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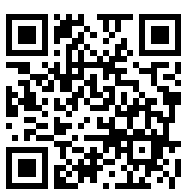

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EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973

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HEARINGS

BEFORE THE

SUBCOMMITTEE ON HEALTH

OF THE

COMMITTEE ON LABOR AND PUBLIC WELFARE UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

ON

S. 504

TO AMEND THE PUBLIC HEALTH SERVICE ACT TO PROVIDE ASSISTANCE AND ENCOURAGEMENT FOR THE DEVELOPMENT OF COMPREHENSIVE EMERGENCY MEDICAL SERVICES SYSTEMS

S. 654

TO ESTABLISH AN EMERGENCY MEDICAL SERVICE ADMINISTRATION WITHIN THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE TO ASSIST COMMUNITIES IN PROVIDING PROFESSIONAL EMERGENCY MEDICAL CARE

JANUARY 31 AND FEBRUARY 1, 1973
WASHINGTON, D.C.

MARCH 9, 1973
SAN FRANCISCO, CALIF.

MARCH 12, 1973
LOS ANGELES, CALIF.

Printed for the use of the Committee on Labor and Public Welfare

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EMERGENCY MEDICAL SERVICES SYSTEM DEVELOPMENT ACT OF 1973

WEDNESDAY, JANUARY 31, 1973

U.S. SENATE,
SUBCOMMITTEE ON HEALTH OF THE COMMITTEE ON
LABOR AND PUBLIC WELFARE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:16 a.m. in room 4200, Dirksen Office Building, Senator Edward M. Kennedy, chairman of the subcommittee, presiding.

Senators present: Kennedy, Schweiker, Beall, and Taft.

Also present: Senator Hollings.

Committee staff members present: LeRoy G. Goldman, professional staff member; Jay B. Cutler, minority counsel, and Louise Ringwalt, research analyst.

Senator KENNEDY. The subcommittee will come to order.

First of all I want to apologize to the witnesses this morning for getting started about 20 minutes late. Members of our party had a caucus this morning on matters affecting law enforcement, and compensation to victims. And the tragedy is that it is only when there is some extraordinary act of violence that the American people or we in the Congress get involved in doing something that is long since overdue. The importance of these hearings is dramatized by last night's occurrences; the treatment Senator Stennis received on his way to the hospital put these hearings into dramatic focus.

I have an extensive statement which I am going to put in the record. It outlines in detail the provisions of this legislation, and its importance. I stand by this statement and I want to have it included at the outset of this hearing and I ask that it be printed as read.

OPENING STATEMENT OF SENATOR KENNEDY

Today and tomorrow the Senate Health Subcommittee will hold hearings on Emergency Medical Services legislation and will hear testimony on S. 504 the Emergency Medical Service System Development Act of 1973.

Nowhere is the health care crisis in this country more evident or more insupportable than in the appalling lack of high quality emergency medical services. Not for nothing is accidental injury and death dubbed the great neglected disease of our society. Every year, 52 million Americans are injured. Of these, 110,000 die and 400,000 are left with lasting disabilities. They occupy an average of 65,000 hospital beds for 22 million bed days under the care of 88,000 hospital personnel. Thousands of those who die could be saved and thousands of

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those who suffer permanent injury would be less incapacitated if only they were given prompt and effective emergency medical care.

This is even more true of those suffering from heart disease; today 700,000 people die of heart disease every year. The majority of these die of acute heart attack, and more than half of them before they even reach the hospital. It is generally recognized (by, amongst others, the American College of Emergency Physicians) that at least half of these deaths could be prevented by proper cardiopulmonary resuscitation within the first hour of illness. But far too often that is not provided.

There are 200,000 ambulance personnel in this country and the National Academy of Sciences has stated that only 35 percent of them are qualified at what it considers the minimum acceptable level—that reached by medical corpsmen in the field. Sixty-five percent of the attendants do have advanced level Red Cross training, but 25 percent have only a lower level of instruction and 10 percent have had no training at all. Furthermore, of the country's 25,000 ambulances, 20,000 are of the station wagon type which are quite unsuitable for tending sick people in transit and which do not have the room to carry adequate life support equipment. Only 37 percent of ambulances meet the minimum design standards set by the National Academy of Sciences.

Furthermore, only one-sixth of the country's hospitals maintain an emergency department staffed 24 hours a day and although there are now 15,000 physicians practicing emergency medicine in the country, there is almost nowhere for them to be trained.

This bill is designed to improve this appalling situation. It authorizes to be appropriated $300 million over the next 3 years to be paid in grants and contracts by the Secretary of Health, Education, and Welfare to State, regional, or local governments which put forward a comprehensive emergency medical services areawide plan. Such a plan must include:

1. An areawide emergency medical services council.
2. Proposals for training emergency medical services personnel at all levels.
3. A central communications system.
4. Emergency medical services transport system.
5. Twenty-four hour easily accessible emergency medical services facilities.
6. Emergency access, including emergency transport systems.
7. Universal access to emergency medical services regardless of ability to pay.
8. Disaster plan for national emergencies.
9. Followup and rehabilitation plan.
10. Public education program.
11. Plan for independent evaluations of system.
12. Standardized patient recordkeeping system.

I am convinced that this bill is essential if we are to improve the delivery of emergency medical services in this country. In the next 2 days, we will be hearing from a number of witnesses, all of whom have experience in emergency medical services systems. Amongst them are the Department of Transportation, the American College of Emergency Physicians, the University Association for Emergency Medical Services, the Ambulance Association of America,

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the Society for Critical Care, the American Medical Association, the American Hospital Association, the American Heart Association, Helicopter Emergency Rescue Service, and Brig. Gen. Sam Seeley, Professional Associate of the Division of Medical Sciences of the National Academy of Sciences, National Research Council.

Despite their overwhelmingly important role in the implementation of the provisions of this legislation, we will not be hearing testimony from the Department of Health, Education, and Welfare. It was with dismay that I heard only yesterday morning that DHEW was to refuse the subcommittee's invitation to testify, formally extended to them on January 24.

At this point I order printed in the record, a copy of S. 504 and Senator Beall's bill S. 654.

[A copy of the bills referred to follows:]

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93D CONGRESS
1ST SESSION

S. 504

IN THE SENATE OF THE UNITED STATES

JANUARY 23, 1973

Mr. CRANSTON (for himself, Mr. KENNEDY, Mr. SCHWEIKER, Mr. WILLIAMS, Mr. JAVITS, Mr. BEALL, Mr. DOMINICK, Mr. EAGLETON, Mr. HUGHES, Mr. MONDALE, Mr. PELL, Mr. RANDOLPH, and Mr. STEVENSON) introduced the following bill; which was read twice and referred to the Committee on Labor and Public Welfare

A BILL

To amend the Public Health Service Act to provide assistance and encouragement for the development of comprehensive emergency medical service systems.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Emergency Medical Services Systems Development Act of 1973".

SEC. 2. (a) The title of part C of title VI of the Public Health Service Act is amended to read as follows:

"PART C—CONSTRUCTION OR MODERNIZATION OF EMERGENCY ROOMS AND DEVELOPMENT OF AREA EMERGENCY MEDICAL SERVICES SYSTEMS".

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(b) Section 631 of the Public Health Service Act is amended by striking out "1971," and inserting in lieu thereof "1974,".

(c) Section 633 of such Act is amended to read as follows:

"AUTHORIZATION

"SEC. 633. To assist in, improve, and expand the provision of adequate emergency medical services in the Nation for the treatment of accident victims and victims of sudden illness, and handling of other medical emergencies, there are authorized to be appropriated $50,000,000 for the fiscal year ending June 30, 1974; $100,000,000 for the fiscal year ending June 30, 1975; and $150,000,000 for the fiscal year ending June 30, 1976, for special project grants to and contracts with appropriate governmental entities for the planning and development or expansion of comprehensive area emergency medical services systems. Sums made available under this section may be used for planning, construction, training and manpower development, communication, transportation, public education, coordination of services and facilities and other components necessary for the implementation of a plan submitted in accordance with section 635."

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EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973

HEARINGS

BEFORE THE

SUBCOMMITTEE ON HEALTH

OF THE

COMMITTEE ON LABOR AND PUBLIC WELFARE

UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

ON

S. 504

TO AMEND THE PUBLIC HEALTH SERVICE ACT TO [redacted] ASSISTANCE AND ENCOURAGEMENT [redacted]

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SEC. 3. Part C of such title is further amended by adding at the end thereof the following new sections:

"ELIGIBILITY FOR GRANTS AND CONTRACTS

"SEC. 634. Funds appropriated pursuant to this part shall be available for grants and contracts made by the Secretary, after consultation with the National Emergency Medical Services Advisory Council established by section 638, and funds available for grants and contracts under section 633 shall be provided on a matching basis of up to 75 per centum in accordance with criteria of need as determined by the Secretary pursuant to regulations he shall prescribe, to assist States, political subdivisions, or regional arrangements, compacts, or consortiums comprising the governmental jurisdictions for at least those areas included in a standardized metropolitan statistical area (as determined by the Office of Management and Budget) in the case of programs to be carried out in such standardized metropolitan statistical areas, presenting a plan for the provision of comprehensive and coordinated emergency medical services for a geographical area which encompasses an area at least congruent with an areawide comprehensive health planning agency as established under section 314 (b) of this Act or multiples of such area (unless the Secretary determines that such area cannot

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feasibly operate under a single plan in which event he may approve a plan submitted for a portion of such area), which plan must be approved by the Secretary and meet requirements consistent with the provisions of section 635 set forth in regulations prescribed by the Secretary.

"PLANS

"SEC. 635. Each plan submitted pursuant to section 634 must include the following—

"(a) reasonable assurance that there has been or will be established in or for the area with respect to which such grant is sought an area emergency medical services planning council pursuant to the provisions of section 636;

"(b) proposals for programs (carried out in coordination with education and training programs assisted under titles III, VII, VIII, and IX of this Act and in a manner consistent with the appropriate provisions of such applicable title) for the training and continuing education of health professionals and paraprofessionals (with priority for the recruitment and training of veterans of the Armed Forces of the United States with training or experience in the health care field) in the provision of emergency medical services to victims of accident and sudden illness, which programs must meet criteria established by the Secretary in regulations and,

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in the case of the training of paraprofessionals, must include supervised clinical training for at least one-half of the program;

"(c) provision for a communications system including, at least, a central, areawide communications network linked with other appropriate area, State, and National networks, and with maximum accessibility for the public through a universal emergency telephone number and other means, which system shall allow transmission of information by voice, telemetry, or other electronic method and shall provide for cross-frequency patching capability;

"(d) provision for an emergency medical services transportation system, which shall include such airborne and waterborne transportation as is necessary to meet the individual characteristics of the area;

"(e) provision for the establishment of easily accessible, continuously operational emergency medical services facilities in sufficient numbers and situated at strategic locations in the area to meet the emergency medical services needs of the area;

"(f) provision for emergency access to specialized critical medical care units in the area, including provision for the necessary transportation systems for such access, and, where such resources are nonexistent or inadequate

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in the area, for access to such units in a neighboring area where access is feasible in terms of time and distance;

"(g) assurance that necessary emergency medical services, to the maximum extent feasible, shall be provided to all patients requiring services and shall be provided without regard to, or prior inquiry as to, ability to pay;

"(h) provision for developing for submission for approval by the Secretary, within one year of receipt of funds under this part, a plan assuring an operational system for providing emergency medical services during mass casualties, natural disasters, or national emergencies;

"(i) provision for transfer to facilities and programs providing such followup care and vocational rehabilitation as is necessary to effect the maximum recovery and restoration of the patient;

"(j) provision for a program of public education and information in the area served (taking into account the needs of visitors to the community to know or be able to learn immediately the means of obtaining emergency medical services), stressing appropriate methods of medical self-help;

"(k) provision for periodic, comprehensive, and independent review and evaluation of the extent and qual-

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ity of the emergency medical services provided in the area; and

"(l) provision for a standardized patient record-keeping system meeting standards established by the Secretary in regulations, which records shall cover the treatment of the patient, from initial entry into the system through discharge from the emergency medical services system, and shall, to the maximum feasible extent, be consistent with ensuing patient records used in followup treatment and rehabilitation of the patient.

"AREA EMERGENCY MEDICAL SERVICES PLANNING COUNCIL

"SEC. 636. (a) The composition of the Area Emergency Medical Services Planning Council to be established in accordance with the plan submitted under section 635 shall include representatives of the State agency and appropriate areawide health planning agency or agencies (if any) established under section 314, of the regional medical program established under title IX of this Act in the area, of all public safety agencies having responsibilities within the area, of hospital councils, public, voluntary, and nonprofit private agencies, institutions, and organizations concerned with health or health education, of the local government or governments or units thereof exercising jurisdiction in the area, of uniformed services of the Federal Government operating installations in the area, of the Veterans' Administration medical

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facilities in the area, of communications networks, mass media, and public utilities, of firms, organizations, and other entities having responsibilities related to the provision of emergency medical services, and of the general public who are not related to the provision of health care and who shall comprise at least one-third of the Council's voting membership.

"(b) The functions of such Council shall include development, in consultation with the congruent areawide comprehensive health planning agency or agencies established pursuant to section 314(b), of the plan described in section 635(h) for areawide emergency medical services and shall include continuous monitoring and evaluation of the operation of the emergency medical services system with a view to making recommendations for the improved effectiveness of its operation.

"INTERAGENCY TECHNICAL COMMITTEE ON EMERGENCY MEDICAL SERVICES

"SEC. 637. (a) The Secretary shall establish an Interagency Technical Committee on Emergency Medical Services which shall be responsible for coordinating those aspects and resources of all Federal programs and activities relating to emergency medical services to assure the adequacy and technical soundness of such programs and activities and to provide for the full communication and exchange of infor-

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mation necessary to maintain the necessary coordination and effectiveness of such programs and activities. The Secretary or his designee shall serve as Chairman of the Committee, which shall include appropriate scientific, medical, or technical representation from the Department of Transportation, the Department of Justice, the Department of Defense, the Veterans' Administration, the National Academy of Sciences, the National Science Foundation, the Office of Science and Technology, the Federal Communications Commission, the Office of Emergency Preparedness, and such other Federal agencies, and parts thereof (including components of the Department of Health, Education, and Welfare), as the Secretary determines administer programs directly affecting emergency medical services functions or responsibilities. The Committee shall meet at the call of the Chairman, but not less often than four times a year.

"(b) The Secretary of each military department (or his designee), as such term is defined in section 101(8) of title 10, United States Code, is authorized to enter into agreements with emergency medical services systems under which agreements, equipment, and personnel of the armed force under the Secretary's jurisdiction may, to the extent it will not interfere with the primary mission of that armed force, provide transportation and other services in emergency situations.

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"NATIONAL EMERGENCY MEDICAL SERVICES ADVISORY COUNCIL

"SEC. 638. (a) The Secretary shall establish a National Emergency Medical Services Advisory Council with which he shall consult on a continuing and regular basis in administering this part. The Council shall consist of the Secretary or his designee, who shall serve as Chairman, the Director of the National Institutes of Health and the Administrator of the Health Services and Mental Health Administration in the Department of Health, Education, and Welfare, all other members of the Interagency Technical Committee established under section 637, and eighteen members appointed by the Secretary, nine of which appointed members shall be members of the general public who are not related to the provision of emergency medical services, and nine shall be individuals experienced in the provision or development of, or the training of, personnel to provide emergency medical services.

"(b) The functions of the Council shall be to review and advise the Secretary (through a subgroup which it shall appoint) on applications received for grants and contracts under this part and to make recommendations to the Secretary with respect to carrying out the provisions of this part.

"(c) Each appointed member of the Council shall be appointed for a term of four years, except that—

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"(1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his or her predecessor was appointed shall be appointed for the remainder of such term; and

"(2) of the members first appointed after the effective date of this part, six shall be appointed for a term of four years, six shall be appointed for a term of three years, and six shall be appointed for a term of one year, as designated by the Secretary at the time of the appointment. Appointed members may serve after the expiration of their terms until their successors have taken office.

"(d) A vacancy in the Council shall not affect its activities, and fifteen members of the Council shall constitute a quorum.

"(e) Members of the Council who are not officers or employees of the United States shall receive for each day they are engaged in the performance of the functions of the Council compensation at rates not to exceed the daily equivalent of the annual rate in effect for grade GS–18 of the General Schedule, including traveltime; and all members, while so serving away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as such expenses

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are authorized by section 5703, title 5, United States Code, for persons in the Government service employed intermittently.

"GRANTS FOR RESEARCH

"SEC. 638a. (a) The Secretary is authorized to make grants to public or private nonprofit agencies, organizations, or institutions for the support of research in emergency medicine techniques, methods, devices, and delivery to be carried out in conjunction with the implementation of a plan submitted in accordance with section 635.

"(b) For the purpose of making payments pursuant to grants under this section, there are authorized to be appropriated $5,000,000 each for the fiscal year ending on June 30, 1974, and the next two fiscal years.

"SEC. 639. (a) No application for a grant or contract under this part shall be approved unless—

"(1) the State comprehensive health planning agency established pursuant to section 314(a) and the areawide health planning agency established pursuant to section 314(b) have had an opportunity to comment thereon, within ninety days of the submission to those agencies of copies of such application, and the applicant has submitted to the Secretary a reply to any such comments with a view toward accommodating any objec-

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tions by and remedying any differences with such agency or agencies.

"(2) the applicant agrees to maintain such records and make such reports to the Secretary as the Secretary determines are necessary to carry out the provisions of this part.

"(3) the application is submitted in such form and such manner and contains such information as the Secretary shall prescribe in regulations.

"PAYMENTS AND CONDITIONS

"SEC. 640. (a) Grants under this part shall be paid in advance or by way of reimbursement in such installments and on such conditions as in the judgment of the Secretary will best carry out the provisions of this part.

"(b) Nothing in this part shall limit or otherwise restrict the use of funds which are granted under other provisions of this Act or other Federal law and which are available for the conduct of emergency medical transportation and services programs from being used in connection with programs assisted through grants and contracts under this part where the former programs meet the standards and criteria established by the Secretary under this part.

"(c) Contracts may be entered into under this part without regard to sections 3648 and 3709 of the Revised Statutes (31 U.S.C. 529; 41 U.S.C. 5).

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"(d) No grants or contracts may be made under this part in support of an emergency medical services system except where all components of such system meet standards and criteria established in regulations by the Secretary after taking into account standards established by appropriate national professional or technical organizations.

"REPORTS

"SEC. 640a. The Secretary shall prepare and submit to the Congress, one year after enactment of this part and every year thereafter, a report on the administration of this part, which shall include an evaluation of the adequacy of the provision of emergency medical services throughout the Nation including a study to determine the legal barriers to the effective provision of medical care in emergency situations and the extent to which the needs for such services are being adequately met through assistance under this part and otherwise and his recommendations for any legislation necessary to promote the provision of and provide emergency medical services throughout the Nation at a level adequate to meet such needs."

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93D CONGRESS
1ST SESSION

S. 654

IN THE SENATE OF THE UNITED STATES

JANUARY 31, 1973

Mr. BEALL introduced the following bill; which was read twice and referred to the Committee on Labor and Public Welfare

A BILL

To establish an Emergency Medical Services Administration within the Department of Health, Education, and Welfare to assist communities in providing professional emergency medical care.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. That this Act may be cited as the "Emergency Medical Service Systems Act".

FINDINGS; DECLARATION OF POLICY AND PURPOSE

SEC. 2. (a) The Congress finds—

(1) That there is an urgent need for the development and improvement of emergency medical services in many urban, suburban, and rural areas throughout the Nation.

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(2) That countless lives have been and are being lost through the lack of prompt and professional emergency services, and many of these lives could be saved if such care were more readily available.

(3) That while programs can best be planned at the local and regional levels, implementation will require coordination at community, regional, State, and National levels.

(b) It is the policy of the Congress and the purpose of this Act to encourage the implementation of programs for delivery of emergency medical services, to assure nationwide availability and accessibility of such emergency medical services, and to prevent the needless loss of life by upgrading the quality of emergency medical services in the United States. This purpose should be achieved through the establishment of a Federal entity having the authority to set standards for ambulance and life support equipment, ambulance-to-hospital and disaster radio communication, personnel training, emergency room facilities, and personnel, ancillary supporting services within the hospital, and other components of qualified emergency medical service systems, giving special consideration to the utilization and training of discharged military medical corpsmen, and the authority to provide financial assistance to States for distribution in the development and establishment of qualified

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emergency medical service systems operated by or under the supervision and auspices of local political subdivisions or combinations thereof.

ESTABLISHMENT OF EMERGENCY MEDICAL SERVICES ADMINISTRATION

SEC. 3. There is established within the Department of Health, Education, and Welfare an Emergency Medical Services Administration (hereinafter referred to as the "Administration"). The Administration shall be headed by a Director (hereinafter referred to as the "Director") who shall be a qualified health care professional appointed by the President, by and with the advice and consent of the Senate.

DIRECTOR OF THE ADMINISTRATION; TECHNICAL AND PROFESSIONAL PERSONNEL

SEC. 4. (a) The Director, under the general direction and supervision of the Secretary of Health, Education, and Welfare (hereinafter referred to as the "Secretary"), shall carry on the functions and responsibilities vested in or transferred to him or the Administration by or under this Act, and shall perform such related duties as may be prescribed by the Secretary to carry out the purpose of this Act.

(b) The Director shall serve at the pleasure of the President and shall receive basic pay at the rate prescribed for level V of the Executive Schedule under subchapter II of chapter 53 of title 5, United States Code.

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(c) With the approval of the Secretary, the Director shall appoint such technical and professional personnel as he deems necessary, in addition to the regular personnel of the department under his jurisdiction and control, to carry out the functions of the Administration, and shall fix the pay of the personnel so appointed, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service or the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

FINANCIAL ASSISTANCE FOR DEVELOPMENT AND OPERATION OF EMERGENCY MEDICAL SERVICE SYSTEMS

SEC. 5. (a) In order to make funds available to local communities to assist in the development and operation of qualified emergency medical service systems, and improvement of existing emergency medical services, the Director is authorized to allot funds to qualified States for distribution to communities as provided in section 6.

(b) A community, within the meaning of subsection (a), shall be a political subdivision or a regional combination of subdivisions and may encompass an area of one or more counties, or a part or contiguous parts thereof, and may be situated in more than one State.

(c) A qualified emergency medical service system, within the meaning of subsection (a), shall operate within standards

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which the Director shall by regulations prescribe, shall provide comprehensive emergency medical services, directly through facilities and staff of the community or indirectly through contractual arrangements with public or private agencies, organizations, or other entities, and shall include:

(1) well-equipped emergency vehicles, staffed by emergency medical service technicians, with special consideration given to the utilization of discharged military corpsmen, trained and equipped to provide necessary life support at the scene of accident or illness and during transportation;

(2) a communications system that assures prompt response to the need;

(3) high quality emergency care facilities, staff, and equipment at the hospital level;

(4) medical self-help training programs that reach a large number of area residents;

(5) adequate highway signs to locate emergency medical services;

(6) emergency medical services adequate to meet the needs of the community or region;

(7) periodic evaluation of the quality of services to be provided through systems of inspection by the State, and such other quality control measures as the Director shall deem appropriate;

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(8) registration of ambulance attendants through a national registry program maintained by a voluntary organization such as the National Registry of Emergency Medical Technicians which shall provide for periodic review of personnel;

(9) categorization of emergency capabilities within regional planning;

(10) hospital facilities to meet the emergency medical service needs for the area; and

(11) such other components as the Director may add.

GRANTS TO STATES

SEC. 6. (a) The Director shall allocate and pay to each State which qualifies under section 7, with respect to any fiscal year, from the funds appropriated pursuant to section 18(a) for such year, an amount (based on the population of the State and other conditions, such as population density and the availability of physicians and hospital facilities, demonstrating or bearing upon the adequacy of emergency medical services in the State) which reflects the needs of such State and its political subdivisions for improved emergency medical services relative to the corresponding needs in other qualified States.

(b) Funds made available to a qualified State with re-

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spect to any fiscal year under subsection (a) shall be disbursed by the appropriate agency of such State to eligible communities as defined in section 8, in accordance with the State's emergency medical services program and on such additional terms and conditions (consistent with such program) as such agency deems appropriate, for the development, operation, and improvement of qualified emergency medical service systems: *Provided, however,* That funds shall not be utilized to duplicate or compete with any existing private enterprise for emergency ambulance service that meets the standards established by the Director and is satisfactorily providing services within the purposes of this Act.

(c) Under regulations prescribed by the Director, any funds which have been disbursed by a State to a community with respect to any fiscal year for the development and operation of an emergency medical service system, and which remain unexpended and unobligated, may be withdrawn from such community (and redistributed to other communities in that State), if the State administrator as referred to in section 7 (b) deems the withdrawal of such funds warranted on the basis of subsequent inspections made or information received. Funds allocated by the Director to any State for

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any fiscal year under subsection (a) which remain unexpended and unobligated may be withdrawn from such State and redistributed by the Director to other qualified States.

QUALIFICATION OF STATES

SEC. 7. In order for a State to qualify for assistance under section 6, the Governor of the State (or the State health officer, if designated by the Governor) shall submit to the Director a State plan for comprehensive emergency medical services, and the Director must approve the plan. Such a plan must—

(a) designate the appropriate State health agency (hereinafter referred to as the "designated State agency") as the sole agency for the administration of the emergency medical service program within the State;

(b) provide for the appointment by the Governor of an administrator (hereinafter referred to as the "State administrator") who shall direct the activities of the designated State agency and who shall disburse funds in accordance with the provisions of this Act;

(c) provide for the establishment of a State Emergency Medical Service Advisory Council, pursuant to the provisions in section 14, to consult with the designated State agency in carrying out the State plan;

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(d) provide for financial assistance to communities for the establishment and operation of emergency medical services, and the improvement of existing emergency medical services, pursuant to plans which include reasonable assurance of the establishment of qualified emergency medical service systems within such communities;

(e) provide for a program of collection, preparation and dissemination to the general public within the State of information on availability and accessibility of emergency medical services in the State;

(f) provide for a system of inspection and periodic evaluation of the quality of services performed by communities receiving assistance under this Act; and

(g) provide for reports by the designated State agency to the Director, as the Director may by regulations direct, on the administration of the State's emergency medical service program under this Act.

COMMUNITY QUALIFICATION FOR ASSISTANCE

SEC. 8. (a) In order for a community to qualify for financial assistance under this Act—

(1) the community must make application to the designated State agency in its State for financial assistance and submit therewith a plan for the devolpment and operation of an emergency medical service

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system, or the improvement of an existing system, and establishment of a qualified emergency medical service system in the community;

(2) the community application and plan shall be in such form as the designated State agency may by regulations prescribe and shall contain reasonable assurance of the establishment of a qualified emergency medical service system; and

(3) the community application and plan must be approved by the designated State agency within the provisions in subsection (b).

(b) Before any application and plan referred to in subsection (a) may be approved by the designated State agency—

(1) The State Comprehensive Planning Agency, and the local health planning agency, if any, and the State Emergency Medical Service Advisory Council must be given an opportunity to review such application and plan and to submit its recommendation respecting approval thereof to the designated State agency for its consideration.

(2) In the evaluation of any application and plan for approval under this subsection, consideration shall be given to the importance of linking together, in a regional system, emergency medical services in rural and small communities which do not have the necessary resources to develop

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and support their own qualified emergency medical service systems, and the adequacy of the community plan to meet the needs of the community; and the State and local medical societies and other appropriate professional and voluntary health agencies in the area to be served shall be consulted.

PAYMENTS TO COMMUNITY

SEC. 9. (a) The designated State agency shall make payments to a community, for the purpose of this Act, only under the following conditions:

(1) such community meets the conditions of eligibility under section 8; and

(2) the State administrator has, on the basis of reports submitted by the community along with its application for funds, and onsite inspection, review, and other information and data which the Director may deem necessary, specifically approved any such payment as suitably contributing to the achievement of the plan for a qualified emergency medical service system.

(b) Payments to a community under this section may be made with respect to any fiscal year for the development and operation, and the improvement of any component or components of a qualified emergency medical service system (including the purchase of new equipment for these purposes) in an amount not to exceed 75 per centum of costs incurred therefor by the community during a fiscal year; and payments

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to such a community may be continued in an amount not to exceed 50 per centum of such costs incurred by such community during the next succeeding fiscal year, and in an amount not to exceed 25 per centum of such costs incurred by such community during the second succeeding fiscal year.

(c) (1) Whenever the State administrator, after reasonable notice and opportunity for hearing to a community, finds that a community is not adequately performing pursuant to the emergency medical service plan which he approved as a condition of eligibility for assistance under section 8 (c), he may deny any further payments to the community under this Act. He shall give the community notice of any such denial and state a reasonable time to correct the condition as a basis of reinstatement of payments. If the condition is not corrected within the time stated, or within any extension of time which may be granted by the State administrator, the State administrator may withdraw the approval of financial assistance to the community under this Act, and shall give notice of any such action to the community. Any determination by the State administrator under this subsection shall be subject to appeal by the community to the Director within thirty days following notice thereof.

(2) On appeal duly made from a determination of the State administrator under subparagraph (1), the Director shall have authority to confirm, reject, or modify the de-

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termination of the State administrator, and shall within thirty days following such action of appeal make a determination in the matter and give notice thereof to the community.

(3) The community shall be entitled, further, to court review of the Director's determination under subparagraph (2) by commencing an action in the Federal district court for the district in which the community is situated within thirty days following notice of the Director's determination.

ESTABLISHMENT OF STANDARDS FOR OPERATION OF EMERGENCY MEDICAL SERVICE SYSTEM

SEC. 10. The Director shall establish, keep current, and from time to time publish standards to govern the operation of an emergency medical service system. Such standards shall be designated to insure that such services are provided and available on the widest possible basis, and shall include (without being limited to) standards and minimum requirements for:

(a) Emergency medical service equipment, including:

(1) type of emergency ambulance and related rescue vehicles, including mobile intensive and coronary care units;

(2) type and amount of rescue resuscitation and life support equipment to carry onboard ambulance vehicles;

(3) radio or radio-telephone equipment for communication between ambulance and hospital.

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(b) Licensure by States of ambulance service providers based upon periodic inspection of such providers' vehicles and equipment and periodic review of the training level of its personnel and the adequacy of its dispatching and communications system.

(c) Communications and reporting, including:

(1) establishment of a universal emergency telephone number;

(2) ambulance to hospital communications, which tie in to other public service agencies for daily and disaster radio communications;

(3) establishment of methods and standards for interregional emergency communication, including radio, microwave relay, and other technology;

(4) establishment of emergency medical service information and data retrieval systems, including telemetry, biomedical data relays and human intellect augmentation systems;

(5) filing of reports on emergency rescue and ambulance services and the integration of these reports with patient emergency care records;

(d) Levels of adequate liability insurance to cover any ambulance operations.

(e) The performance of training, advisory functions, and quality control by physicians designated as responsible for

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the medical supervision of ambulance services, including standards for training curriculums.

(f) Facilities and routing:

(1) establishment of emergency medical services operations centers;

(2) categorization of emergency medical services capabilities;

(3) establishment of methods for marking the location of emergency medical facilities and the establishment of routes thereto;

(4) physicians and personnel back-up by a hospital of its emergency department and adequate in-house back-up with special unit beds.

FINANCIAL ASSISTANCE FOR INITIAL PURCHASE OF EQUIPMENT

SEC. 11. (a) In addition to providing financial assistance for the development and operation or improvement of a qualified emergency medical service system, the Director is authorized, subject to the conditions in subsection (b), to assist in the establishment of new ambulance services and new emergency departments in any political subdivision or regional combination in a qualified State by making grants to a subdivision or combination for—

(1) The initial purchase of ambulance vehicles, equipment, and communication systems to be used in

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the provision of ambulance services by or under the supervision and auspices of an officer of such political subdivision, and

(2) acquisition of equipment for emergency departments and special units in rehabilitation areas (but not for the construction of new facilities).

Such special grants shall be limited to designated items by the Director and shall be made only with respect to purchases approved by the Director, after recommendation for approval by the State administrator.

(b) A grant under this section shall be in an amount not exceeding 50 per centum of the costs of the purchase of equipment involved, and shall be made only to a community which demonstrates to the satisfaction of the Director, after recommendation of the State administrator, that, with the acquisition of such equipment, it will rapidly be able to provide ambulance services or emergency departments which can be integrated into a qualified emergency medical service system.

TRANSFER OF EMERGENCY MEDICAL SERVICES PROGRAM OF THE FEDERAL GOVERNMENT TO THE EMERGENCY MEDICAL SERVICES ADMINISTRATION

SEC. 12. (a) All functions, powers, and duties of the Secretary of Transportation and the National Highway Traffic Safety Administration relating to emergency medical services (standard numbered 11) which are being exercised

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under, in connection with, or as a part of the uniform standards for State highway safety programs are transferred to and vested in the Secretary of Health, Education, and Welfare, to be exercised and carried out by him through the Director and the facilities and other personnel of the Administration.

(b) Within one hundred and eighty days of the effective date of this Act, the President may, in addition to the functions, powers, and duties transferred by subsection (a), transfer to the Secretary any functions, powers and duties relating to emergency medical services which are being exercised by any other Federal departments or agencies.

(c) So much of the positions, personnel, assets, liabilities, contracts, property, records, and unexpended balances of authorizations, allocations, and other funds of the Secretary and the agencies noted, as were employed, held, used, or available for use exclusively or primarily in connection with the functions, powers, and duties transferred by subsection (a) or (b) shall be transferred to the Administration along with such functions, powers, and duties.

(d) The transfers under subsections (a), (b), and (c) shall be made in accordance with such regulations as the Director of the Office of Management and Budget may prescribe to carry out this section.

(e) With respect to any function, power, or duty transferred by subsection (a) and exercised after the date

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of the enactment of this Act, any reference in any law, document, or record to the previous governmental program shall be deemed as a reference to the Director and the Administration.

APPLICATION OF STANDARDS TO FEDERAL PROGRAMS

SEC. 13. (a) The standards established by the Director under section 10 shall apply to and govern the operation of all ambulances and other emergency medical services, except those ambulances and services operated under the auspices of the Department of Defense, which are provided or assisted in any way under Federal law or under programs established, carried on, or supported under Federal law.

(b) The Director shall consult with and provide technical and other advice and services to the heads of the various Federal departments and agencies having jurisdiction over programs or activities involving the provision of ambulance or other emergency medical services or the provision of assistance in any form, directly or indirectly, to entities furnishing such services, in order to insure that the requirements of this section will be met and that all such programs and activities of the Federal Government will be effectively coordinated with a view to the widest possible achievement of the purpose of this Act.

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STATE EMERGENCY MEDICAL SERVICES ADVISORY COUNCIL

SEC. 14. (a) The composition of the State Emergency Medical Services Advisory Council established in accordance with the State plan submitted under section 7 shall include representatives of providers of health services, including medical societies, hospital administrators, nursing groups, ambulance services, local chapters of voluntary health services; public agencies, including the fire and police departments, hospital departments (and medical examiners and coroners), health planning agencies, and local government; community leaders representing civic and service clubs, traffic and highway safety groups, telephone companies, and public utilities, and other groups, including the news media, which would have an interest in emergency care.

INTERAGENCY COUNCIL

SEC. 15. There is established an Interagency Council to provide for, communication and exchange of information that is necessary to maintain the necessary coordination and effectiveness of emergency medical service programs and activities of all Federal agencies and developments that are involved in such programs. The Council shall consist of an Assistant Secretary of the Department of Defense,

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the Department of the Interior, the Department of Agriculture, the Department of Commerce, the Department of Labor, and the Department of Transportation, the Chief Medical Director of the Veterans Administration, the Deputy Director of the Office of Emergency Preparedness, and the Deputy Administrator of the Health Services and Mental Health Administrator, who shall serve ex officio. The Secretary or his designee shall serve as Chairman of the Council and the Council shall meet at the call of the Chairman, but not less often than four times a year.

NATIONAL EMERGENCY MEDICAL SERVICES ADVISORY COMMITTEE

SEC. (a) There is established a National Emergency Medical Services Advisory Committee which shall advise, consult with, and make recommendations to the Director with respect to overall planning and policy and the objectives and priorities for all emergency medical services. The Committee shall consist of sixteen members appointed by the President who shall be persons who by virtue of their education, training, or experience are qualified to carry out the functions of members of the Committee. Of the members so appointed, four shall be officials of the State or local governments or governmental agencies who are actively engaged in emergency medical services, four shall be doctors of

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medicine, and the remainder shall be persons who are representative of the ambulance services and others who have shown expertise in emergency medical services and have special knowledge of nursing, transportation, consumer needs and desires, hospital facilities, and educational and manpower development. The President shall designate the Chairman of the Committee and the Committee shall meet at the call of the Chairman but not less than four times a year.

(b) Members of the Committee (other than members who are full-time officers or employees of the United States) shall, while serving on business of the Council, be entitled to receive a per diem allowance at rates not to exceed the daily equivalent of the rate authorized for grade GS–18 of the General Schedule. Each member of the Council, while so serving away from his home or regular place of business, may be allowed actual travel expense and per diem in lieu of subsistence as authorized by section 5703 of title 5 of the United States Code for persons in the Government service employed intermittently.

GENERAL PROVISIONS

SEC. 17. (a) In administering the provisions of this Act, the Director is authorized to utilize the services and facilities of any other agencies of the United States and of any non-Federal public private agencies or institutions, in accordance

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with agreements entered into between the Director and the heads of such agencies or institutions, on a reimbursable basis or otherwise.

(b) The Director is authorized to conduct or contract with others to conduct studies and research projects on the problems and conditions of emergency medical care. Such studies or projects shall particularly be directed toward the utilization of technological advances in the improvement of emergency medical services. Such studies shall include (but not be limited to):

(1) planning and development for emergency medical services programs;

(2) establishment and improvement of medical emergency transportation systems, including at least one stateside system, using aircraft, helicopters, and radio-equipped vehicles;

(3) providing for cooperative use of equipment and personnel of the Armed Forces for medical emergency transportation assistance;

(4) design, development, and demonstration of advanced methods of, and equipment for, medical emergency transportation communications;

(5) development and operation of training programs for emergency medical service personnel.

(c) The Director, with the approval of the Secretary,

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shall prescribe such regulations as may be necessary or appropriate to carry out this Act.

(d) The Director shall submit to the Secretary for transmittal to the President and the Congress a full and complete annual report on activities under this Act, including such recommendations as he may consider necessary or desirable for legislative or administrative action to improve and make more effective the program under this Act.

(e) The Secretary of each military department (or his designee) is authorized to enter into agreements with communities under which equipment and personnel of the armed forces under the Secretary's jurisdiction may, to the extent it will not interfere with the primary mission of the armed forces, provide transportation and other services in emergency conditions. If the Coast Guard is not operating as a service of the Navy, the Secretary of Transportation (or his designee) may enter into such agreements for the provision of such services by Coast Guard equipment and personnel.

AUTHORIZATION OF APPROPRIATIONS

SEC. 18. (a) For grants under sections 6 and 11, there is authorized to be appropriated the sum of $150,000,000 for the fiscal year ending June 30, 1973, the sum of $150,000,000 for the fiscal year ending June 30, 1974, and the sum of $150,000,000 for the fiscal year ending June 30, 1975.

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(b) For other expenses incurred by the Director and the Administration in carrying out this Act, there is authorized to be appropriated the sum of $50,000,000 for the fiscal year ending June 30, 1973, the sum of $60,000,000 for the fiscal year ending June 30, 1974, and the sum of $70,000,000 for the fiscal year ending June 30, 1975.

(c) Any amounts appropriated pursuant to this section shall remain available until expended, and any amounts authorized for any fiscal year under this section but not appropriated may be appropriated for any succeeding fiscal year commencing prior to July 1, 1975.

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SENATOR KENNEDY. Senator Beall, any comments?

Senator BEALL. I would like to second what you said about dramatization of the need for emergency care delivery as a result of last night's tragic events concerning Senator Stennis. We see this every day unfortunately, and we are all concerned about the fact that we do become able to deliver to the American people in a timely fashion the kind of care that is necessary in order to keep them alive. I have a rather lengthy statement also, which I would like to put in the record at this juncture, following yours.

I would like to point out one thing which I alluded to in the statement. I was reading in the "National Observer," a very interesting article, about emergency health care delivery in Russia.

The article points out at some length the apparently good job the Russians are doing in delivering emergency health care in a very timely fashion. The article points out that of 29,000 people picked up in Leningrad last year, only 3 of them were dead on arrival to the hospital. In Moscow, not a single death occured en route. This if accurate, is a fantastic record. If they are that successful, certainly there is maybe something we can learn from them.

I think this is an area of concern to all of us. I have some pride in the facility at the University of Maryland, which is one of the outstanding facilities in the country. We hope we can expand that kind of facility and kind of care across the country. I would ask unanimous consent that the statement be included and the article from "National Observer" be included in the record.

[The prepared statement of Senator Beall and the article referred to follow:]

STATEMENT OF HON. J. GLENN BEALL, JR., A U.S. SENATOR FROM THE STATE OF MARYLAND

Mr. Chairman, I want to commend you on scheduling hearings on emergency care legislation. As one who has sponsored the Emergency Medical Services Systems Act, who has had a deep interest in this subject, I believe that it is imperative that the Congress and the country move to improve emergency health care and services for our people.

Emergency health care has been called the "hidden crisis" in health care by former Secretary DuVal and has been labeled by the National Academy of Sciences as "one of the weakest links in the delivery of health care in the Nation."

Yet, the more one examines this area the more disturbed he becomes. For no where in health care delivery is the gap between what we know and what we are delivering to the American people greater.

The tragedy is that the present deplorable situation in general need not be. For the military, both in World War II, Korea, and more recently in Vietnam, has demonstrated that we need not regard trauma deaths as unfortunate occurrences that are inevitable.

Mr. Chairman, this week's issue of the "National Observer" features an article entitled "Survival by the Numbers," which carries a subheading of "Emergency—Medicine Plan Like Russia Could Save U.S. Lives." The article points out the remarkable record of the Soviet Union, who employ national emergency numbers, medical teams, and

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speed in saving lives. For example, in Leningrad the story reports that only three of the last 29 thousand patients were pronounced dead on arrival. Similarly, the Director of the Moscow System says not a single patient has been lost en route to a hospital in the Soviet capital. Commenting on the Soviet success Dr. Patrick Storey, who has studied Soviet medical care for 10 years, says in the United States "we just send an ambulance to haul the patient in." In Russia they get a "fully equipped doctor there in 15 minutes." Dr. Storey attributes the differences between patient survival in the United States and the U.S.S.R. to the ability of the Soviet Union to get the patient to the hospital in at least half the time it takes Americans.

Mr. Chairman, unlike cancer and heart diseases, the technology and know-how exists for us to make dramatic improvements such as have taken place in Vietnam where the death rate is near zero and apparently in the Soviet Union. We need only to rationalize and categorize our emergency facilities and services to enable the application of known lifesaving methods. I am pleased that President Nixon has responded to this problem when he initiated the research and development efforts to demonstrate improved emergency care in the country.

The State of Maryland has been a pioneer in this area for some time. We probably have the most sophisticated trauma center in the Nation located at the University of Maryland Hospital in Baltimore. A system of rapid transportation has been developed utilizing a helicopter system operated by the Maryland State Police.

The Maryland University Shock-Trauma Center, the Johns Hopkins University Hospital Pediatrics Trauma Center, the Baltimore City Hospital-University of Maryland Neonatal Centers, the Baltimore City Hospital Burn Center, special coronary units, community hospitals and the paid and volunteer ambulance services provided the Baltimore metropolitan area and the State, means that Maryland has the component parts, and an outstanding capability to lead the Nation in this vital area.

I have been working with the State, the Maryland Trauma Center and others to assure that our resources, capabilities and expertise in emergency care will be available to all our citizens across the State.

Recently it was my pleasure to announce that the State was granted a $1.25 million grant for the development of an Emergency Medical Services Communications System, a vital component of a total Emergency Care System, in the Baltimore Metropolitan area.

This communications system will improve care for victims of medical emergencies by getting the victim to the best medical facility as rapidly as possible. Hospitals, ambulances, helicopters, and medical personnel will be linked by a radio-telephone network.

The project will establish a central dispatch facility, provide 24-hour medical consultation, link hospitals with the State Police's Medi-Vac Helicopter Program, and provide immediate care for coronary patients through telemetry equipment installed in ambulances. I believe that we should develop a statewide system for emergency care.

Dr. Cowley, the capable head of the Maryland University Trauma Center, has told me that Maryland could cut its accident death rate in half if Maryland were to have a statewide emergency health system.

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Mr. Chairman, last year when I introduced legislation on the subject, I pointed out the magnitude of the problem by comparing the deaths and costs of the tropical storm Agnes, which swept the east coast of the United States from June 16 to June 23 and which had been front page news, with the staggering toll of accidents in this country. I noted that during the 6 days that Agnes rampaged through the east coast. 118 lives were lost and the total damage nationally was estimated at $3 billion.

However, I observed that on each of these days an average of 316 of our citizens died of injuries resulting from accidents, for a total of 2,212 victims over the same 6-day period.

The comparison indicates, I believe, the seriousness of the problem and the urgency for action in this area, action that may mean the difference between life and death for the 316 Americans who will die from accidents today and the 316 who will die tomorrow, the next day, and so on.

All of us are potential victims, yet as it has been pointed out, we continue to allow the taking of accident victims to the wrong hospital, hospitals whose chief distinction may be in the words of a Maryland official, their proximity to the accident.

When life or death is involved, we need to utilize the best organization and the best possible personnel. We have not been doing that and I am hopeful that we can move with dispatch on this legislation so that all Americans wherever they live, if victims of an accident, will be assured of quality care.

[From the National Observer, Feb. 3, 1973]

SURVIVAL BY THE NUMBERS—EMERGENCY-MEDICINE PLAN LIKE RUSSIA'S COULD SAVE U.S. LIVES

(By Mara Holmes, from Moscow)

The telephone number 03 is often the difference between life and death for persons needing emergency medical care in Russia. Dialing 03 sets in motion a system called Skoraya, which speeds a physician, an assistant physician, and a nurse in specially equipped ambulance to the victim's side within 15 minutes.

This medical team, which can handle practically all emergencies, is equipped to carry out blood transfusions, administer anesthetics, and even perform tracheotomies. Special ambulances will be dispatched if the victim is under 3 years of age or suffers from myocardial infarction (heart attack), poisoning, burns, shock, trauma, or neurological disorders. These ambulances carry specialized equipment and medical teams specially trained to cope with the particular emergency.

Skoraya Meditsinskaya Pomosch, which translates as "rapid medical assistance," is nationwide and has existed in Russia since July 1918. Skoraya has an excellent track record of getting its patients to the hospital alive. In Leningrad only 3 of the last 29,000 patients were pronounced dead on arrival (DOA) at the hospital. Dr. Nikolai M. Kaverin says that in his two years as director of the Moscow Skoraya not a single patient has been lost en route to a hospital in the Soviet capital.

Skoraya has piqued the interest of many Americans concerned about the lack of a similar speedy emergency medical system in the United States. After returning from a visit to Russia, Dr. Charles A. Hoffman, president of the American Medical Association, recommended recently that American cities study the Soviet system. The National Academy of Sciences, though not recommending a specific American study of Skoraya, stated in a report last Aug. 24 that emergency medical services in the United States are "one of the weakest links in the delivery of health care in the nation."

Dr. Patrick B. Storey of the University of Pennsylvania has studied Skoraya and Soviet medical care for 10 years and hopes for an in-depth U.S.-Soviet study of the Soviet system next year. Storey is medical director of the Graduate Hospital at the university in Philadelphia.

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HAULING VS. TREATING

"Emergency medical services are a natural specialty, not a medical specialty, not an orthopedic specialty," he says. "All these medical disciplines are brought together in this field."

In the United States "we just send an ambulance to haul the patient in," he says. In Russia they get a "fully equipped doctor there in 15 minutes." Storey believes there is a great difference in patient survival in the two nations because of the Soviet ability to get the patient to the hospital in at least half the time it takes Americans.

In the Soviet system, after the patient or someone else dials 03, the call goes to Skoraya personnel—either nurses or assistant physicians (called *feldshers*)—who man the switchboard around the clock. In large and medium-sized cities the call is passed on to an ambulance-dispatching center next to the switchboard center.

At the dispatching center one of a team of trained dispatchers, connected by special telephone lines to Skoraya substations located strategically throughout the city, orders an ambulance from the substation closest to the site of the emergency. All Skoraya ambulances are radio- and telephone-controlled, and the dispatchers always know the location of the specialized ambulances.

Seated near the ambulance dispatchers is an on-duty physician. He is called upon when the switchboard operator believes it is necessary to clarify some details, if the caller is incoherent, or if the emergency necessitates preliminary medical advice on how to handle a patient before the ambulance arrives.

BEFORE COMPLICATIONS

"Our ambulances leave the substation on the fourth minute after the call comes in," says Kaverin, the director of the Moscow Skoraya. "We usually reach the patient on the seventh minute. In case of a heart attack, trauma, poisoning, or what have you, we are on the spot before complications arise. So our people try to cut telephone conversations down to the minimum."

In 30 per cent of the emergencies the Skoraya team will take the patient to a hospital. But usually, after rendering whatever medical assistance is necessary, the Skoraya team either arranges for further medical assistance to be rendered at home by a physician or for the patient to be hospitalized later.

Skoraya personnel decide where the patient will go, so they must know which hospital can handle the emergency. Skoraya is connected by special phone lines to all hospitals and keeps records of how many beds are available. "It's not just the half time saved by bringing a fully equipped doctor to the patient, it's the enormous quantity of time saved through the existence of the system," says Storey. "The first hour is the time when half of our deaths occur from myocardial infarction."

NEW CONSTRUCTION

Skoraya exists in all Soviet cities and rural communities. The Moscow Skoraya presumably is the largest city-wide emergency medical service in the world. It has 23 substations in the city and its outskirts, serving an area of 350 square miles with a population of seven million as well as a daily influx of 1.6 million transients. The Moscow Skoraya has been expanded considerably in the last two or three years. Kavrin says that the Moscow Skoraya presently has some 500 ambulances at its disposal and approximately 1,000 physicians and 4,000 feldshers, nurses, and midwives.

The buildings housing the Moscow Skoraya are old and bleak. But a new, seven-story Skoraya center is now under construction. It will cost between $11 million and $13 million and will be ready by 1975. The new center will be equipped with computers to help streamline operations.

The Skoraya ambulances, which are rented from the Moscow City Council, are equipped to enable the medical teams to handle practically all emergencies. When a regular Skoraya on-line physician finds that he cannot deal properly with an emergency, he will summon a specialized vehicle.

BLINDFOLDED PACKING

All Skoraya personnel undergo special training. Newcomers arrive fresh from medical school—feldshers at age 18–19, doctors at 25 or so. They spend two to three months in the ambulance-dispatch center, then undergo at least a month's

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training on an on-line ambulance. All team members must be able to pack and unpack a medical kit blindfolded. Physicians must attend special two- to three-month courses every three years to upgrade their knowledge.

A feldsher is a medical worker a level below the physician but above the nurse. Feldshers sometimes work independently at subway or factory first-aid stations.

Like the Skoraya crew, U.S. hospital physicians and interns once rode ambulances. But the practice long has been discontinued throughout most of the nation. Miami Beach is the only city in which doctors regularly ride ambulances. "We just can't say that we'll never get our doctors to work on our ambulances again," says Storey. If "the principle of getting that well-equipped, specialized care to the patient is the principle that pays when you put it into effect . . . then we'll have to do it."

He concedes that the American medical profession might have valid reasons for not wanting to put doctors in ambulances. "What they are really saying is, 'You're wasting all that talent. There must be a more efficient way.' "

FEDERAL TESTS

The United States does have an experimental emergency-medical-services project under way. The $8 million project, conducted by the Department of Health, Education, and Welfare, began last June and is aimed at city-wide and state-wide testing of several systems.

The testing areas include two states, Arkansas and Illinois; the city of San Diego, Calif.; Jacksonville and its surrounding area in Duval County, Florida; and a multiple-county area in southeastern Ohio. Some of the areas already have excellent ambulance services, with highly qualified technicians riding ambulances equipped with sophisticated technology, but lack local hospital emergency departments. Others have good facilities but lack integrated ambulance systems.

No unified emergency-medical-service system exists in the United States. The best such American operation so far was in South Vietnam, where medical-rescue teams worked under remote medical supervision and where DOA figures were below 1 per cent of the wounded. So, up to now at least, the Russians offer a better ride.

Senator KENNEDY. Senator Cranston regrets not being here. He is the principal sponsor of S. 504, and has a longstanding interest in this problem. He has unavoidable commitments in California and I know he will want to review carefully all the information presented today.

We have asked Senator Cranston to hold some hearings in the field out in California. He has been glad to undertake this and I think we will gain greatly from the record that is made out there.

I would like to include in the record, at this point Senator Cranston's statement on introduction of S. 504.

[The information referred to follows:]

[From the Congressional Record, Senate—Jan. 23, 1973]

EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973: S. 504

Mr. CRANSTON. Mr. President, I am pleased to introduce S. 504, the proposed Emergency Medical Service Systems Development Act of 1973, and am very gratified that so many of my colleagues on the Senate Health Subcommittee have again this Congress joined me in sponsoring this legislation.

The legislation I am introducing today is almost identical to that I introduced last year for S. 3784, and which was adopted by the Senate in S. 3716. I have made three changes: first, to include a separate appropriations authorization for research in emergency medical service techniques, devices, methods and delivery; second, to include language similar to that in the House-passed bill last year, authorizing the Secretaries of each military department to enter into arrangements with communities for the establishment of MAST—Military Assistance to Safety and Traffic—programs; and third, I to direct that the annual report required by the proposed legislation include a study of the legal barriers to the provision of emergency medical care.

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Since the time the provision of emergency medical services became a legislative issue last year, increasing attention has been paid to the problems and potential solutions involved in this field by almost every element of the community related to these programs. Recently, some 15 national organizations met to discuss how these services could be improved and organized to better meet the Nation's needs. This group produced some very promising recommendations—for the most part similar to conclusions I had reached in developing the proposed legislation. I look forward to the contributions of these organizations in the consideration of this legislation.

DEFICIENCIES IN EMERGENCY MEDICAL SERVICES

One of the most serious deficiencies in the health system in many communities is the inability to respond immediately and effectively to emergency medical crises. The mounting numbers of deaths and disabilities resulting from medical emergencies which in many cases could be averted by adequate planning and organization of health resources is a matter of considerable concern today.

MORTALITY AND DISABILITY FROM MEDICAL EMERGENCIES

Projections from studies indicate that mortality from accidents alone could be reduced by from 10 to 20 percent by proper medical care at the scene of the accident or en route to an emergency facility. Thirty percent of cardiac deaths could be prevented if the public were educated to recognize the symptoms of heart attack and if ambulance attendants were adequately trained to provide immediate emergency treatment. Five thousand deaths each year from other causes such as poisonings, drownings, and drug overdoses could be prevented by immediate medical attention.

The National Academy of Sciences-National Research Council reports that on the basis of current surveys, it is estimated that only 65 percent of the more than 200,000 ambulance attendants of the Nation are trained to the level of the advanced first aid course of the American National Red Cross or higher levels, 25 percent are trained at a level less than the Red Cross course, and 10 percent have no training at all in the fundamentals of first aid.

The ultimate goal outlined in the guidelines established by the National Academy of Sciences-National Research Council and recommendations on the training of ambulance personnel is to create a nationwide corps of career ambulance emergency medical technicians who are qualified to carry out measures now applied by allied health personnel in emergency departments and by medical corpsmen in combat areas. It is estimated by the National Academy of Sciences-National Research Council that fewer than 35 percent of all ambulance personnel are now qualified at the recommended minimal basic level.

Accident is the fourth leading cause of death in the United States. In 1968 trauma resulted in more than 100,000 deaths, 10 million cases of temporary disability, and 400,000 of permanent disability. Trauma patients used more hospital days than all heart patients or all obstetrical patients and more than four times as many hospital days as all cancer patients.

AMBULANCE SERVICES

The adequacies of ambulance services vary widely throughout the Nation. In many communities, ambulance services are run by the local undertaker, in others, the ambulance service is a commercial enterprise—yet few of these find it a profitable business; more than a fourth lose money on ambulance services and depend on other sources for income to make up the loss. The average cost of ambulance service is $75 per trip. Few emergency victims are able to pay that amount. Third-party insurance rarely covers the full cost; in many instances it covers none of the cost.

About one-fourth of the ambulance service in the United States is provided by the local unit of government—usually through a public safety organization such as the fire department, police department, or sheriff's office. Two percent of ambulance service is provided by hospitals.

The American College of Emergency Physicians reports that only 37 percent of ambulances in a recent survey met minimal design standards, and only 6 percent had facilities to communicate directly with a hospital emergency room. Many ambulances have little more room than that sufficient for a prone patient;

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forcing the attendant to crouch to minister to him. Frequently, life-saving equipment or even basic equipment such as splints, backboards, or poison antidotes, are not carried as standard equipment on the ambulance.

HOSPITAL EMERGENCY ROOMS

Increasing concern is being expressed regarding the heavy demands made upon a major element of any emergency medical system—the hospital emergency room. Hospital emergency rooms are increasingly called upon to provide out-patient care for the community. There has been over a 600-percent increase in the number of emergency visits in some hospitals in the last 25 years. Nationally the average is an increase of 10 percent a year. Last year there were approximately 50 million visits to emergency rooms.

In the critically underserved neighborhoods of densely populated urban areas, emergency medical services should more accurately be termed health services. Here, the distinction between emergency medical care and primary health care is very difficult to determine.

This increased reliance of the community on the services of the emergency room has vastly compounded the difficulties of providing medical care to the emergency victim.

In many communities the small hospital is particularly hindered by inadequate staffing and undertrained personnel and by equipment shortages. Rural communities serving underpopulated areas find it particularly difficult to maintain emergency medical services at the optimum staff and equipment level necessary to meet the infrequent need to provide critical care to an accident victim. According to a study of the National Academy of Sciences, 70 percent of motor vehicle deaths occur in rural areas and communities with a population under 2,500. Some of this tragic difference is caused by inability to reach the patient quickly in an isolated area, but some of it is caused by the inadequacies of emergency room facilities.

I believe a special problem faces the rural community on a seasonal basis. For a major part of the year, such communities have a small number of critical medical emergencies. However, during the peak of the resort season, the number of emergencies rises sharply. Frequently these areas have minimal health personnel or health facilities capable of dealing with these emergencies on a 24-hour basis. In such instances the need for areawide planning of emergency medical services and coordination of such services with neighboring communities becomes a matter of necessity.

CAPABILITY TO CORRECT EXISTING DEFICIENCIES

Modern science has given us the means of overcoming many of the obstacles to providing immediate and effective emergency medical care. The development of portable equipment for the treatment of victims of heart attack, or other critical and sudden illnesses; the development of totally equipped and staffed mobile critical equipment capable of bringing the expertise of the hospital to the scene of the emergency; developments in radio and telecommunications permitting electronic monitoring and transmittal of patient data to an acute care center; utilization of rapid means of transport such as helicopters where ground transportation access is poor or too slow—have provided us with the tools necessary to assure prompt response and reaction to a medical emergency.

COORDINATION IN PLANNING SYSTEMS OF EMERGENCY MEDICAL SERVICES

I feel the deficiencies of emergency medical services throughout the country are not impossible to correct. The technical information and the medical capacity to deal with these problems exist. However, to date, efforts to find solutions to them have been fragmented and uncoordinated. The greatest deficiency has been lack of coordinated planning efforts at both the local and the national levels. At the community level, methods must be developed of involving all elements related to the provision of emergency services in meeting community needs.

At the Federal level, governmental units in numerous agencies are concerned and involved with the provision of these services, yet coordination has been haphazard.

In drafting this legislation, I considered means of developing a system whereby these units could work together nationally and locally toward meeting their shared goals.

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The proposed Emergency Medical Services Systems Development Act of 1973 is intended to provide the means by which this can be accomplished. The bill authorizes the Secretary of HEW to provide support to States, units of local governments, or combinations of local governments, comprising a SMSA to plan, assist in, improve and expand the provision of emergency medical services. A 3-year appropriations authorization for grant and contract support is included as well as a separate appropriations authorization for research in emergency medical services and systems development. A basic requirement of any application for funding is the development of a comprehensive plan for the establishment of an emergency medical services system. Opportunity for participation in the development of the plan must be assured to all elements in the community having a relationship to emergency medical services, including consumers, public safety agencies, communications networks, private ambulance firms, representatives of Federal agencies, as well as health care providers, health facilities, and health education institutions.

The community must establish an area emergency medical services planning council whose membership willl include representatives of these elements, and whose functions will include development of the plan, in consultation with the 314(a) and appropriate 314(b) planning agency, as well as continuous monitoring and evaluation of the operation of the emergency medical services system.

For the State or community to be eligible for Federal support, the plan must provide for certain essential elements.

TRAINING

To be eligible for a grant or contract the plan must include provision for the training of sufficient numbers of specialized professional and paraprofessional staff as well as providing for their continuing education.

Fully trained emergency medical services personnel are an essential element of any comprehensive emergency medical services system. I, therefore, feel that adequate programs of educating and training such individuals must be developed. The bill requires that these programs meet criteria and standards approved by the Secretary after due consultation with appropriate medical and educational interests. Since there will be an immediate demand that these programs be supported in sufficient numbers to provide the personnel necessary to permit the adequate functioning of EMS systems supported under this act I would hope the Secretary will make the development of these programs a first priority.

The bill specifies that all training and education activities developed under plans adopted be coordinated with programs authorized under titles III, VII, VIII, and IX of the Public Health Service Act. This coordination will insure the programs under other legislative authorities and should avoid the duplication of training activities.

The multidisciplinary approach to the provision of emergency medical services has proven its effectiveness in Los Angeles, Jacksonville, and the State of Illinois, among other communities having exemplary systems for the provision of emergency medical services. I believe that the training of emergency medical services personnel is particularly suited to the concept of team training provided within the concept of the total emergency medical services system.

Continuing education is of paramount importance to the paraprofessional as well as to the professional. I feel that any member of the emergency medical staff should be required to participate in regularly scheduled continuing education programs.

In order for EMS systems to be properly planned, developed, operated and evaluated, several types and levels of personnel will be needed and must be trained.

Currently, there are approximately 15,000 physicians providing emergency care on a full-time basis in emergency there were no postgraduate training programs for emergency physicians such as those under which other specialists are trained. There are now six such programs, and more are being developed. This expansion in the number of postgraduate training programs is promising and I hope the expansion will continue. Many more of these programs are needed to provide hte numbers of full-time emergency physicians needed to adequately serve the Nation's communities. In addition, these physicians must have access to continuing education programs geared to their needs as emergency physicians.

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Further, there is a need for all physicians in postgraduate training programs in other specialties and physicians practicing in other specialties to be able to handle common medical emergencies as well as those which arise in their specialties. Programs must be developed to provide training for these physicians to handle common medical emergencies and to maintain their competence in handling them when they go into practice.

The importance of adequate training of the paraprofessional, who in most instances, is the first person at the scene of the emergency, cannot be overemphasized. A number of standardized training programs have been developed, most notably the course developed by the Department of Transportation which consists of some 70 hours of training. I have been impressed by reports on the highly skilled paraprofessionals who have completed longer periods of training of 300 hours or more. These individuals, working in conjunction with a professional at the emergency room or other health facility by voice communication, are capable of providing lifesaving care and utilizing complex equipment essential to save the patient from death and protect him from serious disability.

The utilization of the former military medic in these systems seems particularly appropriate, and there has been some notable success by communities to recruit these individuals for these positions.

In addition, there is a need to develop and train other emergency medical personnel. Among members of the emergency medical services system staff are the emergency nurse, including the specially trained nursing associate who can carry out triage in certain circumstances and provide some element of treatment to the patient, the emergency physician's assistant, emergency medical technicians to work both in hospital emergency departments and at the scene of the emergency, emergency communications personnel knowledgeable about the development and operation of sophisticated communications networks, emergency department ombudsmen, community workers both within the emergency room and in the community who can relate to the needs of the patients as well as provide educational services on the use of emergency facilities.

In addition to the emergency medical personnel directly involved with patient care, I am impressed with the need for managers of emergency medical systems who can plan, develop, operate, and evaluate such systems. Ideally, these managers would have a background in both emergency health care and in health administration and management. Reports of the development of programs to educate such individuals at Ohio State University and at the University of Pennsylvania are very promising and I would hope their development will be pursued at other educational institutions.

The need for health managers or administrators is becoming more evident as medical services move from a nonsystem of fragmented care to one of coordinated and organized systems. There is a real need for these specialists in implementing a comprehensive emergency medical services system in a large community or a State.

The bill does not provide a separate authorization for training programs since it is our conviction that training for emergency medical services must be integrated with an emergency medical services system operating in a community. Provision for training programs and continuing education programs are required elements of any comprehensive plan submitted with an application for funding support.

COMMUNICATIONS

Mr. President, another requirement of any plan is the provision for a 24-hour communications system which provides the necessary linkage from the point of the emergency through a central point dispatching emergency personnel and vehicles, and on through all points of the system to the emergency medical facility and its highly specialized personnel and equipment. These communications systems should at the same time be compatible with the transmission of patient data to the critical care unit through radio and video transmission or other electronic monitoring systems.

In providing ready consumer access to an emergency medical services system, while the 911 dial system currently being advanced by the telephone companies within the United States is highly desirable, it is a time-consuming and expensive process, and alternative courses of action should be considered by communities as an interim or substitute measure prior to the installation of a 911 system. Another major problem involved in consumer access to the communications systems is the ability of the dispatch center to locate the emergency geographically, when the consumer is a child, or a stranger to an area and unable to

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identify his location. Areas of technology must be pursued so that future capabilities can be established to help the central dispatch point identify the location of the call.

TRANSPORTATION

Another requirement of an emergency medical services system is adequate provision for transportation. Sufficient numbers of vehicles, equipped with the necessary life-saving equipment, accompanied by well-trained emergency personnel and meeting standards of safety and patient care recommended by nationally recognized organizations must be a basic element of any system. In many communities such vehicles are in use already, sometimes provided by commercial ambulance companies, sometimes by public safety agencies, sometimes by voluntary agencies, and sometimes by the community hospital. Where such resources already exist and where they meet standards of equipment and personnel recommended by the Secretary, they should be incorporated into and would form important components of a program for the comprehensive emergency medical services.

Transportation systems must be geared to the special geographical characteristics of the community. In some areas where road systems are inadequate or distances are great, the utilization of a helicopter has proven particularly appropriate in transporting emergency victims. The outstanding record achieved by the MAST pilot programs established in several communities is an example of the effectiveness of the helicopter as an element of an emergency medical services system. One of the great deterrents to greater utilization of helicopters is the heavy expense. I believe the involvement of public safety agencies, many of which utilize helicopters for other purposes, in the development of plans for community emergency medical services can offer opportunities for the joint and therefore more economical use of this method of transport.

FACILITIES

A fourth major element in any system for the provision of emergency medical services is adequate facilities, conveniently and strategically located, and available for utilization on a 24-hour basis. For the most efficient operation of an emergency medical services system and for the most efficient utilization of scarce financial and professional resources, planning for thes facilities is essential. The potential organizational efficiency which could result from the application of the recommendations for categorization of facilities made by the Commission on Emergency Medical Services of the AMA makes them well worth consideration.

Adoption of such a categorization system in the communities would appear to provide a rational approach to the provision of emergency medical services while avoiding expensive and unnecessary duplication of equipment and facilities and poor utilization of scarce staff resources.

ADDITIONAL REQUIREMENTS

Other requirements of community plans include:

Access to specialized critical medical care units either within the community or in a neighboring community, and means of transfer to facilities and programs which can provide such followup care and rehabilitation as is necessary to bring about the patient's recovery.

Assurance that anyone in need of emergency medical care will be provided such care without regard to ability to pay or prior inquiry as to financial situation or insurance coverage.

Provision for developing a program to come with emergency medical services during mass casualties, natural disasters, or national emergencies.

Provision for a program of public education and information, stressing appropriate methods of medical self-help.

Provision for standardized patient recordkeeping systems.

ROLE OF COMPREHENSIVE HEALTH PLANNING AGENCIES

Since the 314(b) agency should be the logical entity to coordinate and plan for a well functioning health system, the proposed act requires involvement of the comprehensive health planning agencies established under section 314 of the Public Health Service Act in the development and implementation of any programs for area emergency medical services. Indeed, to be eligible for a grant, a governmental unit or combination thereof would have to comprise at least the

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area covered by an area-wide 314(b) planning agency unless the area proved to be incompatible to the development of a coordinated comprehensive system.

REPORTS AND RECORDS

A grantee must make such reports and maintain such records as the Secretary of HEW determines are necessary. To insure that grants and contracts awarded under the provisions of the proposed act are directed towards the implementation of plans for emergency medical services systems, the Secretary is expected to make every effort to require periodic reporting on progress achieved in the development, establishment, or expansion of components of such systems.

To assure the effectiveness of such systems, all components of an emergency medical services system must meet standards and criteria established in regulations by the Secretary.

The bill provides for two alternative award mechanisms—grants and contracts. The indefinite nature and need for flexibility in the development of plans for emergency medical services systems in any given area are most appropriately addressed by the grant mechanism. A similar approach has also proven most effective in training programs.

However, in the actual implementation of a plan for an emergency medical services system and the development of its components, the utilization of the contract mechanism has special applicability. This contract mechanism provides a greater degree of assurance that implementation of the plan will more closely follow the original purpose proposed in the application and provides for greater control over compliance with requirements and quality standards prescribed by the Secretary.

Under the bill, utilization of the contract mechanism must be subject to the same review and approval procedures as the grant mechanism. There must also be sufficient flexibility to permit renegotiation of the contract should the local unit of government feel the original purpose for which the contract was awarded should be changed. Again, any such renegotiation should be subject to the same review procedures as used in the grant mechanism.

INTERAGENCY TECHNICAL COMMITTEE

At the Federal level, the bill establishes an interagency technical committee to coordinate Federal programs and activities relating to emergency medical services. Many successes have been realized in the MAST programs through coordinated activities of the Department of Defense, Department of Transportation, and the Department of HEW. The Inter-Agency Committee should resu't in further cooperative efforts at the Federal level. I hope that local community efforts, also will be made to foster these coordinated arrangements at the local level.

A new provision of the bill would authorize the Secretaries of each military department (including the Secretary of Transportation as to the Coast Guard in non-war periods) to enter into agreements with communities for the establishment of MAST programs. These programs have been in effect in five communities with outstanding results, however, the Department of Defense General Counsel has expressed the need for authorizing legislation for the expansion of these programs to additional communities. This congressional authorization will enable MAST programs to be initiated in some 21 new sites which currently have the capacity to participate in MAST programs.

NATIONAL EMERGENCY MEDICAL SERVICES ADVISORY COUNCIL

A National Advisory Council is established by the bill within HEW to review and advise on applications and to make recommendations to the Secretary on implementation of programs under the proposed act. Membership of this Council includes not only representatives from other Federal agencies, but also the Director of the National Institutes of Health and the Administrator of the Health Services and Mental Health Administration. I recognize that the development of effective emergency medical services system will depend on the coordination of the resources of both the research and the services components of the Public Health Service and for that reason specifically included the directors of these units on the Advisory Council.

REPORT TO CONGRESS

The bill requires an annual report to Congress which shall include an evaluation of the adequacy of emergency medical services throughout the Nation, a

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study of the legal barriers to the provision of such care, and recommendations on legislation which would correct any deficiencies. The provision of emergency medical services is affected in some states by inflexible laws on licensure, malpractice and liability. This seems to be an appropriate area for study in the preparation of the report.

RESEARCH

In addition to the basic elements of trained personnel, communications systems, transportation systems, and facilities, we need intensive research in the physiological changes produced by trauma, as well as research to utilize, to the fullest extent, technical knowledge in the development of sophisticated hardware and systems for emergency medical services as well as of equipment for monitoring or treating the patient.

Relatively little has been done in fundamental studies on acutely injured individuals in the areas of wound healing and infections, and psychological, metabolic, cardiac, and respiratory changes following trauma. A beginning has been made through the eight trauma centers supported by the National Institute of General Medical Sciences, but funding for these programs has always been quite limited. The substantial reduction in mortality and lasting disability from burns resulting from the establishment in recent years of specialized burn centers attests to the positive results that can be attained through applying concentrated medical efforts in a center where multidisciplinary teams can work together in developing optimum treatment capacities and an organized approach to providing specialized care.

As we turn from our massive research efforts in manned space exploration, the scientific capability developed for those programs could propitiously be transferred to improving our ability to provide emergency medical services.

Because of the need for research in areas related to emergency medical services systems, I have added a separate authorization of $5,000,000 annually for support of research programs. Such grants for research must be carried out in conjunction with area emergency medical services systems which have developed a plan meeting the requirements of this proposed legislation.

CONCLUSION

Mr. President, I believe that enactment of this legislation will insure the continuation and improvement of existing emergency medical services programs and will provide opportunities for the development of new programs on a comprehensive basis throughout the Nation.

I would like to express my appreciation for the assistance and support provided in the development of this legislation by the distinguished Senator from New Jersey (Mr. WILLIAMS), chairman of the Committee on Labor and Public Welfare, and by the distinguished Senator from Massachusetts (Mr. KENNEDY), chairman of the Subcommittee on Health, as well as by the distinguished respective ranking committee and subcommittee minority members, the Senator from New York (Mr. JAVITS), and the Senator from Pennsylvania (Mr. SCHWEIKER). Joining with them as cosponsors of this bill with me are the Senator from Maryland (Mr. BEALL), the Senator from Colorado (Mr. DOMINICK), the Senator from Missouri (Mr. EAGLETON), the Senator from Iowa (Mr. HUGHES), the Senator from Minnesota (Mr. MONDALE), the Senator from Rhode Island (Mr. PELL), the Senator from West Virginia (Mr. RANDOLPH), and the Senator from Illinois (Mr. STEVENSON).

Senator KENNEDY. Before we welcome our first witness I should like to say that I regret very much that despite our invitation to the Department of HEW, they did not feel that they could testify this morning. We regret that. I think it would be extremely helpful if we had been able to hear their testimony.

We are pleased to have as our first witness Mr. James Wilson, Associate Administrator, National Highway Traffic Safety Administration, Department of Transportation.

We regret that we could not get your testimony in advance. As you know we have a rule here about testimony being available to the committee 48 hours beforehand. I have always found, as has the committee, that it is a very valuable and worthwhile rule, and I am going

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to mention the people who do not comply with it, and commend the people that do. I just think that in terms of preparation, it is important; it makes us much more responsive. I regret that we were unable to get yours, Mr. Wilson. We understand that there is a change-over in leadership in the Department but I hope you understand the importance and significance of it. But we welcome you here.

STATEMENT OF JAMES E. WILSON, ASSOCIATE ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, ACCOMPANIED BY FRED LEWIS, HIGHWAY SAFETY SPECIALIST, AND STEPHEN WOOD, OFFICE OF CHIEF COUNSEL

Mr. WILSON. Mr. Chairman, I regret very much that we were not able to provide the testimony to you at the proper time. We did, however, provide you with copies this morning. I hope that we can do better next time.

Mr. Chairman, I would be pleased if I could have at the table with me Mr. Fred Lewis, a member of my staff, who is a Highway Safety Specialist working in the emergency medical field, and Mr. Stephen Wood, from our Office of Chief Counsel.

We welcome the opportunity to be able to appear before you this morning, and discuss the Department of Transportation's role in emergency health services, and particularly the impact that S. 504 would have on emergency services in this regard. I have a statement that I would like to have entered in the record, if I may.

I would now like to highlight some of the points in that statement, if I may.

Senator KENNEDY. That will be included in the record.

[The prepared statement of Mr. Wilson and supplemental information follow:]

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Statement of

JAMES E. WILSON

ASSOCIATE ADMINISTRATOR,
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION,
accompanied by

FRED LEWIS
Highway Safety Specialist

and

STEVE WOOD

Office of Chief Counsel

January 31, 1973

Mr. Chairman and members of the Subcommittee:

I welcome the opportunity to appear before you today to discuss the emergency medical services (EMS) program of the Department of Transportation and S.504, relating to the EMS activities of the Department of Health, Education, and Welfare.

Our EMS role stems from the mandate given us by the Congress in 1966. In that year, the Congress initiated the Federal motor vehicle safety program through the enactment of the National Traffic and Motor Vehicle Safety and Highway Safety Acts. To prevent crashes and minimize injuries when crashes nevertheless occur, we were directed to issue standards to improve highways, and motor vehicle and driver performance. Congress recognized, however, that these preventive efforts would have to be supplemented by other

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measures. If crash victims did not receive prompt medical attention, many persons would needlessly die or become permanently disabled. The Department was, therefore, also directed to undertake a vigorous EMS program under the Highway Safety Act.

The Act requires each State to conduct a highway safety program that complies with program standards promulgated by the Secretary. To aid the States in carrying out these programs, the Act provides financial assistance for the States on an even matching basis. To ensure the participation of the communities, the Act requires that 40 percent of the Federal assistance be expended by or for the benefit of the political subdivisions of the States. The aid is funneled through the States to help ensure the statewide coordination of all State and local activities. To aid the States in finding better ways of implementing their programs, the Act also authorizes the Secretary to conduct research, development, and demonstration projects.

Pursuant to the Act, we issued in 1967 an EMS standard specifying the steps to be taken by the States and their political subdivisions to improve their EMS activities. Although the

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purpose of the Act is to promote highway safety, we recognized from the beginning that the accomplishment of the Act's EMS goals would require upgrading State and local EMS capabilities for all types of medical emergencies. Consequently, the standard requires each State to develop a comprehensive, statewide plan covering all types of EMS activities, not merely those relating to highway safety. The standard also requires the establishment of a program for training and licensing emergency vehicle operators and attendants, setting requirements for emergency vehicle performance and equipment, coordinating emergency vehicle services, training EMS personnel in emergency medical care procedures, and acquiring facilities, emergency vehicles, equipment, and communications systems.

Implementation of this standard will enable the States to identify and satisfy their EMS needs. Under the standard, patients are to be transported in well-equipped vehicles to a central spot such as a hospital emergency room. Communications networks are to be utilized to report the emergencies, efficiently allocate vehicles and personnel, and relay advance medical information concerning the patient's injuries or illness to the hospital. Emergency medical care personnel are to be carried in the emergency vehicles to assess the injuries

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or illness and apply life-sustaining procedures.

At the time we issued the standard, the overall quality of EMS was tragically low in most areas of the country. There were poorly designed and equipped emergency vehicles, inadequately trained and even untrained personnel, deficient or non-existent communications systems and a lack of both professionalism and job stability for emergency vehicle personnel. Perhaps the most serious problem was the inattentiveness of most States to the management and professional aspects of EMS activities.

Our first attempts to administer the EMS standard were hindered by the absence of any modern management or analysis techniques in the State EMS programs. Further, the States did not initially view the entire EMS operation as an integrated system requiring coordination through communications networks and command control activities. We began, therefore, by identifying and formalizing the elements of the EMS system and demonstrating the benefits and costs of optimizing each system element.

Since then, we have provided guidance on a wide variety of EMS system elements, including (1) State EMS capability survey and comprehensive plan development, (2) the economics of

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emergency vehicle services, (3) the extrication of victims from crashed vehicles, and (4) the development of management information and data systems. To assist the States in assimilating all of this material and in implementing their programs, we have also developed a program manual that explains at length how to establish and operate each element of an EMS program.

In an effort to speed the Federal financial assistance to the States, we have decentralized the grant approval process under the Act. Grant applications are no longer being processed first by the regional offices and then transmitted to Washington for final approval. Instead, they are being reviewed and approved by the regional offices in accordance with uniform policy guidelines. We believe that the approval process has been substantially improved by giving the decision-making authority to regional officials who are closer to the details of the EMS problem and the people charged with solving it.

To provide the manpower necessary for the EMS programs, we have developed an 81 hour course and are nearing completion of an advanced 480 hour course for emergency medical technicians. Both of these courses were developed in cooperation with the

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National Academy of Sciences and National Research Council and cover all types of medical emergencies. We have also developed courses for State highway patrolmen in emergency medicine and for emergency vehicle dispatchers in communications. In addition, we are currently seeking bids on a contract to develop a postgraduate course for managers of EMS systems. Once implemented, this course will provide the manpower needed to implement the comprehensive State plans.

We have been working hard to ensure that newly acquired equipment is of the best quality. Drawing upon our expertise in setting vehicle safety standards and the medical expertise of others, we have been developing criteria for the selection of safe, well-equipped emergency vehicles.

In an attempt to spur the States and communities to adopt new advanced methods for implementing EMS programs, we have conducted numerous demonstration projects in urban and rural areas to improve EMS technology and practices. Several projects showed that helicopters may be useful for coping with certain emergencies in rural areas. However, the procurement, maintenance and insurance costs of helicopters may render them impractical in many circumstances. Other projects have demonstrated the value of a sophisticated communications network for allocating emergency vehicles and personnel, thus

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avoiding duplication of emergency responses and reducing the amount of equipment and personnel necessary to provide an adequate level of service.

The progress that the States have made in EMS under the Act is gratifying. Most importantly, we expect that all States will have submitted acceptable comprehensive EMS plans during the coming fiscal year. To ensure the completion of these plans, we have issued an administrative order reminding the States that failure to submit their plans could result in the invocation of the sanctions provided in the Act. The capability of the States to plan and administer an effective, coordinated EMS program has increased in other ways. In 1967, only 4 States had inventoried the types and levels of EMS activities operating within their boundaries. Today, 41 States have collected this information on their resources and needs. Further, the number of States with a full EMS staff and a State EMS director has grown from 6 in 1967 to 50 today. These directors oversee EMS activities for all types of medical emergencies. The capability of the States to provide the manpower necessary for EMS has also increased. For instance, at least 44 States have adopted our 81 hour emergency medical technician course under which 80 percent of the nation's 200,000 person emergency vehicle work force will have been trained by the end of 1974.

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The individual successes of particular States and communities under the Act are even more encouraging. Illinois has attracted international as well as national attention through its program to develop a network of regional trauma centers interconnected by a central information and data system. This imaginative program was undertaken in response to the EMS standard and with our financial assistance to provide equipment and trained personnel. Under this program, the condition of each patient is first stabilized by highly qualified emergency medical technicians. Then the patient is rapidly transported in a properly equipped and manned vehicle to a designated hospital for full medical treatment. The selection of the appropriate hospital is facilitated by the categorization of the hospitals within each region. This activity was also aided with Highway Safety Act funds. One measure of the benefits of the program is that in a 15 county area, highway fatalities have declined by 15 percent.

New York State has established this country's first comprehensive EMS data system. This advanced system analyzes both capability and response data. The State is thus provided with the information necessary to (1) establish proper training levels for personnel, (2) properly locate and allocate emergency vehicles, (3) evaluate the performance of emergency vehicle

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and emergency room personnel, and (4) provide cost-benefit data to facilitate the assessment of the overall State EMS program. Other States are now beginning to collect data for similar evaluation and oversight processes.

In Jacksonville, Florida, Highway Safety Act funds were used to develop a highly sophisticated response system for the rapid reporting of emergencies and efficient allocation of responding vehicles and personnel. The operation of this system has enabled local authorities to reduce the number of highway fatalities per 1,000 injury-producing crashes by 38 percent. In Los Angeles, financial assistance has been provided for the training of firemen in emergency medical care.

The results of these and other activities being conducted across the country are transmitted to us and then conveyed to the other States and communities. In this way, the EMS innovations of individual States and communities can be fully analyzed by us and then shared by all.

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As I have indicated, the EMS support provided by our Department is making an important contribution to improving EMS performance in many States and localities. The ultimate responsibility, of course, for the detailed planning and implementation necessary to establish truly comprehensive EMS systems is appropriately vested in the State and local governments. Unfortunately, although the technological and basic resources are generally available, the ability to combine these elements into viable systems is often lacking.

The Administration is attempting to address this problem through the EMS demonstration initiative announced by the President. The primary responsibility for this initiative was placed by the President on the Department of Health, Education and Welfare. Last year, representatives of that Department described the initiative for the Committee. The initiative will demonstrate alternative methods and the costs and benefits associated with the creation of fully functioning comprehensive EMS systems in different types of localities. As a result, States and localities around the country will be able to adopt an EMS system that is responsive to local requirements and conditions and that, most importantly, can be sustained and financed through State and local resources.

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With respect to S. 504, the Department of Transportation generally defers to the views expressed by HEW last year since the principle impact of the bill would be on that Department. We would only add, however, that ample statutory authority already exists to enable the Department of Transportation to carry out a broad range of EMS related activities. Accordingly, we believe it would be ill-advised to add further program authorities in this field.

In summary, Mr. Chairman, the Administration has demonstrated - through the EMS initiative described by HEW last year and the funding of EMS activities by Department of Transportation - that it shares the concern of sponsors of S. 504 that the level of EMS activities in many parts of our nation need to be upgraded. We disagree, however, that the additional authorities contemplated in this legislation are either necessary or desirable.

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JANUARY 1969
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highway safety program manual

vol 11 emergency medical services

U.S. DEPARTMENT OF TRANSPORTATION • NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

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HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11

EMERGENCY MEDICAL SERVICES

Nothing in this volume makes optional any mandatory requirement contained in promulgated Highway Safety Program Standards

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FOREWORD

As part of the Highway Safety Program Manual, this volume is designed to provide guidance to State and local governments on preferred highway safety practices. Volumes comprising the Manual are:

0. Planning and Administration
1. Periodic Motor Vehicle Inspection
2. Motor Vehicle Registration
3. Motorcycle Safety
4. Driver Education
5. Driver Licensing
6. Codes and Laws
7. Traffic Courts
8. Alcohol in Relation to Highway Safety
9. Identification and Surveillance of Accident Locations
10. Traffic Records
11. Emergency Medical Services
12. Highway Design, Construction, and Maintenance
13. Traffic Control Devices
14. Pedestrian Safety
15. Police Traffic Services
16. Debris Hazard Control and Cleanup

The volumes of the Manual supplement the Highway Safety Program Standards and present additional information to assist State and local agencies in implementing their highway safety programs.

The content of the volumes is based on the best knowledge currently available. As research and operating experience provide new insights and information, the Manual will be updated.

The volumes of the Highway Safety Program Manual deal with preferred highway safety practice and in no way commit the Department of Transportation to funding any particular program or project.

Many expert organizations and individuals at all levels of government and in the private sector contributed heavily in the preparation of the volumes of the Manual. The Department appreciates greatly this help in furthering the national program for improving highway safety for all Americans.

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NATIONAL HIGHWAY SAFETY BUREAU

HIGHWAY SAFETY PROGRAM MANUAL

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CHAPTER I. Purpose	January 17, 1969

(42-01)

Par. 1. Introduction
2. Purpose
3. Specific Objectives

1. INTRODUCTION

a. Many of those injured in highway crashes die needlessly or are permanently disabled because they do not receive prompt and proper emergency care. Few areas of the United States now have adequate emergency services. In most areas there has been inadequate planning of emergency logistics, communications, and transportation facilities, and present services are inadequately managed. Ambulance operators, drivers, and attendants are commonly not required to be skilled in emergency care nor are they required in most parts of the country to carry adequate equipment in their vehicles. Hospitals and ambulances seldom have radio or other direct communications links either with each other or with police radio communication systems. Helicopters are rarely employed, and landing pads exist only at a small number of hospitals along our coasts for the use of the Coast Guard. It is imperative that highway and other Emergency Medical Services* be improved throughout the nation.

b. The Highway Safety Act of 1966 was passed by the 89th Congress and approved by the President only after searching inquiry by the Senate and House of Representatives and considerable public discussion of the many

* Throughout this document, the term "Emergency Medical Services" (EMS) connotes the complete system of emergency care provided for in Highway Safety Program Standard 4.4.11, including first aid given by bystanders; emergency care rendered by specially trained ambulance attendants or other personnel; and medical care rendered by physicians or qualified personnel under their direct supervision. Although the care rendered by laymen may be referred to under the term "emergency medical services," it is not implied that their care is medical in the professional sense.

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important issues involved. Emergency medical services for persons injured in highway crashes was one such issue. In favorably reporting the Highway Safety bill to the House of Representatives, the House Committee on Public Works said:

> "When accidents occur, it is essential that every available resource be mobilized to save lives, lessen the severity of injuries, protect property, and restore the movement of traffic. An essential part of the State safety program should be the development of emergency facilities system. This will require the advice and services of experts and personnel in medicine, law, engineering, communications and law enforcement, at a minimum."*

2. PURPOSE

a. The purpose of an Emergency Medical Services (EMS) Program is to ensure that victims of traffic crashes receive prompt and adequate emergency care. Such a program involves a comprehensive EMS system which includes the necessary emergency equipment, manpower, and facilities.

b. The Department of Transportation (DOT) recognizes that EMS in support of the needs of highway accident victims represent only one of several demands placed on an EMS system. Therefore, there has been a serious attempt to design an EMS Highway Safety Program which assures States the degree of flexibility necessary to upgrade their total EMS system to serve these varied needs.

3. SPECIFIC OBJECTIVES

a. A comprehensive EMS system should have the capability to:

(1) Provide prompt identification and response to crashes under a range of emergency conditions.

(2) Sustain and prolong life through proper first aid and emergency care measures, both at the scene and in transit.

(3) Provide the coordination, transportation, and communications necessary to bring the injured person and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards.

* H.Rept. 1700, 89th Congress, 2d Session, p. 19.

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b. Achievement of these specific objectives require that each State undertake the following:

(1) Comprehensive EMS planning.

(2) Encouragement and active support in the development of cooperation by local governmental, private, and voluntary organizations in determining areas of responsibility, management of communications, dispatching emergency personnel and equipment, and effecting mutual support agreements between contiguous jurisdictions.

(3) Development of performance standards and criteria suited to the needs and resources of each State.

(4) Adoption of personnel selection, training, and licensing standards based on performance.

(5) Adoption of equipment standards.

(6) Periodic review and evaluation of Statewide emergency medical services to identify needed improvements, to establish action programs to help solve these needs, and to help meet requirements posed by Standard 4.4.11.

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CHAPTER II. Authority	January 17, 1969

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Highway Safety Program Standard 4.4.11, Emergency Medical Services, which is contained in Appendix A of this volume, was issued by the Secretary of Transportation under the authority contained in Chapter 4 of Title 23, U.S.C. (hereinafter referred to as the Highway Safety Act of 1966) on June 27, 1967. Section 402(a) of Title 23 states that:

> "Each State shall have a highway safety program approved by the Secretary, designed to reduce traffic accidents and deaths, injuries . . . resulting therefrom. Such programs shall be in accordance with uniform standards promulgated by the Secretary . . . such uniform standards shall include . . . emergency services."

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CHAPTER III. General Policy	January 17, 1969

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Par. 1. Introduction
2. Policies

1. INTRODUCTION

a. It is the general policy of the Department of Transportation (DOT) that emergency medical services should be available in each State to assure that prompt and adequate emergency care is administered to all individuals in need of such care.

b. Although DOT recognizes that each State must itself determine the level and types of emergency medical services to be established within its jurisdiction, it urges States to analyze carefully the level and type of services currently provided and be constantly alert to potential improvements in the State program that will help in reaching the national goal of minimizing disability and saving human life.

2. POLICIES

The following are specific policies of the DOT relative to the EMS program:

a. Factors such as population, population densities, population dispersal, topography, miles of highway, existing emergency medical services, and financial resources suggest that each State must determine the specific objectives of its own EMS program. The establishment of these objectives is prerequisite to the development of a Statewide EMS program plan.

b. Each State should evaluate existing State laws and regulations relative to Highway Safety Standard 4.4.11 and undertake a survey of existing EMS systems operations prior to establishment of their specific EMS objectives.

c. State EMS objectives should be established with maximum participation of those organizations and individuals who will be depended upon to meet them.

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d. Statewide EMS should be viewed as a public utility or service subject to certain requirements and regulations which may even include public management and State technical and financial assistance.

e. Provision of EMS should not result in destructive competition; franchising should be considered in each response area to the extent required to help meet overall Statewide objectives.

f. Agreements specifying jurisdictional responsibilities and inter-jurisdictional assistance should be encouraged.

g. Effective channels of communication should be established between State and local EMS officials (including voluntary organizations) for purposes of technical assistance and reporting.

h. Local EMS policy committees should be established to support development of State EMS plans and programs at the community level.

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CHAPTER IV. Program Development and Operations	January 17, 1969

(42-01)

Par. 1. Introduction
2. EMS System Functions
3. EMS System Components
4. Postadmission
5. State EMS Program Elements

1. INTRODUCTION

a. Improvement in existing EMS systems is essential if the goals of minimizing fatalities and decreasing the consequences of injuries on the nation's highways are to be met. Responsibility for the provision of highway emergency medical services in many communities is often fragmented, resulting in an ineffective EMS system. This lack of coordination and central responsibility for EMS contributes to unnecessary suffering and even death to victims of crashes.

b. The proper relationships between the various EMS system components, e.g., communications, law enforcement, ambulance services and hospital emergency departments, should be established to ensure that all of the functions necessary for prompt application of definitive medical care to injured persons are accomplished. A variety of approaches can be taken at the State and local level to develop a coordinated and effective EMS system, provided all of the required functions are given adequate consideration.

c. In establishing a viable EMS system, private, volunteer or municipal systems may be considered.* The most practical approach will depend upon several factors including:

(1) Economic feasibility of operation by private enterprise.

(2) Geography and size of area.

* Appendix J lists selected EMS systems which may be adaptable for local use.

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(3) Capabilities of existing institutional resources, e.g., police, fire department, hospital, etc.

(4) Population distribution.

(5) Possibility of volunteer resources, e.g., funds, manpower, donations, etc.

d. The interrelationships between the EMS system functions and supporting components are illustrated by Exhibits I and II. Exhibit I describes a simple highway crash incident where single vehicle, injury, and ambulance interrelationships are described in sequence and the corresponding functions identified. Exhibit II deals with a more complex accident involving multiple vehicles, injuries, ambulances, and hospitals. Reference will be made to these figures in describing the EMS system functions and supporting components.

2. EMS SYSTEM FUNCTIONS

a. The sequence of functions associated with the EMS system,* illustrated in Exhibit III, are as follows:

(1) Detecting the accident.

(2) Reporting the accident.

(3) Dispatching ambulances and public safety vehicles and alerting emergency care facilities.

(4) Driving ambulance(s) to the crash scene.

(5) Rendering emergency care to the victims.

(6) Extricating victims from the damaged vehicles, if required.

(7) Transferring injured persons to the hospital and administering emergency care while en route.

(8) Admitting the injured to the emergency department of the hospital.

* Sometimes the same function is provided by more than one component. For example, first aid may be given by a "passerby" who first detects an injury and by a law enforcement officer who commonly arrives next at the scene.

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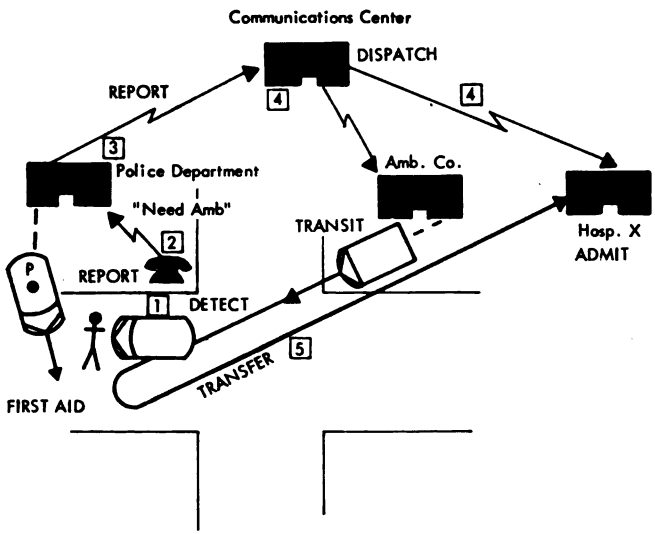
EXHIBIT I

SIMPLE INCIDENT



TIME SEQUENCE DESCRIPTION OF INCIDENTS

1. Pedestrian and vehicle collide.
2. Driver calls police, "Accident, need ambulance."
3. Police notify communications center and dispatch patrol car.
4. Comm. center dispatches ambulance and notifies hospital.
5. Ambulance personnel render emergency care and transfer and admit to selected hospital.

EMS SYSTEM FUNCTIONS

Detection & Reporting
Reporting & Dispatching
Dispatching
First Aid, Transfer, & Admission

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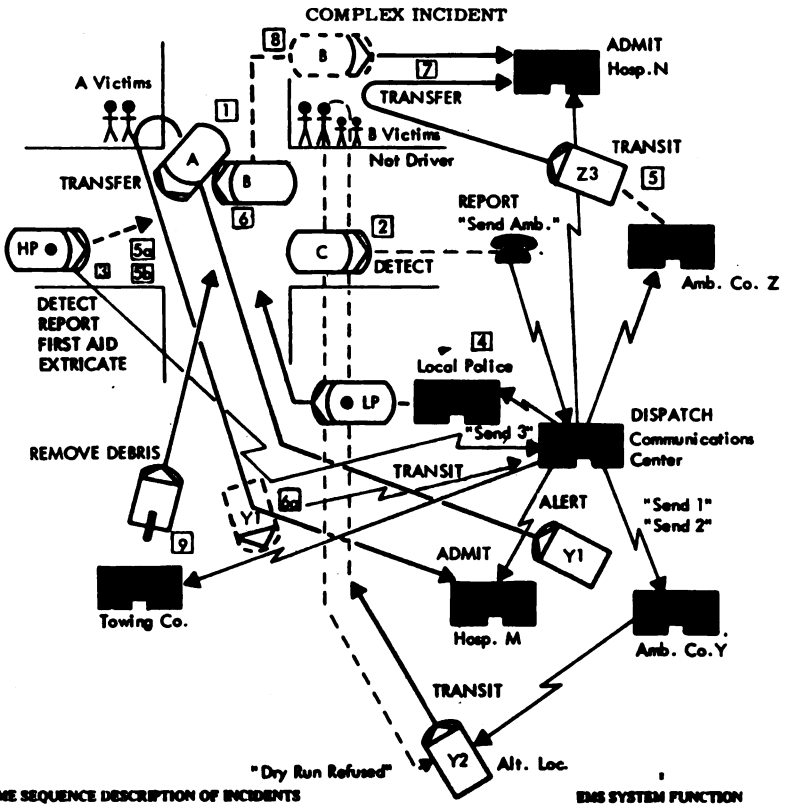
EXHIBIT II

COMPLEX INCIDENT



TIME SEQUENCE DESCRIPTION OF INCIDENTS	EMS SYSTEM FUNCTION
1. Vehicles A & B collide with rollover.	
2. Vehicle C, witness, proceeds to phone, "send ambulance".	Detection & Reporting
3. Within minutes, highway patrol (HP) "finds" accident -- six victims, radios comm. center for 3 ambulances.	Detection & Reporting
4. Comm. center has already dispatched local police (LP), one ambulance (Co. Y).	Dispatching
5. After HP call, comm. center dispatches 2 more ambulances from two different companies (Y has one left, so Z is called in).	Dispatching
5a. HP aids victims A & B.	First Aid
5b. LP arrives and aids other B victims.	First Aid
6. Ambulance Y1 arrives, completes emergency care, extricates victims and begins transfer.	Emergency Care, Extrication, & Transfer
6a. Ambulance Y1 requests alerting of Hospital M.	
7. Ambulance Z3 takes 2 B victims to Hospital N (Driver B insists) and requests alerting of Hospital N.	Transfer
8. Ambulance Y2 is refused by Driver B who drives 2 B victims to Hospital N.	
9. Debris removal equipment dispatched if not already at accident scene.	

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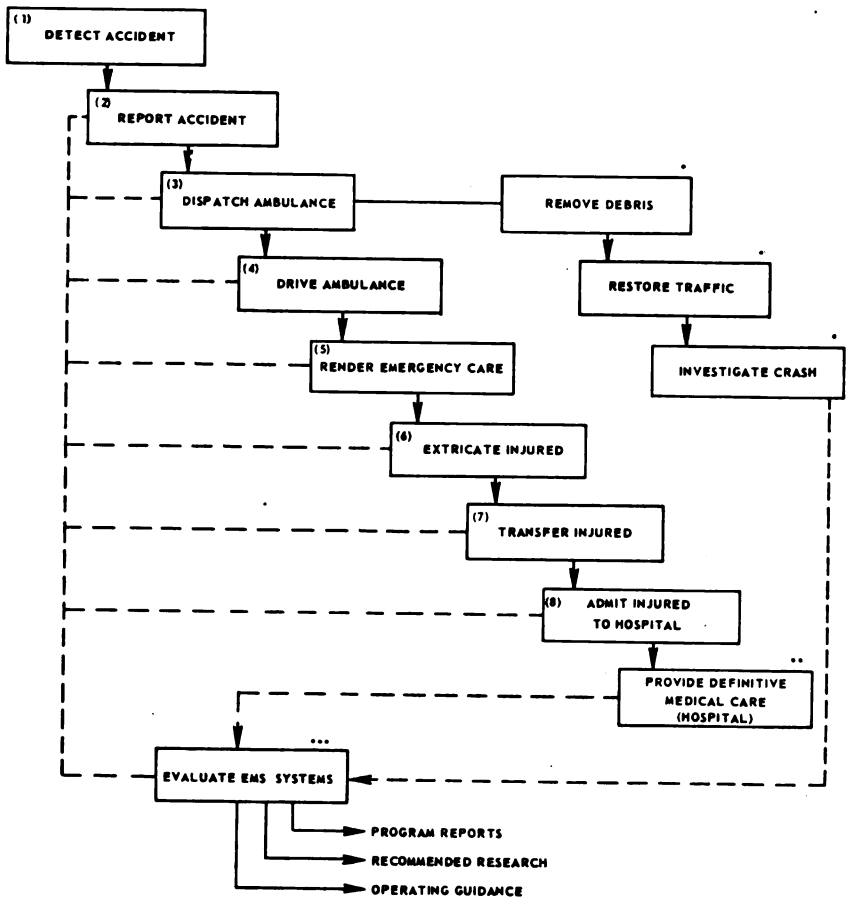
EXHIBIT III

SYSTEM FUNCTIONS AND
PROGRAM EVALUATION RELATIONSHIPS



Numbered functions (1 through 8) pertain to the EMS System.

* Accident related functions
** Post EMS care
*** EMS program responsibility

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b. The following paragraphs describe these functions in further detail:

(1) Detect crash.

(a) A highway crash is usually detected by a passing motorist, a law enforcement officer, a maintenance patrol, or a roadside observer. However, prompt detection of crashes is often delayed on rural and low-use roads and on major highways during periods of light traffic. In many urban areas, air patrols of major highways are becoming common and provide prompt detection and reporting of highway crashes, particularly when they restrict or block traffic flow. Limited application is also being made of TV surveillance at selected intersections or other control points in metropolitan areas.

(b) On rural or seldom-traveled roads, a partial solution to the detection problem is to alert travelers to look for off-road crash signs, such as broken guardrails, skid marks leading off the road, etc., so that detection delays of such crashes will be minimized.

(2) Report crash.

(a) Ideally, crash reporting should immediately follow detection. This is accomplished when the reporting source has nearby access to either telephone or radio communications and knowledge of whom to call for assistance. Roadside communication instruments should either directly connect with EMS dispatchers or have instructions on how to reach the nearest EMS dispatcher. On some urban area highways, the combination of frequent patrols by radio-equipped vehicles and centralized communication support and dispatching facilities ensures prompt reporting of highway crashes. Many areas, and particularly rural areas, have much less capability for accident reporting.

(b) Advanced highway reporting systems include roadside telephones. In one State they are free and spaced at 1/2-mile intervals along each side for 55 miles; each telephone is connected to a State Police substation; each costs approximately $950 per instrument to install and has a monthly rental rate of $15. Sections of a perimeter highway around a major city are using emergency "push-button" signal boxes at regular intervals that signal for police, maintenance, and fire control response. Operating results to date indicate that voice call facilities are more satisfactory and may be less expensive if reasonable amortization is considered.

(c) The concept of a single, common emergency telephone number has been implemented in several European countries and is being considered in the United States. Lacking this, emergency numbers for each jurisdiction should be prominently displayed on each telephone. Visual signs are

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frequently a significant factor in facilitating prompt highway crash reporting. Signs should clearly indicate directions to nearest telephone. Portable signs carried by motorists for display on their vehicles which indicate the nature of the emergency, i.e., "need medical aid," "need mechanical aid," etc., are helpful in securing roadside assistance from both passing motorists and air patrols. An open hood or a white flag on the antenna has become recognized as a signal indicating a need for assistance.

(d) There are approximately 300,000 citizens, nationwide, who have two-way radios for private and/or commercial use. Many of these are mobile units used on the highways and a number of organizations have been created to use this potential in lifesaving and law enforcement. Among these are REACT (Radio Emergency Associated Citizens' Team) with 50,000 members in 1,600 teams; HELP (Highway Emergency Location Plan) sponsored by the Automobile Manufacturers Association, with several thousand members concerned primarily with assisting motorists; and CRW (Community Radio Watch) sponsored by Motorola, which claims 250,000 members in 20,000 business organizations in more than 300 cities. These citizen-operated radios offer a great potential in alerting authorities about highway crashes and require only good organization to be effective.

(e) States and jurisdictions should first consider optimizing existing resources for crash reporting, including the interconnection of existing communication networks and areawide standardization of emergency call procedures. The traveling public should be indoctrinated in the vital role they can play and the obligation they have in reporting highway crashes. Roadside telephones (or radios) should be considered for installation in convenient, well-marked places.

(3) Dispatch ambulance.

(a) Dispatching may range from a complex communications center controlling police, fire, and other emergency functions to the handling of emergencies as a collateral duty by a law enforcement officer or funeral director. There are numerous operating examples which show that central dispatching and control of emergency operations such as EMS result in improved service and are generally more economical. In areas lacking central dispatching, confusion, duplication, and poor service typically result.

(b) Before establishing a central dispatching facility the various organizations involved should agree to abide by central control and coordination. After there is general agreement, the communication ties, physical center, and operating procedures can be established to serve the entire community.

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(c) In addition to sending the ambulance(s) to the crash scene, the dispatcher should be prepared to alert law enforcement, fire, and debris control personnel, if necessary. Each dispatcher should be connected by direct line telephone to the area's hospital emergency departments so that the most appropriate hospital can be selected and this information relayed to the ambulance driver. (Appropriateness of a hospital includes its ability to best handle the specific medical problems posed as a result of the particular crash or other situations to which a response is being made.) This action will initiate medical preparations prior to ambulance arrival. The dispatcher should also be able to provide a direct connection between the ambulance and medical personnel in the receiving hospital if medical advice is needed while en route.

(d) EMS dispatching can be done in many ways.

1 In many large cities the dispatching is done by the fire or police departments, who also operate the ambulances.

2 In one large county with multiple urban centers, private ambulances under county contract are dispatched by the county dispatcher on emergency cases.

3 In another large densely populated county one ambulance company has the franchise for the entire county and operates its own dispatching center in close cooperation with fire and police dispatchers.

4 Since EMS systems support the community medical function, some dispatching centers are being collocated with hospitals. In many cases, emergency care aspects are likely to be improved by such collocation.

(4) Drive ambulance.

Usually a dispatcher, particularly one operating from a centralized facility, can provide special instructions to minimize driving time to the scene. It is important that current street maps of the area served be available to the dispatcher. In urban areas street change reporting procedures should be established to provide current routing information to the dispatcher. Each ambulance driver must be familiar with his area of operations. In remote areas it may be desirable for residents to supply detailed location instructions in advance for use by the ambulance driver. Certification of each driver for such knowledge is recommended.

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(5) Render emergency care.

(a) Early and proper emergency care at the scene can reduce mortality. However, in many cases even the most responsive EMS system may not permit ambulance attendants to reach the scene in the first few minutes after a crash occurs. Therefore, first aid in the initial critical minutes must be given by those first on the scene. Public education programs, such as the American Red Cross program, "First Aid on the Highways," may make a valuable contribution in this regard. Properly trained ambulance personnel will initiate emergency care measures when they arrive.

(b) The question of the nature and amount of treatment that can be given by ambulance attendants is being redefined by the medical profession, since this is directly related to the level of training to be given and the type of equipment to be carried. The minimum ambulance crew should be two persons, each with adequate training in emergency care.

(c) Sending one or more physicians to the scene of severe highway crashes should be considered, to supervise the sorting and handling of victims by emergency care personnel. This is often done in connection with industrial and natural disasters. Transporting such personnel by helicopters is becoming entirely reasonable.

(d) Properly constituted "Good Samaritan" laws should be considered to protect persons giving first aid against unwarranted lawsuits. This should be done in concert with public education emphasizing the value of "Good Samaritan" actions.

(e) All persons who may be called upon to render first aid in line of duty, other adults, and school children should be given opportunities to learn the fundamentals of first aid. The American Red Cross "Standard Course" and the U. S. Public Health Service "Medical Self-Help" training course are both suitable for this purpose.

(6) Extricate injured.

(a) Appropriate tools must be available to gain entry in the event vehicle doors do not open.

(b) First aid and/or emergency care may be necessary in severe injury cases prior to removal of the victim(s) from the vehicle(s).

(c) There are numerous instances of victims suffering permanent disablement or death primarily from spinal cord damage resulting from improper removal from wreckage. Thoroughly trained ambulance and rescue squad personnel should be able to recognize situations which require

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special techniques and equipment before removal can be attempted. Specialized equipment (such as backboards) has been developed for removing spinal injury cases and should be carried in each ambulance. In addition, portable fire control equipment should be carried for fire suppression during extrication of the injured.

(d) Removal of the injured from the wreckage should be accomplished by passersby or police only under extreme conditions.

(e) DOT is assessing and evaluating extrication methods and equipment in a study to recommend improvement.*

(7) Transfer injured.

(a) En route communications are vital for notifying ambulance personnel of proper destination hospital and for obtaining medical advice.

(b) The dispatch center should coordinate hospital selection, at least in serious or critical cases, based on medical advice and on the location and status of available hospitals. In a number of cities all major hospital emergency departments are on a "party" hot line and can be queried simultaneously. The dispatcher should direct the ambulance to the selected hospital and then inform the hospital of the inbound cases and their condition.

(c) The ambulance attendant will frequently require medical advice from an emergency department physician while en route. This should be provided by relay or radio "patch" through the dispatcher, or radio from ambulance to hospital. Proper on-scene stabilization and en route care will usually reduce the necessity for speed en route to the hospital and greatly enhance patient comfort. Gentle handling and smooth transport are of prime importance.

(d) The recently developed ability to telemeter various vital functions, such as pulse and respiration, over relatively long distances can be of great assistance in the application of emergency care. In the future it may be possible in many areas to transmit an indication of patient's vital functions from the scene of a crash, and en route to the hospital, for display to specialists in the hospital. Well trained attendants will be able to perform more sophisticated treatment under a physician's remote control, and critically injured or ill persons will be properly transferred over great distances.

* The results of this study should be available in mid-1969.

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(e) The possibility of transport of the injured by passersby who have little knowledge of emergency medical facility locations should be considered.*

(8) Admit injured to hospital.

(a) Delay in admission should be minimized so that definitive medical treatment can commence as soon as seriously injured person(s) reach the emergency department. To accomplish this goal the emergency department should have advance warning so that all necessary steps are taken to assemble pertinent personnel and any needed equipment. Advance notification is critical, particularly for smaller emergency departments, which are sometimes poorly equipped and not staffed on a 24-hour basis.

(b) There is a need to define more clearly the ambulance attendants' role in admission. They should provide information on the condition of the injured when found and emergency care given. In small emergency departments they should also be prepared to assist with movement of the injured from the ambulance to the receiving room if required. There may be a need for ambulance personnel to function as temporary emergency room aides.

(c) It is not uncommon for hospital emergency facilities to be inconveniently located, hard to find, and limited in ambulance handling space. Such aspects can become critical to providing prompt medical treatment to the injured. Each emergency department should be critically examined to insure that adequate location information and unloading space are provided for incoming ambulances.

(d) As the use of helicopters in EMS expands, hospitals should consider the location of a suitable helistop in relation to emergency department needs.

(e) As part of the EMS system implementation, standardization of all emergency medical record forms and hospital emergency department admission procedures is needed.

c. During the transport process to and from the emergency scene, several types of skills and knowledge are required of both attendant and driver. In the near future DOT will develop operational guidelines for ambulances that will describe the essential series of events in optimal time order

* See Volume 12, Highway Design, Construction, and Maintenance for additional information on directional information to hospitals.

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that normally occur during response to a range of emergency situations from the time the request for service is received and the ambulance is dispatched to the time the requirement is satisfied and the vehicle is returned and ready for another mission.

(1) A task analysis of ambulance operations will be conducted at typical locations nationwide, including public and private operations and operations in urban, suburban, and rural areas. Such factors as relationships of driver/attendant with police, fire, injured person, relative of the injured, medical personnel, etc., will be identified. Emergency vehicle operating safety and maintenance will be fully treated.

(2) The incorporation of vehicle operational guidelines in ambulance personnel training should have a positive effect on safer ambulance transport. Collection of ambulance collision data will allow evaluation of the effect of such training.

3. EMS SYSTEM COMPONENTS

An EMS system should be comprised of four principal components: communications, transportation (including personnel and equipment), law enforcement agencies, and emergency medical facilities.

a. Communications.

(1) Emergency care associated with most disasters usually requires prompt information transfer among cooperating groups which are frequently separated and without communication links. An EMS system should be a communications-based emergency system in which each succeeding system function depends upon broad radio and telephone communications support following the detection of a highway crash.

(2) Communications equipment should be used to dispatch and control movement of ambulances; clear traffic lanes; mobilize rescue equipment; dispatch professional personnel and supplies; advise ambulance personnel on the care of injured at scene and during transport; alert emergency departments of expected arrival and condition of injured; distribute injured to appropriate medical facilities; coordinate with affected local governmental departments and with backup ambulance services as necessary.

(3) A variety of communications links can frequently be used in support of EMS. Direct telephone lines commonly connect public safety offices and hospitals with ambulance dispatching centers. Two-way radios link the dispatcher with ambulances and governmental vehicles (public safety, maintenance, etc.).

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(4) Provision is also made in some areas for coordinated communications support that is essentially areawide and provides a common dispatching point for public safety, highway maintenance, and forestry forces in addition to local governmental radio and TV services. With this communications base areawide dispatching of ambulances can be accomplished.*

(5) The design of the EMS communications support component should provide a continuous dispatching capability, flexibility of cross-network utilization, compatibility with radio, and perhaps transmission of vital human performance data - heart condition, etc. Wherever possible, direct-line telephone systems should connect fixed EMS facilities with provision for radio backup, if required by telephone failure. Communications design should emphasize the importance of using normal, day-to-day operating procedures as a prerequisite to emergency operations.

(6) More specific criteria for the design of EMS communications will be available as a result of present and future Federally-supported studies and demonstration projects.

(7) It is recommended that the planning for communications support of EMS systems consider emergency needs associated with natural disaster and national civil defense emergencies. The placement of communications centers in facilities that are protected in varying degrees from fallout and other nuclear attack effects should be considered. Guidance and assistance are provided by the State Office of Civil Defense to government at all levels in developing communications support capabilities that are applicable to large-scale emergency operations.

b. Transportation and related equipment.

(1) In an ever-increasing number, the operators of private ambulance services are finding the economics of business more restrictive and, as a result, many are leaving the profession and depriving many communities of ambulance transportation. Efforts are underway to establish design criteria for various classes of ambulance vehicles, which may result

* One midwestern State is planning a consolidated State communications system that will provide direct access from communications (dispatching) centers to all radio-equipped public vehicles and governmental and public service facilities, including support to EMS functions. The initial objective is to develop and test procedures for utilizing normal, day-to-day, governmental communications to satisfy State and national emergency operational requirements as defined by the Federal Office of Civil Defense.

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in reasonably priced production models.* Research is now underway into the operation of helicopters for emergency medical transportation.**

(2) There should be standardization of minimum equipment carried by ambulance vehicles. The ambulance equipment list published by the American College of Surgeons (Exhibit IV) should be used as the minimum standard for ambulance equipment in each State. Additional equipment is desirable and can be added. Ambulance personnel should also be provided with equipment for the extrication of the injured and trained in its use. Such items are classified as light rescue equipment and include lifting, prying, battering, and cutting tools for release from entrapment or for forcible entry; backboards, ropes, straps for patient removal; and portable lighting and fire-fighting equipment. Rescue equipment carried must not, however, interfere with vehicle transport capability.

c. Law enforcement agencies.

(1) Law enforcement agencies should provide critical support in connection with all highway crashes. A police officer frequently arrives at the crash scene prior to the ambulance attendant and he is usually the last to leave. He is often called upon to give first aid and to assist with removal of the injured. He is responsible for crash debris clearance arrangements, restoring traffic flow, and conducting an investigation of the crash.***

(2) Police reports of crash investigations should contribute to the basic data inputs for the evaluation of an EMS program. A written policy concerning the scope of the crash investigation function should be established by each law enforcement agency. In addition, these agencies should develop a checklist of tasks that a police officer should accomplish upon responding to a highway accident call.****

d. Emergency medical facilities.

(1) Emergency medical facilities should be categorized according to capability. Guidelines for categorization of EMS facilities are provided in Exhibit V.

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* See Appendix F, The Economics of Ambulance Service.

** See Appendix G, The Use of Helicopters in EMS.

*** See Volume 16, Debris Hazard Control and Cleanup.

**** See Volume 15, Police Traffic Services.

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EXHIBIT IV

MINIMUM AMBULANCE EQUIPMENT

In addition to litters and blankets, the minimum equipment to be carried in ambulances should include the following:*

1. Hinged half-ring lower extremity splint with web straps for ankle hitch.

2. Two or more padded boards 4-1/2 feet in length and 3 inches wide, and two or more similar padded boards 3 feet in length and 3 inches wide, or material comparable to four-ply wood, for coaptation splinting of fracture of leg or thigh.

3. Two or more padded 15-inch by 3-inch wood or cardboard splints for fractures of the forearm.

4. Short and long backboards with 2-inch webbing straps for extrication of victims with spine injuries.

5. Oxygen tanks and masks of assorted sizes for administration of oxygen.

6. Hand operated bag-mask resuscitation unit with adult, child, and infant size masks (unit capable of being attached to oxygen supply preferred).

7. Simple suction apparatus with catheter (available types listed in March-April 1965 Bulletin A.C.S.).

8. Mouth-to-mouth two-way resuscitation airways for adults and children.

9. Oropharyngeal airways.

10. Mouth gags made of three tongue blades taped together and padded.

* This list was proposed by the American College of Surgeons in The American College of Surgeons Bulletin, (March-April, 1967). Although not included in the above list, consideration should be given to inclusion of antidotes and equipment for handling acute poisonings.

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EXHIBIT IV
(Continued)

Universal dressing, approximately 10 inches by 36 inches packaged, and folded to 10 inches by 9 inches.

12. Sterile gauze pads.

13. One, 2- and 3-inch adhesive tape on cylinder.

14. Six-inch by 5-yard soft roller type bandages.

15. Triangular bandages.

16. Safety pins, large size.

17. Bandage shears.

18. Several pillows.

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EXHIBIT V

GUIDELINES FOR CATEGORIZATION OF
EMERGENCY MEDICAL FACILITIES

1. Class I Facility (Major Emergency Department)

Facilities - Fully equipped to render complex and comprehensive emergency care on the premises, as well as any required definitive care up to and involving rehabilitation. Diagnostic facilities constantly available for even the most specialized procedure. Blood bank available. Ready accessibility to special purpose operating rooms.

Staffing - Twenty-four-hour staffing by highly competent medical and hospital support personnel. Ready accessibility to all types of specialists on a 24-hour basis.

Scope of Care - Routinely capable of performing the most advanced surgical and medical procedures including cardiac surgery, the treatment of severe head, neck, and chest injuries, as well as major plastic surgical procedures.

2. Class II Facility (Limited Emergency Department)

Facilities - Equipped to deal with most life-threatening emergencies but not with highly specialized resuscitative and surgical procedures. Diagnostic facilities (laboratory and X-ray) and blood bank constantly available.

Staffing - Twenty-four-hour staffing by component personnel on premises or on call but lacking in some specialist services and medical support personnel.

Scope of Care - Equipped to deal with routine medical and surgical procedures but lacking in ability to accomplish some highly specialized diagnostic, medical and surgical procedures. Total needs for stabilization or care of the critically sick or injured may exceed the capabilities of the facilities and personnel.

3. Class III Facility (Provisional Emergency Unit)

Facilities - Emergency units in small or specialty hospitals, clinics, industrial plants, or public buildings with limited or modest first aid equipment. Diagnostic capability and supporting equipment may not be available.

Staffing - Limited to either full or part-time professional nursing coverage and only part-time physician coverage.

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EXHIBIT V
(Continued)

Scope of Care - Limited to treatment of minor conditions and emergency resuscitation. Capable of controlling external blood loss, maintaining airways, performing external cardiopulmonary resuscitation and similar procedures.

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(2) Categorizing facilities could result in better use of manpower and facilities, more judicious choice of facilities, and direct delivery to the facility most appropriate to the need. This categorizing serves to define the scope of care which can be expected of a given facility, and unless time, distance, or the need for emergency resuscitation requires interim care, the injured should be delivered directly to the facility most suited to the situation. Class II facilities should be capable of treating the majority of serious cases and stabilizing critical cases that are beyond their capabilities where transfer to a Class I facility is necessary.

(3) Any staffing reduction during parts of the 24-hour period may affect hospital classification category and should be considered. Periodic detailed surveys of such facilities should be conducted. In this way, potential needs can be anticipated and steps taken to satisfy such needs. Actions of this type frequently use appropriate checklists that are updated by comparison with other EMS systems and make full use of professional recommendations.

4. POSTADMISSION

Although the highway EMS system terminates with hospital emergency department admission and the documentation of EMS system response, the medical facility treatment and the final results to the injured are essential to the proper assessment of prehospital EMS system performance. A record should be completed on each emergency patient from the time of his injury until hospital discharge or completion of autopsy. These records, which individually must be treated as confidential, can provide much of the data for system evaluation and subsequent upgrading.

5. STATE EMS PROGRAM ELEMENTS

It is recognized that the State will tailor its program and conduct its EMS program activities in accordance with State needs and practices. From a management viewpoint, it is convenient to consider a State program as being comprised of several major program elements. These elements partially overlap information presented in prior paragraphs, but are described here in terms of a State action plan for EMS.

a. Program administration.

Program administration is primarily concerned with assuring that the program is established and operated in accordance with national and State standards and requirements. Effective administration requires:

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(1) Identification of participating agencies.

Agencies which have EMS involvement and whose participation is necessary for proper program operation must be identified.

(2) Coordination and liaison.

Well-defined channels of administrative communication should be established for coordination and liaison of EMS program activities with other State agencies and groups.

(3) Public relations and public information.

The generation of public interest and the dissemination of information to the public is an important responsibility of the program administration element of the EMS program. It should be noted that Standard 4.4.11 suggests that the general public be encouraged to take first aid courses.

(4) Guidance procedures.

Guidance should be provided to local agencies and others who have EMS system responsibilities. However, some States may wish to establish as a specific program function the preparation of guidance procedures. This volume can serve as one basis for such guidance.

b. Licensing, certification, and inspection.

(1) Licensing, certification and inspection are the principal means by which State requirements and those specified by Program Standard 4.4.11 can be enforced and incorporated into the EMS system. There are many ways in which regulation and enforcement can be accomplished by the State. Some States may decide to specify and enforce Statewide uniform standards and requirements. Others may decide to delegate most of the responsibility to local governments.

(2) To meet the requirements developed, the following specific systems might be implemented:

(a) A system of issuing permits to establish and operate an ambulance or rescue vehicle service.

(b) A system of certifying ambulance and rescue vehicle personnel, including dispatchers, drivers, and attendants. (For administrative

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efficiency, the fulfillment of ambulance driver license requirements might be indicated on the appropriate motor vehicle operator's permit.*)

(c) A system of certifying emergency ambulance and rescue vehicles.

(3) Through these systems, requirements specified by State and local governments can be implemented. The system of requiring permits for ambulance service operators can be used to regulate the establishment of new services (for example, proof of public necessity might be required), and the operations of existing services (for example, restrictions as to certain geographic areas). The system of certifying ambulance personnel can be used to specify qualifications. Minimum requirements might be established as to character, age, physical capability, knowledge of area (including locations of hospitals, road networks and traffic patterns, barriers to movement, etc.), training in emergency medical care, and proven ability to operate emergency vehicles in a safe manner.** The system of certifying ambulance vehicles can be used to specify the type of vehicle and equipment to be carried.

(4) The mechanism by which requirements are established may include statutes, ordinances, contracts or franchises, codes, etc. Several appendices illustrate mechanisms that can be employed and provide an indication of requirements that might be specified.

(a) Appendix I is the model ordinance or statute developed by the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council.

(b) Appendix L is a sample State Act to regulate ambulance services.

(c) Appendix M is a sample contractual agreement for ambulance services provided by a private operator.

(5) Effective regulation requires some means of enforcement. This might include periodic inspection of facilities, vehicles and associated equipment, and the testing of personnel. Assessment of EMS system performance through reporting of certain EMS response data is another indicator.

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* See Volume 5, Driver Licensing.

** See Appendix K, Sample Invitation for Applicants for the Position of Medical Steward.

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c. Training for personnel administering emergency care.

(1) Quality ambulance services exist in only a few localities. Some of the reasons for this deficiency are:

(a) Lack of local leadership and involvement.

(b) Minimum consideration given to wages.

(c) Little recognition of the ambulance profession as a career.

(d) Instability of career pattern.

(e) Inadequate recruitment procedures and training.

(2) To aid in the elimination of these deficiencies and areas of neglect, the ambulance attendant should be fully established in an emergency care career pattern which provides attractive compensation, prestige, and recognition deserving of his services as a member of the emergency care team. If the needs for ambulance service in a locality are such that an ambulance attendant is not fully occupied, one alternative is that he be an employee of a hospital where he might serve as an assistant in the emergency department, intensive care unit, operating room, or other areas where injured or acutely ill patients are treated.

(3) Ambulance personnel, rescue squad workers, policemen, firemen, participating physicians, and other employees or volunteer members of public and private organizations having a responsibility for the provision of emergency medical care should be trained in and held accountable for proper performance of their duties.

(4) Ambulance personnel are responsible for all lay emergency care from the time they first see the injured or ill through transportation and delivery to the care of a physician. Therefore, they should be able not only to appraise the extent of first aid rendered by others but also to carry out whatever additional measures are necessary to minimize morbidity and mortality. They should be instructed in:

(a) Safe operation of emergency vehicles.

(b) Communication between the scene of the emergency, traffic authorities, dispatchers, and emergency departments.

(c) Rendering of necessary additional care en route.

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(d) Preparation of records and reports for transmission to medical and other authorities.

(5) Although the emphasis on certain EMS subjects will vary depending upon the nature of the personnel providing the care, all personnel, whether responsibility is transferred to the ambulance attendant or to other persons, should be trained so that maximum care can be assured.

(6) Recognizing the importance of training, DOT, in cooperation with other agencies and groups, is developing a total training package to provide the skills and knowledge required by ambulance attendants/drivers at the entry level of performance.* In the future, a training package for the intermediate and advanced skill levels, including ambulance operating practices, is planned.**

d. Training for communications dispatchers.

The States should consider a training program for communications dispatchers. Two exhibits are included as general guidelines to illustrate the broad training required of a dispatcher in a relatively large and complex central communications facility. These outlines can be modified as appropriate for smaller facilities and those limited solely to the ambulance dispatching function. Emergency care training and hospital emergency department indoctrination for ambulance dispatchers should be considered since it will allow better understanding of the problems of the vehicle crew and better dispatching decisions.

(1) Job description for communications dispatcher.

A job description for dispatcher personnel at the central communications facility in a large county is shown in Exhibit VI.

(2) A new employee is processed through both an in-class and on-the-job training and testing program as outlined in Exhibit VII.

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* This training package should be available in early 1969.

** Appendix H, Outline of Material for Ambulance Personnel Training, contains the subject material from which these training packages will be developed.

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EXHIBIT VI

JOB DESCRIPTION FOR COMMUNICATIONS DISPATCHER

Definition

Under supervision, to dispatch emergency police, fire, and other public safety equipment in a coordinated manner; to operate various communications equipment; and to do related work as required.

Typical Tasks

Receives and transmits emergency radio calls for fire and law enforcement personnel; receives reports on fires, plane crashes, and requests for resuscitators; dispatches fire equipment and ambulances; receives complaints and dispatches law enforcement personnel; coordinates search and rescue operations between various agencies in plane crashes and other major emergencies; transmits information by telephone or radio; types and files cards recording persons or equipment wanted; reports the need for repairs on radio equipment; calls by telephone off-duty personnel needed for emergency service; maintains complete radio logs on all messages received and transmitted; compiles and types detailed reports on activities during the shift worked; keeps familiar with major roads, streets, industrial plants, and buildings; operates key point attack warning equipment; operates a lease line teletype and a TWX; performs miscellaneous clerical work.

Employment Standards

Completion of the 12th grade and one year of experience as a dispatcher, or three years of general business experience.

Possession of a valid third class Radio Telephone Operator's License, or higher, issued by the Federal Communications Commission; must be obtained prior to permanent appointment.

Aptitude for learning the operation of two-way radio and telephone communications equipment; ability to learn and retain location of roads, streets, major industrial plants, and public buildings in the county; aptitude for learning the rules and regulations of the department; ability to understand and carry out all directions; good voice and excellent hearing; willingness to work on Saturdays, Sundays, holidays, and at odd and unusual hours.

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EXHIBIT VII

SAMPLE PROGRAM FOR PROCESSING AND TRAINING
NEW PERSONNEL

Date Assigned _____ Date Completed _____

NAME _____

I ADMINISTRATION
- (a) Processing
- (b) Appointment for physical examination

II DISPATCHING DIVISION
- (a) Issue key, earphone, and message box
- (b) Apply for ID card
- (c) Assign DSN (Dispatcher Serial Number), notify Administration and Technical Divisions of assignment

III ORIENTATION
- (a) Read general orders
- (b) Read introduction to procedure manual
- (c) Review station "sign in" log
- (d) Review system chart
- (e) Tour communications center

IV READ AND STUDY
- (a) Procedure manual

V MEMORIZE
- (a) Department key numbers
- (b) Codes
- (c) System chart
- (d) Police chiefs
- (e) Fire chiefs
- (f) Other key department heads

VI FIELD TRIPS (When possible to schedule)
- (a) Sheriff's Department
- (b) Central fire district
- (c) Public works
- (d) Field orientation with director
- (e) Hospital emergency department

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EXHIBIT VII
(Continued)

VII DISPATCHING TRAINING (Preliminary)
- (a) Monitor frequencies
- (b) Practice logging
- (c) Monitor telephones

VIII TESTS (Prior to assignment)
- (a) Department key numbers
- (b) Codes
- (c) System chart

IX RESPONSIBILITY ASSIGNMENTS*
- (a) Local government console
- (b) Police consoles
- (c) Fire console
- (d) Ambulance consoles

* At this point in the training program a new employee is assigned to an experienced dispatcher for "on-the-job" training and experience.

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e. EMS survey, plan development, and evaluation.

A comprehensive EMS plan should provide for the assessment of EMS system capability and performance and the establishment of action programs to remedy identified deficiencies.

(1) The plan should be revised periodically to reflect increased knowledge of State EMS operations, the establishment of more definitive EMS standards or criteria, and actual program accomplishments.

(2) The guidelines provided in this paragraph were developed under NHSB contract* and provide a logical stepwise approach to assist States in developing this aspect of their program.

(a) Areas of concern are the organizational and planning procedures required at the State level, the steps required to implement a State program, actions required at the local level to facilitate program implementation, and data needs for EMS evaluation and determination of program priorities.

(b) The guidance does not specify rigid procedures to be followed in all States. Sufficient flexibility is provided to allow for variations in State and local characteristics while retaining comparability in data collection and general evaluative techniques.

(c) Development and implementation of a program, therefore, involves organization at the State level, between State and local levels, and at the local level analysis and planning based on adequate information, active participation by government and nongovernment organizations, and periodic evaluation of progress.

(d) To meet requirements posed by the Standard a State program should incorporate:

1 Leadership and careful planning at the State level.

2 Interest and active participation at the local level.

* The guidance document, Emergency Medical Services Survey and Plan Development, prepared under this contract, provides detailed procedures for survey of local EMS systems and for establishing an EMS data system. This document is available for $3.00 from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151. Requests should cite document No. PB 178232, Vol. 2 (Contract FH-11-6554).

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3 Data collection sufficient to permit assessment of EMS performance and evaluation of the impact of specific program policies on achievement of program objectives.

(e) Procedures suggested in this guidance are grouped into eight steps:

1 Step 1: Establish State-level organization.

2 Step 2: Evaluate legislative and administrative provisions relative to Federal Standards.

3 Step 3: Survey local EMS systems.

4 Step 4: Prepare preliminary comprehensive EMS plan.

5 Step 5: Establish EMS data system.

6 Step 6: Identify deficiencies in local EMS systems.

7 Step 7: Determine priorities and provide funding for support of local activities to upgrade EMS.

8 Step 8: Establish procedures for periodic evaluation of EMS program.

(3) The steps suggested for implementing a State EMS program, as outlined in paragraph (2) above, are listed roughly in sequence. However, they are not mutually exclusive and, depending on progress made in individual States, concurrent activities may be undertaken. The rate of progress can be expected to vary from State to State, depending on activities already underway in the EMS area (particularly at the local level), interest or organizations concerned with EMS, and other factors. These steps are:

(a) Step 1: Establish State-level organization.

1 In the implementation of the provisions of the Highway Safety Act of 1966, a Governor's Representative/program manager for highway safety has been appointed in each State, and organizational arrangements to prepare a comprehensive highway safety program plan should have been made. However, the organization and planning to date have in most States been directed at the overall problem of highway safety, not specifically at emergency medical services. Because of the size and complexity of the EMS program, it may be desirable for the Governor's Representative/program

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manager, in conjunction with the appropriate State agencies, to designate a qualified person to be responsible for the development, operation, and maintenance of this program.

2 Experience in other complex programs indicates that acceptance and implementation are facilitated if both policy advisory and technical committees are formed early in the planning process. If possible, membership of both committees should be drawn from government and private groups closely identified with the committees' functions. The advantages of such committees are that they:

a Provide a broad basis for responsibility and policy designs.

b Involve government and nongovernment leadership in planning and implementation problems and decisions.

c Serve as an educational channel to local officials and citizens, thereby increasing understanding and acceptance of the EMS program.

d Provide a method of cooperation between government and nongovernment organizations concerned with highway safety and citizen leadership.

3 The chairman of the State EMS policy advisory committee should be the director of the Department of Health, and its membership should be drawn from such State departments as the Highway Patrol or State Police and Department of Motor Vehicles and from the leadership of such organizations as the State medical, hospital, first aid, and ambulance associations, the Red Cross, and other interested groups. The functions of the policy advisory committee are to assist the State Government in making the policy decisions necessary for a realistic EMS program and to serve as an educational channel to local government and other groups interested in EMS problems.

4 The technical committee is responsible for analyzing information on EMS operations, contacting local government and nongovernment groups to obtain additional information and to encourage participation in the EMS program, and assisting the policy advisory committee in developing a comprehensive EMS program and in evaluating effectiveness of program activities. The technical committee should be supported by a permanent staff with competence in communications, ambulance operations, hospital administration, emergency medical treatment, and data handling. Depending on the magnitude and complexity of the EMS program, this staff group may have full- or part-time EMS program responsibility.

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(b) Step 2: Evaluate legislative and administrative provisions relative to the Standard.

1 One of the first tasks of the EMS committees is to assess existing requirements in the areas specified in the Standard as reflected in State rulings. This involves the following work:

a For each of the minimum program requirements listed in the Standard, review relevant State legislation, judicial decisions, or administrative rulings, if any.

b Tabulate these requirements, indicating responsible State agencies.

c Evaluate consistency of varying requirements and degree of coordination among responsible agencies.

d Identify requirements specified in the Standard for which no activities have been initiated at the State level.

e Describe all pending legislation relating to EMS, whether likely of enactment or not, with an assessment of such probability for each item.

2 It is not the purpose of this task to provide a basis for drafting legislation or recommendations for administrative requirements. It will, however, indicate areas where no action has been taken at the State level and which must therefore receive attention, and for those areas where some action has been taken, it will describe specifics.

(c) Step 3: Survey local EMS systems.

1 The purposes of this step are to:

a Inform local officials regarding the highway safety program and its EMS aspects.

b Develop information on characteristics and operations of local EMS systems.

c Generate local interest in EMS evaluation and improvement.

d Provide a basis for delineating EMS areas or reporting jurisdictions.

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2 The extent of the survey effort required in a State will depend on the amount of information already available. Special studies of EMS or of major system elements such as ambulance services or emergency medical facilities have been conducted in some States. In others, information may be available from State agencies or private organizations on local EMS operations or on local organizations concerned with EMS. Before plans are made to survey communities within a State, therefore, it is very important that these sources of information be thoroughly explored.

3 Special attention should be paid to reporting procedures and data availability since program evaluation, in the long run, will require adequate data collected on a uniform basis. Exhibit VIII, following this page, lists the type of information that would be useful in assessing data availability and indicates potential sources. In making this assessment and before contacting local organizations or individuals, the EMS technical committee should have formulated a data framework suitable to its purposes. Therefore, a thorough review of the data system suggested in this volume is necessary at this point. (The system and its application are described in Steps 5 and 6 of this paragraph.)

4 In States where EMS has been the subject of detailed study, the survey of local systems can be limited to the generation of interest in EMS evaluation and the development of a data system and to discussion of suitable boundaries for local EMS areas or reporting jurisdictions. In most States, however, a more extensive effort will be required. This will involve contact not only with local leadership, but also with representatives of law enforcement agencies, ambulance services, communications centers, and emergency medical facilities.

5 In practice, it is not necessary to conduct a survay of this depth in every community in a State. It is necessary, however, to identify leadership groups in each community to generate interest in EMS problems and encourage local participation in program activities, particularly in the establishment of a comprehensive data system. It is suggested, therefore, that the survey be conducted in two phases:

a Detailed survey of a sample of communities selected to reflect variations in urbanization, EMS characteristics, political organization, and other relevant factors.

b Limited survey of remaining communities to identify and establish contact with local leaders or leadership groups and to define EMS organization and service areas in a preliminary way.

6 The purpose of a limited survey is to assure that a basis for active local participation is established. This is necessary prior

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EXHIBIT VIII

TYPES AND SOURCES OF DATA ON EMS SYSTEMS

Type of Data	Source
Law Enforcement	
1. Reporting requirements for State and local police, data collected, and analyses made at the State level	Public Safety Department (or Highway Patrol or State Police)
2. Sources of data on law enforcement activities	
3. Activities of law enforcement personnel at the scenes of crashes not currently included in standard reports	
Communications	
1. Communications networks contributing to EMS operations	Public Safety Department, Advisory Committee on Communications
2. Present reporting requirements	
3. Sources of data on communications traffic (e.g., communications centers, law enforcement agencies)	
Ambulance Services (or Comparable Organizations)	
1. Variations in the characteristics of emergency transportation services in urban, suburban, rural, and remote areas	Public Safety Department Public Health Department Medical association Hospital association Associations representing ambulance services Hospital planning association First aid associations Accident prevention or injury study agencies
2. Present reporting requirements	
3. Sources of data on ambulance operations (e.g., ambulance companies, communications centers, law enforcement agencies, private organizations)	

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EXHIBIT VIII
(Continued)

Type of Data	Source
Emergency Medical Facilities	
1. Variations in the characteristics of emergency medical facilities in urban, suburban, rural, and remote areas	Public Health Department Medical association Hospital association
2. Present reporting requirements	
3. Sources of data on EMS operations	

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to initiation of Step 5 and subsequent steps in the EMS program. Field studies conducted prior to preparation of this volume indicate a wide variation among political jurisdictions with regard to the interests and affiliation of individuals willing to assume leadership roles in the EMS field. In some areas, for example, an EMS committee with broad community representation may already be active. In one study area, significant assistance was received from the director of the local communications center. In another area, the police chief was the driving force. Specific guidance regarding local leadership, therefore, cannot be given. The survey effort must be flexible enough to examine alternatives and select those individuals or groups most likely to provide effective leadership. Members of the State-level policy advisory committee should be of considerable help in arranging preliminary contacts in local areas.

(d) Step 4: Prepare preliminary comprehensive EMS plan.

Step 4 consists of assessing and organizing the information gathered in Step 3, preparing a preliminary comprehensive EMS plan, and preparing a summary report to NHSB. The objectives of the plan should reflect the overall objectives of the State EMS program.

1 The outline in Exhibit IX, opposite this page, should be used in preparing the preliminary plan. It provides a framework for describing current conditions and major problem areas in the State and for detailing proposed EMS program activities.

2 The preliminary EMS plan provides the basis for preparing the summary report. This report should indicate major problem areas, proposed legislative or administrative actions relative to these problem areas, and special studies required to provide sufficient background data for legislative decisions. The report should also outline proposed organizational arrangements, scheduling, data use, and anticipated costs for the establishment of an EMS data system in Step 5 and for subsequent steps.

(e) Step 5: Establish EMS data system.

1 The survey of local EMS systems (Step 3) and the subsequent analysis (Step 4) will permit identification of major problem areas and of geographic locations of concern. Such identification is based

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EXHIBIT IX

OUTLINE FOR USE BY STATES IN DEVELOPING A PRELIMINARY COMPREHENSIVE EMS PLAN

I. Organization for EMS Plan Development and Program Implementation (Discussion will cover current activities and future planning at the State level and, to the extent known, at the local level.)

A. State Level.

1. Describe the agency and official with overall responsibility for implementation of EMS evaluation program.

a. Organizational structure of personnel responsible for the EMS program and brief statement of their functions.

b. EMS program activities and budget relative to:

(1) Classification and accreditation of ambulance services and emergency medical facilities.

(2) Estimation of existing and projected EMS needs - facilities, personnel, and equipment.

(3) EMS training - types of courses for various categories of EMS personnel, training procedures, and participating organizations.

2. Describe division of EMS responsibilities among State government departments:

a. With respect to planning and program activities.

b. With respect to organization, regulation, licensing or inspection of communications, ambulance services, emergency medical facilities, and accident investigation procedures.

3. Describe cooperative and coordination efforts with:

a. Autonomous authorities (e.g., port, tunnel, highway, bridge authorities).

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EXHIBIT IX
(Continued)

b. Contiguous political jurisdictions (e.g., other States, regional governmental planning agencies).

c. Independent associations (e.g., State, medical, hospital, ambulance associations).

B. Local Level.

1. Discuss the formation of local EMS committees or groups and definition of EMS reporting jurisdictions.

2. Describe existing or developing local organizations concerned with EMS.

3. Describe strengths, weaknesses, and suggested improvements at the local level with respect to the EMS system.

4. Describe the effects of local special interest groups (political, social, or commercial) on EMS system organization and activities.

5. Describe the effects of unique financial, geographical, or climatological conditions on the EMS system.

II. EMS Standards
(Discussion will cover existing and proposed standards relating to organization, operation, personnel, and training in EMS organizations.)

A. Describe current and planned standards (including provisions for licensing, regulation, and enforcement).

B. Discuss bases for establishing standards and procedures for evaluating effectiveness.

III. Proposed EMS Data System Implementation

A. Review proposed data formats and reporting procedures for:

1. EMS response data.

2. EMS inventory data.

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EXHIBIT IX
(Continued)

B. Discuss data flow (e. g., does State level receive raw data on evaluation results), implementation procedures, schedules, and estimated costs for implementing EMS data system.

1. EMS response data.

2. EMS inventory data.

C. Discuss users and uses of data generated by the EMS data system:

1. EMS response data.

2. EMS inventory data.

IV. Other Relevant Information
(Discuss specific problems relating to organization and evaluation of EMS systems and to role of U. S. Department of Transportation in the EMS area.)

A. Discuss effects of specific situations on organizing and evaluating EMS systems:

1. Political (such as overlapping governmental jurisdictions).

2. Financial.

3. Social.

4. Geographical or climatological.

B. Role of the Department of Transportation (and other Federal agencies) in the States' EMS systems.

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largely on informed judgment and, in any event, reflects only partial coverage of the State or of EMS system elements (unless a detailed study has been made for the State).

2 In most States statistical data on the operation and capabilities of emergency services are limited or nonexistent. Routine reporting on accidents is undertaken only by State and local police, who are concerned primarily with causes rather than with consequences. Information on injuries is limited and is not classified in a form suitable for assessing EMS requirements. Typically, no reporting is done by ambulance company or emergency room personnel. It is not possible, using currently available data, to document specific inadequacies in EMS system operations or to determine program priorities other than in a general way. Step 5 involves the development and implementation of a data system designed to provide, on a routine reporting basis, the data required to document system operations, identify problem areas, and measure the impact of system modifications.

3 Characteristics of a data system.

The critical components of an EMS system are:

a A reporting source.

b Emergency department facilities.

c Law enforcement agencies.

d Ambulance service.

e Communications.

4 Deficiencies could occur at any one or several points in this system; for example, in some areas a major problem may be inordinate time between occurrence and discovery of crashes. In other areas facilities for accident reporting may be limited, communications may be inadequate, ambulance personnel may not be sufficiently trained in first aid techniques, or emergency room capability may not be adequate to handle certain types of emergencies.

5 To be effective, therefore, a data system should have the capability to measure performance of each component as a basis for identifying such problem areas. Two types of data are required for a

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comprehensive system: inventory data (describing the characteristics of the local system) and response data (describing the performance of the system).*

a Inventory data.

The purpose of collecting data of this type is to provide a description of what can be termed EMS assets. These include the communications network (central facilities, provisions for summoning and dispatching aid, capability for two-way communication, etc.), ambulance services (equipment, first aid supplies, personnel by level of training), emergency medical facilities (equipment, staffing) and emergency care training resources. Data of this type would be collected once, with provision for updating to reflect changes.

b Response data.

The purpose of collecting response data is to provide a basis for assessing system performance. For all injury crashes, data are required on the various critical times from occurrence of crash to receipt of definitive treatment, on injury characteristics, and on first aid rendered at the scene or en route to hospital. Reports are required from police, ambulance attendants, emergency room personnel, and from the communications center if there is one in the area. These data should be routinely collected to provide a statistical data base for continuing evaluation of system performance. Their provision should not, however, in any way be organized so as to interfere with immediate and optimum EMS.

6 Test studies in various parts of the country prior to preparation of this volume indicated that a significant proportion of the injuries sustained in highway crashes are minor. A two-level system for data processing, providing for limited analysis of minor injuries and more detailed analysis of moderate and severe injuries, may be possible after experience has been gained with the data system as currently defined.

7 The importance of local interest and active participation in data reporting was referred to above. It is emphasized again here because it is vital to the success of a data system that relies on reporting by a variety of organizations. Step 3 activities should provide points of contact in each community to be used as nuclei for generating local interest. But a more formal arrangement would be desirable so that the effort required to initiate the data system can be properly coordinated and continuity can be maintained.

* Detailed descriptions, including data collection formats, are provided in the guidance document, Emergency Medical Services Survey and Plan Development (see footnote on p. 27).

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8 A completely formalized arrangement cannot be applied to all States equally, because of variations in local government organization and State-local relationships. One State, for example, has enacted legislation requiring each county to establish an emergency medical committee to plan and evaluate emergency care in the county. Responsibility for the data system would be an appropriate function for such a committee. Another State is planning to locate an employee of the State health department in urban counties to assume responsibility for EMS planning or evaluation. Experience with other complex programs suggests that an organizational arrangement, including a broadly representative committee with specific program responsibilities and a permanent full-time staff, offers a reasonable guarantee of success.

9 The first activity in Step 5 is to delineate EMS reporting areas on the basis of information collected in Step 3. This activity should be undertaken concurrently with Step 4 activities so that data collection procedures can be initiated as soon as possible. In many States the county is an appropriate area within which to evaluate EMS, particularly since the county hospital is frequently the major source of emergency treatment and since counties often have regulations covering emergency services. In rural areas, it may be more suitable to conduct planning on a multicounty basis. In areas where counties are not strong units of government, separate treatment of incorporated and unincorporated areas may be warranted. In general, initial area designations should reflect hospital and ambulance service areas, subject to the political constraints referred to above.

10 Procedures for coding and processing data received from the various reporting entities are included in the guidance document. Several organizational alternatives are available to accomplish this function, ranging from complete responsibility at the local level to complete responsibility at the State level.

11 Analysis of data processing requirements for the inventory data system suggests that most of this effort should be done at the State level. The primary functions to be performed at the local level include collection of data, reviewing data forms for completeness, and following up with participating organizations when required.

12 Past studies of data systems requiring continuous reporting such as the response data system suggest that, as a minimum preliminary screening and matching and coding of report forms should be done at the local level. This simplifies followup procedures that may be required to fill data gaps or obtain missing report forms. After coding has been completed, data processing could be done on local equipment, either community-operated or operated by a commercial service center, or forms could be sent to the State level for processing.

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(f) Step 6: Identify deficiencies in local EMS systems.

1 The data system described in Step 5 permits two levels of deficiency analysis to be undertaken. Inventory data can be used to assess the extent to which communities are meeting the first six requirements of the Standard and any State requirements that have been introduced. Since response data constitute the major input to program evaluation, these data provide the basis for more precise identification of deficiencies and for specification of more detailed requirements that can be done with inventory data alone.

2 Analysis of inventory data provides documentation on training levels of emergency personnel, characteristics of transportation and communications equipment, and arrangements for coordination of emergency system elements. This will permit further revision of the comprehensive State plan as modified in Step 4. However, the information is primarily descriptive and does not provide an objective basis for assessing adequacy of such EMS requirements as exist at State and local levels.

3 Response data fill this gap but require continuing analysis for periods of time that vary widely according to frequency of highway crashes and level of analytical detail required. Three types of data essential to an evaluation of EMS systems are required:

a Type and severity of injuries.

These data are essential to determining time of response and skill level requirements.

b Emergency care actions taken.

These data are the basis for judgments regarding adequacy of training of emergency personnel and of others assisting at the scenes of crashes.

c Time sequence.

These data reveal problems in system response to highway crashes.

4 The guidance document provides a list of report formats which could aid in system assessment and the potential use of each.

5 Response data can serve a variety of other local purposes. For example, information on crash locations relative to ambulance

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and hospital locations can be used to develop an optimal ambulance location plan. Detailed analysis of time-sequence data can be used to identify specific geographic problem areas and to provide the basis for cost-effectiveness analysis of remedies. Analysis of injury characteristics can be of value in evaluating emergency room staffing patterns.

(g) Step 7: Determine priorities and provide funding for support of local activities to upgrade EMS.

1 After deficiencies in local EMS systems have been identified, the preliminary comprehensive EMS State plan should be revised to include specific program actions, indicating priorities to be applied to each. In practice, both local and State committees will be assessing needs and developing specific program suggestions. Both groups will be faced with priority problems. The local committee must assess alternative approaches within the EMS area; the State committee must assign priorities among areas.

2 The difficulty is that there are often several alternative solutions to a given problem. It is not appropriate to specify an approach to the assignment of priorities that must be followed by all States. It is suggested, however, that each local committee be urged to accept responsibility for assessing local needs and recommending alternative programs based on guidelines provided by the State. Each recommendation should be documented, to the extent possible, in terms of estimated cost and potential impact on volume of fatalities and severe injuries. State allocations could be based on a comparative evaluation of these programs in approximate cost-effectiveness terms and on an assessment of the distribution of funds (on a per capita or per vehicle mile basis) that would result.

3 The preliminary State plan developed in Step 4 should be revised to reflect these program decisions and should be resubmitted to NHSB. At this time, specific requests for Federal funds can also be made in accordance with procedures specified by NHSB.

(h) Step 8: Establish procedures for periodic evaluation of EMS program and refinement of State plan.

1 Periodic evaluation of progress is an essential element of an EMS program, to compare actual accomplishments with goals established in the State plan and to permit continuing assessment (and modification, if indicated) of data system inputs.

2 Several types of reports should be prepared on a periodic basis:

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a Inventory characteristics, by community.

These data can be used to compare progress made in achieving existing standards or standards that will be developed at Federal, State and local levels.

b System response.

If problems have been identified in response times, in first aid provisions, or in other aspects of system performance, summaries of these elements (prepared on at least an annual basis) will indicate improvements resulting from program activities. This provides a basis for assessing the effectiveness of program activities.

c Deficiency analysis.

This is essentially an output from reports described in this chapter. It is a listing of deficiencies, by area, that still require program action and should be used as a guide for reevaluating and redirecting program activities as necessary.

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NATIONAL HIGHWAY SAFETY BUREAU

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 5
CHAPTER V. Program Evaluation	January 17, 1969

(42-01)

Par. 1. Introduction
2. Evaluative Measures
3. Methodology

1. INTRODUCTION

The purpose of program evaluation is to relate program results to objectives in order to determine program progress and effectiveness. The Standard requires that the State EMS program be periodically evaluated and that the NHSB be provided with an evaluation summary. Such an evaluation is essential to assess the success of a program and to determine the soundness of its goals and objectives and its current direction. It is a prerequisite to further planning or modification of existing plan elements.

2. EVALUATIVE MEASURES

a. Evaluative measures are basically qualitative and quantitative. A configuration of such measures should be developed that will give State EMS program managers the capability to evaluate the performance of each component of the system. Chapter IV, paragraph 5, of this volume outlines in detail the establishment of an EMS data system which would provide on a routine reporting basis data regarding EMS operations. This chapter and the guidance document, described in Chapter IV, set forth in greater detail performance measures useful for program evaluation.

b. Cost-benefit evaluation should also be considered in the evaluation of alternative approaches to implementing specific program tasks.

3. METHODOLOGY

Once the EMS program is established and the EMS data system implemented, information provided by the data system will permit analysis at two levels. Inventory data can be used to assess the extent to which the State is making progress toward achieving the first six requirements of the Standard, as well as related State standards or requirements that may have been

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established. Response data can be used for a more precise identification of deficiencies in EMS performance. Over a period of time, both types of data will provide the basis for documenting system operations, identifying problem areas, measuring the impact of system modification, and evaluating effectiveness of the State EMS program. (Chapter VI suggests a method for structuring the evaluation process.)

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NATIONAL HIGHWAY SAFETY BUREAU

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 5
CHAPTER VI. Reports	January 17, 1969

(42-01)

Par. 1. Introduction
2. Operational Reports
3. Management Reports
4. Program Evaluation Reports
5. Reports to National Highway Safety Bureau

1. INTRODUCTION

An important aspect of the State EMS program is a data system to provide the necessary information on the capabilities and responsiveness of the EMS system. A series of management and evaluation reports should be produced by the data system which can be used to make program decisions and to evaluate the effectiveness of program actions. The purpose of this chapter is to outline the various types of reports associated with the State EMS program.

2. OPERATIONAL REPORTS

a. Local EMS committees can use operational reports received from the various EMS system components in a number of ways:

(1) Information on individual emergency rooms can be used as a basis for plans for directing ambulances to the most appropriate hospital.

(2) Information on characteristics of individual ambulance companies can be checked against requirements contained in local ordinances, regulations, and contracts.

b. The data system suggested for implementation by States, as described in Chapter IV, consists of two parts:

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(1) Inventory system.

Reports should be required periodically for the inventory system to provide an up-to-date statement of capability. Reports should be required from each component of the EMS system in a reporting jurisdiction, indicating basic capability:

(a) Personnel (by level of training).

(b) Equipment.

(2) Response data system.

Reports should be required from each component of the EMS system for the response data system on each crash requiring EMS. These reports should describe injury characteristics, treatment, and system response.

(3) Data system operation reports.

In view of the complexity of this data collection and processing effort, data system operational reports indicating how well the data collection and processing system is operating are desirable. These reports would be used internally by the local EMS office and summaries could be provided to the local EMS committee to keep them informed of the operation of the system and of any difficulties encountered.

3. MANAGEMENT REPORTS

As the data system is implemented, a series of management reports should be developed to aid in effective program management.

a. Local (reporting jurisdiction).

Local EMS committees can identify system deficiencies by using a series of EMS operational reports suggested in Annex 11 to Appendix II of the guidance document referenced in Chapter IV. For example, these committees may find variations in response time within the reporting jurisdiction which may indicate areas where additional ambulance services are required. Excessive time between crashes and their reporting in certain areas may suggest the need for additional surveillance or for installation of call boxes or other equipment. Deficiencies indicated by reports generated by the response data system can be checked with a report derived from the inventory data system, which, in its simplest form, is a printout of information provided by the EMS system components. This report may be compiled locally or at the State level.

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b. State.

Reports summarizing inventory and response data system information for the various reporting jurisdictions provide the State EMS committee with a basis for assessing program operations. They also provide a basis for identifying either regional or functional deficiencies in EMS that should be explicitly considered in the State EMS plan. With this base, State-level decisions can be made regarding future program operations.

c. State summary.

Following the preparation of a preliminary comprehensive EMS plan (Step 4 in the plan development process as outlined in Chapter IV), the State should prepare a summary outlining proposed organization arrangements, scheduling, data use, and anticipated costs for the establishment of an EMS data system and for subsequent program analysis and evaluation, and include:

(1) Indication of major problem areas.

(2) Proposed legislative or administrative actions.

(3) Special studies required for legislative decisions.

4. PROGRAM EVALUATION REPORTS

The data system should include the means for evaluation of the results of program activities by local, State, and Federal governments.

a. Local (reporting jurisdiction).

Provision should be made for periodic updating of inventory information. The local EMS committee can therefore determine changes in training levels, equipment maintained, and emergency facility capability that have taken place during the period and can assess the extent to which program activities have contributed to these changes. The response data system should be continuous. Periodic reports on system operations can be used to evaluate specific program activities. Care should be taken, however, to allow for the effects of other highway safety programs that might have a bearing on the results.

b. State.

Periodic reports of response data should be prepared to assess the extent to which program activities, at the State or local levels, have improved EMS operations throughout the State and to identify continuing problem areas that may require new or unique approaches.

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5. REPORTS TO NATIONAL HIGHWAY SAFETY BUREAU

The NHSB also intends to request each State to submit an annual evaluation summary as required by Section VIII of the Standard. The annual summary should include:

a. A brief statement of program activities during the year.

b. State level summary results of EMS system inventory characteristics, system response information, and general system performance, indicating changes since the previous summary.

c. Summary results of deficiency analyses at the local reporting jurisdiction level.

d. Problems requiring corrective action and type of action, planned or under way, to remedy these problems.

e. New development of action programs initiated since the State's previous summary.

f. Changes, since the previous summary, in State EMS programs and requirements (including legislative actions) and in program schedules, costs, and organizations.

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NATIONAL HIGHWAY SAFETY BUREAU

HIGHWAY SAFETY PROGRAM MANUAL

VOLUME 11 Emergency Medical Services	TRANSMITTAL 5
CHAPTER VII. Local Government Participation	January 17, 1969

(42-01)

Par. 1. Introduction
2. Local Public Agencies with Responsibilities for Providing Emergency Medical Services
3. Description of Activities

1. INTRODUCTION

Interest, cooperation, and active participation of local government agencies and other organizations and individuals at the local level are paramount to meeting the goals of the State EMS program. Local agencies play a decisive role in the development, implementation, and conduct of the Statewide program. The extent of their participation should be based on a self-analysis of capabilities and facilities. When it is evident that local agencies are unable to perform necessary functions, they should look to neighboring community or county or State organizations for assistance.

2. LOCAL PUBLIC AGENCIES WITH RESPONSIBILITIES FOR PROVIDING EMERGENCY MEDICAL SERVICES

The following local public officials and/or local public agencies should be considered to have an interest or responsibility for developing and managing an emergency medical services program.

a. Elected county and city officials and their immediate staffs.

b. Coordinating committee representing agencies responsible for providing EMS and their immediate staffs.

c. Public safety or police authorities.

d. Fire protection authorities.

e. Health authorities.

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3. DESCRIPTION OF ACTIVITIES

Local public agencies are responsible for the following EMS activities:

a. Elected county and city officials and their immediate staffs.

(1) Policy development.

(2) Coordination of activities which are conducted by different agencies.

(3) Encouragement of selected local private and volunteer groups including hospitals, ambulance services, and medical groups to cooperate and participate in EMS program development and operation.

(4) Authorization or appropriation of funds necessary for EMS program operation.

(5) Establishment, as appropriate, of EMS program planning and management staff.

(6) Public information and education.

(7) Adoption, as necessary, of appropriate ordinances and regulations governing EMS activities.

b. Coordinating committee representing agencies responsible for providing EMS.

(1) Establishment of EMS operating standards and requirements that are tailored to local needs and that reflect, and are consistent with, State policies and requirements.

(2) Planning.

(3) Periodic evaluation of adequacy of EMS.

(4) A central point for administration of the EMS program to include:

(a) Administration of established standards or requirements.

(b) Collection, initial processing, analysis, and reporting of EMS data.

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(c) Identification of deficiencies, suggestions for action programs and priorities, and requests for financial assistance.

(d) Submission of reports to the State, as required.

(5) Spokesman for political jurisdictions and local EMS operating components (an ambulance service, for example) in dealing with the State or other jurisdictions, e.g., for purposes of effecting mutual aid.

(6) Point of contact and coordination with local volunteer rescue squad organizations to promote understanding of and active participation in the EMS program.

(7) A point of coordination among and between the health department and local organizations such as the Red Cross, civil defense or disaster office, medical association, hospital association, and ambulance association.

(8) A central point for public relations and public information activities.

c. Public safety, police, and fire protection authorities.

(1) Depending upon the EMS plan adopted locally, the following activities may be performed by either or both specially trained police or fire protection agency personnel.

(a) Ambulance dispatching.

(b) Ambulance service.

(c) Rendering of first aid.

(d) Extrication of the injured.

(e) Traffic control at the emergency scene.

(f) Protection of the injured.

(2) Police personnel will usually play a major role in the detection and reporting of crashes and requesting emergency medical services. (Chapter IV describes in detail recommended ways to perform these activities.)

d. Health authorities.

Health authorities may perform the following activities:

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(1) Evaluation and categorizing of emergency medical facilities.

(2) Development and implementation of education and training programs for the public and for EMS personnel.

(3) Investigation to determine present and future EMS needs.

(4) Collection, management, and provision/distribution of EMS data.

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APPENDIX A

Highway Safety Program Standard 4.4.11

EMERGENCY MEDICAL SERVICES

Purpose

To provide an emergency care system that will:

I. Provide quick identification and response to accidents.

II. Sustain and prolong life through proper first aid measures, both at the scene and in transit.

III. Provide the coordination, transportation, and communications necessary to bring the injured and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards.

Standard

Each State, in cooperation with its local political subdivisions, shall have a program to ensure that persons involved in highway accidents receive prompt emergency medical care under the range of emergency conditions encountered. The program shall provide, as a minimum, that:

I. There are training, licensing, and related requirements (as appropriate) for ambulance and rescue vehicle operators, attendants, drivers, and dispatchers.

II. There are requirements for types and numbers of emergency vehicles including supplies and equipment to be carried.

III. There are requirements for the operation and coordination of ambulances and other emergency care systems.

IV. There are first aid training programs and refresher courses for emergency service personnel, and that the general public is encouraged to take first aid courses.

V. There are criteria for the use of two-way communications.

VI. There are procedures for summoning and dispatching aid.

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VII. There is an up-to-date, comprehensive plan for emergency medical services, including:

A. Facilities and equipment.

B. Definition of areas of responsibility.

C. Agreements for mutual support.

D. Communications systems.

VIII. This program shall be periodically evaluated by the State and the National Highway Safety Bureau shall be provided with an evaluation summary.

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APPENDIX B

GLOSSARY OF DEFINITIONS

This glossary defines those terms whose meanings may be unclear in the context in which they are used. These definitions are meant to apply only to the usage of these terms in this volume.

Area of Responsibility - A designated geographic area in which there is an assigned responsiblity for the provision of emergency medical care.

Communications Link - A part of the communications system, fixed or mobile, which has radio or landline capabilities.

Communications System - A system connected closely with the dispatch center which, by radio or landline communications, makes possible the alerting and coordination of personnel, equipment, and the facilities of the highway emergency services system.

Definitive Medical Treatment - Treatment rendered by a qualified physician in any medical facility that provides timely and appropriate care.

Dispatch Center - A control or coordination center for the efficient management of all participating emergency resources within a designated area of responsibility. The center will dispatch personnel and equipment and coordinate and control these various resources to ensure maximum effectiveness.

Emergency Care - The care rendered by specially trained ambulance or other emergency response personnel.

Emergency Medical Care (EMC) - That care rendered by physicians or specially trained personnel under their direct supervision.

Emergency Medical Services System (EMS) - A system which, in the event of a medical emergency or injury on the highway, is capable of integrating detection and reporting inputs to provide timely dispatch of proper equipment and trained personnel for proper emergency care at the scene and en route, and safe and expeditious transport of the injured to a facility capable of providing the proper level of treatment.

EMS Staff - Individuals (at either the State or reporting jurisdiction level) who provide permanent staff support to the EMS committees in conducting the day-to-day activities and functions within the EMS program.

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Emergency Medical Vehicles - Designated and properly equipped vehicular equipment (including aircraft) used in the transport of the sick and injured.

First Aid - Care administered at the scene by persons not directly connected with the emergency response.

Local EMS Committee - A group with policy advisory and technical advisory responsibility within a reporting jurisdiction that performs functions similar to those of the corresponding State-level committees. Membership includes both the medical profession and laymen so that communications, law enforcement, ambulance services, and hospital emergency services are represented.

Reporting Jurisdiction - A geographic area of defined boundaries for which there is an EMS committee or group and that forms the focal point for coordination with the State and for collection, initial processing, and reporting of EMS data to the State. A reporting jurisdiction may be a county, city, or group of counties (a region) and may include one or more "areas of responsibility," e.g., ambulance service areas.

State EMS Policy Committee - An advisory group usually chaired by the State health department director and having membership drawn from affected State departments such as police or highway patrol, motor vehicles, and education and from interested voluntary organizations such as State medical, hospital, and ambulance associations, the Red Cross, and other groups. The principal function of the committee is to advise State government in making policy decisions leading to the development of a Statewide EMS program.

State EMS Technical Committee - A working group made up of staff members from the State departments and other organizations represented on the policy committee. The technical committee's principal function is to assist the policy committee in developing a comprehensive EMS program and in evaluating effectiveness of program activities.

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APPENDIX C

REFERENCES

The following is a selected list of recognized authoritative references which may be helpful in implementing the programs specified in this volume. This list is not meant to be a definitive bibliography of all documents available in this field.

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APPENDIX D

REPRESENTATIVE PROJECTS

Only a few of the States currently have established comprehensive EMS programs. Consequently, a large number of the current projects under way in the States are involved with resource surveys and various aspects of initial plan development such as the drafting of necessary State legislation, the planning of State organizations, and subsequent staffing. Other projects deal directly with known EMS deficiencies and take the form of:

1. Ambulance service subsidies to enable continuation of service in areas with limited economic resources;

2. Support of training programs for ambulance personnel;

3. Providing first aid training for State employees;

4. Securing National Guard helicopters for EMS;

5. Developing ambulance licensing programs;

6. The upgrading and/or establishment of communications facilities;

7. The evaluation of operative data systems.

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APPENDIX E

RESOURCE ORGANIZATIONS

This appendix identifies a number of organizations with an interest or involvement in the provision of emergency medical services (EMS). Several, upon request, are prepared to offer technical assistance to agencies establishing or operating EMS programs.

Ambulance Association of America
247 North Western Avenue, Suite 11-12
Los Angeles, California 90004

American Academy of Orthopedic Surgeons
29 East Madison Street
Chicago, Illinois 60602

American Academy of General Practice
Volker Boulevard at Brookside Boulevard
Kansas City, Missouri 64112

American College of Physicians
4200 Pine Street
Philadelphia, Pennsylvania 19104

American College of Surgeons
55 East Erie Street
Chicago, Illinois 60611

American Heart Association
44 East 23rd Street
New York, New York 10010

American Helicopter Society
141 East 44th Street
New York, New York 10017

American Hospital Association
840 North Lake Shore Drive
Chicago, Illinois 60611

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

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American National Red Cross
17th and D Streets, N. W.
Washington, D. C. 20006

American Public Health Association
1790 Broadway
New York, New York 10019

American Society of Anesthesiologists
515 Busse Highway
Park Ridge, Illinois 60068

International Rescue and First Aid Association
P. O. Box 233
Caldwell, New Jersey 07006

Joint Commission on Accreditation of Hospitals
200 East Ohio Street
Chicago, Illinois 60611

National Academy of Sciences-National Research Council
Division of Medical Sciences
2101 Constitution Avenue, N. W.
Washington, D. C. 20418

National Funeral Directors Association
135 West Wells Street
Milwaukee, Wisconsin 53203

National Highway Safety Bureau
Federal Highway Administration
Washington, D. C. 20591

National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

Public Health Service
Division of Emergency Health Services
Hospital and Ambulance Services Branch
6935 Wisconsin Avenue
Chevy Chase, Maryland 20015

State and Territorial Health Officers Association
224 East Capitol Street
Washington, D. C. 20003

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Vertical Airlift Council
Aerospace Industries Association, Inc.
1725 DeSales Street, N. W.
Washington, D. C. 20036

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APPENDIX F

THE ECONOMICS OF AMBULANCE SERVICE

This appendix briefly summarizes a recent study on the economics of ambulance service and remuneration considerations based on Federal law.

1. SYNOPSIS OF CURRENT STUDY

a. Introduction.

A recent NHSB study, "The Economics of Highway Emergency Ambulance Service," is available which:

(1) Summarizes the status of ambulance services across the country.

(2) Describes the operational and economic impact of recent legislation and administrative regulations (particularly the 1966 Amendments to the Fair Labor Standards Act, Medicare, and Medicaid legislation and Standard No. 11) on all types of purveyors of ambulance services.

(3) Develops methods for determining the optimum density of ambulance service locations and the numbers of ambulances needed to provide specified levels of service to communities or areas.

(4) Develops a methodology for the Federal and State governments to use in computing equitable subsidies or financial support for non-government purveyors.

(5) Prepares guideline information that local leaders can use in identifying and evaluating alternative solutions to their specific problems in providing an emergency ambulance service.

(6) Considers the role that helicopter ambulances could play in providing services to remote rural areas and the related operating costs.

b. Methodology.

The study contractor has used the techniques of systems engineering to determine the requirements and recommended combinations for transportation, emergency medical care, communications, dispatching, public safety agencies, and record keeping for various typical communities. This use of a systems concept has allowed the contractor to analyze and compare the costs of ambulance services according to their common elements and

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functions irrespective of the specifics of their particular organizations or principal sources of revenue, and to establish a community's requirements for ambulance services and the size and probable costs of an adequate service independently of any questions of how to organize and support it. The analysis also provides a cost model that can be used to predict the probable costs of any ambulance service of specified size. Also analyzed are the pros and cons of alternative revenue structures to support ambulance service costs. The characteristics and conditions for effective subsidies are developed and the bases and formulae for computing the needed subsidies are provided. A sequence of procedures is given so that the leaders of a community may determine or evaluate the number of ambulances and locations they need to answer all ambulance calls within specified "response" times and the estimated costs of such a service.

Guidelines are provided for identifying and evaluating the pros and cons of alternative organizations, sources of revenue, and community facilities for supporting adequate emergency ambulance services.

Copies of the study report may be obtained for $6 through the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151; cite document Nos. PB 178-837 (Vol. 1) and PB 178-838 (Vol. 2) produced under Contract No. FH 11-6541.

2. REMUNERATION CONSIDERATIONS

The Fair Labor Standards Act of 1938, as amended (29 U.S.C. 201, et seq) provides for the establishment of fair labor standards in employments in and affecting interstate commerce, and for other purposes. The present (May 1968) minimum wage under this Act is $1.60 per hour. In an opinion signed by the Wage Hour Administrator of the Department of Labor, May 23, 1966, it was held that, subject to certain exceptions, ambulance drivers and attendants making intrastate trips to pick up dead or injured victims of motor vehicle accidents on public streets and highways are engaged in interstate commerce within the coverage of the Act. Volunteer personnel operating volunteer ambulance services or rescue squads are not affected by the Act. When the ambulance service is operated by public or municipal employees (fire or police) the wages paid these individuals are set by local or State civil service policy and always exceed the minimum wage of $1.60/hour. (The impact of the legislation on any specific operation will be determined by the peculiarities of that operation.) For more information on this subject, inquire at the nearest office of the Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor.

It is generally agreed that eight attendant/drivers are required, on the average, to support and operate one ambulance vehicle on a 24-hour, seven-day-a-week basis, assuming that both an attendant and driver are required

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for each run. Excluding any overtime pay, the annual personnel costs to support one vehicle on the basis of the present minimum wage amounts to about $26,600. If the vehicle operated is a stretched wheelbase modified passenger vehicle, acquisition cost is about $16,000. With depreciation continued over five years and annual maintenance/fuel costs of $2,000, it is evident that about $30,000 in annual revenue may be required just to break even. It is seen, therefore, that personnel costs represent the largest fraction of overall operating costs, especially if the ambulance vehicle is a carryall type at a purchase price of $4,500 complete with equipment.

3. POSSIBLE FUNDING ASSISTANCE SOURCES

There are a number of Federal assistance programs and private sources which may be available for some degree of funding aid to EMS. Although comprehensive in scope, the list below is not complete and should be viewed as a starting point for consideration of funding sources.

a. Initial capital costs.

(1) Hospitals from cash flow, funded depreciation, and philanthropic and endowment sources.

(2) Philanthropy.

(3) Borrowed capital, either normal commercial sources, or special low interest programs.

(4) Partial financing through Hill-Burton in association with construction.

(5) In connection with State Highway Safety Programs under Section 402 of Title 23, U.S.C.

(6) Nonfederal governmental funds.

(7) Nonprofit organizational funds.

(8) Regional medical care programs.

b. Operating costs.

(1) Training assistance from hospital, nonprofit organizations, regional medical programs, and vocational educational sources.

(2) In connection with State Highway Safety Programs under Section 402 of Title 23, U.S.C.

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(3) Title XIX of the Social Security Act (Medicaid) - for emergency or transportational service units.

(4) Title XVIII of the Social Security Act (Medicare) - for identified care and transportation units of service with some limitations that might be susceptible to change.

(5) Insurance carriers - for emergency care costs that are included within hospital "overhead." (Some will pay for certain identified transportation costs.)

c. Capital replacement.

(1) Funded depreciation.

(2) In connection with State highway safety programs under Section 402 of Title 23, U.S.C.

(3) Nonfederal governmental funds.

(4) Nonprofit organizational funds.

(5) Philanthropy.

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APPENDIX G

THE USE OF HELICOPTERS IN EMERGENCY MEDICAL SERVICES

1. INTRODUCTION

The purpose of this appendix is to provide general information related to the application of the helicopter for the benefit of those injured on the highway.*

The ability of helicopters to provide effective and efficient transportation of the injured has been proved by military and search and rescue (SAR) applications. This use has shown that the helicopter is unsurpassed as a transportation tool in avoiding traffic congestion, speeding aid to the ill or injured in remote areas, and rapidly transporting the injured to medical care centers. A number of States and municipal governments have begun using helicopters. Others will undoubtedly follow as they become aware of the helicopter's unique ability to solve many of their problems.

a. One county has announced plans to acquire a helicopter after conducting tests that showed the ill or injured could be transported to a hospital in less than a third of the time required by a surface ambulance.

b. A State, with funding assistance from the NHSB, has begun a year-long feasibility test using helicopters for highway patrol and medical evacuation in the suburban fringe area of one of its large cities.

c. A State, with most of its major medical centers located in the center of the State, is investigating the use of helicopters to speed seriously ill or injured patients from outlying hospitals to heliports at the medical centers.

d. Other medical groups have discussed the feasibility of reducing the number of expensive but inadequate emergency rooms in small hospitals and bringing the ill or injured by helicopter to well-prepared emergency departments at major hospitals. Many hospitals throughout the country have already installed heliports, and others are in the planning stage. The Coast Guard has cooperated with hospitals in coastal areas in establishing heliports where its helicopters bring in ill or injured persons.

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* STOL (Short Take-Off and Landing) craft may offer possibilities in connection with EMS in some situations but are not discussed in this volume because of the limited experience available to date.

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e. The discussion which follows initially considers various aspects of helicopter operation in support of EMS transportation functions. Helicopters can be cost-effective if properly utilized. Many States can secure effective EMS helicopter support from military sources, including the National Guard, at little additional cost. Guidelines for such sharing are presented last.

2. HELICOPTER USE LIMITATIONS

a. In view of the relative newness of the helicopter in this application, proper indoctrination of users and alerting sources on both the existence and the capabilities of EMS helicopters is of prime importance. All law enforcement and medical personnel should be indoctrinated in the effectiveness and the limitations of this equipment in order to use it properly in aiding the highway victim.

b. The helicopter should not be used in cases where a surface ambulance is nearby and can transport the ill or injured as quickly to a nearby hospital. Certainly the use of a helicopter is not indicated unless serious injuries are involved. It should be used when seriously injured persons are in remote or inaccessible locations (which include traffic jams) where its arrival would be much quicker than surface transportation and generally in any instances when its use will materially expedite the arrival of trained personnel to the scene.

c. Operation within the heavily built-up urban areas is neither feasible nor desirable because of surface obstructions to operations and the fact that the helicopter offers marginal time saving over surface transportation. There is, however, considerable potential for use on urban throughways since surface traffic congestion can be avoided by the helicopter.

d. It must be recognized that there are severe weather conditions in which the helicopter should not operate and that night operations in mountainous terrain or close to surface obstructions is dangerous. Wires over and adjacent to the highways are hazardous to EMS operations, and there is danger in landing near crowds without proper crowd control. However, severe weather, mountainous terrain, and dense jungle have all been successfully surmounted by helicopters in providing medical evacuations in Vietnam.

e. The availability of helicopters for response may be limited for mechanical reasons. The average mechanical "out-of-service" time has been found by the Coast Guard and Army to be approximately 25 percent, producing 75 percent availability for one helicopter. If two machines are devoted to the mission, availability rises to 94 percent, and if three are available, at least one will be able to respond 98 percent of the time.

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3. HELICOPTER EMS EQUIPMENT

The American College of Surgeons (ACS) recommended equipment list for ambulances (Exhibit IV, Chapter IV) can be used as a guide in the outfitting of EMS helicopters. Weight may be a factor in smaller helicopters and reduction to allowable limits can be accomplished with the recommendation of a properly qualified physician. Some helicopters, mostly military, have hoisting capability and can, if necessary, lift the injured into the helicopter without landing. If the helicopter is hoist-equipped, a hoisting container such as a stokes litter is needed. In the case of military helicopters, the standard equipment for medical evacuation flights is usually established by the base medical department and placed in the helicopter by flight medical personnel.

4. HELICOPTER EMS PERSONNEL

Perhaps the most important action in aiding a person injured in a crash is timely and proper emergency care at the crash scene. The provision of a trained medical attendant on board the helicopter with the necessary first aid gear is essential to the success of the mission. If a medical attendant or physician is not available, the helicopter crewmen must be proficient in first aid. Training requirements for medical personnel assigned to EMS helicopters do not differ greatly from that desired for their ambulance counterparts. Numerous ambulance attendant training courses are available, and a current effort to improve and standardize this training is being made.

5. HELICOPTER COMMUNICATIONS

Communications considerations in the use of helicopters involve two factors: first, the need to alert the helicopter operating activity after a crash, and, second, the need to communicate with the helicopter during the mission.

The helicopter operating activity should be alerted by direct landline from the EMS dispatching center or designated alternate such as a law enforcement agency. Once alerted and given position information, the regular air-to-ground radio equipment is available for control and relay of additional information to the helicopter. Practical experience in the U. S. Coast Guard demonstrates that while a direct means of communications from the scene to the helicopter is desirable, it is not mandatory. Many pickups have been made by helicopters over ships and fishing boats where no direct means of communication were possible. The use of helicopters over land would not appear to inject any higher degree of communications need than that over water. Much of whatever handicap is created by the lack of direct communications between the helicopters and the crash scene can be eliminated by police indoctrination in helicopter hand signals and landing requirements. It is also possible in many cases to hover and discharge a crewman to coordinate with personnel at the scene.

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6. COST-EFFECTIVENESS CONSIDERATIONS

a. Helicopters can be broadly classified into observation, utility, and cargo categories. For reasons of size and cost, the utility category is best adaptable to EMS and will be the only one considered in this appendix. Although observation helicopters can be used to transport medical personnel to a highway crash scene, they do not have the capability for internal transport of medical patients. Cargo types are extremely costly, and their large size restricts EMS application.

b. There has been interest by manufacturers in the development of a utility helicopter for EMS application. Models now in production can be adapted to medical transportation. New models being developed will be better suited for this purpose.

c. The enthusiasm for the helicopter's ability to perform a variety of essential missions is dampened primarily by the high cost of acquisition and operation. In any EMS operation personnel costs constitute a major part of the expense. For example, each ambulance maintained in readiness 24 hours each day by a typical large city government costs approximately $80,000 yearly, of which over $70,000 represents personnel costs. By comparison, a utility helicopter operated by a city government costs $120,000 yearly, of which $100,000 is chargeable to personnel costs. As personnel costs are relatively independent of hours flown, hourly operating costs decrease as operating hours increase.

d. Few communities can afford helicopters that are used only to transport persons injured on the highway. Consequently, the helicopter, if it is to be used for the highway EMS, should be a multimission machine that can be kept busy when not required for EMS in diverse missions such as search and Rescue (SAR), fire patrol, photography, personnel transportation, police investigations, search for stolen cars, and highway patrol. If we include not only persons seriously injured on the highway, but also other injured and acutely ill individuals, such as those with coronaries who could be transported by helicopter, the total volume may become such that the helicopter will prove economical.

e. If military requirements decrease, some of the large inventory of military utility helicopters may be made available for civilian use. The adaptation of this equipment for EMS would have considerable impact on the existing cost impasse.

f. Military operations have verified the helicopter's successful application to the medical transport role. It is believed that proposed tests will soon confirm a broad cost-effective role, including EMS transport support, for the helicopter in local governmental service. Demonstration projects are

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being planned to develop general guidelines and cost-effectiveness for EMS use of the helicopter. Specific recommendations will be provided as the results of these projects become available.

7. USE OF MILITARY HELICOPTERS

a. Military helicopters, when requested by a State, are only assisting units and do not relieve a State of its overall responsibility.

b. There are military helicopters for search and rescue, or local base rescue, missions at some 130 different sites in the country, mostly around the nation's coastal perimeters and southern border. Helicopters are based at other military bases for training, logistics, and mission operations. An SAR helicopter unit maintains constant readiness and spends the greater part of its time standing by for calls. Flying hours devoted to SAR seldom exceed 25 percent of the total hours flown. Consequently, some of these units are able to take on additional responsibilities without any increase in facilities or personnel. They are well trained in SAR, and the recovery of the highway ill or injured presents few problems not found in SAR missions.

c. In actual practice, military rescue helicopters respond to a variety of emergencies and do not confine themselves strictly to military distress operations. For example, responses are regularly made to boating mishaps, lost hunters and fishermen, civilian aircraft crashes, medical evacuation from remote locations, etc. There appears to be no legitimate reason to exclude persons seriously injured on the highways from assistance that is provided to citizens in nearly any other locale, nor to assign them a lower priority due to the nature of their misfortune.

d. As a general rule, there are no agreements between State authorities and Armed Forces commanders for assistance in highway emergencies, even though agreements are common for other emergency situations. Communications and rapid alerting constitute one area of deficiency. Operating procedures and plans also need to be discussed and outlined. Agreements on military-State cooperation should be negotiated at the local level, taking into consideration the particular needs and limitations of both parties. Many of the elements pertinent to State-military agreements are suggested in the checklist contained in Exhibit I at the end of this appendix. Although this concept is aimed at highway EMS, any agreement should not be restricted to that one facet of EMS but should cover other applicable transportation requirements. The scope of military assistance can be best determined on an individual case basis. Military helicopters should be requested only in urgent cases, where existing surface ambulances are unable to accomplish the job quickly or efficiently, or where medical help is urgently needed and prevented from reaching the crash scene.

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e. It is unlikely that additional military facilities can be justified solely on the basis of highway rescue needs. The responsibility for highway rescue rests with the States, and military aid would be furnished only when requested and then out of "available" resources. Even in the event that a highway rescue mission requirement should be levied on the national SAR system as a matter of national policy, there are few historical data on which to make an estimate of the probable additional load. Lacking this estimate and because the increase in cases is likely to be small in the beginning, military facility augmentation must await more conclusive documentation and policy definition.

f. There are approximately 400 National Guard helicopters in the country and their use for emergency medical evacuation offers considerable promise. The State of Nebraska, with funding assistance from the National Highway Safety Bureau, has begun using National Guard helicopters in this work. Ohio National Guard helicopters, with medical personnel from Ohio State University Medical School, have been used on test runs as well as in actual evacuations, and plans are under development to employ them regularly on emergency medical evacuations.

g. Since National Guard helicopters are under the control of the various Governors and thus responsive to State needs, they may be employed with little additional funding in EMS support. Most National Guard training flights are on weekends during periods of heaviest traffic casualties when helicopters could be diverted from training flights for EMS missions. At other times, crews may have to be called and longer delays could result.

h. Many of the helicopters operated by the National Guard are outdated and others are too small for transporting injured persons. It can, however, be expected that with the release of more modern equipment by the military, National Guard equipment will improve. With the exception of the State-control aspect and the percentage of time available, considerations in the use of National Guard helicopters for highway EMS are much the same as in the use of regular military helicopters. Use of National Guard equipment for EMS support has two obvious advantages. First, it provides better utilization of a publicly-funded resource. Secondly, it represents excellent training for National Guard flight crewmen.

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EXHIBIT I

TABULATION OF CONSIDERATIONS IN STATE-MILITARY AGREEMENTS ON CIVILIAN MEDICAL EVACUATIONS

1. WHAT MILITARY FACILITIES ARE AVAILABLE?

   a. Helicopters

   b. Ambulances

   c. Hospitals (include status of emergency department)

   d. First aid stations or dispensaries

   e. Medical personnel

2. HOW IS MILITARY TO BE ALERTED?

   a. Who receives call on base?

   b. What State agency initiates call?

   c. Are added communications links needed? (If so, will this be locally or State-funded?)

   d. Will calls be accepted from only one State agency (e.g., State Police) or from any police agency? How about calls from citizens? If calls are accepted from State Police only, how do other sources get help?

3. PARAMETERS OF MILITARY HELP.

   a. Hours of operation

   b. Readiness condition and response times during 24-hour day and during days of week

   c. Limits of area of coverage

   d. Conditions in which military help will not be available (i.e., over-riding military commitments, mechanical failures, weather and environmental conditions, etc.)

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EXHIBIT I
(Continued)

e. Means to minimize unnecessary calls or false alarms

f. Agreement on reducing military participation if load becomes excessive

4. MEDICAL PERSONNEL.

a. Are military physicians available to accompany helicopter? Medics or hospital corpsmen?

b. Do helicopter aircrews have first aid training?

c. Can services of civilian physicians to accompany helicopter be arranged?

d. Can arrangements be made for a physician to accompany seriously ill or injured patients on a hospital-to-hospital transfer?

e. Who pays civilian physician?

f. What about liability for injury to patients and physicians being transported? Waivers of liability?

5. MEDICAL EQUIPMENT.

a. Can appropriate medical equipment be prepackaged and ready to go on the helicopter?

b. Who provides original equipment? Replacements?

6. COMMAND AND CONTROL.

Military help is only a supplement to State resources, and the State retains ultimate responsibility for the evacuation of persons injured on the highway. How will coordination be exercised? Who will make the decision as to which hospital is to be used? How is mission to communicate with military bases and helicopters? What are arrangements for coordination on-scene? How are positions of crashes to be described? Grid systems?

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EXHIBIT I
(Continued)

7. HELISTOPS.

Where will hospital helistops be provided? (These should, usually be State- or community-funded and laid out after approval by helicopter operators.) What arrangements for training of emergency room personnel and helicopter crews in cooperation?

8. MEDICAL TREATMENT BY HELICOPTER CREWS.

In addition to normal first aid practices, will medics or corpsmen be permitted to administer fluids or drugs in emergencies? Will State medical society back this? Will helicopter crews be prepared to render first aid on scene prior to moving? Will State agree to request "Good Samaritan" law if not already in force?

9. WHAT TYPES OF CASES WILL BE CARRIED?

a. Injured from highway to nearest hospital?

b. From highway to major medical center (bypass local hospital)?

c. From community hospital (after stabilization) to major center for definitive treatment?

d. Other critical medical emergencies to hospital where ambulance unsuitable?

10. COMMUNICATIONS.

a. Will State undertake to advise all potential users (local police, hospitals, doctors) of availability of helicopter service, how to obtain it, and limitations of service?

b. Who will fund and install necessary communications? Will State or military undertake to clear any FCC problems, including licenses?

11. REPORTS.

If military command does not already have requirement to submit report of each case to own headquarters, will they make a brief narrative report to the State on each air evacuation?

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APPENDIX H

OUTLINE OF MATERIAL FOR AMBULANCE PERSONNEL TRAINING

The Committee on Emergency Medical Services, National Academy of Sciences-National Research Council (NAS-NRC), has produced an outline on which this appendix is based in the form of guidelines entitled "Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport" in response to a request by the Emergency Health Services Branch, Public Health Service. These guidelines and recommendations by the NAS-NRC Committee on a course of action to develop a nationwide training program will be the basis for later development of specific criteria. The full report of the NAS-NRC Committee is available from the Emergency Health Services Branch, Public Health Service, or the National Academy of Sciences.

GUIDELINES FOR TRAINING OF AMBULANCE PERSONNEL

SECTION ONE - EMERGENCY CARE

I. ANATOMY AND PHYSIOLOGY

- A. MUSCULOSKELETAL SYSTEM
- B. NERVOUS SYSTEM
- C. RESPIRATORY SYSTEM
- D. CIRCULATORY SYSTEM
- E. GENITOURINARY SYSTEM
- F. GASTROINTESTINAL TRACT
- G. ABDOMEN
- H. SKIN
- I. EYE
- J. TOPOGRAPHIC ANATOMY

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II. VITAL SIGNS AND THEIR SIGNIFICANCE

Normal ranges of vital signs and abnormalities related to injuries and other emergencies, to include pulse, respiration, blood pressure, skin temperature, color of skin and mucous membranes, pupils, states of consciousness, paralysis, and reaction to pain.

III. LIFE-THREATENING EMERGENCIES

A. AIRWAY MAINTENANCE, ARTIFICIAL VENTILATION, AND OXYGENATION

B. CARDIAC ARREST AND CARDIOPULMONARY RESUSCITATION. Instruction as prescribed by the American Heart Association.

C. BLEEDING. Pressure dressings, pressure points; emphasis on strict limitation on use of tourniquets.

D. SHOCK. Include administration of intravenous fluids.

IV. INJURIES

A. WOUNDS - GENERAL

1. Definition - Open, closed; abrasion, puncture, incision, avulsion; penetrating, perforating.

2. General Effects - Interference with function; shock.

3. Local Effects - Hemorrhage, external, internal; interference with blood supply; destruction; foreign bodies; contamination.

B. INJURIES OF BONES AND JOINTS

Under each heading, instructions as appropriate on techniques of handling extremities, methods of moving victim, dressings, splinting, traction, positioning during transport; emphasis on treating sprains and strains as if they were fractures or dislocations.

1. Fractures and dislocations of upper extremities.

2. Fractures and dislocations of lower extremities.

3. Fractures and dislocations of spine.

4. Fractures of pelvis.

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C. INJURIES OTHER THAN OF BONES AND JOINTS

Under each heading, instructions as appropriate on airway obstruction, cardiac arrest, hemorrhage, techniques of moving, release from impalement, dressings, splints, positioning, preservation of avulsed parts (ear, nose, digits, extremities) and possible complications during transport.

1. Scalp and skull
2. Brain
3. Eye, ear, nose
4. Face and jaws
5. Neck
6. Chest
7. Abdomen, pelvis
8. Genitalia
9. Back
10. Extremities

V. BURNS

VI. ENVIRONMENTAL EMERGENCIES

Instruction as appropriate on prevention of additional injury, methods and hazards of removal from environment, initial care, contamination, possible cardiopulmonary complications during transport.

A. EXPOSURE TO COLD

B. EXPOSURE TO HEAT

C. EXPOSURE TO RADIATION

D. ELECTRICAL INJURIES

E. NEAR-DROWNING

F. EXPLOSIONS

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VII. ACUTE POISONING

VIII. MEDICAL EMERGENCIES

Fainting; stroke, heart attack; convulsions; acute alcoholism; diabetic states; perforated viscus; hemorrhage; asthma; emphysema; nosebleed; shock; unconscious states; allergic reactions; urinary retention; strangulated hernia; protracted vomiting; drug withdrawal; spontaneous pneumothorax; communicable disease (special emphasis on pediatric emergencies).

IX. EMERGENCY CHILDBIRTH

X. MANAGEMENT OF EMOTIONALLY DISTURBED AND UNRULY

SECTION TWO - AMBULANCE SERVICES

XI. PERSONNEL

Effective service requires proper attitudes and conduct in work; show of responsibility: skills obtained by experience and training; acting within limitations of capabilities.

Both attendants and drivers must be equally trained in each other's duties and responsibilities so that they may function interchangeably or independently in caring for multiple casualties.

A. DUTIES AS AN ATTENDANT

PERSONAL ATTITUDES AND CONDUCT:

1. Professional Manner - Definition; ethical standards required; control of emotion; courtesy; tone of voice; refrains from smoking while engaged in duties related to care of patients; uses appropriate topics of conversation.

2. Personal Appearance - Hygiene and grooming; proper wearing of uniform; identifying insignia.

3. General Conduct - Shows interest in job; concern for injured; "common sense" care; teamwork efficiency; prevents embarrassment to injured; gives reassurance to injured; uses injured's resourcefulness in helping himself; shows responsibility for his safety, self, others; cooperation.

4. Response to Injured's Need for Religious Comfort in Face of Death - Obligation to notify clergyman when requested.

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5. In Cases of Apparent Death or Deaths - Definition of death; examines for signs of death; where death is certain, moves body in accordance with local ordinances or regulations; for ethical and humanitarian reasons, remains with deceased until arrival of police, a medical examiner or coroner; shows courtesy, respect, and consideration in handling and exposure of the deceased.

6. Disclosing Bad News - Creates proper atmosphere; displays attitude to mitigate bad effects; demonstrates sympathetic air.

RESPONSIBILITIES TO THE ILL OR INJURED

7. Prompt and Efficient Care - Performs lifesaving measures; provides for safety and protection; gives all possible emergency care when extrication is delayed; undertakes extrication to permit emergency care; avoids undue haste and mishandling; searches for medical identification emblems.

8. Preparation for Transport to Hospital - Immobilizes injured parts; prevents disturbance and exhaustion before transport; makes sure of the cooperation of the person being transported; ensures optimal preparation before decision to transport; protects his valuables.

9. Continuing Care En Route and Delivery to Hospital Emergency Department in Best Possible Condition - Rides in compartment with the ill or injured; continually observes and protects; administers fluids and other measures as instructed or indicated; reports changes in condition during transport.

10. Skill in the Use of Ambulance Equipment and Supplies - Cooperation - When a physician or a paramedical person is present at scene of the crash, assumes subordinate role and gives full cooperation; in their absence, carries out functions which are the usual responsibilities of police officers, firemen, other ambulance personnel, public utilities personnel, clergymen; cooperates fully with hospital emergency department staffs.

B. DUTIES AS THE DRIVER

1. Personal Attitudes and Conduct - The same standards of professional manner, personal appearance, and conduct as pertains to the attendant are applicable to the driver.

2. Responsibilities to the Injured - Transports the injured in such a manner that it minimizes disturbance to affected part and ensures comfort, prevents shock, allows freedom of breathing, avoids further danger to the injured; knows and abides by laws and traffic regulations pertaining to ambulances.

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3. Vehicle Operation - Practices "defensive driving"; exercises emergency privileges properly; prevents crashes; engages in safe driving practices; knows and uses proper operating speeds; knows importance of gentle driving, starting and stopping; knows the relationships of speed to "reaction distance," "braking distance," and "stopping distance"; makes proper use of lights and sirens.

4. Transportation of Mass Casualties - Drives along assigned routes cleared by police; does not alter routes unless directed by police or central dispatcher; proceeds only to designated areas or hospitals; cooperates in a coordinated, constantly-flowing effort.

5. Maintenance of Vehicle - Understands principles of engine and can make minor repairs; routinely inspects and services mechanical parts; checks safety equipment; cleans debris from vehicle; decontaminates inside after transport with contagious infections or radiation exposure.

XII. EMERGENCY VEHICLES

A. AMBULANCES

Regardless of the degree of injury or illness for which the ambulance is dispatched, the ambulance and its equipment must be adequate to cope with the most serious emergencies.

B. HELICOPTERS

In helicopters cruising at low altitudes, the medical problems pertaining to transport in a fixed-wing aircraft are not pertinent. At altitudes under 1,000 feet, the indications for oxygen administration are the same and the problems encountered in case of vomiting, sucking wounds of the chest, and injuries to the sinuses, ears, and brain are dealt with in the same manner as during ambulance transportation.

1. Criteria for Use - Accessibility to the injured; speed in transport of attendants to the crash scene, and of the injured to initial emergency care facility, or in transfer to a medical center.

2. Special Problems - Dust requires covering of all open wounds; moving rotor blades dictate pattern in approaching and leaving helicopter; air turbulence requires special attention to securing of litter and the injured; noise interferes with communication and evaluation of vital signs; vibration may make procedures such as intravenous administration or intubation difficult.

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C. RESCUE VEHICLES

The space requirement for personnel and equipment in rescue vehicles designed for medium and heavy rescue procedures precludes their use as ambulances. Light rescue equipment should be carried on ambulances as well as on rescue vehicles and ambulance personnel trained in its use.

XIII. THE USE OF EQUIPMENT AND SUPPLIES

Thorough familiarity with the theory of any particular device, indications for its use, the desired effects when it is used, its capabilities and limitations, and its malfunctional problems.

Maintenance, exchange, and periodic inventory.

Efficiency in use, as prescribed in the section on emergency care.

A. EMERGENCY CARE

1. Airway Maintenance, Artificial Ventilation, and Oxygenation - Suction apparatus, installed and portable; catheters,* airways, mouth-to-mouth and oropharyngeal,* mouth gags; bag-mask resuscitation unit, installed and portable,* oxygen tanks and masks,* manually triggered oxygen-powered ventilation apparatus.*

2. Control of Hemorrhage - Compression dressings; tourniquets (emphasis on strict limitations in their use).

3. Immobilization of Spine and Extremities - Backboards; half-ring splints; padded boards; inflatable splints; triangular bandages.

4. Dressings - Large universal dressings; pads; bandages; pins; tape; shears.

5. Fluids - Intravenous fluids and administration sets.

6. Emergency Childbirth - Obstetrical kits.

7. Acute Poisoning - Medicinal charcoal; syrup of ipecac.

* Appropriate sizes for adults, children, and infants.

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9. Lighting - Flashlights; floodlights; generators.

B. SAFE AND EFFICIENT TRANSPORT

Warning devices; lights; temperature and humidity controls; restraining devices for litters and occupants; litters; blankets; pillows; neck rolls.

C. SAFETY EQUIPMENT

Warning flags and flares; fire extinguishers; helmets; rubber gloves.

D. LIGHT RESCUE TOOLS

Lifting, prying, cutting and battering tools; backboards; ropes; straps.

E. COMMUNICATION

Radio equipment.

F. ELECTIVE EQUIPMENT - FOR USE BY PHYSICIANS OR OTHER PERSONS TRAINED IN ITS USE

Tracheal intubation kits; mechanical external cardiac compression machine; radiation detection equipment; tracheotomy or cricothyreotomy set; equipment for monitoring of vital signs; cardioscope/defibrillator; pleural drainage set for tension pneumothorax.

XIV. COMMUNICATION

Instruction and demonstration by communication experts on use, regulations, limitations, and maintenance of equipment, and by physicians or paramedical personnel on coordination of care and delivery of the injured. Emphasis on importance of day-to-day use as a prerequisite to efficient operation in disaster.

A. USES OF COMMUNICATION EQUIPMENT

Dispatch and control movement of ambulances; clear traffic lanes; mobilize rescue equipment; dispatch professional personnel and supplies; advise ambulance personnel on care of those injured at scene and during transport; alert emergency departments of expected arrival and condition of the injured; distribute the injured to appropriate medical facilities; coordinate with local government and civil defense officials and with backup ambulance services.

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B. DESIGN OF COMMUNICATION SYSTEM

1. Radio Communication - Twenty-four hour capability; central dispatching; area to be served; terrain features; flexibility of cross-communication with other systems; system not in parallel with, or isolated from, other networks; compatibility with radio or video transmission of vital signs.

2. Auxiliary Communication - "Walkie-talkie"; telephone messengers.

C. LIMITATIONS ON USE OF EQUIPMENT

Federal Communications Commission regulations; stand-by power essential at fixed installations; telephone systems may be blocked.

XV. RELATIONSHIPS WITH HOSPITAL EMERGENCY DEPARTMENTS

Thorough familiarity with care rendered in emergency departments to ensure adequacy of measures taken by ambulance personnel.

A. PROBLEMS FOR AMBULANCE PERSONNEL

1. Delays in Delivery of Injured - Blocked access; traffic control; inconvenient location of facilities.

2. Delays in Continuation of Care - Unavailability of emergency department personnel; inadequacy of examining or treatment facilities; lengthy history taking; lack of triage.

3. Delays in Return or Exchange of Equipment and Supplies

B. RAPPORT

Mutual courtesy and understanding of each other's problems; efficiency of reporting by ambulance personnel; willingness to cooperate and to assist on request.

C. COOPERATION

1. By Emergency Department Personnel - Assistance in clearing way and moving victim; avoidance of delay; return or exchange of equipment; replacement of supplies; constructive criticism of inadequate or improper care rendered; credit for use of good judgment and proper care; priority of emergency department attention to life-threatening situations; periodic critiques of quality of emergency care.

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2. By Ambulance Personnel - Optimal emergency care and efficient and safe transport in advance of delivery to emergency department; advance notification of arrival; identification of victims whose conditions might warrant high priority of reception and resuscitation; assistance as needed or requested; compliance with hospital regulations; rendering of reports to hospital personnel and to police, if indicated; retrieval of equipment and supplies; prompt departure from emergency department; participation in disaster drills and critiques.

XVI. CONTROL OF THE CRASH SCENE

Immediate attention to life-threatening emergencies supersedes any action to control the scene by ambulance personnel.

A. NEEDS FOR CONTROL

To permit access, prompt care, extrication, protection from further hazards; clear lanes for departure.

B. ACTIONS AT SCENE

Anticipate, en route, possible hazards posed by location and type of emergency.

Prevent further crashes or hazard by: precaution in parking ambulance; removal from situations threatening to lives of the injured and ambulance personnel, such as spilled gasoline or chemicals, escaping gases, downed power lines, spreading fire, flooding water; warning devices to divert traffic.

Restrain bystanders from crowding, mishandling of the injured. Obtain assistance of volunteers and specify tasks.

Manage relatives by allaying hysteria; reassurance; questioning and informing away from presence of the injured; prevent mishandling of the injured.

Avoid assuming functions of police or other authorities when they are present. Do not permit their actions to compromise care of injured.

XVII. RESCUE PROCEDURES APPLICABLE TO AMBULANCE PERSONNEL

In urban areas, when specially equipped rescue vehicles may not be readily available, and in rural areas, where such vehicles are nonexistent, or valuable time might be lost in calling from the scene of the crash for

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equipment, ambulance personnel must be provided such light rescue equipment as may be carried on the ambulance, and they must be trained in its proper use.

When rescue from entrapment or confinement, or removal from poles, water, or other hazardous environments may be delayed, emergency care for life-threatening conditions must be carried out to the extent that access to the injured permits. Short-distance removal from immediate hazards may be necessary before emergency care can be rendered.

Ambulance personnel should not engage in rescue procedures when qualified rescue persons are present.

A. SHORT-DISTANCE REMOVAL

Drags; manual carriers; litters, improvised or standard; backboards; chair carry; ladder rescue; rope sling.

B. EXTRICATION PROCEDURES

From vehicles; building debris; electrical lines and equipment; water; vats and tanks; caissons, tunnels, wells, and caves; heights, farm and industrial machinery; locked or blocked living or working areas.

C. LIGHT RESCUE EQUIPMENT AND ITS USE

Lifting, prying, battering and cutting tools for release from entrapment or for forcible entry; backboards, ropes, straps for removal; portable lighting and firefighting equipment.

XVIII. MEDICOLEGAL PROBLEMS

Ambulance attendants must be thoroughly informed by appropriate local legal authorities of Federal laws, State statutes, and local government ordinances regulating operation of ambulance services and communication systems, and standards for personnel, vehicles, and equipment.

A. OPERATION OF AMBULANCE SERVICES

1. General - Levels of responsibility as applicable to a local government operation, a commercial enterprise, or a voluntary organization; subsidy; liability coverage.

2. Vehicles - Licensure; safety inspections; use of warning devices; traffic regulation compliance and exemptions; sanitation.

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3. Communication - Violations of FCC regulations; coordination with other networks.

B. PERSONNEL STANDARDS

Qualifications for employment; training requirements; certification and licensure; liability insurance; compliance with traffic laws; acts within limits of training and ability; protection under "Good Samaritan" law; abandonment.

C. VEHICLES AND EQUIPMENT

Warning devices; identification symbol; safety specifications; safety devices.

D. ILL OR INJURED CARE SITUATIONS

Mentally disturbed or unruly; accompaniment of females; use of restraining devices; requirements for police escort; management of alcoholics; reporting of animal bites and disposition of animal carcass; management of attempted suicide, including search, protection of records and evidence; dying declaration; disposition of dead, including assurance of death, authorization for movement, notification of authorities; reporting of crashes involving felonies.

XIX. RECORDS AND REPORTS

Adequate reporting and record keeping are essential duties of ambulance personnel in transferring responsibility for the ill or injured's care to the personnel in medical facilities, in complying with the requirements of law enforcement and health departments, and in fulfilling administrative needs of the ambulance operator.

A. PURPOSES SERVED

Further continuity of care; basis for correction of infractions; source of information for determining quality and adequacy of ambulance services; provides data for analysis of causes, types, and degrees of injuries and illnesses requiring emergency care; provides legal evidence.

B. PROCEDURE

Must not take priority over victim care. Interrogate victim, relatives or bystanders; note pertinent statements of those not available later for full interrogation; collect suicide notes or related papers for legal authorities; note voluntary dying statement; search for emergency medical

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identification devices; safeguard weapons which may be or may have been involved in suicide or homicide.

C. INFORMATION DESIRED

1. Medical Facilities - Identification of ill or injured, type of crash or nature of illness; location of person when first seen; rescue measures preceding emergency care; care given at site and during transport; crashes and mishaps during transport; disposition of valuables.

2. Law - Information gained in absence of, or ancillary to needs of, officials: circumstances in suicide, homicide, or rape; animal bites; dying statements; statements that may serve as testimony.

3. Health - Requirements of coroner or medical examiner in case of death at scene or during transport; animal bites; radiation, chemical, or gas hazards.

4. Ambulance Operator - Administrative records required by ambulance owner, including time intervals of crash, dispatch, arrival at scene, departure, and delivery to emergency department.

SECTION THREE - IN-HOSPITAL TRAINING PROGRAM

In-hospital training consists of observation, demonstration, and participation to the extent permitted by the professional staff. Instruction is designated (1) to demonstrate the importance and benefits of optimal emergency care, efficient transport, and adequate reporting; (2) to emphasize the penalties of inadequate care or improper procedures; (3) to familiarize the student with the equipment used, staffing, operating policies, and procedures of the department; (4) to have ambulance personnel observe procedures in and develop skills in resuscitation, handling the unconscious, management of the mentally disturbed and unruly, and techniques of delivery and care of both the infant and the mother; (5) to keep ambulance personnel abreast of new developments in equipment and emergency care; and (6) to have ambulance personnel engage in disaster drills.

Two consecutive hours of training are required at any one period in order to receive credit toward completion of a course in the assigned department.

Responsibility for conduct of this program should be assigned to the staff of the emergency department. Training areas include the emergency department, operating and recovery rooms, the intensive care unit, the obstetrical department, and the psychiatric department.

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APPENDIX I

A MODEL ORDINANCE OR STATUTE REGULATING AMBULANCE SERVICE

1. INTRODUCTION

a. Development of this model ordinance or statute began in 1956 when representatives of the medical profession concluded that both the medical profession and those responsible for traffic safety had paid too little attention to preventing trauma in traffic accidents. This resulted in a Joint Action Program sponsored by three organizations, the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council.

b. Late in 1959, the policy committee of this group asked the Traffic Conference to develop a model ordinance or statute relating to the transportation of the injured. A special Conference Committee was activated representing the several interests involved, including a legal consultant, to undertake the task.

c. The following model ordinance or statute was developed by the program after extensive correspondence with many interested groups. Numerous city ordinances and the National Institute of Municipal Law Officers' model were used as a guide and representatives of ambulance associations throughout the country offered several excellent suggestions which were incorporated. The model was approved by the Traffic Conference on October 27, 1963. At this meeting, it was concluded that such a regulation would be more effective if it became a State law. Therefore, the draft is designed so that with appropriate changes, it may be used also as a model statute. Where feasible, it was concluded, a State statute is preferable to a local ordinance.

d. On page 2, Section 2, Licensing Requirements, it is presumed that where the model is used as an ordinance, the city or county has legal authority under State law to adopt special license requirements for ambulances. The legal assumption, which should be verified in each case, is that the city or county has authority under its police power to prescribe regulations necessary to supplement State laws where the public safety and welfare so require. Therefore, it should be expressly understood that, in any State, the model, when adopted as an ordinance, must be modified to eliminate any conflict with existing State laws.

e. The intent of the model is to serve as a guide to improve a necessary public service and provide uniformity throughout the United States. It should be carefully examined for conflict with existing legislation and changed as necessary to adapt it for local use.

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2. MODEL ORDINANCE

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Section 1	Definition
Section 2	License Required
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A MODEL ORDINANCE REGULATING AMBULANCE SERVICE

An ordinance to Regulate the Licensing, Inspection, and Operation of Ambulances, to Provide Standards for the Licensing of Ambulances and of Ambulance Drivers, Attendants, and Attendant-Drivers, to Provide for Renewal and Revocation of Licenses, to Require Written Reports, to Provide for Traffic Regulations of Ambulances, and to Establish Penalties for Violation of its Provisions.

The (_____) of (_____)
enacting body **city or county**

ordain as follows:

Section 1. DEFINITIONS

Unless otherwise specified, the term:

(a) "Ambulance" means any privately or publicly owned motor vehicle that is specially designed or constructed and equipped and is intended to be used for and is maintained or operated for the transportation of patients, including dual purpose police patrol cars and funeral coaches or hearses which otherwise comply with the provisions of this ordinance, except any such motor vehicle owned by, or operated under the direct control of, the United States.

(b) "Attendant" means a trained and/or qualified individual responsible for the operation of an ambulance and the care of the patients whether or not the attendant also serves as driver.

(c) "Attendant-Driver" means a person who is qualified as an attendant and a driver.

(d) "Driver" means an individual who drives an ambulance.

(e) "Dual purpose police patrol car" means a vehicle, operated by a police department, which is equipped as an ambulance, even though it is also used for patrol or other police purposes.

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(f) "Health Officer" means the (_____) health officer
city or county
or other designated official..

(g) "License Officer" means the (_____)
city or county
(_____).
designated officer

(h) "Patient" means an individual who is sick, injured, wounded, or otherwise incapacitated or helpless.

(i) "Person" means any individual, form, partnership, association, corporation, company, group of individuals acting together for a common purpose or organization of any kind, including any governmental agency other than the United States.

Section 2. LICENSE REQUIRED

(a) No person, either as owner, agent, or otherwise shall furnish, operate, conduct, maintain, advertise, or otherwise be engaged in or profess to be engaged in the business or service of the transportation of patients upon the streets, alleys, or any public way or place of (_____)
city or county
unless he holds a currently valid license for an ambulance, issued pursuant to this Ordinance. An ambulance operated by an agency of the United States shall not be required to be licensed hereunder.

(b) No ambulance shall be operated for ambulance purposes, and no individual shall drive, attend, or permit it to be operated for such purposes on the streets, alleys, or any public way or place of (_____) unless
city or county
it shall be under the immediate supervision and direction of a person who is holding a currently valid license as an attendant-driver or attendant.

(c) Provided however, that no such licenses shall be required for an ambulance, or for the driver, attendant, or attendant-driver of an ambulance, which (i) is rendering assistance to licensed ambulances in the case of a major catastrope or emergency with which the licensed ambulances of (_____) are insufficient or unable to cope; or (ii) is operated
city or county
from a location or headquarters outside of (_____) in order to
city or county
transport patients who are picked up beyond the limits of (_____)
city or county

for transportation to locations within (_____) unless the driver,
city or county

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attendant, and attendant-driver and the person subject to the provisions of Section 2. (a) of this Ordinance in respect of such ambulance, hold currently valid licenses issued pursuant to this Ordinance.

Section 3. APPLICATION FOR AMBULANCE LICENSE

Applications for ambulance licenses hereunder shall be made upon such forms as may be prepared or prescribed by the License Officer and shall contain:

(a) The name and address of the applicant and of the owner of the ambulance;

(b) The trade or other fictitious name, if any, under which the applicant does business and proposes to do business;

(c) The training and experience of the applicant in the transportation and care of patients;

(d) A description of each ambulance, including the make, model, year of manufacture, motor and chasis number; current State license number; the length of time the ambulance has been in use; and the color scheme, insignia, name, monogram, or other distinguishing characteristics to be used to designate applicant's ambulance;

(e) The location and descriptions of the place or places from which it is intended to operate;

(f) Such other information as the License Officer shall deem reasonably necessary to a fair determination of compliance with this Ordinance;

(g) An accompanying license fee of $_____.

Section 4. STANDARDS FOR AMBULANCE LICENSE

(a) Each ambulance shall, at all times when in use as such,

(i) be suitable for the transportation of patients from the standpoint of health, sanitation and safety, and be maintained in suitable premises;

(ii) contain equipment conforming with the standards, requirements, and regulations provided for herein, which equipment shall be in proper and good condition for such use;

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(iii) currently comply with all applicable laws and local ordinances relating to health, sanitation, and safety;

(iv) be equipped with such lights, sirens, and special markings to designate it as an ambulance as may be prescribed in reasonable regulations promulgated by the License Officer; and

(v) be equipped with approved safety belts for the driver and for a passenger in the front seat if such seat is provided.

(b) Any change of ownership of a licensed ambulance shall terminate the license and shall require a new application and a new license and conformance with all the requirements of this Ordinance as upon original licensing.

(c) Application for transfer of any ambulance license to another or substitute vehicle shall require conformance with all the requirements of this Ordinance as upon original licensing. No ambulance license may be sold, assigned, mortgaged, or otherwise transferred without the approval of the License Officer and a finding of conformance with all the requirements of this Ordinance as upon original licensing.

(d) Each licensed ambulance, its equipment, and the premises designated in the application and all records relating to its maintenance and operation as such, shall be open to inspection by the Health Officer or his designated representatives during usual hours of operation.

(e) No official entry made upon a license may be defaced, removed, or obliterated.

Section 5. STANDARDS FOR AMBULANCE LICENSE - LIABILITY INSURANCE

(a) No ambulance license shall be issued under this Ordinance, nor shall such license be valid after issuance, nor shall any ambulance be operated in (_____) unless there is at all times in force and effect
city or county
insurance coverage, issued by an insurance company licensed to do business in the State of (_____), for each and every ambulance owned and/or operated by or for the applicant or licensee, providing for the payment of damages:

(i) for injury to or death of individuals in accidents resulting from any cause for which the owner of said vehicle would be liable on account of liability imposed on him by law, regardless of whether the ambulance was being driven by the owner or his agent; and

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(ii) for the loss of or damage to the property of another, including personal property, under like circumstances, in such sums and under such terms as may be required in regulations promulgated by the License Officer.

(b) Said insurance policies shall be submitted to the License Officer for approval prior to the issuance of each ambulance license. Satisfactory evidence that such insurance is at all times in force and effect shall be furnished to the License Officer, in such form as he may specify, by all licensees required to provide such insurance under the provisions of this Ordinance.

(c) Every insurance policy required hereunder shall contain a provision for a continuing liability thereunder to the full amount thereof notwithstanding any recovery thereon, that the liability of the insurer shall not be affected by the insolvency or the bankruptcy of the assured, and that until the policy is revoked the insurance company will not be relieved from liability on account of nonpayment of premium, failure to renew license at the end of the year, or any act or omission of the named assured. Such policy of insurance shall be further conditioned for the payment of any judgments up to the limits of said policy, recovered against any person other than the owner, his agent or employee, who may operate the same with the consent or acquiescence of the owner.

(d) Every insurance policy required hereunder shall extend for the period to be covered by the license applied for and the insurer shall be obligated to give not less than _____ days written notice to the License Officer and to the assured before any cancellation or termination thereof earlier than its expiration date and the cancellation or other termination of any such policy shall automatically revoke and terminate the licenses issued for the ambulances covered by such policy, unless another insurance policy complying with the provisions of this section shall be provided and be in effect at the time of such cancellation or termination.

Section 6. DUTIES OF LICENSE OFFICER

(a) The License Officer shall, within _____ days after receipt of an application for an ambulance license as provided for herein cause such investigation as he deems necessary to be made of the applicant and of his proposed operations.

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(b) The License Officer shall issue a license hereunder for a specified ambulance, to be valid for a period of _____ years unless earlier suspended, revoked, or terminated, when he finds:

(i) that the public convenience and necessity require the proposed ambulance service;

(ii) that each such ambulance, its required equipment, and the premises designated in the application have been certified by the Health Officer as provided for herein;

(iii) that the applicant is a responsible and proper person to conduct or work in the proposed business;

(iv) that only duly licensed drivers, attendants, and attendant-drivers are employed in such capacities;

(v) that all the requirements of this Ordinance and all other applicable laws and ordinances have been met.

Section 7. DUTIES OF HEALTH OFFICER

(a) Prior to the issuance of any ambulance license hereunder, the Health Officer shall cause to be inspected the vehicles, equipment, premises and personnel designated in each application hereunder, and shall certify his approval in a written report to the License Officer when he finds compliance with the standards prescribed in Section 4.(a) and in Section 8. of this Ordinance, and with the regulations promulgated under such sections. Provided, however, that under the terms of this Ordinance the Health Officer shall have no responsibility, and shall exercise no authority, in connection with laws and ordinances of general applicability which deal with motor vehicle inspection.

(b) Subsequent to issuance of an ambulance license hereunder, the Health Officer shall cause to be inspected each such licensed vehicle, its equipment, premises and personnel, whenever he deems such inspection to be necessary but in any event no less frequently than twice each year, and shall promptly report his findings in a written report to the License Officer. The periodic inspection required hereunder shall be in addition to any other safety or motor vehicle inspection required to be made for ambulances or other motor vehicles, or other inspections required to be made, under general law or ordinances, and shall not excuse compliance with any requirement of law or ordinance to display any official certificate of motor vehicle

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inspection and approval nor excuse compliance with the requirements of any other applicable general law or ordinance.

(c) A copy of each initial, semiannual, or other ambulance, equipment, premises, and personnel inspection report submitted by the Health Officer to the License Officer under the provisions of this section shall be promptly transmitted to the applicant or licensee to whom it refers.

Section 8. STANDARDS FOR AMBULANCE EQUIPMENT

(a) Required equipment in each ambulance shall include, at all times when the ambulance is in use as such, equipment adequate in the judgment of the Health Officer for dressing wounds, splinting fractures, controlling hemorrhage, and providing oxygen.

(b) The Health Officer is authorized and directed to promulgate regulations, after public notice and opportunity for public hearing, to implement the standards provided herein as to required equipment in ambulances. In determining the adequacy of equipment, the Health Officer shall take into consideration the current list of minimal equipment for ambulances, adopted by the American College of Surgeons or its duly authorized Committee on Trauma. Each licensee of an ambulance shall comply with such reasonable regulations hereunder as may be promulgated by the Health Officer and shall maintain in each such ambulance, at all times when it is in use as such, all such equipment as may be prescribed by the Health Officer hereunder.

Section 9. APPLICATIONS FOR DRIVERS, ATTENDANTS, AND ATTENDANT-DRIVERS LICENSE

Applications for drivers, attendants, and attendant-drivers licenses hereunder shall be made upon such forms as may be prepared or prescribed by the License Officer and shall contain:

(a) The applicant's full name, current residence, places of residence for _____years previous to moving to his present address, and length of time he has resided in (_____)
city or county

(b) The applicant's age, maritial status, height, color of eyes and hair.

(c) Whether he has ever been convicted of a felony or misdemeanor, and if so, when and where and for what cause.

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(d) The applicant's training and experience in the transportation and care of patients, and whether he has previously been licensed as a driver, chauffeur, attendant, or attendant-driver, and if so, when and where, and whether his license has ever been revoked or suspended in any jurisdiction and for what cause.

(e) Affidavits of good character from two reputable citizens of the United States and residents of (_____) who have personally known
city or county
such applicant and observed his conduct during _____ years next preceding the date of his application.

(f) Two recent photographs of the applicant, of a size designated by the License Officer, one of which shall be attached by the License Officer to the license.

(g) Such other information as the License Officer shall deem reasonably necessary to a fair determination of compliance with this Ordinance.

(h) An accompanying license fee of $_____.

Section 10. STANDARDS FOR DRIVERS, ATTENDANTS, AND ATTENDANT-DRIVERS LICENSE

(a) The License Officer shall, within a reasonable time after receipt of an application as provided for herein, cause such investigation as he deems necessary to be made of the applicant for a drivers, attendants, or attendant-drivers license.

(b) The License Officer shall issue a license to a driver, attendant, or attendant-driver hereunder, valid for a period of _____ years, unless earlier suspended, revoked, or terminated when he finds that the applicant:

(i) is not addicted to the use of intoxicating liquors or narcotics and is morally fit for the position;

(ii) is able to speak, read, and write the English language;

(iii) has been found by a duly licensed physician, upon examination attested to on a form provided by the Health Officer, to be of sound physique, possessing eyesight corrected to at least 20/40 in the better eye, and free of physical defects or diseases which might impair the ability to drive or attend an ambulance; and

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(iv) for each applicant for attendant or attendant-driver license, that such applicant has a currently valid certificate evidencing successful completion of a course of training equivalent to the advanced course in first aid given by the American Red Cross or the United States Bureau of Mines.

Provided however, that no one shall be licensed as a driver or attendant-driver unless he holds a currently valid chauffeur's permit from the State of (_____).

(c) A license as driver, attendant, or attendant-driver issued hereunder shall not be assignable or transferable.

(d) No official entry made upon a license may be defaced, removed, or obliterated.

Section 11. RENEWAL OF LICENSE

Renewal of any license hereunder, upon expiry for any reason or after revocation, shall require conformance with all the requirements of this Ordinance as upon original licensing.

Section 12. REVOCATION OF LICENSE

(a) The License Officer may, and is hereby authorized to, suspend or revoke a license issued hereunder for failure of a licensee to comply and to maintain compliance with, or for his violation of, any applicable provisions, standards, or requirements of this Ordinance, or of regulations promulgated hereunder, or of any other applicable laws or ordinances or regulations promulgated thereunder, but only after warning and such reasonable time for compliance as may be set by the License Officer. Within ___ days after conclusion of such hearing, he shall issue a written decision (which shall include written findings) as to the suspension of said license. Such written decision shall be promptly transmitted to the licensee to whom it refers.

(b) The initial, semiannual, or other ambulance, equipment, and premise inspection reports of the Health Officer herein provided for shall be prima facie evidence of compliance or noncompliance with, or violation of, the provisions, standards, and requirements provided herein, and of the regulations promulgated hereunder, for the licensing of ambulances.

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(c) Upon suspension, revocation, or termination of an ambulance license hereunder, such ambulance shall cease operations as such and no person shall permit such ambulance to continue operations as such. Upon suspension, revocation, or termination of a drivers, attendants, or attendant-drivers license hereunder, such driver, attendant, or attendant-driver shall cease to drive or attend an ambulance and no person shall employ or permit such individual to drive or attend an ambulance.

Section 13. REPORTS

(a) Within _____ hours after transporting any patient within (_____), or from one place within (_____) to another
city or county city or county
place within or beyond its limits, the licensee of an ambulance hereunder shall file a written report with such (_____) of (_____)
designated official city or county
upon such form as they may provide or prescribe, giving all information therein required and any other relevant information which such (_____) may require.
designated official

(b) The provisions of subsection (a) of this section shall apply with equal force in case such patient shall die before being so transported in such ambulance or dies while being transported therein, or at any time prior to the acceptance of the patient into the responsibility of the hospital or medical or other authority if the patient is still under the care or responsibility of the ambulance.

Section 14. OBEDIENCE TO TRAFFIC LAWS, ORDINANCES, AND REGULATIONS

(a) The driver of an ambulance, when responding to an emergency call or while transporting a patient, may exercise the privileges set forth in this section, but subject to the conditions herein stated, and only when such driver has reasonable grounds to believe that an emergency in fact exists requiring the exercise of such privileges.

(b) Subject to the provisions of subsection (a) hereof, the driver of an ambulance may:

(i) park or stand, irrespective of the otherwise applicable provisions of law, ordinance, or regulation;

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(ii) proceed past a red or stop signal or stop sign, but only after slowing down as may be necessary for safe operation;

(iii) exceed the maximum speed limits permitted by law, ordinance, or regulation so long as he does not endanger life or property; and

(iv) disregard laws, ordinances, or regulations governing direction or movement or turning in specified directions.

(c) The exemptions herein granted shall apply only when such ambulance is making use of audible and visual signals meeting the requirements of law, ordinance, or regulation.

(d) The foregoing provisions shall not relieve the driver of an ambulance from the duty to drive with due regard for the safety of all persons, nor shall such provisions protect the driver from the consequences of his reckless disregard for the safety of others.

Section 15. PENALTIES

(a) Any person violating, or failing to comply with, the provisions of Section 2. (a) of this Ordinance and the applicable provisions hereof relating to the licensing of ambulances, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined an amount not exceeding $_____, or imprisioned for a period not exceeding _____days, or be both so fined and imprisoned, for each offense.

(b) Any person violating, or failing to comply with, any other provision of this Ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined an amount not exceeding $_____, or be imprisoned for a period not exceeding _____ days, or be both so fined and imprisoned for each offense.

(c) Each day that any violation of, or failure to comply with, this Ordinance is committed or permitted to continue shall constitute a separate and distinct offense under this section and shall be punishable as such hereunder; provided however, that the Court may, in appropriate cases, stay the cumulation of penalties.

Section 16. SEPARABILITY

If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct,

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and independent provision and such holding shall not affect the validity of the remaining portions hereof.

Section 17. EFFECTIVE DATE

This Ordinance shall become effective on (_____).
date

Section 18. ORDINANCES REPEALED

All ordinances and parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed as follows:

_____

_____

_____

Adopted this _____ day of _____, 19____.

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APPENDIX J

DESCRIPTION OF SELECTED EMERGENCY MEDICAL SERVICES SYSTEMS

1. INTRODUCTION

A 1968 National Highway Safety Bureau contract effort was directed at the study of 18 types of EMS systems. These were selected on the basis of successful operation and, where possible, in areas where former unsatisfactory service required a shift to the existing system. Publication of this study facilitates comparison with conditions in an area of need to facilitate selection of the best suited system without costly trial and error.

2. SYSTEMS STUDIED

a. Systems studied include:

(1) A police department of county seat handling calls in a county of a midwestern industrial area; population served, 56,000; area covered, 408 square miles.

(2) Police department operation in an industrial city in the southeastern U. S.; population served, 384,000; area covered, 63 square miles.

(3) Helicopter ambulance service provided by the fire department in a large city located on the Great Lakes; population served, over 3 million; area covered, 225 square miles.

(4) Fire department operation in a rural county in the northwestern U. S.; population served, 40,800; area covered, 714 square miles.

(5) Fire department operation by a medium-sized northwestern city; population served, 225,000; area covered, 110 square miles.

(6) Fire department operation by an eastern city; population served, 1,000,000; area covered, 75 square miles.

(7) Volunteer rescue squad associated with volunteer fire department in midwestern rural area township 25 miles from a city of substantial size; population served, 5,600; area covered, 50 square miles.

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(8) Volunteer resuce squad associated with volunteer fire department in rural southern community; population served, 25,000; area covered, 93 square miles.

(9) Incorporated volunteer rescue squads of 3 communities (rural, resort, and industrial) in a North Atlantic State; population served, 30,000; area covered, 15 square miles.

(10) Community hospital ambulance service in urban/rural area in the northwestern U. S.; population served, 50,000; area covered, 40 square miles.

(11) Public and private hospital ambulance services in a midwestern urban county; private companies bid to handle the overflow of the public hospital calls; population served, 943,000; area covered, 562 square miles.

(12) Mortician contracting with a city to complete calls answered by the rescue squad of the city fire department; population served, 77,500; area covered, 9 square miles.

(13) Private ambulance service in a heavily populated southern county; population served, 1,200,000; area covered, 2,042 square miles.

(14) Two private ambulance companies under contract to a large northwestern city; population served, 580,000; area covered, 82 square miles.

(15) Private ambulance company contracting with 2 cities in an industrialized mid-Atlantic area; population served, 120,000; area covered, 35 square miles.

(16) Private ambulance company contracting with midwestern county having both urban and rural population densities; several mortician operations in heavily populated areas; population served, 211,000, area covered, 716 square miles.

(17) Multiple private ambulance companies dispatched by a government agency in a western county; population served, 1,000,000; area covered, 1,300 square miles.

(18) Volunteer rescue squad dispatched by a fire department in an urbanized Central Atlantic county adjoining a large urban center; population served, 80,000; area covered, 16 square miles.

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b. The study report may be obtained for the price of $3.00 per volume from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151. Requests should cite Document Nos. PB 179-651 (Vol. 1) and PB 179-652 (Vol. 2).

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APPENDIX K

SAMPLE
INVITATION FOR APPLICANTS FOR
THE POSITION OF MEDICAL STEWARD

THE CITY (COUNTY) OF _____

INVITES APPLICANTS FOR

MEDICAL STEWARD

SALARY RANGE

Effective _____,$_____ (entrance) per month for a 5-day week of 40 hours.

Part-time or intermittent service _____ per day; _____ per day additional up to _____ maximum per month for assignments as Booking Steward.

RESIDENCE

Current city residence is required for admission to the examination; however, once appointed to permanent positions, city employees may establish residence within ___ airline miles of City Hall.

AGE

Applicants must be __ years of age or over on the last date for filing applications. Compulsory retirement age is 65 years.

LAST DATE FOR FILING APPLICATIONS: _____(Date)

Mailed applications must be postmarked not later than the last day for filing applications.

BEGINNING DATE OF EXAMINATION: _____(Date)

The date of the written examination is subject to change. Qualified applicants will be notified by mail of the exact date, time, and place to report for examination.

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CHARACTERISTICS OF THE CLASS: MEDICAL STEWARD

Under direction, supervises and accompanies an ambulance driver in responding to emergency calls; renders first-aid and other needed ministrations to ill or injured persons; and performs related duties as required.

Requires responsibility for: following established methods and procedures in rendering first aid in emergency cases; achieving economies and/or preventing moderate losses through proper handling of equipment, instruments, and facilities; making responsible contacts with the general public or specific persons for the purpose of obtaining information on specific matters at scenes of accidents, injuries, or other emergencies; gathering and preparing pertinent information. Nature of duties involves sustained physical effort with heavy lifting and manual effort and dexterity and with frequent exposure to traffic accidents, health hazards, and other disagreeable elements.

MINIMUM REQUIREMENTS

Possession of a valid (State) driver's license (to be presented at the time of filing application or shortly thereafter); AND EITHER:

1. Possession of a valid permanent (State) Registered Nurse Certificate; OR

2. One year of full-time paid experience within the last six years as a Medical Steward at a major medical facility which gives formal on-the-job training; OR

3. Three years of full-time paid experience within the last eight years in the administration of first aid to sick or injured persons and/or the giving of treatment as prescribed by a doctor, such experience to have been in honorable service in the armed forces medical service with a rating of at least Hospital Man Third Class or the equivalent, or in civilian work deemed to represent similar or comparable training and experience; OR

4. Possession of a mine disaster certificate and five years of first-class paid experience within the last ten years in mine disaster work.

NOTES

A. Because of the specialized nature of the work and the responsibility for human life involved all candidates must have work experience comparable to a Medical Steward. Employment records which do not indicate responsible experience in this field will not be considered as qualifying.

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B. Applicants who have been members of the armed services during the period of time specified above will be allowed an extension of time equal to said service time to meet the requirements.

C. Experience claimed in self-employment will be considered only if supported by evidence of earnings and duties comparable to those of the position here announced.

D. A history of employment that shows frequent and unexplained changes of employers may be a basis for rejection of application.

SCOPE OF EXAMINATION

Subjects	Points
1. Written test on subjects related to duties and abilities as described in the Characteristics of the Class and such other knowledge as may be necessary for the proper performance of the work	700
2. Strength Test: A 125-lb. sack of sand must be lifted from the floor, placed on the shoulder, and returned to the floor without dropping. (Two trials allowed.) Those who fail to pass the strength test will be rejected. No reexamination in this test will be allowed	Qualifying
3. Practical test to determine ability to render first aid, including standard bandaging procedures	Qualifying
4. Qualifications Appraisal: Appraisal of the personal history and personal traits of applicants by oral interview in order to judge their competence and fitness to perform the duties of this position	300
TOTAL POINTS	1,000

A qualifying rating must be attained in each part of this examination.

Issued: _____

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APPENDIX L

SAMPLE STATE ACT TO REGULATE AMBULANCE SERVICES

1. INTRODUCTION

This appendix is only one example of a STATE ACT to regulate ambulance services. It should be carefully examined by necessary legal counsel to determine its legal sufficiency and appropriateness.

2. SAMPLE ACT

Article 1. Definitions and General Provisions

Unless the context requires otherwise, the definitions in this article govern the construction of this chapter.

"Ambulance" means a vehicle which is designed or intended to be used in providing transportation of wounded, injured, sick, invalid, or incapacitated human beings to or from a place where medical or hospital care is furnished.

"Ambulance service" means:

(a) Transportation for a wounded, injured, sick, invalid, or incapacitated human being, or expectant mother, to or from a place where medical or hospital care is furnished which is regularly provided, or offered to be provided, to the public by any persons or public or private agency.

(b) Treatment which is provided, or offered to be provided, by any person employed to provide or assist in providing the transportation referred to in subdivision (a), whether such treatment is provided, or offered to be provided, preliminary to such transportation, or after such transportation is completed.

"License" means a contract between a licensing agency and an operator to provide ambulance service within the boundaries of the licensing agency's jurisdiction.

"Licensing agency" means an emergency medical care committee. (Since such a committee is set up as the principal enforcement body under the Act, its composition, tenure, power, authority, and limitations should be set forth clearly in this article.)

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"Operator" means a person who has a license from a licensing agency to provide ambulance service.

The Legislature hereby finds and declares that the operation of ambulance services within the State of _____ constitutes a matter of Statewide and public interest and concern and that, in order to ensure that adequate ambulance service be provided within this State for the protection of the public health, safety, and welfare, it is imperative that minimum standards for ambulance service be established and enforced by the State, that no ambulance service be operated which does not at least comply with such minimum standards and which is not licensed by the licensing agency, and that adequate compensation will be received by ambulance operators affording this service to the public.

Article 2. Regulations

The State Department of Public Health shall adopt reasonable regulations which it determines to be necessary for the public health and safety relating to the operation, personnel, and equipment of ambulance services.

(a) The enforcement of the initial regulations and those regulations adopted hereafter by the State Department of Public Health, shall be done by the licensing agency.

(b) Licensing agencies may adopt further and additional regulations not in contravention of those adopted by the State Department of Public Health which the licensing agency deems necessary or advisable for their local jurisdiction.

(c) The licensing agency shall also enforce those local regulations that they shall adopt within the area of their jurisdiction.

The regulations may prescribe different standards for emergency ambulance service than are prescribed for nonemergency ambulance service.

(a) No provision of this chapter, nor any regulation adopted pursuant to this chapter shall be construed as limiting or affecting any other provision of law delegating to the Department of the Highway Patrol the authority to regulate or inspect the red lights, sirens, brakes, and mechanical adequacy and safety of the vehicle.

(b) Nothing herein contained shall be construed as preventing cities from enacting additional regulations, not in contravention of the provisions of this chapter.

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Article 3. Licenses

Notwithstanding any other provision of law, no ambulance service shall be operated in this State, other than ambulance service required to be provided by a licensing agency, unless the ambulance service is operated by a private person that has a license from a licensing agency to provide such service. A license for ambulance service shall include the following:

(a) A schedule of fees to be charged for ambulance service which comply with regulations adopted pursuant to this chapter.

(b) A provision that no ambulance service shall be provided unless both the driver of the ambulance or an attendant on duty therein possess an advanced American Red Cross first aid certificate, an advanced first aid certificate issued by the United States Bureau of Mines, or any other first aid certificate specified by the State Department of Public Health, or two or more such certificates.

(c) The area in which the operator shall provide service.

(d) The license shall comply with all regulations established by the State department pursuant to this chapter, and those regulations adopted by the licensing agency.

If no license exists for any county within the State, the licensing agency may contract with an operator on such terms which it deems necessary to afford such service in that county.

All licensing agencies shall establish ambulance control zones, if necessary within their respective jurisdictions for emergency ambulance service in compliance with the regulations adopted pursuant to this chapter, and shall receive applications for the providing of ambulance service.

The licensing agency shall issue a license to any ambulance service which makes application to the licensing agency within 90 days from the effective date of this chapter and has been providing ambulance service for six months prior to the effective date of this chapter.

Notwithstanding any other provision of this chapter, after the issuance of licenses, additional licenses shall be issued by the licensing agency only upon proof by the applicant that there is an existing public necessity for such additional ambulance service.

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Article 4. Violations

Violation of any of the provisions of this chapter or of the regulations adopted pursuant thereto is a misdemeanor. A violation is also grounds for suspension or revocation of any authorized emergency vehicle permit.

Article 5. Operation

This chapter, except for Article 2 and the regulations adopted pursuant thereto, shall become operative on _____ Thereafter, all persons shall have one year to comply with the chapter and all regulations adopted pursuant thereto.

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APPENDIX M

SAMPLE CONTRACTUAL AGREEMENT FOR AMBULANCE SERVICE

1. INTRODUCTION

This appendix is only one example of a contractual agreement for providing ambulance service. It should be carefully examined by necessary legal counsel to determine its legal sufficiency and appropriateness.

2. SAMPLE AGREEMENT

The following is an Agreement between the County of _____, State of _____(hereinafter referred to as "County") and _____ (hereinafter referred to as "Contractor"):

WHEREAS, County desires, in accordance with the exercise of its general police powers, to assure emergency ambulance service for all persons injured or otherwise incapacitated in incidents within the County of _____; and

WHEREAS, Contractor is qualified and equipped to render such service,

NOW THEREFORE, THE PARTIES AGREE AS FOLLOWS:

I

DEFINITION OF TERMS

The following definitions shall apply throughout this Agreement:

A. Ambulance trip - Any trip made as a result of an offical call or an emergency call, which trip is designated Code 11 by Communications.

B. Code 11 - An authorization number issued by Communications indicating that the call was dispatched or cleared through Communications.

C. Communications - The Communications Center of the County of _____.

D. Dry run - Any ambulance trip made as a result of an official call or an emergency call whereupon after responding to said call it is found that no ambulance is needed.

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E. Emergency - Any injury, illness, or death arising out of any accident or sudden illness or declared to be an emergency by a doctor of medicine.

F. Emergency call - A call requesting ambulance services for an emergency.

G. Indigent - All persons who fall within the definition of medically indigent found in Section _____ of the _____ County Ordinance Code.

H. Lack of good moral character - The following are indicative of lack of good moral character: addiction to the use of narcotics or the excessive use of intoxicating liquors, false statements of material facts or practice of fraud or deception in connection with any test, application, or examination relating to the duties and qualifications required under this Agreement.

I. Peace officer - Any person designated as a peace officer by the laws of the State of _____.

J. Physician - Any person duly licensed to practice medicine in the State of _____.

K. Official call - A call for ambulance services placed by any governmental agency, any peace officer, or any physician.

L. On-duty personnel - The driver and attendant who are stationed at the same location as the ambulance equipment and capable of responding immediately to each official call which is directed to them.

M. Suspension - A cessation of the rights and obligations under this Agreement for a certain period of time after which period the Agreement automatically is in full force and effect.

N. Zone of responsibility - Areas of the County designated by Communications in which Contractor has the primary responsibility to respond to emergency calls.

II

DUTIES OF CONTRACTOR

A. Response to Calls

Upon receipt of an official or emergency call, Contractor shall contact Communications to obtain a Code 11. If a Code 11 is obtained from

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Communications, Contractor shall respond to the call and transport each patient to the nearest hospital where there is a doctor on 24-hour duty unless otherwise directed by County or its authorized agents or a peace officer, or the patient or his physician. Provided that no emergency case shall be transported to a hospital outside the County of _____, except that the Contractor in the _____ zone of responsibility may take patients to the _____Hospital or _____General Hospital in _____ County, and the Contractor in the _____ zone of responsibility may take patients to the _____Hospital in _____County.

B. Availability of Equipment and Personnel

1. Contractor shall keep ambulance equipment and on-duty personnel available on a 24-hour basis.

2. Contractor shall keep the availability, location, and status of all ambulance equipment current with Communications. Vehicles which do not have the required on-duty personnel in immediate attendance shall be considered "out of service" and shall be reported as such. In the event all available equipment is in use, Contractor shall immediately advise Communications that it cannot respond.

C. Maintenance of Equipment

1. Contractor shall obtain and keep in force any permits required by the State of _____ to operate each piece of ambulance equipment.

2. Contractor shall furnish ambulance equipment meeting the laws and regulations of the State of _____and Contractor shall furnish such other equipment and items in addition thereto as may be prescribed by County of _____.

3. Contractor shall maintain all equipment in a safe and sanitary condition.

D. Personnel

1. Contractor shall staff each ambulance with a driver of at least 21 years of age and an attendant of at least 18 years of age, both of whom shall wear clean uniforms, who shall be neat and clean, and who shall be physically capable of performing the duties required of them. Both the driver and the attendant shall possess an advanced Red Cross certificate. The driver and attendant shall wear a name badge and carry proper identification containing a picture, description, and certification of training.

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2. Each ambulance driver shall have passed an appropriate driver's test as prescribed by the laws of the State of _____ and shall have in his possession a permit attesting to this fact. He shall also possess an advanced Red Cross first aid certificate. He shall have passed an appropriate street and location test as prescribed by Communications and a first aid test.

3. Each ambulance attendant shall possess a standard Red Cross first aid certificate and shall have passed a first aid test. Provided, however, that Contractor may use regularly employed trainees as attendants. Such trainees shall obtain a standard Red Cross first aid certificate and pass the first aid test given by County within a reasonable time after their employment by Contractor.

4. Contractor shall furnish County monthly with a list of ambulance personnel, including trainees, and such information regarding their training and qualifications as County deems necessary.

E. Insurance

Contractor agrees to carry at its own cost and expense the following insurance:

1. Public liability insurance in the sum of not less than $250,000.00 for injuries to one person and $500,000.00 for injuries to more than one person in one accident.

2. Property damage insurance in a sum of not less than $25,000.00.

3. To carry the County of _____ as an additional insured on such insurance coverage and to file a certificate of such coverage with the General Services Agency of County. This contract shall be of no force and effect until such time as said certificate is filed and failure to keep such insurance coverage in full force and effect shall automatically render this contract null and void.

F. Collection and Billing

1. Contractor shall bill at least three (3) times within a 60-day period after the ambulance service has been rendered and shall provide County with evidence of such billing if requested to do so.

2. If a bill is not paid within the above mentioned 60-day period, Contractor may submit a claim to County for the unpaid portion of the bill at the rates set forth in Exhibit "A". The submission of the claim

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shall constitute an assignment to County of all Contractor's right, title, and interest in and to any such claim.

3. Contractor shall submit claim to County within six (6) months from the date the ambulance services were rendered.

4. Contractor shall comply with all State and Federal laws, rules, and regulations regarding billing under State and Federal medical care programs.

G. Inspection

1. Representatives of County may inspect Contractor's records for the purpose of determining compliance with the provisions of this Agreement. Contractor shall permit, upon request of County, audits by County.

2. Contractor shall permit inspection by the County Communications Department of the electrical systems of all ambulance equipment utilized hereunder. The Communications Department shall render written reports of such inspection, noting any deficiencies. Contractor shall immediately correct any deficiencies noted in said report.

H. Compliance with Laws Relating to Ambulance Service

Contractor shall comply with all laws, rules, and regulations (Federal, State, and county) relating to ambulance service, including but not limited to maintenance and operation of equipment, and qualifications and training of employees.

III

DUTIES OF COUNTY

A. Payment of Claims

1. County shall pay, within fifteen (15) days after receipt of claims properly arising under this Agreement, at the rate schedule set forth in Exhibit "A," which is attached hereto and made a part hereof by reference.

2. In order for a claim to be considered as properly arising under this Agreement, it is necessary that Contractor shall have complied with all applicable terms of this Agreement.

3. No claims will be paid in the absence of reasonable proof that services therefor in fact have been performed.

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4. No claim for dry runs shall be paid unless the claim contains the following information verified by Contractor: name of official placing call; time of call; point of pickup called for; reason for no pickup; and name and address of person for whom ambulance called, if known.

5. County shall notify Contractor within fifteen (15) calendar days after receipt of a claim when a claim is to be rejected and shall furnish and supply Contractor with all available information concerning the sources of revenue from which Contractor may collect for its services.

6. Ambulance trips which terminate at a local hospital, physician's office, or other treatment facility shall be considered as one complete trip with full basic and mileage rates applied.

7. If within thirty (30) minutes after original time of arrival at said point of termination, a subsequent trip is required to transport to another hospital or to a patient's home not more than fifteen (15) miles distant from the point of termination of first trip, it shall be considered a new and separate trip with one-half the basic and one-half mileage rates to apply. If such subsequent trip is to a point more than fifteen (15) miles distant, full mileage rates shall apply after the first fifteen (15) miles. Waiting time charges shall be as set forth in Exhibit "A".

B. Out-of-County Trips

County shall, so far as possible, distribute routine out-of-County trips between ambulance operators holding County contracts. Trips which call for extraordinary services shall be put up for bid. All other trips shall be paid for at the rates set out in Exhibit "A".

C. Two-Way Radio

County shall furnish and maintain two-way radio equipment in ambulance of Contractor for Contractor's use under this Agreement. Such radio shall remain the property of County and be subject to its control, supervision, and removal. Contractor shall be liable to County for the cost of any repairs and maintenance over and above that caused by ordinary wear and tear. Contractor shall carry insurance covering said equipment against loss or damage on account of fire, theft, or collision.

IV

ZONES OF RESPONSIBILITY

A. The zones of responsibility which are currently in use shall remain as the zones of responsibility throughout this Agreement.

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B. Contractor shall not make any emergency call outside Contractor's zone of responsibility without approval of Communications.

C. Existing zones of responsibility shall not be altered without express consent of County and of the _____ County Ambulance Association. No new ambulance companies will be permitted to operate in said zones of responsibility without a clear showing to County of the public necessity therefor, a showing of the financial responsibility of the new ambulance company, and a showing that the new ambulance company is capable of meeting the terms of this Agreement.

V.

EFFECT OF VIOLATION OF AGREEMENT

A. Violation of any of the terms of this Agreement by Contractor shall be grounds for suspension of the Agreement.

B. If it should come to the attention of County that any of the provisions of this Agreement are being violated by Contractor, County shall notify Contractor by telephone call to Contractor's owner personally and thereafter by confirmation in writing of such violation or violations. If the Contractor shall fail to correct said violation or violations three (3) days after receiving said notice, County shall have the right to suspend the operation of this Agreement until such violation or violations have been corrected.

C. The Ambulance Radio Operating Manual of Communications is expressly made a part of this Agreement.

VI.

RELATIONSHIP OF THE PARTIES

This Agreement is an agreement by and between two independent contractors and is not intended to and shall not be construed to create the relationship of agent, servant, employee, partnership, joint venture, or association.

VII.

ASSIGNMENT

Contractor shall not assign any rights or duties under this Agreement to a third party without the written consent of the Board of Supervisors of the

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County of _____. Any such assignment in violation of this Agreement shall automatically terminate this Agreement.

VIII.

TERM OF CONTRACT

Unless sooner terminated by either party upon giving thirty (30) days' written notice, this Agreement shall cover the period _____.

IN WITNESS WHEREOF, said parties hereto have executed this Agreement on the dates herein below shown.

Executed by the County of _____, State of _____ this _____.

COUNTY OF _____

By _____
Chairman of the Board of Supervisors

Executed by Contractor this _____

_____
Address:

APPROVED AS TO FORM:

By _____
County Counsel

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Mr. WILSON. First I would like to discuss the role of the Department of Transportation in emergency medical services. In 1966, Congress passed some very important legislation in the highway safety field, the Traffic and Motor Vehicle Safety Act and Highway Safety Act. This legislation included provisions for crash prevention and efforts to minimize the injury to traffic accident victims. We recognize that prompt medical attention is very, very important to the prevention of death and to the lessening of injury to traffic crash victims. Section 402 of the Highway Safety Act requires that each of the States have a traffic safety program, based on standards promulgated by the Secretary of Transportation. This Act marked the first time that the States looked at highway safety as a system. Within this system, there are the emergency medical services activities. The section 402 program is a matching grant program. At least 40 percent of the funds made available by the Federal Government go, as required by the law, to local governments. The Governor is responsible for administering the program in the States. The legislation also provides for research and demonstrations in the highway safety area. These activities are performed under section 403. Pursuant to the act, an EMS standard was developed and promulgated in 1967. This standard required the States to develop comprehensive emergency service plans. It also required them to provide for the training of ambulance attendants and other people associated with the emergency medical services system. It required that the States license and regulate ambulance services. It also provided for financial and technical assistance to States and communities in the purchase of vehicles, equipment, communication systems, and other things that would support the EMS area.

I would like to enter into the record the standard on emergency medical services.

The implementation of this standard has gone a long way toward improving the quality of emergency services. We think we still have a long way to go, and we are working to do that very, very hard. We are providing better equipped vehicles and better trained ambulance attendants. We are looking at improving the system as a whole. In fact, since the beginning of the program in 1966, $43 million in Federal funds have been obligated toward the improvement of emergency medical services. In addition, $299 million is being spent by State and local governments from their own resources to improve these services.

Beginning in 1966, we felt that the quality of Emergency Medical Services was poor, particularly in the areas of the transportation of the injured, the response time and the training of the ambulance attendants. In many cases, the vehicles used were poorly designed and poorly equipped. Communications systems were deficient or lacking almost entirely. There also seemed to be a lack of professionalism of the personnel working in this area. Since 1967, we have provided technical assistance and Federal funds for the improvement of the systems. We have helped in the development of management techniques for managing EMS areas.

Senator KENNEDY. Could you give us the breakdown of the figures of the 40-odd million dollars and tell us what they have been used for?

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Mr. WILSON. I could supply some of that now and some for the record.

Senator KENNEDY. I recently went around the Commonwealth of Massachusetts and had half a dozen different meetings with most of the law enforcement people up there. Practically all of them remarked that they had received communication equipment under the Highway Safety, and they were glad to receive it. But I would be interested in how much of the assistance is hardware and how much is in training.

Mr. WILSON. We can give you some of that now. I would like to ask Mr. Lewis to provide us with some of that information.

Mr. LEWIS. I cannot give you the exact dollar figures that go for hardware, training, and other items under the standard. However, the large portion of this $43 million of Federal funds has gone toward the purchase of hardware. The exact figures are incalculable because the funds provided by a State for any given year are not always expended at the time we see the financial accounting reports. So it is a question of obligation and of what is left to be spent. We can provide the actual dollars obligated and the dollars spent under each fiscal year for the following items: ambulances, communication systems, training, planning, management, and administration.

Senator KENNEDY. I would be interested in the dollars both obligated and spent. Plans have to be submitted to you and I would be interested in seeing the planning requests. I would also be interested in a breakdown of what the money is being used for; and if it is being used for other purposes.

Mr. LEWIS. We have contracted to purchase approximately 1,800 fully equipped ambulances under this program, about 400 complete communication systems. We have agreements to train about 200,000 ambulance personnel. So far about 4,000 persons have been trained in the program. These figures anticipate performance on the part of the States.

Senator KENNEDY. Could you give us a detailed breakdown of that?

Mr. LEWIS. Yes.

[The information subsequently supplied follows:]

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OBLIGATION OF FEDERAL SECTION 402 FUNDS TO EMS TO DATE
(As of December 31, 1972)

	Percentage
AMBULANCES, EQUIPMENT, AND LIGHT RESCUE VEHICLES	60+
COMMUNICATIONS STUDIES, SYSTEMS, AND EQUIPMENT	20+
TRAINING OF AMBULANCE PERSONNEL	14
ADMINISTRATION SURVEYS, STUDIES, PLAN DEVELOPMENT, STAFFING	2.7+
SUBSIDIZATION OF EMS SERVICE (CONTRACTS)	1.5+
UPGRADING EMS SERVICES (INCREMENTAL ITEM PURCHASES)	1.2+

The total funds obligated by the States to date to which the above percentage distribution applies are $43,926,129. Expenditure figures which are available are of little value because of a great time lag between purchasing, delivery, vouchering, and posting. Because of this, expenditure figures at any point in time are highly unreliable indicators of true involvements and activities.

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OBLIGATION AND EXPENDITURE OF FEDERAL SECTION 402 FUNDS TO DATE BY STATES FOR EMS

NHTSA Region I
Cambridge, Massachusetts

State	Federal Funds Obligated	Federal Funds Expended
CONNECTICUT	$ 211,038	$ 138,048.91
MAINE	294,908	158,230.30
MASSACHUSETTS	741,367	632,431.74
NEW HAMPSHIRE	215,732	142,767.13
RHODE ISLAND	43,412	27,412.00
VERMONT	335,913	286,403.86
Total	$1,842,370	$1,385,293.94

NHTSA Region II
White Plains, New York

NEW JERSEY	$1,200,452	$ 666,198.88
NEW YORK	3,286,234	1,162,233.80
PUERTO RICO	726,253	623,853.15
Total	$5,212,939	$2,452,285.83

NHTSA Region III
Baltimore, Maryland

DELAWARE	$ 217,622	$ 201,663.96
MARYLAND	733,739	445,345.31
PENNSYLVANIA	2,777,344	1,733,146.94
VIRGINIA	1,056,123	787,584.64
WEST VIRGINIA	553,247	282,675.38
DISTRICT OF COLUMBIA	274,082	199,022.08
Total	$5,612,757	$3,649,438.31

NHTSA Region IV
Atlanta, Georgia

ALABAMA	$ 391,796	$ 298,334.17
FLORIDA	2,089,039	1,295,026.41
GEORGIA	1,103,660	489,477.53
KENTUCKY	730,304	372,178.27
Sub-Total	$4,314,799	$2,455,016.38

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NHTSA Region IV (Continued)
Atlanta, Georgia

State	Federal Funds Obligated	Federal Funds Expended
Forwarded	$4,314,799	$2,455,016.38
MISSISSIPPI	509,687	427,077.54
NORTH CAROLINA	1,425,070	672,812.00
SOUTH CAROLINA	754,041	502,240.70
TENNESSEE	1,059,885	321,755.47
Total	$8,063,483	$4,378,902.09

NHTSA Region V
Chicago Heights, Illinois

ILLINOIS	$2,813,520	$ 634,578.96
INDIANA	695,053	448,667.42
MICHIGAN	1,614,764	636,948.74
MINNESOTA	1,100,418	872,905.57
OHIO	1,966,084	622,023.47
WISCONSIN	1,742,186	1,095,852.01
Total	$9,932,025	$4,310,976.17

NHTSA Region VI
Fort Worth, Texas

ARKANSAS	$ 457,017	$ 370,273.00
LOUISIANA	115,705	85,050.15
NEW MEXICO	228,807	154,504.52
OKLAHOMA	267,330	143,206.62
TEXAS	1,636,445	1,581,614.05
Total	$2,705,303	$2,334,648.34

NHTSA Region VII
Kansas City, Missouri

IOWA	$ 759,032	$ 410,483.91
KANSAS	970,669	598,365.02
MISSOURI	1,367,344	1,177,816.57
NEBRASKA	1,120,387	809,505.24
Total	$4,217,432	$2,996,170.74

NHTSA Region VIII
Lakewood, Colorado

COLORADO	$ 470,738	$ 352,519.21
MONTANA	508,141	230,459.57
Sub-Total	$ 978,879	582,978.78

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NHTSA Region VIII (Continued)
Lakewood, Colorado

State	Federal Funds Obligated	Federal Funds Expended
Forwarded	$ 978,879	$ 582,978.78
NORTH DAKOTA	448,622	236,308.44
SOUTH DAKOTA	391,668	222,106.70
UTAH	214,142	146,792.05
WYOMING	256,295	196,798.52
Total	$ 2,289,607	$ 1,384,984.49

NHTSA Region IX
San Francisco, California

ARIZONA	$ 494,204	$ 357,378.66
CALIFORNIA	1,542,591	439,725.39
NEVADA	208,712	147,103.00
HAWAII	204,800	79,189.80
Total	$ 2,450,307	$ 1,043,396.85

NHTSA Region X
Seattle, Washington

IDAHO	$ 233,715	$ 122,899.00
OREGON	499,007	334,844.39
WASHINGTON	476,345	246,920.61
ALASKA	390,839	133,220.00
Total	$ 1,599,906	837,884.00
GRAND TOTAL	$43,926,129	$24,773,980.76

Again, it must be stated that because of considerable time lag between ·chasing, delivery, vouchering, and posting, expenditure figures at any time are unreliable and inaccurate indicators of State emphasis and t. With the current Comprehensive EMS Planning effort, it is anticipated that this gap between obligation and expenditure can be narrowed, and that future expenditure figures can be more relied upon to be representative of what is actually taking place. Additionally, the expenditure figures shown here are Federal only and do not reflect State and local expenditures which add to effort and accomplishment.

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Senator KENNEDY. Has any of this money been impounded?

Mr. WILSON. No, Mr. Chairman. All of the money that has been made available to us by the Congress has been made available to the States.

Senator BEALL. Has all of it been obligated?

Mr. WILSON. We try to obligate the funds at the beginning of the fiscal year. States spend these funds throughout the year. We have obligated all the moneys. They have been made available to the States and communities. But as far as the spending, there is a lag, and reimbursement procedures have indicated that the paying of the bills would follow by some months. This is the reason for the difference.

The money has been made available to the States.

Senator KENNEDY. How is it made available? While we are talking about it, have any of the State plans been turned down?

Mr. WILSON. Yes; some of them were not good enough as far as Emergency Medical Services were concerned. We are proceeding, however, in virtually all the States with some Emergency Medical Services funding. The system of delivering funds to the States runs something like this. The State develops a comprehensive plan in traffic safety. Integrated into that plan is a plan for emergency medical services. The States determine, with the concurrence of the Department of Transportation, what priorities that they think they should spend the Federal funds on. At the beginning of the fiscal year we ask the States to submit to us an annual work program. At that time, prior to the beginning of the fiscal year, we approve that program and as funds become available from the Congress and from the executive branch, they are then made available to the States. This is usually done at the beginning of the fiscal year.

All of the annual work programs have been approved. We do have some States that have not yet submitted Emergency Medical Services plans that are satisfactory. However, we are going to get those in here before the end of this coming fiscal year.

Senator KENNEDY. You have not withheld any funds under the Highway Safety Act because of inadequacy of planning the program by any State?

Mr. WILSON. No; there is such a need here that we have not. We have not considered that.

Senator KENNEDY. But surely the need is not just to get money to the States but also to develop a real comprehensive program?

Mr. WILSON. That is correct.

Senator KENNEDY. You have the authority to withhold funds?

Mr. WILSON. Yes; we can withhold funds for States that are not implementing an approved highway safety program. All of the States' programs have been approved.

Senator BEALL. You give helicopters also?

Mr. WILSON. We have in the past made available funds to the States and communities to purchase helicopters. We have currently a moratorium on this type of procurement.

Senator BEALL. Why?

Mr. WILSON. We are assessing now the cost benefit of helicopter operation. There are many conditions under which helicopters may not be cost beneficial.

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In urban areas, for instance, helicopters may not be cost beneficial. You may be able to get ground ambulances to traffic victims just as quick as and more practically than helicopters. In areas where you have mountain areas or where you are covering large distances there may be some conditions under which a helicopter would be justified. I believe we purchased throughout the life of the highway safety program something on the order of 40 helicopters. A helicopter costs in the neighborhood of $125,000. Insurance and maintenance costs are substantial. To provide 24-hour helicopter service, you must have approximately three helicopters available, and sufficient crews. This runs into a very expensive operation. If it turns out that helicopters are cost beneficial and can be used jointly perhaps by police and emergency services, we may very well change this policy.

Senator BEALL. Are you looking State by State how helicopters are used?

Mr. WILSON. We are looking at all the States that have purchased helicopters so far under our program, and we are trying to get an assessment.

Senator BEALL. Maryland, for instance, has several, that the State police use, in traffic work as well as emergency work.

Mr. WILSON. This of course improves the benefit, if it can be used for several purposes. And it is even better if you can train the police that are riding in the helicopter to be trained in the care of the injured.

Senator BEALL. That is exactly what the State of Maryland has done, train the State policemen.

Mr. WILSON. Yes.

Senator BEALL. Is there some plan on a national basis to do this?

Mr. WILSON. Not at the present time.

Senator BEALL. Would it be advisable to develop such a plan?

Mr. WILSON. I think it would be a little premature to do that. We want to assess the overall costs and benefits. It may work very well in other States. We had some demonstrations that we are looking at as well, demonstration programs that were wholly federally funded. We are trying to assess what these have done for the EMS victims.

[Information referred to and subsequently supplied follows:]

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MORATORIUM ON THE USE OF 402 FUNDS FOR HELICOPTER PROCUREMENT

Five EMS Demonstration Projects in the amount of $3,277,729 have been sponsored and funded to test rapid-response Emergency Medical Services Systems in the highway environment, including those developed by the Department of Defense. Air delivery by military helicopter is the visible part of a highly-developed, complex, Emergency Medical Services System which includes trained professional medical personnel, dedicated medical facilities, lifesaving equipment, telecommunications, and complete system logistic support coordinated through a central command authority. The system, operating as a whole, has resulted in substantial reduction in combat deaths. In many cases, helicopter air evacuation systems offered the only practical alternative in combat operations in Vietnam and Korea. Cost was a minor consideration.

Although there have been dramatic helicopter-involved incidents of life-saving in highway crashes, results for the most part were inconclusive in determining benefits in lives saved by air evacuation, considering the influence of training of persons attending the patient, equipment employed, readiness of operating room, and other system variables. Evaluation of the Military Assistance to Safety and Traffic (MAST) Program's demonstration projects operating in five sites has shown that the major employment has been for inter-hospital transfers, many of which could have been performed by ground ambulances.

The annual cost of operating a helicopter of the Bell JetRanger category, which includes depreciation, direct costs, insurance, and personnel to provide 24-hours-a-day service, is estimated at $250,000. This figure considers acquisition cost of $145,000, hull insurance $40,000, and direct operating cost of $48,000 ($40 per hour). These figures are based on 100 flight hours per month or an operating cost of $225 per flight hour. Aircraft utilization of 100 hours per month represents good utilization which is accepted by the helicopter industry. Lesser utilization than 100 hours per month results in an increase in cost per flight hour, while 100 hours per month is the maximum practical limit for helicopter operation.

To be fully employed, experience from the projects has shown that the helicopter must be multi-purpose and available for other than EMS missions. Of additional consequence, helicopters in the practical EMS-size category are constrained by poor weather, endurance, patient care and passenger-carrying capability. The basic EMS system, including trained personnel, communications, ground ambulances, and fully ready hospital emergency departments, must continue to exist to make air evacuation useful. By

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contrast, the annual cost of providing 24 hours-a-day service with fully-equipped ground ambulances is estimated at $80,000.

There may be a role for the air ambulance (helicopters and fixed wing aircraft) in highway safety in sparsely-settled sections of the country. Alternatively, however, many ground ambulances can be procured and equipped, communications equipment installed, and personnel trained for the same dollar amount. These latter actions contribute more toward upgrading the whole EMS system for the benefit of a larger number of people. For these reasons, we are not presently funding helicopter demonstration projects while work is progressing to develop criteria for air ambulances, and guidelines for the proper mix of ground and air ambulances and for their utilization.

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Senator KENNEDY. I want to welcome Senator Taft to the hearings.

Let me ask you, do you work with the LEAA about joint purchasing of this equipment?

Mr. WILSON. We have an understanding. In fact we have a document that was signed by the Attorney General and Secretary Volpe over a year ago stating that we would be cooperating in many areas, not just in emergency medical services, but in the total law enforcement area.

Senator KENNEDY. To follow the line of Senator Beall, have you worked out now the joint purchase of equipment with them?

Mr. WILSON. This can be done. I really cannot say that there has been much of that accomplished so far. We are working on it. We have had our regional administrators meeting with administrators from LEAA and they are familiar with this idea. It certainly should be done.

Senator BEALL. Did I understand you to say for the time being you have terminated any helicopter assistance?

Mr. WILSON. We have put a hold on any further purchase of helicopters until we have had a chance to assess their value.

Senator BEALL. Does it make sense perhaps, where helicopters are being used efficiently, to proceed and maybe help those States that are using them effectively?

Mr. WILSON. We are watching them very closely, and we will certainly be the first to recognize that if they are cost beneficial, this policy should be more liberal.

Senator BEALL. There is a lot of watching that goes on. I just hope it does not become a stare so that nothing eventually ever happens.

Senator KENNEDY. Are you going to do cost-effectiveness studies to show us how many lives have been saved by helicopters?

Mr. WILSON. We are going to try.

Senator KENNEDY. Could you also provide for us a breakdown of what funds have been made available to the States so we have a State by State program?

Mr. WILSON. We certainly will for the record, sir.

Senator KENNEDY. Do you want to continue?

Mr. WILSON. We have provided technical assistance to the States in the development of management techniques for emergency medical services. We have assisted them in their development of comprehensive emergency medical plans. We have helped them to develop techniques for extrication of traffic accident victims from vehicles. We have published a manual I would like to show you.

Senator KENNEDY. Could we get a copy just for our file?

Mr. WILSON. Certainly, We will leave one here. We have over the past several years developed a number of training aids with which I think some of you, perhaps all of you, are familiar. We have developed an 81-hour course.

Senator KENNEDY. Have you done any kind of evaluation of those training aids, to show how effective they have been?

Mr. WILSON. Forty-four States have determined that this 81-hour course is of sufficient value to adopt it as their official course for the training of ambulance attendants. It is very difficult to relate the actual training to the saving of lives and the lessening of the effects of injuries.

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Senator KENNEDY. I would be interested in hearing what kind of problems you are running into with regard to suits against any of these individuals because they have not been licensed. Is it not a problem? What are medical societies doing about it? Are they or are they not providing leadership? Are they helping or harassing you? In what States have they been good or bad?

Mr. WILSON. I would have to say that things are in pretty fair shape. None of these things have been brought to my specific attention. Perhaps Mr. Lewis could comment on that. I believe there are good Samaritan laws in virtually all the States.

Mr. LEWIS. We have not had any problems with the kinds of care rendered by the people who have been trained to this 81-hour level. I might mention that the outline for the 81-hour course was developed by the National Academy of Sciences. We took their document and developed it into a total training package. We have had some very dramatic success in certain instances with people who have been trained to this level of skill. We have had no suits or conflict of interest between the State Medical Practice Act. These ambulance people are doing things which are perhaps somewhat more advanced than what they had done before they had this training.

Mr. WILSON. We have also pursued the development of a 480-hour training course which would further raise the level of competency of the ambulance attendant. We have that course here in draft form. I do not care to enter it in the record. If you would like to have a copy of it, I'll provide one.

Senator KENNEDY. Please do just for the files.

Mr. WILSON. We have participated and developed training in first aid and Emergency Medical Services for highway patrol people. Quite often these people are the first ones on the scene of a crash. They can do a great deal toward saving life. We have developed, with the assistance of the National Academy of Sciences and other organizations, new vehicle standards relating to the dimensions of the ambulances so that attendants can move more freely and better equipment can be used in these vehicles.

I might say that the amount of Federal funds from the Highway Safety Act going into emergency services shows that it is one of our highest priorities. Actually the amount it receives is exceeded only by three other programs: driver education; police traffic services; and traffic records.

Progress has been very good. When we started in 1966, only four States had really inventoried their needs in Emergency Medical Services. Now 41 have made such surveys. In 1966, there were only six States that had a full EMS staff that really addressed this problem. Now all 50 States have such staffs.

The 81-hour course that I mentioned has been adopted by 41 States. By 1974, 80 percent of the 200,000 ambulance attendants will have gone through the 81-hour course.

Some successes in EMS were mentioned when the bill was introduced. Illinois trauma centers have been extremely successful. They established trauma centers throughout the State. In one 15-county area, there has been a 15 percent reduction in fatalities.

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New York State was one of the first States to develop a comprehensive EMS data system, which is necessary to do a proper planning job in the EMS area.

In Jacksonville, Fla., officials have done some things there that have improved the rapid response to all emergencies.

In Los Angeles, we have participated in the training of firemen in the EMS area.

Further, the Department has tried to disseminate this information from State to State, so that all of the States will know what is working well in some States. If we find things that are not working well, we want to advise the States of this also.

The Department of Transportation is convinced that the current Emergency Medical Services programs should be supported.

Senator KENNEDY. I see in the Budget that the President has recommended abandoning the regional medical program. I see also that the RMP provides much of the EMS money. What is the impact of the cutback going to be on EMS?

Mr. WILSON. Since our program is administered through the office of the Governor in each State, we feel that we can still continue with a very, very viable program toward improving the quality of emergency medical service in the States. We applaud your interest in the MAST programs through which the military organizations provide helicopter service in the emergency medical area. I understand that there are probably between 20 and 30 sites that could be developed for a MAST type operation. Based on the success that we have seen in the previous five sites, we think this is a good thing.

Senator KENNEDY. Could you give us a little greater detail, the tie-in with the regional medical program, specifically what training programs are taking places, what the impact is?

Mr. LEWIS. Mr. Chairman, our legislation requires the Governor to be responsible for this program in each State. Therefore we have the ability to invoke sanctions, if we so desire, so the States are obligated to do these things under our legislation.

The regional medical programs, in our experience, have seemed to come into being independent of our legislation and of the State priorities established under the highway safety program. We are in many cases in contact with the personnel who are administering that program in a given area.

We feel our legislation addresses the entire land mass of the United States, whereas the regional medical centers programs cover limited areas.

We prefer to see communities working through the State as the primary responsible agent in the EMS area.

Senator KENNEDY. Have you made an assessment of RMP's relationship to EMS, and just what they are doing?

Mr. LEWIS. No.

Mr. WILSON. We find that somewhere around 70 percent of highway traffic fatalities occur in rural areas. We are naturally concerned about this fact.

As I have indicated, the EMS support provided by our Department is making an important contribution to improving EMS performance in many States and localities. The ultimate responsibility for detailed planning and implementation necessary to establish truly comprehen-

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sive EMS systems is properly vested in the State and local governments. Although technological and basic services are generally available, the ability to combine these elements into viable systems is often lacking. They often lack expertise or funding.

The administration is attempting to address this problem through the EMS demonstration initiative announced by the President. The primary responsibility for this initiative was placed by the President in the Department of Health, Education and Welfare. Last year representatives of that Department described the initiative for the committee. I believe that the information you may have received this morning will cover that. The initiative will demonstrate alternative methods in cost and benefits in fully functioning EMS systems in different types and localities. As a result, States and localities around the country will be able to adopt an EMS system that is responsive to local requirements and conditions and that most importantly can be sustained and financed through State and local resources.

Senator KENNEDY. How many of these research demonstration programs took place in rural communities and mountainous areas?

Mr. WILSON. There are five of them that have been put into operation or about to go into operation. Incidentally, the Department of Transportation had a role in selecting these areas. I believe they are the State of Arkansas, the State of Illinois, the city of San Diego and some surrounding counties, a seven-county area in southern Ohio, and Jacksonville, Fla.

Senator KENNEDY. Well, I was wondering how many demonstration projects were taking place in strictly rural communities.

Mr. WILSON. I believe southern Ohio would be almost all rural.

Senator KENNEDY. What about any of the mountainous areas? Have you got the number of the States in the Rocky Mountain areas, let alone West Virginia, and the Appalachian Mountains and the West?

Mr. WILSON. Earlier we had some demonstrations with regard to helicopter use in the Phoenix area. While Phoenix itself is in rather flat territory, the area to the north and both east and west is somewhat mountainous, and we had some successes there. I am not that familiar with the topography of the five locations. I would defer to HEW on that.

Senator KENNEDY. Could you tell us how much actually is being spent on emergency services by the Department of Transportation, by HEW, and by the Defense Department this year, and next year?

Mr. WILSON. We anticipate that approximately 15 percent of the available section 402 Federal funds would be spent in the EMS area. This would amount to approximately $12 million. That is in the current fiscal year.

Senator KENNEDY. That figure is for Department of Transportation?

Mr. WILSON. Yes. I am in no position to provide you with figures from HEW.

Senator KENNEDY. Do we have to get HEW up here? I am interested in the type of coordination that you have with them as well.

Mr. WILSON. We certainly coordinate the activities, as is evidenced by the fact that the Department of Transportation was a participant in the selection of the five emergency medical demonstration sites that I just mentioned.

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Senator KENNEDY. Do any of your people know what the Department of Defense and HEW are going to be spending? Is there any one place that you can find out how much is going to be spent in emergency services this year and next year?

Mr. LEWIS. Mr. Chairman, as far as I know, the formal response to this initiative that the President announced last year was an $8.5 million program at these five sites. In addition, the regional medical programs, I believe, in various parts of the country established projects involving about another $11 million, if I recall correctly.

There are other factions within HEW that do smaller kinds of things, particularly regarding the training of paraprofessionals, nurses, and allied health professionals working in the field of emergency services. I do not know what funds are obligated or what funds have been provided for that training.

Senator KENNEDY. We have under the legislation a technical committee, and an advisory committee that would be made up of all the interested agencies, so you get some kind of coordination on this program. Your testimony is very informative on the present situation, for it does seem that one of the problems is that HEW and the Department of Transportation, the Department of Defense do different things. It's hard for any of us to tell any of our constituents where they can go to get a coordinated picture on the various emergency service programs. And this is one of the features of the Cranston legislation which I think is valuable. You have given us instances where there has been cooperation and interaction. But it seems to me that from both a technical and a public point of view, it would be enormously useful if there was greater focus on this particular effort.

You can proceed.

Mr. WILSON. With respect to Senate bill 504, the Department of Transportation generally defers to the views expressed by HEW last year since the principal impact of the bill would be on that department. We would only add that ample statutory authority already exists to enable the Department of Transportation to carry out a broad range of EMS-related activities. Accordingly, we believe that it would be ill advised and unnecessary to add further program authorities in this field.

In summary, Mr. Chairman, the Administration has demonstrated through the EMS initiative described by HEW last year and the funding of EMS activities by the Department of Transportation that it shares the concern of the sponsors of S. 504, and that the level of EMS activities in many parts of our Nation needs to be upgraded. We disagree, however, that the additional authorities contemplated in the legislation are either necessary or desirable.

Mr. Chairman, that concludes the statement. I would be very happy to answer as many questions as I can, sir.

Senator KENNEDY. Well, I understand the regional medical program had approximately $15 million for EMS. Does that seem approximately your figure?

Mr. LEWIS. They had $8.5 million for the five demonstration sites. There were some additional sites, from what other source I am not fully aware, and other projects around the country, quite apart from these demonstration sites.

Senator KENNEDY. It is my understanding that approximately $15 million will be lost with the abolition of the regional medical program.

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Last summer Dr. Du Val, who has also retired and for whom I have a good deal of respect, appeared before the Rogers committee and indicated that there was no technical advisory committee and no data clearinghouse. Can you tell me whether you have established since then any coordinating committee or any kind of data clearinghouse for emergency services?

Do you know of any?

Mr. LEWIS. The National Heart Blood Vessel and Lung bill of 1972 requires an interagency coordinating committee. We are represented on that committee. We meet with these people regarding the award of grants and the direction the program should take. But this is the only formal legislative scheme wherein we are enjoined with other departments to implement or advise on implementation of legislation.

Senator KENNEDY. Now Dr. Du Val said in his testimony; I quote, that:

> Under EMS initiative, we will be coordinating the already extensive Federal activities in the EMS and will very shortly be funding five demonstration total emergency items. We will also establish an EMS clearinghouse, EMS data system and technical assistance function. And we like to point out that these actions are being taken under existing legislative authorities.

Now, have they been done? That was said last June.

Mr. WILSON. The Department of Transportation has appointed Dr. Mills to serve as its representative on that interdepartmental policy committee.

Senator KENNEDY. Is he here?

Mr. WILSON. No, he is not.

Senator KENNEDY. Can you tell us anything about it?

Mr. LEWIS. The nomination went forward only 3 days ago, Mr. Chairman, for Dr. Mills to represent the Department of Transportation on this specific advisory and coordinating committee.

Senator KENNEDY. Did it exist before? Can you tell us the date that it was set up? Do you know when it was set up?

Mr. LEWIS. At Christmas, an ad hoc meeting was held. At that time the principals met and formally identified themselves as representing various departments. Then a formal letter came from Secretary Richardson to Secretary Volpe asking for the nomination. A response was sent on the 13th of January.

Senator KENNEDY. What about the data bank?

Mr. LEWIS. This is something Dr. Du Val proposed before the Rogers subcommittee. I understand they have plans to initiate and operate such a program.

Senator KENNEDY. When and what plans?

Mr. LEWIS. I do not know, sir.

Senator KENNEDY. Could you give us some additional information about what steps were taken on the advisory committee, who was on it, when it met, and what report was made, if any? Also on the data bank? What has been done since the time that Dr. Du Val appeared before the committee? What steps were taken to implement those recommendations? What plans are in the works? When do you hope to achieve it? What steps are being taken to implement the technical committee? Are you abandoning that? Could you give us a progress report on those areas?

Mr. WILSON. We will submit this information we have for the record, Mr. Chairman.

[The information referred to and subsequently supplied follows:]

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DOT PARTICIPATION IN DHEW EMS INITIATIVE

On December 8, 1972, Secretary of Department of Health, Education, and Welfare (DHEW) requested by letter to Secretary of Transportation (DOT) that DOT participate in the Emergency Medical Services (EMS) Interdepartmental Committee. The cooperation of DOT was extended to DHEW on January 15, 1973, and a representative was named to participate on the Committee. As of this date, no meeting of the Committee has been held.

We are not aware of an "EMS Administrator's Advisory Committee." The proposal for the establishment of a National EMS Information Center and EMS Data System was contained in the remarks of Dr. Merlin K. DuVal, Assistant Secretary for Health and Scientific Affairs, DHEW, before the Rogers Subcommittee on H.R. 12563, June 13, 1972.

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Senator KENNEDY. Senator Beall.

Senator BEALL. Thank you, Mr. Chairman. I do not want to beat the helicopter thing continuously, but this is exceedingly important to my State. You seem to contradict yourself a little bit, for on the one hand you indicate the desirability of the MAST program, on the other hand you place a moratorium on the use of helicopters. This does not make sense to me.

Mr. WILSON. The difference is that in the area of the MAST program, the expensive equipment and trained personnel already exist for another purpose. If their use can be expanded to improve the quality of medical service in the community, I think this is good.

Senator BEALL. I do want to appear to be trying to get a couple helicopters here. Maryland has had very good experience in this. They want to reach out to less populated areas of the State particularly western Maryland and the Eastern Shore to provide emergency medical services. It seems to make good sense, rather than to wait to study the whole problem across the country to go ahead with the States where you have had good experience. If they find they can use this kind of equipment efficiently on a cost effective basis, why should we not go ahead?

Mr. WILSON. We have recently put together a document that we would be very happy to supply you with to give you the present status of the evaluation. I would hesitate, though, to give helicopters purchased exclusively for emergency medical services, and exclusively for police traffic services. We do not know enough about them yet.

Senator BEALL. When do you think we will know enough?

Mr. WILSON. Probably need another year to look at this thing.

Senator BEALL. In some areas the States are very hard pressed. They have felt that this is a worthwhile investment for the operation of these things. It seems to me if they are willing to make this investment, it might be to the Government's advantage to proceed and go ahead and help them.

Mr. WILSON. We would like to supply to the staff a copy of any information we have on this subject, I will give you a copy of this study if you would care to have it.

Mr. LEWIS. Senator, I see that you have great fondness of the potential of helicopters in emergency medical services. We operated a helicopter demonstration project in the greater Philadelphia area in 1967 and 1968. This helicopter was available 24 hours as needed. It took three machines to assure that one was available 24 hours a day. There were approximately 6,400 instances in that time where this helicopter could have responded to a traffic or an emergency. It actually responded 39 times, and it moved only eight people.

Senator BEALL. I am not implying that machines save lives. I am implying that the proper use of machines will make it possible for the person who is injured to get into the hands of the people who can save their life in a timely fashion. I have been told by people who work in trauma centers that if they can get these people within an hour, if injured, the chances are they can save someone who would ordinarily die. All I am suggesting is, it has been proven in some parts of the country, that the helicopter can be used effectively in getting people to the place where medical technology exists in order to save their life. It seems to me our experience in Vietnam, if it did

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not prove anything else, has demonstrated that we do have the capability with the proper use of all the machinery to get the people the kind of emergency treatment that is needed in order to save their life. I am not saying that the helicopter is good in all cases; I am saying there are many cases particularly in rural areas where you do not have the capability of supporting the trauma center, where you can use the helicopter to get the person from the scene of the accident to the trauma center in a timely fashion in order to save the life.

As a matter of fact, I personally inspected and saw the potential of these helicopters demonstrated. I was picked up on the Capitol Beltway and went to the trauma center at the University of Maryland in Baltimore, and it took me 20 minutes from the time I boarded the helicopter until the time I got in the operating room in a trauma center. Where speed is so important, in these matters of life and death, the helicopters are great, properly used. I think we ought to take advantage of them.

Mr. LEWIS. It all boils down to dollars, Senator.

Senator BEALL. It was pointed out to me that it took 40 minutes to take Governor Wallace from the Laurel Shopping Center, which is north of the Beltway, to the hospital along the Beltway by ambulance where Governor Wallace was taken. He could have been taken to the Baltimore trauma center in 12 minutes.

Mr. LEWIS. Helicopter EMS costs amount to quite a bit of money as contrasted to what surface or land-based ambulance people can do much more cheaply.

Senator BEALL. My point is in some areas of the country we can effectively use this kind of equipment. I would just suggest, while it is advisable to study the whole country, why penalize some sections while we are waiting for the results of the study that does not apply to them necessarily?

Mr. WILSON. We will take a look at this and provide you with some information as well.

Senator BEALL. I was pleased to hear you say you were doing this on a State basis, wherever possible, rather than going through regions. I recently came across a place where the State and region were at odds with each other. The region wanted to implement a communication system within the region, but would not have capability of tying up on a statewide basis. It made better sense to use the State.

Mr. WILSON. One of the very fundamental aspects of our act is that these programs should be statewide and State developed, and under the control of the Governor himself.

Senator KENNEDY. Senator Taft.

REGIONAL MEDICAL PROGRAM

Senator TAFT. Thank you, Mr. Chairman. First of all, with regard to the matter that came up some time ago, as to the $15 million that has been available, as I understand it, that still is in the budget, Mr. Chairman. I have got the HEW budget here, which states as follows: "Also included in the budget for the national center, 1974, is $15 million to continue medical services projects formerly funded in RMP."

So I think the item is going to continue to be in the budget in that regard. I hope we can get the Department of HEW up here. I under-

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stand that the problem we have in regard to that at this present time is that we do not have any Secretary. If we could get the Senate to go ahead and act, we would get a little bit better coordinated information between the respective departments that are involved on this, and other problems.

EMERGENCY VEHICLES

I was particularly interested in the various comments in your testimony as to the vehicles themselves. I was concerned with the helicopter problem that Senator Beall has mentioned. I share, I think, pretty strongly in his views, also. But also with regard to on the road equipment, I made inquiry last year as to whether or not there were any research funding going into the question of studying community ambulances and their suitability. There is nothing but praise in your testimony for ambulances. Some of my information is directly to the contrary, and that really they are nothing but remade trucks and there has been no effective research in what can better be done in this area to provide better vehicles, better able to meet the needs and meet the situation. Has there been anything on that?

Mr. WILSON. I would like to have Mr. Lewis comment on that. There has been a lot of work done with the help of the Department of Transportation and other organizations in the development of the criteria for ambulances. I would like to have him comment on that, if I may.

Mr. LEWIS. Senator Taft, 5 years ago a man with $200 could have put himself in the ambulance business in about 10 minutes. In some places you can still do that today. The reason was that he was leasing a vehicle which was really not suitable for the transportation and care en route of the critically ill or injured patient.

Three years ago we developed this booklet in conjunction with the National Academy of Engineering [indicating]. Ambulances purchased under our program must meet these criteria for dimensions, braking distances, passing time, safety reasons, air conditioning, and environmental control. It is all in here. We use this as a lever to get the States when they use money in their program to come up to the standards available in this document here [indicating].

I would like to introduce it for the record, if I may.

Senator TAFT. Yes.

[The information referred to follows:]

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AMBULANCE CRITERIA AND UPGRADING

Prior to May 1971, there were no national standards on the design criteria for ambulances. The National Highway Traffic Safety Administration (NHTSA) accepted the challenge to correct this deficiency when it contracted with the National Academy of Engineering to develop standards. The standards are now being used throughout the country by States and local governments when purchasing ambulances under the Highway Traffic Safety Program. Several other agencies of the Government are using the "Ambulance Design Criteria", including Government Services Administration.

At the time the Highway Safety Act was passed in 1966, only 35% of the Nation's 26,500 ambulances met emergency medical equipment requirements. The majority of ambulances used throughout the country were either station wagons or limousines, one of which met design requirements. Since the establishment of the standards, the majority of ambulance manufacturers voluntarily have followed the criteria. To date, the vast majority of ambulances are meeting these requirements, no matter if Federal or private funds are used.

In addition, approximately 65% (compared to 46% in 1966) of the ambulances have two-way radio capability. In 1966, 52% of the ambulance personnel had Advanced First-Aid Training or no training at all; today, 72% have the Advanced Training or better.

A quotation by Gerald Looney, M.D., Associate Director, Department of Emergency Medicine, LAC/USC Medical Center, Los Angeles, California, which appeared in the January/February 1973 issue of the Emergency Medical Services Journal, follows:

"...There has been more improvement in emergency services in the last four years than the preceding three decades of purely local effort and community responsibility, and most of this has been due to the National Highway Safety Act of 1966."

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Mr. LEWIS. All the ambulances that we have purchased under our grant-in-aid program have met these standards.

Senator TAFT. These vehicles still, as I understand it, are really remade vehicles or vehicles also that are really designed for purposes other than operation as an ambulance. They may have been amended and changed and rebuilt to meet the standards, but the standards as I understand it, have been tailored pretty much because of the fact that you are dealing with vehicles that are almost more or less standard vehicles.

Mr. LEWIS. It is true that most ambulances now are converted vehicles from either luxury limousines, vans, or carryall types. We also have the so-called modular type, which is a cab and chassis unit with an EMS box built upon the back of this thing.

I understand one of the large automobile manufacturers right now has designed an ambulance from the ground up. I hear it is going to be available on the market in the next year or so.

Senator TAFT. Was there any Federal supervision, research or assistance?

Mr. LEWIS. This vehicle will have to meet the safety standards under our legislation. We are right now working with the General Services Administration to develop a Federal specification for ambulances. In fact, the meeting is this morning. These will be the specifications by which the Government buys its own ambulances. This would not preclude anybody from buying an ambulance for any other purpose.

There are not sufficient vehicle sales to justify, so the automobile manufacturers tell me, to justify complete ambulance design.

Senator TAFT. That is the problem as I see it. Private research has not gone into it, even though there may be a very important public interest involved. Without some additional assistance from Government in some way, it is unlikely that an ambulance is going to be designed from the ground up and produced. I am interested in your saying that there is one underway. What company is that?

Mr. LEWIS. General Motors.

Senator TAFT. Is this information available yet?

Mr. LEWIS. I cannot get it.

Senator TAFT. Still the ones you have here may be sounder, or the one from the ground up could easily meet most rules and regulations.

Mr. LEWIS. This manual does not favor any particular kind of configuration. These are the performance specifications, if you will (indicating). Many different concepts could be developed to meet these specifications.

Senator TAFT. You do not feel some governmental research and assistance in connection with the matter of ambulance design would be desirable?

Mr. LEWIS. Yes, sir; I think it might be.

Senator TAFT. You do?

Mr. LEWIS. Yes.

Senator TAFT. What was the southern Ohio county that the project was going ahead in?

Mr. LEWIS. The project is centered around Athens, Ohio.

Mr. WILSON. It is located in seven counties.

Senator TAFT. I know some recent publicity about the continued use, and increase in use of emergency runs for free clinics. Do you

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run into this, or do you have any comments or suggestions in this regard? Have your efforts been impeded by that in any cases?

Mr. WILSON. Not that I am aware of. I would not be able to comment on it.

Senator TAFT. Thank you, Mr. Chairman.

Senator KENNEDY. I just have one final question. In your prepared statement you talk about the ultimate responsibility, of course, for detailed planning and implementation necessary to establish truly comprehensive EMS systems is appropriately vested in the State and local governments. Unfortunately although the technological and basic resources are generally available the ability to combine these elements into viable systems is often lacking.

The Congress under that title 11 provision gave you the sort of stick as well as the carrot of offering funds to insure that there was going to be a good effective program. Yet, as you have mentioned yourself, you have been unwilling to bring the States along to insure that they are meeting these established standards, as I would understand it. I am wondering what you feel is lacking. It seems the Congress gave you the authority to move ahead in this area, and yet by your own statement you talk about the difficulty in combining the elements into a viable system.

I am wondering whether you want either more effective legislation or is it a matter of your administration of the program or what?

Mr. WILSON. We have made considerable progress. I think one of the problems has been the lack of resources made available to the States to carry out these programs. By resources I mean technical assistance and training people at the State and local level as well. As far as moving ahead with the sort of club, if you wish, we have advised the States that unless they have a comprehensive emergency medical services plan available, we will not approve their next year's annual work program, which encompasses all of highway safety. This has forced the States to address this problem rather quickly.

Last year when we testified during the summer, some 14 States had comprehensive emergency plans in hand. We felt at that time that it was time to start to put emergency medical services on a firmer footing and work toward a comprehensive program. We have since advised the States that we must have that plan in hand before we approve next year's plans.

Senator KENNEDY. What else has been moved into the Center for Health Services R. & D. under section 304, under the President's program? Do you know of other programs besides EMS that have been moved over there?

Mr. WILSON. I could not comment on that.

Senator KENNEDY. They say your $15 million is still there, but the administration has not requested an increase of that size in the budget of the Center for Health Services R. & D. They have only requested about $7½ million. So EMS's $15 million is going to be competing with other programs, which have been ongoing. They are going to have to divide up that pie a little more narrowly. I would think this would not be quite as secure as before.

Mr. WILSON. We feel the funds made available through the Highway Safety Act for emergency medical services or the State program

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would not be less than they have been. We would anticipate that there would be perhaps even more going into this area.

Senator KENNEDY. I hope you are right.

Thank you very much.

Mr. WILSON. Thank you very much, Mr. Chairman. It has been a pleasure to be here.

Senator KENNEDY. I would like to submit some questions to you from Senator Cranston, if you would be kind enough to respond to those questions. I will submit them to you, and you can return them in writing.

Mr. WILSON. I will do so. Thank you very much.

[The following questions and respective answers were subsequently supplied for the record:]

QUESTIONS SUBMITTED TO JAMES E. WILSON, ASSOCIATE ADMINISTRATOR, DEPARTMENT OF TRANSPORTATION, BY THE HONORABLE ALAN CRANSTON, A U.S. SENATOR FROM THE STATE OF CALIFORNIA

Q. 1. The Fiscal Year 1974 budget requests $90 million in obligations to support highway safety programs. I understand this covers driver licensing, motor vehicle registration, traffic records, and programs more directly related to accident prevention such as alcohol safety action projects. Could you provide for the record a breakdown of how you propose to distribute this requested amount? What proportion will go to support of emergency medical services?

A. 1. NHTSA proposes to distribute the $90 million budget request as follows:

$77 million—NHTSA.

$13 million—FHWA.

The requested amount for NHTSA will be distributed in the following program categories:

[Dollar amounts in millions]

	Fiscal year 1974 amount	Percent of total
Program support	$11.6	15
Traffic laws and regulations	850.0	1
Vehicle requirements	2.3	3
Traffic safety education	12.8	17
Driver licensing and control	13.5	17
Enforcement	20.4	26
Traffic courts and adjudication	3.0	4
EMS	9.2	12
Administrative support	3.5	5
NHTSA total	77.0	100

Q. 2. A. Under the provisions of the Highway Safety Act, you are required to provide at least 40 percent of Federal funding support to local political subdivisions. However, this requirement may be waived where the Secretary determines there is not a sufficient number of local highway safety programs to justify this apportionment. Could you advise me what the experience of the Department has been in implementing these provisions?

A. 2. (A) To evaluate State compliance with the 40 percent local funding provision of the Highway Safety Act, NHTSA has allowed a grace period following authorization and appropriation actions.

As of October 31, 1972, the following States have yet to obligate 40 percent of their 1967, 1968, and 1969 authorizations.

Connecticut	Maine	Vermont
Arkansas	Louisiana	Texas
South Dakota	Alaska	

B. What proportion of funds have actually been provided local communities?

Puerto Rico and the District of Columbia were granted waivers against the 40 percent provision.

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(B) NHTSA estimates the cumulative nationwide figure for local funding under the provisions of the Act to be approximately 55 percent. This estimate includes projects employing State agency personnel to service a community's highway safety needs.

Q. 3. The Highway Safety Act also provides that any State which is not implementing a highway safety program approved by the Secretary shall have its apportionment of highway funds reduced by 10%. Have you exercised this authority?

A. 3. The NHTSA to date has not exercised its sanction authority against the States. To stimulate State action in priority areas, NHTSA has chosen a course of negotiation and encouragement. In the instance of serious deficiencies, NHTSA has successfully employed the penalty threat and will do so in the future.

Q. 4. You have had some demonstrations of the use of helicopters in providing emergency medical services and you have also administered the MAST programs. Could you describe the findings of these demonstrations?

A. 4. The findings of the various demonstration projects involving helicopter ambulances and the MAST test program are summarized in "Helicopters in Emergency Medical Service, NHTSA Experience To Date," December 1972 (attached with question 9). Each demonstration project final report was made available to the public through the National Technical Information Service or the Superintendent of Documents.

The costs of the demonstration projects involving helicopter ambulances is not generally indicative of cost of a continuous helicopter ambulance service. In most of these projects the helicopter operation was only one element of the total EMS demonstration project.

In the Arizona State University Project (joint use EMS and Highway Patrol) the estimated cost (in 1970) to continue the operation of two helicopters was $379,071 per year. This does not include initial cost of the helicopters, $120,000 each, and other startup costs of about $20,000. During an 8-month period the two helicopters carried 225 patients. Physicians' comments concerning the patients after delivery indicated that the time saved effected a reduction in morbidity in at least *9* cases and the paramedic's action in at least *one* other case. The time saved improved the patient's chance of survival in at least *four* cases and on *two* occasions, the paramedic was credited with saving the patient's life. Disregarding initial costs, this amounts to about $15,795 per patient benefited, not considering the value of the helicopter for other highway patrol work.

In the Metropolitan Inter-County Council (MN) Project, where the helicopter was used for EMS only during a 12-month period, $126,089 was paid for helicopter and pilot services (attendant not included). The one leased helicopter carried 70 patients during this 12-month period. Of these patients, the medical advisory committee's opinion was that 35 had conditions or suspected conditions serious enough to warrant helicopter transportation and of this 35, eight were benefited in a way in which they would not have been by ground ambulance transportation. This amounts to $15,761 per patient benefited. Admittedly, this helicopter appears to have been under utilized due to a failure to be approved by and integrated into a complete emergency medical service system.

Due to the difficulty in getting an opinion on the benefit to a patient from helicopter use and having no standard against which to make a judgment, only one other demonstration gave any information on actual benefits. The University of California-Los Angeles project reported that during 180 operating days, the helicopter retrieved 88 patients and was considered instrumental in saving the lives of five. It also was successful in transferring 12 patients, six of whom were considered to have life-threatening injuries, from small hospitals to hospitals with greater capabilities.

Q. 5. Where a MAST program has been established, has there been any difficulty in the unit responding immediately when needed?

5. With the exception of weather adverse to helicopter operations and lack of complete information being available, there has been no difficulty in three of the five units responding immediately when needed. The remaining two units had limited equipment and personnel and departures were sometimes delayed while crews were being recalled. The civilians responsible for coordination of the MAST project and the emergency medical service were aware of this shortcoming and have compensated for it in their planning. Even with the restricted response the civilian communities are pleased with the MAST Projects and hope that they can continue.

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Q. 6. Has the use of reserve units for MAST programs been considered and what was concluded?

6. Reserve units have been considered for MAST participation. DOD advises that there is presently a legal bar to their use in EMS. It is reported to us that DOD is seeking a change in the law which would allow reserve units to participate, providing legislative sanction is also given to the rest of the MAST program. Helicopters and crews from reserve units generally would not be available with the same degree of response as those from active duty units. The civilian community plan for utilization of reserve units in their EMS System would have to be designed around the response capability of the particular reserve unit to be utilized, and within the present MAST guidelines of utilizing existing resources without additional DOD funding. There are also other problems in utilizing reserve units which are under study by DOD. The Department of Transportation is ready and willing to assist in integrating any DOD resources, which are made available, into the various civilian emergency medical service systems.

Q. 7. Have you evaluated programs where the helicopter is jointly used by another public agency, such as the highway patrol or fire department? In these instances, has the dual use of the vehicle interfered with an immediate response to an emergency medical situation?

A. 7. The Pennsylvania Project No. EMS 68–1–001, the University of California-Los Angeles Project, the Arizona State University Project, part of the Mississippi State University Project and the MAST Test Program, all reported in "Helicopters in Emergency Medical Service, NHTSA Experience To Date," December 1972, studied and demonstrated air ambulance helicopters in joint use with another public agency. In these projects the joint use has had little or no adverse affect on the air ambulance capability of immediate response. There does not appear to be any worthwhile benefit for a helicopter with the sole mission of EMS as long as the joint use is properly planned. Until there is a tremendous increase in the number of medical emergencies requiring helicopter evacuation, there can be no cost justification for a publicly funded helicopted solely for civilian emergency medical service use. The U.S. Army in combat in underdeveloped countries is the only service which is known to have justified helicopters dedicated solely to air ambulance use.

Q. 8. Have you complied a written evaluation of the use of the helicopter in medical emergencies?

A. 8. A written evaluation of the use of the helicopter in medical emergencies has been prepared for the demonstration projects. Insufficient information has been received from the State projects funded under Section 402 to include them in this report.

Q. 9. Could you please furnish for the Record any reports you have compiled on this?

A. 9. Reports enclosed as requested: (See p. 240.)

"Helicopter in Emergency Medical Service, NHTSA Experience To Date" December 1972.

"Report of Test Program, Military Assistance to Safety and Traffic" July-December 1970.

"MAST Interim Planning Guide."

Q. 10. It is my understanding you have studied some twenty or so communities of varying sizes where emergency medical services systems have been developed. Given the wide range of existing medical resources and variations in population and geographic characteristics, what was the ability of these communities to develop an effective system?

A. 10. There were actually eighteen communities studied. Their demonstrated ability to develop effective EMS systems was worthy of note. The gratifying results of their efforts stemmed from a dedication to the objective of coordinating and upgrading all EMS resources and components in the community.

Q. 11. Last year the Department of HEW established an interdepartmental committee to discuss the programs of the several Federal agencies which related to emergency medical services. How many times did that committee meet and with what results? When was the last meeting?

A. 11. On December 8, 1972, Secretary of Department of Health, Education, and Welfare (DHEW) requested by letter to the Secretary of Transportation (DOT) that DOT participate in the Emergency Medical Services (EMS) Interdepartmental Committee. The cooperation of DOT was extended to DHEW on

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January 15, 1973, and a representative was named to participate on the Committee. As of this date, no meeting of the Committee has been held.

Regarding an "EMS Administrator's Advisory Committee," we are not aware that such a committee has been established.

Q. 12. I was interested to see that you are seeking bids on a contract to develop a postgraduate course for managers of EMS systems. Could you describe the specifics you require included in such a course?

A. 12. In administering the Emergency Medical Services (EMS) portion of the highway safety program for the past six years, it has been our experience that lack of specific professional competence has delayed compliance with Standard 11 and the resulting improvements to be expected in EMS at State and local levels. We detected a lack of status among those attempting managership, as compared with those professionals of the long-standing "establishment" at State and local levels, i.e., the police, fire and motor vehicle administrators, public health officials, etc. Indeed, public health curricula have traditionally been oriented to disease and prevention thereof, as contrasted to concern for trauma and emergency response capability. We have reviewed curricula in the management sciences, public administration, public works, bio-engineering, and the social sciences; and we find nobody who has the skills, knowledge, and attitudinal approaches that are sufficiently relevant and transferable to the EMS job performance. We have, therefore, arrived at the conclusion that a new professional is needed, trained in a new way for a new program. We do not see that this individual should, of necessity, be a physician but, rather, a leader—a persuasive, hard-nosed administrator who is a problem-solver in the true sense. The need for such an individual has been discussed in professional journals and reports. Concerning the curriculum itself, at this juncture—and preliminary to a contractor's final report—we feel the following general topics to be essential to performance in this new field:

Societal problem-solving rationale, techniques, and methods.

The epidemiology and etiology of serious illness and injury.

Definition of time-critical injuries and illness and associated countermeasures.

Intensive course in general physiology.

Societal impact of medical emergencies, value, and ethics philosophy.

The Emergency Medical Services System—definition and role of system elements.

The economics of ambulance service.

Federal/State/Local Government structures.

The art and science of grantsmanship—getting the funds to operate the system.

EMS Communications—survey, command and control; Federal/State/local relationships as a focal point.

EMS facilities—categories, equipment, staffing, economics, performance standards.

EMS manpower development, licensing, and training of EMTAs, police, firemen, volunteers, and general public.

The helicopter in EMS—operational profile, advantages/disadvantages, economics, benefits.

EMS needs identification—State/local.

Drafting EMS legislation—statutes/ordinances.

Comprehensive EMS Planning—regional/State/local.

The modern surface ambulance—design, performance, costs, procurement consideration, safe operation.

EMS public information and education—constituency development, programs for kindergarten through high school, families, recreational and industrial areas, etc.

Managing the EMS System—State and local roles, cost/benefit considerations, political and tax implications.

Practicum—on-the-job riding in ambulances, etc.

Q. 13. I understand that each state is to designate a unit responsible for carrying out the EMS program supported by the Highway Safety Act. In what state agencies are these units generally located? Please provide a list for the record.

A. 13. With few exceptions, the State Department of Health is the unit delegated the responsibility by the Governor's representative for highway safety to coordinate the EMS Program.

In the organization chart of the State Department of Health in 1967, only the States of Maryland, New Mexico, New York, Oregon, and Rhode Island had Emergency Medical Services identified; in 1973, all States—with the financial assistance of the National Highway Safety Program—have an official agency designated (see attachment).

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[QUESTION 13 ATTACHMENT]

November 14, 1972

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of
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* MISSOURI on page 4

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Q. 14. What relationships with the state health departments have been developed by these units?

A. 14. The majority of the agencies delegated the authority to administer the National Highway Safety Program Standard 11, "Emergency Medical Services", are located in the State Department of Health. The health department was considered by NHTSA to be the most logical agency, due to the fact it was in the best position to identify other Federal funds available to the State for upgrading the total emergency medical care system, thus, decreasing the chance for duplication of effort which would result in the waste of Federal funds.

Q. 15. What coordination of emergency medical services with state, county, or local community health programs has been developed by programs supported by the Department of Transportation?

A. 15. The National Highway Traffic Safety Administration (NHTSA), through its Regional Offices, has encouraged close cooperation with their counterparts in the Public Health Service (PHS) Regional Offices. Representation from the Regional Medical Program (RMP), Comprehensive Health Planning (CHP), and Hill-Burton Programs on the State Emergency Medical Services Advisory Councils are encouraged and recommended by the NHTSA Regional Offices. Following the recommendations of the American Medical Association's "Guidelines for Community Councils", States are required under the NHTSA program to establish State and local EMS Councils. The membership, made up of medical, law enforcement, hospital, and emergency services personnel, represents State and local interests.

Q. 16. Are the 314(a) and (b) agencies given an opportunity to review or participate in any way in the planning for these programs?

A. 16. Comprehensive Health Planning A & B agency involvement is encouraged, and in many States, such as Tennessee and Kentucky, the NHTSA Emergency Medical Services Program is integrated into the total health care system.

Q. 17(a). I understand that up to last year you were supporting demonstration projects and that you discontinued them on the grounds that enough is known about emergency medical services, and that you should shift your program to "getting the job done" as you described it in the House hearings.

A. 17(a) In the formative years (1967–68) of the NHTSA efforts in EMS, Section 403 funds were allotted to six demonstration projects to test various elements of the EMS System, in combination and singly. Three of these projects involved use of helicopters in various roles and parameters. These demonstrations were not discontinued because "enough was known about EMS," but rather because the Federal funds made available were spent and the projects terminated as per stipulations in the individual contracts. Since the completion of these demonstration efforts—and partly as a result thereof—NHTSA has reoriented its efforts to programs considered to have a higher pay off (with limited Federal funds available) for the overall highway safety program.

Q. (b) Were the results of your demonstration programs evaluated and made available to the public?

A. (b) The results of these demonstration projects were evaluated and made known to the public through mass distribution of Executive Summaries of each project. The Final Report of each project was placed in the National Technical Information Service, Springfield, Virginia, and its availability from that source was made known through mass mailings (see attached documents list).

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[QUESTION 17B ATTACHMENT]

AVAILABLE DOCUMENTS
EMERGENCY MEDICAL PROGRAMS

SOURCE : NATIONAL TECHNICAL INFORMATION SERVICE
Address: 5285 Port Royal Road, Springfield, Virginia 22151
Phone : Area Code (703) 321-8500, Sales Desk Extensions: 131, 132, or 133

Item No.	Title of Document	Document Number	Contract Number	Price
1.	GUIDANCE DOCUMENT FOR EMERGENCY MEDICAL SERVICES SURVEY AND PLAN DEVELOPMENT	PB-192-735	FH-11-6554	$3.00
2.	EMERGENCY CARE SYSTEMS DEMONSTRATION PROJECTS		FH-11-6596	$3.00 each Volume
	Volume I - Summary, Conclusions, and Recommendations.....	PB-179-847		
	Volume II - The Emergency Care System.....	PB-179-848		
	Volume III - Operational Plans.....	PB-179-849		
	Volume IV - Appendices.....	PB-179-850		
3.	EXTRICATION METHODS AND AMBULANCE OPERATIONAL GUIDELINES (Final Report)		FH-11-6943	$3.00 each Part
	Part 1 - Extrication Methods.....	PB-184-904		
	Part 2 - Ambulance Operational Guidelines.....	PB-184-905		
4.	* ECONOMICS OF HIGHWAY EMERGENCY AMBULANCE SERVICE	PB-178-837	FH-11-6541	$3.00
5.	DESCRIPTION AND ANALYSIS OF EIGHTEEN PROVEN EMERGENCY AMBULANCE SERVICE SYSTEMS		FH-11-6686	$3.00 each Volume
	Volume I - (Broken into two volumes due	PB-179-651		
	Volume II - to size of document)	PB-179-652		

* Comprehensive Summary available from SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, Washington, D. C. 20402. Price: $0.65 per copy.

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Item No.	Title of Document	Document Number	Contract Number	Price
6.	EMERGENCY AMBULANCE SERVICE--DEMONSTRATION PROJECT, New York City		FH-11-6930	$3.00 each
	Part 1 - Demonstration Project..... Methods Employed in Study	PB-195-053		
	Part 2 - Dispersal of Emergency Ambulances..... A Demonstration and Analysis	PB-195-054		
7.	EMERGENCY MEDICAL SERVICE FOR AN URBAN AREA DEMONSTRATION PROJECT, Detroit, Michigan		FH-11-6901	$3.00 each
	Part 1 - Complete Report.....	PB-197-752		
	Part 2 - Summary.....	PB-197-753		
8.	CONSOLIDATED SYSTEM OF EMERGENCY SERVICES DEMONSTRATION PROJECT (20/20), Nebraska, Final Report	HS-800-589	FH-11-6854	$6.00
9.	AIR MEDICAL EVACUATION SYSTEM (AMES) DEMONSTRATION PROJECT, Arizona		FH-11-7090	$3.00 each
	Part 1 - Final Report	PB-193-724		
	Part 2 - Final Report Appendices.....	PB-193-725		
	Part 3 - Executive Summary.....	PB-193-726		
10.	COORDINATED ACCIDENT RESCUE ENDEAVOR STATE OF MISSISSIPPI (CARE-SOM) DEMONSTRATION PROJECT		FH-11-7146	$3.00 each
	Part 1 - Operations Structure and Procedures.....	PB-199-756		
	Part 2 - Appendices.....	PB-199-757		

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Item No.	Title of Document	Document Number	Contract Number	Price
11.	EXTENSION OF PROJECT "CARE-SOM" DEMONSTRATION PROJECT, Mississippi Final Report.....	PB-204-999	DOT-HS-019-1-020	$3.00
12.	HELICOPTER AMBULANCE SERVICE TO EMERGENCIES (HASTE)--DEMONSTRATION PROJECT, Minnesota Final Report.....	PB-200-308	FH-11-7128	$3.00

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SC Superintendent of Documents
Add : U. S. GOVERNMENT PRINTING OFFICE
Washington, D. C. 20402

Item No.	Title of Document	Order Number	Price Per Copy
1.	AMBULANCE DESIGN CRITERIA	USGPO:1970 0-377-476	$0.60
2.	BASIC TRAINING PROGRAM FOR EMERGENCY MEDICAL TECHNICIAN--AMBULANCE		
	Part 1 - Concepts and Recommendations	USGPO:1970 TD-2:208:EM 3	$0.35
	Part 2 - Course Guide and Course Coordinator Orientation Program	USGPO:1970 TD-2:208:EM 3/2	$0.30
	Part 3 - Instructor's Lesson Plans	USGPO:1970 TD-2:208:EM 3/3	$2.50
3.	REFRESHER TRAINING PROGRAM FOR EMERGENCY MEDICAL TECHNICIAN--AMBULANCE		
	1/Part 1 - Course Guide	USGPO:TD 8.8:EM 3 S/N 5003-0032	$0.35
	2/Part 2 - Instructor's Lesson Plans	USGPO:TD 8.8:EM 3/2 S/N 5003-0031	$1.50
4.	TELEMETRY AND PHYSICIAN/RESCUE PERSONNEL COMMUNICATION	USGPO:1971 TD-8.2:T23	$1.75
5.	3/PATIENT-HANDLING MANUAL FOR EMERGENCY MEDICAL TECHNICIANS--AMBULANCE	USGPO:1972	$0.60

1/ Prepared to aid in organizing, conducting, and standardizing a refresher training course. It contains a detailed outline of the course; prerequisites for both students and instructors; suggested scheduling and class size; requirements for facilities, training aids, and reference material; and guidelines for conducting the course.

2/ Prepared to aid the instructor in conducting a refresher training course. It contains detailed lesson plans for the course, and guidelines for developing test materials and for conducting lessons in which student knowledge and skills are evaluated.

3/ The manula is intended as both an instructional text and a general reference document for Emergency Medical Technicians (EMTs). It is devoted exclusively to the tasks associated with lifting and moving the sick or injured person. Its scope is limited further to the range of situations ordinarily encountered by the EMT in ambulance and rescue services.

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Item No.	Title of Document	Source	Price
1.	**EMERGENCY CARE AND TRANSPORTATION OF THE SICK AND INJURED**	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS 430 North Michigan Avenue Chicago, Illinois 60611	$4.95
2.	**EMERGENCY MEDICAL GUIDE, Second Edition** **John Henderson, M.D.** **McGraw-Hill Paperback**	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS 430 North Michigan Avenue Chicago, Illinois 60611	$3.95
3.	**FIRST AID FOR EMERGENCY CREWS, Third Printing 1970; Carl B. Young, Jr., M.P.H.** **Charles C. Thomas, Publisher** **Springfield, Illinois**	AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS 430 North Michigan Avenue Chicago, Illinois 60611	$4.50
4.	**TABER's CYCLOPEDIC MEDICAL DICTIONARY** **11th Edition, 1971**	F. A. DAVIS COMPANY Philadelphia, Pennsylvania 19103	$8.00
5.	**EMERGENCY-VICTIM CARE, 1971**	STATE DEPARTMENT OF EDUCATION Division of Vocational Education Columbus, Ohio 43210	$4.50
6.	**CARDIO-PULMONARY RESUSCITATION**	SOCIETIES OF ANESTHESIOLOGISTS (WFSA) Publications Distribution Office P. O. Box 430 Bronxville, New York 10708	$0.50
7.	**EMERGENCY CARE**	ROBERT J. BRADY COMPANY 130 Que Street, N. E. Washington, D. C. 20002	$4.95

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Item No.	Title of Document	Source	Price
8.	HIGHWAY SAFETY PROGRAM MANUAL Volume 11, Emergency Medical Services January 1969	U. S. DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration General Services Division, 48-51 Washington, D. C. 20590	$6.50
9.	SUPPLEMENT 1 to VOLUME 11, EMERGENCY MEDICAL SERVICES, HIGHWAY SAFETY PROGRAM MANUAL, February 1971	U. S. DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration General Services Division, 48-51 Washington, D. C. 20590	$1.10
10.	HIGHWAY SAFETY PROGRAM MANUAL Volume 16, Debris Hazard Control and Cleanup, April 1969	U. S. DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration General Services Division, 48-51 Washington, D. C. 20590	$2.75

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Q. (c). Were the results made available to HEW prior to their publishing RFPs for emergency services systems last year?

A. (c) The results of these demonstration projects were made available to appropriate offices in DHEW through official forwarding of the documents. Interagency briefings were conducted by the contractors during the course of the projects. Many copies of individual reports were presented to DHEW personnel on an informal basis. During 1967–69, there was a DHEW liaison person assigned to NHTSA. See attached Region IV combined HEW/DOT Regional EMS Resources Directory. (Note.—The Region IV Resources Director referred to may be found in the files of the subcommittee.)

Department of Transportation

Q. (d). I notice that two of the communities you describe as having outstanding emergency medical services systems are the Jacksonville area and the State of Illinois. These are two of the five programs supported by HEW in the current programs by the Department of Transportation? Did you coordinate your support of these programs with the support provided by HEW?

A. (d) The States, not DOT, extend financial support for EMS out of the total Federal funds provided the States for highway safety. Regarding the two cases in point, in 1968, the Jacksonville area was authorized to obligate, and subsequently expended, $303,386.86. This figure was out of a total State obligation of approximately $976.2 thousand to EMS for 1968 which included $424.4 thousand to Dade County. The Illinois Trauma Care System was authorized an obligation of $327,007 in 1972; however, the State has obligated $2,813,519.73, to date, for EMS in the entire State. All of these funds are aimed at upgrading EMS. All of the above actions have been in accordance with technical guidance from NHTSA.

Since all of the activities described in the preceding paragraph antedated DHEW's current year effort, coordination was not necessary. However, when DHEW's effort was initiated, a DOT representative was involved in the site selection for the obligation of $8.5 million. DHEW's objective in site selection was finding places where the mechanism already existed for the administration and expenditure of funds in an already ongoing program. Consequently, DHEW funds are being used to enhance teh activities in these two areas that were originally aided by DOT technical assistance and funding.

Q. (e). Was there a follow-up relationship between the projects supported by HEW and those supported by DOT?

A. (e). DOT headquarters personnel have not visited these sites. Further, DHEW has thus far not reported on the activities at these sites.

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U.S. Department of Transportation

National Highway Traffic Safety Administration

Washington, D.C. 20590

Helicopters In Emergency Medical Service NHTSA Experience To Date

December 1972

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Helicopters in Emergency Medical Service
NHTSA Experience To Date

The purpose of this paper is to document, in one source, the efforts by the National Highway Traffic Safety Administration to study the role of the helicopter in emergency medical service. A five-year period from mid-1967 to mid-1972 is documented by extracts from final contract reports with comments and overall conclusions by this writer.

The National Highway Safety Act of 1966 authorized and directed the Secretary (of Transportation) to assist and cooperate with other Federal departments and agencies, State and local governments, private industry and other interested parties, to improve highway safety. Limited funding provisions were included in the Act to assist in accomplishing its goals. Section 402 provided matching funds for State use and Section 403 provided for full Federal funding of Research and Demonstration Projects.

One subject, on which the Act directed the Secretary to provide a uniform standard for the States' highway safety program, was "Emergency Services." Highway Safety Standard 11 "Emergency Medical Services" was issued June 27, 1967. The stated purpose of this standard is to:

I. Provide quick identification and response to accidents.

II. Sustain and prolong life through proper first aid measures, both at the scene and in transit.

III. Provide the coordination, transportation, and communications necessary to bring the injured and definitive medical care together in the shortest practicable time, without simultaneously creating additional hazards.

Studies were made of existing operations, and methods were explored which would improve the response to highway-related emergencies. Along with other system improvements, the helicopter was proposed as one method of reducing the interval from the time of the accident to the arrival of emergency medical care, and to reduce the time of transportation from the scene to the hospital.

Two of these early studies which included specific information on utilization of the helicopter in the emergency medical service were *Economics of Highway Emergency Ambulance Service* and *Emergency Care Systems Demonstration Projects* funded under Section 403.

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Economics of Highway Emergency Ambulance Service[1]

The *Economics of Highway Emergency Ambulance Service* provides information on the economic problems of emergency ambulance services and provides guidelines that planners can use in developing economical and efficient emergency ambulance service. This report provides guideline information that can be used to identify and evaluate alternate solutions to specific problems in providing emergency ambulance service.

One chapter of this report is devoted to the helicopter ambulance. Among the findings and conclusions was the determination that potential use of helicopters as emergency ambulance vehicles needs objective evaluation. Too many people have formed a positive opinion without benefit of data or cost-benefit evaluation studies. Careful planning and coordination among medical, police, manufacturer, purveyor and aviation agencies, and among municipal authorities are essential to make a helicopter system function effectively. Any viable system will cut across municipal, county (even State) bounds and coordinated action is required. Limited numbers of currently available and certified helicopters are suitable for individual emergency ambulance missions. Payload and size should accommodate two to four litters internally – smaller ones are unsatisfactory; larger ones are uneconomical.

Emergency Care Systems Demonstration Project[2]

The *Emergency Care Systems Demonstration Projects* was designed to provide a complete description of the emergency care system, in terms of its functional components, and to determine the subsystem design required to obtain an effective operational system. In addition, operational plans for emergency care demonstration projects were developed. One of the subsystems examined was airborne emergency care system vehicles. This included fixed wing Short Take-Off and Landing (STOL) aircraft as well as helicopters. Although the additional speed and payload of the fixed wing STOL aircraft gave certain advantages over the helicopter, the helicopter retained certain critical advantages especially at congested hospital delivery points.

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[1] *Economics of Highway Emergency Ambulance Service*, Dunlap and Associates, Inc. (1968)–DOT/HS 003-295, NTIS/PB 178-837, Contract No. FH-11-6541.

[2] *Emergency Care Systems Demonstration Projects*, Franklyn Institute Research Laboratories (1968)–DOT/HS 800-006 thru 009 (4 volumes), NTIS/PB 179-847 thru 850 (4 volumes), Contract No. FH-11-6596.

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In studying the U.S. Army success with the helicopter evacuation, it was found that one of its greatest assets was the efficient communication system which permits prompt notification and effective dispatch control. There is no civilian counterpart to this system and this lack of communications decreases the effectiveness of the civilian emergency helicopter ambulance. Cost figures for various operational plans utilizing a selection of available helicopter types were developed by this study.

In using either of these studies for planning, the planner must adjust the costs developed to present dollar values, and must account for new equipment and practices which have been developed since these reports.

During fiscal year 1968, two States utilized Section 402 matching funds to conduct pilot helicopter emergency ambulance service programs. Pennsylvania started a one-year operation in November 1967 with a Bell 47-J-2A; and the Nebraska 14-month study began in January 1968 utilizing two Sikorsky S-55 helicopters. Neither of these programs lived up to the high expectations of the planners, although much was learned from these early trials.

Pennsylvania Project No. EMS 68-1-001[3]

The Pennsylvania trial of the helicopter in emergency air ambulance use was of one year duration to determine how effective a helicopter ambulance could be in increasing the chances of survival of traffic accident victims. The test area, in the southeastern corner of Pennsylvania, consisted of nearly 900 square miles, one million persons and 34,000 miles of public highways. The Bell 47-J-2A was available from 7 a.m. to 9 p.m. for one year and was controlled by the State Police. For the first 3½ months the helicopter was based in the Philadelphia area and received 14 requests which resulted in three airlifts. During the remainder of the year, the helicopter was based in the more rural Exton area where 130 accident responses were made which resulted in 46 completed airlifts. Regular police traffic patrols were main-

[3]Commonwealth of Pennsylvania, *Helicopter Ambulance Study*. May 1969. Final Report. Project EMS 68-1-001. Robert R. Coleman, Project Director, Pennsylvania Department of Highways. DOT/HS 008-477, NTIS/PB 197-240.

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tained during the trial period. The following table summarizes the major activities during the 12-month period:

Traffic Service	Flights
disabled vehicles	83
accident response	144
air lifts completed	49
Police Service	
criminal	55
civil search	24
miscellaneous	30
Other	
demonstrations, accident simulations, etc.	77
Patrols recording no incidences	244

Functioning as an ambulance, the helicopter completed 49 airlifts of victims to hospitals. The overall response from time of call to delivery of the patient to the hospital averaged 19.5 minutes. The average trip time from base to accident scene was 7.5 minutes and from accident scene to hospital, 5.8 minutes. (This indicates an average response distance of less than 10 miles and an average patient carry of less than 8 miles, and does not give a comparable ground ambulance response time.) The types of injuries sustained by persons airlifted included lacerations, fractures, chest and internal injuries. The time factor in transporting the victims to the hospital was not critical in the majority of incidents. Six of the 49 injured persons had suffered injuries that were later classed as "life threatening." Two of these six victims died after arrival at the hospital. Two lives were "probably" saved as a result of rapid transfer to the hospital.

While the Bell 47-J-2A was satisfactory for this study and performed well within its design limits, it had serious shortcomings and was not considered satisfactory for use in a regular emergency ambulance service. The internal litter and seating arrangements made it difficult to load a litter victim. For a two-week period, the helicopter operated as a unit of a ground ambulance service for test and evaluation. Ground ambulance attendants were part of the flight crew during

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seven airlifts of injured persons. These attendants were impressed by the speed and accessibility of the helicopter, but regarded the space limitations, litter arrangements and limited medical equipment as quite inferior to their own ground ambulances.

The helicopter crew had direct radio contact with the State Police net and all messages to hospitals concerning arrival of injured persons had to be relayed by phone through the State Police stations. While the communication system could have been improved, the lack of requests for helicopter ambulance service throughout the study was a result of personal decisions rather than a communications hardware deficiency.

Nebraska Project No. EMS 68-1-001, 002[4]
(Operation SKY-AID)

Operation SKY-AID was a 14-month study to field test, under civilian conditions, the role a helicopter might play in providing emergency service under the most diversified combination of circumstances possible and to provide operating data pertinent to helicopter operations, i.e., weather, night flying communications and maintenance. Two Sikorsky S-55 helicopters were utilized in the program which covered the 35 southeastern counties of Nebraska. During this program, flights were prescheduled for selected weekends and hours of unusually heavy traffic. Crews were on 15 minute calls from 8 a.m. to 5 p.m., Monday through Friday, and one hour call at other times.

Although any one of the ambulance flights potentially could have proved lifesaving to a severely injured accident victim, there were fewer casualties during the scheduled flying hours than had been anticipated. Most of the missions consisted of highway traffic surveillance. (This report does not state the total number of patients carried during the test, but indications are that it was more than one but less than five.)

The helicopters used during this project were reported ideal for space requirements, accessibility to patient in flight and stability; however, this type helicopter was reported too low powered for access to limited landing sites and the dispatch delay time was undesirable for emergency ambu-

[4]Nebraska Air Ambulance Project, *Operation Sky-Aid* July 1969, Final Report. Project EMS 68-1-001, 002. Paul R. Haith, M. Ed., Project Coordinator. DOT/HS 008-478, NTIS/PB 203-293.

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lance service. Also, even though this project utilized to the fullest extent all available communication systems, communications were inadequate. This study also found that a standby helicopter ambulance program, with a helicopter parked at a medical center prepared to answer emergency calls, is neither feasible nor recommended. A more feasible plan would give consideration combining medical emergency services with services for other agencies.

Both of the foregoing tests experienced several common difficulties which can be expected in any attempted use of the helicopter for emergency ambulance service unless they are anticipated and planned around. Similar difficulties have also appeared in later Section 403 funded demonstration projects.

One difficulty which was not unexpected was the high cost of operation. What was not foreseen was the high cost per patient due to the low usage as an emergency ambulance. Although most advocates of emergency helicopter ambulance service can cite cases where this service could have saved lives or improved the final medical outcome due to the accident victim's injuries, they fail to realize how few such cases occur within the effective operating radius of the helicopter during any given time period. Even when there was a case for which the helicopter would have been the proper response vehicle, failure to alert the helicopter operator was, and still is, a primary problem.

Another difficulty indicated by these tests was the inadequate radio communications with the helicopter crew. Unlike the U.S. military radio communications which have a compatible world-wide system, civilian public service radio communications are generally fragmented or non-existent to the extent that much of the effectiveness of providing rapid helicopter emergency ambulance service is lost. The inability of the crew of the helicopter to communicate immediately with a control center, pick-up site personnel, or destination medical center can cause unnecessary delays. This problem was foreseen in earlier studies.

Also; both test programs indicated difficulties associated with the types of helicopters selected for use. The type of helicopter selected for emergency ambulance use will have a bearing on the outcome of any helicopter emergency ambulance project. There are many types of helicopters available today. Few of these helicopters are suitable for this type of work, and none can be considered ideal.

At the end of fiscal year 1968 and during fiscal year 1969, six projects were contracted under Section 403 (Research and

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Demonstration Projects) which included investigation, to various degrees, of the use of helicopters as emergency ambulances. In the following paragraphs are abstracts of the emergency air ambulance portions of final reports from the contractors listed below:

University of California – Los Angeles

The Metropolitan Washington Council of Governments (DC)

City of Detroit, MI

Arizona State University

Metropolitan Inter-county Council (MN)

Mississippi State University

University of California – Los Angeles[5]

This project titled, "Emergency Medical Service Systems," was to develop and demonstrate means for evaluating the effectiveness of improvements to Emergency Medical Service systems. The project was to measure the benefit, in terms of patient outcome, of improvements to various EMS sub-systems aimed at reducing time to treatment and raising the level of care. Analytical models were developed to describe the operating characteristics and performance of proposed systems. Certain demonstration efforts were evaluated in communications, training of paramedical personnel, and helicopters.

The helicopter emergency ambulance study was conducted in three phases with a converted Bell Jet Ranger:

1. **A response time study** in which a helicopter was dispatched to emergency medical incidents in tandem with ambulances that serviced a suburban area; the helicopter did not land, but estimated probable landing difficulties;

[5] *Emergency Medical Service System*, University of California-Los Angeles, DOT/HS (to be published): NTIS/PB (to be published), Contract No. FH-11-6849.

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2. **A landing feasibility study** to assess the operational potentialities of helicopters, in a suburban/urban environment, in a variety of controlled landing site conditions;

3. **A patient retrieval demonstration** to assess the operation efficiency and medical effectiveness of helicopter ambulance in a rural environment.

The overall objective of these demonstrations was to examine the feasibility of integrating helicopters into the emergency rescue transportation system, both to supplement and to complement ground rescue ambulances.

The feasibility of using helicopters as emergency air ambulances has been well demonstrated both in the U.S. and abroad. However, this project showed in its response time study that despite its speed and ability to fly to a destination in a straight line, a helicopter, on the average, cannot reach the scene of a medical emergency in an urban or suburban area ahead of a ground ambulance dispatched simultaneously from a well deployed fleet of vehicles. Furthermore, in highly developed areas, the presence of poles, overhead wires, tall buildings, and heavy street traffic tend to delay or preclude a helicopter landing, unless a trained controller is at the scene to point out obstacles, control traffic, and guide the helicopter by means of hand signals and/or direct voice communications.

Taking these factors into account, it appeared that helicopter ambulances had their greatest potential in rural areas, where the response time of conventional ambulance service was relatively long, and where the presence of open areas would permit unassisted helicopter landings and take-offs. Rural areas are also characterized by a relatively small population base. Thus the frequency of occurrence of medical emergencies was projected to be relatively low within the area serviced by helicopters. This infrequent demand for emergency ambulance transport, coupled with the high initial investment cost and recurring operating costs of a helicopter, indicate that it might be uneconomical to operate a helicopter solely as an air ambulance in a rural environment. Therefore, helicopters whose presence in rural areas has been justified for other purposes should be sought. In this way, the medical and operational benefits of the secondary role need only be balanced against the incremental cost of operation.

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The area selected for the patient retrieval demonstration (Antelope Valley-Newhall area) contained a County Fire Department base and covers about 2,200 square miles, with a population of approximately 120,000. The county fire department helicopter standby hours for the emergency ambulance test were from noon to 8 p.m. on Fridays, Saturdays and Sundays for a 13-month period. Crews attended an 80 hour emergency medical training course at a teaching hospital prior to initiating the service. The incidents to which the helicopter responded were those for which the estimated response time of a conventional ambulance was 15 minutes or more.

The helicopter was deployed or scheduled for deployment as an air ambulance on 180 days. As an air ambulance it retrieved 88 patients and was considered instrumental in saving the lives of five. It also was successful in transferring 12 patients, six of whom were considered to have life threatening injuries, from small hospitals to hospitals with greater capabilities. Although extensive preplanning and establishment of protocol of operations was accomplished with all concerned organizations, data indicated that if the helicopter operator had been promptly notified of all potential qualifying cases, 41 additional patients would have been transported.

Of the cases transported, the reviewing physician judged 27% to have had sustained life-threatening injuries. In general, the helicopter was used for a greater portion of life-threatening cases than were the surface ambulances based on a 2:1 patient admission rate at the receiving hospitals. The following table compares service times for surface and air ambulance during the patient retrieval demonstration phase. The great difference in waiting time to treatment in the hospital is generally credited to advance notification by radio of arrival time and nature of patient's injury.

Comparative Service Times of Ground Ambulance Calls Greater Than 15 Minutes and Air Ambulance

Time from Dispatch to:	Mean Times		Diff. in Minutes	Pct. Change
	Ambulance	Helicopter		
Arrival on Scene	20.9	14.6	6.3	30.1
Arrival at Hospital	41.4	32.3	9.1	22.0
Treatment at Hospital	52.6	35.8	16.8	31.9

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This comparison should be interpreted as a potential area of improvement in emergency ambulance service in this community and not as a criticism of existing service, since 50% of all calls were responded to by ground ambulance within 10 minutes. The foregoing table is based on only those calls with a greater than 15 minute response. Given the cost and utilization of the air ambulance, careful planning is required before the use of helicopters as air ambulances is arbitrarily decided upon.

This project concluded that the helicopter ambulance could provide improved emergency service to emergency victims who are located 15 minutes or more from the nearest ground ambulance. This improved emergency service, under conditions similar to this trial, would include a 30.1% decrease in time to arrival on scene and a 22% decrease in arrival time at the most appropriate (rather than merely the closest) hospital. This service could be offered at a cost comparable to present ground ambulance costs if the helicopter were made available daily and its use continued beyond the demonstration period. Air ambulance service could be used in other outlying areas of the country having potentially long response times (15 minutes or more) in emergencies. It cannot be stressed too strongly that these findings depend on (1) the helicopter having another function against which the procurement and other fixed costs of operation can be offset, (2) demand for emergency service continuing at identical levels, and (3) no expansion of ground ambulance service or deployment patterns that would effectively reduce the time to arrival on the scene. If one or all of the foregoing conditions were not met, then the economies of operation would change significantly and the medical benefits would be diminished.

The Metropolitan Washington Council of Governments (DC)[6]

This project was to explore the feasibility of integrating a regional helicopter ambulance service with existing ground ambulance service to provide a more efficient, rapid emergency rescue and treatment capability in the Washington

[6] *Report on the Feasibility of Developing an Experimental Helicopter Ambulance Service in the Washington Metropolitan Area* – Metropolitan Washington Council of Governments, Washington, D.C. (1969)–DOT/HS 800-530, Contract No. FH-11-6853.

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metropolitan area (District of Columbia and five surrounding counties in Virginia and Maryland). As the study progressed, it became apparent that key blocks of data needed to determine both the quality and deficiencies of the existing crash rescue system were not available. As a result, the feasibility of integrating a regional helicopter ambulance service had to be based on unsupported estimates and probabilities. It was concluded that the feasibility could only be determined by a demonstration project. (An alternate method of determining feasibility would have been to institute a reporting system which would have collected the needed data. A demonstration project without comparable existing data cannot measure the benefits added by the demonstration.)

City of Detroit, MI[7]

The "Emergency Medical Services for an Urban Area" demonstration project by the city of Detroit and the University of Michigan Highway Safety Research Institute was to study alternative methods of public-supported ambulance use in medical emergencies on the basis of timeliness, quality and cost. Sought were methods of improving emergency medical assistance. Existing public and private (contracted) ground and air ambulance services were evaluated as to time elapsed between the call for help and the victim's delivery to a hospital, and the treatment available from ambulance crews. There also was analysis of communications, including the performance of two citizen-band radio reporting groups, with the object of improving the speed of accident detection and notification.

In the air ambulance portion of this project, the Bell 47-J flew patrol missions over the 140 square mile area of the city between 4 and 7 p.m., Monday through Friday (weekend and late evening flights were scheduled on occasion), for a six month period. The primary mission of the crew was to land at injury accident sites, provide paramedic care, and transport the victim to one of six local hospitals having a helipad or helistop.

A police ground unit was necessary and always requested at the accident scene for traffic control or crowd

[7] *Emergency Medical Services for an Urban Area*, City of Detroit (1970), Final Report. DOT/HS 800-418, NTIS/PB 197-752. Contract No. FH-11-6901.

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security. Four hundred and eighty-seven hours were flown on 131 missions. It was demonstrated that an air ambulance can successfully land – on a busy freeway or a major thoroughfare during rush-hour traffic, or on a vacant lot or playground in a residential neighborhood – and transport an injured victim to a hospital.

In the course of the demonstration, the crew was dispatched to 37 incidents, with 27 successful landings resulting in the transfer of 23 persons. Eight landings were made on freeways, 11 on surface streets, and 8 on off-street areas. Because the injury occurrence process was random, the range of victim's condition varied from minor injuries to critical cases. For the most part, those transported by helicopter were not seriously injured. Three of the victims, however, did fall into a critical category: one apparently died before the craft arrived, another died in flight, and the third was successfully transported and treated.

The primary benefit of the helicopter ambulance is its speed of response and the resultant benefit that this speed affords the victim. To place the helicopter in a perspective of an urban emergency-medical-response system, its time-saving benefits must be compared to those of ground ambulances. The helicopter, operating city-wide, did achieve some time savings, but the benefit was small when compared to the speed of ground operations. The average time from dispatch to hospital was 9 minutes for the Fire Rescue squads and 8.2 minutes for the helicopter ambulance. The helicopter usually could not approach a victim as closely as a ground vehicle and the victim loading process was more complex. In addition, the helicopter traveled greater distances and had only six helipad hospitals on which to rely, while the ground vehicles covered shorter distances and relied on 14 hospitals.

This demonstration study concluded that the time savings of a helicopter ambulance in an urban area does not justify the cost of a helicopter ambulance operating exclusively on patrol. Use of a helicopter for medical emergencies in an urban area may be justified under limited conditions. If a municipality operates a multipurpose helicopter which has a secondary role of standby for emergency medical transport, a screening procedure should be set up to limit the demand and reserve air conveyances for only the seriously injured. The definition of serious would include the nature of injury, the time-treatment requirement, and the distance to be covered to get to proper treatment.

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Arizona State University[8]

The Air Medical Evacuation System (AMES) demonstration project by Arizona State University was to test the AMES concept previously developed at that University. This concept was to provide air ambulance service to rural portions of Arizona utilizing helicopters with additional missions. This system incorporated the helicopter, controlled by the Arizona State Highway Patrol, with well trained paramedical personnel, and a well designed communication system.

Two specially equipped FH-1100 turbine-powered helicopters operated 24 hours a day within a 150 mile radius from a base in central Arizona. The aircraft carried two internal litters, the pilot and an Arizona Highway Patrolman. Both men were trained as paramedical specialists and had over 150 hours in an advanced in-hospital training program. Three physicians, all with military air evacuation and rescue experience, monitored the system continuously. The AMES responded to medical emergencies such as highway accidents, hunting, camping and boating mishaps, and inter-hospital transfers. The communication system could reach any point in the State utilizing the Arizona Highway Patrol frequencies and a separate medical channel. The net could also be patched into the telephone system, whenever desired.

After several months of intensive training, statewide service was initiated on May 30, 1969. By January 31, 1970, the aircraft had flown 1,185 hours and evacuated 225 persons in the course of 213 missions. In addition to medical experience which included evacuation of accident victims, hospital and premature infant transfers, venomous animal bites, tetanus, burns and general trauma, the AMES flew 613 "other" missions, including manhunts, aircraft searches, patrol, surveillance, etc. AMES developed criteria for types of patients suited for this service as well as those definitely not suited; necessary on-scene preparation, procedures, and medications; standards of evacuation care; strategies and devices for comfort and telemetry; and choice of receiving facility.

On-site pickup of the ill and injured was made during the entire test. Hospital transfers to more suitable facilities

[8] *Air Medical Evacuation System (Ames)*, Arizona State University (1970), Final Report. DOT/HS 800-267, NTIS/PB 193-724; Appendix DOT/HS 800-268; NTIS/PB 193-725. Contract No. FH-11-7090.

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were started near the mid-point of the project. Following is a summary of patient origin:

Distribution of Patients

Type Mission	No. Missions	No. Persons	Pct. of Total*	Persons/ Mission
1. Evacuation:				
a. Highway	81	116	52	1.42
b. Non-remote, non-highway	24	25	11	1.04
c. Remote	11	12	5	1.09
2. Transfer	55	72	32	1.30
3. Dry runs	42	0 (not included in % of Total)		
Total	**213**	**225**	**100**	

*(171 w/patient)

Physicians' comments concerning the patients after delivery by AMES indicate that the time saved effected a reduction in morbidity in at least 9 cases and the paramedic's action in at least one other case. The time saved improved the patient's chance of survival in at least four cases and on two occasions, the paramedic was credited with saving the patient's life.

Traveling by helicopter imposes a certain degree of roughness and vibration on the passengers. When comparing this to the roughness and vibrations encountered in riding in a ground ambulance, it is necessary to consider other factors' such as smoothness and contours of the roadway. Any rough movement, vibrations or sudden jerks of a patient cannot help but to bring him further discomfort and could add to the severity of his condition. In only four cases did the paramedic comment about the adverse effect of the helicopter with respect to deterioration of the patient's condition. Relative to the ground ambulance, the helicopter was rated less detrimental on rural/remote missions and more detrimental on urban missions.

In addition, this project provided quantitative answers to the question of cost and operational effectiveness of civilian air medical (helicopter) systems. The expense of such a system is substantial. The conclusion was that the high cost

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can be justified when the helicopter is operated as a rural, remote area system–not as a replacement for, but as a supplement to existing ground ambulance and law enforcement operations if the helicopter is used for other supporting missions, such as law enforcement, patrol, or surveillance, without sacrificing the medical evacuation capabilities or priorities of the system. On the basis of the experience that was gained, it was concluded that the helicopter can perform a very effective role in general law enforcement operations, while, at the same time, performing its primary mission of medical evacuation.

One additional significant conclusion of the project was that a properly designed emergency medical communications system is a key component of an air medical evacuation system operation.

Although not specifically pointed out in the report, the success of this project's operation was partly responsible to good planning by all agencies and organizations responsible for and interested in providing the existing emergency medical service for the demonstration area.

Metropolitan Inter-County Council (MN)[9]

This project entitled Helicopter Ambulance Service to Emergencies (HASTE) was a cooperative, coordinated multi-county emergency medical service response system. It was designed to determine the efficacy of utilizing highly trained and experienced rescue personnel, flown by helicopter to accident scenes, for providing primary or backup medical service to accident victims in the shortest time.

Designed and administered by the Metropolitan Inter-County Council, project HASTE was to take full advantage of the benefits and capabilities of a multi-county representative group organized to identify common needs and solve mutual problems through cooperative program efforts. The Minnesota State Health Department served as the prime subcontractor with responsibility for program implementation, data collection, and final evaluation.

The flight demonstration portion of this project was accomplished in two phases and utilized three types of helicopters. The first flight phase employed a Bell 47-J, without litter capability, which carried a well trained

[9] *Helicopter Ambulance Service to Emergencies (HASTE).* Metropolitan Inter-County Council, Minnesota (1971), Final Report. DOT/HS 800-495, NTIS/PB 200-308, Contract No. FH-11-7128.

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Professional Rescue Instructor of Minnesota (PRIM) to stabilize the victim at the accident scene prior to his transportation to the hospital by ground ambulance. This phase was in operation for three months and resulted in three victims receiving care; nine missions to carry blood, serum, or drugs; and 20 missions being aborted for various reasons. The second flight phase employed a Bell Jet Ranger for the first 10 months (the subcontractor went out of business without prior notice) and a Sikorsky S-62-A which completed the last two months of the project. During this second phase, in addition to carrying the PRIM to the scene to care for the victim, helicopter transportation of the victim was provided to the hospital if the injuries warranted this type of transportation. Seventy patients were carried; on 45 missions patients were attended but not transported; blood, serum, or drugs were transported on 45 missions; and 336 missions were aborted for various reasons.

In the opinion of the medical advisory committee, only 35 of the 70 patients transported to hospitals by helicopter had conditions or suspected conditions serious enough to warrant helicopter transportation. And of these 35, the committee concluded that eight were benefited in a way in which they would not have been by ground ambulance transportation.

The high rate of aborted flights seems to be due to the dispatch criteria which was very liberal. The helicopter was dispatched on any information of a personal injury accident, including those monitored on police frequencies, without regard to severity or of ground ambulance capability in the area. Over 65% of the flights aborted were turned around due to prior arrival of ground units or because the victim had received either minor or no injury. The project personnel felt that the helicopter emergency ambulance was under-utilized and a careful reading of the report will give clues as to a variety of reasons. (The use of a trained central dispatcher could have improved the utilization of the helicopter and reduced the number of aborted flights.)

Conclusions derived from this demonstration project included the determination that helicopter emergency ambulance service in a large metropolitan area such as Minneapolis, St. Paul, and suburbs is not feasible, but that helicopter ambulance service would be reasonable in the outlying areas of the State. In order to be financially feasible and practical in these outlying areas, the helicopter emergency ambulance would have to have a multipurpose use.

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In comparing the two types of helicopters utilized to transport patients, the Bell Jet Ranger was found to be adequate in nearly every aspect of operation. The possible exception would be the space limitation inside the helicopter. Lack of space restricts certain medical procedures that could have been done by paramedics such as cardiopulmonary resuscitation and splinting of lower extremities using fixation or traction type splints. Since only three or four instances of cardiopulmonary resuscitation were required during the project, this factor may not have been of too much consequence. The size problem could be remedied with a slight increase in cabin interior size. The Sikorsky S-62-A has adequate space in its interior cabin for all procedures. However, the ship's size proved a deterrent to officers on the ground. The 8,000 pound helicopter not only caused much more wind disturbance upon landing, but because of its large size it could not necessarily land on the untraveled portion of the highway or the shoulder as the Bell Jet Ranger could. Cost of operation of the Sikorsky S-62-A was found to be considerably more than that of the Jet Ranger.

Mississippi State University[10]

This project known as Coordinated Accident Rescue Endeavor-State of Mississippi (CARE-SOM) was conducted under two separate contracts. The first by the College of Engineering, Mississippi State University, was to evaluate the problems and benefits of a comprehensive and integrated medical response system using a balanced program of helicopter and ground ambulance to serve three large predominately rural areas of the State. The second portion was conducted by the College of Business and Industry, Mississippi State University, which continued the original studies and developed cost and organizational information for the helicopter ambulance use in a multipurpose role.

Three operational zones of a 50 mile radius each were utilized with the operation of the system composed of helicopters and ground ambulances, based on using the method of transportation which could get to the injured and transport them to the nearest hospital in the minimum amount of elapsed time. Time-Response Contour Maps were

[10] *Coordinated Accident Rescue Endeavor, State of Mississippi (CARE-SOM),* Mississippi State University (1970), Final Report, DOT/HS 800-460, NTIS/PB 199-756; Appendices DOT/HS 800-461, NTIS/PB 199-757, Contract No. FH-11-7146; and Extension of Project CARE-SOM, Final Report (1971), DOT/HS 800-584, NTIS/PB 204-999; Contract No. HS 019-1-020.

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developed to determine the portions of the operating area which were better served by the ground ambulance. Each zone system was operated by local people who were a part of the existing emergency medical services, including physicians, hospital personnel, ambulance attendants and law enforcement officers.

One FH-1100 helicopter was assigned to each zone to provide the air ambulance service. Existing ground ambulances were utilized and were provided with two-way radio communications to hospitals and law enforcement officers. The helicopters operated between the hours of 7 a.m. and 9 p.m. daily, from November 1969 through June 1970, and again from November 1970 through February 1971.

During the six month period of November 1969 - April 1970, a total of 828 missions were flown for all purposes; of these, 457 were directly involved with medical emergencies and the transferring of 332 patients. During the four month period of November 1970 - February 1971, a total of 478 missions were flown, of which, 207 were directly involved with medical emergencies and 189 patients were carried on 161 missions. The missions from these periods were classified, as follows:

Type of Medical Mission	Inclusive Dates 11/69-4/70	11/70-2/71
Traffic accidents	182	97
Inter-hospital transfers	180	70
Other medical emergencies	82	38
Blood, drug, equipment transfers	13	2
Total	**457**	**207**

Poor response and cooperation by hospitals and ground ambulance services resulted in insufficient data for any attempt to estimate lives saved or reduction of patient condition deterioration because of helicopter rather than ground ambulance patient movement. (More and better planning is needed in this area.)

The number of requests for the helicopter, other than hospital transfers, appeared to be inversely proportional to the distance of the caller from the helicopter base. This reluctance to request the helicopter for long-range missions could be due to the lack of familiarity with the project. Of interest is the average distance by type of mission. Less than 5% of all missions involved flight distances falling in the 50 to

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80 mile range. Inter-hospital transfers generally involved flight distances in excess of 80 miles. The average distance flown during inter-hospital transfers was 107.67 miles as compared to only 30.63 miles for traffic accidents and other medical emergencies.

The flight speed of the helicopters varied with the type of mission being flown. Since traffic accidents and other medical emergency flights were generally of short duration, the portion of the time spent in steady level flight was less, in relation to the total flight time, than that of the longer inter-hospital transfer missions. As a result, the average flight speed of the three helicopters was only 83.56 miles per hour for traffic accidents and other medical emergency missions as compared to an average speed of 94.73 miles per hour for inter-hospital transfers.

Summarized in the report are recommendations for improvements to the configuration of the FH-1100 as used in this project. Some of the problems which were encountered were with the communication system, litters, and cabin space. Additional findings of this project which are relative to any study of the helicopter as an emergency ambulance are listed below:

- The results of a study made among 61% of the CARE-SOM participating hospitals reveal that an estimated average of 26 minutes was saved in getting an emergency case under the care of a physician as a result of having radio communications with the ambulances (surface). Only 7% of the hospitals in Mississippi have a doctor on the premises on a 24-hour basis.

- The highest frequency of missions flown by the Project CARE-SOM helicopters to traffic accidents and other medical emergencies were within a distance of 25 miles from the location of the helicopter base of operations, but the effective range of the helicopter is best determined from the Time-Response Contour Map.

- The helicopter speed advantage over ground units was most effectively utilized for inter-hospital transfer missions of approximately 80 miles distance or greater.

- Helicopters were effective in responding to non-traffic related emergencies in areas removed from public roads or highways.

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- The time saving of the helicopter (FH-1100) over a ground ambulance can be predicted from the equation:

$$th = 6.68 + 0.23d \text{ where}$$

d = round trip distance in miles $10 \leq d \leq 70$

th = time savings of the helicopter over a ground ambulance in minutes.

It was the conclusion of the CARE-SOM Extension project team that a statewide, State-funded helicopter ambulance system operating under a State agency will provide a more efficient operating system than would a system of autonomous locally-operated units within a State. The statewide system would be a dual-purpose system. The primary purpose would be that of emergency medical services; the secondary function would be police traffic services. The advantages of this type of system from the standpoint of costs and management are many. Cost savings would accrue from the elimination of duplicative management. Economies in the purchase of items ranging from aircraft, fuel and parts to office supply items could be affected. Centralized parts depots and maintenance shops could be established. The use of standardized equipment and procedures would improve operational efficiency and effect cost reductions.

Further conclusions from the CARE-SOM Extension reported were that emergency medical services are increasingly becoming a function of the public rather than the private sector, and all people of the State would receive a more effective service at a lower cost, by the use of strategically located, State-operated, helicopter ambulances. One of the most important advantages of a State-operated system is the ability to utilize the helicopter more fully. As an ambulance serving the civilian populace the helicopter is an extremely expensive method of transporting patients because of its low utilization rate and relatively high operating costs, fixed costs especially. The saving of human lives by the prevention of accidents is as important, and likely less costly in economic terms alone, as the saving of lives after injury has occurred. Helicopters have proven to be effective in police traffic services activities. In the event of a natural or man-made disaster, several helicopters could be more effectively utilized if they are part of a State-operated system under one manager.

The report recommended that full-time medical attendants be utilized in an ongoing State-operated system. Inas-

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much as a dual-purpose system is recommended, it was recommended that the medical attendants be members of the Highway Patrol. These individuals would be selected from among volunteers from the Patrol and would be permanently assigned to the air rescue service. They would receive additional medical training, and would receive pay commensurate with their added training and specialized duties.

Rapid and reliable communications capabilities are an absolute requisite if the potentialities and advantages of helicopter ambulances are to be realized. The greater the number of functions required of the he[illegible]er, the more versatile the radio communications equipment must be.

In summary, the report stated that a State-operated helicopter system offers many advantages over autonomous helicopter ambulance districts. The helicopters can be utilized more efficiently, can provide highway safety services without disruption of medical service capabilities, and can be meshed into a State disaster plan more readily.

A complete plan for a Mississippi Statewide helicopter ambulance and police service is presented in the CARE-SOM Extension final report. This plan includes organization, job descriptions, equipment, operating procedures, budget, and report system.

The foregoing demonstration projects have shown that helicopters can be used as an emergency ambulance in a civilian emergency medical system. Certain truths have been established that should be recognized by any planner in considering the helicopter as an emergency ambulance vehicle:

- That the helicopter can rapidly deliver, to the scene of an injury or illness, an emergency medical technician who can evaluate the degree of danger to the victim and provide emergency medical care at the scene.

- That the helicopter emergency ambulance can transport a patient rapidly from point to point with an emergency medical technician to provide enroute emergency medical care as required.

- That the helicopter can provide rapid transportation of personnel, blood, drugs, or other material requirements to the place of emergency need from the place of supply.

- That the helicopter can provide the above services to some geographic areas not accessible to the ground vehicles.

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- That there are some times and places where the helicopter has no advantage over the ground ambulance for response to the scene of an accident or illness.
- That there are other times and places where the helicopter has no advantage over the ground ambulance for response to inter-hospital patient transfer.
- That the above times and places should initially be identified during the planning stage of a proposed helicopter emergency ambulance service.
- That there are certain categories of injury or illness where the patient's condition will receive no additional benefit from helicopter use.
- That the use of the helicopter as an emergency ambulance can provide medical advantage in only a small percentage of the total number of sick or injured in any given operating area.
- That the helicopter emergency ambulance must be known to and accepted by all other elements of the emergency medical service as having a proper role and place in the system before it can function effectively.
- That communications can greatly affect the time from dispatch to treatment in both ground and helicopter emergency ambulance response, and that inadequate communications can negate the potential time advantage of the helicopter.
- That the more economical ground ambulance, if available, should be used when no apparent benefit to the patient will be realized by use of the helicopter.
- That needless expense can be incurred by the helicopter ambulance service when some form of control or other deterrent to misuse is not available.
- That funds on the order of $200,000 to $250,000 per year, per helicopter should be available to start a proper, continuously available emergency helicopter ambulance service utilizing the 3,000 lb. class jet helicopter (FH-1100 or Bell Jet Ranger). Savings from this amount can be realized by fleet type operations, shared personnel and facilities, and other favorable factors which may be available in certain operating areas.

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- That each potential operating area for a helicopter emergency ambulance service is unique unto itself and plans for each area must recognize the various conditions existing in each area.

- That the benefits to a patient which may be derived by utilization of the helicopter emergency ambulance are difficult to measure (a problem common to most elements of emergency medical service) and that there is no common standard against which to measure these benefits.

- That there are certain equipment criteria and personnel proficiency standards which will increase apparent benefits to a patient and increase the effectiveness of the helicopter as an emergency ambulance.

- That the helicopter can be a useful supplement to an emergency medical service system, but is not a cure for all problems and will not replace proper planning, equipping, training and staffing of other elements of the system.

There appears to be three needs remaining to be resolved, other than funding, before the true benefits of the helicopter as an emergency ambulance can be realized. Each of these needs is interdependent upon the others and an attempt should be made to resolve each in the order listed below:

- A need to evaluate the possible additional benefits which can be accrued to a patient by use of a helicopter emergency ambulance over the ground ambulance.

- A need to establish a minimum criteria for the helicopter emergency ambulance vehicle and a minimum performance proficiency level for the assigned crew in order to achieve the most feasible and desirable of the benefits established above. It may also be desirable to establish a maximum equipment criteria and personnel proficiency level above which no significant additional benefits would be derived.

- A need to regulate the helicopter emergency ambulance service to assure a standard which will make these possible benefits available in any service offered.

It will not be necessary to fund additional complete demonstration projects in order to evaluate the results of studies of the foregoing needs. Existing helicopter emergency ambulance services can be utilized to make the evaluation.

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At the present time it does not seem wise to invest in a helicopter emergency ambulance element to an emergency medical service system until all other elements of the system are complete and operating effectively. An inefficient and fragmented emergency medical service system will result in an inefficient helicopter ambulance service which will be extremely expensive for the limited benefits derived. Expenditure of a large portion of available emergency medical service funds for a helicopter operation will restrict the proper development of other elements of the service. However, a helicopter operation which is presently justified and operating outside of an existing emergency medical service system may be compatible with and augment the existing emergency medical service system with relatively small additional cost. Continued improvement of other elements of the system would still be financially possible and such improvements would increase the benefits derived from these multiple-use helicopters.

One test program to augment the civilian emergency medical service with helicopters and crews presently justified and operating for other purposes is the MAST test program which began in July 1970.

Military Assistance to Safety and Traffic (MAST)[11]

Military Assistance to Safety and Traffic is a program of utilizing military helicopters and medical corpsmen as an adjunct to the existing local emergency medical service system for the purpose of providing assistance to civilian victims of traffic accidents and other medical emergencies. Existing equipment and personnel from active duty Army and Air Force units are involved. These military personnel work in cooperation with local health care providers and law enforcement officials according to a locally developed plan between the civilian and military communities. No personnel or equipment are transferred solely for the purpose of MAST support. The program is sponsored by six government agencies forming the MAST Interagency Executive Group, with administration assigned to the MAST Interagency Coordinating Committee. This committee is comprised of representatives from the Departments of Defense, Transportation, and Health, Education and Welfare.

MAST projects were initiated during the test program and are continuing operations at San Antonio, Texas; Colorado Springs, Colorado; Seattle - Tacoma, Washington;

[11] *MAST, report of test program,* Interagency Study Group, July-December 1970, GPO Stock NR. 1727-0030.

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Phoenix, Arizona; and Mountain Home, Idaho. This program attempts to provide better care in medical emergencies by transportation of medical specialists and equipment to the emergency scene; transporting patients from the scene of the emergency to the appropriate medical facility; and inter-hospital transfer of critical patients where ground ambulance transportation is not available, or air transportation is in the best interest of the patient. In the first six months of the program test, 182 missions were flown, 249 patients were carried, and 290 hours were flown. Of these patients, 115 were emergency site pick-ups and 134 were inter-hospital transfers.

As of June 30, 1972, MAST has completed 1,165 missions, carried 1,433 patients, and logged 2,494 hours flight time at the five sites. Costs are being covered by funds already available for operations and training. No special funds have been allocated, nor have existing funds been reapportioned. No charge has been made for any assistance provided.

Originally, Reserve and National Guard units, as well as active duty military units, were studied to determine the possibility of their use. Many problems, as yet not resolved, were encountered in planning their use. It was decided early in the study to restrict the test program to only regular active duty military units. During the test period it was learned that certain types of military units could engage in the MAST program with no degrading impact on either unit training or operations, and by their very nature provide realistic training experience and motivation. These units were identified as U.S. Army Medical Units (Air Ambulance) and U.S. Air Force Recovery and Rescue Units (Local Base Rescue). Army tactical units were found to be able to support a MAST project, but could do so at the expense of their other training and operational programs.

Although the Army's UH-1 and the Air Force's H-43 helicopters were well-equipped for their military mission, the one predominant problem in their use in civilian emergency medical service was the lack of radio communication. Where civilian radio capability did exist, military equipment was not compatible.

During the test program, it was attempted to establish radio communications by use of portable radios in the helicopters on public service frequencies. Several difficulties were encountered:

- Various public safety organizations in each operating area utilized different frequencies on any one of three

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available bands. A different radio would be required for each of the bands utilized and each radio is normally limited to one or two preset frequencies in that band. An emergency medical communication system is needed in each operating area which would require the helicopter to have only one additional radio with one or two frequencies on the same band similar to the system described in project CARE-SOM.

- The portable radios utilized were not integrated into the helicopter's normal communication system which utilizes headphones and microphone integral with the crewman's helmet. Use of the portable radio required the pilot or crewman to remove his helmet and be isolated from the interphone system of the helicopter. The safety and efficiency of the helicopter and crew is compromised by the arrangement.

- The portable radios used an antenna attached to the radio. With the antenna being inside of the helicopter, the performance of the radio was reduced. A remote, outside mounted antenna would improve the performance of the radio.

Following the evaluation of the MAST test program, a decision was made to continue the five test sites in operation and to plan for expansion to other sites where Army Aero-medical units and Air Force Local Base Rescue units were located, and where the surrounding civilian communities expressed a desire to receive MAST support. MAST is not intended to compete with any existing or planned emergency air ambulance service, but may be utilized to augment such a service. As with other helicopter emergency ambulance projects, the benefits to be received will be relative to the effectiveness of the civilian emergency medical service which the MAST project supports. The emergency medical service which MAST will support is expected to provide the military unit with radio communication equipment compatible with its own emergency medical service communication system, and to provide heliports or helistops at its hospitals designated to receive MAST patients.

Activation of additional MAST projects where planning is complete is awaiting congressional sanction of the MAST concept. After additional experience is gained at those sites where additional funding is not required, thought can be given to utilizing other military resources to assist the civilian emergency medical services.

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In brief summary, the helicopter is not any more ready to completely replace the ground ambulance in emergency medical service than the helicopter air taxi is ready to completely replace the ground taxi. It does not take any great effort or management skill to buy or lease a helicopter, hire a pilot and start flying over the countryside. Add a litter and it could be called a helicopter ambulance. Hire another pilot or two and it can be ready to fly at any time, day or night. You still do not have an effective helicopter emergency ambulance, and will not have one until you utilize a **proper helicopter** with the **proper equipment** and man it with a **pilot and attendant** who maintain a **desired level of proficiency** in flying and medical care. Your helicopter emergency ambulance may now be effective if its use is planned and coordinated with other effective elements of an emergency medical service system designed specifically for the area in which it is designated to operate.

Present policy of the National Highway Traffic Safety Administration is:

1. Beginning with FY 1973, the NHTSA will not approve Federal funding participation in new purchases of helicopters under Section 402. Similarly, the NHTSA will not approve applications for Federal funding of rented, leased, or contractor-provided helicopters or helicopter services.

2. NHTSA will contribute to the cost of maintenance and operation of helicopters previously leased or purchased under Section 402, but participation will be limited to those costs related to traffic safety operations.

3. New helicopter demonstration projects proposed for funding under Section 403 will not be approved unless the project involves field testing of new concepts or new types of equipment to prove their effectiveness in traffic safety programs. Each proposal will be justified and determined on a case-by-case basis.

Publications identified by NTIS/PB-(number) are available from:

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MAST

MILITARY ASSISTANCE TO SAFETY AND TRAFFIC

REPORT OF TEST PROGRAM

by the Interagency Study Group

July—December 1970

Department of Defense, Department of Transportation,
and Department of Health, Education, and Welfare

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NOTE: The Appendices to the MAST Report were not printed because of the large amount of material contained therein. Included in the Appendices are: background correspondence, site reports, cost data, medical evaluation proposals, U.S. Army National Guard involvement, National Medevac concept, and civilian air ambulance operations.

Information on the above may be obtained by writing: MAST Executive Secretary, Department of Transportation, Washington, D.C.

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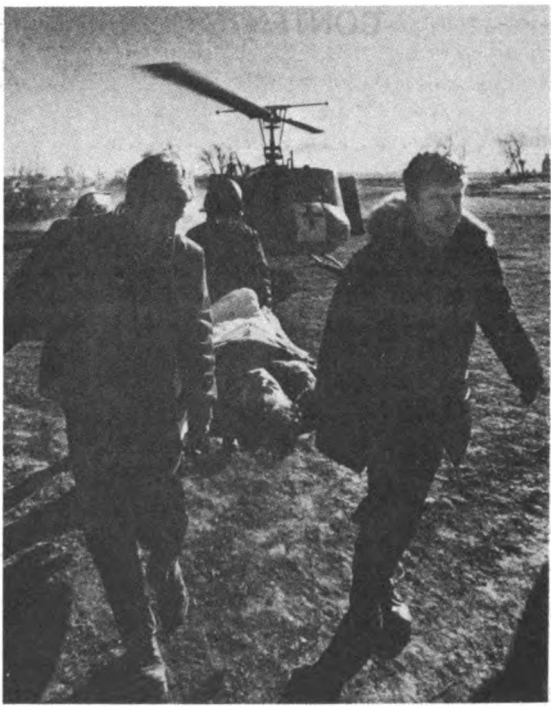

SUMMARY

The Military Assistance to Safety and Traffic (MAST) program was undertaken to explore the feasibility of utilizing military helicopters and service paramedical personnel in responding to civilian medical emergencies, in particular to highway accidents. During several months in 1970, pilot or demonstration projects were implemented at five military installations. Three projects were sited at Army installations and two at Air Force Bases. The program represented a joint endeavor by the Departments of Defense (DOD), Health, Education, and Welfare (DHEW) and Transportation (DOT) to demonstrate, in civilian applications, the capabilities of those military resources and techniques which have been employed so effectively in combat. MAST was essentially an operational test, where military resources of known capability were meshed with local Emergency Medical Service (EMS) systems with a minimum of delay and administrative difficulty, and

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with no additional men, money, or aircraft provided.

The substance of this report clearly demonstrates that it is entirely feasible to utilize military helicopters and paramedical personnel to augument local EMS systems. The extent to which the military capability made an effective contribution varied with circumstances, as detailed in the report. At one of the MAST sites, military operations were distinctly successful, and the program had a high degree of community acceptance and acclaim. At the other sites, operations were successful, but a lower degree of utilization and public involvement was experienced.

Based upon the experience achieved during the trial period, continuation and expansion of the program to additional sites is recommended. A comprehensive evaluation of the MAST program at the most active site (San Antonio) is being prepared by Ohio State University (OSU), under a DHEW contract. This will be submitted as an additional report when that work has been completed in the next few months.

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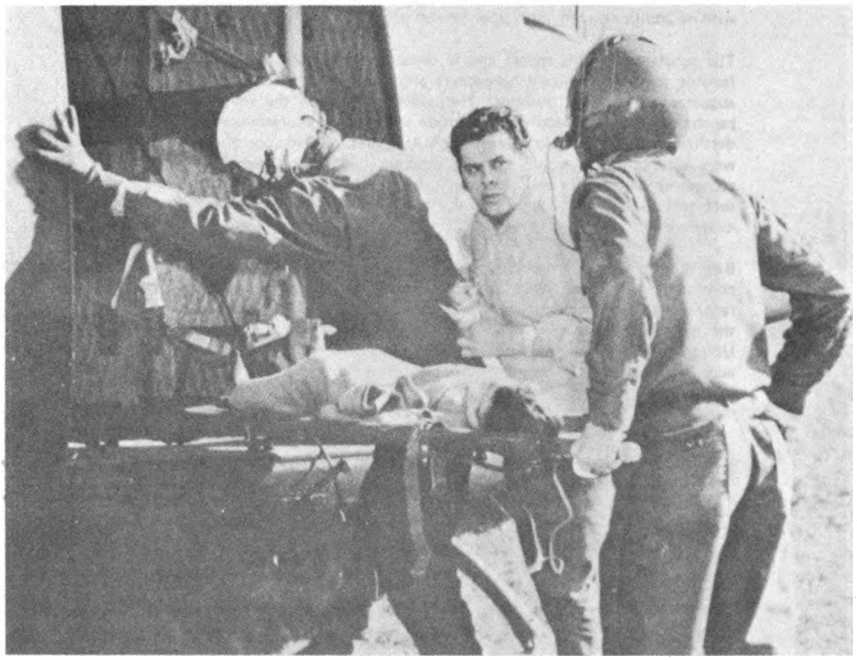

CONCLUSIONS

1. Although operational experience was limited by the short period of the test program and the limited number of test sites, it demonstrated that the concept of using military helicopters and paramedical personnel in an air ambulance role to respond to civilian medical emergencies is entirely feasible from both the military and civilian viewpoint.

2. The military services possess a significant capability for providing assistance to civilian emergencies in terms of helicopters particularly suitable as air ambulances, trained paramedical personnel, immediate 'round-the-clock response, communications, and related support. This capability does not exist to the same degree in the civilian community at present, owing largely to financial considerations.

3. The type of military aviation unit supporting the MAST operations had no bearing on its capability for conducting air ambulance

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operations. The unit's responsiveness to MAST requests, however, was directly related to its primary military mission.

- Army medical air ambulance units are particularly well suited for supporting civilian medical emergencies. Such missions provide realistic training, experience, and motivation for assigned personnel.

- Army tactical aviation units can provide a responsive air ambulance service, but personnel and helicopters must be diverted from training to sustain a continuous effective effort.

- Air Force local base rescue units, although ideally organized and equipped for performing MAST missions, require a u gmentation to provide full responsiveness for assisting in civilian medical emergencies. This is due to their assigned military missions, and the small number of helicopters and crews authorized/ assigned at each base.

4. Throughout the entire test period, military assistance to civilian emergencies was provided by the supporting aviation units without significant degradation of unit integrity, effectiveness, training, and impairment of their primary military mission.

5. The availability of military resources (aircraft and personnel) and the establishment of the necessary mechanism for responding to civilian medical emergencies does not necessarily ensure that the community will utilize the military capability fully or effectively.

6. Less than full-time capability for response by the helicopter activity tends toward a limited utilization of the service by the community.

7. The degree of utilization of the military helicopters, once a responsive service was established, was not a function of any factors within the military, but was related to factors in the community which were not precisely identified.

8. The local community's emergency medical system must be highly developed and well-organized to fully integrate and make the most effective use of military air ambulances. An adequate emergency medical communication system is vital for making responsive and effective use of military air ambulances. It assures prompt notification, proper coordination, and direct communication between the military and various elements of the emergency medical system.

9. A high degree of acceptance of the MAST program was demonstrated by local government, the general public, the medical and

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hospital community, and law enforcement officials. Some degree of reluctance on the part of law enforcement officers to request MAST missions appeared to be a factor which limited the use of military helicopters at some test sites.

10. No additional men, money, or aircraft were required by the military units supporting MAST operations.

11. Costs and operating data from the test program are of limited value to civilian helicopter operators, because the aircraft involved are larger and more expensive to purchase and operate than those presently used for most civilian operations.

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RECOMMENDATIONS

1. MAST should be continued as a demonstration program until the Stanford Research Institute Study* is completed and evaluated. Any expansion should be held in abeyance until the overall evaluation of the program is completed.

2. In the selection of additional sites, consideration should be given to those communities where MAST assistance has been requested and where investigation indicates the likelihood of effective utilization.

3. In the development of future MAST projects, adequate time should be allowed for planning, organizing, and disseminating operational procedures. The local emergency medical service should be viewed as a system and participation by all EMS elements, including any civilian helicopter operations, should be encouraged.

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*The Department of the Army has contracted Stanford Research Institute to evaluate the operations and marginal costs of MAST alternatives. This study is to be completed by September 30, 1971.

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4. The process of implementing a MAST project in a State should be coordinated through the Governor's office, so that operations may be interfaced with civilian emergency services.

5. A cooperative relationship with civilian helicopter operators should be established and maintained to provide for the most effective development of both military and civilian air ambulance operations.

6. Enabling legislation must be secured prior to implementation of MAST as a permanent national program.

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INTRODUCTION

The purpose of the MAST program was to test, by actual operation, the feasibility of using military helicopters and paramedical personnel to respond to civilian medical emergencies. This report sets forth the background which led to the implementation of the MAST program; relates the operational experience; makes a judgment as to the feasibility of the MAST concept, from both the military and civilian viewpoint; discusses some cost considerations; and presents a number of conclusions and recommendations for expansion of the MAST program. Because many elements of the MAST operations are being treated more comprehensively in a DHEW supported MAST evaluation study being prepared by Ohio State University, detailed matters are not specified in this report.

It should be recognized that the MAST operational experience was limited both in time and in the number of sites at which the program was conducted. A further limitation was the stipulation that the program was to be undertaken with existing military resources and that no additional men, money, or equipment were to be provided. The time factor is particularly significant, since information obtained from civilian helicopter projects and confirmed by U.S. Coast Guard experience, indicates that *establishment* of a new service does not mean that effective utilization will ensue immediately, or even in a matter of months.

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BACKGROUND ON MAST

On August 26, 1969, the Secretary of Defense suggested to the Secretary of Transportation that an Interagency Planning Group, representing the Departments of Defense, Health, Education, and Welfare, Justice, Interior, Transportation and the Office of Emergency Preparedness be established to consider a proposal to use military resources in response to civilian medical emergencies. Of specific interest was the employment of military helicopters and paramedical personnel in responding to highway accidents. In his letter of September 28, 1969, the Secretary of Transportation concurred with the idea of establishing the study group. The Undersecretary of Transportation was appointed chairman. One consideration for having the Department of Transportation chair this effort was that the

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Department, through its National Highway Traffic Safety Administration (NHTSA), had funded a number of helicopter air ambulance demonstration projects under the Highway Safety Act. It was also engaged in facilitating the use of Coast Guard helicopters, when available for civilian emergencies through local arrangements between Coast Guard District Commanders and state officials. (Experimentation with the use of military helicopters, communications, and medical personnel for this type activity was also proposed in the Report of the President's Task Force on Highway Safety in December, 1969).

The acronym MAST (Military Assistance to Safety and Traffic) was given to the program and the first meeting of the MAST Interagency Study Group was held on December 11, 1969. At this meeting it was agreed that the general question of how military helicopters and other military resources could be utilized for responding to civilian emergencies would be studied. Four major working groups comprised of members from the participating agencies were established. The first group was to analyze the legal and federal state and local relationships; the second, the command, control and communications aspects; the third, funding and coordination; finally, an executive group was to coordinate the overall operation of the program.

On February 3, 1970, the Interagency Study Group met to consider the work of the several sub-groups and determined that the MAST program would be developed in the following manner: Phase 1 - design of the project and site selection; phase 2 - operations; phase 3 - evaluation; and phase 4 - report and recommendations. DOT, DHEW, and DOD, were each asked to provide a full time working member to undertake the basic program activity. These individuals were designated the MAST administrative staff.

In April, 1970, the MAST administrative staff visited three sites: San Antonio, Texas; St. Louis, Missouri; and Lincoln, Nebraska, representing a regular Army unit, a Reserve unit, and a National Guard unit. In subsequent correspondence between DOD and DOT, it was agreed that the number of test sites should be limited to five, and that initially only active duty military units would be utilized. Accordingly, additional sites at Fort Lewis, Washington, Fort Carson, Colorado, Luke AFB, Arizona, and Mountain Home AFB, Idaho, were selected. The selection criteria used were: the existence of a military capability; a State-government expression of interest in having the military involvement; a rural environment contiguous to adequate medical activity; and different climate and terrain conditions.

At each site, essentially the same procedure was followed. The concept of using the military helicopters and paramedical personnel was presented to the community's medical, public safety, and political

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leadership in a meeting organized by DHEW affiliates. An offer was made to make these resources available, if desired, on the basis of a simple project proposal to be prepared and submitted by the civilian and military representatives of the geographical area.

At all sites, the idea was enthusiastically received, proposals were submitted, and upon their approval by the Interagency Study Group, MAST operations were authorized. Operations began in San Antonio, Texas, on July 15, 1970; Colorado Springs, Colorado, and West Central Washington operations began on August 6, 1970; and Phoenix, Arizona, and Boise, Idaho, operations were implemented on September 1, 1970.

At each site, the program was developed by the civilian community working with the military project officer. General requirements were that the helicopters would augment or supplement the local EMS system, not replace any existing elements of it; that the operation would not be directed into downtown or metropolitan areas where ground ambulance services in general would be more responsive; and that the military operations should avoid any competition with operators of air or ground ambulance services. Requests for the helicopter assistance were based upon judgment by responsible medical or public safety officials at the scene of the emergency that the patient's medical condition was serious or life-threatening and required his expeditious transport to a medical facility capable of providing the necessary treatment.

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OPERATIONAL EXPERIENCE

From July 15 through December 31, 1970, *182* MAST missions were flown by helicopters from all sites—more than one mission a day. Tabulations of the operating data is set forth on the following page. Operating procedures are presented in the site reports. Basically, operations employed military helicopters in an air ambulance role. No law enforcement, surveillance, or other related functions were undertaken. Responses to missions were based solely upon a judgment by responsible medical or public safety officials that a serious emergency existed. Some 48% of those patients assisted were highway accidents victims. Seventy-two percent of the missions flown were inter-hospital transfers generally involving a patient who had been initially taken to a local hospital, where it had been determined that he required transfer to receive more definitive medical treatment. (Because of the program's accomplishments, operations at all five sites are being continued. As of August 22, 1971, 553 missions have been flown and 718 persons assisted.)

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The data below compares the MAST test operations with two civilian helicopter medical projects funded by the NHTSA. The total number of missions flown during similar periods of operations is roughly of the same order of magnitude. Although a number of factors would have to be taken into account to draw any useful conclusions from this comparison, it is interesting to note that the average number of patients evacuated per mission is approximately the same (1.3) for the projects. This tends to support the conclusion from previous studies that helicopters used for responding to civilian medical emergencies should be capable of transporting two patients simultaneously.

Project	Missions	Patients	Hours	Average Number Patients Per Mission
MAST				
4-6 months (5 bases)	182	249	290	1.3
AMES				
6 months (1 base)	171	225	306	1.3
CARE-SOM				
6 months (3 bases)	239	332	195	1.4

The following data shows the wide variation in the number of missions flown in the five MAST areas.

MAST Unit	Missions	Patients
FORT SAM HOUSTON	114	138
FORT LEWIS	34	44
FORT CARSON	25	45
LUKE AIR FORCE BASE	5	18
MOUNTAIN HOME AIR FORCE BASE	4	4

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MAST OPERATING DATA
July 15—December 31, 1970

Site	Months of Experience	Number Missions	Hours Flown	Patients Evacuated				
				Highway Casualties	Other Medical[1] Emergencies	Total	Number[2] Critical/Serious	Number Non-Critical
FORT SAM HOUSTON Texas	6½	114	141.4	86	52	138	82	56
FORT CARSON Colorado	5	25	87	15	30	45	22	23
FORT LEWIS Washington	5	34	41	14	30	44	19	25
LUKE AFB Arizona	4	5	13.2	3	15	18	5	13
MOUNTAIN HOME AFB Idaho	4	4	7.5	0	4	4	3	1
TOTAL		182	290.1	118	131	249	131	118

1/ Includes heart attacks, gunshot wounds, accidental injuries, illness, premature infants, burns, etc.

2/ Patients admitted to hospitals in critical or serious condition, as recorded in admission reports

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MAST OPERATING EXPERIENCE
July 15–December 31, 1970

Data Elements	San Antonio Texas 7/15/70	Colorado Springs Colorado 8/6/70	West Central Washington 8/6/70	Mountain Home Idaho 9/1/70	Phoenix Arizona 9/1/70	TOTALS
MISSIONS						
Total Number	114	25	34	4	5	182
Day	56	20	21	3	3	103
Night	58	5	13	1	2	79
Average time per mission	1 Hr 12 Min	3 Hrs 30 Min	1 Hr 12 Min	1 Hr 54 Min	2 Hrs 36 Min	
Average time to lift off	2 Min	20 Min	6 Min	48 Min	30 Min	
Average time to pickup site	27 Min	52 Min	29 Min	1 Hr 6 Min	30 Min	
Average time from pickup to hospital	24 Min	1 Hr 11 Min	25 Min	36 Min	30 Miles	
Average distance to pickup site	48 Miles	62 Miles	38 Miles	62 Miles	0	17
Aborted missions	6	2	3	6	0	2
Weather	0	0	2	0	0	15
Other	6	2	1	6		
HOURS FLOWN						
Total number	141.4	87	41	7.5	13.2	290.1
Day	66.4	70	24	4.2	6.6	171.2
Night	75	17	17	3.3	6.6	118.9
PATIENTS						
Total Number	138	45	44	4	18	249
Day	57	37	25	3	6	128
Night	81	8	19	1	12	121
Critical	82	22	19	3	5	131
Non-critical	56	23	25	1	13	118
Dead on arrival	4	0	1	0	0	5
Died after admission	2	4	1	0	1	8
Type of Patients						
Highway accident	86	15	14	0	3	118
Inter-hospital transfer	111	20	0	0	0	131
Premature infant	4	5	2	0	0	11
Hoist	1	0	0	1	3	5
Other	52	5	30	4	15	106
Hospitals with helipads	18	4	5	4	5	36

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Considerable attention was directed to determining the causes of the significant disparity between the various projects. Obviously, the projects were located in varying population bases as to number, distribution, and urban/rural configuration. Each area had emergency medical systems with elements which varied in number and capability. However, other less tangible factors are believed to be of greater relevance.

The relatively low mission activity at the two Air Force sites is partially attributed to the inability of the local base rescue units, as presently constituted, to maintain a 'round-the-clock, immediate response capability because of the limited number of helicopters and crews and the nature of their primary military mission. The test program was to determine the feasibility of using military resources in varying circumstances. Intuitively, one might expect that even with only a part-time availability, MAST services would experience a high demand. While operations were limited, the data indicates that a part-time response capability will not be effectively utilized. This factor was confirmed in discussions with several responsible law enforcement officials.

The relatively high mission activity at San Antonio is attributed to a fortuitous combination of many factors. These included a large metropolitan area, a full-time medical company conducting the MAST operations, good command-level support, effective local planning and organization, favorable terrain and weather conditions, cooperating hospitals with helicopter-landing facilities, and an unusually high degree of active and favorable publicity concerning the program. During the first days of MAST operations, a mission was flown which was credited with saving a youth's life. This incident became front-page news, and the program was off to a flying start. Location of the MAST unit in San Antonio proper—a city where the military enjoys a close and favored association with the community—appeared to be a real, although intangible, reason for the obvious success of the project.

The reasons for the limited operational activity in Washington and Colorado are similar. MAST operations were conducted by regular Army tactical units located contiguous, but not central, to a populous metropolitan area. They did not enjoy the homogeneous political and operating area that characterized San Antonio, and were not as closely located to centers of emergency medical service. Some reluctance was expressed in both project areas to commit community resources and attention to a program which was recognized as a demonstration, with no assurance of its continuation. Established patterns in local emergency care systems were not dramatically altered by MAST. Reluctance to request military assistance was understandably generated following the loss of one helicopter and crew of four from Fort Lewis while making an approach on a MAST mission. Law enforcement officials felt responsible for the accident, and were reluctant to request

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further MAST missions. Weather conditions caused some aborted missions, and this probably raised some doubts as to the legitimacy of requesting MAST missions.

The location of the helicopters, away from population centers, and a limited public awareness of MAST activity in Washington and Colorado influenced the lower utilization of the service at these sites. Although considerable effort was made by the military and civilian project personnel to sell the program, no significant increase in mission activity has been noted. Taking all factors into consideration after extensive discussion with both military and civilian project representatives concerned, *definitive causes of the lower utilization at these sites were never fully and satisfactorily established.* The military unit never failed to respond, except in those weather conditions cited. The simple fact is that fewer requests were received than would have been expected.

No major difficulties were encountered during the test phase of the program that would affect the establishment of MAST projects in other locations. Communications between the helicopter and civilian EMS elements– public safety and medical–could have been greatly improved with more adequate equipment, but this inadequacy did not significantly hamper operations. The program essentially tested only the feasibility of the military involvement and did not feature any new techniques or exotic procedures. It was a simple operation requiring intensive community support, organization, and selling. Operating procedures must be simple, well-understood, and thoroughly disseminated.

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MEDICAL EVALUATION

An attempt has been made to evaluate the medical justification of calling for a MAST mission rather than depending on available ground ambulance transportation and personnel. The decision to call for a MAST mission was sometimes made by physicians, especially in the case of hospital transfer. It is not prudent to question the decision of a physician at the scene of a medical emergency that he and the medical facilities available are not adequate to care for a patient and that rapid, i.e., MAST evacuation of the patient to a major treatment center is necessary. In other instances (especially at the scene of an accident or acute illness), the decision to call for a MAST mission is made by a law enforcement official.

The medical evaluation in large part answers the questions: how often were the missions justified on a basis of severity of the patient's condition, distance (measured in time for ground transportation), isolation of the site, or combination of these factors?

The mission reports were reviewed for the following four sites: Fort Lewis, Washington; Fort Carson, Colorado; Mountain Home AFB, Idaho; and Luke AFB, Arizona. Since a contract has been awarded to Ohio State University to conduct a detailed evaluation of the Fort Sam Houston, Texas, test site, no attempt was made to evaluate the missions from that site. The objective of the MAST program was to test the feasibility of using military helicopters and personnel for evacuating civilian medical emergencies. Evaluation of the medical justification of utilizing this form of rapid patient transportation was not a major goal of the test project. It should be noted that the reporting forms used were adapted from another project and did not lend themselves to facilitation of medical evaluation. Regrettably, the patient's condition upon arrival at a major treatment center and the subsequent course of his illness were not documented by physicians in most instances.

It should also be pointed out that some unnecessary calls are justified when law enforcement officials are placed in a position of making a medical decision. In the interest of the patient, the error should always be in the direction of calling for the MAST mission.

At the four sites, fifty-six flights were evaluated on which one or more patients were transported. A total of seventy-three patients were transported on these flights. Of the fifty-six flights, a total of forty-six were judged to be justified on a basis of the condition of one or more of the patients transported, distance from a treatment facility (measured in time required for ground transportation), isolation of the site, or combinations of these factors. Of the forty-six flights, fifteen were justified in large part by the remoteness of the pick-up site, although many of these patients were severely ill or injured. On six

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flights, there was insufficient patient information available on which to make a judgment. On four flights, the mission apparently was not justified. Of these four flights, one was for a liver transplant patient, one was for a child with convulsions, one was for a patient with a gunshot wound of the lower leg, and one was for a young woman with acute bronchitis who was apparently not in severe respiratory difficulty. It is felt that ground transportation would not have deleteriously affected these patients.

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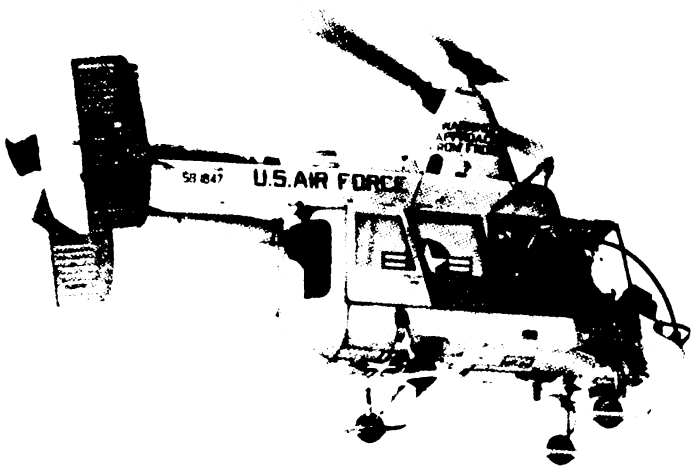

FEASIBILITY OF MAST—MILITARY ASPECTS

The limited MAST experience demonstrated that the concept of using military helicopters and paramedical personnel to respond to civilian emergencies is operationally feasible. Further, it proved desirable from the standpoint of training and motivation for the medical unit in particular. Aeromedical evacuation procedures developed for combat situations are readily transferrable to civilian applications. Public acceptance of the concept was clearly established and reflected most favorably upon the military.

Although the military has traditionally responded to civilian emergencies, this assistance has previously been rendered on an individual, local, "ad hoc" basis with no prearranged plan or procedures. MAST built upon this background by providing an authoritative sanction and mission. It brought together military and

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civilian authorities and provided efficient procedures to make the military contribution rapid and effective. Feasibility, from the military viewpoint, was established by the fact that MAST missions were successfully carried out by regularly constituted military units with no additonal resources committed to the program. While men and aircraft were, in varying degrees, dedicated to the MAST missions, at no site did MAST operations exceed the regular flying time programmed for the supporting aviation unit. The MAST mission did not significantly detract from the basic military mission, although the measures taken by the tactical aviation units to maintain the response capability necessary for a satisfactory service did represent some diminution of unit training.

By the nature of their mission and orientation, Army medical air ambulance units are particularly effective in supporting the civilian EMS, as evidenced by the distinct success of the San Antonio project. Based upon extensive discussion with unit personnel, MAST missions flown by the 507th Medical Company had no degrading impact on either unit training or operations, and by their very nature provided realistic training experience and motivation for 507th personnel.

Army tactical units, while more limited by the constant demands of their training mission, can also respond to civilian emergencies effectively. To provide the necessary instant response capability, however, helicopters and personnel must be diverted from "line" training activity. It may be necessary to augment these tactical units with additional aircraft and personnel, as well as to recognize MAST-type activity as part of the unit mission, if they are tasked to provide responsive air ambulance support to the civilian community. *MAST operations were a "natural" for the medical company, but an "add-on" for the tactical units.*

Military priorities and the small number of helicopters and crews severely minimized the effectiveness of the two Air Force projects. The Air Force sites did not have the capability for immediate, 'round-the-clock response, and this operated to the detriment of these projects. At one site, after having experienced what seemed an inordinate response time, the law enforcement officials understandably were reluctant to rely upon the service, even though response at other times would have been satisfactory. Although the operations conducted were quite successful and were undertaken with vigor and enthusiasm by the units involved, the experience confirmed what had been noted in civilian projects sponsored by NHTSA, namely, that less than full-time, 'round the-clock capability is not accepted as a responsive service by the local EMS system. Because of their primary mission of local base rescue, and the size of the aviation activity, this type of unit cannot provide the immediate response needed to achieve the degree of utilization and acceptance experienced elsewhere.

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FEASIBILITY OF MAST—CIVILIAN VIEWPOINT

The feasibility of MAST from the civilian viewpoint is shown by the testimonial material in the Appendices and, also, by the specific requests for MAST by other communities. The medical evaluation will also support the feasibility of augmenting the civilian EMS system with military helicopters. Discussion with medical and public safety officials in the MAST communities confirmed the public recognition of need and feasibility of the MAST concept.

The effective utilization of the military resources was directly influenced by the proficiency, organization, and leadership of the civilian EMS systems they supplemented. Experience indicated that no one system design or operating procedure could, or should, be

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developed to fit the varying circumstances of different communities or regions. EMS system capabilities vary tremendously in nature and scope around the country. Success of MAST operations is conditioned by such factors as the extent of training of law enforcement and hospital personnel, the extent of community awareness and information efforts, communications capability, the type of medical facilities and their capabilities, and the active involvement of the local leadership in the program.

While the MAST operations were brought into being with a minimum of delay from the time the concept was presented to the community until flying operations were begun, experience demonstrated that more time for planning, organizing, and selling the program would have been desirable. Involvement of more elements of the local or regional communities might have been achieved. It takes time to implement and perfect basic operating procedures at all of the working levels and jurisdictions in the areas which encompass MAST activities.

A particularly desirable feature of the program was that it provided the occasion at some sites for the community to train military paramedical personnel in civilian aspects of emergency medical service. Conversely, the military had the opportunity to conduct briefings and train members of the civilian community in the military aspects of the operation. By such measures, the overall EMS system derived benefit, and closer and more desirable working relationships resulted.

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MILITARY AND CIVILIAN HELICOPTER CONSIDERATIONS

The MAST concept was immediately accepted by local officials and the general public at all sites. The only objections to MAST were presented by private helicopter operators associated with the Helicopter Association of America (HAA). MAST was viewed by the private operators and HAA as an "encroachment" by the Federal Government and the military into what they consider to be the domain of private enterprise.

In present circumstances, the military capability—adequate helicopter air ambulances, trained paramedical personnel, immediate, 'round-the-clock response time, communications and support— simply does not exist to the same degree in the civilian community. The NHTSA funded five demonstration projects utilizing civilian helicopters under Section 403 of the Highway Safety Act. This type of activity is relatively costly, and few communities are able to justify or support helicopter air ambulance service against a background of other urgent needs in emergency medical services. Under Section 207 of the Highway Safety Act, the States estimated their own needs to achieve the performance levels of the Highway Safety Program Standard on Emergency Medical Services. These estimates totalled $209,000,000 for FY '72 alone. Emergency Medical Services suffer deficiencies of this magnitude nationwide, and in such basic areas as training, communications, ground ambulance service, etc. Inadequate ground ambulance service alone represents a serious problem, particularly in rural areas where financial considerations have driven great numbers of private purveyors from the field.

Some idea of the priorities assigned to these matters by the States themselves can be seen from the fact that over 1,000 projects have been submitted for the acquisition of ground ambulances and related expenses under the matching-fund programs of Section 402 of the Highway Safety Act. During the same period, only four projects for helicopters in EMS were funded, and one of these involved National Guard aircraft and flying personnel. None is currently being funded. Creation of a responsive civilian air ambulance service alone would be a financial impossibility, even for communities of some size; the economic basis for the operation would generally have to be developed for multifunctional use of the aircraft and personnel. A discussion of civilian air ambulance operations is presented in the Appendices.

When MAST was undertaken, the Secretary of Defense indicated that the experience gained was to be made available to the civilian sector so that helicopter operators might be assisted and encouraged. Increasing

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interest in the versatile capability of helicopters heightened by the federally-funded projects, the increasing availability of more suitable helicopters, the trend toward concentration of medical facilities in metropolitan areas, and diminishing rural ground-ambulance service are factors which indicate civilian air ambulance operators have a promising future. Under present financial circumstances, however, and in the light of 56,000 annual highway fatalities alone, the military capability should be utilized where it can contribute effectively, while at the same time civilian operations should be encouraged and assisted as practicable. These considerations have been discussed with the Helicopter Association of America, and continuing efforts should be made to foster civilian air ambulance development.

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COST CONSIDERATIONS

MAST operations conducted during the test period did not receive any additional funding from any of the services or agencies involved. All missions flown by the aviation units involved were accommodated in their regular flying operations as aviation training.

Costs associated with the MAST operation are of limited relevance and utility to the civilian community, since helicopters designed for the military mission are larger and more costly than those ordinarily feasible and employed in civilian applications. The only significant costs that can appropriately be assigned to MAST operations are those related to the direct operating costs of the helicopters and salaries of aviation crew members. (Even here, it must be recognized that flight operations would ordinarily have been flown for training had there been no MAST missions.) Fixed costs of acquisition, depreciation, hull and liability insurance, hangar fees and administrative costs, all of which are major factors to civilian operators, have no direct application to the military case.

Should MAST be continued or expanded on a regular basis, it would be desirable to identify costs that can realistically be associated with MAST. This data is set forth in the Appendices.

LEGAL ASPECTS

Local commanders are presently authorized to provide assistance to any individual in a serious emergency when other means of transport are not available, feasible, or adequate (AR-500-60 and AFR 76-6). Since the program was undertaken as a pilot project, no fundamental legislative or administrative measures authorizing permanent operation were necessary and none have been put forth.

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FUTURE ACTIVITY

The capability of helicopters in Emergency Medical Service systems and the feasibility of using military resources has been clearly seen in MAST. Continued experimentation with these concepts is justified on the basis of accomplishments to date, and has been recommended by such authorities as the National Advisory Commission on Health Manpower in 1967 and the President's Commission on Highway Safety in 1969. The MAST program is consistent with the objective of the President's Health Message to Congress in 1971 which discusses—among other matters—the need to provide health care in rural and outlying areas.

The clearly successful operation at San Antonio demonstrates what MAST can accomplish under the best circumstances. Operations at other sites, while certainly beneficial, showed a singificantly lower degree of utilization. This presents a real question as to whether dedication of the helicopters and military personnel necessary to

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provide the instant response ('round-the-clock), by which the benefits of the system can most effectively be realized, is adequately justified to fly about one mission per week (Fort Lewis and Fort Carson).

The potential of MAST was demonstrated at San Antonio, but was not realized to the same degree at other sites. Inconclusive causes were adduced for this lower utilization. A sensible course would be to advance the MAST concept to selected additional sites—to find other San Antonios— rather than to undertake a broader national program until the determinants of a well-utilized program emerge more clearly.

Another factor which argues for a gradual, rather than an all-out, program is the desirability of encouraging civilian operations.

The testimonial material in the appendices illustrates the acceptance of military assistance by the civilian community. For this reason alone, it would be desirable for all the Services to become involved in MAST operations.

The initial program was undertaken with active duty aviation units only. National Guard and Reserve components, however, are now beginning to receive more adequate helicopters (UH-ID) and qualified personnel, and it seems likely that an effective contribution could be made if a responsive service were established. A proposal for arranging National Guard active duty training time so as to provide a full-time response is presented in the Appendices. National Guard or Reserve units, with their close association in the community, might influence the utilization of MAST at some sites.

In the future, it seems likely that the capabilities of the helicopter will find increasing application in air ambulance roles, as well as in other functions. A limited expansion of the MAST operation is recommended as the next step in advancing air ambulance operations. Comprehensive planning for broader expansion of the program appears warranted by the potentialities already seen.

It seems reasonable to assume a role exists for both military and civilian operations. A proposal for a national approach using military or civilian helicopters is contained in the Appendices. This type of planning is recommended under sponsorship of the Interagency Study Group while MAST operations continue.

Future MAST projects should be coordinated through the Governor's office to insure the military assistance is integrated with civilian EMS projects supported by the Departments of Transportation, and Health, Education, and Welfare and, also, Civil Defense.

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As previously indicated, operations at the five project sites are continuing, pending a final evaluation of the overall program and a decision as to future military involvement in MAST-type activities. Since January 1, 1971, there has been a significant increase in the number of MAST missions flown by the supporting aviation units at Fort Carson, Colorado and Fort Lewis, Washington. Through August 22, 1971, Fort Carson has accomplished 129 evacuations involving 173 seriously injured or ill civilian patients; Fort Lewis has flown 108 missions evacuating 123 patients.

The increased activity at both sites is attributed to an extensive educational program concerning all aspects of MAST which is being conducted on a continuing basis by the civilian and military officials participating in the two projects. This has resulted in the more direct involvement of representatives from all elements of the local EMS system as well as other public officials, concerned with using the military capability. Although the Fort Sam Houston, Texas site was considered to be the most successful project during the test period, the projects at Fort Carson and Fort Lewis are now operating with equal effectiveness.

In August 1971, both Luke AFB and Mountain Home AFB received additional aircraft and crew, enabling them to respond to MAST requests on a 'round-the-clock basis. This increased military capability should result in more effective operations at both sites.

DHEW Publication No. HSM-72-7000

Health Services and Mental Health Administration
Regional Medical Programs Service

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MAST

A COOPERATIVE PROGRAM OF:
DEPARTMENT OF TRANSPORTATION
DEPARTMENT OF DEFENSE
DEPARTMENT OF HEALTH
EDUCATION AND WELFARE

Interim Planning Guide
Military Assistance to Safety and Traffic
(MAST)

1. Introduction

Purpose: The purpose of this outline is to specify the procedures and define the criteria for implementing MAST operations in selected communities that have expressed an interest in establishing a MAST project where a military capability exists and where an air ambulance service can be effectively utilized. The word "community" in this outline includes all political subdivisions within the proposed MAST operating area.

Concept of Operations: The MAST concept supplements the existing emergency medical service system by providing for military helicopters configured as air ambulances, crew members, medical equipment, and supplies to be maintained in a state of readiness to respond efficiently and effectively to serious civilian medical emergencies. Serious medical emergencies are defined as situations where an individual's condition requires that he be air-evacuated to a medical care center as soon as possible to prevent his death or the aggravation of his illness or injury. The decision to request a MAST helicopter is based solely on the judgment of the law enforcement officers, physicians, or other responsible persons such as public safety officials at the scene of the emergency.

In addition to responding to serious medical emergencies resulting from highway accidents, MAST units also will respond to gunshot wounds, heart attacks, farm accidents and similar emergencies. As examples, inter-hospital transfer of patients, premature infant transfer, pick-up and delivery of blood, medicine, and human organs for transplant also are considered valid MAST operations. The evacuation of non-critical patients from remote or inaccessible areas where ground transportation is not feasible or practicable may be accomplished by military air ambulances when requested by an appropriate official.

2. Responsibility

The Departments of Defense, Transportation, and Health, Education and Welfare are jointly responsible for overall policies, implementation and operation of the MAST Program. Duties related to the MAST Program will be assigned as follows:

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a. The Interagency Executive Group; composed of members from the Departments of Transportation, Defense, Health Education, and Welfare, Interior, Justice, and the Office of Emergency Preparedness; will act as the final decision authority in all MAST activities.

b. The Interagency Coordinating Committee, composed of one member from each department, will report to the MAST Interagency Executive Group and serve as the administrative staff to the Executive Secretary of the Interagency Executive Group. Each member shall be responsible individually to the senior member of the MAST Interagency Executive Group who represents his department.

c. Local MAST Coordinating Committee, composed of individuals representing the providers of emergency medical services (EMS) in the geographic areas served by the MAST Project will be responsible for local MAST operations and coordination. This coordination will be performed on a day-to-day basis by a civilian coordinator appointed from the committee and a military officer assigned from the local military base. Committee composition may vary according to local needs.

3. Considerations

Military Resources: The locations of military units possessing sufficient potential resources for supporting MAST operations will be determined by the department possessing the resources. No military unit will be relocated solely to provide MAST support. At the present time, the only regular military units authorized for participation in the MAST program are U. S. Army aero-medical units and U. S. Air Force Aerospace Recovery and Rescue detachments.

Civilian Resources: At the present time, only a limited civilian air ambulance capability exists camparable to that available to the military services. In many rural and isolated areas demographic constraints restrict adequate ground ambulance operations. Civilian medical capability for treatment of critically injured is generally centered in metropolitan areas.

Funding: Initially, only aero-medical and Air Force Aerospace Recovery and Rescue detachments will participate in the MAST Program. As experience is gained, it may be possible to include non-medical helicopter units. Enabling legislation will be required and must contain provisions for reimbursing the DOD for the marginal cost of conducting MAST operations in the latter case. Non-military resources for conducting MAST activities will be provided by the civilian community.

4. Site Selection

Responsibility: The MAST Interagency Coordinating Committee is responsible for selecting and evaluating prospective sites where MAST support has been requested.

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Initial Requests: Initial requests for MAST support will be directed to the Executive Secretary of the Interagency Executive Group.

a. The civilian department's representatives on the Interagency Coordinating Committee will screen requests to insure:

(1) Requests are non-competitive with private enterprise.

(2) Local EMS system is able to utilize MAST.

(3) Proper coordination is effected with state officials concerned with emergency medical programs.

b. The Department of Defense representative will screen the request for availability of suitable military resources.

Upon notification that the prospective site has met Department of Transportation, Department of Health, Education and Welfare and Department of Defense criteria above, the MAST Interagency Coordinating Committee will meet with the requesting community EMS leaders and the local military commander(s). This meeting will allow the detailed explanation of MAST concept and program criteria prior to final submission of a community proposal. During this meeting, it will be made clear to the responsible community officials that, in the event of a military contingency, MAST operations may be discontinued with little or no advance notice. Similarly, emphasis will be placed on the fact that military support must not compete with private air or ground ambulance service. Military support is intended to supplement the services of those agencies.

Criteria - Military: Adequate military resources for supporting MAST operations must be available within the proposed operating area. Primary missions of supporting military aviation units will take precedence over MAST requirements.

Criteria - Civilian: The civilian community must submit a plan which demonstrates its capability to utilize the military resources as an adjunct to the existing civilian emergency medical services system. The community also must be willing to provide the necessary civilian communication equipment (including maintenance) to enable the military aircraft to communicate with the various elements of the civilian EMS system.

Demonstration of Need: Community requests must contain evidence documenting the need for MAST support, and a comprehensive plan for effective utilization of air ambulances.

Resources - Military: Supporting military units must have a sufficient number of aircraft adequately equipped to support MAST missions, and sufficient personnel trained to deliver the appropriate level of emergency medical care without compromising primary military mission and effectiveness.

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Resources - Civilian: The civilian community must have a major medical facility within the proposed operating area. The facility must be equipped and staffed to provide the required medical support. The community also must present evidence of cooperative agreements between all components of the civilian emergency medical service system. These components must be equipped and staffed to provide the necessary support to the MAST Program.

Area of Operation: MAST operations should be conducted primarily in non-urban areas extending outward 80-100 miles from the supporting military base. Projects will not be approved for communities where a civilian helicopter operator has established an effective air ambulance service equipped and staffed to provide the required level of medical and operational support.

Civilian Education and Public Information: A civilian education and public information program must be implemented to assure full utilization of MAST potential. Explanation of the purpose, capabilities and limitation of the project should be made through all forms of news media, civic groups, and professional organizations. Individual and collective accomplishments of the project should be given timely release to these same groups. Continuing orientation and training programs must be conducted to familiarize civilian personnel with MAST procedures. These activities will be the responsibility of the local MAST coordinators.

Communications: The civilian community must provide the communications equipment necessary to alert the military support unit, provide enroute and pickup-site information and guidance, and permit consultation with the destination hospital. The military unit will be responsible for installation of community-provided communication equipment in military aircraft. The community retains all maintenance responsibility for this communications equipment. Communication capabilities should provide direct linkage between the participating hospitals, helicopters, highway patrol, ground ambulances and military communication centers for MAST operations.

Local MAST Coordinating Committee: The local MAST Coordinating Committee shall be composed of individuals representing the emergency medical services in the geographic area served by the MAST Project. This committee will generally consist of representatives from the local military base, ambulance services, medical society, hospital association, health department, civil government, law enforcement, and other appropriate health-oriented organizations. The committee will be responsible for preparing the MAST project proposal and operating plan and for coordinating all MAST activities necessary for planning, implementation, operation, and evaluation of MAST operations. In the preparation of the MAST project proposal and operational plan, the committee will coordinate its actions with the recognized local EMS coordinating councils or committees located within the MAST operating area.

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One civilian member of the local MAST Coordinating Committee will be designated as the civilian MAST coordinator. This individual will be responsible for directing and coordinating all non-military aspects of the project on a day-to-day basis.

A military officer from the supporting base will serve as a member of the local MAST Coordinating Committee and will be responsible for coordinating all military activities concerning the project.

- Training: A continuous training program will be conducted for all military and civilian personnel participating in MAST operations. Training courses will relate to flight operations, capabilities and limitations of military helicopters, loading and unloading procedures, safety precautions, use of emergency and special medical equipment, communications, and procedures for administering emergency medical treatment. Medical training of military corpsmen will be monitored to ensure maintenance of not less than the minimum level of proficiency recommended by the National Academy of Sciences in the Basic Emergency Medical Technician-Ambulance training course published by the Department of Transportation.

Reporting System: There will be a reporting system which permits central recording of necessary information to document and permit evaluation of the MAST Project. For this purpose uniform forms and procedures will be established by the MAST Interagency Coordinating Committee.

5. Evaluation and Approval

Local: Procedures must be prepared and implemented to ensure adequate review and evaluation of the medical treatment and transportation of each MAST patient. This should include the care provided by both military and civilian personnel. Findings and recommendations resulting from this review and evaluation will be communicated to all personnel involved in the care and support of each patient.

National: Site evaluation visits by the MAST Interagency Coordinating Committee or its designated representatives will be conducted on either an announced or unannounced basis. Participation in a MAST Project will not reduce the requirement for the communities involved to provide a high quality EMS system. It should be clearly understood that MAST will augment but not replace any element of the existing or planned emergency medical service.

Site Approval and Implementation Procedure:

Upon receipt of a proposal for establishing a MAST Project from a community, the MAST Interagency Coordinating Committee will review it to ensure that it conforms with the criteria set forth in the preceding paragraphs.

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The proposal will then be forwarded by the Executive Secretary to the members of the MAST Interagency Executive Group for their departmental review and comment. All departments concurring, the proposal will be forwarded by the MAST Executive Secretary to the chairman of the MAST Interagency Executive Group for action. The MAST Interagency Executive Group then will review and approve or disapprove the request. If approved, a letter of agreement will be sent to the chairman of the local MAST coordinating Committee in the proposed operating area. The letter of agreement will contain a proposed date for project implementation and the procedures to be followed to achieve this objective. The Secretary of the appropriate Department will take necessary action to implement the project. If disapproved, the chairman will notify the local MAST Coordinating Committee of the decision.

Civilian Air Ambulance Operator Involvement:

In the event a private helicopter operator possessing the necessary equipment and trained personnel to conduct air ambulance operations desires to become a part of the local emergency medical service program, it will be the responsibility of the civilian element of the local MAST Coordinating Committee to evaluate his resources and capability. Based on this evaluation, the committee will determine if the private air ambulance operator should be integrated with or replace the MAST Project.

If combined military and civilian operations are desired by the committee, a joint agreement specifying the nature of support to be provided by the military and private air ambulance operator must be negotiated. This proposed agreement will be forwarded to the MAST Interagency Coordinating Committee for review and approval or appropriate action.

In the event the local MAST Coordinating Committee determines that military assistance is no longer needed, a notice will be forwarded to the chairman of the MAST Interagency Executive Group who will, in conjunction with members of his committee, terminate the Project MAST site. A letter of termination indicating the date operations will be discontinued will then be sent by the chairmen of the MAST Interagency Executive Group to the local MAST Coordinating Committee and the Departments represented on the MAST Interagency Executive Group.

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Community Check List

1. Study the Planning Guide for MAST and make initial determination:
   a. that your community is capable of meeting the criteria, and
   b. that proper military support is possible in your area.

2. Inform individuals and organizations, which could be represented in the prospective Local MAST Coordinating Committee, about the MAST program; its benifits, responsibilities, and limitations.

3. Hold an exploratory meeting of the prospective Local MAST Coordinating Committee in order to determine whether or not all necessary organizations within the proposed MAST operating area are willing to work together to improve the Emergency Medical Services within your area, and supplement this service with a MAST project.

4. Send an initial request from a responsible official to the Executive Secretary, MAST Interagency Executive Group in care of;
   National Highway Traffic Safety Administration 42-15
   400 7th Street, S.W.
   Washington, DC 20590
   In this request indicate:
   Who may be contacted as spokesman for the requestor,
   What organizations will be represented on the local committee,
   What local, regional or state EMS planning groups will assist, and
   Identification of the need for a MAST project in your area.
   Also, attach to the request, statements reflecting the possible concern for competition from a MAST project by representatives of air and/or ground ambulance services.

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Senator KENNEDY. Our next witness this morning is Dr. Peter Safar, professor and chairman, Department of Anesthesiology Critical Care Medicine, University of Pittsburgh.

We welcome you to the committee, Dr. Safar.

STATEMENT OF DR. PETER SAFAR, PROFESSOR AND CHAIRMAN, DEPARTMENT OF ANESTHESIOLOGY CRITICAL CARE MEDICINE, UNIVERSITY OF PITTSBURGH

Dr. SAFAR. Senator Kennedy, ladies and gentlemen: I am speaking as an individual, but I have held National, State, and local Emergency Medical Services (EMS) advisory positions since the 1950's.

I am president, Society of Critical Care Medicine (SCCM), member of the National Research Council/National Academy of Sciences Committee on EMS, founding chairman of the American Society of Anesthesiologists Committee on Acute Medicine; member of the Health Care Task Force of Governor Shapp, Commonwealth of Pennsylvania and chairman of its subcommittee on EMS, and cofounder and past president of the Allegheny County Council on EMS.

My professional work has included research which, together with that of others, led to the introduction of mouth-to-mouth resuscitation; modern ambulance design and equipment and ambulance attendants training; and multidisciplinary Intensive Care Units (ICUs) staffed by especially trained physicians.

The Society of Critical Care Medicine (SCCM) is a nonprofit multidisciplinary professional organization, founded in 1970 and incorporated in 1971 "to improve care for acute life threatening illnesses and injuries and to promote the development of optimal facilities for this purpose." SCCM's primary commitments are education and academic leadership. Membership is by nomination. Physician members must be Board eligible or certified in a specialty. Nonphysician members must play leadership and/or teaching roles.

SCCM members have developed guidelines for organization of ICU's and for physician education in CCM.

SCCM, the American College of Emergency Physicians and the University Association of Emergency Medical Services are in the process of federating for coordination of education and standards.

Critical Care Medicine (CCM) is "those aspects of service, teaching, and inquiry which concern themselves with critically ill and injured patients." Critical care medicine includes (1) resuscitation; (2) emergency medical care; (3) intensive care.

SCCM focuses on only between 2 and 5 percent of the patients coming to emergency departments throughout the Nation. These critically ill or injured patients, however, require the most sophisticated care, the highest standards. Therefore, what we are interested in is the maximal upgrading of total emergency care.

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I would like to stress that any emergency medical services legislation must provide for the development of the entire system which includes: (*a*) Communitywide organization, (*b*) recognition of a medical emergency, (*c*) communications, (*d*) initiation of the emergency medical response system, (*e*) treatment at the scene, (*f*) transportation with life support, (*g*) treatment in the hospital emergency department, (*h*) treatment in the operating room, (*i*) treatment in hospital intensive care units, (*j*) data collection and evaluation of effectiveness, (*k*) health care delivery research in EMS, (*l*) laboratory and patient research in EMS. The breakdown of just one segment of (*a*) through (*j*) of this system means that the patient may be doomed.

Representatives of over 30 professional organizations concerned with EMS have agreed that EMS legislation must provide for the development of the entire system from (*a*) through (*k*). It should not include routine hospital medical care and rehabilitation. Laboratory and patient research (*l*) should also be included if not covered by other sources, such as NIH.

In our great country the best and the worst medical care can be found side by side. In most communities EMS is a disgrace, primarily because of lack of organization, coordination, and clearly defined responsibilities and authorities. In a community which may pride itself on cardiac transplants a person with sudden chest pain at night might not find a physician; he may be taken by taxi-like ambulance to an emergency room where he might die from ventricular fibrillation while the physician assigned to the emergency room, inexperienced and untrained in emergency care, applies inadequate measures.

Those injured on highways stand a good chance of being further irreparably damaged because of delayed and improper extrication from a wreck or partial asphyxiation en route to the nearest hospital, which may be inadequately staffed and equipped to care for patients with multiple injuries.

Most States require licensure for barbers but fail to license those rendering lifesaving measures outside of hospitals, primarily because of counter lobbying by providers with vested interests. The highway safety act has never been enforced.

Implementation of national recommendations concerning ambulance services' improvements are still being retarded because of incompetence, bigotry, indifference of the public and governments and because the interest of providers rather than consumers prevail.

I consider regionalization of hospital facilities for health care in general and EMS in particular, with centralization of special expensive care to be essential in order to give better care to more people at lower cost. This is being opposed by some hospital boards, administrators and physicians who jealously guard the notion that "their" hospital can provide all kinds of care as well as any other hospital.

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Studies and personal knowledge of case reports support the opinion of EMS experts about the health care gap in EMS. Hard data are scarce because of the unavailability of meaningful evaluation methods, a lack of nationwide statistics and heterogeneous and fragmented practices and organizations of providers.

An estimated 800,000 persons die each year in the U.S.A. from (1) heart atacks, (2) accidental injuries, and (3) miscellaneous emergencies. Experts estimate that up to 25 percent of these deaths, 200,000 per year, could be prevented with ideal application of present knowledge and technology. While completely closing this gap is utopian, efforts toward closing it are feasible and morally mandatory.

Since the introduction of mouth-to-mouth breathing, external heart resuscitation, respiratory care, modern treatment of shock and multidisciplinary intensive care in general during the 1950's, the life-saving potential for critically ill or injured patients has increased phenomenally.

The earlier modern life support is applied, the greater is the patient's chance for survival without becoming a financial and emotional burden to society. In other words, the more money that is spent on upgrading communications, first-aid, transportation and care in emergency departments and intensive care units, and directing patients initially to the most appropriate treatment facility—the less money will be needed for nursing homes and invalids' pension. "An ounce of prevention is worth a pound of cure."

(1) There are approximately 600,000 deaths per year in the U.S.A. from ischemic heart disease, one-half of which occur outside of hospitals. An estimated one-third of those occur in hearts too good to die, namely from arrhythmias which are completely reversible with modern resuscitation. The EMS system which could give thousands of heart attack victims valuable second lives would have to include public education in early suspicion of a heart attack and in performing cardiopulmonary resuscitation (CPR); as well as upgrading ambulance services to the capability of mobile intensive care units (MICUs). MICUs give basic emergency care capability by ambulance attendants—as recommended by the National Research Council—plus the capability for definitive therapy such as intravenous infusion, administration of drugs, monitoring of the electrocardiogram, external electric defibrillation, and tracheal intubation.

MICU systems can prevent cardiac arrest and irreversible organ changes from oxygen lack in shock. We favor general MICUs over mobile cardiac care units because most critically ill or injured patients need more than cardiac care and the dispatcher can rarely identify what the patient will need when the ambulance gets to the scene.

MICU capability so far has only been applied in pilot projects but not on a regional or communitywide basis, with the exception,

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perhaps, of Jacksonville, Fla. These pilot projects have given ample evidence that patients with heart stoppage outside of hospitals have a second chance to live.

Senator Kennedy mentioned former President Johnson. The agents who reached President Johnson within 2 minutes of his call, according to Pittsburgh papers, performed mouth-to-mouth breathing; according to other accounts, also external heart compressions. Rushing President Johnson to a far away hospital, however, even with heart-lung resuscitation going on was doomed to fail; whereas an MICU ambulance or helicopter with technicians trained to restart the heart at the scene under radio guidance by an emergency physician specialist, could perhaps have saved him if his death was due to ventricular fibrillation in a still viable heart muscle.

A proven example of the many hearts too good to die is the untimely death of former Pennsylvania Governor David Lawrence, who collapsed on November 4, 1966 in Pittsburgh while giving a speech three blocks away from our hospital. Bystanders started CPR. When the police ambulance service arrived 5 to 10 minutes later they rushed him to our hospital without providing an air passage and without CPR during transfer. They strapped a resuscitator to his face, a device not recommended by national committees.

Upon arrival at the hospital 20 minutes after the collapse he was found to have his air passages full of vomitus and his heart was not beating. We provided ventricular fibrillation and reversed it within seconds with one electric countershock and good normal heart action continued thereafter.

Unfortunately, his brain had sustained permanent damage from the oxygen lack suffered during the 10 to 20 minutes of no resuscitation prior to his arrival at the hospital emergency department. Since he did not regain consciousness in our ICU, his primary physician, Dr. Campbell Moses—present director of the American Heart Association—and I, his resuscitation and intensive care unit physician, agreed to discontinue extraordinary means of life support.

The Pittsburgh police ambulance service, well meaning, unequipped and untrained, has not changed in the subsequent 6 years in spite of continued urging and fighting by our EMS council even with the help of news media, because our city and county political leaders are ignorant on this subject and have not been willing to learn, giving priority to political considerations rather than established medical needs. This is in spite of the fact that a controlled study in Pittsburgh revealed inadequate prehospital care in 62 percent of cases transported by the police, and 78 percent transported by private and volunteer ambulance services, as compared to only 11 percent transported by an MICU service—Freedom House Enterprises (FHE).

FHE evolved from a sociologic-medical pilot project at the University of Pittsburgh, initially funded by OEO, other Federal grants

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and local foundations. It proved that formerly unemployable Blacks can develop an MICU ambulance service which exceeds national recommendations. An areawide expansion of this service's MICU concept has so far been blocked by petty local politics and lack of funds.

(2) There are about 110,000 accidental deaths per year in the United States. Accidental death rates in rural areas are twice as high as in urban areas, probably due to longer transportation time without life support and poorly staffed hospitals in rural areas.

About 14,000 people die each year from injuries on the job. Accidental injury is the leading cause of death among all persons between 1 and 38 years of age. Each year more than 52 million citizens are injured in the United States; 11 million require hospitalization and 400,000 suffer lasting disabilities at a cost of $3 billion in medical fees and hospital expenses and $7 billion in lost wages.

In view of this it seems irrational that our Government supports efforts to apply what is known in trauma and to learn more about trauma care with only a small fraction of the funds spent for diseases which are primarily problems of the elderly or without known cure. For instance, while money for CCM can save thousands of lives now, money for cancer research may or may not buy the needed scientific breakthroughs before lives can be saved.

Examples. (a) A young woman was shot through the head. During transportation to our hospital there was no one in the back of the ambulance with her since both police ambulance attendants were sitting in the front. Upon unloading, the hospital team found spontaneous breathing but a completely obstructed airway which was simply corrected by backward tilt of the head and forward displacement of the jaw. Her brain suffered damage from oxygen lack in addition to that caused by the bullet.

(b) Last week I stopped at an accident on the parkway and extracted a patient with suspicion of a broken neck and paralysis. It took 1 hour and 10 minutes before he reached the hospital, which was 5 minutes away, because reporting of the emergency was delayed 20 minutes and the ambulance could not go through a tunnel, which was blocked by another accident. Communication between police, ambulance, and tunnel authority was chaotic and thus traffic control in the rush hour impossible. Early admission of such patients may give physicians a chance to reverse paralysis with modern treatment.

(c) I stopped at another accident and extricated a patient with severe multiple injuries. Extrication, transportation, and hospital care were ideal and led to complete recovery because of chance leadership at the scene and insistence that the patient be taken to a major center which is staffed and equipped to care for such severe multiple injuries.

The routine order for the ambulance service involved was to take the patient to the nearest hospital. In our hospital ICU programs we get such patients transferred days or weeks later when brain, lung or kidney damage have become irreversible, because of inadequate initial hospital care.

(d) News media accounts of Robert Kennedy's and Martin Luther King's assassinations suggest that they also received substandard emergency care at the scene and during transportation. However,

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their injuries were lethal and better care would not have saved them.

(e) Some children's lives have been wrecked by brain damage from oxygen lack, not only following inadequate perinatal care and newborn resuscitation, but also in cases of near drowning and other asphyxiating emergencies, due to late or inadequate resuscitative efforts at the scene or unsophisticated intensive care in the hospital.

(3) There are an estimated 90,000 deaths from miscellaneous medical emergencies each year, which in variable proportions could be prevented. These include potentially reversible conditions in otherwise healthy individuals, such as asthma, lung infection, sepsis, convulsions, poisonings and drug overdose.

What can EMS legislation do about it? Legislation should make EMS part of the overall health care system. Since the latter does not yet exist, EMS could lead the way.

Public education is needed since most people do not know what good or poor emergency care entails. Life support at the scene and during transportation to the most appropriate hospital within a region should be the right of every citizen.

Legislation should foster the placement of responsibilities and authorities concerning, at least, communications, treatment at the scene, transportation and regionalization of special care. Councils consisting of consumers, providers and experts should not only control planning, education and applications for public funds but also enforce national recommendations, particularly in the pre-hospital phase.

The simplest and quickest approach would be placing responsibility for EMS into the hands of local, State and Federal governments and legislating systematic improvements through a health czar, benevolent, informed, responsive dictatorship with broad democratic input. Such a dictorial approach is distasteful to many Americans and can be deleterious if politically motivated governments respond to constituents with vested interests.

Thus, we and other EMS activists have tried the voluntary approach through community councils. The Allegheny County Council on EMS was the first such council in the country. At the State level we recently decided to spend $0.5 million per year of DOT money not for buying the wrong equipment, as has been the case in the past, but for covering one-half of the State of Pennsylvania with EMS councils for planning, organization and catalyzing EMS improvements. The council approach is slow and expensive in terms of time and energy on the part of dedicated expert volunteers, it encounters infighting between agencies which claim to be responsible for the same thing—e.g. comprehensive health planning, regional medical program, hospital planning associations, et cetera—and it has so far failed to implement national recommendations in EMS throughout any major region.

In order to make the voluntary approach work I believe that it requires large-scale financial support from the Federal Government, as well as cooperation from local government, with input from consumers, providers, and expert activists, who themselves do not have vested interests within the EMS system in terms of political power and money.

Each State should have a specified EMS director appointed by and directly responsible to the Governor. This director should have final responsibility for the coordination of all EMS efforts within the State,

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implementing the decisions of community councils and comprehensive health planning b agencies.

An uncoordinated multiplicity of health maintenance organizations, HMO's, developed for profit, may encourage better preventive-comprehensive care, as their financial incentive is to keep patients out of hospitals, but, I believe will fail to provide organized, regionalized, high-quality emergency care and intensive care, since they serve only a portion of the population and are surrounded by and intermingled with other ambulatory and hospital systems.

The many Federal agencies which now claim that they financially support components of EMS should be coordinated. The interagency council of this bill is a good idea. One office with authority and responsibility should help applicants for EMS improvement projects in the preparation of applications and should direct these applications to the most appropriate source. Secrecy and political manipulations must be removed from Federal, State and local funding. Less money should go to the perpetuation of agencies' and offices' power and image; and more to the grassroots level to accomplish the agencies' stated missions. Agencies have asked nongovernmental experts to do the work for them gratis and at the same time have often made it difficult for experts and activists, who are eager to meet local needs, to obtain the necessary funds.

We need decentralization of primary care and noncritical emergency care, and centralization of critical care in category I and II hospitals on a regional basis. These health and EMS regions should be according to natural rather than political boundaries.

Interest and leadership of diverse local groups, as well as some duplication for the sake of competition, should be encouraged, in order to spur peak performances and innovations, while wasteful duplications must be discouraged.

Intensive care is the final step in the EMS system for critically ill or injured patients. Intensive care is continuous intensive monitoring and life support as well as definitive therapy for patients with critical and acutely life-threatening illness or injury. This phase requires the most sophisticated modern medical care as it may make the difference between death and survival. In 1971, of the 5,388 short term general hospitals in the United States, about 50 percent had ICU's, and of the 1,347 general hospitals with over 200 beds, about 80 percent had ICU's. Unfortunately, most of these ICU's are without full-time physician staffing.

Mortality in ICU's is approximately 20 percent. Available data suggest that a reduction in mortality in ICU's is possible when these units are directed and staffed by physicians especially trained in CCM. In general, ICU's have suffered from overemphasis on equipment and design and underemphasis of personnel, particularly a neglect of physician leadership.

SCCM is for the team approach. Most CCM physicians are full-time salaried hospital-based physicians devoted to the care of the critically ill and injured. At present, not more than half a dozen fellowship training programs for physician specialists in CCM which approach the guidelines established by the SCCM are in existence.

Persons engaged in providing intensive care should possess knowledge, skills, experience, and judgment in resuscitative and life-support

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measures, master highly complex technology to prevent, detect, and treat emergencies and have some knowledge of a variety of pathologic conditions. Neither the M.D. degree nor traditional specialty training guarantees such knowledge and capability in CCM.

Intensive care is the final and most sophisticated phase of the emergency care system. Therefore, it is essential to include training grants for all ICU personnel, including physicians who are capable of providing modern, sophisticated titrated life support and also are capable of functioning as leaders for communitywide EMS programs. The present threat by the Federal Government to discontinue all training grants is counterproductive and lacks vision. Successful EMS pilot projects evolved from physician leaders who found the appropriate support.

CCM physician fellowship training programs complement the emergency department physician training programs, which concern themselves with overall emergency care, not only that for critically ill and injured patients. SCCM is providing the critical care input for such training programs of emergency department physicians.

Comments on EMS bill S. 504 (Kennedy-Cranston): This is the best EMS bill I have seen. My colleague, Dr. Weil, who is a qualified critical care physician and bioengineer, will talk on training and technology. Here are some of my recommendations:

Funds should be allocated according to needs, identified as gaps between national recommendations and the present state of implementation at the local level, as well as according to the opportunities for change within the community.

Providing funds only for those who already meet standards makes no sense, since the bill should help in upgrading those communities where standards are not and could not be met so far. Plans should present a step-by-step method of closing the gap between knowledge and its application.

Eligibility for grants should not depend on Comprehensive Health Planning (b) Agency scope, since it may be difficult to unite actions of people at such a broad level.

All applications should have expert peer review, which in the case of research grants in the past has worked better than distribution of money with political considerations. This peer review must include considerations of need and opportunity for change.

Approval of grant applications must not be in the hands of bureaucrats. There must be a way for individuals and groups at the local level (e.g., educational institutions, hospitals, EMS councils, consumer groups, technical experts) to make direct proposals without requiring local and State government approval of implementation funds, because unenlightened local governments can block progress.

Senator KENNEDY. Could you repeat that?

Dr. SAFAR. Because unenlightened government has blocked progress, as for instance in Pittsburgh and Allegheny Counties. It will take many years of stirring public opinion to change this trend. It took us 5 years to change local government attitudes. We could have made breakthroughs in implementation 5 years ago with help of DOT funds.

Senator KENNEDY. Why are governments not responsive on this? Is it just lack of foresight of individuals or is it vested interest or what?

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Dr. SAFAR. Both. They are responding to vested interests. In our case, it was first self-imposed leaders of volunteer fire department ambulance services threatening with loss of votes; and second, government's fear to become stuck with funding ambulance services when the grant expires. This made local government turn down Federal support of various projects.

Senator KENNEDY. We understand that kind of thing here, too. Could you just tell us a little bit about the forces you see within the local community that either help or hinder?

Dr. SAFAR. I think councils can bring community providers, experts, and consumers together. Councils may or may not be blessed with local government cooperation. In some communities with local government cooperation EMS projects could get off the ground much quicker.

Planning and development of EMS should be under comprehensive health planning agencies, which have shown so far variable expertise and success. The bill should guarantee that comprehensive health planning (1) establishes EMS plans with expert input; and (2) make plans adhere to national recommendations and standards.

There should be provision for external evaluation of the entire EMS system even after funding, perhaps through some type of peer review whereby leaders of one system are responsible for evaluating another.

Funding should be according to needs and improvement opportunities but concentration of most of the money in only a few places must be guarded against.

Members of the National EMS Advisory Council shall not be political appointees but selected on the basis of competence and experience in EMS. The present wording does not guard against incompetence. The Council must enforce standards (e.g., National Research Council, Joint Commission on Accreditation of Hospitals, professional societies), be responsive to consumer demands and to identification of needs by experts; and be resistant to political manipulations.

Commercial ambulance services should not be permitted to block the funding by this bill of competing higher quality, MICU, and/or more economical, nonprofit, ambulance services. Manipulation of the bill by the Appropriations Subcommittee to this effect should be prevented through a proviso in the bill.

Payment in advance is good, since the amount of money needed may be unavailable from local resources.

One of the most counterproductive recent events in Federal social and health care programs has been their short-term nature and unexpected discontinuance. Many years are required before educational programs bear fruit and before one can determine the effectiveness of such programs. Moreover, professional leaders hesitate to join programs which lack security and continuity.

There must be provision for research and data collection. Research should be supported in part by EMS legislation because breakthroughs of the future will depend upon cross-fertilization of (a) service, education, and research; and (b) laboratory research, patient research, and health care delivery research. For instance, concepts discovered in the laboratory need further studies of delivery techniques before the

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public can benefit from them and unsolved problems encountered in the field may be solved in the laboratory.

The National Research Council/National Academy of Sciences through its committee on emergency medical services has held a leadership role in the initiation of concern about EMS nationwide and in the establishment of national recommendations, guidelines and standards concerning emergency and critical care medicine.

I understand that the NRC is presently without money to continue this role. I strongly recommend that Federal funds support the NRC EMS committee permanently, since it is needed for continued evaluation of new discoveries and innovations, for keeping national recommendations and standards current and for acting as a "watchdog" over EMS standards without being controlled by any professional organization, "union," or government agency.

How much money is needed?

This depends upon whether this legislation is to cover only catalyzing grants or, in addition, pay for direct patient services which are not yet covered by health insurance or government from taxes. As written, the bill seems to focus on grants.

First, I recommend that it should become a policy of the Federal Government that all health insurance programs include benefits for all components of the EMS system. At present most do not cover treatment at the scene and emergency transportation with life support. Some do not cover fully the care in emergency departments and ICU's. The proposed national health insurance standards act and authoritative actions by State insurance commissioners should consider this.

Secondly, I recommend that hospital emergency and critical care improvements, if within the regionalization concept, should be exempt from the Federal price control. If EMS becomes public policy, as I think it should, hospitals should be permitted to absorb all or part of the costs for certain components of the EMS system not directly concerning intrahospital care, as for instance, for emergency medical communications and transportation by MICU ambulances. Improvements of emergency departments and ICU's, include education. Federal price control at present makes any such improvements impossible.

The amount of money which should be provided through this bill, therefore, will depend upon improvements in insurance coverage and lifting of price controls on hospitals.

The $50 million, $100 million and $150 million per year recommended by this bill seems to us adequate only if improved patient services, including emergency medical transportation (MICUs), emergency medical communications equipment, and ambulance equipment are paid for from other sources.

I am not an expert in health financing. Knowing the needs and having had experience with local budgeting of EMS improvement programs, I came up with the following very approximate cost estimates for EMS improvements nationwide:

(1) MICU ambulance vehicles with portable EKG defibrillator and ambulance and hospital based telemetry equipment, $25,000 per vehicle, one vehicle per 100,000 population = $50 million.

(2) Emergency medical communication equipment, based on Allegheny County estimates of 25 percent of total emergency communica-

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tions equipment costs [$6 million for 1.5 million population], i.e., $1 per person = $200 million.

(3) EMS councils, based on $0.5 million allotted in Pennsylvania for funding of councils for approximately 5 million people = $20 million per year.

(4) Ambulance Services [emergency medical transportation with MICU capability] based on metropolitan areas' experience with approximately one vehicle [10 attendants for 24-hour coverage with 2 attendants per vehicle] per 100,000 population, $1.50 per person per year = $300 million per year.

(5) Education of EMT's grade two [to staff MICU ambulances] if done through community colleges affiliated with hospitals, could perhaps be accomplished for $2,000 per EMT for 2 years. Need 20,000 EMT's [10 per vehicle per 100,000 population] = $40 million.

(6) Education of EMT's grade one could be accomplished gratis through upgraded first-aid courses, American Heart Association cardiopulmonary resuscitation courses and EMS council staff and volunteer work; and/or as spin-off from (5), (7), (8), and (9).

At present there are in the United States of America an estimated 200,000 ambulance personnel operating 25,000 ambulance services and 50,000 vehicles [average 25 vehicles for 100,000 pop.] [in Pennsylvania there is twice the national average of ambulances], most of them staffed with volunteers without training in life-support. Upgrading of volunteer and paid EMT's would ultimately concentrate more expertise in fewer hands.

(7) Training of emergency department physicians—There is an estimated need for 8,000 ED physicians. With available manpower resources now and a warming up period of 1 year, I would hope that the newly formed "Federated Societies of Emergency and Critical Care Medicine" (ACEP, SCCM and UAEMS) could develop about 40 2-year ED physician residency programs. These may turn out an average of 10 ED physicians each per year, a total of 400 per year or 2,000 in 5 years. The remaining 6,000 could come from practicing physicians receiving short-term hospital-based "second career" training. Estimated training grant needs: for ED residents 50 percent of $12,000 per year stipends from hospital, 50 percent from grant $6,000 × 400 = $2.4 million per year. Second career costs—$3,000 per M.D., 1,200 MD's per year for 5 years—total $3.60 million per year.

These total ED training grant needs are at least $6 million per year.

(8) Training of ICU physicians [CCM specialists]—estimate a minimal need of 2,800 physician specialists for 1,400 short-term general hospitals with over 200 beds. These physicians would already have had training in a base specialty and could earn much money in private practice. In order to persuade them to get further training in CCM, a minimal stipend of $15,000 per year would be required = $42 million.

(9) Emergency and critical care centers—about 10 in the Nation to be funded with about $1 million per year per center, for educating CCM community leaders and teachers, to make innovations [research and development] and to evaluate = $19 million per year.

(10) Hospital emergency department and ICU facilities. They could be upgraded through hospitals' borrowing money and charging

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it to overall costs, provided price control is lifted. Training of nonphysician hospital personnel [ED and ICU nurses and technicians] could come as a spinoff almost gratis from (7), (8), and (9).

Summary. If the $150 million proposed for the third year could be extended for at least a fourth and fifth year, the needs listed under (1), (3), (5), (6), (7), (8), and (9) could be met. In order to include (2), (4), and (10) the legislation—after further study—would have to be $\frac{1}{2}$ to $1 billion per year.

The above seems a reasonable estimate considering the protection of the cost to bring nationwide EMS services to meet minimal standards under Standard 11 of the Highway Safety Act of 1966, namely, a total of $1.8 billion ($0.6 billion of which would be appropriated anyway from private funds and local and State governments and thus $1.2 billion of Federal support required).

EMS Council support, and most, but not all of other EMS grant support could cease when, hopefully after 5 years, national standards will have been implemented. Remaining council functions could then be taken over by governments' health departments and CHP. Permanent authorization is required for continuous funding of remaining needs not covered by regular health care funding.

The bill should insure that funds allocated for EMS are actually spent for EMS. This regrettably has not been the case with some other health programs approved by Congress.

Conclusion. Among the various health care strata, we believe that priority support of (1) comprehensive-preventive care at one extreme, and (2) emergency and critical care medicine at the other extreme, will save more lives than the support of regular (intermediate) organ- or disease-oriented, hospital care. Emergency and critical care medicine could become the most striking breakthrough in health care delivery in this country, if supported as mission-oriented, interdisciplinary programs, e.g., the space program. EMS needs large scale financial support, like the space program, for applied research, organization, education and implementation, since basic knowledge is far ahead of implementation. Where basic breakthroughs in knowledge have not yet occurred, as in cancer, discoveries cannot be "bought" with money and modest funds are needed to give inquisitive minds security, time and freedom for inquiry.

Obstacles to EMS improvement at the community level include fear, ignorance, bureaucracy and indifference. While communication, education and activism have been tried with variable success, the power of money is more effective in rapidly catalyzing progress by changing conditions rather than relying on persuasion and influencing political leaders and public.

The noblest cause of medicine in general and critical care medicine in particular is to prevent premature death of the human brain and to reduce pain and suffering. I hope that our leaders, many of whom now realize that they have wasted over $130 billion and over 1 million lives on an immoral and stupid war, will vote for the expenditure of $\frac{1}{2}$ to $1 billion a year for 5 years to move our EMS system from one of the most disorganized among industrialized nations to the best in the world. I believe that our Nation, which developed the self-discipline of teamwork necessary to send man to the moon, can apply the same organizational talents to provide emergency and critical care services nationwide.

Thank you.

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Senator KENNEDY. Thank you very much. I think you have outlined at the conclusion of your testimony in considerable detail the critical expenses for this type of program.

As you point out, the amount of money which is being authorized is woefully inadequate measured against the kind of ideal which you have suggested here, which I suppose should be defended not as the ideal but the bare minimum.

It is useful for us to have this kind of breakdown, particularly from someone like yourself, who has given the kind of attention to it that you have. I want to thank you very much for your comments. They have been very helpful.

You have gone into considerable detail on various aspects of the legislation. You were here earlier when we had Mr. Wilson talk from the Department of Transportation that everything is moving along quite smoothly. I do not want to put Mr. Wilson's testimony up for a target, but I thought you might like to give some kind of reaction to the presentation he made on the progress being made within the Department of Transportation.

Dr. SAFAR. I do not want to start a hassle. The Department of Transportation has moved things along considerably since the mid-1960's. However, to my knowledge there has been little use made of the force behind the Highway Safety Act, namely, withholding highway money, unless national standards on ambulance design and equipment and ambulance attendants training are implemented. Money has been spent rather freely without such controls. This is changing now in our State.

I do not favor the disjointed support of the past. The Department of Transportation does not dare to set its foot into a hospital, nor does HEW, and so on and so on. It will remain a confusing hodgepodge unless all components of the EMS system come under one Federal agency.

Senator KENNEDY. Senator Beall.

Senator BEALL. Just briefly. I was a little confused. Are you suggesting or you indicated that there has been a reluctance on the part of local governments to move ahead in this field. You indicate that we ought to bypass this level of government and deal directly with volunteer councils. Did that include States also? Does your criticism include State governments?

Dr. SAFAR. No. We need State EMS directors directly under the Governors. But I do not like to see the final power in the office of one individual. So the State EMS director has to be very responsive to the State EMS Advisory Council.

I did not say that all local governments are obstacles. I just gave one example that they might be obstacles. But where they do not cooperate, we should not hold back progress and rather support local projects directly.

Senator BEALL. You are advocating much greater coordination than we now have. Are you advocating also that wherever possible we run these programs through the State?

Dr. SAFAR. Yes. State Comprehensive Health Planning, certainly, should have the right to review. The power of the State EMS director should be primarily in coordination, not so much in details of a grant application and project. Local groups should be able to apply directly with review and comment from local and State governments.

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Senator BEALL. In effect a veto would still rest with the State in order to give proper coordination?

Dr. SAFAR. Yes. However, I do not know at this time how much power there should be at the State level. This would depend on the individuals involved. I think when there is expert input, the final power in this regard does not mean too much. Comprehensive health planning agencies now in some parts of the country are using EMS councils as their EMS action arms for planning and catalyzing. In 3 to 5 years planning and surveillance could be transferred from EMS councils to CHP and councils perhaps be dissolved.

Senator BEALL. The only point of my question is that planners tend to plan forever sometimes. Somewhere down the line you need someone to say let's get something done. In most cases this is going to be the Governor, if you want things done on a statewide basis.

Dr. SAFAR. Yes; I agree.

Senator BEALL. Thank you.

Senator KENNEDY. Thank you very much.

Our next witness is Dr. Max Weil who will be followed by Dr. Mills and Dr. McDade of the American College of Emergency Physicians.

Dr. Weil, would you come on up to the table.

STATEMENT OF MAX WEIL, M.D., CHAIRMAN, SCHOOL OF MEDICINE, UNIVERSITY OF SOUTHERN CALIFORNIA

Dr. WEIL. Mr. Chairman, I want to say that Dr. Mills from the American College of Emergency Physicians, represents an extremely active organization. I certainly echo the importance of recognizing their comments.

I am grateful, and I shall be extremely brief, to have an opportunity to provide dual representation, both as immediate past president of the society of critical care medicine and as the chairman of the committee on emergency medical care for the county of Los Angeles, which, to the best of my knowledge has the largest emergency medical aid program in our country.

I speak in both instances, however, and my comments reflect my personal statements. I have not, because of the pressure of time, been directly confirmed by either organization.

I do believe, however, that both organizations are strongly in support of this legislation.

I would like to combine my comments both to the importance and the selective aspects of the bill, with regard to two items: Namely, those of training and technology.

I think that something should be stated because all of us walk with substantial guilt, as we consider the inadequacies of the services that are rendered the critically ill and injured, and the progress of the last decade. It is barely a decade now that we have been able to keep people alive on breathing machines, put in heart pacers on emergencies, and keep kidney failure from being a failure.

The dilemmas are in part being created by rapid expansion of technology itself and the minority of our physicians who are in fact prepared by training, simply because of the time lags to cope with it.

There are to the best of my personal knowledge only two centers in this country, at the present time, that are training specialists in critical

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care medicine, and both in insignificant numbers. At least one of them is threatened with extinction because of funding problems.

Senator KENNEDY. What are those?

Dr. WEIL. One is at the University of Pittsburgh and the other is at the University of Southern California School of Medicine in Los Angeles; 15,000 physicians are trained to be emergency physicians, approximately 5 percent of the total. The challenge with regard to training becomes obvious. If we calculate, it would take approximately $12,000 to train an emergency physician. Under this legislation it would all be considered for purposes of training.

With specific reference to this bill, I would recommend that the training function not be associated to the community councils as proposed, but be selected for those medical schools or major teaching hospitals which can establish training programs, since the separation of funds into communities for purposes of physician training would probably splinter that particular effort.

The same probably does not apply to training of nursing personnel as much, and applies least of all to training of emergency medical technicians and paramedical personnel.

My remaining comments will relate to technology. I should like to echo Senator Taft's opposition to the statement made by our friends in the Department of Transportation that machines do not save lives. A machine saves a life of a patient as assuredly as the machine saves the life of the individual who is 20,000 to 30,000 feet up in the air.

If that machine is imperfect or if the ventilator is imperfect, or pacemaker is imperfect, and the heart stops beating and the machine stops breathing, the patient dies.

As a hopefully reasonably skilled professional in this area, I can do practically nothing about substantial technological support.

Our present modes of operation, Mr. Chairman, are custom made, sort of like the cobbler making shoes. We adjust a little intravenous drip and have fluid flowed into the vein. We take blood samples out of the vein, deliver them to the laboratory where tests are performed, and results are returned and recorded. If we are to meet our destiny in regard to taking care of the relatively massive numbers of patients at reasonable costs, I do not think we can evade the responsibilities for paying strong attention to the technology which would make this an efficient undertaking.

With one probe in one blood vessel, we can monitor five or six of the procedures we are performing while simultaneously and automatically inducing blood or fluid.

The issue extends also to quality control. Without having systematic ways of doing the job, we have no reproducible way of doing it in the small community or the large community.

Senator KENNEDY. Who should do quality control?

Dr. WEIL. I think quality control is inherent in systematizing the operation. There is no reason why one cannot have an information system akin to that used by Hertz or Avis in preserving their automobiles, in checking where things are at any one time.

I was pleased to see, Mr. Chairman, that in the revised bill $5 million is allocated for technology.

Senator KENNEDY. Let me ask you this. Do you think we can have an efficient EMS system if we continue to rely on funeral directors and the "for profit" ambulance system?

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Dr. WEIL. No, I do not really think so. However, I do not think that is essentially the element of the problem as much as it is to have the requirement for trained personnel who could make predictable use of competent equipment. If that is the criteria of the basis of which we would seek some uniformity of productivity and quality control, then I think they might be considered incompetent to begin with.

I could imagine that there may be some highly dedicated funeral services in the country who would want to revise themselves to be highly competent in emergency medical services. That is, if they are willing to expend their resources for the training of their personnel, the equipping of their facilities, and the relating to the host of other community agencies involved.

I think the issue relates to the quality of care which is inherent in the professional activities that are involved, the skill of the individual, and the technology which supports him. We have really no private enterprise substantially involved in this technology to speak of.

This concludes my presentation, Mr. Chairman. I have entered into the record two statements. One of those statements is contained in a published manuscript, published in medical literature, entitled "A Crisis in the Delivery of Care to the Critically Ill and Injured."

The other is a statement of the present emergency medical services system in Los Angeles County, and I would be grateful if they were to be included in the record.

Senator KENNEDY. We will include it as part of the record*.

[The information referred to follows:]

*See p. 488 for statement on the Emergency Medical Services System in Los Angeles County.

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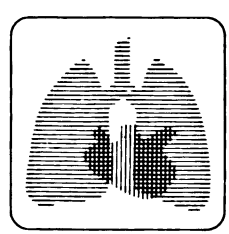
A Crisis in the Delivery of Care to the Critically Ill and Injured*

Max Harry Weil, M.D.; Herbert Shubin, M.D.; E. C. Boycks, Ph.D.; Norman Palley, M.S.; J. H. Carrington, B.A.; and Arleen Jacobs, B.S.



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SPECIAL COMMUNICATION

A Crisis in the Delivery of Care to the Critically Ill and Injured*

Max Harry Weil, M.D.; Herbert Shubin, M.D.; E. C. Boycks, Ph.D.; Norman Palley, M.S.; J. H. Carrington, B.A.; and Arleen Jacobs, B.S.

The Dilemma

Astounding advances in biological science since World War II have provided remarkably potent methods for sustaining life and function in critically ill patients. All who are afflicted with serious heart attacks, overwhelming infections, severe burns or loss of kidney function; accident victims suffering from excessive blood loss; the emotionally distressed who are hospitalized after an overdose of sleeping tablets or narcotics—all these share a common plight: survival is unlikely unless their life-threatening defects can be promptly inventoried and artificial methods immediately applied to support the functions of their vital organ systems. Today medical science has the know-how to provide this essential lifesaving support, but neither resources of skilled manpower nor equipment is available to deliver it to more than a minority of our citizens.

Scope of the National Problem

Approximately two million Americans die each year. More than one half of these deaths are the direct result of diseases of the heart and blood vessels. Cancer accounts for the next largest number. Traumatic injuries, acute diseases of the lung, certain diseases of early infancy, diabetes, and suicide account for the majority of the remainder. Most of these causes of death present as acute life-threatening defects and we look to effective critical care facilities to increase the salvage of life.

The dimensions of the problem become even more readily apparent when we review the incidence of disabilities in addition to fatalities. Besides the 115,000 Americans who die each year from accidental causes, 400,000 suffer permanent disabilities and 10 million more are temporarily disabled.[1] When these data are interpreted in relationship to the life span of an individual, the likelihood that any one individual will sustain a permanent disability due to accidental injury exceeds 13 percent. The incentive for incisive action is particularly great since the majority of injuries occur in Americans who are less than 45 years old.[2]

A majority of deaths after acute injury or critical illness are the direct result of respiratory failure. The patients simply cannot breathe for themselves and unless they are temporarily provided with the artificial support of a breathing machine, they die. National mortality rates due to respiratory problems have increased twice as rapidly as all other causes of death.[3] This is in part because of an increase in chronic respiratory diseases, particularly pulmonary emphysema. Equally important, however, are problems that stem from trauma. It is estimated that 75 percent of all accidental deaths involve injuries to the chest and lung.[4] In addition, a fatal form of lung failure has now emerged as the single largest cause of death in patients who are effectively resuscitated after shock states. Methods for artificial lung support of critically ill patients by the use of tubes in the airway and mechanical ventilators came into use less than ten years ago at about the same time that the hospital was confronted with the need to implement coronary care, renal dialysis, and open heart surgery. The medical, nursing, and

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administrative staffs of even the most forward looking community hospitals were overwhelmed by these developments. Good opportunity to save lives was at hand, but the means by which this could realistically be accomplished with limited resources of technically expert professional and supporting staffs and available facilities were and continue to be disappointing.

The delivery of critical care is contingent not only on adequate facilities but even more on the availability and utilization of highly trained professional and technical personnel. Yet a realistic assessment of current circumstances throughout this country indicates that not enough physicians, nurses, and technical specialists are available to fill even half of the estimated need for critical care services. A conservative estimate indicates that more than 10,000 additional physicians and 40,000 additional registered nurses or specialists with equivalent competence are currently needed to staff those hospital units which give lifesaving care.[5] This shortage of trained personnel currently necessitates limitations on bed usage or curtailment of services so that the level of specialized care is compromised. At this very time, major hospitals in an urban community such as Los Angeles are unable to supply critical care service to the extent requested and needed. Our own Center for the Critically Ill during August, 1971 was able to staff only 29 of 38 active beds, and highly trained intensive care nurses could not be recruited for some mortally ill patients who might otherwise have survived. Programs for training medical corpsmen and other paramedical personnel to fill this void warrant a somewhat more optimistic outlook for partial relief of the very critical shortage of qualified personnel in some parts of the country. However, the number of candidates who commit themselves to a career which involves 24-hour availability and current facilities for the training of such personnel are now so stringently limited that no short-term improvement is in sight. We must look to alternatives other than expansion in staff as a means of resolving our critical staffing problems.

Beds for Critical Care

Between 1960 and 1969 the number of short-term general hospitals[6] with critical care facilities increased 440 percent. The proportion of total hospital beds devoted to intensive care varies between 3 percent and 25 percent.[7] Although the specific characteristics of the hospital must be taken into account, it is estimated that as many as 3 percent of acute care beds are likely to be reserved for intensive coronary care,[8] as many as 5 percent for intensive respiratory care,[9] and an additional 4 percent for other components of critical care. We estimate that only 43,000 acute care beds—5 percent rather than the 12 percent warranted—are presently allocated for critical care services. Approximately 55,000 additional critical care beds are needed.

The benefits that stem from systematized care of traumatized and critically ill patients have accrued primarily to patients in large medical centers. These centers are more likely to have sophisticated systems for patient monitoring and management and better provision for the dedicated services of physicians and technical personnel at the bedside. Simple devices for automation of selected components of routine care which reduce the commitment of bedside staff, such as infusion of fluids and mechanical ventilation, are therefore likely to be of greatest benefit in community hospitals.

Potential for Saving Lives

With respect to lung failure, the largest single cause of death in our critical care units, the impact of expert respiratory care on mortality, has been objectively evaluated. Pontoppidan and his colleagues[10-12] at Massachusetts General Hospital, Boston, have recently reported a decrease in mortality to one-third of what it was prior to opening of the respiratory unit. O'Donohue and his associates[13] report a fivefold reduction in mortality in their acute respiratory failure unit at the Medical College of Virginia. These statistics have been further corroborated by Petty[14] in Denver.

The remarkable decrease in the mortality of battle casualties, beginning with the Crimean War (16.7 percent) and continuing with World War I (8.2 percent), World War II (4.5 percent), and the present Viet Nam War (1 percent),[15] reflects not only the availability of improved methods of patient care and facilities for implementing such methods but to a large extent the very rapid evacuation of patients to specialized centers. During an operational experiment on evacuation of casualties in Viet Nam, helicopters were reserved and hospital units were kept in readiness for immediate care of wounded servicemen. These provisions[15] resulted in further reduction in mortality to only 0.368 percent (five deaths out of 1,368 casualties). The average time interval between injury and arrival at the operating table was from 15 to 20 minutes and as little as 7.5 to 10 minutes for the most seriously injured patients. Extrapolation of this experience to civilian practice leaves little doubt of the lifesaving impact of rapid transfer of a seriously traumatized patient to a center which is uniquely prepared for his medical care.

For patients who reach the hospital alive and

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who are admitted to coronary care units, control of otherwise fatal disturbances of the rhythm of the heart is estimated to reduce mortality after heart attacks from 30 percent to 35 percent to a range of 10 percent to 15 percent.[8] There is also evidence that mortality may be further decreased through the use of mobile intensive care units which make possible effective treatment within one hour after onset of chest pain.[16]

Neonatal intensive care units[17] have increased the survival of critically ill infants by approximately 50 percent.

Our own experiences give further indications of the lifesaving potential of expert critical care. Of a total of 70 patients who had attempted suicide by taking barbiturates, tranquilizers or narcotics in lethal amounts and who at the time of admission to the hospital were in collapse, 19 (27 percent) ultimately died. However, there has been a progressive reduction in mortality. Five of the first eight patients treated in our specialized unit died, but only one of the last 21 patients died.

We have made a conservative estimate of the potential national impact on the survival of Americans if these advances were implemented. On the basis of the available data, it is evident that effective critical care services have been capable of reducing mortality by 50 percent or more. However, a portion of this improvement can be attributed to implementation of new techniques of resuscitation, pacemakers, defibrillators, drugs, and other effective therapy, the use of which is not restricted to those specialized units which are reserved for the care of the critically ill. To assure a conservative estimate, we therefore attribute only half of the improvement in survival rates to the selective impact of organized critical care services.

Our computation of the numerical effect of this improvement assumes that 5 percent of all acute hospital beds are currently reserved for critical care, that the average stay in critical care units is five days, the average bed occupancy 70 percent, and the overall mortality 20 percent. If the mortality rate were lowered to 15 percent—a 25 percent reduction—more than 100,000 lives would be saved.

Opportunities for Technologic Development

Major technologic advances which have provided efficient systems of automation and communication now common in other service industries have as yet had limited application in the medical field. If techniques comparable to those presently used in hospitals were applied to the delivery of electrical power or water supplies to our communities, only a few fortunate subscribers could be served. Time after time, a nurse must adjust an intravenous drip with a screw clamp rather than simply pushing a button which delivers a known volume of fluid over a known period of time, or even better, entering a command into a computer-operated system that predictably executes an order and automatically takes care of the record keeping. Bedside care, whether it is the measurement of urine output or the administration of fluids and drugs, is entirely a manual process. Record keeping and record retrieval impose inordinate demands on the time of the overworked doctor and nurse.

A systematic reorganization of the methods for delivering medical service to the critically ill, utilizing the benefits of automation, is urgently needed. Only such a reorganization is likely to resolve the crisis that now exists in the delivery of care to the critically ill and injured.

The effectiveness of trained personnel who are in such short supply and the efficient use of available facilities must be increased. Techniques for dependable delivery of crisis care surely must not lag behind methods which assure the availability of a broad array of consumer products and services, most of them substantially less essential.

Economic Implications

The economic implications may be assessed in terms of the direct benefit to the critically ill and injured patient, the cost of the health delivery service, and the impact on third parties who provide the funding for operation of critical care facilities. The economic impact of disabilities and deaths due to trauma is staggering because of the disproportionately high incidence of traumatic injury in relatively young and productive persons. More than 77 percent of all injuries occur in patients less than 45 years of age and 40 percent in those under 17.[2] In addition, the mortality for men is more than double that for women.

Trauma accounts for the loss of more productive man-years than any one disease and its cost is estimated at $23 billion. This estimate does not include the continuing costs of maintaining patients with permanent disabilities.[18] Long-term sequelae of injuries in children have a disproportionately greater medical and social significance. More than 100,000 children are permanently crippled each year by accidents.[19] Thus even a small reduction in morbidity in children would substantially reduce the burden on our national economy if these youngsters are restored to lifelong productivity.

The high cost of critical care, quite aside from the unavailability of staff, is worthy of comment. Our analysis leads us to anticipate that, through automa-

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tion, the total commitment of critical care nurses to mechanical tasks may be reduced by one third. This alone would make $270 million available for improving those components of care which cannot be automated. If each year only 2.5 percent of the total costs for nursing care were expended for research and development of automated methods—a much smaller allocation than is current practice in technologic industries in which such allocations typically range from 7 percent to 12 percent—approximately $20 million would be budgeted for this practical and humanitarian undertaking.

A Plan for Meeting the Crisis

Our national leaders should be and want to be apprised of this current dilemma involving critical care medicine. Health care delivery is now the nation's second largest industry, accounting for more than $67 billion or 7 percent of the gross national product during fiscal 1969-1970. Yet during this period only $18 million were spent on research in this area. Dr. J. Glen Beall cites the fact that we cannot find a major American industrial enterprise which funds research and development so poorly.[20]

Applied research involving close liaison between practice-oriented research physicians, engineers, nonclinical scientists, and medical administrators must be further encouraged and financially supported. At the present time there is remarkably little government support for applied biomedical engineering: $6.5 million during 1970.[21] Applications for public funding of these technologically important endeavors fall into the crack between established programs for support of basic medical research and those reserved for programs which relate to administrative components of medical care.

A very few programs exist as examples of what can be done. Automated critical care facilities at the Latter Day Saints Hospital in Salt Lake City, at the Pacific Medical Center in San Francisco, at the University of Alabama in Birmingham, and at the Center for the Critically Ill at the University of Southern California in Los Angeles serve as an indication of the potential value of research initiated to improve clinical care of the traffic accident victim, the open heart surgery patient, and the man whose life is being snuffed out by breathing difficulties caused by emphysema. Automated pumps for the delivery of fluid and medication, breathing machines, body temperature controlling devices, all of which operate on a remote-control basis, are already available but only on a small experimental scale. Instrumentation at the bedside, which at present often barricades the patient from the medical and nursing staff, has been streamlined and miniaturized.

Substantial incentives may have to be created—possibly with subsidies—to encourage industry to develop and market already available devices for lifesaving medical care. Public support for development and packaging of those items which are badly needed but not yet available must be recruited. With good support we estimate that seven years will be needed for the engineering, evaluation, and marketing of competent systems by which major components of critical care may be automated. Routine use of these systems in small community hospitals may be anticipated within the next ten years.

Specific Proposal

We recommend that specific funds be provided in the amount of at least $20 million annually for dedicated research and development of systems by which services in critical care centers can be facilitated. More specifically, categorical monies are needed for support of applied biomedical engineering efforts by which suitable instrumentation is designed, prototype units are developed, rigorous routines of preclinical and clinical testing are established, and orderly provisions are made to recruit the participation of industry in packaging and early marketing of systems of proved value. The funds should also serve for development and operation of at least ten pilot facilities which might serve as testing and training centers.

The allocation of these funds may be directly related to Catastrophic Health Insurance (S1376), the details of which have been published in the Congressional Record for May 12, 1971. This bill, submitted on March 24, 1971, and sponsored by Senator Russell B. Long (and cosponsored by Senator Alan Cranston,[22] who has demonstrated special and continuing interest in the problems detailed in this statement), is intended to provide $2.5 billion annually for the support of Catastrophic Health Insurance. We propose that of this amount, a sum approximately equivalent to 0.8 percent, or $20 million, be reserved and committed for applied clinical engineering. This appears to us to be a uniquely rational and supportable component of such a bill if it is to improve catastrophic medical care. Funding of services without assuring that services can actually be delivered with the total resources now at hand would be likely to thwart the very purposes of such legislation. Concurrent efforts to expand the technologic resources with which to serve those who are enfranchised is therefore regarded not only as important foresight but also as appropriate insurance.

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Senator KENNEDY. Senator Cranston has, as you know, exhibited a great interest in this subject, and particularly in your program, which is really one of the very outstanding programs. We want to express again our very warm appreciation for your presence here.

Senator Cranston has some additional questions he would like to ask in writing, and we will give those to you before your departure and hopefully you will be able to respond.

Senator Beall, any questions?

Senator BEALL. Just briefly, you commented on ambulances and ambulance drivers. It seems to me in observing this problem that a major obstacle is not only training the person to make the decision, the proper decisions to which hospital a patient must be taken but removing the liability that exists should this person be challenged under the decision he has made. How are we going to get around this?

Dr. WEIL. The paramedic or emergency medical technician is an extension of the in-hospital service, and as such he performs best as a member of that team. When he is out in the field, he is best in continuing voice communication with that hospital facility. Therefore, the decisions that are made and are executed in the field represent for all practical purposes the collaboration between him and those physicians to whom he reports.

I would be remiss if I would not state something that I know is so amply demonstrated in the trauma center, which is so excellently operated in your own area. That there has been within the last year and a half—thanks to the National Research Council, the Department of Transportation, and the American Medical Association—a tremendous upsurge of interest in emergency medical care external to the hospital.

But, Mr. Chairman, I submit that, including our own county, that portion is progressing well. We are, in fact, in our own county, transporting patients within 10 to 12 minutes to the right place under highly safe conditions, compared to in the past having them transported to the wrong place only to wait there for 40 or 45 minutes to be transported to a second or perhaps a third place. However, even if they are transported to the right place, the organization of the individual emergency facility and the systemization by which the physician and his staff respond is so custom made, the delays that are inherent in that procedure now make the most threatening period of the patient's survival the immediate period following his hospital admission.

Very often we assume if we can get them to the hospital alive, everything is all right. I do not believe that is the case. I think we will find that the bottleneck will be at the level of the emergency room, rather than the retrieval system on the outside.

There will be some contention on this point of view, and I am sure that my own position on that is in part prejudiced by the strives in the paramedic program and other transportation systems which have been converted now to professional systems in my county. But I am concerned about the time delays and the trial-and-error operations, that are inherent in the operation of critical care services which occur after the admission of the patient. This is due to the unavailability of specially trained personnel and of technological backup, which in most instances is primitive.

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We have this dual problem of education of the professional and paraprofessional. We have the problem of technological resources with which to work. No matter how effective we create the system of payment or the public system of involvement and decision-making, unless we have the professionals and the materials with which they can work, I do not see how this can be accomplished.

Senator BEALL. It is also going to take a great deal of willingness on the part of the professionals to manage their own affairs, is it not?

Dr. WEIL. Very much so. In our specialty, as Dr. Safar alluded to, we are the first specialty which is perhaps as directly as anybody confronted by the dedication to 24-hour shifts.

We can no longer work without having 24-hour continuous loyalty to our patients. This kind of specialty has to stay in the hospital 24 hours a day. The specialist will have to share it with two or three colleagues just like the nurses do. This is a revolution in the way medical services are being dispensed in hospitals.

Senator BEALL. Thank you very much.

Senator KENNEDY. Our next witness is Dr. James Mills, president of the American College of Emergency Physicians, who is accompanied by Dr. John McDade, Department of Emergency Medicine, Alexandria Hospital, Va. We are happy to have you with us.

But first I want to say that Congressman McDade from Scranton, Pa., is here to introduce his brother, Dr. John McDade.

Mr. JOSEPH M. MCDADE. I would like to present to you, if I may, my brother, who has had to bear the burden of my career in public service. I accuse him of coming up here to testify to get even with me. I want to introduce two people testifying on the Hill for the second time. Their career for the past 11 years roughly has been operating an emergency medical facility that is considered to be the prototype of the United States of America. Both men are physicians.

This hospital operates about 30 minutes from the Capitol in Alexandria. It has led to the development of a new college in medicine, the American College of Emergency Physicians.

I think they have something they can offer this committee, because, so to speak, they have been in the front lines and trenches trying to deliver emergency medical service for the past 11 years. They are quite obviously intensely committed to this problem. This is their life. They are dedicated to trying to solve this critical problem that exists in the United States of America, and they are here to speak on a day off. This is not something that has been prepared for them. This is something that their college has wrestled with, thought about, and wants to present to this committee to give you the benefit of their 11 years of experience.

Dr. Mills, who is the head of the American College of Emergency Physicians, will present a statement. I would like to present him with your indulgence to the committee.

Senator KENNEDY. Congressmen, we hope you can stay with us; if not, we want to thank you very much for taking your time.

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STATEMENT OF JAMES D. MILLS, M.D., PRESIDENT OF THE AMERICAN COLLEGE OF EMERGENCY PHYSICIANS, ACCOMPANIED BY JOHN P. McDADE, M.D., DEPARTMENT OF EMERGENCY MEDICINE, ALEXANDRIA HOSPITAL, VIRGINIA

Dr. MILLS. My name is James D. Mills. I am president of the 3,500 member American College of Emergency Physicians (ACEP). Unique among medical groups which testify today, the membership of ACEP has the provision of emergency medical care as its primary concern. It is primary in a real sense because it is as deliverers of emergency care that we earn our livelihood. We do this on a 24-hour, onhand basis in the emergency departments of hospitals, usually community hospitals, where the bulk of medical care is rendered in the United States.

From this vantage point, we see the deficiencies of the emergency medical system daily and in detail. We think we can see appropriate remedies. Accustomed in our work to dealing with the sickest patient first, we can offer advice on where tax dollars can be expected to do the most good for patients.

We have formulated an ACEP position paper on emergency medical services which sets down in concise outline form our view of the problems and possible solutions in this important health area. I request your permission to include the paper in my written testimony. We have also included our essentials for a residency in emergency medicine.

We have faith that the Senate, through this committee, will enact a comprehensive and workable emergency medical service act. We hope it will be focused just there, on EMS, and not become ensnared with all the health needs of the Nation. Realizing that complex problems call for comprehensive solutions, we also know that when it comes to implementation, the more comprehensive the legislation, the more time is consumed through administrative agonizing, the more tortuous becomes the lines of authority, the more labyrinthine become the new bureaus to handle the job.

You will hear repeatedly the request for single-door funding, for a single office of authority under a director, EMS, tying together the EMS efforts of the several departments of the Government. We think this is highly important.

We would further request a streamlining of the grant application process. A grant application ought not to be a master's thesis in length and scholarship. Hopefully a single-page narrative would be sufficient to constitute a preliminary grant application. There should be a 30-day decision obligation on the part of the director, EMS, yes, or no, with, say, two 30-day extensions. As it is, the applicant spends emotional investment, hours, and money on applications and the Government does the same, most of which is fruitless except as costly, busy, work.

The legislation which you will formulate will have awesome money figures on page 2 or 3. Respectfully I would like to point out that the word is getting around that no act, however salubrious, is worth the time of the Government Printing Office if it is not funded. I therefore

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request your dedicated efforts through to enactment of the necessary appropriations.

Prudent expenditure of tax money in emergency medical services demands first attention to the training of personnel. Important as they are, the physical elements of the system and its organization are secondary to the need for competence of personnel in the one-to-one relationship of health profesional to patient.

Professionals generally perform as professionals, which is to say, to the best of their ability. Ability tends to vary with training, and here the opportunities are thin. The professionals who need basic, advanced, and ongoing training are emergency medical technicans within and outside of the hopsital emergency department, emergency physicians, and emergency nurses.

For physicians: One, medical students need to find basic emergency medical technique in their curricula. That as a group they are interested in emergency medicine is evidenced by their great response to elective emergency medicine clerkships.

Two, emergency medicine is a broad spectrum specialty with its accent on life-threatening conditions. Because it is broad spectrum, it cuts across existing traditional specialties. As a divided responsibility thrust is lost. Within medical schools there should be, as there now is at the University of Southern California, departments of emergency medicine chaired by full professors on a par with the other clinical departments. This implies a departure from tradition, always difficult in the medical community.

Three, to create specialists in emergency medicine, structured residences need to be offered in greater numbers. Nine university affiliated residencies for the graduate training of emergency physicians now exist. Federal funds are needed to support residencies in emergency medicine. ACEP has developed essentials of an emergency medicine residency. It is working with the Council on Medical Education of the AMA to develop formal criteria leading to specialty board examinations and certification.

Four, there presently exists a maldistribution of specialty areas. Incentives and retraining opportunities are wanted to direct specialists in saturated fields into emergency medicine which is much in demand. These should be expanded under medical school auspices.

Five, all physicians need postgraduate opportunities to review and to keep abreast of new developments. Local, regional, and national programs exist. Medical schools offer short courses for this purpose. More should be encouraged.

Six, the ACEP is committed to the development of a Computerized Interrogative Textbook for use directly in emergency departments by physicians and other health professionals for learning, anticipatory peer review, self-assessment and consultation. Financial help is needed by the medical schools which are developing the core content for this computerized system.

For nurses: In no area of medicine do physicians work more closely with nurses than in emergency departments. Nurses have organized themselves into the Emergency Department Nurses Association (EDNA), which holds joint educational meetings with ACEP. This is appropriate because the lecture content of these meetings is pertinent to both groups. Emergency nurses have special

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skills, understand electrocardiograms, heart monitors and other sophisticated machinery. They are an invaluable part of the team. Their skills too need to be constantly honed and updated. Educational efforts in nursing schools need to be established to train them in this specialized area.

For E.M.T.'s: Emergency medical technicians are needed both in hospitals and for treating patients before arrival at the hospital. Their numbers are increasing and their skills improving. Federal money has produced solid teaching courses in this important field. It is now necessary to spend more money to offer these courses in community and other colleges and wherever else they may properly be taught. At the same time these paramedics should be encouraged by model statute and ordinance to qualify for certification within a reasonable length of time.

Most of what I have suggested is related to education in an effort to make emergency medical evaluation and treatment as competent as possible.

The money I request is for students at all levels and for institutions and others doing teaching.

S. 504 treats many health areas and I would like to see Emergency Medical Services treated in a separate law.

I have requested a single office with the power to make grants. In S. 504 this office should be related to the Interagency Technical Committee described in section 637.

The Advisory Council, section 638, seems to be made up of at least 32 people. It includes nine who provide, or develop, or train personnel. It seems to exclude providers of emergency medical services, and I believe that providers continuing to work in their field should be specifically included, in numbers sufficient to balance the named Federal officers. As to the nine members of the general public having nothing to do with Emergency Medical Service, I take it they are to represent consumers. Experience in various advisory boards makes me suggest you review this provision. Consumers have their demands, to be sure, but they lack the experience and expertise to make positive contributions, and in the end tend to adopt the position on which the experts agree. In the process time has been lost in educating these members.

Finally in the matter of grants, we believe that those for pilot or demonstration purposes be tied in with a statement of goals and an evaluation mechanism which holds back a portion of the grant money until an acceptable evaluation is filed.

Twelve years ago, when emergency medicine had little visibility as a crisis of national proportions the grassroots of American medicine were already moving to solve these problems. On a local level, without demonstration projects, or Federal largess, viable solutions were put forth by community physicians solving local problems. It was from this local community effort that our own college of emergency physicians was born and has grown. We must not forget, and we ask you to remember as you write this legislation that it is to the local community that the effort is directed and unless the benefits of the legislation reach the community it may as well not have been written.

We in the ACEP applaud your efforts, and pledge our help in this national effort.

Thank you.

[The following information was supplied for the record.]

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INTRODUCTION

A. State of EMS National

1. Statistics:

a. 18,000 people could be saved every year out of 115,000 who die in accidents if proper immediate care is given.

b. 50,000 pre-hospital coronary deaths could be prevented with proper emergency care.

c. 5,000 deaths from other causes are preventable each year - other causes being poisonings, drownings, obstetrical complications, etc.

d. There has been over a 600 percent increase (Total 60,000) in the number of emergency visits in some hospitals since World War II. The national average is an increase of 10 percent per year. There were approximately 50,000,000 visits last year.

e. Only 37 percent of ambulances recently surveyed meet minimal design standards.

f. One-third of emergency room visits are not for life-threatening or urgent conditions.

g. In 1970 only 5 percent of the nation's ambulance attendants met even minimum standards of training recommended by ACS, DOT, NAS, DHEW, and 5 percent had no training. 33 percent had only standard first-aid course.

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h. Only 6 percent of ambulances can communicate directly with hospital.

i. Although there are some 15,000 physicians practicing emergency medicine, there is no formalized training course.

2. At the same time we have developed:

a. Sophisticated trauma units and burn centers.

b. MAST program for providing helicopter ambulance service.

c. Sophisticated telemetry of EKG data.

d. Approved EMT course.

e. Sophisticated voice communication systems.

f. Approved guidelines for categorization of hospitals.

g. Sophisticated model of emergency department staffing.

B. Problems

1. Local / State / Regional Problems:

a. We need total EMS systems.

(1) There is a need to integrate and implement existing technology.

(2) There is a need to get groups to work together at the local level toward a common end.

(3) We need funds and technical assistance to develop and operate total systems and sub-systems.

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(4) We need one source funding-coordination of available financial resources from all sources.

2. Federal Problems:

a. Federal agencies disorganized and uncommunicative.

(1) Programs of one agency don't coordinate with or logically follow those of another.

(2) Information difficult to get.

(3) Applying for funds for integration of elements of the system too difficult because of multiplicity of fund sources and resulting complexity of applications process. A grant specialist is needed to prepare a grant application. This expertise and expense should be borne by the government.

b. Low federal priorities for EMS.

c. Too little funds.

d. A single focus for EMS in the federal government is needed.

C. Description of "White Paper"

Acknowledging its clear responsibility to exert professional leadership in the field of EMS, the ACEP has written this "white paper" to establish its position on the issues described above. Each of the required elements of a total community EMS system is carefully examined and described. In addition, the need for changes at the federal level in the programs dealing with EMS is discussed.

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ACEP PUBLIC POLICY STATEMENT ON EMS LEGISLATION

I. Elements of EMS System at Local Level

A. Communication

B. Transportation

C. Facilities

D. Manpower and Education

E. Organization

F. Public Education

II. Federal Level

A. Problems

B. Proposed Organization

C. Support Mechanism

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I. Elements of EMS System at Local Level

A. Communications

1. ACEP supports concept of "911" system:

a. Central, area wide communications network

b. Linked with other area, state, national

c. Should have cross-frequency patching capability

d. Linked to disaster communications system and civil defense

e. Linked to poison control and other rapid medical information systems (ACCESS, etc.)

f. Common, highly visible access made to public

g. Trained individuals should answer phones.

2. Network should allow voice communication among the following:

a. Rescue personnel on the scene

b. Emergency Departments and hospitals

c. Fire, safety, law enforcement and health personnel

d. Appropriate primary care centers

e. Local physicians in rural areas

f. Should have capability of dispatching appropriate individual.

3. Telemetry capability from scene to Emergency Departments, physicians' offices and homes

4. Early notification system for remote areas:

a. Phones on highways, etc.

5. Continuous monotoring and recording of all calls:

a. Medico-legal reasons

b. Education of personnel

c. Public education

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d. Research

e. Patient Care.

B. Transportation

1. Ambulance systems:

a. National standards for vehicles, equipment, and systems set by Secretary of HEW in consultation with appropriate professional and private organizations

b. Phased application of standards, using available standards such as NAS/NRD, ACS, etc.

c. Flexible response systems are eventual goal with most appropriate equipment responding

d. Systems to be geared to needs of locality (approved by EMS Councils and other planning bodies)

e. Hospitals and emergency physicians should be involved with extra-hospital EMS

f. Research needed in area of:

(1) Needs assessment

(2) Equipment standards

(3) Optimal forms of equipment in each circumstance

(4) Special ground vehicle for specialized circumstances.

2. Air transport:

a. Helicopters:

(1) Should be used when and only when proven to be technically and financially feasible and efficient. Recent experience indicates this to be in cases where ground transportation access is poor and/or slow.

(2) Should be used only in conjunction with and when integrated with rest of Health Care System.

(3) Use of military resources (MAST) should be encouraged, but should be utilized only after taking into full account public and private resources in civilian sector.

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(4) Research on optimum use of helicopters needed.

b. Fixed wing aircraft:

(1) Use should be encouraged when financially and technically feasible and efficient.

(2) In conjunction with rest of Health Care System.

(3) Full use of military resources should be encouraged, taking into account public and private civilian sector resources.

(4) Research needed.

3. Sea transportation and rescue:

a. Technology developed by Coast Guard for air-sea rescue should be applied to civilian use.

b. Full use should be made of Coast Guard and military capabilities in coordination with Health Care System.

4. Self transportation:

a. Promotion of national highway sign effort

b. Advertising campaign on public vehicles, etc.

c. Public education on transport of injured or ill persons.

C. Facilities:

1. Emergency Departments in hospitals:

a. Should be a review of all existing Emergency Department design and equipment standards and guidelines undertaken by Secretary of HEW, in consultation with public and professional organizations.

b. Standards for Emergency Department design and equipment should be promulgated and periodically updated by Secretary of HEW.

(1) Should be flexible:

(a) Meet local conditions and ideas

(b) Geographic differences

(c) Difference by categorization

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(d) Size, equipment, and design of Emergency Department determined by qualitative and quantitative patient load of facility.

(2) Should be comprehensive.

c. Technical assistance for design and equipment of Emergency Departments should be available.

d. Efforts should be made to ensure utilization of proven methods whereby Emergency Department facilities and equipment are most efficiently and effectively designed, acquired, maintained, and renovated.

e. Research in new methods of Emergency Department design and equipment as developed with publications of a large variety of prototypes.

f. Approval by Community EMS Council

g. Must be accessible to all forms of transportation.

2. Other facilities outside hospital:

a. Free standing facilities, first-aid satellites, etc., should be subject to above mentioned regulations designed for such facilities.

b. Free standing emergency facilities should be integrated with the rest of the EMS and health delivery system in the area.

3. Facilities inside the hospital:

a. Burn unit, CCU, ICU, SICU, trauma unit, Pediatric Emergency Center, etc. All should be adequately staffed by appropriately trained personnel 24 hours per day.

b. Design and equipment of such facilities should meet standards as developed by Secretary of HEW in accordance with JCAH standards, in the manner described above and in consideration of such research regarding design and equipment as has been conducted.

c. Research needed.

D. Manpower and Education:

1. Physician:

a. Problems:

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(1) Shortage of qualified physicians in Emergency Departments

(2) Methods needed for training qualified physicians, recognizing unalterable trend to increased need.

b. Policy:

(1) There should be 24-hour coverage of Emergency Departments where required by categorization.

(a) Research need in staffing problems.

(2) There should be peer review of all physician emergency services to ensure at least adherence to minimum standards of care.

(3) Standards needed for quality of care should be developed through ACEP.

(4) Emergency Departments require status of major clinical department within hospital.

(5) Peer review should be within the Department and should be tied to continuing medical education.

(6) Each emergency physician should be a member of the Hospital Staff and subject to all regulations and privileges of the Medical Staff.

(7) Emergency physicians must be aware of and involved in the community around the Emergency Department.

(8) Emergency physicians should be encouraged to join EMS Councils. Every EMS Council should have at least one emergency physician on it.

(9) Emergency Medicine should have Board status and should be selected for same by criteria developed by ACEP or CME of AMA.

(10) There is a need for emergency physicians with several different orientations:

(a) Those primarily clinically oriented, devoting time to care of patients in Emergency Departments and their community

(b) Academic emergency physician

(c) Emergency Health System specialist emergency medicine

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(d) Researchers

(e) Combinations of above.

c. Training:

(1) General:

(a) Because of different levels of training of emergency physicians, and because of other considerations, many levels of training with broad scope are needed.

(b) The training of emergency physicians should permit broad and comprehensive exposure to all types of clinical and administrative settings and problems. Where this is not possible, alternative setting should be extensively observed and/or discussed.

(c) The training of emergency physicians should be conducted by Departments of Emergency Medicine within the medical schools and other approved residencies. These Departments should enjoy Chair status.

(d) Area health education centers should have emergency medical training capability.

(2) Undergraduate training:

(a) All medical and dental students should be exposed to and experienced in proper methods of rendering first-aid and in basic elements of live-saving procedures, such as CPR (via ED of school).

(b) Medical schools should be capable of providing any student who wishes to enter a career in emergency medicine, sufficient and appropriate exposure and experience, including clinical and administrative problem solving should be offered.

(c) Clinical clerkships, preceptorships, etc., in emergency medicine should be available to those students wishing to take them.

(d) Curriculum assistance by ACEP/UAEMS.

(3) Graduate residency training - Clinical:

(a) Should qualify for Board certification.

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(b) Program in Department of Emergency Medicine

(c) Broad exposure available:

(i) All types of facilities

(ii) Clinical and Administrative

(iii) Graded responsibility with mandatory period of being in charge of Emergency Department

(iv) Preceptorship possible for a period of time.

(d) Curricula recommended by ACEP

(e) Funding sources available under Comprehensive Health Manpower training Act of 1971 (both starting and operation).

(4) Postgraduate training/clinical/mid-career or second career:

(a) Types:

(i) Full-time clinical fellowship in Emergency Department

(ii) On-the-job training courses for physician from another discipline:

- Inbreadth overview courses

- Indepth courses (in relevant areas.)

(b) Available through Emergency Department of educational entity

(c) Have as eventual end Board eligibility in Emergency Medicine

(d) Broad and comprehensive exposure.

(5) Postgraduate training program system specialist:

(a) Need only to train selected number of these

(b) Broad exposure as above but with emphasis on community and administrative experience.

(c) Significant responsibility toward end

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(d) Possible M.P.H. or M.A. if through a community medicine residency training program

(e) Could build on experience of regular emergency medicine residency

(f) Should or must be practicing Emergency Department physician

(6) Postgraduate training/research:

(a) Fellowship experience

(7) Continuing medical education in EMS, such as Computerized Interrogative Textbook (CIT) being developed by ACEP

(a) Audiences:

(i) Current EMS physician

(ii) Physicians in other specialties

(iii) House staff in EMS and other specialties

(b) Focus Emergency Department in educational entity

(c) National programs should help to develop these in consultation with ACEP

(d) Self-assessment testing should be encouraged and/or certification by ACEP

(e) Continuing medical education tied to peer review to maintain and upgrade skills

(f) Inovative ideas such as the Computerized Interrogative Textbook should be encouraged and used in self assessment testing, peer review, and continuing medical education

(g) Research needed:

(i) To evaluate present programs

(ii) To develop new programs

(h) Periodic local needs assessment in EMS System at local level through peer review process

(i) Tie in continuing medical education with malpractice - no fault

(j) Recertification periodically by peers

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2. Nurses:

   a. Postgraduate training courses should have tie-in with Emergency Department Nurses Association

   b. Comprehensive, inbreadth training should be available

   c. Indepth training aimed at appropriate clinical areas should be available

3. EMT's:

   a. National standards for licensing, at state level, of EMT's with regard to various levels of education and performance

   b. Education:

      (1) EMT basic - Given by approved course in EMT basic training followed by certification by appropriate licensing agency

      (2) EMT advanced - as above (1)

      (3) Periodic recertification should be mandatory

4. Physician assistant:

   a. Research needed for role to be played in EMS

   b. Two-year course as presently planned

   c. Certification necessary

E. Organization of Local EMS:

1. Should be community based

   a. May be CHP ("b" agency) geography

   b. May be multiple CHP geography

   c. May be smaller community within CHP geography, which will easily fit larger system planning in the future, if the smaller community is ahead of CHP in planning

2. The local organization should lend itself to easy regional and state coordination

3. There should be broad representation to include:

   a. Providers

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b. Public agencies

c. Community involvement

4. A complete listing of resources should be compiled which show linkage possibilities between other health facilities and related social services in the community

5. Planning

a. Should be by municipality (part of CHP "b" agency) or CHP, coordinating with state agencies

b. The plan should be comprehensive, including financing for the system

c. The planners should be a corporate entity

(1) Municipal

(2) Private, non-profit

(3) Private, for profit (e.g., under contract to municipality, a foundation, etc.)

6. Operation

a. Under one roof Corporation for total system which may be municipal, private, non-profit, or private for profit

(1) The component parts of the system should be an integral part of or contracted for by above entity, which should bear the responsibility for their performance.

(2) Component parts may also be municipal, private, non-profit, or private for profit

b. The operation should be based on a plan approved by secretary HEW

c. Categorized according to AMA, AHA, ACEP, etc.

d. The operation should provide for coverage of medically under serviced population

e. There should be a unit record system, i.e., prehospital EMT reports, Emergency Department records, inpatient record should become part of patient's medical history

(1) Research is needed here in problem oriented record keeping, coding for data retrieval, etc.

f. Personnel and equipment in system should meet standards set by Secretary HEW

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7. Quality Assessment

   a. The object is to reduce preventable deaths and assure quality of routine care

   b. The record system noted above should be a part of such assessment

   c. It should be tied in with peer review and continuing medical education

   d. Research is needed in total system quality assessment beginning from occurrence of emergency through emergency department of hospital

8. Financing

   a. Funding should be made available from state and/or Federal government

   b. Grants should be for

      (1) Planning

      (2) Development

      (3) Acquisition of property and/or equipment

      (4) Operation of system where necessary

   c. Plan should provide for phasing out of federal/state support so that third party/medicare-medicaid/patient payments will make system self-supporting

F. Public Education

1. On methods of accident prevention

2. Self help in emergency

3. Utilization and availability of services

II. Federal Level

A. Problems

1. Interdepartmental cooperation and avoidance of duplication

2. Interagency cooperation and avoidance of duplication

3. Mega-government causes confusion at local level

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4. Need for "one door funding"

5. Need for presidential emphasis

6. Need for aid in implementing existing knowledge and technology

7. Need to channel research efforts in EMS toward more productive areas

B. Proposed Organizations

1. There should be a focus for Emergency Medical Services within HEW

a. It should have a director appointed by the president

b. The director should have the authority to set and enforce EMS standards

c. The director should have the authority to coordinate all federal EMS programs and activities and to implement EMS systems

d. Funding should come through one focus in each community (possibly CHP)

e. There should be a National Information Clearing House

f. There should be a data collection and dissemination effort within the EMS focus

g. There should be a technical assistance capability within the EMS focus which can assist with local problems

h. An annual report to congress and the president should be required

2. An Interagency Technical Committee should be formed

a. At executive office of the president level

b. Participated in by all departments of federal government with EMS activity

c. Function:

1) To get overview

2) Initially determine activities of office of EMS

3) Monitor progress

4) Report 1, 2, 3 above to National EMS Council

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3. National EMS Council

   a. Consisting of prominent EMS people, on stipend, continuing to work in their field

   b. Advisory as to policy

   c. Review and approval of major projects, (i.e.) feasibility; technical and scientific merit

C. Support Mechanisms, Federal

1. Project grants and contracts

   a. Planning

   b. Total system development

   c. Initial operation of system (start-up)

   d. For system components including acquisition of facilities and equipment

   e. Municipal, private non-profit, or private for profit for both total system and/or component parts

   f. Phased out federal support to promote local autonomy

   g. Incentives needed, such as priority for totally categorized system, etc.

   h. Regulations needed for guidelines and criteria to assist grant applicants

   i. Technical assistance should be available from the government to assist in preparation of definitive grant applications

2. Loans and Loan Guarantees

   a. Capital costs

   b. Operating costs

3. Training Grants and Contracts

   a. In addition to universities, funds should be available to organizations, both formal and informal, including groups of physicians, who are actively working to improve E.M.S. Incentive needed here for inovative ideas and for training of both physicians and allied E.M.S. personnel

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b. Funds should be provided for curriculum development

c. Funds should be provided for teaching institutions with emergency departments having major clinical status, establishing chairmanships of Departments of Emergency Medicine. Incentives needed here, such as grant priority to institutions which have such departments functioning or planned.

d. Inovative ideas, such as Computerized Interrogative Textbook currently in development by A.C.E.P., should receive special attention

e. May use Comprehensive Health Manpower Act of 1971 (Primary Care Residencies) or Section 774 on special projects

4. Special Project Grants and Contracts

a. Helicopters and other special purpose vehicles and their application to specific problems

b. Prevention and self help

c. Public education

5. Grants and Contracts for Research

a. Evaluation of delivery of service

(1) A portion of grant funds for any project determined to be pilot or demonstration should be held back until evaluation is performed

b. Clinical research

c. Record keeping and data retrieval

d. Quality assessment on system effectiveness in decreasing mortality and morbidity

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ESSENTIALS OF A RESIDENCY TRAINING PROGRAM IN EMERGENCY MEDICINE

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
241 East Saginaw
East Lansing, Michigan
48823

January 30, 1973

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ESSENTIALS OF A RESIDENCY TRAINING PROGRAM IN EMERGENCY MEDICINE

Reference: Directory of Approved Internships and Residencies, 1969-1970 American Medical Association

I. The provisions of the General Requirements (Section 1-10) as stated in the "Essentials of Approved Residencies" must be met.

II. Special Requirements for Residency Training in Emergency Medicine.
   A. Residency training in Emergency Medicine should be specifically designed to meet the needs of graduates intending to become Emergency Physicians. An Emergency Physician is defined as one who:
      1. Provides initial emergency health services to patients of all ages.
      2. Evaluates patients' emergency health needs, providing such services as are immediately indicated and, if necessary, refers patients to other appropriate physicians for further definitive care.
      3. Insures the availability of follow-up care, in or out of the hospital as may be required.
   B. Duration of Training – The duration of training should be a total of 36 months following graduation from an accredited medical school. The training may be organized as a two-year residency to follow a year of an approved internship, or it may be organized as a three-year graduate training program.
   C. Principles
      1. Although it may be necessary that the resident spend a portion of his educational experience on each of the traditional specialties, he must not lose his identity as an Emergency Physician. His training shall be designed with emphasis on the recognition and initial treatment of acute problems.
      2. The hospital and the Emergency Department responsible for the administration of the residency program should meet with the following minimal requirements:
         a. There must be a full-time Director of the Emergency Department.
         b. The Emergency Department should be constituted as a full and equal department within the hospital organization, with its own budget to include the resident staff.
         c. The Emergency Department Director must assume responsibility for the entire training program.
      3. Training need not take place in one geographical location nor in one institution, provided the training is coordinated to insure completeness; and that the Department Director retains administrative control; and that the resident spends no less than 80% of his time in the parent institution.
      4. Each Department shall hold weekly meetings of the attending staff and residents for the purpose of conducting a program critique and evaluation.
      5. Periodic in-training examination of the resident is required at least annually. The examination shall be under theauspices of the Graduate Education Committee. Copies of the examination results shall be distributed to a) the resident, b) the program director, and c) the Graduate Education Committee.

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D. Content

1. The Emergency Physician Resident shall be trained in the emergency aspects of the other disciplines. He should be familiar with the principles of continuity of care in the other disciplines in order that he may more properly initiate emergency treatment.
2. A portion of the residency shall include training in Intensive Care and Coronary Care Units supervised by attending physicians.
3. Recognizing the need for the opportunity to evaluate the results of his treatment, a certain amount of out-patient training shall be provided the resident in the nulti-disciplinary setting of a hospital out-patient department, or, in some instances, in physicians' offices.
4. He shall be trained in preventive medicine especially as it relates to Emergency Care.

MEDICINE
(esp. Infections, Cardio-Vascular, Endocrine and Metabolic Diseases, Allergy and Drug Reactions, Shock, and Dermatology)

SURGERY
(esp. Acute Abdomen, Projectile Wounds, G.I. Hemorrhage, Cut-Downs, Burns, Shock and Major and Minor Trauma)

ORTHOPEDICS
(esp. Fractures, Sprains, Dislocations and Traction Procedures)

PEDIATRICS
(esp. Infections, Poisonings and Convulsions)

PLASTIC SURGERY
(esp. Lacerations and Burns)

THORACIC SURGERY
(esp. Chest Injuries, Tracheostomies and Pulmonary Physiology)

NEURO-SURGERY AND NEUROLOGY
(esp. Head Injuries, Coma and Nerve Injuries)

OBSTETRICS AND GYNECOLOGY
(esp. Deliveries and Abortions, Pelvic Infections, Pelvic and Perineal Injuries and Vaginal Bleeding)

PSYCHIATRY
(esp. Acute Neuroses, Acute Psychoses, Suicidal Patients and Poisonings)

RADIOLOGY
(esp. Diagnosis)

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UROLOGY
(esp. Injuries, Calculi, Obstruction and Infections)

OPTHALMOLOGY
(esp. Injuries, Foreign Bodies, Infections and Hemorrhage)

OTOLARYNGOLOGY
(esp. Injuries, Foreign Bodies, Infections and Hemorrage)

ANESTHESIOLOGY
(esp. Airways, Fluids, Supportive Care, Pulmonary Physiology and Inhalation Techniques and Treatment)

5. Enumeration of the above specific areas does not preclude training toward competence in other areas considered necessary by the training Director or the specialty involved.
6. Although currently this training will be provided by the specialty and may or may not be taught in the Emergency Department setting, ultimately integration and application of the skills, techniques, and procedures of the traditional specialties in the provision of Emergency Care will be best learned in the Emergency Department, when taught by Emergency Physicians.
7. For residents desiring additional training in certain specific areas, elective time should be provided.
8. Opportunity for meaningful research in emergency health care should be provided.
9. There shall also be training in emergency medical services systems management, including :
   a. Emergency Department and hospital administration.
   b. Forensic medicine, and medicolegal problems.
   c. Community relations, including news media.
   d. Emergency transportation and communications.
   e. Mass casualty management and coordination for the hospital and community.
   f. Education of allied health personnel; and their utilization.

III. Goals

This training program will accomplish the basic goal of educating physicians qualified to provide emergency health services. It is further anticipated that Graduates shall be eligible for certification by the American Board of Emergency Medicine.

Revised, February 1972

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Senator BEALL. Thank you, Dr. Mills. Dr. McDade, do you want to supplement the testimony?

Dr. MCDADE. I am here to help him with the testimony and help him with our position paper if we have any questions on that.

Senator BEALL. With regard to the curriculum aspect, your first suggestion is that medical students need basic emergency medical technique in their curricula. How widespread now is emergency medical training for medical students around the country to get this particular item?

Dr. MILLS. I think it is different in different places. The situation where it is closest to becoming ideal is the University of Southern California, where there is the department of emergency medicine, where the chairman of the department is on an equal basis with the other departments in the university.

Senator BEALL. Is there a willingness on the part of the medical colleges generally to establish this kind of department?

Dr. MILLS. The last official word that I heard was last summer in Dr. Cooper's testimony before Mr. Rogers' subcommittee where there was not much willingness and not much recognition of the need.

Senator BEALL. Does the AMA have a position on this?

Dr. MILLS. The AMA is getting with it in this area, and it has a council on medical education, which sits over all the areas of medical education, and it is presently in conversations with organizations such as ACEP, the University Association for EMS, and the Society for Critical Care Medicine. They are having a conference this spring. Hopefully they will decide what belongs in an emergency medical residency, and once that happens more residencies will be implemented. I think this will be followed up by board examinations and the possibility of certification.

Senator BEALL. What can we do legislatively?

Dr. MILLS. I think it would be helpful if there were funds available for the creation of departments of emergency medicine within medical schools, because all medical schools—and I do not think there are any exceptions—are in financial trouble. They cannot entertain a new idea because they cannot afford it.

If you are really convinced that this is worth doing, it would be possible to put strictures on other funds that universities receive unless they do comply in this area.

Senator BEALL. The only recent precedent for this was in 1970 when we attempted to encourage medical schools to establish separate departments of family practice. This was not enthusiastically received in the medical school community.

Dr. MILLS. It is happening, and it is making more people go into family practice and more residencies are being filled, whereas formerly they were not.

Senator BEALL. It is happening because we almost did something about it?

Dr. MILLS. I think so.

Senator BEALL. There is a rumor around town that a study was recently made of emergency room facilities in the Washington metropolitan area, and the study has not been made public yet, I have heard that it shows that not too many of them are up to snuff.

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Dr. MILLS. There has been more than one study made in this area, and that conclusion has been reached. I do not know the one you are referring to.

Senator BEALL. I better not mention it for the record because it has not been made public yet.

Is this a serious problem?

Dr. MILLS. I think there is plenty of room for improvement in all the emergency departments.

Senator BEALL. Why is it not happening?

Dr. MILLS. I think they are getting better. I think they have gotten better in the years which we have been doing this.

Senator BEALL. How long do you think it will take before they get well enough to pass the study or pass the test?

Dr. MILLS. I hope we raise the standards and raise the test when that happens so they will still have to get better.

Senator BEALL. It is a relevant sort of thing. I am interested in your colleagues. I think perhaps for the benefit of the committee and the record that it would be interesting to hear a brief commentary on the organization of your colleagues and from where your students come and how you get them and train them.

Dr. MILLS. We are not a college in the sense that we operate school rooms. We are an organization which is named a college in the same sense as the American College of Surgeons. We are an organization.

We have headquarters in East Lansing, Mich. We are only 4½ years old, so we are not yet listed on the list of specialty societies of the AMA, because you have to be in 5 years before that can happen. That will happen this year.

We conduct national symposia, and we are divided into State chapters, and we have many, many State conferences, which have grown throughout the year for the purpose of post graduate education.

We generally hold these in conjunction with nurses, or we frequently do because they have a big role in emergency departments.

Senator BEALL. Is your membership made up exclusively of those people who work in an emergency room atmosphere, or do you encourage membership from those out and hope they will become——

Dr. MILLS. They are almost entirely from emergency departments. Some of them, however, are from university faculties.

Senator BEALL. Senator Schweiker, do you have any questions?

Senator SCHWEIKER. Thank you, Mr. Chairman. First, I would like to belatedly welcome Dr. Mills and Dr. John McDade. I understand that Congressman McDade, a constituent of mine, from my home State of Pennsylvania, was here and introduced you gentlemen earlier.

We are glad to have you before our Health Subcommittee and appreciate your testimony. I have just a few questions.

What problem do we have today in terms of the emergency room being used as an outpatient clinic? Let me give you an illustration. Having five children, if something happens to one of them after 5 o'clock, there is only one place in this area that I can get medical attention, and that is an outpatient service room. If you call the doctor, you get an answering service that says go to such and such emergency room.

Are we turning emergency rooms into outpatient clinics after hours?

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Dr. MILLS. This is a question we hear frequently. I am glad you asked that question. We think that an emergency has to be judged from the basis of what the patient thinks it is. We find that there is a lot of peril in taking any other point of view.

You may have a child with a cut chin, and to you that is a great big deal, but it might well be taken care of 6 hours later. Nobody ever bled to death through his chin, and the results might be just as good. So we found out a long time ago that it does not pay to argue with the public over whether or not it is an emergency. All the people who come to the emergency department think they have emergencies, and that includes those people who have had a backache for 6 months or a longtime rash. It does not mean we are going to cure all of those things or dispense with them. But their anxiety level rose up to a certain place so they came in.

You must also consider that as important as these life threatening situations are, it only amounts to 3 percent of the people that we see. So in our emergency department we see 50,000 patients a year or about 135 a day, and this means four people come to us with life or death situations. When this happens, other people have to wait. Everything is dropped. The signals are clear.

All the people who are there believe they should be there. We do not think we can tell them anything different. If we had to man the emergency department with the large staff that we now have for 24 hours a day, waiting merely for the four people with life threatening situations, the cost would be prohibitive. Besides that, it would be necessary to assess each one of these other 132 people to see whether or not they had emergencies, and having made a good assessment, you are long way toward being finished with diagnosis and treatment.

It does not seem to make sense to not do both functions. In other words, it depends on whose eyes are looking at the problem.

Senator SCHWEIKER. My question is I suppose: Would it make sense for some of the other doctors who just shut the door, lock the offices and leave after 5 o'clock to have a system worked out for less urgent treatments? Obviously, I am not thinking of a person coming in with a bloody face and head which is serious, but rather a person with a problem which probably cannot wait until the following day, such as a broken limb or something which is not going to cause death, but should be dealt with that evening. I am just wondering if the medical profession itself shouldn't look at it and consider whether by forcing everybody in the emergency room of the hospital, they are diluting the quality of service they are providing in the emergency room, and perhaps set up some alternate service. I am worrying about quality. I recall specifically when my daughter thought she had broken her hand, a situation I described a moment ago, and we had to wait an inordinant length of time. I spoke to a doctor moonlighting from Bethesda, and I ask him about the staffing problem. He said the staffing problem was normal. They did not have the people to do the job. They were overworked. They did not have the help.

I believe there is a staffing problem in this area. Just my rather bad experience at one of the hospitals would lead me to that conclusion. Fortunately my daughter was not in bad shape. I just wonder if you do not make the problem worse by saying that you are going to take

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everybody and not try and get the medical profession organized to have an alternate route for the nonemergency cases?

Dr. MILLS. May I ask whether you considered this fracture an emergency or not? Did you consider this an emergency?

Senator SCHWEIKER. We thought the hand was broken and we thought it should be set.

Dr. MILLS. That is what the other 130 people thought that came that day. That is what they thought.

Senator SCHWEIKER. The difference I am trying to make is that she did not have to be treated as soon as I walked in the door. I agree with that. However, I saw a very serious car accident patient come in that night, and that person did not get treated as soon as he came in the door, because there were 30 other people in the waiting room.

My point is that it would have been prudent to see if the hand should have been set that night. Would you agree?

Dr. MILLS. Yes.

Senator SCHWEIKER. You have an in-between area where you do not have a bona fide emergency, and yet you cannot wait 12 hours in good prudence to provide treatment. We have not designed the situation to take care of that. Maybe if we are going to give the kind of quality emergency care we need, we have to decide on a kind of alternate service.

Dr. MILLS. I agree she should have been treated, and for that reason we double the staff and triple the staff during peak hours. When you say a layman can make this judgment, that is true. But that layman is not necessarily the patient or spouse of the patient or the parent of the patient, because they are involved with my child or my spouse, and they have other feelings about it. You have to pay serious attention to all of the people who have these demands.

Let me say that I have no idea what hospitals you are talking about, but the solutions have got to vary by size of caseload and size of hospital.

At the University of Miami, they have some 400 people a day in their emergency department, and they have quite sensibly broken it down into departments, so that various things go through it at a different pace, and some people are referred to the outpatient clinics and so on. There are tiny hospitals in which people sit around and have nothing to do, because the community said we need emergency services here, and they are willing to subsidize a small hospital emergency department where there is very little work going on. But the community gets some feeling that that emergency department is there and it is open when they want it, and I think you have to tailor the answers to the local problem.

Senator SCHWEIKER. I agree with you. I think there is no easy, quick answer. I think the average person who calls is in a degree of emotional state difficult to work with.

Should we not sit back as members of the Health Subcommittee and look at whether we are delivering health services at the proper place, proper time? I certainly concur, I might say, with your recommendations, with what you pointed out was the problem, and with your very constructive testimony.

I was just raising a deeper issue with you. That is all I have, Mr. Chairman. Thank you.

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Senator BEALL. Doctor, it was just pointed out to me that emergency room visits are up 600 percent over the last 25 years and number about 50 million annually now. It appears at the present time many people in our society feel their only access to health care delivery system is through the emergency room.

Dr. MILLS. People's health demands have increased over this same decade. It is true they have increased astronomically in emergency departments.

Senator BEALL. I alluded somewhat earlier in the testimony about an article in the National Observer, relating to emergency medical service in Russia and how successful they have been. They make a big point of the fact that there is a universal telephone number that is used to get emergency medical services.

Do you see this as an important part of the system?

Dr. MILLS. I think it is very important. I am sure you do know that the 911 number is effective in many areas, and it is in this area.

Senator BEALL. In your statement you were talking about residencies and the necessity of establishing residencies in institutions so that people can get the training necessary in emergency care. Do you encompass team training in this sort of environment?

Dr. MILLS. You mean teams doing the training or teams receiving the training?

Senator BEALL. Receiving.

Dr. MILLS. I do not envision that.

Senator BEALL. Where does the medical technician get into the act?

Dr. MILLS. I think generally speaking this is done at a separate level of instruction, and then when all the people, all the components are well trained, it turns out they work very well together.

Senator BEALL. I understand that you all train technicians in Alexandria; is that correct?

Dr. MILLS. That is true. We also have clerkships from Georgetown Medical School. We have medical students also.

Mr. MCDADE. The capability of training emergency medical technicians and giving them this 80-hour Department of Transportation course, which is acceptable in most of the States, exists in most communities without going into community colleges and so forth. We are running a course in Alexandria now for our own rescue squad.

When you step up from these and go to the 480-hour course, this would undoubtedly require collegiate or university support, because it's far more sophisticated than the basic course you heard spoken to this morning.

Incidentally, if I may say something else, I would like to buttress Dr. Safar's statement this morning about local governments. One of the things that we have done with our position paper is to try to change our own approach to grant applications on a local level.

Last year when we testified before the Rogers subcommittee, we felt in agreement with many of the people who spoke about local grant applications. It should be done through the CHP agency and that the grant should include the entire CHP agency. One of the problems on the local level concerning CHP is that they frequently overlap local political boundaries. It is difficult enough to get one city council or local organization to work toward EMS and to try to get two or three of them this route together is very frequently impossible.

One of the things we have asked for is that grant mechanisms on a local level be made available to communities within CHP geographic

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areas. In other words, if their own plan can fit into something that is obviously going to be comprehensive at a later date, a community should not be rejected out of hand because some of its neighbors are not quite as far advanced in planning and organization as they are.

Senator BEALL. It has been pointed out to me that the legislation on comprehensive health planning expires on the 30th of June this year, and this committee will be getting into that. When you talk about the technician training and then putting them out in the field to take care of emergency needs, what kind of legal problems are we running into? How serious are they? What sort of impediment are the legal problems to getting first-class service to the people?

Dr. MILLS. I think they are more theoretical than real. You have dealt with this in S. 504 by saying that you are going to have some research into things which hamper people legally into doing a good job in the health area.

I think it is not going to be a big problem. It has not been solved by any means. We need permissive legislation in the State of Virginia to use physician's assistants.

Dr. McDade. Wrestling with this program right now in Virginia, one of our partners is on the Virginia highway safety program and is discussing this business of legislation right now. The problem is that right now in the legislation as it is now written, the community EMT and the volunteer EMT are allowed to do certain things, but those who are in the private field are not. They are wrestling with this problem right now because some of the people, for instance, in the private field are well trained or better trained than some of the volunteer organizations. Yet, they would not be allowed to use this expertise if the situation arose or if it was required.

Senator BEALL. Thank you, Dr. Mills and Dr. McDade. We appreciate your testimony.

There are several other witnesses to be heard today. Since the normal lunch period has come upon us, I would suggest that the committee recess until 2 p.m.

[Whereupon, at 12:45 o'clock p.m. the subcommittee was recessed to reconvene at 2 p.m. the same day.]

AFTERNOON SESSION

Senator KENNEDY. The subcommittee will come to order.

Our next witnesses will be introduced by my good friend and your distinguished Senator, Senator Hollings.

STATEMENT OF HON. ERNEST F. HOLLINGS, A U.S. SENATOR FROM THE STATE OF SOUTH CAROLINA

Senator HOLLINGS. Mr. Chairman, I am most pleased to appear before this subcommittee today during its consideration of S. 504, the Emergency Medical Services Act.

Emergency medical services should be the backbone of our Nation's health care delivery system. With responsive emergency treatment, lives can be saved and the effect of many injuries can be minimized. We know from various studies that with proper medical care at the scene of an accident and en route to the hospital, we could reduce the accident mortality rate by 10 to 20 percent and we could prevent many cardiac deaths. When we consider that in 1971, over 115,000 Americans

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died in accidents, 400,000 were permanently disabled, and 10 million were temporarily disabled. The potential saving in lives and suffering by upgraded emergency care is staggering.

There is great variety in the caliber of emergency services provided by the community. Many communities lack the financial resources with which to plan and provide for more than minimal service. Looking into the details of ambulance services, for instance, we find that ambulance attendants often have not been trained to even the level of the advanced first aid course given by the American Red Cross. Looking at the vehicles, they often are not designed in such a way as to enable the attendants to minister properly to the injured person, and they just as often lack the most basic equipment necessary for the treatment of injury. Looking at the hospitals, we again see great variety in the capability of emergency rooms to treat these difficult cases.

The bill which this subcommittee has under consideration—S. 504—brings attention to the need for more adequate emergency health care. It is designed to provide the coordination necessary to train the ambulance attendants, to staff and design the vehicles, and to develop the comprehensive programs needed to provide the people of this country with the kind of emergency treatment they require and deserve.

Further, I am pleased that S. 504 incorporates my bill—S. 31—which authorizes the use of available military emergency services and equipment in civilian accidents. This program, entitled military assistance to safety and traffic (MAST), has been successfully tested in selected locations since 1970. To put the program into full scale operation, however, we need specific legislative authorization.

The MAST program can be particularly beneficial in rural areas. The military units—air ambulances, crews, medical personnel, equipment and supplies—are simply far beyond the means of most rural areas. But they are in a continuous state of readiness for military requirements. They are able to respond immediately to the evacuation of civilian medical emergency cases. MAST units have been invaluable in cases where rapid evacuation is required and where ground transportation is difficult or exceptionally lengthy and time-consuming. I would note also, Mr. Chairman, that the MAST provision contained in S. 504 will not interfere with the primary missions of the Armed Forces.

While S. 504 provides Federal funds and technical resources for the coordination and establishment of programs within the local areas, it does not get the Federal government into the business of providing emergency treatment—and it does not set up another expensive Federal program to drain our tax dollars for years to come.

Mr. Chairman, the people I am introducing to your panel today have been involved in Emergency Medical Service planning since the beginning. As a South Carolinian, I am proud to say that much of this planning has been done in our State. In February 1972, representatives from seven States met in Charleston, S.C., to form a National Council for Emergency Medical Services. Other States joined in over the months. Then in September 1972, the group met again to invite all the major medical associations and other interested organizations to participate. Also at that meeting, Dr. Curtis Artz, chairman of the Department of Surgery at the Medical University of South Carolina and chairman of the Committee on Trauma of the American

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College of Surgeons, was elected chairman of the EMS group. On December 18 of last year, another meeting was held in Chicago for the purpose of formulating necessary elements concerning Emergency Medical Services legislation. The report of the meeting goes into considerable detail on what these elements are, and that is what these gentlemen are here to testify about today.

With me, Mr. Chairman, are:

Dr. Max Rittenbury, associate professor of surgery at the Medical University of South Carolina and chairman of the Governor's Emergency Medical Services Advisory Council.

Mr. Ted Shearer, consultant on Emergency Medical Services to the Department of Surgery at the Medical University of South Carolina.

Mr. R. A. Brandes, a member of the board of directors of the Ambulance Association of America and past chairman of the board of the Registry of Emergency Medical Technicians. Mr. Brandes is from Charlotte, N.C.

Dr. Alan Dimick, who is associated with the Medical Center of the University of Alabama and who participated in the Chicago meeting in December.

Dr. Douglas McGill, a member of the American College of Physicians who is with the Mayo Clinic at Rochester, Minn.

Dr. Alan Klippel, a member of the Department of Surgery at the Washington University School of Medicine in St. Louis, Mo. Dr. Klippel is, in addition, spokesman for the University Association for Emergency Medical Services.

Dr. C. T. Thompson, from Tulsa, is the chairman of the Oklahoma State Committee on Trauma.

Mr. Chairman, there is one other person in our audience today whom I should like to point out for his long and distinguished services to the improvement of medical care. He is Dr. Vince Moseley, a South Carolinian—and he is presently serving as the coordinator of the ·th Carolina regional medical program. In this capacity, he has ·en the distribution of some $350,000 in grants for the support · mergency Medical Services in South Carolina.

I· is my pleasure to introduce these distinguished people to this panel. I know the subcommittee, and the Senate, will benefit from the knowledge and counsel they are about to share with us.

STATEMENT OF TED SHEARER, TED SHEARER ASSOCIATES, INC.; R. A. BRANDES, AMBULANCE ASSOCIATION OF AMERICA; C. THOMPSON, M.D., PRESIDENT, OKLAHOMA TRAUMA SOCIETY; M. S. RITTENBURY, M.D., DEPARTMENT OF SURGERY, UNIVERSITY OF SOUTH CAROLINA; DOUGLAS MacGILL, M.D., MAYO CLINIC; ALAN DIMICK, M.D., UNIVERSITY MEDICAL CENTER, BIRMINGHAM, ALA.; ALLEN P. KLIPPEL, M.D., UNIVERSITY ASSOCIATION OF EMERGENCY MEDICAL SERVICES, A PANEL

Mr. SHEARER. Mr. Chairman and committee members and guests, I am Ted M. Shearer, president of Ted Shearer and Associates, consultants in emergency medical services from Charleston, S.C.

I feel, as I stand here testifying before you today, like a man who has just reached the top of the tallest mountain, and, I might add, one whose path has been strewn with immovable objects. Had it not

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been for you, Mr. Chairman, Senator Cranston, and the other concerned Senators and Congressmen, we would still be trying to climb that mountain.

My personal involvement in emergency medical services is short, when compared to others who will testify during these hearings, only 4 years on a daily basis. Approximately 1 year in trying to work with section 11 under the national highway safety program, and 3 years with the Health Services and Mental Health Administration. I shall not go into detail on HSMHA, but will be happy to answer questions, should they arise. I shall, with your permission, center my testimony around helicopters, costs of the transportation portion of a system, and the methods for expending funds under this impending legislation.

You will hear many people say, "Give us Federal funds and we will solve the problem." To me, nothing could be further from the truth. To simply make funds available, without guidance, will not only not solve the problems, it will in many cases make them worse, as has been proven in previous funding.

States, regions and communities are hesitant to assume the obligation for a costly emergency medical services system. While the initial costs may come from the Federal Government, the continuance of the system, must be borne by the users and/or the taxpayer. Of course the thought of additional taxes for anything raises outcries.

Take, for instance, just setting up the transportation system for emergencies. In the consolidated city of Jacksonville, Fla., and Duval County the cost of operating this fire department-operated system is approximately $1,200,000 per year, for operating eight ambulances which comes to about $150,000 per year per ambulance. I said approximately, because reports vary as to the actual costs.

As you will note in the report provided you, Mr. Chairman, not all of the costs are includued. While Jacksonville states it costs approximately 75 cents per taxpayer, this report states it is more like $1.50 for city dwellers and possibly up to $4 in rural areas. For less populous areas in the United States, this costly system would be impossible to implement. Turn the coin over, and Dade County, which includes Miami, Fla., contracts for a system which covers all of Dade County, provides 37 ambulances, and costs Dade County approximately $600,000 per year, or one-half of the Jacksonville system, with 29 more ambulances provided. Charlotte, N.C., has, since 1960 operated under an ambulance commission, contracting with existing services, and currently spends $24,000 per year, or about 8 cents per taxpayer. The key to this system was the passage of an ordinance making it a misdemeanor not to pay a legitimate ambulance bill, if the person can afford to pay it. The collection rate is around 95 to 96 percent. Mr. Brandes can give you more details on that. The city of Knoxville, Tenn., operates on this same system. Another area which is contemplating going to this system is Los Angeles, Calif.

I would like to correct that. I understood the city was considering this, and when the material arrived to me in Charleston, S.C., it seems that others are asking the city to go into this. It is not the city itself.

To me, the ambulance commission-ordinance-system is the least expensive. The ambulance commission sets the standards under which the franchise must operate, sets the rates, and has the authority to tax to cover the system, if necessary.

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You will note that I have dealt strictly with the cost of a system of transportation. This is where the problems arise. What is needed to make the system work, that is, the training, communications, ambulances, equipment to be carried in the ambulances, classification of the emergency rooms, the cost to implement the various elements of a system are fairly well known. The big question is, "How do we continue, once we have the system started?" Your legislation will provide the start of the local and regional systems, but we must make it as near self-supporting as possible. The most practical method, in my opinion, and that of many others dealing in these services daily, is to use existing services whenever possible, excluding them only when they fail to provide service at the recognized level of competence.

Much costly duplication of services has existed because of misinterpretation of Federal laws and guidelines. Due to the fact that private concerns cannot be funded directly by DOT and HEW, it has been interpreted that they cannot participate at all. This is not true, to my knowledge; there is nothing to keep any city, county, State, or institution, which is eligible to receive these funds, from contracting with existing services. This should be spelled out in this bill, and/or report.

To touch briefly on helicopters, the reports issued on helicopter use in emergency medical services, under projects funded by the National Highway Safety Bureau, set a cost ranging from $180 to $275 per patient transported. This confirms what I have always stated, that helicopters, used only for emergency medical services, in the majority of areas within this Nation, are not economically feasible. My personal feeling is that the helicopter must or should be used by the highway patrol, or another agency for normal duties, with emergency medical services provided as a secondary function. In my own State of South Carolina, the highway patrol has agreed to do this and to have the patrolmen who fly these units trained as emergency medical technicians. The highway patrol, under State operation, can fly for approximately $50 per hour. This makes the costs comparable with a ground ambulance, even if the ground unit were charging $25 plus a dollar a mile oneway. This could be the answer to providing service to remote and rural areas that do not generate enough calls to provide revenue for private operation, nor have a sufficient tax base to support a governmental unit.

To me the best answer is to make the system not dependent on the Federal Government nor totally dependent on the taxpayer. Those who can afford to pay for the service should pay. A closer relationship must be developed with the insurance companies to cover emergency medical services for private payment into the system, and indigent and welfare coverage must be provided through existing programs. Most areas are taking care of the indigent and welfare costs now, so the implementation of a total system would not cost more money, but in many cases would reduce the cost, particularly where a police department is now covering the need with crash wagons. The reduction in costs for emergencies would, of course, be passed on to the individuals, through less time in the hospitals, this from proper care at the scene of the accident, the emergency room being notified ahead of time of the extent of the injury, and when hopefully, no stay in the hospital at all. Many persons now, in areas with

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proper systems are treated at the scene, and not taken to the hospital at all.

One of my greatest concerns is that strong enough language is put into the bill and report to keep the money from being put into one agency budget, to follow the bill, and then allow the authority to be taken from that agency and given to another, as was done recently in the Health Services and Mental Health Administration. I have had the privilege of sitting in on hearings held by you, Mr. Chairman, and I have heard you answer other concerned individuals on how to assure the legislation is carried out as intended by the Congress. You stated that the strength is in the wording of the bill, and this is what I want to see done in this bill. Senator Cranston is to be commended on the excellent drafting of this bill. I had the privilege of going over this bill with an aide of the Senator's office, prior to the introduction in the Senate. Both she and I, with a copy of the necessary elements for EMS as passed in Chicago, by representatives of the major medical organizations, were looked at as they pertain to the bill, and we found they were all covered.

For many years reports have filtered down from Washington, that the Congress did not respond to the people, if nothing else, the involvement in EMS has proven this wrong. We have all found the Congress ready to listen and respond. Members of your staff, Mr. Chairman, have always taken the time to listen to our problems and give advise on how to handle and solve them. Our thanks to you, Mr. Chairman, for your rapid call of hearings on emergency medical services so soon after the resumption of the Congress. And my thanks to Senator Cranston, for your farsightedness in drafting such a far-reaching piece of legislation.

In closing, I would recommend: One, that a separate agency be given authority for the program; two, that review and approval of all grants and contracts be given to the National Emergency Medical Services Advisory Council as contained in this bill; three, that funds be given only to the State for those functions that can be best done on a state basis, i.e., educational programs, communications technical needs, certification and inspection of services; four, that at the local level, as established in this bill as any area comprising the boundaries of a comprehensive health planning "B" agency, there must be freedom to grant funds to responsible institutions or agencies qualified to establish, administer and evaluate the effectiveness of an EMS system. Each of these must have a local EMS council, composed of appropriate representatives to supervise these activities.

It has been a privilege to testify before this committee, on legislation which will affect the life of every man, woman and child in the United States. To me, it is the most important piece of legislation to be introduced in many years. You, Mr. Chairman, Senator Cranston, and the committee are to be congratulated and thanked. We asked and you responded. What more could we ask for? If, in any way I can be of further assistance to you, the committee or the staff, please do not hesitate to ask. Thank you.

Dr. Dimick will act as moderator if there are any questions.

Senator KENNEDY. Would any of you gentlemen like to make any comments or any additions?

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Dr. DIMICK. We feel the testimony has already been submitted from each one of us, and we stand ready to answer any particular questions anyone may have regarding the EMS system.

If there are no questions, we can make some comments.

Senator KENNEDY. If you would like to make some brief comments, there are a few areas I would then like to question you on, so go ahead.

Mr. MACGILL. Thank you very much for the chance to be here, Senator. Addressing this very difficult question of the nonemergency patient in the emergency room, care for this person, is woven in with the care for the more urgently ill, but I think it is terribly important that all of us in thinking about this problem, and particularly this system, focus on the patient who is critically ill and who needs the kind of delivery systems that we have spoken about. If not, I think there is the possibility that these funds which are, I think, not enough to do the job as stated will be diluted in caring for the vast unmet health needs of the nation, which are in part being answered through the emergency room.

I think it is estimated that somewhere between 25 and 33 percent of office practice in the United States goes on in the hospital emergency rooms. These moneys are a very small segment.

Senator KENNEDY. Admission to emergency rooms have increased dramatically, have they not, in the past 5 years? About 600 percent

Mr. MACGILL. Right.

Senator KENNEDY. As a result of less and less primary physicians in underserved areas?

Mr. MACGILL. Right.

Senator KENNEDY. You want to make sure that the resources that are made available really are targeted into those particular emergency cases?

Mr. MACGILL. Precisely. And that the problem of the unmet health needs for the 90 percent of the patients who come in be considered subsequently.

Senator KENNEDY. How would you do that?

Mr. MACGILL. I do not know, frankly. That is a terribly difficult question. It is difficult at all levels. In the community it usually happens that some sort of mechanism is worked out so that patients coming in through a common entrance are screened, and those who need highly sophisticated urgent care go down one hall and everyone else goes down another hall. Such triage systems are fundamental, but they are difficult to implement.

Senator KENNEDY. I suppose when they arrive at the medical center that is only one feature of it, is it not? You are concerned with whether before they get there, emergency services are going to be overutilized by those not in as great a need as others?

Mr. MACGILL. Yes. The system that we have talked about provides for ambulance services, for training paraprofessionals, for prehospital care, and care in the intensive care unit, down that one track, so to speak, and not down the other.

Senator KENNEDY. Would any other of you gentlemen like to make additional comments? You might briefly tell us about your own personal interest in this program and what is happening. I see the panel is pretty broadly represented in terms of States and regions.

Dr. THOMPSON. I am from Tulsa, Okla., which is somewhat a

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metropolitan area in a very rural State. We have problems that are probably different than Massachusetts or perhaps some of our more urbanized States.

There are several points, and as we have discussed this bill as a group, there are several points that we would like to express some concern about. Part of this was reflected in some of the testimony earlier this morning.

The chief concern that I have is an emphasis perhaps on the 314(b) agencies, as the basic areas to be encompassed by all the emergency medical services planned.

As you know, these were originally developed as economic development districts and not as health planning areas. Many times the areas really do not overlap quite well. I think it is important also to recognize that you may have two very active——

Senator KENNEDY. This is helpful, because it expires in June of this year, so we are going to be reviewing that as well.

Dr. THOMPSON. I think when this is reconstructed, this would be important to you. One can have our areas, our 314(b) agency areas side by side, both very active, and in many senses competitive in their planning areas that may both present adequate EMS plans and yet not be compatible. My request, and again particularly in areas such as my State that has a very good planning mechanism for a statewide type of EMS plan, is that some consideration be given to make certain that the area plans are at least compatible in the areas of communication, transportation, training, et cetera.

I think that we share, all of us, a concern also that the bureaucracy, if you would, which is established not only at the planning level but in the administration level, somehow be cut through. One of the greatest concerns that we have is again, as moneys are filtered out into the hinterland, if you would, has always been that the layers of bureaucracy that one cuts through in order to get $5 to rural Oklahoma is many times quite complicated.

If we have anything to say, it is in the development of this bill, and the $50 million the first year, I think will be largely utilized in setting up—we would like to emphasize that much of the technology is available, much of the ability to develop these programs are available, and it is simply a matter of getting on with the implementation.

Senator KENNEDY. How is your State program?

Dr. THOMPSON. The State program works quite well in that we have a consortium made up of a health commissioner who is given statutory responsibility for this. The Governor's highway safety coordinator, who administers the Department of Transportation funds and the State health planning agency, which is the AID agency, the regional medical programs, and the trauma committee of the American College of Surgeons all act as a consortium in the development of the EMS program.

Some provide money; some provide expertise; but so far we have had a fairly unified front. This is difficult to arrange in many States which are either larger or which have sort of recalcitrant people at the heads of various agencies.

Dr. DIMICK. I would like to make one comment at least in regard to Senate bill 504. I am from the University Medical Center, Birming-

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ham, Ala. My particular comments regard advisory councils as mentioned in S. 504.

Our group has reviewed this, and we are concerned regarding these two advisory councils at the two different levels. First is the area EMS Planning Council and second the National EMS Advisory Council. Now I personally speak from the basis of experience with such emergency medical service councils.

I have been chairman of the one in Birmingham for several years and chairman of the Alabama State EMS Council for the past 2 years. I have lived with this. I have seen the trials and tribulations of development of such councils and the problems that they encounter. Because we preach the EMS concept as a team concept, this is important for representation on these EMS councils. The team concept starts with the people at the scene of the emergency, be it the police, fire, ambulance, emergency medical technician, and continues through the hospital facilities, the emergency hospital facilities, the nurse and the physician and attendants. To get these people to work as a team—it is a beautiful thing to see this developed. The doctor and nurse talking with the ambulance personnel, working with him in the hospital, and in communication with him by radio when he has problems in the field.

Our experience at both local and State levels has demonstrated the need that members of this team need to be represented on these EMS councils. We break them down into providers—one category is providers of emergency services, among others there would be physicians, hospital administrators, EMT's. And the second category, police and fire departments, health planning agencies and local government. And the third category being community leaders, such as safety organizations, civic service clubs, press, media, public utilities and consumers if you will.

We feel that the provision of emergency medical services is the best of responsibility of local government in conjunction with medical communities serving the area that the two have to work together to perform emergency medical services to the highest possible ability. We commend, of course, the American Medical Association's Commission on Emergency Medical Services, which define this dynamic and responsive system of an EMS council in a little booklet that they have had published for several years now.

Therefore, we request that the committee review these two councils, both the area EMS as well as the National EMS Advisory Council, as defined in S. 504 with the above points in mind.

Senator KENNEDY. Very good.

Dr. RITTENBURY. I am from Charleston, S.C. I would like to stress two points, if I might.

The first is—and this has been alluded to earlier—is that we are really talking about a very significant portion of the health care system in this country, and that Emergency Medical Services really lends itself to the development of a true regionalization of health care. I think that the advantages of regionalization, categorization of facilities, nonduplication of efforts, the economics of this system can really be worked out under an emergency medical service system, and it can be followed in the nonemergency care that is offered throughout the country. I think that should be stressed, and somewhat answer the questions, maybe, that Mr. MacGill was asked.

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I would strongly support Dr. Dimick's statement about the value and the makeup of both the local and the National EMS Advisory Council. At the same time, and in reviewing this 504, I think due consideration must be given to the requirement that each State have a single agency or director duly appointed to be appointed for overall State planning for emergency medical services, and that he have an advisory council to serve him and the State, because there are certain functions at the State level that must be done with planning, training programs, interrelationships between EMS local systems that were set up, and also to evaluate the needs of each locality within the State.

In our own State, and this must be alluded to, we do have an advisory council, that took 2 years of working together, and at the same time our State regional medical people can well work as an executive arm of this council under this program, mainly because of their expertise and their knowledge and development.

Senator KENNEDY. I do not know whether they are going to be around to work.

Dr. RITTENBURY. I do not know, but there are established systems within the State that are functioning well. I think it must be utilized at the State levels.

Mr. BRANDES. I am a Charlotte, N.C., private ambulance operator. I am a member of the Ambulance Association, past president, also past president of Ambulance Technicians, an organization set up to evaluate and examine ambulance personnel across the Nation to attest to their actual training.

My concern naturally is that we certainly see the need and want to lend support to it, as we have sought over the years to participate in these programs. I think there have been innuendos made that everything is all right on the ambulance end, and that we are receiving good training across the country, that the situation is being handled, and on the receiving end of the training I can unequivocally say it is not being done, as we would be led to believe it is.

Likewise, I would say that the funding mechanisms are questionable due to the fact that in many areas, especially with training where funding has been done, to put on training programs, the private ambulance operators personnel have been barred—this is happening in one State right now—from taking the training program recommended by the Department of Transportation.

This creates a lot of apprehension among the private operators. What we are saying here is that we want to be included. We want to help. We want our personnel qualified. We want our vehicles equipped properly. We want standards by which we have sought for years with the hope that a person traveling from California to the east coast can expect the same level of emergency care.

Thank you.

Senator KENNEDY. As I understand you operate two ambulance services?

Mr. BRANDES. Yes

Senator KENNEDY. Can you operate without a subsidy?

Mr. BRANDES. Senator, I think the word "subsidy" is a misnomer. I think rather if an ambulance operator is to operate at a profit or operate at all he must be paid for the services he provides, just like a telephone company or anyone else. The subsidy comes about where

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we are transporting indigent patients, and those patients who are unable to pay for their services. Then in this context there should be a subsidy, rather than harassing the indigent for actual payment of the bill. We feel very strongly in this. They are deserving of medical care just like anyone else. This is the only form of subsidy that I feel is necessary for a community that is large enough, say 200,000 or more. Your rural communities certainly need a subsidy; yes, sir.

Senator KENNEDY. Are you familiar with the Los Angeles situation? They have 26 different ambulance services, as I understand it, and they are privately operated.

Mr. BRANDES. That is correct.

Senator KENNEDY. How are they able to make a go of it, whereas others can't?

Mr. BRANDES. Their collection rates are not what would be termed as a good business venture, because of the fact that they have a lot of transients in that area. They do have a much higher rate than most sections of the country to offset the losses that may be incurred in a reasonable rate, ambulance rate I am speaking of.

Senator KENNEDY. How do they survive then?

Mr. BRANDES. I think the major survival is because of the fact that they do charge a higher ambulance rate than the other sections of the country charge.

Senator KENNEDY. What is the difference?

Mr. BRANDES. Well, in Charlotte, N.C., it is $25 for the first 10 patient-miles, and a dollar a mile over that. In California, some of the areas, it is as high as $47.50. There is a city in Oregon that is $67.50.

Senator KENNEDY. Where?

Mr. BRANDES. Salem, Oreg. This frightens me.

Senator KENNEDY. Dr. Klippel.

Dr. KLIPPEL. I am from St. Louis. I have been recently appointed as director of emergency services, medical services for the city of St. Louis. But my interest is in the upstate area, as much as within the city itself.

I would like to make a plea that this money not be just dumped into the States, but that there be a decent program developed. Basically we need the money to get started, and then we ought to be able to carry the load ourselves.

One thing that I would like to emphasize is that there be a power built into the law that if a program does not comply with its implementation—in other words, if the program as designed does not come up, if they do not do what they said they are going to do, that the Secretary would, with the advice of the local review agency, have the power to cut off funds, to force them back into compliance. If you are talking about expending a great deal of money, it would seem to me wise to make sure that money is properly spent, and we need a good review, and cut off the funds if they do not do what they say they are going to do.

Senator KENNEDY. Let me ask another question of Mr. Brandes. What percent of the patients you carry are covered by insurance?

Mr. BRANDES. The people that we transport, Mr. Chairman, would be about 11 percent, that insurance companies pay us. Now in a lot of instances the patient collects from the insurance company, and we do not hear anything else from them. This happens quite frequently.

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Senator KENNEDY. Can you give us any idea of the number of people that you transport who have insurance that covers your services?

Mr. BRANDES. We would not have that close of a figure. We have run a recent survey on ambulance coverage within the Ambulance Association of America, and at this date 70 of them have responded. For the record it might be interesting to show the impact of proper training, that of the total personnel of these participating firms, it has amounted to 1,442. Nine hundred and seventy-seven of them or 67 percent have completed the recognized minimum course of 82 hours. The number of automobile accident victims that we transported was 103,626. The deaths, while in care of the ambulance crew, was 926 or 0.2 percent of our total patients transported.

So we are getting dividends from proper training, and this is what we believe is a necessary element.

Senator KENNEDY. Let me ask, Dr. Thompson, about the trauma research. If I understand it, it will be cut by the administration's budget recommendations. Of course this has, I imagine, some impact on the whole emergency medical services. Do you have any reaction to it?

Dr. THOMPSON. We are talking about system development primarily, and most of the major medical centers, particularly in metropolitan areas, which have large emergency departments have ongoing activity in trauma research, which is related to patient care.

Our prime emphasis, of course, that we need to develop our research, if you would, into implementation of the system, that most of the technology is here. So far as we can see, and in your bill we are looking at I think $5 million, which is basically toward research and development moneys, that again in terms of basic research is fairly small. But in terms of seed money for implementing the system it is fairly large, and I think it can be utilized to great advantage.

Senator KENNEDY. Mr. Shearer, you mentioned that the key to the success of the Charlotte EMS scheme is that an ordinance was passed making it a misdemeanor not to pay a legitimate ambulance bill, if the person can afford to pay it.

Mr. SHEARER. It raised the collection rate from maybe 62 percent to around 95 percent.

Senator KENNEDY. How did you decide what is legitimate?

Mr. BRANDES. This all occurred when the funeral homes decided to go out of the ambulance business in Charlotte. I was in the trucking business. The city was looking around for some mechanism to actually assume this role, and I had gone before the city council not 3 months prior to that complaining about the handling of a particular patient who was very close to me. And by virtue of the fact that I had complained, they asked me to look at it.

On the first year of operation, I had close to $100,000 in uncollectable bills that I was holding. So I went back before the city council and asked them for the same type ordinance that the taxicab companies had, that the motels and hotels had—the innkeeper's rule—that where a person could afford the ambulance bill, that they be required to pay within 90 days if they were able to afford it. If they were not able to afford it, then the welfare would certainly pick it up. It was a matter of actually public education, because up to this time the funeral homes

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had carried them for nothing, as advertising gimmicks or whatever it was, resulting with the fact that the city passed an ordinance making it a misdemeanor for those persons who could afford to pay the ambulance bill to do so within 90 days. Otherwise it would be turned over. So we issued warrants for their appearance before the city court. The judge could ask the questions if they were financially able to pay the bill or not, where I could not. No one was ever locked up. About 10 percent of them were turned loose, because of the fact that they could not afford it.

The rest of them paid the bills. We have not issued a warrant within 5 years, and our collection rate is 96.7 percent today. It is a matter of public education. It is a service they are receiving. It is not a taxi business. It is a necessity.

Senator KENNEDY. What is the criteria for the ability to pay? What do you have to show?

Mr. BRANDES. Well, to quote the judge, are they employed? Does he recognize the ambulance bill? If the answer is yes, do you think you can pay this ambulance bill within 30 days? If he says yes, then fine, all right, if you will bring me a paid receipt within 30 days, fine, that's it. If you cannot, what are your circumstances?

This is another way that the judge was able to determine the indigent to be sure that they were contacted by the social services to put them on the welfare rolls if they were indigent and not actually responsive to it.

Senator KENNEDY. OK. Thank you very much, gentlemen. You have been very helpful.

Dr. THOMPSON. I think there has been a little misconception, if you would, in this business of training ambulance attendants. We heard testimony this morning from the Department of Transportation. The Department of Transportation has been most helpful in that they have provided funding for the development of the Dunlop course which has been the basic outline, but as an outline only. Over the whole country right now volunteer physicians are training and teaching these actual courses on a 72-hour basis per ambulance attendant. I think that a note need be made of that, because we are using volunteer physicians in every State of the country in order to accomplish this.

Dr. DIMICK. I would like to make one more point if I could. The questions this morning on regional medical programs I think were pertinent.

I want to say that the Alabama RMP has given emergency service system a high priority in Alabama, and has done a number of things to improve emergency care there. They have recently earmarked funding about a year ago, providing moneys for the EMT, the emergency medical technician training program, which are going on in local communities throughout the State. About 25 of these are in the process of training. It complements nationally the State law we have.

The Alabama regional medical program has provided continuous education program for physicians and nurses, for department physicians and nurses and other practicing physicians to develop their skills. This is being carried out in local hospitals around the State, trying to assimilate the needed skills. The Alabama regional care program is probably unique in this endeavor that they have also provided

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coordination between the other Federal agencies and allowed us to do a better job within our State.

Here I am referring to the coordination between the Department of Transportation, DHEW, and other professional organizations, State and local governments. I feel we should mention this at this time.

Senator KENNEDY. Thank you very much, gentlemen.

As our final witness this afternoon we have Thomas A. Hulfish, president, Paramed, Inc., 300 North Lee Street, Alexandria, Va. We have about 12 minutes or so, and then I will have to depart. We will include all your testimony in the record. If you would like to highlight it or summarize it, please proceed.

STATEMENT OF THOMAS A. HULFISH, PRESIDENT, PARAMED, INC., ALEXANDRIA, VA.

Mr. HULFISH. Mr. Chairman, I am Thomas A. Hulfish, president of Paramed, Inc., a consulting and operating company exclusively in the field of Emergency Ambulance Services; and legislative chairman of the National Ambulance and Medical Services Association (NAMSA), an association of ambulance purveyors numbering some 200 members across the Nation, including 1 which served you, Senator Kennedy, as a result of an airplane crash years ago.

To date, Paramed has developed or assisted in the development of new or upgraded systems for 13 cities and counties, ranging from a major metropolitan area in the Southwest to a very poor rural county of 14,000 citizens in the Southeast. In addition, systems operated, managed or owned by our firm provide total medical transportation to an area approximately 5,000 square miles. In this group of systems are local and regional operations. To accomplish the tasks involved we have had to work with local, State, and Federal regulatory, funding, licensing, and planning agencies. This experience places us in a unique position among those who have testified here—we have done the job, in various ways, in differing areas, striving to develop high-quality communitywide Emergency Medical Service systems at moderate cost—and we have been successful. We are not looking at the planning, development, operating and supervisory functions of an Emergency Medical Service system from "on high," expounding theories and making recommendations and rules. We are involved in working with and under those theories, recommendations and rules—and we make it work.

What makes this system effective—

1. The business-like application of studies performed under section 403 of the Highway Safety Act in planning the systems.

2. Knowledgeable application of practical experience in planning and operations—a scarce commodity in bureaucracy, planning agencies, and sometimes Ivory Towers.

3. A cooperative effort of government and free enterprise wherein the strong points of both are used to a common goal.

Mr. Chairman, our organization and the communities we serve heartily support S. 504 as we feel there should be one department directing and coordinating the Federal effort, hopefully with a number of experienced individuals with broad exposure to Emergency Medical Services. Unfortunately, many existing Federal and State officials with responsibility in EMS have no background in the field,

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nor are their backgrounds compatible with EMS. Quite often this leads to little action, and often no real improvement in EMS on a broad scale. Most tragically, successful programs are often over-designed and too expensive for local government to support when funding programs end; further, many positive legislative efforts are greatly diluted by those inexperienced officials. The end result decreases the cost effectiveness of the improved systems.

A unique and cost effective element of S. 504, which differentiates it from most prior bills is the inclusion of existing qualified components in upgraded systems. At present 70 to 80 percent of the Nation is served by one of the various types of private operators. Certainly it would be more economical, efficient and in keeping with our American system to upgrade these companies—if they are able and willing to do so—than replace them with local bureaucracy. Jacksonville and Baltimore are examples of what government systems can do at great expense; however, there also are many very substandard government operations at high cost.

The basic economics of our health care delivery system make the private performance contract operation attractive. Seventy-four to 82 percent of the population served in our areas of operation, and I believe this figure holds true for the Nation, have third-party payment for emergency ambulance service. Most government operators do not charge a fee for service—or when they do it is token or has several exclusions. Under these circumstances government ambulance operations do not bill the third party or in some cases cannot collect from the third party. The result is that the user of the government ambulance service pays twice for the service—once through direct or indirect premiums to insurance companies and again to his community's totally tax-supported service via taxes. The insurance company often does not have to pay due to oversight in the rate structure created by the government agency. This is not true when the private purveyor is involved. He collects from the insurance company and these receipts assist in lowering the tax cost.

Another factor in the economic picture is the inherent high cost of government operation. An example is a community here in the Washington area. It now spends approximately $240,000 per year to operate two units. It runs approximately 8,000 calls per year and charges a token fee of $15. Collections run only $25,000 per year. Any competent private operator could serve that community with:

Fifty percent more cars and crews, raising the immediate response capability and lowering service times.

A higher degree of patient care—at present this government system only requires an American Red Cross first aid card—certified EMT's and communication with the receiving emergency rooms.

A net tax cost of $53,000 per unit, versus the present cost of $104,000 per unit.

We find this situation to be the rule rather than the exception.

There are as many ways to provide ambulance service as there are sides to an argument. There are combinations of ways. We in the private field think that we are flexible and can assist communities in a number of ways. We also feel that private enterprise is good.

You have heard testimony as to what various agencies and group efforts have been in emergency medical services. Eleven years ago

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the concerned responsible private operators in this country banded together and singularly and collectively knocked on the doors of many of these groups and the Departmnt of Health, Education, and Welfare. Deaf ears, with the exception of the American College of Surgeons, met their requests for assistance and guidance. Most said, "It is not our area of responsibility." Now many of these former pilgrims are no longer in service. They have fallen without support or have been replaced by ambitious local officials using Federal money.

The majority of the surviving private operators, working with local physicians and governments, under performance-type contracts, with guidance and financial assistance from the Federal Government as described in the proposed bill, could give the Nation a greatly improved level of service at lower cost and in a shorter period of time than the existent legislation and Federal organization. Again, this use of existing resources is not the total answer, but is a part of it.

These many groups who did not heed the cry for help have since gotten on the bandwagon and all have generally duplicating programs or parochial interest in EMS, somewhat adding to the confusion. Some have even suggested that the main emphasis of your legislation should be directed to their field, funding for hospitals, medical schools, et cetera. I believe that you are aware of the acute situation the majority of the Nation's citizens face with regard to their EMS needs. Certainly the most expedient and productive step at this time would be the implementation of the program before you, substantially as written.

There has been testimony given that more research is needed. We agree with this; however, we are quite aware that much of the recent federally funded research is not being used. At the Department of Health, Education, and Welfare's second national conference on emergency services, presentations by representatives of Government agencies as well as other expert statements and recommendations were made in contradiction of conclusions reached in costly studies funded by DOT. The information available should be inventoried before more basic research is funded. It is rather clear in the ambulance field that we do not research in the areas of:

A documentation system which each community and its funding and regulatory agency could use to evaluate the operating system, document patient care, results of patient care, and cost effectiveness. This would be an outgrowth of the Stanford study on documentation funded by the National Highway Safety Bureau in 1968.

A study of the relationship of training, patient care and operating procedures, demographic data and morbidity. This would enable a community to determine what level of service it could receive—based on x dollars and y system.

In summary, I reaffirm our support of S. 504 and add the following points:

Emphasizing the use and upgrading of existing resources rather than building large demonstration projects at giant cost.

Identifying the need to incorporate knowledgeable people with practical, broad EMS experience into the leadership of the Federal EMS effort.

Key the Federal effort to developing good basic systems, not overdesigned experimental or demonstration programs which duplicate prior projects.

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Develop research programs conservatively.

It is quite important to the success of the total effort that nine members of the National Advisory Council with EMS experience, established in section 638–A of the bill, be individuals whose experience is compatible with the goals of this bill.

Providers of EMS appear to have been deleted from the area of emergency medical services planning councils established in section 636–A of the bill and should be included due to their knowledge and experience which will be most valuable to the lay and non-EMS oriented members.

The task before you, and all of us involved in emergency medical services, is demanding and terribly important to all citizens of this Nation at this critical juncture. Thank you for the opportunity to contribute.

Senator KENNEDY. What is the difference between your organization and Mr. Brandes' organization? You are the National Ambulance and Medical Services Association, and his is the Ambulance Association of America. What is the difference in philosophy?

Mr. HULFISH. It was originally one association, the American Association, formed about 11 years ago. A year or so after that, there was a split due to organization, personality, and what have you. We unfortunately have two organizations.

Senator KENNEDY. Are there differences either in philosophy or approach?

Mr. HULFISH. To certain degrees, yes.

Senator KENNEDY. What are they?

Mr. HULFISH. We feel that the word subsidy is inappropriate, for example. If a community has a responsibility to see that its citizens have a degree of service available to them, we feel that anyone charged with the responsibility of providing this costly service should be paid a professional fee with a set contractual income from county or governmental officials. As cost of a system can be predetermined, for example, let's suppose a system costing $300,000 can predict income from service to the users and third party payment sources can produce $200,000 in income, we feel that the $100,000 in cost above the income provided the service, often called subsidy but more appropriately a professional fee, should be paid by the community to the provider, providing the provider has lived up to the specifications of the contract.

Senator KENNEDY. Do you represent any communities that have these ordinances requiring payment?

Mr. HULFISH. No, sir. We do not feel we should use the courts as a collection agency in this particular situation.

Senator KENNEDY. Right. I want to thank you very much for coming. The subcommittee will recess until 9:30 tomorrow morning.

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EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973

THURSDAY, FEBRUARY 1, 1973

U.S. SENATE,
SUBCOMMITTEE ON HEALTH OF THE
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 4200, Dirksen Office Building, Senator Edward M. Kennedy (chairman of the subcommittee) presiding.

Present: Senators Kennedy and Beall.

Senator KENNEDY. The subcommittee will come to order.

The subcommittee will now resume its hearings on emergency medical services legislation. Yesterday we heard a great many witnesses, almost all of whom testified to the deplorable state of emergency medical services in this country today. Doctors, surgeons, specialists in trauma, administration, ambulance operators, and many others intimately concerned with delivery of emergency health care in this country all gave evidence about their desperate needs.

With one exception, the DOT, all of the witnesses we heard were unanimous in their belief that legislation was needed to improve the delivery of EMS in this country. For today, 50 million Americans are injured every year, 115,000 people die in accidents of whom 18,000 could be saved with prompt and adequate emergency medical care and the 400,000 who are permanently disabled could also be substantially aided.

There was also agreement that a situation in which at least 350,000 people could be saved every year from prehospital coronary deaths must not be allowed to continue.

There was general agreement that there are three essential components to proper EMS; hardware, training and coordination. We agreed yesterday that we had the hardware, but our ambulance personnel had quite insufficient training. Only 37 percent meet the minimum standards set by the National Academy of Sciences Research Council. And there is no coordination.

On this the DOT agreed with the rest of us, when their witness, Mr. James Wilson, declared "the ability to combine these elements into viable systems is often lacking." Just what we believe.

Perhaps the whole sorry situation was best summed up by the witness who said:

In most communities EMS is a disgrace, primarily because of lack of organization, and clearly defined responsibilities and authorities . . . most states require licensure for barbers but fail to license those rendering lifesaving measures outside of hospitals . . . the Highway Safety Act has never been implemented. Im-

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plementation of national recommendations concerning ambulance improvements are still being retarded because of incompetence, bigotry, indifference of the public and governments and because the interest of providers rather than consumers prevail.

It is such a situation which this bill is designed, by awarding contracts for the setting up of areawide EMS systems, to rectify. I believe that it will do so. And I am sure that the testimony of those of you giving evidence today will be immensely helpful to us in this end.

At this point, I want to insert into the record a statement by Mr. Tom Johnson, executive assistant to the family of Former President Lyndon B. Johnson.

[The information referred to follows:]

Some press reports of testimony given Wednesday before the Senate Health Subcommittee stated that the agents who reached President Johnson had a chance to save him had they performed not only mouth-to-mouth breathing but also external heart compressions. In view of this statement relative to President Johnson's emergency treatment the following information reported by me in a news conference Monday, January 22, 1973—the date of President Johnson's death—is repeated.

From the moment that Secret Service agents Ed Nowland, Mike Howard, and Harry Harris arrived at President Johnson's bedroom (approximately 3:52 p.m.) until he was pronounced dead by Dr. Abbott of the Johnson City Hospital aboard the family aircraft, the agents administered vigorous heart compression, mouth-to-mouth breathing, and employed the use of a portable resuscitator. This procedure was continued until 4:17 p.m. by the Secret Service agents, at which time heart-lung resuscitation was begun by Dr. Abbott without success.

The Johnson family considers that the agents did everything within their power to administer effective emergency treatment, and all Secret Service personnel in the room with President Johnson at the time immediately after he was stricken were trained in external heart compression.

Senator KENNEDY. Our first witness for this morning is Mr. C. W. Thompson, president, Helicopter Emergency Rescue Service, Inc. of Fort Lauderdale, Fla.

STATEMENT OF C. W. THOMPSON, PRESIDENT, HELICOPTER EMERGENCY RESCUE SERVICE, INC., FORT LAUDERDALE, FLA., ACCOMPANIED BY MOTT F. STANCHFIELD, VICE PRESIDENT, PUBLIC AND GOVERNMENTAL AFFAIRS

Mr. THOMPSON. Thank you, Mr. Chairman, distinguished members of the committee. I am C. W. Thompson, president of Helicopter Emergency Rescue Service, Inc. Accompanying me is Mr. Mott F. Stanchfield, vice president, Public and Governmental Affairs.

Today in America, the problems of humanitarian nature seem insurmountable to the individual citizen in his own niche in the community and certainly to the local community in respect to the national scene. Although the daily awareness seems centralized around the war and its injuries to men and mankind, the real emphasis can be transferred immediately to the man in the street and the community itself in its effort, or lack of it, to provide adequately for coordinated emergency rescue services for all contingencies.

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The mortality rate in any area is directly proportional to the community's ability to respond to the individual in an emergency. The reflected rate is too high. By augmenting existing services and coordinating all efforts through a centralized one, the "ambulance race," or high speed pursuit to and from the emergency scene can be reduced to a controlled minimum, thereby saving even more lives.

The following program offers a feasible solution now to the requirement of a coordinated total health care program at the statewide level to include emergency medical services, emergency rescue services, disaster relief and civil defense at a minimum cost to the taxpayer.

The key to the entire effort is finances for equipment or utilization of existing, available equipment and public determination to settle for nothing short of accomplishment. This requires community participation and nonpartisan cooperation, unselfishly so.

Valuable expertise derived through expensive training and the equipment used to perform those missions is now available and going to waste in every section of our Nation. These men and the equipment were funded by tax dollars and now stand as unemployed and unproductive representatives of our Nation's cutback in involvement in the war. Millions upon millions of tax dollars spent in training these persons and additional millions spent on the purchase of the aircraft will be lost when these skills become lost and the equipment becomes unsalvageable or unuseable due to inattention.

By coordinating efforts to obtain the utilization of such equipment and by providing realistic civilian salaries to these people, now largely unemployed veterans, the result can be one of the most far advancing humanitarian projects that it will ever be the privilege of the people of each State to share.

Looking toward Florida as the national pilot program for such an effort, where population density levels and geographical distances are representative of any place in the Nation, Helicopter Emergency Rescue Service, Inc. (HERS), a private, nonprofit Florida corporation, hereby offers its plan for Americans inservice to Americans for you and your Statewide community.

Medevac! Unfortunately, those of our people exposed to the harsh realities of combat these past few years have been forced to use that call sign. Responding to that call anywhere in battle, from the coastal plains to the lush, triple canopied jungle or to the mountaintop plateaus, we have seen and heard the arrival of that beautifully efficient rescue helicopter utilized in its lifesaving role under all types of circumstances and weather conditions, day or night.

The U.S. Surgeon General's files are full of evidence in the form of insurmountable statistics to convince any who would doubt the validity of the concept that takes timely effective treatment and/or relief to the physically and mentally wounded combatant.

Why should we, the taxpaying public who bought this equipment and demanded its availability for our fighting men, be willing to accept lesser efforts here in the Nation that advances this concept of humanitarian service under the worst of conditions?

We clamor over a single casualty reported over a week's time on the battlefront, yet we allow the cardiac troubled victim or the horrible

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automobile accident case to wait for too many minutes or hours before a ground vehicle reaches the scene, only to fight traffic conditions and ground distances back to a hospital.

According to a recent comment by Representative Paul G. Rogers, Democrat, of Florida, chairman of the House Public Health Subcommittee, current emergency activities represent the weakest links in the Nation's health system.

The advent of the helicopter emergency rescue service for use by the general public has come about as a direct result of the increasing complexity of the transportation congestion problem and the physical dispersion of the population.

While technological medical science has developed immensely in its ability to diagnose and treat the injuries and diseases of mankind, the mode of delivering the patient and/or medical personnel to each other has remained stagnated by traffic conditions and poorly coordinated communication systems, in most instances.

Many lives are lost daily throughout each State that might otherwise have been saved if they had received effective stabilization sooner or a faster means of transportation directly to the correct medical facility without the risk of further injury enroute.

It is toward this goal of real-time response that Helicopter Emergency Rescue Service, Inc. (HERS) is dedicated. HERS will strive to provide:

(1) Faster, more efficient means of bringing together medical aid and victim.

(2) Twenty-four hour rescue service originating from hot pads strategically located at municipal airports.

(3) Commercial and general aviation a greater expansion of professional safety services to satisfy requirements for aerodrome, commercial air and community rescue in response to Federal Aviation Administration (FAA) airport disaster plans and in instances of individual passenger needs.

(4) Effective, well-coordinated rescue services in relief of the many emergency situations that arise daily through systematic utilization of centralized communication centers.

(5) An end to needless waiting and suffering that too many victims endure before stabilization treatment arrives.

HERS is a professional emergency rescue service, designed to respond with certificated personnel as required by State and Federal guidelines. HERS will act as the coordinating nucleus of a State emergency medical services system until such time as other entities can accept the responsibility, or desire to do so. Should that occur, HERS shall remain as an integral part of the overall EMS program. an augmenting capability manned by professionally certificated personnel.

Following the planning criteria established by HERS, a State can receive wider coverage, faster response time and attention by specifically trained and certificated personnel. This type of program is certainly preferred when compared to the military assistance to safety and traffic (MAST) program of the military.

Cooperation with military rescue units is certainly encouraged. However, having a secondary mission assigned of providing emergency

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transport does not satisfy the community requirement for immediate response to any emergency situation.

The MAST program provides a reaction radius of 100 miles and only from a military installation having a helicopter rescue unit in service there. This is not conducive to any overall EMS program, since no new units will be formed or transferred to implement a MAST site.

An example of one EMS area in which HERS could have performed recently was the Miami air disaster resulting from the crash of a L–1011 jumbo jet into the Everglades. This illustrated the inadequacy of immediate response by the airport disaster plan in effect.

Had HERS been implemented, professional and certificated EMT personnel would have placed daylight illumination and a minimum 47-litter capability on the site within the first 5 minutes. As it were, the first helicopter took 35 minutes to arrive and 15 minutes additional time before the first victim was evacuated.

If you have any questions, Mr. Chairman, we should be pleased to answer them.

Senator KENNEDY. Thank you very much.

Can you tell us just a little bit about your own background in helicopters?

Mr. THOMPSON. Yes, sir. My particular background involving helicopters has been primarily from the planning standpoint while an officer in the Marine Corps. I served as an officer for 10 years in aviation, and was attached primarily to fixed-wing units, but was obviously involved in staff considerations for operational planning and contingency planning, things of this nature, as well as our role and concept of the Marine Corps deployment requiring us to know as much about the rotary-wing capability.

However, my companion here, Mr. Stanchfield, has not only been associated with the Army in experience in rotary wing but also with several manufacturers of airframes in the rotary-wing business and has been recently employed with the Palm Beach sheriff's unit in Florida as an EMT qualified paramedic and pilot.

Senator KENNEDY. Some general evaluation has been done on the helicopter emergency medical service by the Department of Transportation. Are you familiar with that study?

Mr. THOMPSON. Not familiar with all of it, sir. We have asked our Congressman, Paul Rogers, to inquire into each of these. As far as we understand, there are approximately 14.

Senator KENNEDY. We will include this study as a part of the record.

[The information referred to may be found on p. 240.]

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Senator KENNEDY. One of the conclusions it makes is that at the present time the helicopter works best as part of a complete EMS system.

You make a strong case to the contrary. But we will make it a part of the record, and we would be interested in what your reaction is to the study itself. It would be worthwhile.

Mr. THOMPSON. I would be happy to provide it for you.

Senator KENNEDY. In your proposed budget you have operating costs of approximately $38 an hour.

Mr. THOMPSON. That is correct, sir. That is in the event we had to use an alternate plan.

We provided for a plan whereby plan A is the preferred plan where the utilization of aircraft assigned to either HERS or to the State by the Federal Government of the aircraft in excess of the active military requirement for use by these people—these are the same people that flew them in combat conditions, and the same machines that have been established last year under the program to be utilized in this kind of work.

We do feel that that is the preferred route. However, if the Federal Government cannot see its way clear to assign these aircraft to us, or to a State wanting to implement this service, we then provide under plan B an arrangement whereby we will lease helicopter services on an annual basis from another group for the purpose of obtaining the equipment.

This plan would illustrate the fixed direct flight-hour cost reflected in the $38 per hour figure. This includes consumable parts and fuel.

Senator KENNEDY. Have you made a complete breakdown of the costs of the running of this program? How much will be Federal funding and how much non-Federal funding?

You have included the costs of the helicopter, I suppose, and the fuel? Are you suggesting that the Federal Government should pay the fuel bill? What is your breakdown of costs?

Mr. THOMPSON. First of all, under plan A where the Federal Government would assign aircraft, we as taxpayers have already paid for those aircraft. They have been budgeted. They are already there.

In order to maintain them in a usable status, the spare parts, or consumable parts required to operate, have already been budgeted for and are available.

If DOD, or whatever agency would regulate the requirements for these aircraft, decides there is a minimum flight time that must be flown in order to keep them in a status acceptable to that particular agency, then we would reflect that that particular hourly requirement should be funded by Federal sources.

However, we have sources in the civilian community in the form of petroleum companies who would be happy to meet any differentiation as a public relations gesture for the community between that minimum flight time, if required, and the actual time resulting in being flown in support of the program.

Essentially, sir, the main item for funding you are speaking of there is salaries. We feel after the initial pilot program is executed, we have the rapport in the community to show how, at the State level and surely higher than State level, after the initial year the program could be maintained or sustained in the State by people directly benefiting from the services themselves.

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Senator KENNEDY. This would be the fuel that would have been used if they had been mothballed, or whatever, in order to maintain their usability?

Mr. THOMPSON. Yes, sir. For example, you have to run up an aircraft of that type in order to keep the hydraulic seals from drying out, and you have to keep the engine oiled. This is what we are talking about.

Senator KENNEDY. But other studies on the helicopter cost per flying hour show their cost of operation is about three times that of ground ambulances.

It seems that it's only by the regular utilization of the helicopters for traffic control and law enforcement that the cost can ever be lowered to around the accepted level.

Do you foresee the possibility of using helicopters for other than just emergency medical services?

Mr. STANCHFIELD. Senator, no. The cost of $38 per hour is a direct operating cost that involves fuel and consumable parts under plan B which the aircraft cost when leased from a civilian entity.

I would not doubt that in the past it has shown that a helicopter has cost three times as much to operate as an ambulance, but that is considering the initial cost of the equipment. That is in plan B, under depreciation. But, by utilizing excess military equipment, you would not be depreciating the cost of the aircraft.

The HERS program is on a standby basis, not on a patrol basis, therefore the lower usage would reduce considerably annual costs as opposed to a law enforcement agency. HERS would assure maximum incident (EMS) rate per flight-hour consumed as opposed to law enforcement's minimum incident rate per flight-hour consumed.

It would seem, Senator, if I may say this, that we have the equipment, it has already been paid for by the taxpayer's dollars.

Senator KENNEDY. How much equipment is there? Where is it? How many helicopters are available? Do you know where they are?

Mr. STANCHFIELD. We know one place where we have some 2,000 of them due to a lessened training program. The models that we are suggesting are not the newest ones, and they are certainly not the oldest ones. It is turbine equipment which would facilitate an interior loading of the patients—you cannot save them on the outside. They must be inside so your paramedic can be administering aid to them.

The training has been paid for. That is by virtue of participation in the recent conflict. The EMS need is apparent if not only by virtue of the establishment of this subcommittee. It would seem logic would dictate combining tax paid for equipment, trained personnel, and an American need, to produce a total health care system.

I think the HERS program if studied in depth will become quite clear.

Senator KENNEDY. Thank you very much. Your prepared statement and other pertinent material furnished this committee will be submitted for the record at this point.

[The information referred to follows:]

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PROSPECTUS

FOR IMPLEMENTATION OF

HERS

(HELICOPTER EMERGENCY RESCUE SERVICE)

HELICOPTER EMERGENCY RESCUE SERVICE, INC.
4520 NW 36th Street
Ft Lauderdale, Florida
33313
(305) 735-9704

Revised
December 1, 1972
Original
June 1, 1972

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PROSPECTUS

HELICOPTER EMERGENCY RESCUE SERVICE, INCORPORATED, IS A COMPANY ESTABLISHED FOR THE PURPOSE OF PROVIDING STATE-WIDE AREAS WITH AVAILABLE EXPERTISE IN VERTICAL FLIGHT EMERGENCY RESCUE OPERATIONS IN THE FORM OF QUALIFIED VETERANS WHOSE EXTENSIVE TRAINING AND SERVICES, AT GREAT COST TO THE TAXPAYER WHILE ON ACTIVE DUTY, ARE NOW GOING TO WASTE IN EVERY CITY, TOWN AND RURAL AREA OF OUR COUNTRY. IT IS FURTHER DESIGNED TOWARD THE EFFECTIVE UTILIZATION OF CURRENT INVENTORY, MILITARY ROTARY WING AIRCRAFT PRESENTLY IN EXCESS OF ACTIVE MILITARY REQUIREMENTS DUE TO WITHDRAWEL FROM A WARTIME ENDEAVOR.

LOGICALLY, SHOULD NOT THESE MACHINES WORK IN A LIFE-SAVING ROLE IN A STATE WHICH THE AMERICAN HEART ASSOCIATION INDICATED A DEATH TOLL LAST YEAR OF OVER FORTY-FOUR THOUSAND (44,000) PERSONS IN CARDIAC OR PROBLEMS OF THE THORACIC CAVITY ALONE? THE PRIMARY MOTIVATIONAL FORCE BEHIND THESE EX-SERVICEMEN IN THIS OPERATION IS THE DESIRE TO PROVIDE THEIR COMMUNITIES WITH THIS HUMANITARIAN SERVICE.

HERS IS WORKING IN CLOSE COORDINATION WITH SEVERAL STATE COORDINATORS FOR PERSONNEL IN THE EMS AREA UNDER OPERATION M.E.D.I.H.C. (MILITARY EXPERIENCE DIRECTED INTO HEALTH CAREERS). THESE PERSONS ARE THE ARMED FORCES MEDICAL PERSONNEL WHO SERVED AS CORPSMEN AND FIELD MEDICS FOR OUR COMBAT CASUALTIES AND ARE NOW SEEKING CAREERS RELATED TO THEIR EXPERIENCE IN SERVICE.

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AS A PRIVATE, CHARITABLE, NON-PROFIT ORGANIZATION, HERS IS CAPABLE OF EFFECTING A WELL-COORDINATED EMERGENCY SERVICES PROGRAM IN WHICH HELICOPTER OPERATIONS ARE TO BE USED IN AUGMENTATION OF EXISTING MEANS OF EMERGENCY RESCUE NOW AVAILABLE WITHIN THE STATE. WITH THE TREMENDOUS RESERVOIR AND CROSS-SECTION OF TALENT AVAILABLE, INCLUDING THE DISABLED VETERAN, HERS CAN EFFECTIVELY AND EFFICIENTLY DEVELOP THE COORDINATION CENTERS AT THE STATE'S REGIONAL EMS LEVEL. THESE COORDINATION CENTERS ARE CRUCIAL FOR THE TOTAL OPERATIONAL COHESIVENESS IN THE USE OF ALL RESCUE EFFORTS. FOR EXAMPLE, THE ELECTRONIC COORDINATION OF THE ENTIRE COMMUNICATIONS NET IS A REQUIREMENT WHICH FEW, IF ANY, STATES CAN EFFECT IMMEDIATELY. HERS' PERSONNEL ARE EXPERIENCED IN THE NEEDS AND NOMENCLATURE FOR ALL SUCH EQUIPMENT AND POSSESS FIELD EXPERIENCE IN THE ESTABLISHMENT OF COMMUNICATION NETS AND INITIATING THEIR USE IN SITUATIONS CALLING FOR MAXIMUM UTILIZATION ON A MINIMUM RESPONSE TIME BASIS.

FURTHER, STATE AND FEDERAL AGENCIES CAN REALIZE ADDITIONAL SUPPORT IN UTILIZING HERS UNDER DISASTER RELIEF, CIVIL DEFENSE AND LAW ENFORCEMENT EMERGENCY SERVICE ROLES.

PERHAPS MOST SIGNIFICANT TO THE IMPLEMENTATION OF THE HERS PROGRAM IS THE FACT THAT IT WOULD INVOLVE NEITHER CREATION OF A COSTLY NEW GOVERNMENT AGENCY WITH MASSIVE EQUIPMENT OUTLAYS, NOR CENTRALIZED BUREAUCRATIC DIRECTION WHICH ROBS SUCH OPERATIONS OF THE FLEXIBILITY NECESSARY TO MEET UNIQUE LOCAL NEEDS.

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THE METHOD OF ACQUIRING EQUIPMENT WHICH HERS CONSIDERS AS THE MOST ECONOMICALLY FEASIBLE, WOULD BE THE "ASSIGNMENT" OF THE REQUIRED EQUIPMENT FROM FEDERAL INVENTORIES. AS MENTIONED PREVIOUSLY, THIS EQUIPMENT IS CURRENTLY IN EXCESS OF ACTIVE MILITARY REQUIREMENTS DUE TO WITHDRAWEL AND SCALE-DOWN FROM A WARTIME ROLE. THERE CAN BE NO BETTER USAGE OF A LIMITED QUANTITY OF THESE TYPES OF HELICOPTERS AND ASSOCIATED EQUIPMENT THAN TO EMPLOY THEM IN A HUMANITARIAN, PUBLIC SERVICE, LIFE-SAVING ROLE IN AMERICA FOR AMERICANS.

ONLY AIRCRAFT PRESENTLY ASSIGNED TO MILITARY UNITS ARE CAPABLE OF PERFORMING IN AN EMERGENCY MEDICAL SERVICE (EMS) ROLE AT A LEVEL ADEQUATE TO MEET SUCH NEEDS. THESE TYPES OF AIRCRAFT ARE NOT DECLARED ON THE GENERAL SERVICES ADMINISTRATION (GSA) "EXCESS" OR "SURPLUS" PROPERTY LISTS. AIRCRAFT LISTED BY GSA ARE REGARDED AS UNSUITABLE.

THEREFORE, THE ASSIGNMENT OF THE PREVIOUSLY MENTIONED EQUIPMENT TO EITHER HERS, INC. OR THE INDIVIDUAL STATE, WITH TITLE RETAINED BY THE FEDERAL GOVERNMENT, IS LOGICAL AND SHOULD BE CONSIDERED. ALL CONSUMABLE PARTS AND COMPONENTS SHALL BE PROVIDED FROM FEDERAL INVENTORIES ON A "PRIORITY" BASIS TO ASSURE MAXIMUM UTILIZATION. TO MAINTAIN A STATE OF OPERATIONAL READINESS, A MINIMAL QUANTITY OF FLIGHT HOURS PER AIRCRAFT SHOULD BE ESTABLISHED BY DEPARTMENT OF DEFENSE (DOD) DIRECTIVE WITH APPROPRIATE FEDERAL FUEL ALLOCATION FOR THOSE HOURS REQUIRED BY DIRECTIVE.

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IT IS DESIREABLE THAT THE AIRCRAFT REMAIN IN STANDARD MILITARY CONFORMITY AND BE EXEMPTED OF CIVIL CERTIFICATION REQUIREMENTS. THIS WOULD FACILITATE THE USE OF STANDARD MILITARY SPARE PARTS CONSUMPTION AND, IN THE EVENT OF NATIONAL EMERGENCY NECESSITATING RECALL OF ANY OR ALL AIRCRAFT BY THE MILITARY SERVICES, THE AIRCRAFT WOULD BE IN PROPER CONFORMITY AND IMMEDIATE "OPERATIONAL READINESS" POSTURE. PERIODS FOLLOWING PREVIOUS WARS INVOLVING AVIATION HAVE SHOWN THAT AIRCRAFT IN EXCESS TO PEACETIME REQUIREMENTS ARE NOT "SALVAGED" IN A MANNER BENEFICIAL NOR SELF REWARDING TO THE AMERICAN TAXPAYING PUBLIC AS THE PRESENT OPPORTUNITY PROVIDES.

THE AIRCRAFT PROVIDED THROUGH FEDERAL SOURCES WOULD BE MAINTAINED AT MILITARY MAINTENANCE LEVELS BY HERS AND THEREBY OFFER AN OPPORTUNITY FOR ON-THE-JOB TRAINING UNDER THE G.I. BILL FOR VETERANS INTERESTED IN OBTAINING FAA CERTIFICATION IN THE MAINTENANCE FIELD.

FURTHER SERVICE WHICH CAN BE PROVIDED WITH FEDERAL CONCURRENCE IS A CENTRALIZED MAINTENANCE EFFORT FOR RESERVE AND NATIONAL GUARD HELICOPTERS. THE INFLUX OF HERS PERSONNEL ON READY RESERVE STATUS AND THOSE INTERESTED IN BECOMING AFFILIATED WITH A LOCAL UNIT WILL REFLECT A REQUIREMENT FOR CONSIDERABLE ADDITIONAL FLIGHT TIME. HERS CAN AID INSUFFICIENT MAINTENANCE EFFORTS AND PROVIDE AIRCRAFT ORGANIC TO THOSE UNITS WITH A MORE ADEQUATE MAINTENANCE SERVICE TO ENSURE THE OPERATIONAL READINESS AND FLIGHT TIME.

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THE MAINTENANCE PROVIDED FOR HERS PROGRAM AIRCRAFT PROVIDED BY THE FEDERAL GOVERNMENT WILL BE PERFORMED AT NO ADDITIONAL LABOR CHARGE TO THE FEDERAL GOVERNMENT.

THE DESIRED AIRCRAFT TYPES ARE THE HUGHES OH-6A, THE BELL UH-1D/H AND THE SIKORSKY CH-3. WHEN OPERATING IN HIGHER DENSITY AREAS AND IN RESPONSE TO SITUATIONS REQUIRING LOWER MEDICAL OR OPERATIONAL RESPONSE, THE SMALLER HUGHES OH-6A WILL BE UTILIZED. THE BELL SERIES WILL BE UTILIZED IN LOWER DENSITY AREAS AND/OR SITUATIONS REQUIRING HIGHER MEDICAL OR OPERATIONAL REQUIREMENTS. THE SIKORSKY CH-3 WILL BE LAUNCHED IN RESPONSE TO LARGE DISASTER REQUIREMENTS. EACH AIRCREW WILL MAINTAIN PROFICIENCY IN ALL MODELS AND AIRCRAFT MAINTENANCE STANDARDS WILL BE THOSE AS ARE REQUIRED BY THE MANUFACTURER AND MILITARY ESTABLISHMENT.

FUNDING

LEGISLATION CURRENTLY BEFORE CONGRESS WOULD PROVIDE MATCHING FEDERAL FUNDS FOR AN EMERGENCY RESCUE PLAN EMBRACING THIS SERVICE. ADDITIONAL FUNDS WOULD BE AVAILABLE AT THE STATE GOVERNMENT LEVEL, YET, REQUIRED FROM NEITHER ENTITY AFTER THE INITIAL TWO OR THREE YEARS OF SUCH A PROGRAM, AS PRIVATE SOURCES AND THE ELEMENTS DIRECTLY BENIFITTING FROM THE PROGRAM COULD SUSTAIN ITS OPERATIONAL REQUIREMENTS. FUNDS MARKED FOR THE EMS PROGRAMS COULD THEREFORE BE UTILIZED MORE FULLY OVER THE BROAD SPECTRUM OF THOSE EMS EFFORTS.

PERSONS OR ORGANIZATIONS RECEIVING HERS SERVICES WILL NOT BE

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CHARGED DIRECTLY FOR THE SERVICE. AN INFORMATIVE LETTER DEFINING THE COST PER HOUR TO OPERATE EACH MODEL HELICOPTER WILL BE PRESENTED TO THE INDIVIDUAL. BASED UPON THAT RATE, THE LETTER WILL FURTHER INDICATE THAT AT ANY TIME THEREAFTER, A FULLY TAX DEDUCTIBLE DONATION OF ANY AMOUNT WILL BE GRATEFULLY ACCEPTED BY HERS.

THE REQUIREMENT FOR EMERGENCY MEDICAL SERVICES, EMERGENCY ASSISTANCE AND DISASTER RELIEF IS PARAMOUNT AND WILL CONTINUE TO INCREASE THROUGHOUT AMERICA IN HOMES, BUSINESSES, AIRPORTS, HIGHWAYS AND WATERWAYS OF ALL CITIES, TOWNS AND RURAL AREAS. DR. EMANUAL M. PAPPER. M.D., VICE PRESIDENT FOR MEDICAL AFFAIRS AND DEAN OF THE SCHOOL OF MEDICINE AT THE UNIVERSITY OF MIAMI IN FLORIDA STATED IN AN ARTICLE IN SEPTEMBER OF 1971, "IT WOULD APPEAR TO BE SAFER TO BE INJURED IN BATTLE IN VIETNAM THAN TO BE INJURED ON THE HIGHWAYS OF CIVILIAN AMERICA."

THE CHARTS ON THE FOLLOWING PAGES WILL ILLUSTRATE SPECIFICALLY HOW AN ALL-ENCOMPASSING PROGRAM AND ITS MULTITUDE OF INTER-RELATIONSHIPS CAN BE DEVELOPED. PROJECTED OPERATING COSTS UNDER PLANS A AND B, GENERAL PROCEDURES AND OTHER CONSIDERATIONS ARE AREAS DISCUSSED FOLLOWING THE CHARTS.

PLAN "A" REPRESENTS FEDERALLY "ASSIGNED" EQUIPMENT.
PLAN "B" REPRESENTS PRIVATE, LEASED EQUIPMENT WHICH WILL BE PHASED OUT OF CONTRACTURAL REQUIREMENT AS FEDERAL EQUIPMENT IS PROVIDED. PLAN "B" MAY BE IMPLEMENTED IMMEDIATELY!

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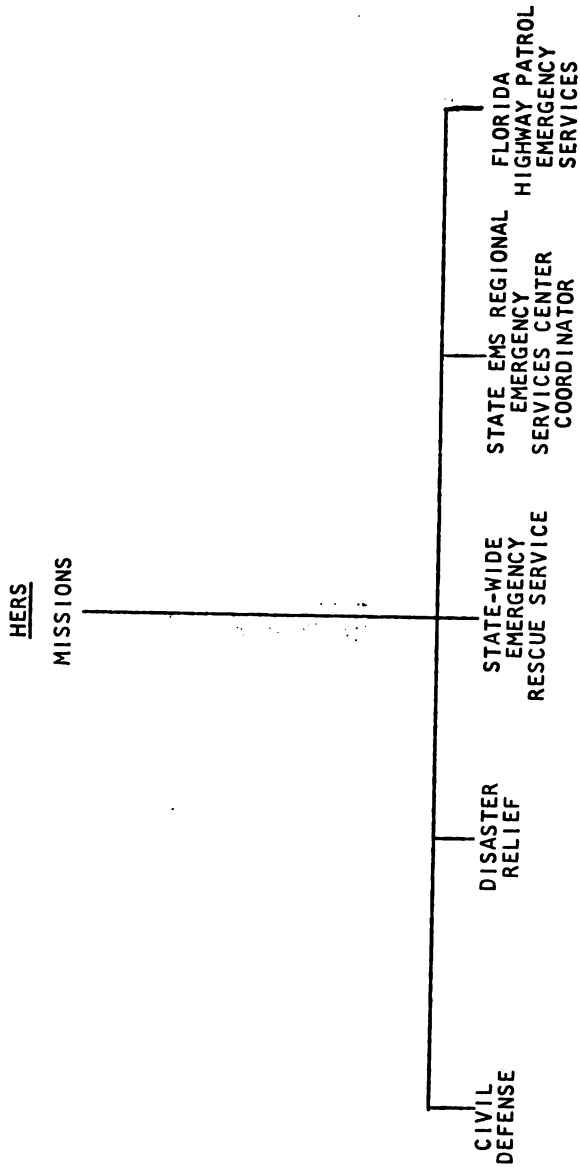

CHART 1. HERS MISSIONS

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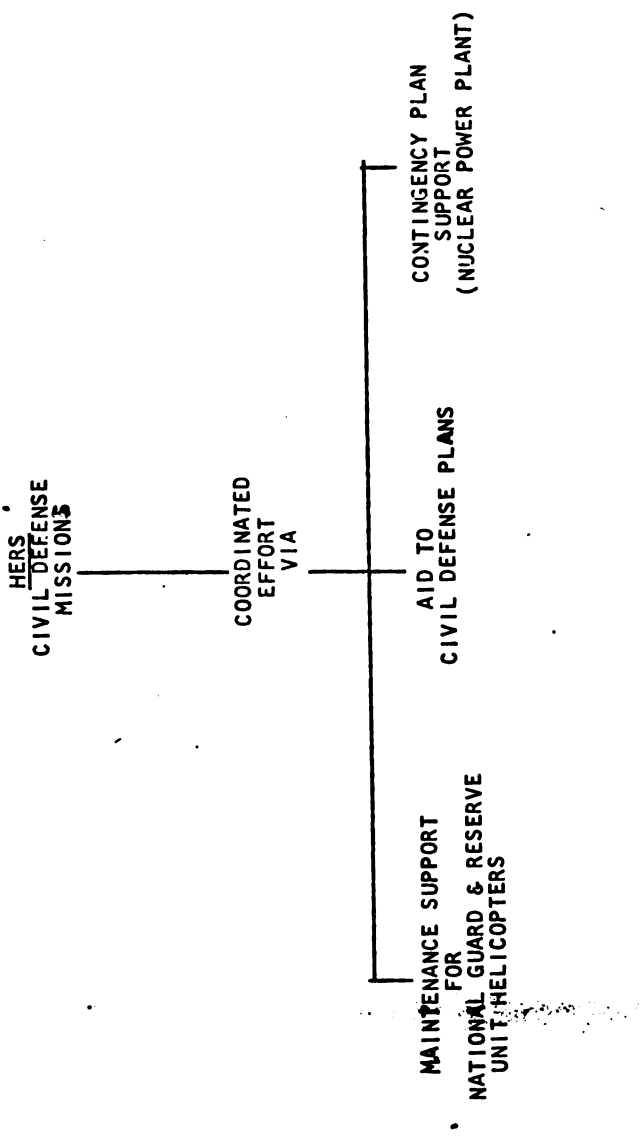

CHART 2. HERS CIVIL DEFENSE MISSIONS

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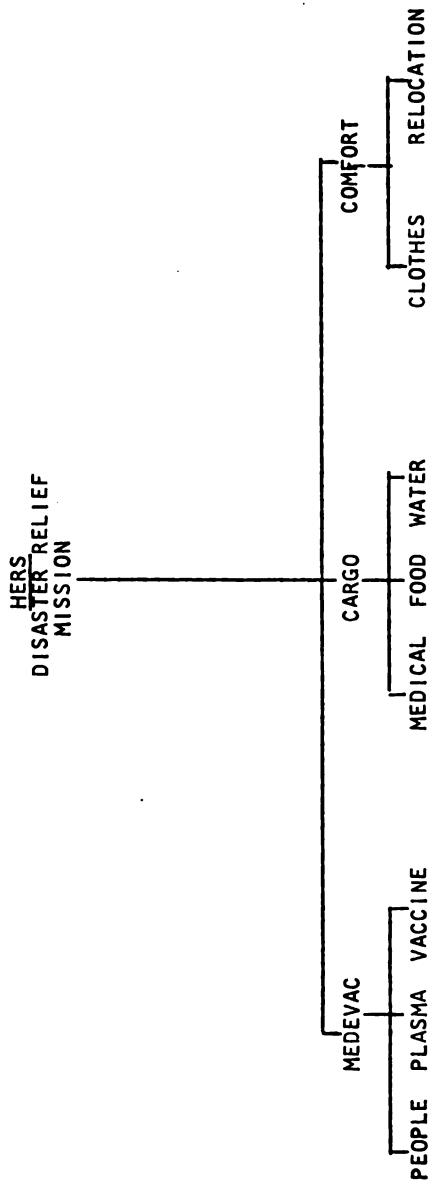

CHART 3. HERS DISASTER RELIEF MISSION

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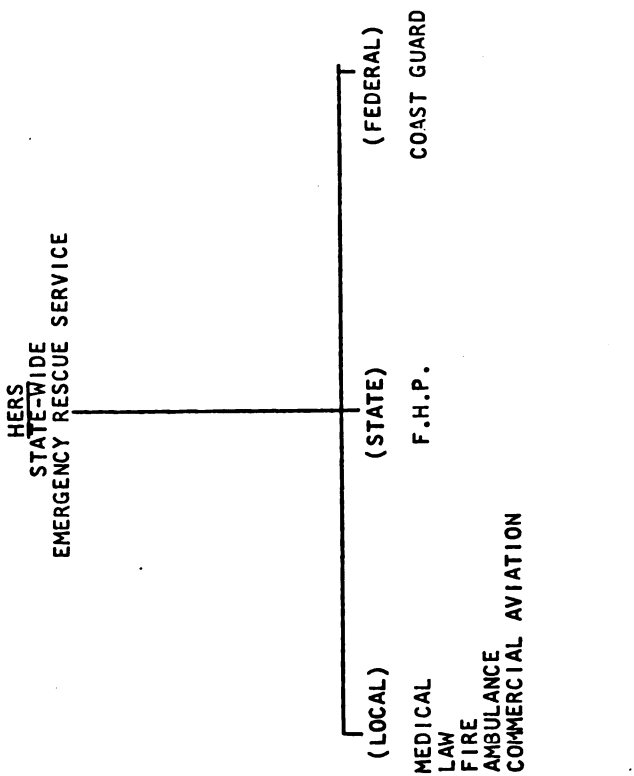

CHART 4. HERS STATE-WIDE EMERGENCY RESCUE SERVICE

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HERS
STATE EMS REGIONAL
EMERGENCY SERVICES CENTER COORDINATOR

PARTICIPANT	COORDINATOR
RESCUE (LAND OR SEA)	INTER-AGENCY COMMUNICATION
MEDICAL MISSIONS	MEDICAL FLIGHT QUALIFICATION
EXAMPLES:	PHYSICIAN
PHYSICIAN	PARAMEDIC
PLASMA	REGISTERED NURSE
VACCINE	RESCUE OPERATION AIRBORNE
PATIENT	COMMAND POST
EXAMPLES:	
CARDIAC	
THORACIC	
RENAL SHUTDOWN	
BIRTH COMPLICATIONS	
ACCIDENTS	
EXAMPLES:	
AIR	
AUTOMOTIVE	
ELECTRICAL	
FIRE	
WATER	

CHART 5. HERS STATE EMS REGIONAL
EMERGENCY SERVICES CENTER COORDINATOR

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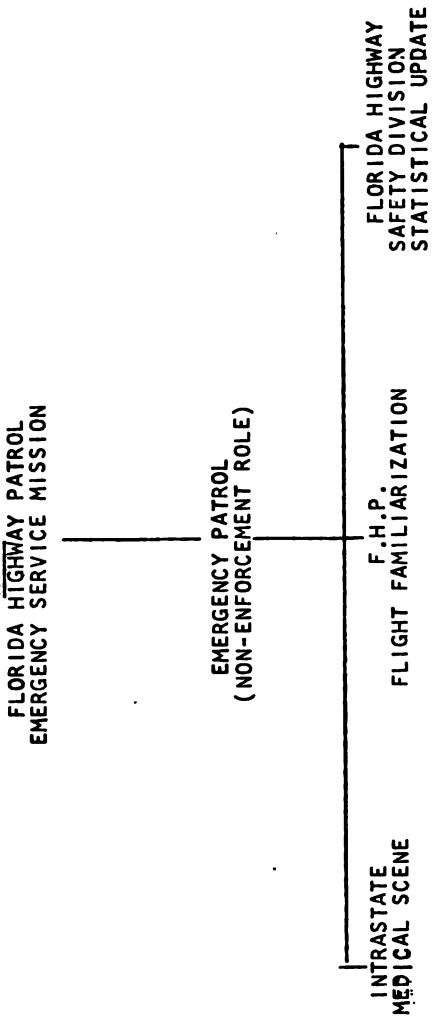

CHART 6. HERS FLORIDA HIGHWAY PATROL
EMERGENCY SERVICE MISSION

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HELICOPTER EMERGENCY RESCUE SERVICE

ANNUAL PROJECTED BUDGET

FLORIDA STATE-WIDE PROGRAM

I	ADMINISTRATIVE PERSONNEL			$489,600.00
	EXECUTIVE OFFICERS			$86,000.00
	PRESIDENT (1) ($20M) *		$20,000.00	
	VICE PRESIDENT (4)($16.5M) *		66,000.00	
	* INDICATES FULL EXPENSE ACCOUNT			
	ADMINISTRATIVE OFFICERS			$216,600.00
	STATE FLIGHT OPS DIRECTOR	(1) ($13.8M)	13,800.00	
	STATE EMT DIRECTOR	(1) ($13.8M)	13,800.00	
	REGIONAL FLT OPS DIRECTOR	(7) ($12.5M)	87,500.00	
	REGIONAL EMT DIRECTOR	(7) ($12.5M)	87,500.00	
	MAINTENANCE DIRECTOR	(1) ($14M)	14,000.00	
	COMMUNICATION PERSONNEL			$126,000.00
	REGIONAL DISPATCHER	(14) ($9M)	$126,000.00	
	CLERICAL PERSONNEL			$61,000.00
	ADP PERSONNEL	(2) ($12M)	$24,000.00	
	SECRETARY	(2) ($10.5M)	21,000.00	
	ADMINISTRATIVE CLERK	(2) ($8M)	16,000.00	
II	FLIGHT PERSONNEL			
	PLAN "A" (FEDERAL EQUIPMENT-(12) BELL UH-1D/H, (12) HUGHES OH-6A, (4) SIKORSKY CH-3C)			$1,800,000.00
	PILOT	(88) ($12M)	$1,056,000.00	
	PARAMEDIC (EMT)	(56) ($12M)	672,000.00	
	CREW CHIEF	(8) ($9M)	72,000.00	
	PLAN "B" (HERS CONTRACT AIRCRAFT (20) HUGHES 500C)			$816,000.00
	PILOT	(34) ($12M),	$408,000.00	

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	PARAMEDIC (EMT)	(34) ($12M)	$408,000.00	
III	MAINTENANCE PERSONNEL			
	PLAN "A"			$150,000.00
	MECHANICS	(15) ($10M)	$150,000.00	
	PLAN "B"			$70,000.00
	MECHANICS	(7) ($10M)	$70,000.00	
IV	FACILITIES			$319,000.00
	SATELLITE OPERATIONS UNITS **	(18) ($15.5M)	$279,000.00	
	MAIN OFFICE EQUIPMENT		$40,000.00	
	MAINTENANCE FACILITY (NOT DETERMINED AT THIS TIME)			
	** ONE TIME COST			
V	TRAINING			
	AIR CREW EMT TRAINING PLAN "A" - NOT AVAILABLE			
	PLAN "B" - NOT AVAILABLE			
VI	ADMINISTRATIVE CONTINGENCY FUND			
	TRAVEL, INSURANCE, GENERAL $ ADMINISTRATIVE COSTS			$250,000.00
VII	EQUIPMENT COSTING			$2,027,792.80
	PLAN "A" -NONE, FEDERALLY ASSIGNED.			
	PLAN "B" -AIRCRAFT INSURANCE, DEPRECIATION, ENCUMBRANCES		$53,649.64	
	FLIGHT RATE PER HOUR @ $38.00 (INCLUDES CONSUMABLE PARTS AND FUEL, ANTICIPATED DAILY USE, 2 HRS PER A/C)		$27,740.00	
	SERVICE RATE		$20,000.00	
	TOTAL PER AIRCRAFT		$101,389.54	
	TIMES TWENTY AIRCRAFT		$2,027,792.80	
	PLAN "A" TOTAL COSTS			$3,008,600.00
	PLAN "B" TOTAL COSTS			$3,972,392.80

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OPERATING POLICY

HERS, INC. PROPOSES TO OPERATE IN CONJUNCTION WITH EXISTING EMERGENCY RESCUE SERVICES, EMERGENCY MEDICAL SERVICES, CIVIL DEFENSE AND LAW ENFORCEMENT AGENCIES WITHIN THE STATE.

PROCEDURES FOR AUGMENTATION OF SERVICES WITH THOSE OF OTHER CIVIL AND MILITARY RESCUE UNITS WILL BE COORDINATED TO INSURE MAXIMUM BENEFIT TO THE AREA EFFECTED. THE ESTABLISHMENT OF CENTRAL EMERGENCY RESCUE SERVICE CENTERS WILL BE ONE OF THE MAJOR PRIORITIES TOWARD EFFECTIVE RESCUE SERVICE WITHIN EACH EMS REGION AND THE STATE. COORDINATION OF COMMUNICATIONS TO BE UTILIZED FOR EMERGENCY SERVICES BETWEEN HOSPITALS WITHIN EACH STATE EMS REGION WILL HAVE A HIGH PRIORITY.

PERSONS OR ORGANIZATIONS RECEIVING HERS SERVICES WILL NOT BE CHARGED FOR THE SERVICE. (REFER TO "FUNDING", P. 9)

NECESSARY EMERGENCY MEDICAL RESCUE SERVICE, TO THE MAXIMUM DEGREE FEASIBLE BY HERS, WILL BE PROVIDED TO ALL VICTIMS REQUIRING SERVICE AND SHALL BE PROVIDED WITHOUT REGARD TO, OR PRIOR INQUIRY AS TO, ABILITY TO PAY.

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OPERATIONS

MISSION PRIORITIES

HERS, INC., A FLORIDA FOUNDED, PRIVATE, NON-PROFIT, CHARITABLE CORPORATION WILL BE GUIDED IN PERFORMANCE BY THE FOLLOWING MISSION PRIORITIES:

A. PRIMARY MISSION - TO PROVIDE "REAL-TIME", EFFECTIVE AIRBORNE EMERGENCY RESCUE SERVICE FOR PERSONS OR ORGANIZATIONS REQUIRING MEDEVAC ACTIVITY OR MERCY MISSIONS.

B. SECONDARY MISSION - TO PROVIDE EMERGENCY SERVICE IN AUGMENTATION OF OTHER ORGANIZATIONS AT THE LOCAL, STATE AND FEDERAL LEVEL UPON OFFICIAL REQUEST

C. TERTIARY MISSION - TO ANSWER ALL CALLS OF GENERAL NATURE IN SERVICE TO PEOPLE AND COMMUNITY, INCLUDING MEDICALLY AND SUPPORT RELATED SERVICES FOR PERSONS OR ORGANIZATIONS REQUIRING SUCH EMERGENCY SERVICE.

MEDICAL EVACUATION

A. CLASSIFICATION OF MEDEVACS. REQUESTS FOR MEDEVAC WILL BE RECEIVED AND APPROVED BY HERS, INC. IN COOPERATION WITH OTHER RESCUE SERVICES AND TRANSMITTED TO STRATEGIC OPERATIONAL FIELD UNITS (HOT PADS) FOR RESPONSE UNDER THE FOLLOWING CLASSIFICATIONS:

(1) EMERGENCY - STABILIZATION AND/OR EVACUATION OF CRITICALLY WOUNDED, INJURED OR ILL PERSONS FOR WHOM IMMEDIATE ATTENTION IS A MATTER OF LIFE OR DEATH.

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(2) PRIORITY - STABILIZATION AND/OR EVACUATION OF SERIOUSLY INJURED OR ILL PERSONNEL WHO REQUIRE EARLY HOSPITALIZATION, BUT WHOSE IMMEDIATE NEEDS ARE NOT A MATTER OF LIFE OR DEATH.

(3) ROUTINE - EVACUATION OF DECEASED PERSONS, A PATIENT WITH A MINOR ILLNESS, OR A PATIENT REQUIRING TRANSFER FROM ONE MEDICAL FACILITY TO ANOTHER FOR FURTHER TREATMENT. THE ALERT HELICOPTER WILL NOT BE SCRAMBLED FOR A ROUTINE MISSION IF SIMILAR EQUIPMENT CAN BE PROVIDED WITHIN A REASONABLE PERIOD OF TIME OR IF OTHER MEANS OF TRANSFER CAN BE USED.

COMMAND CONTROL

COMMAND CONTROL OF ALL HERS UNITS AND EQUIPMENT WILL REMAIN UNDER DIRECT CONTROL OF HERS, INC. (BANDAID BASE), AND PRIORITIES WILL BE ASSIGNED TO HOT PAD UNITS VIA HERS CONTROL (BANDAID BASE) UPON RECEIPT OF A REQUEST FOR ACTION THROUGH THE REGIONAL EMS EMERGENCY CONTROL CENTER. UNDER NO CIRCUMSTANCES WILL FLIGHT PERSONNEL BE DIRECTED BY AN OUTSIDE SOURCE TO ALTER OR DEVIATE FROM THE ASSIGNED MISSION PRIORITY. ANY CHANGING MEDICAL SITUATION, EITHER GROUND OR AIRBORNE, WHICH REQUIRES A CHANGE IN PRIORITY, WILL BE PASSED THROUGH HERS CONTROL (BANDAID BASE) RADIO NET FOR COORDINATED ACTION. SILENCE REPRESENTS CONSENT. OPERATIONAL CONTROL OF EACH AIRCRAFT IS THE DIRECT RESPONSIBILITY OF THE ASSIGNED FLIGHT CREW AND SAFETY OF FLIGHT DECISIONS BY THE COMMAND PILOT ARE FINAL.

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GENERAL PROCEDURES

A. PLANNING. ALL PLANNING INFORMATION AND PROCEDURES FOR THE AREA INVOLVED WILL BE COORDINATED WITH CIVIL AND MILITARY AUTHORITIES IN ACCORDANCE WITH EXISTING DIRECTIVES AND REQUIREMENTS. HERS WILL CONDUCT A REVIEW OF CURRENT AND PROPOSED LEGISLATION CONCERNING EMS AND PREVENT DUPLICATION OF EFFORT BY REVIEWING SAME FOR AMENDMENT OR ADDITIONAL REQUIREMENTS.

B. NAVIGATION. ALL CONTROL POINTS, CORRIDORS, APPROACH AND DEPARTURE LANES, ORBIT POINTS, DIRECTION OF ORBITS, ALTITUDES, KNOWN LANDING ZONES (PADS), ETC. WILL BE COORDINATED WITH APPROPRIATE AGENCIES TO AVOID DELAYS AND ENHANCE SAFETY.

C. NAVIGATIONAL AIDS. ALL KNOWN AIDS IN THE AREA OF OPERATIONS (AO) WILL BE UTILIZED TO ENSURE MISSION EXPEDIENCY AND SAFETY.

(1) HERS CONTROL WILL PROVIDE GRID INFORMATION AND BEARING AND DISTANCE INFORMATION FROM KNOWN POINTS.

(2) ON-THE-SCENE OFFICIALS CAN DIRECT THE HELO BY MAINTAINING RADIO CONTACT FROM HOT PAD DEPARTURE TO ARRIVAL AT THE PICK-UP AREA.

(3) ELECTRONIC LOCATING TRANSMITTING DEVICES (ELTS) WILL BE USED WHEN POSSIBLE. VISIBLE MEANS TO ATTRACT THE MEDEVAC MISSION SUCH AS MIRRORS, LIGHTS, PANELS AND SMOKE ARE ALSO RECOMMENDED. PUBLIC DISSEMINATION OF SUCH INFORMATION SHOULD BE CARRIED OUT THROUGH

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PUBLIC MEDIA FACETS.

D. COMMUNICATIONS. THE COMMUNICATION SYSTEM WITHIN HERS WILL PROVIDE FOR CROSS-FREQUENCY PATCHING CAPABILITY, WILL HAVE A CENTRAL, AREA-WIDE COMMUNICATION NETWORK, WILL BE ABLE TO ACCEPT DIRECTIONAL GUIDANCE FROM OTHER APPROPRIATE AREA, STATE AND NATIONAL NETWORKS AND SHALL PROVIDE FOR VOICE, TELEMETRY OR OTHER ELECTRONIC MEANS FOR TRANSMISSION OF INFORMATION BETWEEN INDIVIDUAL HERS UNITS AND COOPERATING AGENCIES. OPERATING PROCEDURES WILL CONFORM WITH ESTABLISHED ONES AND WILL BE COORDINATED THROUGH APPROPRIATE AGENCIES FOR ALL OPERATIONS. CALL SIGN FOR ALL HERS UNITS WILL BE BANDAID. HERS CONTROL WILL BE DESIGNATED BANDAID BASE AND AIRCRAFT WILL USE NUMERICAL DESIGNATORS TO IDENTIFY EMS REGION AND HOT PAD ASSIGNED. EXAMPLE: BANDAID 21 WOULD BE THE PRIMARY AIRCRAFT FROM THE TALLAHASSEE (REGION 2) HOT PAD.

E. MEDICAL PERSONNEL. AN EMT CERTIFICATED PILOT AND PARAMEDIC WILL FLY EVERY MISSION, WILL NORMALLY BE GUIDED IN THEIR PERFORMANCE BY A LICENSED PHYSICIAN OR REGISTERED NURSE IN AT LEAST VOICE CONTACT FROM THE HOSPITAL TO WHICH THE VICTIM IS BEING TRANSPORTED AND WILL BE FURTHER MEDICALLY GUIDED BY SELECTED MEDICAL REPRESENTATIVES WITHIN THE EMERGENCY RESCUE COORDINATION CENTER. THE CREW WILL ASSIST ANY PHYSICIAN WHO MIGHT BE IN ACCOMPANYMENT OF THE PATIENT(S) ABOARD.

F. TRAINING. HERS AIR CREWS WILL UNDERGO EMT TRAINING IN A PROGRAM DESIGNED TO CONTINUE THE EDUCATION OF THOSE

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INDIVIDUALS WITH EMPHASIS AND PRIORITY FOR THE RECRUITMENT OF THE ARMED FORCES VETERANS OF THE UNITED STATES WITH PRIOR TRAINING AND/OR EXPERIENCE IN THE HEALTH CARE FIELD. OPERATION M.E.D.I.H.C. (MILITARY EXPERIENCE DIRECTED INTO HEALTH CAREERS) AND PROJECT TRANSITION WILL CONTINUE TO BE PRIME SOURCES FOR PERSONNEL.

THERE WILL BE A CONTINUING EDUCATION EFFORT OF HERS PERSONNEL IN THE PROVISION OF EMERGENCY MEDICAL SERVICES TO VICTIMS OF ACCIDENTS OR SUDDEN ILLNESSES. CLINICAL TRAINING WILL CONSTITUTE AT LEAST FIFTY PER CENT OF SUCH TRAINING.

SELECTED MEDICAL ADVISORS WHO DESIRE TO FLY WITH HERS WILL BE ACTING AS SUPPORTING MEMBERS OF THE ORGANIZATION AND HAVE FULL AUTHORITY TO DIRECT THE MEDICAL SCENE. TWO-WAY RADIO CONTACT WILL BE MAINTAINED AND RECORDED WITH THE RECEIVING MEDICAL FACILITY AT ALL TIMES AND VITAL SIGN INFORMATION WILL BE ELECTRICALLY TRANSMITTED FOR READOUT, WHEN APPLICABLE, TO THOSE LOCATIONS WITH COMPATIBLE EQUIPMENT. EFFORTS WILL BE MADE TO ENSURE THAT ALL FACILITIES WITH WHICH HERS SERVES SHALL HAVE SUCH MONITORING CAPABILITIES.

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SITES

HERS UNITS OPERATE FROM HOT PADS SELECTED TO ENSURE THE BEST OVERALL COVERAGE FOR THE GEOGRAPHICAL AREA AND POPULATION DENSITY REPRESENTED. EACH SPECIFIC STATE-WIDE PLAN WILL BE TAILORED TO ITS SPECIFIC NEEDS IN TERMS OF PAD LOCATIONS AND NUMBERS OF PERSONNEL EMPLOYED. THE HERS PLAN FOR FLORIDA PROPOSES A MINIMUM OF SEVENTEEN (17) SITES WITHIN THE STATE. ADDITIONAL CONSIDERATIONS FOR SITE LOCATIONS ARE THE GENERAL AND COMMERCIAL AVIATION TRAFFIC AND OPERATIONS WHICH MIGHT REALIZE AN INHERENT SAFETY BENEFIT AND THE LOCATIONS OF EXISTING RESCUE ORGANIZATIONS AND THEIR ABILITY TO RESPOND TO THE NEEDS OF THE TERRITORY SURROUNDING THEM.

HELIPADS

EFFORTS WILL BE COORDINATED TO ENSURE THAT ALL HOSPITALS PARTICIPATING WITH HERS IN THE EMERGENCY RESCUE EFFORT WILL HAVE ADEQUATE LANDING FACILITIES AND THEIR CONSTRUCTION AND USE WILL BE IN COMPLIANCE WITH REGULATORY REQUIREMENTS.

STRATEGIC EMERGENCY SERVICE FACILITIES

HERS PLANS TO PROVIDE, WHEN REQUIRED, FOR EMERGENCY MEDICAL SERVICE FACILITIES IN THE FORM OF SATELLITE UNITS SIMILAR TO THE HERS EMERGENCY RESCUE OPERATIONAL SATELLITES. THESE UNITS WILL BE DEPLOYED IN AREAS WITH NEED AND IN COORDINATION WITH STATE PLANNING OFFICIALS AND APPROPRIATE MEDICAL ADVISORY PARTICIPATION. THE UNITS WILL BECOME A PART OF THE HERS RESPONSE NET AND WILL BE MANNED BY HERS ADVISORY STAFF AND PERSONNEL.

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CONSIDERATIONS

PROGRAM AREAS ON WHICH ATTENTION MUST, AND WILL BE FOCUSED ARE THOSE DEALING WITH:

EMERGENCY MEDICAL SERVICES (EMS)

EMERGENCY MEDICAL TECHNICIAN (EMT)

AIR CREW READINESS

EQUIPMENT UTILIZATION AND MAINTENANCE

EMERGENCY MEDICAL SERVICES

AS A NATIONAL PILOT STUDY, THE HERS PROGRAM WILL:

(1) PROVIDE FOR THE AIRBORNE TRANSPORTATION SYSTEM FOR THE STATE SERVED IN EMERGENCY MEDICAL SERVICES.

(2) PROVIDE EMERGENCY ACCESS TO AND FROM SPECIALIZED CRITICAL MEDICAL CARE UNITS IN THE AREA IN THE FORM OF TRANSPORTATION AND ENROUTE CARE.

(3) COOPERATE WITH THE DRAFTING OF LEGISLATION WHICH WILL INDEMNIFY THE EMT AND THE PHYSICIAN OR PROFESSIONAL NURSE WHICH INSTRUCTS THAT EMT THROUGH AT LEAST VOICE CONTACT.

(4) PROVIDE AN OPERATIONAL PLAN FOR THE IMPLEMENTATION OF THE PROGRAM FOR EMERGENCY MEDICAL RESCUE SERVICE DURING MASS CASUALTIES, NATURAL DISASTERS, OR NATIONAL EMERGENCIES. SUCH RESPONSES WILL BE DEVELOPED IN FULL COORDINATION WITH APPROPRIATE STATE AND FEDERAL AGENCIES.

(5) PROVIDE FOR PERIODIC, COMPREHENSIVE AND INDEPENDENT REVIEW AND EVALUATION OF THE SERVICES PROVIDED.

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(6) PROVIDE VETERANS WITH TRAINING IN MEDICAL TECHNICIAN FIELDS AND AS PHYSICIAN ASSISTANTS.

(7) PROVIDE SERVICE TO RESPOND TO THE REQUIREMENTS FOR AIRPORT DISASTER PLANS IN RESPONSE TO SPECIFIC AIRPORT NEEDS AS DETERMINED IN COORDINATION WITH FAA, AIRLINE PILOTS ASSOCIATION (ALPA) AND AIRPORT AUTHORITIES.

(8) CONFIRM PRESENT THEORIES OF OPERATION.

(9) ESTABLISH NEW CONCEPTS IN CIVILIAN ROLES, IN ADDITION TO PROVIDING CROSS-CHECKS ON PROGRAMS ELSEWHERE.

(10) ELIMINATE UNTENABLE CONCEPTS AND PRACTICES.

(11) COORDINATE ALL RESCUE SERVICES INTO A TRUE SERVICEABILITY ROLE.

EMERGENCY MEDICAL TECHNICIAN

THE EMT CERTIFIED PILOT OR PARAMEDIC EMPLOYED BY HERS CAN ASSIST THE LOCAL EMT REPRESENTATIVE IN OTHER RESCUE UNITS IN UNDERSTANDING THE AREA OF AERIAL OPERATIONS TO THE EXTENT THAT, IF REQUIRED, HERS CAN CONDUCT FLIGHT FAMILIARIZATION TRAINING FOR THOSE DESIRING SAME.

EMERGENCY PHYSICIANS DESIRING TO WORK IN THE FIELD WITH HERS CAN RECEIVE FLIGHT FAMILIARIZATION AND DESIGNATION AS AIRBORNE QUALIFIED AFTER A SPECIFIC NUMBER OF HOURS AND MISSIONS OF VARIOUS TYPES.

LOCAL MEDICAL AND STATE EDUCATIONAL INSTITUIONS CAN BE EMBRACED TOWARD FULLY DEVELOPING THE EMT PROGRAM.

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LAW ENFORCEMENT AGENCIES CAN DEVELOP PERSONNEL IN MUCH THE SAME MANNER AS THE PHYSICIAN, PRECLUDING NEEDLESS WASTE OF TIME AND DUPLICATION OF EFFORT IN THEIR FLIGHT PROGRAMS FOR EMERGENCY SERVICE RESPONSE.

AIR CREW READINESS

AN AIRCREW WILL BE ON IMMEDIATE STANDBY TWENTY-FOUR HOURS DAILY AT EACH HOT PAD LOCATION. PILOTS, PARAMEDICS AND AN OPERATIONS CREW WHICH INCLUDES A DISPATCHER WILL BE MAINTAINED TO PROVIDE INSTANT REACTION TO ALL EMERGENCY RESCUE SERVICE REQUIREMENTS. IT IS NOT INTENDED FOR HERS AIRCRAFT TO OPERATE FROM A PATROL BASIS. AIRCRAFT WILL BE ELECTRICALLY "EXCITED" TO PROVIDE IMMEDIATE STARTING CAPABILITY. DUTY AIR CREWS WILL BE IN A STATE OF READINESS AT ALL TIMES. HERS AIRCRAFT DISPATCH SIGNALS WILL BE CATEGORIZED IN NUMERICAL FORM AS ARE LAW ENFORCEMENT SIGNALS TO EXPEDITE INFORMATION. TYPE OF INCIDENT, DIRECTION AND LOCATION WILL BE THE INITIAL INFORMATION GIVEN AIRCREWS, WITH ADDITIONAL DATA FORTHCOMING ONCE AIRBORNE. MILITARY COMPETENCY FOR AIRCREWS WITH HERS WILL THEREBY BE MAINTAINED FOR READY SERVICE IN THE EVENT OF A NATIONAL EMERGENCY, WHILE TAXPAYER EXPENSE IS NOT INCREASED. A MILITARY RESERVE STATUS WILL BE ENCOURAGED FOR CREWS BY HERS, INC.

VETERANS WILL BE ENCOURAGED TO OBTAIN FAA CERTIFICATES IN THE MAINTENANCE FIELDS OF AIRFRAMES AND POWERPLANTS, WITH

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SUPERVISION PERFORMED BY CERTIFICATED PERSONNEL. IN MOST INSTANCES, TIME SPENT IN TRAINING AND ON-THE-JOB EFFORTS WHILE IN SERVICE, WILL BE APPLIED TOWARD THE QUALIFICATION FOR THE CERTIFICATE. THIS TOO, REPRESENTS A SAVINGS OF VALUABLE TAX DOLLARS SPENT ON THE INDIVIDUAL'S MILITARY TRAINING BY PREVENTING THE SKILLS FROM GOING UNUSED.

EQUIPMENT UTILIZATION AND MAINTENANCE

EQUIPMENT PROVIDED UNDER PLAN "A" (FEDERAL ASSIGNMENT OF AIRCRAFT AND SUPPORT EQUIPMENT) WOULD BE MAINTAINED IN STRICT CONFORMITY WITH MILITARY STANDARDS AND WOULD BE PERIODICALLY INSPECTED BY COMMANDS REPRESENTING THE SERVICE TO WHOM THE EQUIPMENT WAS TITLED, OR INVENTORIED. THIS WOULD INCLUDE THE AIRCRAFT AND ANY SUPPORT EQUIPMENT SO PROVIDED. MAINTENANCE PERSONNEL WILL BE A&P SUPERVISED.

EQUIPMENT PROVIDED UNDER PLAN "B" (LEASED AIRCRAFT) WOULD BE UNDER THE REGULATORY AUSPICES OF THE FAA AND WOULD BE SUBJECT TO THOSE RULES OF OPERATION. SINCE THESE HELICOPTERS WOULD BE COMMERCIAL VERSIONS, THEY WOULD BE MAINTAINED UNDER FAA AND MANUFACTURER PROGRAMS. THE PERSONNEL IN THIS MAINTENANCE PROGRAM WOULD BE A&P RATED.

BASIC ON-BOARD MISSION EQUIPMENT WILL CONSIST OF NOT LESS THAN: OXYGEN, I.V., DF. EKG MONITORING, APPROVED ASSORTED MEDICAL EQUIPMENT, METAL CUTTING AXE, LIFE PRESERVERS,

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PORTABLE LIGHT, MACHETTE, NYLON CORD, HAND CROWBAR, FIRE EXTINGUISHER, FOUR (4) COLORED SMOKE BOMBS.

METHODS OF RECORDING PATIENT DATA

A STANDARDIZED PATIENT RECORD-KEEPING SYSTEM WILL BE MAINTAINED THAT WILL INCLUDE INFORMATION REGARDING THE INITIAL INPUT OF DATA CONCERNING THE VICTIM INTO THE SYSTEM AND TREATMENT PROVIDED, BOTH FIRST AID AND THAT UNDER APPROPRIATE GUIDANCE. DATA WILL BE RETRIEVABLE IN TAPE AND ADP FORM.

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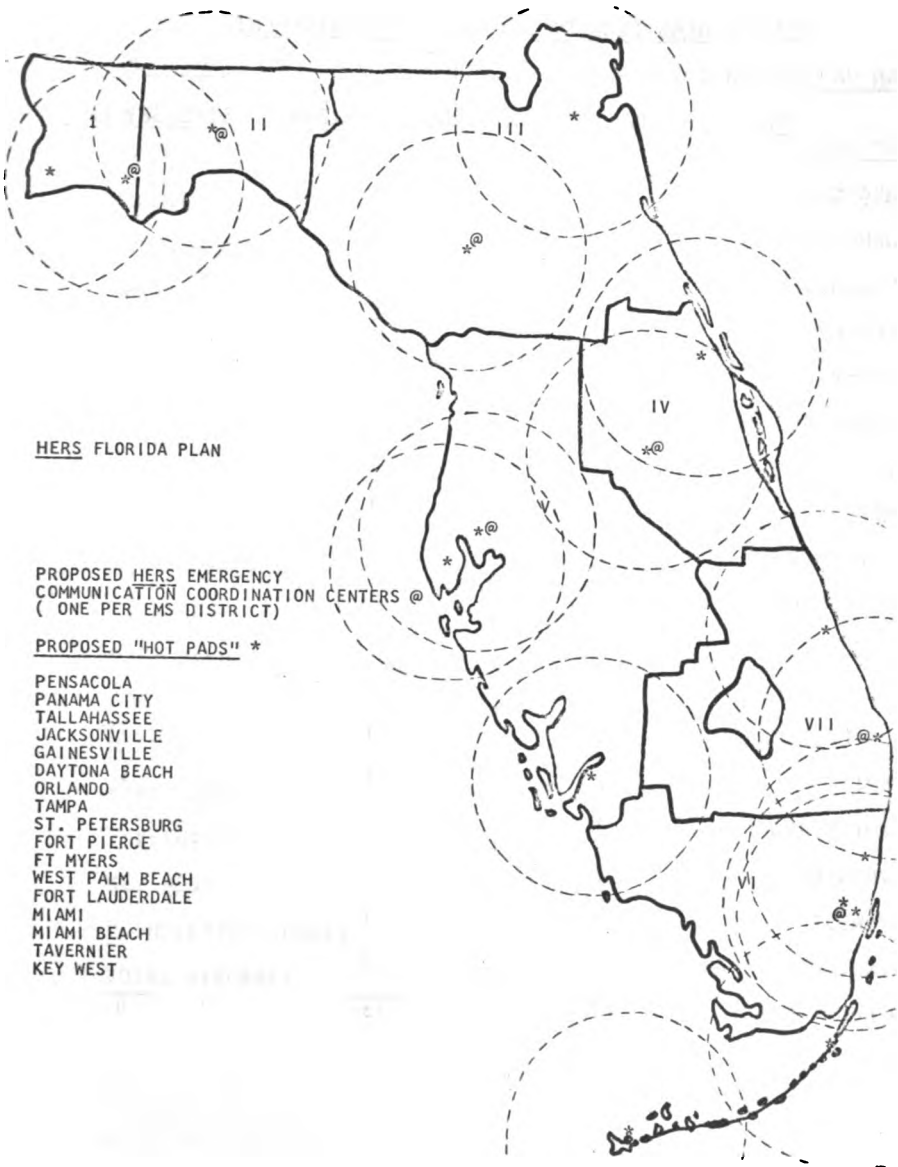

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HERS FLORIDA HELICOPTER REQUIREMENT

PLAN "A" (FEDERAL EQUIPMENT "ASSIGNED")

TYPE "HOT PAD"	HUGHES OH-6A	BELL UH-1D/H	SIKORSKY CH-3/53
PENSACOLA	1		
PANAMA CITY		1	
TALLAHASSEE		1	
JACKSONVILLE		1	1
GAINESVILLE		1	
DAYTONA BEACH	1		
ORLANDO	1	1	
TAMPA		1	1
ST PETERSBURG	1		
FORT PIERCE	1		
FT MYERS		1	
WEST PALM BEACH		1	
FORT LAUDERDALE	1	1	1*
MIAMI	2	1	1
MIAMI BEACH	1		
TAVERNIER	1		
KEY WEST	1	1	
* INDICATES SPARES	2	2	
TOTAL AIRCRAFT	13	13	4

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HERS FLORIDA HELICOPTER REQUIREMENT

PLAN "B" (PRIVATE, LEASED AIRCRAFT)

"HOT PAD" TYPE A/C	HUGHES 500C
PENSACOLA	1
PANAMA CITY	1
TALLAHASSEE	1
JACKSONVILLE	1
GAINESVILLE	1
DAYTONA BEACH	1
ORLANDO	1
TAMPA	1
ST PETERSBURG	1
FORT PIERCE	1
FT MYERS	1
WEST PALM BEACH	1
FORT LAUDERDALE	1
MIAMI	1
MIAMI BEACH	1
TAVERNIER	1
KEY WEST	1
*: INDICATES SPARES	3
TOTAL AIRCRAFT	20

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(Hold Page Numbers Forward)

FORT LAUDERDALE, FLORIDA JAYCEES

RESOLUTION

RESOLVED: HELICOPTER EMERGENCY RESCUE SERVICE, INC. (HERS) is a private, non-profit, charitable corporation dedicated to the humanitarian effort of providing coordinated EMERGENCY MEDICAL SERVICES (EMS) to any individual or individuals without regard of the individual's ability to pay for such services, and

WHEREAS: Under no circumstances will anyone be obligated to remunerate HERS, and

WHEREAS: An information letter will be presented to individuals receiving HERS' services which shall describe incurred costs for which a tax deductible contribution may be offered to HERS at any amount the recipient may so choose to donate, and

WHEREAS: It is toward the goal of "real-time" response that HERS will strive to provide:

(1) Faster, more efficient means of bringing together medical aid and victim

(2) Twenty-four hour rescue service originating from "hot pads" strategically located at commercial and municipal airports

(3) Commercial and general aviation a greater expansion of professional safety services to satisfy requirements for aerodrome, commercial air and community rescue in response to Federal Aviation Administration (FAA) Airport Disaster Plans and in instances of individual passenger needs

(4) Effective, well coordinated rescue services in relief of the many emergency situations that arise daily through systematic utilization of communication centers

(5) An end to needless waiting and suffering that too many victims endure before stabilization treatment arrives, and

WHEREAS: The significance of the implementation of HERS program is that it would involve neither creation of a costly new government agency with massive equipment outlays, nor centralized, bureaucratic direction which robs such operations of the flexibility necessary to meet unique local needs, and

WHEREAS: HERS personnel will be drawn from the ranks of veterans who have been trained in the required fields by the American taxpayer for a war effort, and

WHEREAS: Pilots and paramedics will be trained as EMERGENCY MEDICAL TECHNICIANS (EMT) and will be state certified, and

WHEREAS: Mechanics will be able to receive VA approved training to enable them to acquire FAA Airframe and/or Powerplant licenses through on-the-job training under senior FAA certified mechanics, and

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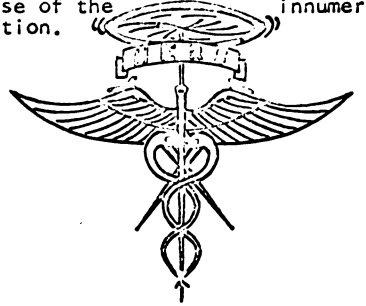
WHEREAS: Disabled veterans will perform as communication dispatchers, and

WHEREAS: The acquisition of equipment which HERS considers as most economically feasible would be the "assignment" of required equipment from Federal inventories to HERS or the State, and

WHEREAS: This equipment is currently "in excess" of active military requirements due to the withdrawel from a wartime role, and

WHEREAS: There can be no better usage of a limited quantity of these previously tax funded, trained veterans, helicopters and associated equipment than to employ them in a humanitarian, public service, life-saving role in America for Americans, in PEACE

BE IT RESOLVED: FORT LAUDERDALE, FLORIDA JAYCEES unanimously urges the adoption and implementation of the HERS Program, because of the innumerable benefits listed in this Resolution.



ACCEPTED this 21st day of February, 1973.

Robert [illegible] PRESIDENT

Edward [illegible] V.P.

[illegible] V.P.

[illegible] Secy.

For any additional information contact:

Jack Handley, Director
134 N.W. 69th Street
Fort Lauderdale, Florida

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Senator KENNEDY. Our next witness is Roman Galasinski, M.D., of Milwaukee, Wis., a surgeon in the active practice of medicine. He speaks to us on behalf of the American Medical Association.

STATEMENT OF ROMAN E. GALASINSKI, M.D., AMERICAN MEDICAL ASSOCIATION, ACCOMPANIED BY WILLIAM BURNETT AND HARRY N. PETERSON

Dr. GALASINSKI. Thank you, Mr. Chairman, and members of the subcommittee.

I am Dr. Roman E. Galasinski of Milwaukee, Wis., a surgeon in the active practice of medicine and I serve as chairman of the Committee on Community Emergency Services of the American Medical Association. Accompanying me is Mr. Harry N. Peterson, director of the association's legislative department, and Mr. William Burnett, secretary of our committee. We are pleased to have the opportunity to offer the association's views on the subject of emergency medical services, which is now being considered by your subcommittee.

The newspapers, television, and radio bring us countless reports of carnage on our highways, rail, and air accidents, violence in our communities, and natural disasters, all bearing witness to the need for life-supportive care on an emergency basis. Beyond those instances which are reported by the media, there are the thousands of heart attacks, strokes, industrial and home accidents, and sudden illnesses which call upon a community's emergency medical care resources.

In a recent report of the Committee on Emergency Medical Services, of the National Research Council, titled, "Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services," the foregoing incidents are brought into sharp focus by the following excerpt:

> Accidental injury and acute illness generate a staggering demand on ambulance and rescue services, allied health personnel, physicians, and hospitals for the delivery of emergency medical services. Accidental injury is the leading cause of death among all persons aged 1 to 38. Each year more than 52 million U.S. citizens are injured, of whom more than 110,000 die, 11 million require bed care for a day or more, and 400,000 suffer lasting disability at a cost of nearly $3 billion in medical fees and hospital expenses and over $7 billion in lost wages. Those requiring hospitalization occupy an average of 65,000 beds for 22 million bed-days under the care of 88,000 hospital personnel. This hospital load is equivalent to 130 500-bed hospitals. Of the more than 700,000 deaths from heart disease each year, the majority are due to acute myocardial infarction and more than half of these deaths occur before reaching the hospital. Approximately 40 million persons seek care each year in hospital emergency departments as a result of accidents, heart disease, stroke, poisoning, diabetic coma, convulsive disorders, and many other illnesses.

The need for the development and improvement of emergency medical services throughout our country is well documented. The interest of this committee in seeking to accomplish this goal is indeed laudatory. Let me say very emphatically that the medical profession also desires to achieve this objective.

The American Medical Association has long been interested in emergency medical care. During the period from 1955 to 1970 the AMA Committee on Disaster Medical Care dealt with problems associated with medical care for the victims of natural or other disasters.

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In 1967, the association organized its commission on emergency medical services. The commission since then has acted as a coordinating body to deal with problems relating to emergency medical service systems. The commission represents 12 medical organizations that have a specific interest in emergency medical services.

In 1970, the association established its committee on community emergency services. This committee incorporates the role of disaster planning into the total community plan for emergency medical services. It has taken the initiative to encourage all State and local medical societies to stimulate the development of an improved and expanded emergency medical service system for their community. In addition, the committee has encouraged and promoted community assistance through Federal legislation. We will comment on this legislation in a few moments.

In November of 1971, the House of Delegates of the American Medical Association, emphasizing the urgent need for improvement of emergency medical services, recommended that the following activities should be implemented at the local, regional, State, and national level.

(1) The AMA, State, and local medical societies, and medical specialty societies should assign a high priority to improving the emergency medical service system throughout the Nation. Those medical societies that have not already done so are urged to establish councils on emergency medical services or to assign that subject area to an appropriate existing council, whose responsibility should include developing action-programs in emergency medical services to meet their area's needs and maintaining liaison with groups at all levels of organized medicine concerned with emergency medical services.

(2) Provision of emergency services in rural areas and in small communities presents particularly acute problems of accessibility and availability. Those communities that do not have the necessary resources to develop and support their own emergency medical service system should consider linking together with surrounding communities to form a regional system. Such a regional system may include a single county, part of a county, or a multicounty area. Emergency medical service councils should, similarly, be developed on a regional basis.

(3) Emergency medical service programs will vary according to the resources and needs of each area, but each must have the following basic component—this is very important—(*a*) well-equipped emergency vehicles staffed by emergency medical services technicians, trained and equipped to provide all necessary life support at the scene and during transportation; (*b*) a communications system that assures prompt response to the need; (*c*) high quality emergency care facilities, staff, and equipment at the hospital level; and (*d*) first-aid training programs that reach large numbers of area residents. Programs should identify and retain those existing elements that are satisfactory, adding to the delivery system whatever is needed.

(4) Plans for emergency medical services developed by councils on emergency medical services should be coordinated with plans of local, regional, and State planning agencies. The medical profession in each area should assume responsibility for providing medical leadership to these planning agencies.

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(5) The medical profession in each area must strive to see that emergency medical services are adequate to meet the needs of the community or region and that the quality is evaluated periodically through systems of inspection, certification of personnel, and other quality control measures. If inadequacies are found, the emergency services committees should make recommendations for remedial actions and, in cooperation with other concerned groups and individuals, find ways to implement these actions.

(6) At the Federal level, it is recommended that there be a single agency with responsibility for all governmental efforts to improve emergency medical services. This agency should have sufficient manpower and finances to coordinate the Federal activities and to assist local, regional, and State groups to plan and implement action-programs to serve the emergency medical service needs of the entire Nation.

The foregoing statement of our House of Delegates clearly indicates that the improvement of emergency medical services throughout our Nation is a major program priority with the American Medical Association. Following this action the Association undertook the formulation of a legislative program, which resulted in the introduction of the Emergency Medical Services System Act in the last Congress. Mr. Chairman, we are pleased to state that additional refinements have been made to this proposal which was just introduced as S. 654 and referred to this committee.

Mr. Chairman, your committee also has before it S. 504, the Emergency Medical Services Systems Development Act of 1973, a bill which is similar to S. 3716 which was adopted by the Senate last year but which failed to be enacted into law.

As we understand S. 504, it would continue for 3 years the authorization in the Hill-Burton program for the Secretary of HEW to make grants for the construction or modernization of emergency rooms. In addition, it creates new authorization for emergency medical services systems. Under the latter, funds could be used for construction, training and manpower development, communications, transportation, public education, coordination of services and facilities, and such other activities as are necessary to implement a community's or area's approved plan for comprehensive and coordinated emergency medical services. Such a community plan would include many elements essential in establishing a forward-looking and responsive emergency medical service program.

It must be pointed out that while hospitals provide the continuum of care of the emergency patient, the life-saving procedures must be initiated at the site of the medical emergency, in other words, getting the individual into the system. It is only after these life-saving steps are undertaken that the patient is transported to the hospital. The hospital is only one part of a comprehensive emergency medical service system in the community. The other parts of the system are of equal importance in the overall goal of creating a community coordinated program.

The authors of S. 504 are to be commended for their responsiveness to what is so clearly a critical public need. That bill seeks to bring order out of what must be characterized, at best, as a national patchwork of emergency medical service capabilities. While we support the

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intent and purposes of S. 504, we strongly recommend that the committee give favorable consideration to S. 654.

Inasmuch as S. 654 was just introduced, I will present the essential features to inform the committee of the programs contained in the bill.

This bill provides for the creation of a comprehensive emergency medical service system throughout the country. While direction and financial assistance would be provided at the Federal level, the program is focused at the level of the individual community. The program is designed to help communities to help themselves in the building of a meaningful and responsive program of emergency health care.

S. 654 establishes an Emergency Medical Services Administration as a separate Department in HEW. It would be headed by a Director who is a qualified health care professional appointed by the President. Emergency medical service programs in the Department of Transportation and other Federal agencies would be transferred for centralization in the new Department. The Director would allot funds to the communities for the development and operation of community emergency medical service programs.

To qualify for an allotment, the State would submit to the Director a plan for improvement of emergency medical services throughout the State. The plan would provide for financial assistance to eligible communities within the State, and would designate an appropriate State health agency to administer the plan and disburse funds under the direction of a State administrator appointed by the Governor. It would also provide for review and comment by the State Comprehensive Health Planning Agency, and the local areawide health planning agency, if any, on community applications for assistance.

As a condition of eligibility for financial assistance, a community would submit a plan for a "qualified emergency medical services system," providing for prescribed services, equipment, and programs. Such a plan would also be reviewed for comment by the State Comprehensive Health Planning Agency, and local health planning agency, if any, before referral to the State administrator for final approval.

A "qualified emergency medical services system"—and I stress the word "system"—would operate within standards prescribed by the Director and would include as minimum requirements:

(a) Well-equipped emergency vehicles, staffed by emergency medical service technicians, trained and equipped to provide all necessary life support at the scene of accident or illness and during transportation;

(b) A communications system that assures prompt response to the need;

(c) High quality emergency care facilities, staff, and equipment at the hospital level;

(d) Medical self-help training programs that reach large numbers of area residents;

(e) Adequate highway signs to locate emergency medical services;

(f) Emergency medical services adequate to meet the needs of the community or region;

(g) Periodic evaluation of the quality of services to be provided through systems of inspection by the State, and such other quality control measures as the Director shall deem appropriate;

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(h) Registration of ambulance attendants through a national registry program, such as the National Registry of Emergency Medical Technicians which shall provide for periodic review of personnel;

(i) Categorization of hospital emergency capabilities within regional planning;

(j) Hospital facilities to meet the emergency medical needs for the area; and

(k) Such other components as the Director may add.

A community emergency medical service area could be a county, part of a county, or a multicounty area and could be situated in more than one State. Federal funds for any approved comprehensive medical emergency system would be provided on a matching basis, Federal contribution being limited to 75 percent of the costs incurred for development and operation of a "qualified system" in the first year of grant, and, if continued, 50 percent in the second year, and 25 percent in the following year.

Standards would be issued by the Federal Director from time to time.

Senator KENNEDY. What do you mean by "from time to time"? This of course is an area that we will probably get into in greater detail later, but on the question of the standards I am interested.

This has been one of the areas that has been criticized in the past, that is, failure to comply with standards and failure to enforce them. I am not completely sure what you mean by standards issued "from time to time."

Dr. GALASINSKI. As we would like to envision this, there would be a yearly review, and these standards would be set up on the Federal level by the Director who would be assisted in this by an advisory council which we speak to later. This certainly should be on a yearly basis.

Now, as to the control of these standards, the enforcement, Mr. Chairman, which you referred to, we envision that there would be an inspection, and the control could be enforced by the withdrawal of funds if a community did not in effect meet these standards which would be required.

Senator KENNEDY. The problem on this is that DOT has the power to do that at the present time under Standard 11, but we have not seen any indication that it actually does so. As a matter of fact, there has not been a single example where it has done so in the past.

What makes you think the procedure will work more effectively in your program?

Dr. GALASINSKI. We feel by establishing a central authority in the Department of Health, Education, and Welfare we will then have a more impressive impact instead of the different types of regulations which might come from different agencies within the Federal Government as now exists. Besides the Department of Transportation there are other agencies involved in emergency medical care.

If we establish a central authority within the Government with standards which would be sent down to State levels, recommending that these systems must meet these standards, we feel we can then enforce what we might call in effect quality control of the types of emergency medical services provided.

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Senator KENNEDY. Just while we are on this point, this would be a new agency would it not?

Mr. BURNETT. It would be a department within HEW.

Senator KENNEDY. What sort of level are you talking about? Would it be on the level of HHSMA, for example?

There is so much talk now about reducing the number of agencies, reducing the number of programs, and here we have the suggestion of the creation of a new one.

I am trying to get some kind of feeling as to how it would interact with the other agencies. At what level would it be, could you tell me?

Dr. GALASINSKI. In view of the fact that we would be unifying the several agencies now in existence into one authority, it should receive a rather high level with direct responsibility to the Secretary of HEW.

Senator KENNEDY. Why do we not continue and come back to questions later.

Dr. GALASINSKI. I will resume with standards. These would establish minimum requirements for:

(a) Emergency medical services equipment, including:

1. Type of emergency ambulance and related rescue vehicle, including mobile intensive and coronary care units;

2. Type and amount of rescue resuscitation and life support equipment to carry on board ambulance vehicles;

3. Radio or radio-telephone equipment for communication between ambulance and hospital.

(b) Licensure by States of ambulance service providers based upon periodic inspection of such providers' vehicles and equipment and periodic review of the training level of its personnel and the adequacy of its dispatching and communications system.

(c) Communications and reporting systems would include:

1. Establishment of a universal emergency telephone number;

2. Ambulance to hospital communications, and disaster radio communications;

3. Establishment of methods and standards for interregional emergency communication, including radio, microwave relay and other technology;

4. Establishment of emergency medical services information and data retrieval systems, including telemetry, biomedical data delays, and human intellect augmentation systems;

5. Filing of reports on emergency rescue and ambulance services and the integration of these reports with patient emergency care records.

(d) Levels of adequate liability insurance to cover any ambulance operations;

(e) The performance of training and advisory functions by physicians designated as responsible for the medical supervision of ambulance services, including standards for training curricula;

(f) Facilities and routing:

1. Establishment of emergency medical services operating centers;

2. Categorization of hospital emergency medical service capabilities;

3. Establishment of methods for marking the location of emergency medical facilities and the establishment of routes thereto;

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4. Physicians and personnel backup by a hospital of its emergency department and adequate in-house backup with special unit beds.

Additional programs would be provided in the bill authorizing the director:

(a) To make direct payments contributing 50 percent of costs to a community for the initial purchase of ambulance vehicles; and

(b) To make grants to public or private nonprofit organizations or enter into contracts with public or private organizations for emergency medical service projects, including studies and research for:

1. Planning and development for emergency medical services programs;

2. Establishment and improvement of medical emergency transportation systems using aircraft, helicopter, and radio-equipped vehicles;

3. Providing for cooperative use of equipment and personnel of the Armed Forces for medical emergency transportation assistance;

4. Design, development, and demonstration of advanced methods of, and equipment for, medical emergency transportation and communications; and

5. Development and operation of training programs for emergency medical service personnel.

The bill also creates a State emergency medical services council which would consult with the State health agency in carrying out the State emergency medical service plan. Also established is an interagency council composed of Federal agency heads to coordinate emergency medical service activities, and a national advisory committee composed of State and local government representatives, physicians, consumers, and others to advise the Federal director.

The director would make annual reports to the President and the Congress on the activities under the act.

Mr. Chairman, we believe that S. 654 offers the most promising solution to the challenge of establishing comprehensive community-based emergency medical service programs, and we urge its favorable consideration by your committee.

We appreciate this opportunity to offer the views of the American Medical Association on emergency medical services. We will now be pleased to respond to any questions which the committee may have.

Senator KENNEDY. Thank you very much, Dr. Galasinski, for your excellent testimony and your outlining of the legislation.

I believe the legislation is to come before us this afternoon.

Senator BEALL. It was introduced yesterday.

Senator KENNEDY. Thank you, Senator Beall.

On the question of standards again, would you be willing to accept the NAS-NRC minimum standards for emergency medical services?

S. 504 embraces their minimum standards, and I was just wondering what your reaction is.

Dr. GALASINSKI. In general, we would support them.

Senator KENNEDY. You would be willing to use them as a criterion of minimum standards? I am just trying to find out whether we differ on this.

Dr. GALASINSKI. I think we are together in thinking on that.

Senator KENNEDY. All right. The AMA does not usually have the image of being a big spender, but you double the rather modest proposal which has been introduced by Senator Cranston and myself in

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this area, and I think this is an important reflection of the magnitude of the problem.

In reviewing some of the differences as I understand them, our approach is to try to provide some coordination between the various agencies that are dealing with it. You have a separate agency. Can I ask you again whether you would compare it in terms of organization to the HSMHA organization and its relationship with the Secretary?

Would it be that high on the table of organization? Would that be a fair comment about where it would fit in the HEW organization?

Dr. GALASINSKI. When we consider that death from trauma is either third or fourth, depending on how you categorize whether it is heart, stroke, cancer, and accidental death, when this is the fourth greatest cause of death, I believe it rates a very high priority.

Senator KENNEDY. We had some testimony yesterday on the costs of ambulance transportation, and we heard one witness testify that in his area it was $67 per ambulance trip.

What is the position of the AMA with regard to those who have not the ability to pay?

We heard yesterday that some local administrations have passed ordinances making it a misdemeanor not to pay. What is the position of the AMA?

Dr. GALASINSKI. I would say it was the same as it always has been: to render the care regardless of ability to pay.

As a practicing physician this has been my philosophy, and I am sure this is the philosophy of the American Medical Association. We cannot ask every very sick or injured individual: "Can you pay?" We must treat that individual.

Senator KENNEDY. You might help us in thinking of ways that attitude could be reflected in the legislation. That question is really left rather open by the legislation itself.

We have in subsection (g) of section 635 of our bill that the necessary emergency medical services to the maximum extent feasible shall be provided to all patients without regard to ability to pay.

You would not object to leaving that language and incorporating it in your bill?

Dr. GALASINSKI. Not at all.

Mr. PETERSON. Mr. Chairman, I think we should also recognize there are other programs, for instance the medicaid program, which provide assistance for individuals who are unable to pay for their own care. We would expect certainly that those programs would cooperate and continue to provide assistance.

Senator KENNEDY. Right; one of the other differences, of course, is that S. 504 will provide greater flexibility in the question of the recipient instruments of Government to receive resources for comprehensive planning in the emergency medical service area. We do not limit it just to States. It can be counties, States, it can be a regional program, or an interstate program as well.

I personally believe that this achieves a greater flexibility, rather than if only States are targeted. I wonder if you could elaborate a little bit upon the need to restrict this just to States, instead of providing some flexibility in support of either local or regional programs if they are worth while, and achieve the other requirements of your program.

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Dr. GALASINSKI. Yes. If you will recall, although we advocate development of systems within the State, we also provide for area considerations so that there would be interstate communication, and dialogue, and cooperation, in the establishment of a system.

I can envision in northern Wisconsin and along Minnesota where there are communities right across the river, one in Minnesota and one in Wisconsin, it would be ridiculous to stop at the river.

Senator KENNEDY. I agree with you. Because of that very reason S. 504 provides the additional flexibility to permit grants to worthwhile regional programs that might be interstate, rather than just making the grants to States themselves, as DOT does at the present time.

How strongly do you feel about that?

Dr. GALASINSKI. Rather positively, Senator, in this respect. We have to exercise a certain amount of control, quality control, of the type of emergency service within the system, and this has to be done within an integrated area.

We calculated that the State would be the best, recognizing also that there must be flexibility of areas involved between States.

Senator KENNEDY. Let me ask you about AMA provisions to encourage training in emergency care in various medical schools. What is your position?

Dr. GALASINSKI. We strongly support that. As a matter of fact, right now there is a request by the American College of Emergency Physicians to establish a scientific section in the AMA, and there is also under study from the last meeting of the house of delegates a proposal to the Council on Medical Education for the establishment of residencies for emergency care physicians. But that is the physician angle.

However, we strongly feel that allied medical personnel, the so-called emergency medical technician, receive extraordinary training.

At the moment there are schools in several areas where the emergency medical technician is being trained, anywhere from 35 to maybe 50 to 100 hours. We would strongly support a standard training program so that a person may be trained to render emergency care as a technician, whether they are trained in California or in Massachusetts or in Wisconsin.

They could travel from one area to another, and their training would qualify them to obtain a position in that capacity wherever they went.

Senator KENNEDY. Do you have a program now?

Dr. GALASINSKI. At this moment?

Senator KENNEDY. Yes.

Dr. GALASINSKI. There are several training programs, but no definite one.

Senator KENNEDY. I know there are several developed by different groups. I was wondering if the AMA had put their stamp of approval on any one of them or all of them.

Mr. BURNETT. If I may comment, Mr. Chairman, the AMA has been cooperating with DOT in 72-hour training programs, and in the helpful program of working with the National Registry of Emergency Medical Technicians. The program has been approved in that respect, so that we agree with the DOT program.

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We are also looking closely at the advanced program of 200 some hours for that.

The other program which we are talking about in the area of training is combining the training of emergency medical technicians such as they do at the Manhattan Community College to train a person as an emergency medical technician who receives an associate of arts degree.

We have developed a curriculum with the colleges in this area.

Senator KENNEDY. I appreciate what you say about cooperation with DOT. I think it would be helpful if around the country people knew that a given program of 80 hours or 400 hours, whatever it is, was approved by the AMA.

Mr. BURNETT. If I may, Senator, there are a couple of other programs that have been conducted by specialty medical societies.

The American College of Surgeons has a training program for emergency personnel, has had one for a number of years, as has the American Academy of Orthopedic Surgeons. Those courses are readily acceptable to the AMA for training of these individuals.

Senator KENNEDY. Have you tried to work with the medical schools to encourage them to move into this area? If so, what kind of reaction are you getting from them?

Dr. GALASINSKI. This is under study, and there has been dialog with the medical colleges to include this in the curriculums of those medical schools who choose to do so.

We are not in a position to enforce or make it compulsory. This would be relegated to the realm of the individual school if it chose.

However, we have had surveys of students who are showing an inclination to go into this particular type of field.

Senator KENNEDY. Which schools have been positive on it and which schools have been more reluctant to move? Did you write to all the medical schools?

Mr. PETERSON. No; I do not think we have written to all medical schools, unless the medical education department has.

As Dr. Mills mentioned, there are nine current schools in which there is established a residency. There are a number of schools—Harvard and Yale——

Senator KENNEDY. Nine out of what is it?

Mr. PETERSON. 113.

Mr. BURNETT. But there are a number of schools which are establishing special courses on emergency medical services for the physician who has a special interest in that area. This is the kind of thing that is being looked at now, and hopefully will be recommended to the medical schools for those physicians who want to go into emergency medical services.

Dr. GALASINSKI. We have a council on medical education to which I briefly alluded, and we not only are concerned with the special training of physicians but also with what we call the allied medical personnel; the laboratory technician, the technologist, and the other specialties which are arising in the area of assisting in the providing of health care.

The AMA has set up guidelines for them. I dare say that if it is not now in effect it is under study and will be further developed.

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Senator KENNEDY. Perhaps you could inquire of your education committee. If you like, we can draw up a question.

I am interested in what your committee on education is doing with the medical schools in encouraging them to move into this area of need.

You have recognized the area of need now, and have spent a good deal of time developing the program and have suggested considerable funding for it. I am interested in what steps are being taken to encourage people to go into it, and draw attention to the medical schools, and, moreover, what the medical schools are doing to respond.

They are talking about capitation grants and other things in the research program. I would like to find out just what they are doing, and would appreciate it if you could tell us what you are doing to encourage them and what kind of response you are getting.

I think we ought to commend those medical schools which are really responding; they ought to be able to get some recognition.

Knowing your interest in this, I think it would be useful to hear your views.

Dr. GALASINSKI. We would be delighted to investigate this entire matter and report it to you.

Senator KENNEDY. Senator Beall.

Senator BEALL. Doctor, I apologize for coming in after you started your statement. I have had an opportunity to read most of it.

First of all, I would like to congratulate the AMA for coming up with such a comprehensive approach to such a major problem.

I am happy to introduce this bill because it is so comprehensive in nature. I gather what you are saying is that we do have the technology and capability of handling this problem, if we just get properly organized.

Dr. GALASINSKI. You are absolutely correct. The technical phase is here, the know-how is here. It is the application to improving what amounts to a health care system as a whole which is the lack of deficiency, and we advocate that this deficiency be corrected.

Senator BEALL. Through strong field direction and State cooperation?

Dr. GALASINSKI. Correct.

Senator BEALL. I gather your emphasis on the State role is partially due to the fact it is going to take a very strong commitment from the Government to get this thing going in the States; is that right? I have been emphasizing this to Governor Mandel and I am pleased that the State of Maryland is moving to provide the necessary leadership and coordination.

Dr. GALASINSKI. Correct, because it would require development of a system within a State which would be applicable to all communities, and, of course, you recognize, due to geography and other considerations, this may vary from State to State.

But it is the system we are interested in, and the system must meet certain standards.

Senator BEALL. The States control licensing of medical schools and all the facilities that are going to be used in the implementation of this system.

Dr. GALASINSKI. That is correct.

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Senator BEALL. I was interested in the preamble to your statement where you talk about giving special consideration to former military medical corpsmen. I commend you for this statement because I think there is a great reservoir of talent here that can be properly used that is not now being used.

I am wondering, though, what changes in the licensing laws are going to have to take place around the country in order to use these people to their fullest potential.

Dr. GALASINSKI. First of all, there has to be the desire on the part of the individual to continue in this type of work in civilian life. He already has excellent training, but it is more or less specialized in the military type of setup, the basic situations there.

Of course, in the military it is primarily trauma. In civilian life this would encompass more than trauma. It encompasses nontraumatic emergencies, so-called medical emergencies, including poisoning, comas; and he would need additional training for this.

After proper training—and we would like to have a universal program of at least 200 hours for certification—then a licensure, and then updating regularly so as to keep them as current as possible with the greatest knowledge that they can use in their own expertise in rendering this first aid.

The most important thing is to get the individual into the system, and once he is there not to just look at him but to do something immediately.

Senator BEALL. Assuming they get the initial training and qualify, as you say, is the AMA now, through its State societies, working with State legislators and others at the State level to change the licensing laws so that they are more in line with today's needs?

Dr. GALASINSKI. I do not know specifically whether the AMA itself is doing it. I will ask Mr. Peterson to answer that specifically, but I do know in the State of Arizona the medical society did work with the legislature there to actually pass legislation. We have models of that type of legislation.

Can you add anything?

Mr. PETERSON. I would not be able to add specifically.

Senator KENNEDY. Could they give that to us?

Senator BEALL. I am wondering if there is a nationwide effort being made. It seems to me there are archaic licensing laws, and I am wondering if there is a national effort being made to modernize these archaic laws so that we can modernize delivery of health care.

Dr. GALASINSKI. You are so correct, Senator. For years the problem was so critical we had to pass the Good Samaritan laws in some States. It almost became a liability to look at an individual who was injured on a highway.

Senator KENNEDY. Would the Senator yield?

Senator BEALL. Certainly.

Senator KENNEDY. Could you let us know which States have adjusted or made changes in their laws recently to encourage such use of paramedical personnel as is envisioned in either your legislation or S. 504? State's licensing laws may be a hindrance to the effectiveness of this program, what steps is the AMA taking to help State agencies or societies to change the law so that the kind of personnel we envision using may be utilized?

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Dr. GALASINSKI. Off hand, Senator, we do not know of legislation besides Arizona, Oregon, and Illinois, and I believe there is this legislation in Texas.

We would be delighted to get this and forward it to you.

Senator BEALL. One final question. It seems to me that the planners perform a very important service in all this. But it also seems to me there comes a time when we have to get off the dime so to speak and get away from planning and get into implementation.

How do we do this? I have seen instances where the planners once they develop the plan try to make themselves the implementers of the plan also, so we create a lot of confusion.

How do we move from the planning stage, since we know generally what we should do, and move to make this capability and know-how available to our citizens?

Dr. GALASINSKI. In our proposal, Senator, if you will notice we ask for a director who is qualified and knowledgeable in this area. As a matter of fact, we already recognize that there will have to be an administrator type of individual who can be the director of an emergency medical service system, not only on a State level but even within the hospital itself.

We recognize that the word "room" is archaic. We now must use the word "department," and where there is a good emergency medical service department, it should have a head just as we have a chief of medicine who would be the chief of emergency medical services.

Senator BEALL. Thank you, Mr. Chairman, and thank you, Dr. Galasinski.

Senator KENNEDY. Just finally I suppose you realize from this last response, emergency medical services do not end at the hospital door; they certainly go right on into the hospital itself and the emergency room.

Dr. GALASINSKI. Oh, yes.

Senator KENNEDY. That is a very essential aspect of the whole effort.

Dr. GALASINSKI. Yes.

Senator KENNEDY. Thank you very much.

Dr. GALASINSKI. Thank you very much.

Senator KENNEDY. Our next witness is Mr. Neil Chayet. I am happy to welcome our next witness this morning, Mr. Neil Chayet. Mr. Chayet represents the Committee on Cardio-Pulmonary Resuscitation and Emergency Cardiac Care of the American Heart Association. Mr. Chayet is a member of the Harvard Medical School Faculty and of the Boston University Faculty of Law and Medicine. He is also the author of a book entitled Legal Implications of Emergency Care. I am sure we will find his testimony immensely helpful.

I know of Mr. Chayet from having listened to him testify in my own State in Lynn, Mass., in 1970 when we were holding drug abuse hearings.

We are glad to have you back. You were enormously helpful then, and we look forward to having you here.

STATEMENT OF NEIL I. CHAYET, AMERICAN HEART ASSOCIATION, COMMITTEE ON EMERGENCY CARDIAC CARE

Mr. CHAYET. Thank you very much, Senator. I am pleased to be back before you once again.

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I am speaking today both as an individual and for the American Heart Association's Committee on Emergency Cardiac Care.

Having submitted a written statement which I prefer not to read from, I would ask that it be made a part of the record.

Senator KENNEDY. It will be included in the record.

Mr. CHAYET. I would like to speak briefly if I may on some of the problems which both you and Senator Beall just alluded to, the considerable legal impediments and hindrances which exist in this area.

I first became interested in the subject of emergency care as a result of a family tragedy. In July of 1967, my father suffered a stroke in a boatyard south of Boston; I arrived on the scene a few minutes later, found him unconscious and barely breathing, and called the Boston police. Thirty minutes later I called again, and 45 minutes later I called yet another time. The response was so poor that a private physician summoned from Newton arrived before the police. At last, more than 1 hour after the initial call, the police arrived in a vehicle that was simply beyond belief; its interior and exterior were covered with filth and grime; the windows, sirens and oxygen were inoperable and the police officers who manned it, while well meaning and helpful, clearly had no advanced training in handling stroke or heart attack victims.

I will never forget that ride. My father died 7 days later, and of course no one can say what difference it would have made, but I feel there could not have been even a fighting chance when a vehicle arrives an hour later, operated by untrained men with virtually no equipment.

It seems to me in this day and age we all deserve something better, particularly when you consider the fact about each year 800,000 people will die of heart attack and 350,000 of these will not even make it to the hospital, many dying simply because no one knows what to do. I think that is a sad statistic for us to ponder for a moment.

I began to look into the subject, and a short time after this incident I received a call from a doctor who wanted to know what his liability would be if he took action to help persons injured in a disaster. I found it difficult to believe that physicians would actually worry about legal liability in such a situation.

When I researched the Massachusetts disaster statute, which is about the worst in the country, second only to New Hampshire's, which reads the same way, I found that the statute said a person would not be liable, except that such person would be liable for his negligence, a rather curious statutory protection. I found when the law was passed the exception was the result of the legislative counsel who felt that the statute was too broad, and he added those words to limit it.

I wrote the book "Legal Implications of Emergency Care" to explore some of the myths which surround the area of emergency care, and I would like to make a copy of it available to the committee for your records.

I would like to briefly survey some of the legal problems that occur from the moment a person is struck down until he dies. First there is a 50 percent chance that a physician passing by an individual will not stop. Fifty percent of all physicians questioned in an AMA survey said they would not stop at the scene of an automobile accident because of a legal liability. You have just heard medical testimony a

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few moments ago—I think the quote was: "A doctor can incur liability if he just looks at someone."

This is the belief of so many physicians, and yet I have found not a single case in the entire United States in which a physician has ever been sued as a result of playing the role of Good Samaritan.

There is not even a single claim that was ever settled out of court. I have been looking for 5 years. I wrote every malpractice insurance company, and there are no claims that have been paid.

I even offered a reward on the Dick Cavett show for someone to come up with a case. There were no takers.

There are no cases, and if you look back, you find they all go back to the Doctor Kildare show or the Saturday Evening Post, or the Reader's Digest—although the Reader's Digest has tried to correct the error. It is a very popular theme—someone is injured, a young doctor stops, saves the person's life, and then gets sued. That is a very popular TV plot. In one I recall Dr. Kildare coming back from a party, a woman was giving birth, the child died due to a prolapsed heart—no negligence on his part—but the jury was impaneled and came back with a verdict of $60,000.

The average doctor watching that says, "Now, I know I am right. Look what happened to Dr. Kildare."

I think it is the media that has done a great deal of damage in this area, and it is extremely difficult to erase the image which prevails.

There was one case which I would like to refer to because it shows just how great is the confusion. Wherever I would go, someone would say, "How come you have not heard about the *Virgin Islands* case?" I finally located the doctor involved in that incident.

He was vacationing in the Virgin Islands, saw a person who had been electrocuted at the end of the dock, ran down to the end of the dock and did all he could to try to revive the victim.

As a last ditch effort he opened the person's chest and massaged the heart. He could not revive the victim.

The rumor was that he was sued for $200,000, and it was widely known; but he was never sued. He was thanked by the family, and I wish I could end the story there.

The sad fact is that he was arrested for practicing medicine without a license in the Virgin Islands. This of course is the other side of the problem, the licensure problem.

It is relevant to mention that at the time this case happened the Governor of the Virgin Islands was directly appointed by the President of the United States. The President at this time was your brother, and this was a Cape Cod physician.

I do not know how he got word back to the mainland, but he was told he could return to the Cape, but they were considering all sorts of prosecutorial criminal action. He was in fact never prosecuted.

He did have to hire a lawyer to represent his interests in the Virgin Islands, and he got a bill from the lawyer for $3,000, and he had to get another lawyer to defend that action, so he ended up with a lot of problems and a ruined vacation, but he was never sued.

That activity resulted in the passage of the Massachusetts Good Samaritan Law which has nothing to do with the situation, which involved the criminal responsibility rather than civil liability.

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I would like to emphasize that the fear of criminal liability should not exist either, because in this country nearly every State law exempts emergency situations from the medical practice law.

This is not generally known. Ambulance attendants continually worry about it. Neither are they comforted when equipment such as oxygen tents are labeled: "Use only upon the direction of the physician." The standardization of equipment and procedures and labeling is one area where I think the Federal Government should get involved so trained persons would be able to operate equipment easily.

Senator KENNEDY. Thank you very much. Mr. Chayet, I am enormously interested in your testimony. It is true, is it not, that doctors have been held liable in the emergency room itself?

Mr. CHAYET. That is true, Senator. In the emergency room there have been some suits, and I was going to refer to some in a few moments. The problems in the emergency room usually go back to hospital organization.

I am trying to defend a case now where a man came in, fell off a motorcycle, the resident on duty looked at the film and said, "You are all right; go home."

The fellow went home and died about 8 hours later, and in about a day and a half after that the film went to the radiologist who dictated a report which commented on severe head injury and fracture. The report of the radiologist appeared subsequently in the chart, but the individual had already been discharged and had died.

The O'Neill case in New York involves a man who walked into a hospital with chest pains and because he was a member of the hospital insurance plan, but this hospital was not in that plan, he was told to leave and go to a plan hospital, and he died before ever reaching it.

So there are problems in the emergency room, but in the Good Samaritan situation where so many physicians are concerned and will not respond when a call comes in, "is there a doctor present?"—there are no cases in that situation.

I would like to mention a few more incidents which relate to the question of training. One doctor did approach me once and this has always troubled me. After I spoke on the subject he made sure no one was around and he said that, "Do you know why I don't stop?" I said "Why?" He said, "Well, I don't really know what to do."

I think this is a real problem relative to your question about medical schools. The training in medical schools is very poor. There are many, many physicians who do not know what to do in an emergency situation. That is a significant problem.

But of course most of the time it is the police officer, the fireman, the ambulance attendant, who arrives on the scene—that is where I think we must put our major effort, but we should not take it for granted that the physician is beyond reproach in this area.

A psychiatrist called me just before I came down to testify before you. He was driving along the Massachusetts turnpike, saw an individual leaning over the hood of an automobile, he stopped and asked what was wrong; a woman said, "My husband is having an asthma attack."

In reality the man had had a heart attack about several months ago, but his physician had felt it better not to tell the wife. The psychiatrist recognized the problem as a heart attack, put the man in his car, and went to the nearest phone, and called the local police.

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The police said they did not handle medical emergencies. They referred him to the fire department. He called the fire department, and was told they had no vehicle to send, and in turn referred him to a local hospital.

He drove the man to the hospital, it was a chronic care hospital without any emergency facilities whatsoever.

He finally got the State police to respond about an hour and a half later. The man died just after they arrived.

This should not happen. When you received the turnpike ticket, perhaps it could tell you what to do in case of an emergency. In the present situation. sometimes the blue "H"signs lead you to an emergency room, and sometimes they do not.

The question of how to implement is really the question. Do we need new agencies? Do we need millions and millions of Federal dollars? I do not think we do. I think we need a relatively simple coordinated effort and a large measure of voluntarism. To make tremendous expenditures in the area is not possible at this juncture nor is it really called for.

The question we have is how do we train these people? How do we give incentives for training, and how do we translate this into action?

I will be leaving directly from here to go to Atlanta to meet with the heart association and discuss a plan which I hope will involve many other organizations. The heart of the plan will be the voluntary association. All of the associations are or could be skilled in the promulgation of standards. What we need is some simple way to implement these standards.

The plan would be very simple. I would like to explain it very briefly. Let us take just the area of cardiopulmonary resuscitation which happens to be the particular interest of the American Heart Association, although the association is interested in the entire spectrum of emergency care.

The association would promulgate standards which are now being prepared. Once these were promulgated, we would hope States would enact relatively simple legislation to set up an emergency care board to review courses and make sure they were in accord with the national standards of the organizations involved.

Again, if they approve the course, individuals would take the course—we have no licensing need at all. I am against licensure and its call for tremendous bureaucratic expenditures. It is unnecessary. The individual would take the approved course—

Senator KENNEDY. Are you against all licensure?

Mr. CHAYET. I think licensure is the greatest error that we have ever gotten ourselves into. Supposedly it is to protect quality of care and to give some status to the person licensed. It does not do it.

It does not protect quality. It tries to give some economic advantage. It is expensive.

Every licensure examination is outdated by the time it is operational. It is useless. There is a better way I feel, and it is through use of a nonprofit governmental structure, utilizing evidence of qualification, rather than licensure.

Let us go back to the CPR—cardiopulmonary resuscitation. The individual would take the course. When he concluded the course he would be given a certificate which specified that he was one of two types of

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individuals. If it were a full course—which I hope we can look to in the near future, 80 hours or a 100 hours—he would receive a certificate that he has completed this course and is now a life support technician.

If he just took a portion of it or just a CPR course, he would receive this and he would be a life support technician with training in CPR this would be indicated and right on the card.

With this card he would need no license because you would build into your statute recognition to the individual who possessed such a card, prohibiting other individuals from holding themselves out as a life support technician.

By this way you build in a measure of immunity if the individual has been trained in the area in which he is functioning.

Senator KENNEDY. Do you need Federal legislation for that?

Mr. CHAYET. I do not think so, Senator. I think what is needed is coordination and leadership of the diverse resources which already exist in this field.

The American College of Orthopedic Surgeons, the American Heart Association, and many others have fine programs; somebody has to bring them together and in some way turn it into a system.

We have the associations; we do not have to form associations. We do not have to form agencies. All we have to do is in some way—here is where the Federal leadership is so important—get everybody together into a standardized system.

We need to avoid registration and licensure systems. You lose nothing by this because if the individual does not have the card, then he has not received the training. You do not have to license him and make him pay $15 to take an outdated examination.

If he has the card, you know he has taken the approved course. The courses would have an expiration date so he has to get retrained when appropriate.

You are depending on your board to look at the courses and make sure that they have adhered to the standards which are laid down.

Senator BEALL. Are you assuming that the profession will police itself, regardless of what the profession is.

Mr. CHAYET. I feel that is correct.

Senator BEALL. Has history proved that to be correct, or has it proved sufficient protection for the public?

Can we rely on the profession to do this job itself?

Mr. CHAYET. I do not think we have ever really relied on the profession or given it that challenge.

For many, many years everyone said, "You are a licensed physician; that must mean something." There are licensure boards so that theoretically they can take someone's license away. We know that the license to practice medicine has not been a guarantee of quality.

H.R. 1 is not going to work either; unless we establish an effective internal peer review structure we are never going to get anywhere.

Senator BEALL. But you are talking about the man who administers first aid, and you will say he in effect will retrain himself or will police his own group.

Mr. CHAYET. We have a lot of other controls. First of all, I think we could require training and retraining before a person can drive a vehicle which is an ambulance; in Massachusetts we have a terrific controversy now as to the dual purpose vehicle.

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The police do not want their station wagons and firetrucks to be considered ambulances, and the State department of health feels they should be. I feel they should be.

If you require that vehicle can only be operated by someone who has training and you have quality control of the training, enforced by this board I have mentioned, you would have the beginnings of an energetic system.

We have a great distance to go. We must reach the point where when someone comes across a victim who has had a heart attack, he will not think he is a drunk, and even more, he will know what to do.

A doctor recently asked a police officer in Boston who drives an ambulance when he last had training, and he said 18 years ago at the academy. I said, "How often do you drive this vehicle?" He said, "Four out of every seven nights," and all he does is pick up injured people.

We are so behind in training, and this would be a relatively simple system without getting into a tremendously costly bureaucracy to assure we reach a minimal level of training.

Then we can go on from there with the forming of a true profession. What we are talking about is getting to some place so that at least the police and firefighters will have the training. That is what I am trying to get at, Senator.

I think that I should bring this to a close. I will not spend much time dealing with the individual who lives to get to the hospital—you would think that his problems would be over. Unfortunately in many institutions they have just begun, because in many institutions experienced people are not manning the emergency room. They are people who are moonlighting, people with other primary interests, other situations. There are experienced corpsmen coming back from Vietnam, but the hospitals will not hire them. They do not know where they fit into the licensing system.

I keep telling them they do not have to fit in because as long as a physician remains responsible, they can have the individual work in the emergency ward under his direction.

Senator KENNEDY. Some of the hospitals have taken them in. The Cook County Hospital has taken some. San Francisco has taken some. I do not know how we are in Boston.

Mr. CHAYET. I do not believe we have very many.

Senator KENNEDY. But it does not diminish the thrust of your point, which I think is still valid and is worth noting.

Mr. CHAYET. In conclusion, I just might say I hope that some day we can move toward the day when lives will no longer be unnecessarily lost and needlessly lost because no one was there, or because no one knew what to do.

Senator KENNEDY. Your testimony is very powerful, Mr. Chayet, just as it was before when we were discussing drug abuse; it is a very provocative and stimulating statement.

Let me ask whether or not you agree with me on this: If you had vigorous administration of the highway trust fund safety program, couldn't a lot of these things be achieved?

Mr. CHAYET. Yes. The thing that bothers me in our own State—I hope I am not overly picking on Massachusetts this morning——

Senator KENNEDY. Well, you are.

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Mr. CHAYET. Funds have been available, I believe, to set up an Office of Emergency Planning in the State Department of Public Health since 1967 or 1968, and it was only a week ago that an individual was appointed to fill that position. That is a long time, it seems to me, to lose. Many other States are in the same position.

Senator KENNEDY. Was this Dr. Goldmark?

Mr. CHAYET. This is Robert Murray who has just been appointed under Dr. Bicknell.

Many other States are in the exact situation. For some reason the problem is so massive and we are so far behind, the system is barely functioning.

When somebody is hit and lying in the road, sooner or later somebody gets there, picks him up, puts him in the back of a station wagon without hardly even looking at him, and brings him to a hospital.

I have stayed in a hospital emergency ward and watched the way people are brought in. It is simply incredible.

The other thing the Senator asked before about the question of control. You might say, "Why do not doctors adhere to their ethical responsibilities and respond properly?"

I think in the only case I know of where the postman was shot in New York in front of a doctor's office—feeling quite fortunate to be shot in front of a doctor's office—he walked up the stairs bleeding and entered—and the receptionist said, "Just a moment; do you have an appointment?"—that type of thing.

He was told to sit down for a moment. She called the doctor in the back. He refused to come forward. The postman said, "Could you call the police?" She checked with the doctor, and he said, "No, do not call the police."

The man was assisted out and went to the sidewalk where he collapsed, and he was taken to a hospital. He did recover.

He had no legal redress because, as you know, there is no legal liability to come to the aid of a stranger, no matter how easily you can do so.

I hope we do not have to go to the continental system in France and in Europe where you must help an individual who is in distress or else face criminal arrest and be fined. A doctor in Paris was recently fined for refusing to help a victim of a stabbing.

The point I am making is we have to come up with other ways. Vermont, by the way, has just passed a statute which is interesting in that it says any person must help another in distress if he can do so without danger to himself or without interference with important duties owed to others—whatever that means.

If you do not help, you are fined $100. I do not know how they are coming along with the enforcement of the statute, but I have often wondered why our laws have never developed along the lines where you have to help someone else. I hope our laws can develop voluntarily; if they do not, perhaps we have to take some other steps.

I will not answer all your questions so lengthily, Senator.

Senator KENNEDY. Senator Beall.

Senator BEALL. If I understand you correctly, what you are saying is there really are not as many legal impediments in this area as we think; it is a matter of attitudes and education more than changing the law.

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Mr. CHAYET. That is really it, and yet the myths are so ingrained in the population, particularly with the physicians and with many other people—the fear of litigation now is very great.

The question is how do you get the education across? That is why I have kind of done something that I do not care to do; in the model legislation which I will be presenting to the Heart Association tonight. I have included a rather unusual community provision. The way it would work is if you have training in a specialty such as CPR, that person would be immune from civil liability except if his actions were wanton, reckless, or grossly negligent.

If he did not have the training, then what I have done in the statute is to spell out the standards of negligence which themselves offer a great deal of protection. You are not negligent for anything if you have acted as another prudent person would have acted under the same circumstances—another person with your training.

But for a person who has gone to the trouble to get the training, I have given him a slightly increased immunity, largely as an incentive and as educational aid; the first thing I was told when I drafted it without immunity, was that the first line responders would simply not render the necessary aid. They said, "Right now we pack up people; we do not touch them, we just get them to the hospital. We are going to have them get training and have to spend 10 minutes doing resuscitation, and so forth, and we are worried about getting into legal difficulty."

I should add many people have told me they don't want to help out at accidents because they "do not want to get involved." That is our real problem, how we get people involved.

Senator BEALL. I am not an attorney, but from what you just said you are talking about an immunity in the statute which seems to me would have to be enacted in the State legislatures to accomplish what you want to accomplish. Is that not correct?

Mr. CHAYET. Yes. Almost every State legislature has a good samaritan law now. This would alter that law so it would apply to people other than physicians.

Senator BEALL. The point is we do have to change some laws at the State level obviously, particularly, not only with regard to liability but with regard to licensing.

As a former State legislator, I noticed whenever we wanted to change some laws, the most reliable people who would come before us would be the AMA or the ABA, and most State legislators looked to the bar association for advice, with their help and support the law would often be changed. So the bar cooperation in changing the liability law would seem to me most helpful.

Is there any kind of cooperative effort going on between AMA and the ABA nationally to get into this area and say, "All right, we have to bring some rationality into the various State liability laws and the State licensing laws."

These have to be uniform, it seems to me, across the country in order to make this work. Is some effort going on in that regard?

For instance, does the American Heart Association urge these two great national organizations to get involved together to do something about a problem that seems to exist?

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Mr. CHAYET. They have not yet, but you can bet they are going to do that after tonight's meeting, Senator. I feel there has been no significant activity in this area.

I will be contacting the Uniform Commissioners on State Laws because that hopefully will be one way of getting this model legislation in the hands of the legislators.

But I agree with you that unless the medical and legal professions get together on this, we are going to continue to have chaos.

Maryland just passed a bill that surprised me. They made a serious error. If you take a course in cardiopulmonary resuscitation, you end up being able to practice medicine. I do not think that is the way we ought to amend the laws. That is being corrected. It was done inadvertently.

The problem is that each association in the past has been worried about its specialty. If this continues we are going to have 50 different bills whereas we need only one bill and one system.

I think your suggestion about involving the AMA and the ABA is an excellent one.

I have been spending my time with many of the medical and related associations. I think I better get after my own professional group as well.

Senator BEALL. I thank you for pointing that out about Maryland.

Do you not think we perhaps should involve the American Hospital Association?

Mr. CHAYET. Definitely. The hospitals should bear far greater responsibility for how people arrive in their emergency wards. Also, we need better organization and triage. Often the police officer will take you to the municipal hospital, which may be over on the other side of town, while another hospital was much closer.

There may be some situations where the person should be taken right to Childrens Hospital, for example, if it is a serious matter. If it is a laceration, the child could go to the city hospital. There is no effective system which directs the transporting vehicles.

The question is the moment the call is placed, what happens next; and right now it is a poor response on almost all fronts.

Senator BEALL. I congratulate you on your enthusiasm.

Mr. CHAYET. Thank you very much.

Senator KENNEDY. Of course it is also dramatized and complicated by the fact that States have different laws regulating the licensing.

I think if your approach were embraced you would meet that particular objection.

Mr. CHAYET. Massachusetts, for example, exempts in the ambulance law all dual purpose vehicles. That is ridiculous. You have just exempted the people who are most often involved in emergency care.

The problem is where are we going to replace our men while our men are being trained? Private ambulance operators say the same thing. Will the Government pay some stipends, some wages?

Maybe we can involve the hospital in the training situation. Perhaps you could have one of your men in a hospital to see how the doctors respond—add an hour onto a shift, instead of an 81-hour course that has to be taken in a certain length of time.

It seems to me we can take the system that we have and without huge expenditures of money create a workable system.

Senator KENNEDY. Very excellent testimony.

[The prepared statement of Mr. Chayet follows:]

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PREPARED STATEMENT OF NEIL L. CHAYET,[1] AMERICAN HEART ASSOCIATION, COMMITTEE ON EMERGENCY CARDIAC CARE

Mr. Chairman, thank you for the invitation to appear before you to discuss a matter of utmost importance to the American public—the chaotic conditions under which emergency medical care is rendered to the hundreds of thousands of victims of accident and sudden illness each year.

I first became interested in the subject of emergency care as the result of a family tragedy. In July of 1967, my father suffered a stroke in a boatyard south of Boston; I arrived on the scene a few minutes later, found him unconscious and barely breathing, and called the Boston Police. Thirty minutes later I called again, and forty-five minutes later I called yet another time. The response was so poor that a private physician summoned from Newton arrived before the police. At last, more than one hour after the initial call, the police arrived in a vehicle that was simply beyond belief; its interior and exterior were covered with filth and grime; the windows, siren and oxygen were inoperable and the police officers who manned it, while well meaning and helpful, clearly had no advanced training in handling stroke or heart attack victims. The ride to the hospital on the stifling summer's day is etched in my mind as if it were yesterday.

I wish that I could report to you that my experience was an anomaly—an unfortunate breakdown in the system by which those who are suddenly struck down are given at least a fighting chance to get to the excellent medical care which awaits them in so many institutions throughout the United States. Unfortunately my research has convinced me that my experience is thoroughly representatives of the system—or non-system as it might better be called.

My father died seven days later, and it is difficult to say if better initial care would have made a difference. But surely he, and so many others, deserve something better than to be transported after an hour's wait in a vehicle which is not fit to transport sick animals, and this happened in metropolitan Boston. Of the two million estimated deaths for the year 1972, more than one million will be attributable to cordiovascular diseases. The greatest single killer is heart attack, taking more than 675,000 victims, with 200,000 more falling prey to strokes. The shocking fact is that 350,000 victims of heart attack will never even reach a hospital, many dying simply because no one knows what to do.

Shortly after this incident, I received a call from a fine surgeon who said that he and many of his colleagues were concerned about their liability if they acted as Good Samaritans during a holocaust or disaster. I found it difficult to understand why knowledgeable physicians would actually be concerned about acting in such a situation. When I researched the Massachusetts disaster statute, I found the following wording:

I * * * on and after a declaration of an emergency neither the Commonwealth nor any political subdivision thereof, nor other agencies, nor any person engaged in civil defense activities, while in good faith complying with or attempting to comply with this act or any other rule or regulation promulgated pursuant to the provisions of this act, shall be civilly liable for the death of or any injury to persons or damage to property as a result of such activity *except that such person shall be liable for his negligence* (*italic supplied*).

With this "disastrous" legislation in mind, I resolved to further research the subject of emergency care. That research has led me to many surprising findings of which I shall list just a few:

Many doctors do not stop at accidents because of the fear of liability; others say they are not certain what to do, and many others say simply that they do not want to get involved. Non-physicians who are at a scene, while usually less worried about the law, have frequently had no training in handling emergencies and are even more likely to prefer not to get involved. Police officers and ambulance attendants are frequently poorly trained; and even those who have training are hampered from fully utilizing their training because of fear of violating not only the laws regulating medical practice, but also because admonitions on labels placed on oxygen tanks by the manufacturer which read "use only on a doctors prescription". The vehicles which respond often have no life-saving equipment and no facility for two-way communication with the hospital to which they are bringing their victim. When they get there, there is often either no doctor on duty or a physician not interested in emergency cases, but forced to take a stint in the emergency ward on pain of losing his staff privileges. Even

[1] Mr. Chayet is a practicing attorney in Boston, Mass., a member of the faculty of the Harvard Medical School, the staff of the Massachusetts General Hospital, and the author of the book, "Legal Implications of Emergency Care."

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if there is a well-trained full-time emergency physician on duty, he may not be able to function until he gets a release from the patient's physician, if that physician is on the hospital staff. If the patient presents himself to an emergency ward as did a recent unfortunate man in New York City—he may be turned away to die alone a few hours later simply because he was a member of a prepaid insurance plan which did not include among its members the hospital he chose because of its convenience to his home.

Will we ever see the day when a stricken or injured person will volunteer their help with the knowledge of at least basic life-sustaining procedures; when a passing physician will go out of his way to help; when an easily-invoked distress system will be triggered into action, when a well-equipped and clean emergency vehicle will arrive promptly, manned by well-trained individuals; when that vehicle will be in instant communication with the hospital which serves that region and where the victim will be received by a full-time physician, well-trained in emergency medicine? How can we bring this about, given the current sparsity of resources and even more fundamentally, the increasingly widespread disregard of man for his fellow man.

I welcome the involvement of this committee, not only for the specific legislation and eventual monies which may result, but for assembling those who are interested in the area; of emergency medical care and for the possibility that you may provide us with the leadership which has until now, been so sorely lacking.

One final note before I turn to some steps that we might take to bring order out of the chaos of emergency medical care in the United States in 1973 and the years to come. A few days ago I received a call from a fine psychiatrist in Boston. This doctor was driving through the western part of Massachusetts when he came upon a man, obviously ill, leaning on the hood of his vehicle. He stopped, went to the man's aid, and was told by the wife that her husband was having an asthma attack, similar to one he had had a few months earlier (the man's physician had evidently thought it prudent that the wife did not know her husband had suffered a heart attack). The doctor recognized the symptoms, placed the man in his car, and drove to the nearest telephone. He called the local police and was told that they didn't handle medical emergencies. After further informing him that they had no vehicle to send, they directed him to a hospital. When he finally arrived at the hospital nearly an hour later, he found it to be a chronic care facility with no physician or emergency care facilities whatsoever. He then contacted the state police who sent a station wagon—without oxygen or any other lifesaving equipment. Shortly after the arrival of the state police, several hours from start to finish, the man's labored breathing stopped and he died. While the medical report may list cause of death as heart attack, those two words tell a decidedly incomplete story.

To begin at the beginning, then, perhaps the greatest needs are in the areas of training and motivating those trained to render assistance. It is my eventual hope that every citizen will receive at least minimal training in what must be done to sustain life following an injury or sudden illness. I remember that I had to learn to swim before being able to graduate from Brookline High School; why could we not require at least minimal instruction at the grade or high school level in every school across the country? As a minimum, however, we must train those who come regularly in contact with emergencies—police officers, firefighters and ambulance attendants—municipal, private, and volunteer.

A major problem, in addition to cost, arises from the widespread lack of standards in the emergency care area.

The American Heart Association will be meeting tonight and tomorrow in Atlanta for the precise purpose of promulgating standards for the teaching of cardiopulmonary resuscitation to laymen. Over the past several months I have drawn up a proposal for uniform state legislation to implement those standards and give them legal effect. I will ask that this model statute and a brief statement describing it be made a part of the record of these proceedings. My hope is that national professional, trade, and charitable associations will promulgate standards which can be utilized for purposes of training and that each state will establish a mechanism to assure its courses adhere to established standards. Great flexibility will be provided in the courses to suit any level of training and skill, and a massive and expensive licensing system will be avoided through the processes of accreditation and certification outlined in the model statute. The bill makes emergency medical training a mandatory part of the training programs of police officers, fire fighters, and ambulance operators and attendants. Of particular help in dealing with the oft-heard complaints of these groups that they

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simply cannot spare the time for the level of training supposedly needed, would be the appropriation of federal funds both for training and for subsidizing the individual ambulance operator or police or fire department to permit it to maintain its force while a portion of its staff was undergoing training.

On the assumption that we may some day solve the training dilemma, we must strip away the barriers which deter those who are and will be trained, and even those who have no special training, from acting. These barriers are in large part based on a series of myths. One common myth is that ambulance attendants will face possible criminal liability for "practicing medicine without a license", even though they may have been trained to do a particular task. This fear is mythical, as nearly every state has an exception in its medical practice act which exempts the emergency situation, so that any person who acts in an emergency cannot be prosecuted for such an offense. These fears are occasionally reinforced, however, by largely unregulated and non-uniform labeling such as the above-mentioned oxygen bottle which preconditions use on a doctor's order. Federal standards should regulate the labeling of all emergency medical equipment and standardization should also be required by Federal law. The fear of running afoul of controlled substance statutes is also present among many attendants when drug dispensation is indicated, but many of these statutes exempt the emergency situation from the statute's reach. Where no such exemption is presenly made in a particular state, statutory amendment is required in order to assuage fears of criminal liability.

The second major fear is in the area of civil liability for rendering emergency care. Throughout the country this fear runs rampant, particularly within the medical profession and, to a lesser extent, among police officers, firefighters and ambulance attendants. In one study, 50% of the physicians queried said they would not stop at an automobile accident and gave as their primary reason the fear of legal liability. This fear, real though it is, is based on unfortunate myth—there is not a single case in the United States in which a physician has been sued for playing the role of a Good Samaritan. In more than five years of research, I have never been able to find even a single claim settled out of court; I recently went so far as to offer a reward on the Dick Cavett Show to anyone who knew of such a case—and I am pleased to report that there was not a single response from the more than one million viewers. The genesis of the fear is difficult to trace, but a surprising number of rumored cases trace themselves back to a Dr. Kildare Show or a magazine article—the popular plot seems to be the young doctor who saves a life only to be ungraciously sued.

Merely to say that the fear is mythical is not to combat it effectively and devices tried thus far have proved ineffective. Ethical controls have been either non-existent or meaningless. The only case which I have been able to find where ethical standards were enforced involved a postman who was shot in front of a doctor's office. Upon staggering into the waiting room, he was informed by the doctor's receptionist that we would have to leave since the doctor refused to come from the rear of the office to examine or in any way treat the victim. The doctor would not even permit the police to be called from his office. But while the doctor was suspended for 90 days by the Kings County Medical Society, the postman, of course, had no civil remedy against the doctor as there is, of course, no legal duty for the rendering of aid in such a situation. Legislative attempts to deal with this problem have also been less then successful. While the Good Samaritan laws have sailed through the legislature of nearly every state (no doubt prompted by medical testimony that a doctor would not stop, even if a legislator were lying injured in the road), they have failed to allay many of the fears of physicians. In one state, a survey of doctors taken after the Good Samaritan Law was passed showed that fewer of them stop after the law was passed than before! Most Good Samaritan laws are also of dubious legal value in that they not only do not bar a suit, but actually aggravate the situation by forcing a claimant to allege wanton or reckless action or gross negligence rather than ordinary negligence which would be the claim in the absence of such a statute. Furthermore, many of the statutes require that the renderer of aid act gratuitously on pain of losing what ever protection the statutes offer. I could never understand why a physician who gave several hours of his time to help a heart attack victim who could afford to pay or who had adequate third party coverage could not send a bill for services rendered. Many of the statutes have also been criticized for not covering police officers, firefighters, or ambulance attendants—or laymen—persons who may actually need protection more than the doctor who is supposed to know what he is doing.

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One state has adopted a novel approach. Vermont has passed a statute which requires any person to help another in distress if he can do so without danger to himself or without significant interference of important duties owed to others. Failure to do so incurrs a fine of $100. This is similar to the law in many continental countries, where heavy criminal penalties are attached to a person who fails to render emergency assistance.

My sincere hope, however, is that we can avoid use of the criminal law to compel action in this area, perhaps by structuring positive incentives to encourage people to offer help to their neighbors.

Hospitals, too, are in need of a great deal of guidance. While the latest standards of the joint commission of hospital accreditation require all hospitals to have an emergency room or means of assessing patients (and presumably a way of transporting to other facilities those who are in need of emergency care), there are many facilities where emergency care exists in name only. Responsibility for patient care, the hazards of abandonment, the nature of the physician-patient relationship which is created, and the definition of an emergency are all matters which are badly in need of attention.

In closing, I should note that I am encouraged by the broad-based approach of the proposed bill. The required inclusion in all submitted plans of programs dealing with all aspects of emergency care—from the initial accident or injury, to communication with the central emergency dispatching system, to transportation to and from the emergency site, to adequate and, if necessary, specialized intensive care at the emergency facility, even to followup care at a rehabilitation facility—is systematically and, in the long run, fiscally sound. The specific assurance by every submitted plan that emergency medical services will be provided regardless of ability to pay is absolutely essential and welcome.

I should also note my support of the concept of regionalization inherent in the Area Emergency Medical Services Planning Council and the coordination which will hopefully derive from the establishment of the Interagency Technical Committee on Emergency Medical Services.

Finally, I am cheered by the provision requiring an annual evaluation of national EMS, including a study of legal barriers to the effective provision of EMS. It has long been my contention that the adequacy of our emergency medical structure varies directly with the wisdom of our laws. With the resources, interest, and support of the Federal Government behind the effort, I look more confidently to the day when lives are no longer needlessly lost.

Senator KENNEDY. Our next witness is Brig. Gen. Sam F. Seeley, who has served for 31 years in the Army Medical Corps. He was chairman of the NATO committee which produced the study "Emergency War Surgery" which was the standard text on this subject in Vietnam.

After he retired from the Army, Dr. Seeley was a full-time professional associate of the Division of Medical Sciences of the National Research Council of the National Academy of Sciences for 14 years. He retired from the Academy this past summer. As such, he monitored many committees and coauthored many documents and reports on emergency medical services. We are delighted to have Dr. Seeley here. He is going to tell us his impression of the evidence that has been submitted so far.

STATEMENT OF BRIG. GEN. SAM F. SEELEY, U.S. ARMY, PROFESSIONAL ASSOCIATE, DIVISION OF MEDICAL SCIENCES, NATIONAL ACADEMY OF SCIENCES, RETIRED

General SEELEY. Mr. Chairman, I am here before you not as a representative of any organization, biased or prejudiced, but as one who has been exposed to the care of trauma victims all my professional life, and who has been in the very unusual and advantageous position at the Academy of Sciences of being objective in drawing together the Nation's experts and trying to help solve the problems not only of

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trauma victims but also of those requiring other medical emergency procedures.

Therefore most of what I have to say reflects the opinions of those who have been identified as the Nation's greatest experts. Now that I am retired, however, I can also express some personal opinions that are not included in recommendations of committees of the Academy of Sciences.

The evidence which you have heard in the past 2 days supports and amplifies the significance of inadequate emergency care and recommendations on correction of these inadequacies reported in 1965 in a publication by the Academy of Sciences, which is the first report in your packet, entitled "Accidental Death and Disability, the Neglected Disease of Modern Society."

Practically every problem discussed at this meeting was brought out in this very short white paper. Recommendations were made on the ways in which we could proceed to solve these problems, standards have been developed for every procedure in emergency care. The goal must be to implement these standards throughout the Nation.

The Academy Committee on Trauma, on Shock, and on Anesthesia were sorely disturbed about the chaotic and unorganized emergency medical care, particularly people like the chairman of the committee on trauma. Dr. Truman Blocker of Galveston, Tex., who cared for hundreds of victims of the Texas City disaster, and Dr. John Howard of Philadelphia, chairman of the committee on shock, who applied many of the principles which we developed at Walter Reed Hospital when I was Chief of Surgery there during the Korean war. Application of these procedures reduced the amputation rate from 55 to 12 percent.

The Academy committees resolved that something needed to be done to bring the disgraceful situation to the attention of the public, the profession, the State law bodies, the executive branch, Federal agencies, and the Congress, few of whom appreciated the magnitude of the problems of emergency medical services.

We proceeded then on a course which was designed to develop national standards for every element of the emergency medical services system. Since the Academy was the prime medical advisor to the American National Red Cross we undertook revision of the American Red Cross first aid text which is now in galley proof and which will soon be published. This text includes new sections such as drug abuse, on emergency child birth, and on mouth-to-mouth resuscitation, which are not included in the present edition. It updates the principles of first aid and gives more opportunity for the woman or the man at home, at work, or on the street to render better lifesaving care.

In 1966 the Academy of Sciences and the American Heart Association conducted a national conference at the Academy on cardio-pulmonary resuscitation—CPR—, the proceedings of which have been adopted as national standards for the teaching of professional and lay persons in cardio-pulmonary resuscitation. This procedure is saving hundreds of victims of acute heart attacks each year.

The meeting which Mr. Chayet mentioned and which he will be attending in Atlanta is the second meeting of representatives of the American Heart Association, the Academy of Sciences, and others, who are planning a national conference to further advance the means

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by which the American public can be made more aware of its responsibilities and its resources in reducing the toll from acute heart attacks.

The next Academy project was to undertake a survey of the ambulance situation. The only national effort at that time to upgrade emergency departments and ambulance attendant training was by the committee on Trauma of the American College of Surgeons. Having gone up against many blank walls, the College of Surgeons Committee on Trauma was joined by the American Association for the Surgery of Trauma and the National Safety Council to develop and to modify an ambulance ordinance which the College has been trying to get accepted throughout the Nation.

This small group, called the joint action program, was the only one on the scene in 1965, except the American Heart Association which was concerned with cardio-pulmonary resuscitation. Although some of the activities of other national professional organizations were related to aspects of emergency care, none were formally identified with solving the problems of organizing a system of emergency medical services.

The Academy task force summary report on ambulance services is in the pocket of reports which I handed to you. It calls attention to the archaic state of affairs, including the fact that a man can use a station wagon or a hearse, put on a uniform, and call himself an ambulance attendant or purveyor, yet have no experience or training and be equipped just to haul people in a recumbent position.

In regard to Senator Beall's question of yesterday about research on the design and equipment of the ambulance, the question was not fully answered.

The recommendations of this task force resulted in an important step in upgrading ambulance programs, which is described in the Academy document in your folio entitled Medical Requirements for Ambulance Design and Equipment.

Requirements for ambulance design and equipment were crucial if we were going to assure an adequate vehicle and the right kind of equipment for the people properly trained to apply life-support care at the scene of an accident or serious illness and during transport.

The report, Medical Requirements for Ambulance Design and Equipment, was translated by a committee of the National Academy of Engineering into design criteria as a guide to construction of ambulances by industry. The report, ambulance design criteria has been adopted by the DOT as the standard on which the Department grants matching fund financial support for the purchase of ambulances, and ambulance equipment, including radios. Mr. Lewis, of DOT stated yesterday that they have authorized matching funds on a 50 to 50 up to a 70 to 30 basis toward the purchase of 1,800 of these modern ambulances. Meanwhile the ambulance industry itself, stimulated by the active competition created by these new standards, is producing vehicles that are truly worthy of the cause. With enthusiasm they have adopted important improvements, including numerous safety standards and elevation of the roof to provide a minimum of 54 inches of space in the ambulance so an attendant can conduct CPR in a kneeling position with the patient on a litter.

The Committee on Ambulance Design Criteria included design engineers of General Motors, Chrysler, and Ford, and the man who

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holds the first patent on automobile air conditioning, as well as experienced ambulance operators and physicians who wrote the Academy report, Medical Requirements for Ambulance Design and Equipment. Senator Beall is thus assured that exhaustive research has been devoted to this problem.

If by any chance steps are taken to reduce the Department of Transportation resources for support of procurement of modern ambulances, and communications equipment, or for training of emergency medical technicians, there would be a void at least of a year for new authorization and appropriations, and at least 2 years before adequate resources might become available from any other agency. This situation is now so well handled by DOT that it is a matter of simply providing additional funds to the DOT so it can be assured of the opportunity and the authority to go ahead and replace 15,000 inadequate ambulances of the 20,000 in the United States. Our society deserves the best ambulance service in the world. All we need to do is to implement existing standards of vehicles, equipment, and training of personnel. I hope nothing will interfere with the progress in this field.

Senator KENNEDY. You think the matching ought to be 70 to 30.

General SEELEY. Well, it has been 50 to 50 in general. In certain circumstances I think it was as high as 80 to 20. Mr. Lewis told me yesterday they now give 70 to 30. It is very significant that under funding requirements DOT has withholding authority to insure that these ambulances do meet safety and design requirements, as well as to prescribe as a condition of support that two technicians man the vehicle, that it be available 24 hours a day, that technicians be adequately trained, and that proper records are maintained.

HEW does not have either the funds or withholding penalty if standards are not met. The only ambulances they are supporting are those provided for in the $8.5 million for five demonstration areas.

Training standards for ambulance emergency medical technicians are incorporated in two Academy documents in your folio. These have been endorsed and adopted nationwide as the standards for training of ambulance personnel.

The Academy committees recommended that the absolute minimum of training be 80 hours, for which the American College of Surgeons developed a curriculum and which was implemented in the form of lesson plans produced by the Department of Transportation. In developing training requirements representatives of many professional and ambulance organizations met at the Academy of Sciences. In this way we were assured that principles of early medical care and those of first aid taught by the Red Cross were consistent on a nationwide basis.

The text for the American College of Surgeons curriculum and the DOT lesson plans was developed by the Committee on Injuries of the American Academy of Orthopedic Surgeons. As of last summer 120,000 copies of this textbook have been purchased, and more than 25,000 emergency medical technicians had completed the basic level course.

DOT is supporting the training programs, as well as HEW and others, and local people throughout the country are contributing generously of their time.

Recommendations and guidelines for training programs beyond the minimum of 80 hours are contained in the Academy of Sciences publi-

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cation, Advanced Training Program for Emergency Medical Technicians—Ambulance. This course consists of 480 hours. It includes not only much exposure in all of the departments of the hospital where emergencies are handled, but also in the morgue to find out what the errors of judgment were or whether the conditions which were covert could have been recognized and survival assured. This course also is designed to qualify technicians to administer drugs and carry out defibrillation to correct cardiac arrhythmias, a cardinal sign preceding cardiac arrest, the cause of death of more than 200,000 people before they can be brought to a hospital.

A 2-year college-level course for emergency medical technicians is under development by the AMA with the American Association of Junior Colleges. Initial guidelines for program planning have been published, and a few institutions are now undertaking the institution of the 2-year training program.

Senator KENNEDY. Do you know how many people have taken each of these courses?

General SEELEY. Approximately 50,000 have had the 80-hour basic course. The 480-hour course has been pilot tested at a hospital at Springfield, Mass., and detailed lesson plans have been developed. Under DOT support, this course is being further refined at five or six other large institutions. The approved curriculum for this should be available within the year.

Meantime, a number of cities, including Seattle, New York, Los Angeles, and Portland, have conducted courses ranging from 400 to 1,200 hours.

Senator KENNEDY. We are just trying to find out how many have taken these courses in all, and what you anticipate the numbers to be over a period of time.

I think you have indicated that apart from these particular courses you have outlined here, there are other very satisfactory courses being developed in other situations.

I was just trying to get a feeling about how far this has increased in the last 2 or 3 years, and what sort of projection is being made for the next few years.

General SEELEY. I do not have the latest figures. As of March when the Academy published the report entitled the Roles and Resources of the Federal Agencies in Support of Emergency Medical Services, approximately 35 percent of the 200,000 ambulance attendants were qualified at the basic level, either by passing the 80-hour course or through previous training and experience. I would estimate that fewer than 5 percent are qualified at the 480 hours advanced level.

The basic course is being widely applied throughout the country. I think we need have no concern about this level being mandatory, but it will take 1 to 2 years to qualify more than 100,000 technicians. There must be some assurance where necessary of a subsidy of local communities where they are not able to get a sufficient number of volunteer people or training aids to do the training.

Since publication of the report, Accidental Death and Disability: The Neglected Disease of Modern Society, the physicians themselves have recognized that they had failed to pay adequate attention to the quality of care rendered by the ambulance attendants.

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I have said publicly many times that the average physician of today is less informed about what the ambulance personnel did before the patient came to the emergency room than the physicians own wife knows about the control of quality of the groceries and the meat that are delivered to her kitchen.

This situation is being rapidly corrected, for which I am very grateful.

In order to provide communication systems adequate to the needs of the critically ill or injured, a study has been underway at the Academy, but the final report is not out. Meantime, however, two very important and valuable documents on this subject have come out, one by the Department of Transportation and one by the Division of Emergency Health Services of HEW.

An adequate communications system is crucial to saving lives of the seriously ill or injured. This system includes immediate notification that an incident has happened and the extent of help that is required. This must be acted upon at a central source that cannot only direct an ambulance to the scene but also let the police know if traffic problems exist, to alert utilities people if an electric line is down, the fire department if there is a fire, and a rescue vehicle if there is need for heavy equipment.

Immediacy of coordinated response by a central communications center is available in only a few communities today, having been developed only in recent years because of public disorders. However, there is much to be wanted in terms of those who are imbued with their own responsibilities to include emergency medical services requirements within their systems of notification or action through communications.

An example is the fragmentation of communications in political jurisdictions. The vast amount of money that is being put into LEAA emphasizes that law enforcement requires highly sophisticated communications. Something should be written in the provisions for such support to express the sense of the Congress that in the development of communications to coordinate the response of law enforcement authorities, there must be present in the system means by which immediacy of response of all other emergency services can be effected. Emergency medical response must be as much a community responsibility as law enforcement and fire control.

Senator Kennedy. As a member of the Judiciary Committee that has oversight on LEAA, I would be very interested if you could help.

General Seeley. It is here in considerable detail (referring to the document on Federal Rules and Resources in Support of Emergency Medical Services.)

Senator Kennedy. All right.

General Seeley. There must be communication between the dispatcher and the ambulance itself. I would estimate that 10 years ago fewer than 1 percent of the ambulances of this country even had a radio with which they could communicate with dispatchers, let alone with physicians or hospitals.

In such a circumstance the taxi industry would go broke. The emergency requirements are such that any ambulance that does not have radio communication, at least with a dispatcher, ought to be ruled off the road.

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DOT money includes support not only for radios, but also subsidy of all other equipment, dispatcher training, and a base station at the hospital, so there can be communication between the ambulance and the hospital staff.

I have many reservations as to the wisdom of pushbutton call boxes on the highways to let somebody know "something happened," without voice communication between the caller and the recipient. Until a patrol vehicle arrives, notification cannot go forward to inform dispatchers whether firetrucks, rescue equipment, utility workers, or ambulances are needed. Meantime, many may die for lack of proper care.

Ambulance personnel must be able to inform the hospital of the number of casualties, the extent of their injuries, and the estimated time of arrival. It is most important that casualties be taken to the hospitals best equipped and staffed to cope with the seriousness of the victims, and this decision must be made in advance.

Within most hospitals, communications systems are quite sophisticated, particularly for mobilizing personnel and equipment in case of cardiac arrest, and so forth, of a patient. Interhospital communication for areawide disaster or public disorder, for hospital professional help, for equipment or blood, and for interhospital transfers, calls for regional communication systems that must cross many political jurisdictions. These systems must be compatible on a nationwide basis. For this reason the Office of Emergency Preparedness and the Office of Telecommunications Policy should assume the primary responsibility to see to it that the emergency communications systems throughout the country will be immediately coordinated in case of widespread disaster or a national emergency.

In the "Accidental Death and Disability" report it was recommended that every community organize a council on emergency medical services. The AMA Commission on Emergency Medical Services published guidelines for developing such councils, which have been followed in establishing not only local, but also regional and Statewide councils. This resource should be fully utilized by State and areawide comprehensive health planning agencies, and funds appropriated for implementation should be earmarked specifically for components of an emergency medical services system.

Testimony at this hearing has emphasized the importance of delivering patients to hospital emergency departments best prepared for their particular problems. In the "Accidental Death and Disability" report the Academy of Sciences recommended that hospitals be categorized in terms of emergency care capabilities, that the numbers of hospitals of each category be determined on regional patterns to provide optimal emergency care, and that ambulance and communication services be coordinated to effect prompt admission of patients to appropriate facilities.

In subsequent studies by Academy committees, detailed criteria were spelled out for each of four categories of hospital emergency capabilities. These criteria served as a major resource for a "Conference on the Guidelines for the Categorization of Hospital Emergency Capabilities" by the AMA Commission on Emergency Medical Services. Criteria for each category include the scope of the emergency department, the number of specialty services staffed on a 24-hour basis;

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equipment; readiness and availability of laboratory, X-ray, blood, operating room, postoperative recovery and intensive care facilities; areawide agreement on patient transfer between hospitals; requirements for acceptance of patients; availability of hospital records; audit and review of services; continuing education programs; in-house, or access to, poison control information centers; mass casualty plans, rehearsals, and expansion capabilities; radio and telephone communication facilities; and accessibility to ground and air transport vehicles.

GENERAL SEELEY. Regarding Senator Beall's questions on helicopters, I would like to make some observations. I think it is the consensus throughout the country that the multipurpose helicopter is the most economical and readily available airborne vehicle for providing emergency service, and that the people who man these helicopters must be trained adequately, at least to the basic level of the emergency medical technician.

We recognize the problems of night flight, weather conditions, and overhead power lines; but we also recognize that in the interstate highway four-lane system, once an accident has occurred, all the traffic is cleared in front of it, and the helicopter can easily land. The helicopter is also indispensable for emergency services in areas of rugged terrain, and can land in the immediate vicinity of a hospital.

I will use as an example of the effectiveness of helicopters their role in reducing mortality among wounded in recent wars.

In World War I, 8 percent of battle casualties died after entering the medical system. In World War II, the mortality rate was reduced to 4 percent. This was due to advances in medical care, better access to casualties in a forward-advancing military situation, and to some extent the beginning of a national blood program.

In Korea, with complete air superiority, hospitals were in advance locations, and the helicopter was put into use. Even though casualties were transported in pods outside the cockpit, they received care earlier and the mortality rate was reduced to 2.3 percent.

In Vietnam we started out with the same percentage 2.3 but with much better helicopter evacuations. Within 25 minutes from the time a man was wounded on the front lines he could be on the operating table receiving surgical attention with a much greater opportunity to survive. As a result the mortality rate in the early phases of the war was reduced to 1.9 percent.

The helicopter system became so efficient that casualties were admitted with massive wounds of such a magnitude that they were irreversibly fatal, but they were entered into the medical system, and the mortality rate was increased to 2.3 percent. Thus it is apparent that the helicopter proved effective as a crucial link in affording the greatest possible chance of survival from critical trauma. Our efforts must be devoted to making the helicopter economically feasible and readily available, and these problems must not be ignored at the expense of loss of life.

We are now prepared for revolutionary changes in providing optional emergency medical services throughout the Nation. This service is the weakest link in the health care system. Scores of newly organized professional and lay organizations strive to implement standards for ambulances, ambulance equipment, emergency communications, emergency departments, training of personnel at all levels,

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and systematic delivery of emergency service on integrated regional patterns. Compared with current Federal programs in support of health care, the amount of money needed is relatively small. Application of known technology to components of the emergency medical services system requires initial expenditures to modernize ambulance fleets under DOT and HEW programs; modernize and expand emergency departments under Hill-Burton and other resources; install integrated communications systems; support training programs under the Bureau of Health Education of the NIH, and DOT and the Division of Emergency Health Services, HEW; expansion of research in shock and in trauma involving multiple body systems under the division of general medical sciences of the NIH, and in coronary heart disease under the Heart and Lung Institute, NIH; and emphasis on support of components of emergency medical services by the multitude of Federal agencies whose responsibilities in this area are identified in the Academy of Sciences report," Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services". Since the Bill—S. 504 provides only for amendment of the Public Health Service Act, I wish to make a strong plea than in legislation applying to all other major Departments of the Government identified in the Academy report, they will be supported and encouraged to incorporate provisions for emergency medical services through actions of subcommittees on Health of the Senate and of the House. Amendments or expressions of the sense of the Congress are especially applicable to DOT support of ambulance and communications services, to Health Maintenance Facilities and to OEO in support of urban neighborhood out-patient clinics to relieve hospital emergency department pressures, to DOD in support of training programs and helicopter services, and to HUD in support of urban communications systems and location of emergency health facilities planning.

The Academy report was written for the edification of all Federal bodies that have a role to play in providing emergency medical services, as stated in the preface:

It is the hope of the NAS–NRC Committee on Emergency Medical Services that this report will add momentum to the further development of administrative policies and interdepartmental coordination by the Executive Office of the President, the development of program priorities and consolidation and direction of programs within the Department of Health, Education, and Welfare, the allocation of appropriate resources by the Office of Management and Budget, and the appropriation of adequate funds by the Congress toward the development and implementation of optimal emergency medical services for every citizen of the country.

Mr. Chairman, I respectfully request that this report and others which I furnished to you today be incorporated in the record of the hearings on S. 504 by your subcommittee. This record will thus inform all Members of the Congress of the magnitude of the toll from trauma, which is the leading cause of deaths in our citizens of the ages from 1 through 38 years, and all major programs to develop emergency medical services are described. It is my fervent hope that the Congress will, in this session, embark on a program of emergency medical services that will be as strongly supported and implemented as Federal programs in mental health, drug abuse, heart, cancer, stroke, consumer protection, environmental control, poliomyelitis, and many other problems related to human welfare.

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Hearings on S. 504 at this time marks a milestone in emergency medical service. This is the first time, to my knowledge, that a public statement in a Senate subcommittee has expressed active concern about emergency medical services. The first time that a President expressed concern about emergency medical services was in January 1972, in President Nixon's message to Congress. Then, for the first time, emergency medical services was identified within the HEW at a level higher than that of one small Division of Emergency Health Services, who primary responsibility was limited mainly to response in disaster.

Thank you.

Senator KENNEDY. General, yours has been splendid testimony. We are going to make this report "NAS–NRC's Roles and Resources of Federal Agencies in support of Comprehensive Emergency Medical Services," a part of the record, it is a superb piece of work and of great credit to all who had a part in it. We will include the other reports, which I think are also excellent in the file of our committee hearings.

[The report referred to appears on p. 947.]

Senator KENNEDY. Have you had a chance to examine the bill which the American Medical Association introduced?

General SEELEY. Only to the extent related this morning. My reaction, however, is that there is very little to be reconciled between the two bills. I do not see any problem in consolidating the important aspects of both bills in the final presentation of your subcommittee. I feel the same way about those that have been to the Senate, or of reconciling your recommendations with those that will be presented in the House. I avoid trying to compare one with the other at this stage of development. The most important consideration is that, for the first time in history, the Congress is expressing its concern specifically about emergency medical services, and is providing leadership and direction to the executive branch to implement long-needed programs that will save thousands of lives and avoid lasting disability of hundreds of thousands of our citizens each year. Obviously the implementation of your initial actions will reveal many additional requirements and problems to be met in the coming years. Therefore I am not really concerned about current details. Whichever bill comes out this year will be a starting point.

Senator KENNEDY. Along those lines, if you could give us your advice on which are the best aspects of each, we would be very much in your debt. For you have given as much thought to this whole problem as anyone in the country, and I believe you bring extraordinary experience to it. We would therefore be most grateful for your opinions.

General SEELEY. Yes, sir. I am extremely happy to hear you say that, and I am honored. You may be assured that now that I am retired and live in this area I will be available to come down and work with your staff at any time that they wish.

Senator KENNEDY. Now, on the matter of the resources of the National Research Council, I think your testimony here probably is one of the best justifications of Federal expenditures in this area. We have seen here what an enormously valuable service for the country this can be. But I am dismayed to learn that you are going to be feeling the pinch over there, are you not?

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General SEELEY. Yes, sir.

I must say in good conscience that at the time I had to retire because of age the Academy Committees on Emergency Medical Services had fulfilled the important mission of serving as a catalyst and as a forum for the Nation's experts to develop recommendations and guidelines that have been adopted as nationwide standards for all components of a comprehensive emergency medical service. This mission was accomplished through financial support by the Division of Emergency Health Services, HEW, and the National Highway Traffic Safety Administration, DOT.

The standards developed by the Academy committees are the basis upon which numerous professional, lay, and industrial organizations and the initial programs of HEW and DOT are implementing some components of emergency medical services.

Now, there is an even more important mission that can be carried out by the Academy. There must be a continuing forum of experts, who, without conflict of interest, can carry out the traditional role of the Academy in keeping fully informed of developments and of problems arising during implementation of emergency medical programs so that it can respond to requests for advice and assistance from any branch of the Government. To do this an objective and critical analysis and judgment of congressional and Executive policy and administration, and of the effectiveness of implementation by State and local political jurisdictions are essential. Concurrently these experts must keep abreast of medical advances, new research avenues, and technological progress that influence better delivery of emergency medical services.

So I would suggest that an invitation to the Academy to declare ways in which it might be helpful is the best way to determine its future role in this area.

Senator KENNEDY. Very good.

General, many, many thanks. We will be calling on you as we move through with this legislation. Your statement was very constructive, very helpful.

General SEELEY. Thank you very much. I will leave extra copies of all these reports.

Senator KENNEDY. Our last witness will be William J. Silverman, director, Cook County Hospital, Chicago, Ill. Accompanying him is Leo J. Gehrig, M.D., vice president for Federal Relations of the American Hospital Association.

Gentlemen, welcome to the Senate Health Subcommittee. I know we will benefit greatly from your testimony.

STATEMENT OF WILLIAM J. SILVERMAN, DIRECTOR, COOK COUNTY HOSPITAL, CHICAGO, ILL., ACCOMPANIED BY LEO J. GEHRIG, M.D., VICE PRESIDENT FOR FEDERAL RELATIONS OF THE AMERICAN HOSPITAL ASSOCIATION

Mr. SILVERMAN. Good morning, Senator Kennedy.

Senator KENNEDY. Was I right about your medics?

Mr. SILVERMAN. Yes, you were.

Senator KENNEDY. I visited the Cook County Hospital about a year and a half ago, and I thought if I remembered right you had about six or so former medics from Vietnam in a program which

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seemed highly successful. I found the unit there very impressive.

Mr. SILVERMAN. We have three or four times that number now.

Mr. Chairman, I am William J. Silverman, director, Cook County Hospital, Chicago, Ill. Accompanying me is Leo J. Gehrig, M.D., vice president for Federal Relations of the American Hospital Association. We are pleased to have this opportunity to express to your committee the American Hospital Association's support of the emergency medical services legislation before you.

I have a prepared statement which I would like to submit for the record, but rather than read it, I would like to summarize it and offer three suggestions concerning S. 504 which are intended to be constructive.

There are a variety of indicators that point up the importance of developing comprehensive emergency medical service systems. Accident alone account for as many as 115,000 deaths, 400,000 persons permanently disabled, and 10 million persons partially disabled during the course of a year, with a resulting loss to the economy of some $28 billion.

While accidental injury is the number one cause of death to persons under age 37, the entire range of emergencies include many causes other than accidents. It was indicated in the Conference on Emergency Health Services, held by the Department of Health, Education, and Welfare in December 1971, that preventable deaths from all emergency conditions totalled approximately 60,000 a year.

These deaths resulted from such causes, in addition to accidents, as heart attacks, strokes, poisonings, acute medical illnesses and other. In fact the estimated preventable deaths from heart attacks alone were approximately 35,000 while those from traffic accidents were 12,000 a year.

An AHA report, published in 1972, and entitled "Emergency Services" states:

> Many persons were given excellent care; many were not. Some received disabilities that could have been prevented; some died whose lives could have been saved had prompter and more adequate emergency care been available from the onset of the emergency, during the trip to the hospital and at the hospital.

In one type of emergency, automobile fatalities, it was estimated that almost one-fifth of the deaths could have been avoided if the victims had received adequate emergency medical treatment.

Hospital emergency department visits have increased dramatically in recent years. From 1965 to 1971 the number of such visits rose from about 29 million to some 51 million, a gain of more than 21 million. While these data provide an index to the magnitude of the demand for emergency services, many of these visits did not present true emergency conditions or urgent conditions but had to be considered emergencies until an appropriate clinical determination could be made.

The reasons for such nonemergency demands upon hospital emergency rooms are several. For many people the emergency room has become the first point of contact with the medical care system. For many it has in effect become their family doctor. This means that for the effective use of emergency departments we must find alternative sources for primary care of nonemergency cases and thus avoid the commingling of such cases in the emergency department where essential resources should be directed to receiving and treating patients who are severely injured or seriously ill.

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Too often when prompt and appropriate medical attention is critically needed to treat victims of accidents, or a serious illness, adequate emergency transportation and treatment are not readily available. The problems in urban and rural areas present some differences, for example, in one instance the distance from adequate resources, in another a clogged and uncoordinated emergency system.

Meeting all emergency medical needs in an area requires coordinated, communitywide planning, adequately designed and equipped transportation and treatment resources, effective communications, and well-trained emergency personnel.

The objective of communitywide or regional planning should be to devise a system that will get the patient to the right place promptly, provide adequate treatment of his emergency condition, and provide the necessary supportive care en route to the hospital. Such planning must be structured to develop or improve a coordinated system for emergency care in a given service area.

Planning for emergency services should involve existing and potential participants in the delivery of these services in the area and representatives of the community, and should require appropriate involvement of areawide and State comprehensive planning organizations.

It is important that provision be made for flexibility in the establishment of service areas for emergency medical services. In many instances effective service area boundaries will not coincide with political boundaries, but may cross county or even State lines. A variety of considerations such as location of health facilities, transportation routes, utilization patterns, et cetera, should be included in defining a functional service area. Any program for planning or operation of emergency medical services must be sufficiently flexible to permit the development of effective service areas that are not necessarily limited by political boundaries.

S. 504 recognizes the importance of adequate planning by requiring establishment of area emergency medical services planning councils with input from and appropriate coordination with the section 314 agencies established under the Public Health Service Act.

The Department of Transportation estimated in July 1971 that there were about 13,000 ambulance services with about 23,000 ambulances operating in the United States. These services are provided by a wide variety of organizations including such diverse groups as funeral homes—44 percent; volunteer groups—24 percent; commercial companies—14 percent; fire and police departments—13 percent; hospitals—3 percent; and other—2 percent.

In many instances vehicles serving as ambulances are unsuited for providing medical care and lack the necessary supplies and equipment. For example, only about 40 percent of ambulances are equipped with splints which are so necessary to the movement of persons with broken bones. Very few have the capability of administering intravenous fluids so important in the treatment of shock.

A recent study sponsored by the Chicago hospital council disclosed that a sick or injured patient is treated in a Chicago hospital emergency room every 30 seconds of every day. Every 3 minutes of every day an ambulance is sent to pick up an accident victim.

A 2-week study revealed that in one Chicago hospital alone 859 patients were treated in the emergency department each day. Some two-thirds of these patients were transported to the hospital in what

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is termed "squadrols," which are actually paddy wagons. These vehicles had no means of administering oxygen to the 35 cardiac cases, to the 51 patients with seizures and convulsions, or to the 21 unconscious patients they transported to the hospital each week.

The 179 limb injuries per week could not be splinted, nor the 200 laceration cases per week temporarily cared for. These inadequacies present a substantial threat to the health and even life of patients transported in such squadrols. We believe the situation revealed by this report may well exist in other large cities.

Admittedly, emergency medical transportation needs will vary depending on the geographic characteristics of the service area. Thus, it is significant that the provision of the bill dealing with emergency medical transportation specifically calls for including airborne and waterborne transportation as necessary.

I would call to the committee's special attention a specific concern I have with regard to the size of the area emergency medical services planning councils that would have to be established in order to qualify for assistance under the bill. In my own area there are more than 125 units of government that, as I read the bill, would have to be represented on our planning council. This would give a very large and perhaps unworkable body.

Senator KENNEDY. You have how many units in government or administration?

Mr. SILVERMAN. In Cook County, which is a government jurisdiction, we have in addition to the city of Chicago—which is the big part—something on the order of 127 separate recognized municipalities.

I live in the village of Park Forest which is one of these. Almost every one of these has a police department, fire department, or combined public safety body.

The language of the bill as I read it says "shall include representatives of all public safety agencies." Since it says "all" we would start in our county with 127 municipalities represented and go on from there to every medical school, every hospital.

We support the representation of the categories, and I might point out, Senator, we are pretty far down the road in this direction in Illinois on reflecting some of the State law previously alluded to, and we have in Metropolitan Chicago created an emergency medical services commission which seems to be just this kind of body.

The chief of the ambulance service with the fire department is on that commission, and representatives of all of the categories which we think would ordinarily be intended here, but to have representatives of each and every body represented would make it prohibitively large.

Our group is 39 or 40 in size, and that does include an adequate cross section of representation.

I will go back to my statement under emergency medical service personnel.

Studies have shown that 62 percent of ambulance attendants have training to the level of advanced first aid training, and 5 percent have no training. Guidelines prepared by an expert task force under the aegis of the National Academy of Sciences—National Research Council Committee on Emergency Medical Services—take the position that ambulance attendants should be qualified to carry out medical procedures performed by assistants in emergency departments or by medical corpsmen in combat areas. They should be able to do so independently

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or with guidance and supervision of a physician via voice communication.

Such procedures include medication by hypodermic or intravenous routes, transfusion, tracheal intubation, tracheotomy, decompression of tension pneumothorax, defibrillation, mechanical external cardiac compression, and control of hemorrhage.

No single aspect of an emergency medical services system is more crucial than the availability of an adequate number of trained personnel, both professional and paraprofessional. We are pleased that S. 504 provides specifically that any emergency system supported by the bill must include programs for the training and continuing education of health professionals and paraprofessionals in the provision of emergency medical services. Further, we agree with the hope expressed by Senator Cranston upon introduction of the bill that the Secretary will make development of such training programs an item of first priority.

While a high priority in the development of an effective emergency medical services system is the training of personnel who operate within that program, we must not overlook the importance of first aid and medical self-help training for members of the general community. The importance of public education and information is evident when one notes in the study of "Emergency Services in the Chicago Area," that 44 percent of patients with emergency conditions—that is accident victims rated by physicians as needing immediate medical attention to avoid loss of life or function—drove themselves or were driven by friends or family to the hospital emergency facility.

The public needs to be educated.

Senator KENNEDY. How about those that really truly needed emergency help? We know that three out of four that go into the emergency room——

Mr. SILVERMAN. Some 44 percent of those who on the basis of a medical determination—I will be touching on that in just a moment.

Senator KENNEDY. All right.

Mr. SILVERMAN. Some 44 percent of those got there under their own power or members of their family brought them in.

We say training must be provided for the paraprofessional and professional personnel, and the public needs to be educated regarding emergency medical services.

Inadequacy of communication is a major stumbling block in many emergency care systems. For example, despite the critical need for communications to provide both direction and response for ambulance units, only 6 percent of ambulances have the radio capability to communicate directly with hospital emergency rooms, and in fact only slightly over one-half have such a communication capability with their own base.

It is fundamental that local, regional, and State emergency medical service systems include provision for a functional communication system operating 24 hours a day, which links all elements of the system and provides for timely responses.

We sometimes run into language problems. For example in Chicago we are just now duplicating 250,000 copies of some educational material to go into every home. It will be printed in English, Spanish, and Greek. In other communities in Chicago it will be printed in other languages.

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Senator KENNEDY. A few will be printed in Polish?

Mr. SILVERMAN. Yes, and I think some more languages.

The bill deals very appropriately with the subject of communications and with the need for adequate communications systems. This is a real deficiency in many of our medical emergency systems today. The need is emphasized when as I have stated only some 6 percent of ambulances have radio equipment which enables direct communication with hospital emergency departments. Only slightly over one-half have communications equipment with even their own home bases.

Another problem impinging on radio communication systems has to do with shortage of radio frequencies assigned to the health care field.

Mr. Chairman, while initial emergency support and adequate provision for transportation of a patient are vital, follow-up services at the hospital emergency room and then in hospital intensive-care units are also critical parts of the continuum of emergency medical services.

The American Hospital Association's 1971 annual hospital survey showed that about one-half of the 6,570 reporting hospitals did not have even a basic emergency department capability and some 13 percent of these hospitals did not report any emergency capability. Another study revealed that as few as 17 percent of emergency departments had 24-hour coverage by onduty physicians. While it is recognized that it is not feasible or necessary to provide comprehensive emergency services in all hospitals, particularly in all of the many hospitals serving urban areas, upgrading of these services is sorely needed.

As a matter of fact, Congress authorized in the last extension of the Hill-Burton program, $20 million to be made available annually for construction or modernization of emergency facilities. Regrettably, no funds have been appropriated under this authority to carry out this program to improve emergency facilities in general hospitals. S. 504 recognizes the need for improvement of such facilities and would extend the authorization for this program for 3 additional years. To implement this activity it will be necessary that Congress appropriate funds pursuant to the authorization.

We agree fully that anyone in need of emergency medical care should be provided such care without regard to or prior inquiry about his ability to pay. While health services are provided to patients unable to pay for them, it must be recognized that a key problem in maintaining an effective emergency medical services system is meeting the standby costs of hospitals in providing and maintaining life-saving equipment and assuring round-the-clock availability of highly trained staff. It is essential that the costs of these services be shared fully and equitably by all purchasers of care, including the Federal Government as outlined in the American Hospital Association's statement on the financial requirements of health care institutions and services. For instance, in 1970 approximately 1,892,000 people were treated in metropolitan Chicago hospital emergency rooms at a loss of $8.3 million. These costs had to be recovered from other sources.

Senator KENNEDY. How did you recover them?

Mr. SILVERMAN. By overcharging other patients at the hospital and third parties who pay for them.

Senator KENNEDY. Could you give us a breakdown on how they were recovered?

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Mr. SILVERMAN. No sir, not without putting some figures together, but I would be glad to supply it.

Senator KENNEDY. I think it would be helpful.

Mr. SILVERMAN. We will be glad to.

Senator KENNEDY. That is pretty common. It is rather typical.

Mr. SILVERMAN. Oh, sure.

S. 504 wisely provides for the establishment of an interagency technical committee to coordinate Federal programs and activities, and to provide for full communication and exchange of information as a basis for program coordination. It further provides for the establishment of a National Emergency Medical Services Advisory Council within HEW to review and advise on applications for assistance under the program and to make recommendations to the secretary with respect to carrying out the program.

The American Hospital Association supports S. 504 which would authorize $300 million over the next 3 years for project grants and contracts to assist States, political subdivisions, or regional arrangements, compacts or consortiums on a matching basis of up to 75 percent for the planning and development or expansion of comprehensive area emergency medical service systems. It also includes a separate authorization of $5 million each for the next 3 fiscal years to provide grants to public or private nonprofit agencies, organizations, or institutions for research in emergency medicine techniques, methods, devices, and delivery.

Mr. Chairman, we appreciate the opportunity of presenting these views of the American Hospital Association and will be pleased to answer any questions the members of the committee may have.

Senator KENNEDY. As we were talking about payments, are you able to tell us approximately how many people who receive emergency services can afford them and how many cannot?

Can you also give us some broad figures on the total number of people in emergency rooms and the total deficit?

Mr. SILVERMAN. We will have to put some figures together. It varies so from institution to institution, depending upon the individual community being served, that it will take some averaging to give you a meaningful answer.

Some hospitals run dreadful deficits. Others can come pretty close to breaking even. It depends on the location of the hospital and the nature of the community it serves.

Senator KENNEDY. You mentioned that your 1971 report showed that 13 percent of the hospitals are without any emergency capability. How do you define that?

Mr. SILVERMAN. There are all kinds of definitions. The American Hospital Association has a four-level system, if you will, of hospital capabilities to provide emergency services.

The AHA and AMA have four stage levels. In Illinois by law we have three. In practice it is my personal opinion that two are about enough.

Senator KENNEDY. Does it run pretty close to the definition of the National Academy of Sciences?

Mr. SILVERMAN. I think so.

Dr. GEHRIG. The classifications under which these figures were compiled were first, major facilities, which was described as capable of

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rendering advanced medical and surgical care by a skilled staff, 24 hours a day.

The second level was a basic hospital which had organized facilities capable of rendering care for most life threatening emergencies, but not highly specialized resuscitation. It was staffed 24 hours a day.

Then there is a third category which is limited to treatment of minor conditions, emergency resuscitation, with professional nursing personnel available.

Finally there is a category of referral services alone.

But the figure that you referred to of 13 percent is indicated in our statement in 1971; 3.4 percent of this group said they only had emergency referral services and 12.6 reported no emergency capability. The remainder of the group fell in the classification that I have described.

Senator KENNEDY. What is your attitude toward the creation of an emergency medical services residency in medicine? Should that be regarded as a specialist subject?

Mr. SILVERMAN. Yes sir. I think it should be supported.

Senator KENNEDY. Have you taken any action to express your attitude before the Council on Education?

Dr. GEHRIG. Not to my knowledge, Senator. We have been concerned in the broad area of training health manpower, both at the paraprofessional and the professional levels, but I do not know of specific action in this.

Senator KENNEDY. Do you pay much attention to the categorization of hospitals according to the emergency services offered?

Mr. SILVERMAN. Yes sir. This is a takeoff point, if you are going to develop a system in one community. In Chicago where we are pretty far down the road and serve as a prototype actually for the State, 15 hospitals in a cooperative effort, working with the Illinois three stage categories of standby, basic, and comprehensive, have categorized their capability.

Four have comprehensive capability, some four or five have basic, and some four or five standby.

That means some are at the beginning point of phasing out the emergency room business. It makes better economics for them. It makes for better care for the patients in the community. It is one means of moving into the area of economies and efficiency in the method of delivering health care.

This is the area where we are mounting the public education program as well.

Senator KENNEDY. Do you think there should be standards enforced on emergency rooms as to the equipment and space and staff per patient ratios?

Mr. SILVERMAN. I am troubled with standards being forced. I think the guidelines of the American College of Surgeons and other bodies ought to be available and used by institutions. When they start working together in regional areas, as in the instance I cited and in others, you cannot look away from the standards.

I think the standards are needed. I hate to see them legislated.

Senator KENNEDY. In the Boston City Hospital one sees the problems of accreditation in many instances, the lack of general support for municipal hospitals, the shortage of funds, the cutting back of Hill-Burton.

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It seems that the ones providing the greatest amount of care have very strict kinds of standards, and have the most difficulty living up to them. Yet they are in so many instances the only ones providing immediate care.

Mr. SILVERMAN. I think the message is clear in the hospital field that if we do not do it, somebody else is going to.

Senator KENNEDY. Yes.

Do you have any reaction to the cutting back of the Hill-Burton funds?

Mr. SILVERMAN. I am sure in the AHA there is an official position. I have a personal one.

Dr. GEHRIG. I must say, Senator, that I do not believe I can reflect adequately at this moment on the question. I would like to state from my own personal observation that in some of the discussion that is occuring now about Hill-Burton funds there is a good deal of discussion about construction of new facilities, but there is a great lack of discussion of what I think may be the biggest capital financing need of hospitals, and this is modernization.

The need is particularly great in the larger urban areas but not restricted to them.

There are other problem areas. Not only is there great need for modernization, but in many instances the community itself has a very low capability to provide capital financing for needed facilities or to solve the very problem of maintaining an effective health care institution.

This is a subject on which we can more adequately speak later, but I think the casual comment that nothing is needed ignores very real problems.

Senator KENNEDY. It is going to be a very real problem out our way.

Mr. SILVERMAN. Out our way too.

Senator KENNEDY. I hope we will be able to work with you later on that particular problem.

I want to thank you very much for your appearance here and for your very helpful comments. Thank you.

Give my best to the mayor.

[The prepared statement of the American Hospital Association follows:]

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STATEMENT OF THE AMERICAN HOSPITAL ASSOCIATION
BEFORE THE SENATE SUBCOMMITTEE ON HEALTH
ON S.504, THE EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT
OF 1973

Mr. Chairman, I am William J. Silverman, Director, Cook County Hospital, Chicago, Illinois. Accompanying me is Leo J. Gehrig, M.D., Vice-President for Federal Relations of the American Hospital Association. We are pleased to have this opportunity to express to your committee the American Hospital Association's support of the emergency medical services legislation before you.

There are a variety of indicators that point up the importance of developing comprehensive emergency medical service systems. Accidents alone account for as many as 115,000 deaths, 400,000 persons permanently disabled, and 10 million persons partially disabled during the course of a year, with a resulting loss to the economy of some $28 billion. While accidental injury is the number one cause of death to persons under age 37, the entire range of emergencies includes many causes other than accidents. It was indicated in the Conference on Emergency Health Services, held by the Department of Health, Education, and Welfare in December 1971, that preventable deaths from all emergency conditions totalled approximately 60,000 a year. These deaths resulted from such causes, in addition to accidents, as heart attacks, strokes, poisonings, acute medical illnesses and others. In fact the estimated preventable deaths from heart attacks alone were approximately 35,000, while those from traffic accidents were 12,000 a year.

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An AHA report, published in 1972, and entitled "Emergency Services" states:

> "Many persons were given excellent care; many were not. Some received disabilities that could have been prevented; some died whose lives could have been saved had prompter and more adequate emergency care been available from the onset of the emergency, during the trip to the hospital and at the hospital."

In one type of emergency, automobile fatalities, it was estimated that almost one-fifth of the deaths could have been avoided if the victims had received adequate emergency medical treatment.

Hospital emergency department visits have increased dramatically in recent years. From 1965 to 1971 the number of such visits rose from about 29 million to some 51 million, a gain of more than 21 million. While these data provide an index to the magnitude of the demand for emergency services, many of these visits did not present true emergency conditions or urgent conditions but had to be considered emergencies until an appropriate clinical determination could be made.

The reasons for such non-emergency demands upon hospital emergency rooms are several. For many people the emergency room has become the first point of contact with the medical care system. For many it has in effect become their family doctor. This means that for the effective use of emergency departments we must find alternative sources for primary care of non-emergency cases and thus avoid the commingling of such cases in the emergency department where essential resources should be directed to receiving and treating patients who are severely injured or seriously ill.

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Too often when prompt and appropriate medical attention is critically needed to treat victims of accidents or a serious illness, adequate emergency transportation and treatment are not readily available. The problems in urban and rural areas present some differences, for example, in one instance the distance from adequate resources, in another a clogged and uncoordinated emergency system. However, meeting all emergency medical needs in an area requires coordinated, community-wide planning, adequately designed and equipped transportation and treatment resources, effective communications and well-trained emergency personnel.

Planning

The objective of community-wide or regional planning should be to devise a system that will get the patient to the right place promptly, provide adequate treatment of his emergency condition, and provide the necessary supportive care en route to the hospital. Such planning must be structured to develop or improve a coordinated system for emergency care in a given service area. Planning for emergency services should involve existing and potential participants in the delivery of these services in the area and representatives of the community, and should require appropriate involvement of areawide and state comprehensive planning organizations.

It is important that provision be made for flexibility in the establishment of service areas for emergency medical services. In many instances effective service area boundaries will not coincide with political boundaries, but may cross county or even state lines. A variety of considerations such as location of health facilities, transportation routes, utilization patterns, etc. should

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be included in defining a functional service area. Any program for planning or operation of emergency medical services must be sufficiently flexible to permit the development of effective service areas that are not necessarily limited by political boundaries.

S.504 recognizes the importance of adequate planning by requiring establishment of Area Emergency Medical Services Planning Councils with input from and appropriate coordination with the Section 314 agencies established under the Public Health Service Act.

Transportation Equipment

The Department of Transportation estimated in July 1971 that there were about 13,000 ambulance services with about 23,000 ambulances operating in the United States. These services are provided by a wide variety of organizations including such diverse groups as funeral homes (44%), volunteer groups (24%), commercial companies (14%), fire and police departments (13%), hospitals (3%), and other (2%).

In many instances vehicles serving as ambulances are unsuited for providing medical care and lack the necessary supplies and equipment. For example, only about 40% of ambulances are equipped with splints which are so necessary to the movement of persons with broken bones. Very few have the capability of administering intravenous fluids so important in the treatment of shock.

A recent study sponsored by the Chicago Hospital Council disclosed that a sick or injured patient is treated in a Chicago hospital emergency room every 30 seconds of every day. Every three minutes of every day an ambulance is sent

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to pick up an accident victim. A two-week study revealed that in one Chicago hospital alone 859 patients were treated in the emergency department each day. Some two-thirds of these patients were transported to the hospital in what is termed "squadrols," which are actually paddy wagons. These vehicles had no means of administering oxygen to the 35 cardiac cases, to the 51 patients with seizures and confulsions, or to the 21 unconscious patients they transported to the hospital each week. The 179 limb injuries per week could not be splinted, nor the 200 laceration cases per week temporarily cared for. These inadequacies present a substantial threat to the health and even life of patients transported in such "squadrols." We believe the situation revealed by this report may well exist in other large cities.

Admittedly, emergency medical transportation needs will vary depending on the geographic characteristics of the service area. Thus, it is significant that the provision of the bill dealing with emergency medical transportation specifically calls for including airborne and water-borne transportation as necessary.

Emergency Medical Service Personnel

Studies have shown that 62% of ambulance attendants have training to the level of advanced first aid, 33% have standard first aid training, and 5% have no training. Guidelines prepared by an expert task force under the aegis of the National Academy of Science -- National Research Council Committee on Emergency Medical Services take the position that ambulance attendants should be qualified to carry out medical procedures performed by assistants in emergency departments or by medical corpsmen in combat areas. They should be able to do so independently or with guidance and supervision by a physician via voice communication.

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Such procedures include medication by hypodermic or intravenous routes, transfusion, tracheal intubation, tracheotomy, decompression of tension pneumothorax, defibrillation, mechanical external cardiac compression and control of hemorrhage.

No single aspect of an emergency medical services system is more crucial than the availability of an adequate number of trained personnel, both professional and paraprofessional. We are pleased that S.504 provides specifically that any emergency system supported by the bill must include programs for the training and continuing education of health professionals and paraprofessionals in the provision of emergency medical services. Further, we agree with the hope expressed by Senator Cranston upon introduction of the bill that the Secretary will make development of such training programs an item of first priority.

While a high priority in the development of an effective emergency medical services system is the training of personnel who operate within that program, we must not overlook the importance of first aid and medical self-help training for members of the general community. The importance of public education and information is evident when one notes in the study of "Emergency Services in the Chicago Area," that 44% of patients with "emergency" conditions (that is accident victims rated by physicians as needing immediate medical attention to avoid loss of life or function) drove themselves or were driven by friends or family to the hospital emergency facility.

Communication

Inadequacy of communication is a major stumbling block in many emergency care systems. For example, despite the critical need for communications to provide

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both direction and response for ambulance units, only 6% of ambulances have the radio capability to communicate directly with hospital emergency rooms, and in fact only slightly over one-half have such a communication capability with their own base.

It is fundamental that local, regional, and state emergency medical service systems include provision for a functional communication system operating twenty-four hours a day, which links all elements of the system and provides for timely responses.

Hospital Emergency Services

Mr. Chairman, while initial emergency support and adequate provision for transportation of a patient are vital, follow-on services at the hospital emergency room and then in hospital intensive care units are also critical parts of the continuum of emergency medical services.

The American Hospital Association's 1971 Annual Hospital Survey showed that about one-half of the 6,570 reporting hospitals did not have even a basic emergency department capability and some 13% of these hospitals did not report any emergency capability. Another study revealed that as few as 17% of emergency departments had 24-hour coverage by on-duty physicians. While it is recognized that it is not feasible or necessary to provide comprehensive emergency services in all hospitals, particularly in all of the many hospitals serving urban areas, up-grading of these services is sorely needed.

As a matter of fact, Congress authorized in the last extension of the Hill-Burton Program, $20,000,000 to be made available annually for construction or modernization of emergency facilities. Regretably, no funds have been

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appropriated under this authority to carry out this program to improve emergency facilities in general hospitals. S.504 recognizes the need for improvement of such facilities and would extend the authorization for this program for three additional years. To implement this activity it will be necessary that Congress appropriate funds pursuant to the authorization.

We agree fully that anyone in need of emergency medical care should be provided such care without regard to or prior inquiry about his ability to pay. While health services are provided to patients unable to pay for them, it must be recognized that a key problem in maintaining an effective emergency medical services system is meeting the standby costs of hospitals in providing and maintaining lifesaving equipment and assuring round-the-clock availability of highly trained staff. It is essential that the costs of these services be shared fully and equitably by all purchasers of care, including the federal government as outlined in the American Hospital Association's "Statement on the Financial Requirements of Health Care Institutions and Services." For instance, in 1970 approximately 1,892,000 people were treated in metropolitan Chicago hospital emergency rooms at a loss of $8.3 million. These costs had to be recovered from other sources.

Coordination of Federal Medical Emergency Programs and Activities

S.504 wisely provides for the establishment of an Interagency Technical Committee to coordinate federal programs and activities relating to emergency medical services to assure the adequacy and technical soundness of such programs and activities, and to provide for full communication and exchange of information as a basis for program coordination. It further provides for the establishment of a

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National Emergency Medical Services Advisory Council within HEW to review and advise on applications for assistance under the program and to make recommendations to the Secretary with respect to carrying out the program.

* * * * * * * * * * * * * *

The American Hospital Association supports S.504 which would authorize $300 million over the next three years for project grants and contracts to assist states, political subdivisions or regional arrangements, compacts or consortiums on a matching basis of up to 75 per centum for the planning and development or expansion of comprehensive area emergency medical service systems. It also includes a separate authorization of $5 million each for the next three fiscal years to provide grants to public or private nonprofit agencies, organizations, or institutions for research in emergency medicine techniques, methods, devices, and delivery.

Mr. Chairman, we appreciate the opportunity of presenting these views of the American Hospital Association and will be pleased to answer any questions the members of the committee may have.

Senator KENNEDY. The subcommittee stands at recess.
[At 1:00 p.m., the subcommittee was recessed.]

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EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973

FRIDAY, MARCH 9, 1973

U.S. SENATE,
SUBCOMMITTEE ON HEALTH,
OF THE COMMITTEE ON LABOR AND PUBLIC WELFARE,
San Francisco, Calif.

The subcommittee met, pursuant to notice, at 9 o'clock a.m., in Carr Auditorium, San Francisco General Hospital, Senator Alan Cranston of California presiding pro tempore.

Present: Senator Cranston.

Committee staff present: LeRoy Goldman, professional staff member; Jay B. Cutler, minority counsel, and Louise Ringwalt, research analyst.

Senator CRANSTON. Good morning, ladies and gentlemen.

We will have an emergency medical treatment demonstration here at this time. Then I will make a brief statement as to the purpose of this hearing and we will proceed to hearing the experts in the field on the bill that we are considering in Congress concerning emergency medical services.

I want to welcome all of you here this morning. I am Senator Cranston and I will be conducting these hearings for the U.S. Senate Health Subcommittee of the Committee on Labor and Public Welfare.

Before the hearings begin, we thought that it would be useful to have a practice demonstration of emergency services as rendered by the emergency ambulance and emergency technicians here in San Francisco.

[Thereupon a demonstration on emergency treatment was given.]

Senator CRANSTON. It is believed that we can prevent 30 percent of heart attack deaths and that we can eliminate 5,000 deaths each year from poisonings, drownings, and from drug overdoses. At the present time there are 10 million cases annually of temporary disability due to accidents of one kind or another. There are 400,000 cases of permanent disability resulting from accidents of one sort or another. We believe that that figure can be greatly reduced, turning the permanent disability into a temporary disability, and, in addition save a great amount of money that is spent on those people who are permanently disabled but need not be permanently disabled.

One of the problems that requires attention is that only 65 percent of the ambulance attendants are trained to the level of the first-aid training course of the Red Cross, 25 percent of ambulance attendants have less training than that, and 5 percent have no training. They need a great deal of training.

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This bill that we are considering would lead to the creation of a corps of ambulance emergency technicians. Many of them could be veterans who have received some training in this field as medical corpsmen. This would be a great opportunity not only for veterans who come back from Vietnam and need employment, but also would be a great advantage to society in recruiting people who have had some health training and putting them to work rather swiftly with a bit more training.

The bill would encourage making more efficient ambulance services available and would encourage the better use of ambulance services. It would make certain that a person who is in charge of an ambulance is able to find out through an adequate communication system exactly where to take the victim for the treatment level required. Some hospitals don't have an emergency treatment room, some do, and in an emergency you want to take the person to the right place.

There has been, incidentally, a 10 percent annual increase in the number of people who visit an emergency medical room annually, and listen to this astoundng figure, last year 50 million individuals were treated in an emergency hospital room in our country.

This bill would lead to coordination of existing resources, to training of necessary personnel, to better communications in emergencies, and to better transportation. It would authorize $55 million to be spent in the first year, including $5 million on research and $315 million total over 3 years, including $5 million each year for research.

The hearing today is on the Emergency Medical Services System Development Act of 1973, S. 504. It is a bill I introduced, with Senator Kennedy as the principal cosponsor. Senator Kennedy chaired 2 days of hearings on this bill in Washington, D.C., on January 31 and on February 1, and it is his intention to begin markup of the bill to report it out shortly. He regretted he couldn't be here today and so do I.

During the California hearings today here in San Francisco and Monday at Los Angeles, we will be learning of the problems California communities have faced in organizing systems to provide emergency medical services for residents and visitors in their communities.

One of the most serious deficiencies in the health system of many communities is the inability of the community to respond immediately and effectively to emergency medical crises. The mounting numbers of deaths and disabilities resulting from medical emergencies could in many cases have been averted by adequate planning and better organization of existing health resources.

The deficiencies of emergency medical services throughout the country are not impossible to correct. The technical information and the medical capacity to deal with these problems exist. However, to date, efforts to find solutions to them have been fragmented and uncoordinated. The greatest deficiency has been lack of coordinated planning efforts at both the local and the national levels.

At the community level, methods must be developed of involving all elements related to the provision of emergency services in programs to meet the community needs.

At the Federal level, governmental units in numerous agencies are concerned and involved with the provision of these services, yet coordination has been very, very haphazard.

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Any effective legislation in this field must thus serve to develop a system in which all these governmental and local units work together nationally and locally toward meeting their shared goals.

S. 504, the proposed Emergency Medical Services Systems Development Act of 1973, is intended to provide the means by which this can be accomplished. The provisions of this bill passed the Senate last year in S. 3716, but we were unable to reach agreement with the House which passed a comparable bill in the closing days of the 92d Congress.

We expect to get the bill all the way through this year in this session of the Congress.

S. 504 authorizes the Secretary of Health, Education, and Welfare to provide support to States, units of local government, or combinations of local governments to plan, improve, and expand systems for providing emergency medical services.

A basic requirement of any application for Federal funding support is the development of a comprehensive plan for the establishment of an emergency medical services system. Opportunity for participation in the development of this plan must be assured to all those elements in the community having a relationship to emergency medical services. This means representation from consumers, public safety agencies, private ambulance firms, representatives of Federal agencies, as well as the health care providers, health facilities, and health education institutions in the community.

The plan must provide for certain essential elements—training of the necessary health care personnel, particularly paramedicals, for a smooth functioning system, optimum utilization of facilities, adequate provision for transportation of patients, and a communications network providing the necessary linkage from the point of the emergency through dispatch to the medical facility and its highly specialized personnel and equipment. Other requirements include: Assurances that anyone in need of emergency medical care will be provided such care without prior inquiry as to ability to pay for care—many times a life has been lost because of quibbling at the hospital door whether or not to admit somebody because of a question of whether or not that person could pay his bill if he happened to survive—a program for public education and information, a plan for coping with mass casualties, and provision for immediate access to specialized critical medical care units, either within the community or in a neighboring community, as well as a system for providing followup care and rehabilitation as is necessary to bring about the patient's recovery.

At the Federal level, the bill establishes an interagency technical committee to coordinate Federal programs and activities relating to emergency medical services, and establishes a National Advisory Council within the Department of Health, Education, and Wefare to review and advise on applications and to make recommendations on implementation of programs authorized by the act.

S. 504 also provides for special grants for research to be made to research programs carried out in conjunction with area emergency medical services systems which have developed a plan meeting the requirements of the proposed legislation.

The witnesses who will be providing testimony today have all participated in efforts to develop emergency medical resources in their

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communities and will provide invaluable insights into the many components, sometimes conflicting, requiring coordination in order to build up a competent communitywide system to provide immediate emergency care to all those who need it.

In preparing for the hearings today, I was impressed by the numbers of outstanding leaders California has developed in this field. As always, California is leading the Nation in the experts and varieties of approaches developed. We will be hearing from many of them today.

Because of the time limitation of the hearings, I have had to ask many of these experts to submit testimony for the hearing record rather than to present it in person.

Because of the number of witnesses today, I also want to ask each of you who are witnesses to summarize your statements, which, of course, will be printed in their entirety in the hearing record.

We will now hear from the Department of Health, Education and Welfare, Dr. John Zapp, Deputy Assistant Secretary for Legislation (Health), who will present the administration's views.

Dr. Zapp, I am very pleased to see you in California.

Dr. Zapp, if you will now proceed.

STATEMENT OF JOHN S. ZAPP, D.D.S., DEPUTY ASSISTANT SECRETARY FOR LEGISLATION (HEALTH), U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Dr. ZAPP. Thank you very much, Senator Cranston, and also being a westerner myself it is a particularly pleasurable opportunity to testify.

Also I would like to thank you and the chairman of the subcommittee, Senator Kennedy, for the opportunity to testify here since we were unable to testify in the initial 2 days of hearings that were held in Washington, D.C.

It is a pleasure for me to be here today to testify on S. 504, the Emergency Medical Services Systems Development Act of 1973, and S. 654, the Emergency Medical Services System Act. I am attaching to my statement a fairly detailed statement describing the Administration's initiative in emergency medical services as outlined in President Nixon's 1972 State of the Union and 1972 Health Messages.

I will, therefore, direct my remarks this morning to the administration's position on the legislation pending before this subcommittee, and also to summarize my statement and shorten the amount of time so the long list of impressive witnesses you have can come before the Committee.

Senator CRANSTON. None are more impressive than you.

Dr. ZAPP. Thank you.

S. 504 would provide authorizations of $50,000,000, $100,000,000; and $150,000,000 for fiscal years 1974-76, respectively, to make grants and contracts for planning, construction, training, transportation, and coordination of services and facilities necessary to implement emergency medical services plans submitted for financial support.

I will pass on the description of the bill, Senator—it was quite adequately covered in your opening statement—and move on to S.

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654, introduced by Senator Beall, with many provisions similar to S. 504, which would differ materially, however, in one important respect. It would establish an Emergency Medical Services Administration as a separate organizational unit in HEW which would be headed by a Director who is a qualified health care professional appointed by the President with the advice and consent of the Senate. Emergency medical service programs in the Department of Transportation and other Federal agencies would be transferred to the proposed Emergency Medical Services Administration, designated in S. 654. The Director would allot funds to States on the basis of a formula specified in section 6 of the bill, and the States, in turn, would distribute funds to the communities for the development and operation of community emergency medical service programs.

To qualify for an allotment, the State would be required to submit to the Director a State plan for improvement of emergency medical services throughout the State. The plan would provide for financial assistance to eligible communities within the State, and would designate an appropriate State health agency to administer the plan and disburse funds under the direction of a State administrator appointed by the Governor.

Mr. Chairman, the Administration shares with you and many others a sense of the need for improved emergency medical services in many, if not all parts of our country. This concern is reflected in the attached material setting out our current and past efforts, which I will be glad to read later if the Subcommittee so desires. The Department also recently submitted to you, Mr. Chairman, a report covering our emergency medical service efforts currently underway.

We strongly believe, however, that the approaches reflected in S. 504 and S. 654 are inappropriate for a number of compelling reasons from the standpoint of the administration.

In the first place, although the Federal Government can assist in remedying certain deficiencies in emergency medical service, we believe it is inappropriate for the Federal Government to create yet another categorical legislative program involving potentially large-scale federal support for the development of emergency medical service systems. The activities involved are inherently of a local character and should reflect local priorities and decisions. State and communities will be receiving very substantial Federal financial assistance in the coming years through general revenue sharing, some of which could probably be put to good use by supporting development of comprehensive emergency medical service systems.

Ample legislative authority is already on the books to allow the conduct of a range of federal demonstration initiatives in the emergency medical service field. If there is an existing need, it is not for additional categorical legislation such as that proposed in S. 504 and S. 654, but rather for a rationalization and simplification of the maze of statutes, regulations and guidelines into something comprehensible for those who look to the Federal Government for assistance. Equally important is the need to simplify the administration of the initiatives by the Federal Government and agencies concerned. We believe it is inappropriate to enact additional legislation on the unsupported assumption that needed improvements in the emergency medical service field will not occur without additional legislation.

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Particularly objectionable is the provision in S. 654 to establish a new organizational structure, the Emergency Medical Services Administration, in the Department with responsibility for emergency medical service programs. We seriously question whether the best way to assure a successful program effort in any particular area is to statutorily establish a new organization with responsibility for that area. We do not think that a separate organization for emergency medical service activities best serves program needs in the area of emergency medical services. During recent Congresses, there have been enough proponents of this theory to cause the introduction of many bills to establish new agencies within the Department and new institutes within the National Institute of Health.

Nevertheless, experience in the management of health programs makes it evident that no mere organizational change—of and by itself—can cause an area to be successful. The matter of scale is also most important, however, for there are significant administrative costs associated with a new organizational structure, and these increased administrative costs would have to be at the expense of other high-priority health activities. Accordingly, Mr. Chairman, we strongly oppose as undesirable and unnecessary the creation of a separate emergency medical service administration as proposed in S. 654.

Furthermore, the appropriation authorizations contained in both bills are greatly in excess of the amount of funds that could conceivably be soundly invested in a Federal demonstration program in the foreseeable future. Enactment of legislation containing the large authorizations in S. 504 and S. 654 would constitute another example of creating expectations that we feel the Government cannot hope to fulfill. We believe that the practice of creating categorical programs with unrealistic funding authorizations is undesirable.

Finally, there are various provisions in the bill that we believe are unwise and inconsistent with the President's overall objective of simplifying administration and reducing the plethora of categorical programs, special purpose programs that have grown up in recent years. Particularly ill-advised, we think, are the provisions which would require creation of emergency medical service special purpose local planning councils, an interagency technical committee, and a national advisory council. Their creation would serve only to compound and confuse the already bewildering array of existing planning and advisory bodies at every level of government.

It is for these reasons, Mr. Chairman, and not for the reasons of assistance to the emergency medical service systems, which we share, I hope, equally with you, that we do oppose the enactment of S. 504 and S. 654.

I assume from the press of time and the additional witnesses, Mr. Chairman, that it would not be advantageous to the subcommittee to have me read the attachment, but we assume it will be in the record. Thank you.

Senator CRANSTON. Not that I agree with that testimony, but I do express my welcome to you.

I presume that you do accept the figures that I have given, I don't know whether you were here or not, but I stated there were 100,000 deaths in 1968, the last year for which we have an accurate figure,

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from accidents and emergencies, and a skyrocketing number of people requiring emergency attention, up to 50 million individual cases last year in emergency rooms.

Do you have any question about the material that we have collected, indicating that a more effective approach to this problem could reduce deaths from accidents from 10 to 20 percent and roughly 30 percent in the case of heart emergencies?

Dr. ZAPP. I think we would be in agreement with that. Our difference here is the role of the Federal Government in approaching the problem that obviously needs to be solved.

Senator CRANSTON. I agree with you that this is inherently a local problem, but I think there is great evidence that it is not being handled effectively locally. I think some Federal assistance is necessary.

I have a grave question about revenue sharing as a solution. All the revenue sharing that I have heard of has been allocated in each community already, to balance the budget, sometimes to renovate and expand city halls, and sometimes for worthy purposes and sometimes for unworthy purposes.

Are there any plans for any special revenue sharing for emergency medical services?

Dr. ZAPP. Not specifically for emergency medical services. As I am sure you are aware, when we testified before the Welfare Committee and Mr. Weinberger, we discussed the fact that we have had under consideration within the Department special revenue sharing in the field of health. It is not included in our fiscal 1974 budget, but it is an approach that we do have under active consideration.

Senator CRANSTON. If a community chooses to use revenue sharing in a program of developing better emergency care, what guidelines will exist to assure that components will meet the desired safety standards?

Dr. ZAPP. That would be carefully considered because EMS is obviously such a broad field. It not only concerns trauma centers and transportation, but includes licensure, personnel and the adequate use of existing facilities.

I think our position would be, at this point, except where the Federal Government has moved into a larger Federal role that it would not be our responsibility to come into a local or State area.

Senator CRANSTON. So there would be no guidelines?

Dr. ZAPP. We have used guidelines from the standpoint of the the appropriation programs that we have funded, but we would not probably have operating guidelines. The community would develop its own.

Senator CRANSTON. What technical assistance has HEW provided communities to help them develop their ability to provide emergency medical services?

Dr. ZAPP. We have established an emergency medical services project office within the Health Services and Mental Health Administration. There is also an EMS information data center that has worked primarily with the five demonstration projects that have been funded to date. Also we have established an information center to get the data from more advanced demonstration programs, which exist in several areas, including San Diego, and to disseminate that data to the other states and be able to capitalize on what we think is a field that is

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technologically prolific. There has been an extreme communications problem in advancing the findings of EMS not only across the country but in many cases within a State. The role that we have been playing at this time we feel most appropriate for the Department is to try to develop different types of EMS in different cities within the country and then to have the production system to see that these are translated into the needs of various States which can apply them as appropriate in their particular case.

Senator CRANSTON. Is all of this work inhibited presently by the lack of an Assistant Secretary in the development of the work?

Dr. ZAPP. We are in a very heavy transition period from the standpoint that there are a number of people in acting positions. Even though the people who are acting are familiar with the Department, there is no question about the slippage that occurs in any Department as large as ours is with some 20,000 employees, when key people in line positions that have moved out. We would hope that with our management system that key initiatives, particularly ones like this which are presidential initiatives, would not unduly slip.

Senator CRANSTON. What opportunities for interrelation with other programs of the Public Health Service exist under the present circumstances, such as partnership for health, community health services, and the training and research programs at the National Institute of Health?

Dr. ZAPP. As relates to EMS, Senator, we have established essentially three working groups. One of them has just held its preliminary meeting, and that is an interdepartmental committee. Our interdepartment committee, which is very similar to the one that is proposed in your bill, was a little late in getting started, again because of the fact that the assistant secretary was to be chairman of it, and, as he was leaving, he delegated that back to the administrative system.

We have another interagency coordinating group within the Department to tie FDA and the different components of HSMHA and also the Office of Education together.

Senator CRANSTON. How frequently have the various inter-and intradepartmental committees on emergency medical services established last year met?

Dr. ZAPP. The interdepartmental, which, I think, would have to be considered as the main council, has only had one preliminary meeting. The final membership, to my understanding, has just been cleared and these people have been appointed and their first full official meeting will be held later this month.

Senator CRANSTON. How about the other one?

Dr. ZAPP. The other one, Senator, it is my understanding, because they are all departmental personnel, has not had a high efficiency of meetings, but we feel because of the fact the special officer for emergency medical services reports directly to the administrator, there has been no hindrance in the communications between FDA and HSMHA.

Senator CRANSTON. But there have not been meetings?

Dr. ZAPP. But there have not been regular meetings, no.

Senator CRANSTON. How much money has been allocated for the development of emergency medical services systems in fiscal year 1972, 1973, and 1974?

Dr. ZAPP. Fiscal 1972, I believe, was about $8 million. The original budget for fiscal 1973 was $15 million and the fiscal 1974 was

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also $15 million. As you realize, the President has submitted a revised or amended fiscal 1973 budget which has a variety of adjustments, including in the area of EMS. It is anticipated that our fiscal expenditures or outlays in EMS in fiscal 1973 will be $1.5 million. We feel that even though this is a drop in the projection that we have had that this won't cause a decline in most of the demonstration projects that we funded during fiscal 1972, the demonstration programs that were on 2-year grants.

Senator CRANSTON. The present budget shows a decline in the amount allocated for emergency medical services?

Dr. ZAPP. Fiscal 1973. Fiscal 1974 does contain a request for $15 million. That would be considered, I suppose, for the classical EMS initiative. Of course there is EMS activity, as our letter to the committee in late January showed, in literally dozens of other programs within the Department that are not included. This is a special EMS request.

Senator CRANSTON. Did the Department request more than that?

Dr. ZAPP. No; the Department requested just $15 million for the initiative itself for fiscal 1974.

Senator CRANSTON. What projects have been supported with these funds and what projects are to be supported in fiscal 1973 and 1974?

Dr. ZAPP. I could give you the list for the committee——

Senator CRANSTON. Could you give us that for the record?

Dr. ZAPP. I will give you that for the record. It is rather extensive. I have about a 35-page compilation of the activities going on in the Heart and Lung Institute that deal with EMS.

Senator CRANSTON. The fiscal year 1974 budget request includes $15 million for emergency medical services in the budget for the National Center for Health Services, Research and Development. Is this additional money made available to the Center or will it mean that research in other areas of health service will be reduced?

Dr. ZAPP. As I am sure the committee realizes, Mr. Chairman, all of the programs in HEW, and not only the health area, are undergoing rather severe review at this time. What other projects within the National Center for Health Services, Research and Development that came in the last fiscal year, will not be included in fiscal 1974, the Department will not be in position to comment on that until such time as we have the legislative proposal for the extension of that section 304 completed and transmitted to Congress.

Senator CRANSTON. When is that going to come up?

Dr. ZAPP. We hoped that would come up soon. As you are aware, we had an unfortunate delay in the confirmation of our Secretary, at which time—as a matter of fact, that is the reason I was unable to testify in Washington, we didn't have a Secretary to make a policy position on any legislation. We would hope to have all of the PHS extension proposals submitted to Congress this month. There are some 12 or 15 remaining Public Health Service authorities which will expire by the end of June, and we would like to have an opportunity to have the directorial bodies on both sides direct the extensions prior to that time, as opposed to simply extending them one year after another.

Senator CRANSTON. Do the authorities of this Center provide adequate authority to permit data collection and the dissemination of information to other localities so that we may learn from the experience of programs supported by the Center?

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Dr. ZAPP. Yes. Section 304 is a very broad authority that would cover information and dissemination. Also in HSMHA we have a National Center for Health Statistics, and a variety of other authorities that we feel would allow us more than ample authority.

Our problem is, as I think you realize, Mr. Chairman, one of the prime differences we have with Congress, is to try to reduce each of these categorical authorities down to a single grouping so we can deal with them.

Senator CRANSTON. Is the Center authorized to provide technical assistance to communities which receive support for the development of an emergency medical services system?

Dr. ZAPP. It is my understanding that they would and that it is a part of the five demonstration programs that are currently underway. This is something that really has occurred from the inception.

Senator CRANSTON. What steps have you taken to provide for dissemination of the results and findings concerning programs already funded by HEW.?

Dr. ZAPP. There has been an establishment of this EMS data center within HSMHA for this very purpose. There has also been established a national mail box, EMS 911, Rockville, Md., that we are trying to get out mailings to all of the States and we are attempting to get the different States, localities, who are interested in EMS from either one or all aspects of the coordinated system to inquire about their particular things.

Probably one of the more advantageous things that will happen is that some of the systems that have been funded, of course, they are the ones that show great potential for further development. I know myself and some of the staff have had an opportunity to visit them in Illinois. The Program Director has been all over the country to discuss with other States the advisability of the use of their particular system.

Senator CRANSTON. Could we have for the record copies of reports that you have disseminated of one community's activities to others?

Dr. ZAPP. Certainly.

Senator CRANSTON. I do have some other questions, but I would like you to submit the answers for the record.

Dr. ZAPP. Thank you very much.

Senator CRANSTON. Thank you very much. I appreciate you coming to California.

[The prepared statement of Dr. Zapp and other information subsequently supplied for the record follows:]

PREPARED STATEMENT OF JOHN S. ZAPP, D.D.S., DEPUTY ASSISTANT SECRETARY FOR LEGISLATION (HEALTH), HEW

INTRODUCTION

Mr. Chairman and Members of the Subcommittee: It is a pleasure for me to be here today to testify on S. 504, The Emergency Medical Services Systems Development Act of 1973, and S. 654. The Emergency Medical Services Systems Act. I am attaching to my statement a fairly detailed statement describing the Administration's initiative on emergency medical services as outlined in President Nixon's 1972 State of the Union and 1972 Health Messages.

I will, therefore, direct my remarks this morning to the Administration's position on the legislation pending before this Subcommittee.

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DEPARTMENT POSITION

S. 504 would provide authorizations of fifty, one hundred and one hundred fifty million dollars for fiscal years 1974–1976, respectively, to make grants and contracts for planning, construction, training, transportation and coordination of services and facilities necessary to implement emergency medical services plans submitted for financial support.

Among other things, the bill would:

Require that applicants' plans contain provisions assuring geographical development of and access to medical services, training, transportation systems, communication networks, public education activities, and appropriate transfer and follow-up treatment programs;

Establish a separate area Emergency Medical Services Planning Council to develop and monitor the plan;

Authorize $5,000,000 annually for emergency medical systems research;

Create an Interagency Technical Committee on Emergency Medical Services chaired by the Secretary to H.E.W.; and

Establish a National Emergency Medical Services Advisory Council, chaired by the Secretary of H.E.W. and comprised of members of the Technical Committee and eighteen additional members to review and advise on applications for financial assistance and the program in general.

S. 654, introduced by Senator Beall, with many provisions similar to S. 504, would differ materially, however, in one important respect. It would establish an Emergency Medical Services Administration as a separate organizational unit in H.E.W. which would be headed by a Director who is a qualified health care professional appointed by the President with the advice and consent of the Senate. Emergency medical service programs in the Department of Transportation and other federal agencies would be transferred to the proposed Emergency Medical Services Administration. The Director would allot funds to states on the basis of a formula specified in Section 5 of the bill, and the states, in turn, would distribute funds to the communities for the development and operation of community emergency medical service programs.

To qualify for an allotment, the state would be required to submit to the director a state plan for improvement of emergency medical services throughout the state. The plan would provide for financial assistance to eligible communities within the state, and would designate an appropriate state health agency to administer the plan and disburse funds under the direction of a State Administrator appointed by the Governor.

Mr. Chairman, the Administration shares with you and many others a sense of the need for improved emergency medical services in many, if not all, parts of our country. This concern is reflected in the attached material setting out our current and past efforts, which I will be glad to read later, if the Subcommittee so desires. The Department also recently submitted to you, Mr. Chairman, a report covering our E.M.S. efforts currently underway.

We strongly believe, however, that the approaches reflected in S. 504 and S. 654 are inappropriate for a number of compelling reasons:

In the first place, although the federal government can assist in remedying certain deficiencies in E.M.S., we believe it is inappropriate for the federal government to create yet another categorical legislative program involving potentially large-scale federal support for the development of emergency medical service systems. The activities involved are inherently of a local character and should reflect local priorities and decisions. States and communities will be receiving very substantial federal financial assistance in the coming years through general revenue-sharing, some of which could probably be put to good use by supporting development of comprehensive E.M.S. systems.

Ample legislative authority is already on the books to allow the conduct of a range of federal demonstration initiatives in the E.M.S. field. If there is an existing need, it is not for additional categorical legislation such as that proposed in S. 504 and S. 654, but rather for a rationalization and simplification of the maze of statutes, regulations, and guidelines into something comprehensible for those who look to the federal government for assistance. Equally important is the need to simplify the administration of the initiatives by the federal agencies concerned. We believe it is inappropriate to enact additional legislation on the unsupported assumption that needed improvements in the E.M.S. field will not occur without additional legislation.

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Particularly objectionable is the provision in S. 654 to establish a new organizational structure, the Emergency Medical Services Administration, in the Department with responsibility for E.M.S. programs. We seriously question whether the best way to assure a successful program effort in any particular area is to statutorily establish a new organization with responsibility for that area. We do not think that a separate organization for E.M.S. activities best serves program needs in the area of emergency medical services. During recent Congresses, there have been enough proponents of this theory to cause the introduction of many bills to establish new agencies within the Department and new institutes within the National Institutes of Health.

Nevertheless, experience in the management of health programs makes it evident that no mere organizational change—of and by itself—can cause an area to be successful. The matter of scale is also most important, however, for there are significant administrative costs associated with a new organization's structure, and these increased administrative costs would have to be at the expense of other high-priority health activities. Accordingly, we strongly oppose as undesirable and unnecessary the creation of a separate E.M.S. administration as proposed in S. 654.

Furthermore, the appropriation authorizations contained in S. 504 and S. 654 are greatly in excess of the amount of funds that could conceivably be soundly invested in a federal demonstration program in the foreseeable future. Enactment of legislation containing the large authorizations in S. 504 and S. 654 would constitute another example of creating expectations that the government cannot hope to fulfill. We believe that the practice of creating categorical programs with unrealistic funding authorizations is undesirable.

Finally, there are various provisions in the bill that we believe are unwise and inconsistent with the President's over-all objective of simplifying administration and reducing the plethora of categorical, special-purpose programs that have grown up in recent years. Particularly ill-advised, we think, are the provisions which would require creation of E.M.S. special-purpose local planning councils, an interagency technical committee, and a national advisory council. Their creation would serve only to compound and confuse the already bewildering array of existing planning and advisory bodies at every level of government.

For these reasons, Mr. Chairman, we are strongly opposed to S. 504 and S. 654.

ATTACHMENT

Community emergency medical services consist of the detection and reporting of medical emergencies, initial care, transportation and care for patients en route to hospital facilities, medical treatment for the acutely ill and severely injured within hospital emergency departments and provision of a linkage to continued care and rehabilitation. Emergency medical services are composed of elements which should be organized into a balanced system at the local level. This system is part of the community's total health care delivery system, and therefore must be planned for in conjunction with that total system and should provide immediate access to that system through appropriate diagnosis, treatment, and follow-up care.

PROBLEMS

Experts in emergency medical care point out that the body of knowledge necessary to improve E.M.S. already exists and what is needed is the application of existing technology to the problem. This is important but not the total solution. Inherent in applying existing technology is the requirement to utilize or develop effective local organizations to plan for E.M.S. and to implement programs at the community level.

Existing E.M.S. resources often are used inefficiently, sufficient financial resources are not allocated at the community level, and there is no effective mechanism to implement a total system if one is planned. To overcome these problems, the benefits of developing total E.M.S. systems must be demonstrated to the communities.

In a community with several hospitals, the emergency departments typically have developed independently of each other and of the ambulance services.

Patients who are confused about where to seek services lose vital time in obtaining care. In many communities, all emergency patients transported by public ambulance services are carried to the municipal hospital, frequently bypass-

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ing other hospitals which are adequate to provide the needed services. For the patient with a heart attack, severe respiratory distress or extensive bleeding, the difference in time may be a life-or-death matter.

There often is a duplicative and wasteful proliferation of emergency rooms in every hospital in order to meet accreditation requirements regardless of the need in the community for such facilities. On the average, only 17 per cent of the nation's hospital emergency departments have around-the-clock physician staffing. Regionalization of these facilities, with graded emergency capabilities, would ameliorate many problems if, in addition, the public and ambulance services personnel are informed about which facilities are to be used and for what purpose.

Hospital emergency departments had approximately fifty million visits in 1970. Moreover, the number of visits has increased by 10 per cent each year for the past several years.

These visits fall into three approximately equal groups: Those which are true emergencies and where immediate care to preserve life or diminish the effects of the patient's condition is needed; those in which the patients have urgent conditions and need care sooner than could be otherwise scheduled but would not be harmed by several hours' delay in treatment; and those visits in which patients without immediate medical need use the emergency facility as an ambulatory care clinic. Alternative methods of providing access to care for this latter group of patients need to be developed to avoid diluting the quality of emergency care.

With the growth of popularity of specialization in medical training, emergency care as with certain other areas of primary care, suffered from inattention. Encouraged, however, by the efforts of voluntary and professional organizations in this field, such as the American College of Surgeons, the American Academy of Orthopaedic Surgeons and the National Academy of Sciences, as well as by the efforts of many individuals, we have become increasingly aware that, although we have highly sophisticated technology which could permit prompt, effective emergency care to be rendered, the system by which emergency medical services are delivered in this country is at the present time not as sophisticated as the technology.

Mr. Chairman, it is precisely these problems to which I will address myself this morning in describing for you and other members of the Subcommittee the Department's program for the rationalization and systemization of E.M.S.

GOALS

The ultimate goal of our program is to help remove the barriers that prevent the citizens of this nation from having prompt access to effective, efficient and acceptable emergency medical services when they are in need of those services. At the federal level this goal can best be attained through effective coordination of diverse and sometimes duplicative federal activities. At the local level this goal is best attained by establishing comprehensive, effective total emergency medical systems under which potential and existing resources are fully integrated and, therefore, better utilized.

BARRIERS

There are many barriers to the successful achievement of our ultimate goal. At the federal level, you are aware, there are currently a number of federal agencies active in this field, each providing support and assistance to one or several aspects of E.M.S. Communities must spend an inordinate amount of time and effort to explore and assemble support from these many potential sources and then be subjected to varying requirements for reporting and adherence to various procedures and guidelines, et cetera. This makes for inefficiency and fragmentary and unbalanced implementation.

At the community level, integrating the current technological knowledge and community resources into a comprehensive E.M.S. system is a difficult and time-consuming process that, in many areas, has made very little progress. While many states and communities have developed highly efficient ambulance response systems or sophisticated communications networks or comprehensive E.M.S. plans, et cetera, few have "put it all together" into a fully operative emergency medical services system. Representative models of such systems should be planned, developed, implemented and evaluated, and exhibited to

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states and local communities so that they can take the initiative in replicating them for the benefit of their citizens.

Another barrier is the reluctance of health care providers, hospitals, ambulance companies, et cetera, to become part of a comprehensive system of delivering emergency care. There may be, for example, an economic disincentive for a hospital to close its emergency department even though it is duplicative of existing resources nearby and even though it is not fully equipped to handle some of the patients seen there. When a significant proportion of the inpatient load of the hospital is derived from the emergency department, it might cost that institution dearly to close the E.D. In addition, many ambulance companies, both private and volunteer, are fearful that they will lose their autonomy of function by operating within a larger system.

The important point is that solutions must be found to overcome these feelings of reluctance at the local level before the concept of total E.M.S. systems can be fully accepted and implemented by them. Simply pouring more money into inefficient and ineffective present arrangements will not, in our judgment, remedy the problem.

ALTERNATIVE APPROACHES

There are many ways that these complex problems can be addressed. One approach would be to do nothing except to increase the amount of federal funding available for E.M.S. activities. The same federal agencies would be expected to provide assistance under the same guidelines and regulations, and the same people at the state, regional, local levels would receive the funds. More services might be provided if such an approach were used, although it is doubtful that these services would be better coordinated, that the quality of these services would improve significantly or that access to such services would be easier or quicker.

Another solution would be to coordinate the federal effort so that all federal monies are spent in ways which are consistent with guidelines of other agencies and programs and with the needs in the communities. Monies and assistance would still go to the existing local recipients in the community and services would be provided in the traditional manner. To be sure, coordinated federal assistance could and would bring about changes on the local scene such as improvements in the equipment of ambulances and in the ambulances themselves, better and more extensive training of ambulance attendants, improved organization of emergency departments, et cetera. Services would, however, still be provided in a rather individualistic, uncoordinated manner, with perhaps little or no communication among some major elements of the system. There would be no coordinated mechanism for consumer or provider input of grievances or recommendations for improvement or for evaluation of the components of services provided.

A third approach would be to devote efforts to coordination of the federal effort as well as to demonstrating a limited number of total local E.M.S. systems. In doing so, one would be addressing, and to a large degree overcoming, the other barriers.

ADMINISTRATION APPROACH

It is this latter approach which this Administration has selected and which I will now describe in some detail. As the President indicated in his 1972 State of the Union Message, he has directed the Department of H.E.W. "to develop new ways of organizing emergency medical services and providing care to accident victims." This statement was further defined in his 1973 Health Message in which he directed the Department of H.E.W. "To develop methods of applying new technologies to improve emergency medical services and to develop methods of utilizing new and better trained people in an effort to save the lives of heart attack victims and victims of auto accidents." He stated further that eight million dollars would be committed to "model systems development" in fiscal year 1972 and fifteen million dollars in fiscal year 1973. This fifteen-million program level is also to be continued in fiscal year 1974.

In response to this Presidential Directive, the Department of H.E.W. has launched a comprehensive, multifaceted Emergency Medical Service Initiative with the ultimate goal, as described above, of demonstrating that our citizens can have rapid and easy access to effective, efficient and acceptable emergency medical services when in need of them. A central focus for this Initiative was established within the Office of the Assistant Secretary for Health. The Health Services and Mental Health Administration was designated as the lead agency within the Department, and in accordance with this designation the adminis-

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trator established within his immediate office a Special Project for Emergency Medical Services, charged with implementing the Department's Initiative. Staff for this special project were assigned and activities began.

Funding began with eight million dollars for fiscal year 1972. The Administration is requesting fifteen million for fiscal year 1973 and fiscal year 1974. This money is being used to fund five demonstrations of total E.M.S. systems, which I will discuss in a moment, several E.M.S. subsystems as a research and development activity, and for several related activities which I will discuss later.

As you know, the federal involvement in E.M.S. extends far beyond the E.M.S. Initiative and the funds proposed for its implementation. We believe that there are sufficient funds in the health care system now for the local operation of E.M.S. systems if they were instituted and managed on a rational, regionalized basis. This hypothesis will be tested in the demonstration sites. We view the states and localities as the agencies principally responsible for the implementation of systems of emergency medical services that the federal government will assist in developing and demonstrating.

There is hardly a department or agency that is not involved to some degree in E.M.S. There are several agencies, however, with a major investment of resources and personnel in this field. Among these is the Department of Transportation. In 1967, D.O.T. promulgated an E.M.S. standard under the authorities of the Highway Safety Act. For several years, the National Highway Traffic Safety Administration of D.O.T. has been assisting states to upgrade their ambulance and communications systems and to train ambulance personnel. It has also played a major role in the development of standardized training courses for emergency medical technicians and other types of E.M.S. personnel.

The Department of Defense has over the years developed and refined highly sophisticated techniques for treatment and transportation of trauma victims. They have also participated in the Military Assistance to Safety in Traffic, MAST, demonstration program, along with the D.O.T. and the D.H.E.W., which has shown in five demonstration projects the effectiveness of using military personnel and helicopters to enhance the emergency transportation capabilities of several communities. The MAST program is being carried out in furtherence of military training objectives, but with obvious benefits to civilian programs. Other federal departments and agencies with major responsibilities or interests in E.M.S. include the Department of Justice, the Department of Labor, the Department of Housing and Urban Development, Veteran's Administration, the Special Action Office of Drug Abuse Prevention, and the Appalachia Regional Commission.

As described in the Department's report on Emergency Medical Services, which was recently submitted to this Committee, there are numerous agencies within H.E.W. actively engaged in supporting the E.M.S. Initiative. While I will not repeat in detail all the contents of that report, I would like to briefly summarize its major highlights and ask that it be entered in full in the record.

Within the N.I.H., for example, there are several Institutes with major emergency-related activities. Among these are the Trauma Research Centers Program in the National Institute for General Medical Sciences, the Heartmobile Program in the National Heart and Lung Institute, the Head Injury Research Program in the National Institute of Neurological Disease and Stroke, et cetera. The Food and Drug Administration operates a product safety injury control program. Both the Social Security Administration and the Social and Rehabilitation Service pay for emergency-related medical care under Medicare and Medicaid, respectively. The Office of Education, under its Manpower Development Training Programs, provide financial assistance for the training of emergency health personnel such as emergency medical technicians through the Manpower Training and Development Act.

Within the Health Services and Mental Health Administration there are fourteen programs, each with some degree of involvement in E.M.S. Prominent among these are, of course, the E.M.S. Special Project, the NIMH programs in crisis intervention and in drug abuse treatment, the Division of Emergency Health Services Disaster Relief Program, the C.H.P. Service's efforts to upgrade E.M.S. planning within the C.H.P. "a" and "b" agencies, M.C.H.'s activities in relation to poison control, the H.M.O. Service's work to develop E.M.S. capabilities in H.M.O.'s, the R.M.P. funds for local R.M.P. emergency services projects, and the provision of direct emergency care services through

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the National Health Service Corps, the Indian Health Service, and the Federal Health Programs Service.

A primary objective of the Department in carrying out the E.M.S. Initiative is the coordination of these diverse federal resources and communication among those agencies and departments engaged in E.M.S. activities. At the departmental level an Interdepartmental Policy Committee has been established. The Committee is composed of representatives of those federal agencies and departments with major E.M.S. responsibilities, including representation from each of the major E.M.S.-related agencies in H.E.W. The functions of this Committee are to consider, recommend, and to the degree possible seek implementation of mechanisms for closer cooperation among member agencies in E.M.S. This includes the free exchange of information regarding programs, activities, regulations, standards, multi-source funding, et cetera.

A similar coordinating committee has been established at the agency level in H.S. to develop mechanisms for coordination and cooperation in E.M.S. among H.S. programs, including the E.M.S. Special Project.

Also, at the agency level, an E.M.S. Administrator's Advisory Committee has been established which is composed of professional and technical experts in the field of E.M.S. This Committee will advise the Administrator with regard to policy matters in the conduct of the Special Project.

As I indicated earlier, one of the greatest problems in E.M.S. today is the failure to apply existing information and technology for the improvement and coordination of emergency medical services.

As a result, the President's Initiative, a program to provide contracts for the development of no more than five total E.M.S. systems, was initiated in the E.M.S. Special Project in March 1972. Applications were accepted from any responsible group in a community whose leadership was broadly representative of that community. For the purposes of these contracts, the proposed geographic area for the system had to be contiguous with the geographic area of an areawide comprehensive health planning agency, the "b" agency, or an aggregate of such areas. Moreover, it was required that all applications had to have been reviewed and approved by the appropriate C.H.P. agencies and that the appropriate R.M.P.'s and Experimental Health Service Delivery Systems were also to have the opportunity to review and comment on the application. Another requirement for funding of these systems was that the applicant had to show proof of the existence of local funding support for emergency medical care in an effort to ensure continued operation of the system when the contract support expires. Our intention is that any such system be self-sustaining within a reasonably short period of time, not to exceed three years. In late June, contracts totalling sixteen million dollars were awarded and signed with agencies in five areas for the development of comprehensive E.M.S. systems. The areas are: the State of Arkansas; a three-county area of Southern California, San Diego, a seven-county area of Northeastern Florida, Jacksonville; the State of Illinois; and a seven-county area in Southeastern Ohio, Athens.

The areas selected vary in size, topography, density, and composition of population, socio-economic conditions, and availability of medical systems. Projects being undertaken by the area include upgrading emergency departments; improving transportation and community systems; training of emergency medical technicians, nurses, and physicians; and the conducting of public and professional information programs.

The purpose of the E.M.S. demonstration projects is not primarily to provide improved emergency services to the citizens of the respective areas, although this may be an important ancillary effect. The primary purpose is to develop and demonstrate various approaches to providing emergency medical care in a systematic and comprehensive manner so that other states and communities can look to these experiences in developing E.M.S. systems for their citizens.

Other activities also have been initiated in the E.M.S. Special Project which will permit the Department to assist individuals and communities to improve emergency medical services. These include the conclusion of contracts with three other geographic areas to develop E.M.S. subsystems, of which one for the Baltimore, Maryland, area in the amount of $1.2 million has already been awarded. A National E.M.S. Information Center is being established. This Center has two main functions:

Information gathering, storage and retrieval which involves scientific literature search, survey, and contact with projects under development;

Information dissemination, which involves publications development, development of promotional materials, distribution, and handling of inquiries.

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The Center will not only gather existing information but will also produce informational material such as brochures, articles, exhibits, radio and TV spots and movies. The target of the information will be both the general public and specific groups who provide services to the system. The public will be provided with information about the importance of an effective emergency medical services system so that they will be able to make an informed decision about community support of the system.

Another activity within the E.M.S. Special Project is the E.M.S. Data System which will be established for national planning and for local and national evaluation of the emergency medical systems programs. Under this system, pertinent data from E.M.S. activities throughout the nation, sponsored by federal, state, and local agencies, will be collected, analyzed, and evaluated.

The Department feels that by successfully carrying out the coordination of federal E.M.S. resources and by assisting communities to develop E.M.S. systems—following the system demonstrations funded under the E.M.S. Initiative, we also will be addressing the problems and barriers which were discussed earlier. Other activities with regard to these problems have been undertaken, including the recommendation made in the Department's "Report on Licensure and Related Health Personnel Credentialing" of 1971 that "States take action that will expand the functional scopes of their health practice acts and that will extend the broader delegational authority—both of which will facilitate the assignment of additional tasks to qualified health personnel."

In summary, having received the Presidential Directive, the Department of H.E.W. is working toward the needed improvement of emergency medical services in this nation. As I have previously noted, under the E.M.S. Initiative, we are coordinating the already extensive federal activities in E.M.S. and have funded five demonstration total emergency systems. We have established an E.M.S. Information Center and are planning on E.M.S. National Data System, and a technical assistance function, all of which have been initiated under existing legislative authorities.

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EMERGENCY MEDICAL SERVICES

Department of Health, Education, and Welfare
Washington, D. C.
January 1973

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BACKGROUND

The first significant report on the status of initial care and emergency medical services afforded to the victims of accidental injury was published in 1966. The report, Accidental Death and Disability: The Neglected Disease of Modern Society, was prepared by the National Academy of Sciences-National Research Council with support from the Department of Health, Education, and Welfare.

To compile the report, Committees on Trauma, Shock, and Anesthesia and special task forces of the Division of Medical Sciences, National Academy of Sciences reviewed with representatives of a large number of organizations the status of emergency medical services. The studies included reviews of ambulance services, voice communication systems, emergency departments and intensive care units of hospitals; appraisals of current research in shock, trauma, and resuscitation; revision of the first-aid textbook for the American National Red Cross; preparation of a formal statement on cardiopulmonary resuscitation; and participation in disaster survey studies.

The report presented the magnitude of the problem by stating, "In 1965, 52 million accidental injuries killed 107,000, temporarily disabled over 10 million and permanently impaired 400,000 American citizens at a cost of approximately $18 billion. This neglected epidemic of modern society is the Nation's most important environmental health problem. It is the leading cause of death in the first half of life's span."

The report summarized current practices and deficiencies at various levels of emergency care and identified the following as salient factors which required early solution:

- "The general public was insensitive to the magnitude of the problem of accidental death and injury."

- "Millions lacked instruction in basic first aid."

- "Few were adequately trained in the advanced techniques of cardiopulmonary resuscitation, childbirth, or other lifesaving measures, yet every ambulance and rescue squad attendant, policeman, fire fighter, paramedical worker and worker in high-risk industry should be trained."

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- "Local political authorities had neglected their responsibility to provide optimal emergency medical services."

- "Research on trauma had not been supported or identified at the National Institutes of Health on a level consistent with its importance as the fourth leading cause of death and the primary cause of disability."

- "Potentials of the U.S. Public Health Service Programs in accident prevention and emergency medical services had not been fully exploited."

- "Data was lacking on which to determine the number of individuals whose lives are lost or injuries are compounded by misguided attempts at rescue or first aid, absence of physicians at the scene of injury, unsuitable ambulances with inadequate equipment and untrained attendants, lack of traffic control, or the lack of voice communication facilities."

- "Helicopter ambulances had not been adapted to civilian peace-time needs."

- "Emergency departments of hospitals were overcrowded, some were archaic, and there were no systematic surveys on which to base requirements for space, equipment, or staffing for present, let alone future, needs."

- "Fundamental research in shock and trauma was inadequately supported."

- "Medical and health-related organizations had failed to join forces to apply knowledge already available to advance the treatment of trauma, or to educate the public and inform the Congress."

Death and Disability gave specific recommendations for the improvement of emergency medical services and stated that five major steps must be included in achieving a total national effort:

- Conduct of National Conferences on Emergency Medical Services

- Establishment of a National Trauma Association

- Organization of Community Councils on Emergency Medical Services

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- Formation of a National Council on Accident Prevention

- Creation of a National Institute of Trauma

The passage of the Highway Safety Act of 1966 was another milestone in the development of emergency medical services systems. Under this Act, the Federal Highway Administration was given the responsibility to develop and administer safety standards relating to the identification and surveillance of accident locations; highway design, construction and maintenance, including highway related aspects of pedestrian safety; and traffic control devices in accordance with the Highway Safety Act of 1966, as amended. These standards formed the foundation for the State and local community programs dealing with street and highway safety, and all States were expected to have in operation federally approved programs in accordance with the standards issued by the Secretary of Transportation. The Highway Safety Act reflects the importance of emergency medical services by requiring that the highway safety standards include coverage of such services.

Standard 11 of the Highway Safety Act provides for an emergency care system. The standard of the National Highway Safety Act of 1966 requires that each State shall undertake certain activities including: (1) the training and licensing of ambulance and rescue vehicle operators; (2) the development of standards for the types, numbers and supplies to be carried by an emergency vehicle attendant for the operation of ambulances; (3) the development of first aid training programs for emergency service personnel and encouraging the general public to take such courses; (4) the development of criteria for the use of two-way communications; (5) the development of procedures for summoning and dispatching aid; and (6) the development of an up-to-date comprehensive plan for emergency medical services.

In considering the relative roles of respective departments, it was recognized that within the various components of the Department of Health, Education, and Welfare there existed extensive background and competencies in the areas of motivational research, informational and educational programs, relationships with the Nation's educational system, public health agencies and professional health associations and, therefore, in relation to emergency medical services, the DHEW should have primary responsibility for medical emergency aspects.

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In December of 1971, at the Second National Conference on Emergency Health Services, Dr. Merlin K. DuVal, Assistant Secretary for Health said:

> "Nearly three years ago President Nixon expressed concern about an impending "crisis in health care," with one of the major manifestations of this crisis being the increasing lack of accessibility of health care for the American consumer. It is now becoming more and more apparent that nowhere is this lack of accessibility more crucial and yet more widespread and profound than in the area of emergency care. Any description of our current emergency medical services becomes a litany of inadequacy and neglect . . . .
>
> The time is now. Personally, I am committed to using the full force of my office to stimulate the several departments of government that have a stake in this effort, to full performance. I am also counting on you--and groups like you--to match this Federal effort with an equivalent regional or local concern and investment."

The following month, President Nixon, in his State of the Union Message, called for the reduction of unnecessary deaths from sudden illnesses and injuries.

In announcing his health initiatives, the President said, "We must develop new ways of organizing emergency medical services and of providing care to accident victims. By improving communications, transportation, and the training of emergency personnel, we can save many thousands of lives which would otherwise be lost to accidents and sudden illnesses. Such improvement does not even require new scientific breakthrough; it only requires that we apply our present knowledge more effectively."

On March 2, 1972, the President mentioned his plans for applying science and technology to improve human health. "Emergency Medical Services: By using new technologies to improve emergency care systems and by using more and better trained people to run those systems, we can save the lives of many heart attack victims and many victims of auto accidents every year. The loss to the Nation represented by these unnecessary deaths cannot be calculated. I have already allocated $8 million in fiscal year 1972 to develop model systems and training programs and my budget proposes that $15 million be invested for additional demonstrations in fiscal year 1973."

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In March 1972, the Special Projects Office, Emergency Medical Services was formally established in the Office of the Administrator, Health Services and Mental Health Administration, U.S. Department of Health, Education, and Welfare. The broad objective of the Office is to act as a stimulus in providing citizens with access to quality emergency medical care in a system related to the community's health care delivery system. The specific objectives of the Office are: to establish a national focal point for emergency medical services; to provide technical consultation and guidance to States, communities, citizens, and organizations; to establish an information center; to coordinate inter-department and inter-agency EMS activities; to establish an EMS data system; and to develop five total emergency medical services systems as demonstration projects.

PLAN

The plan is based on activity initiated by the President. It is predicated on the activities of the Department during the past ten months, and projects the Department's intent to increase and strengthen EMS activity responsive to local and regional needs of our citizens. The concept is that EMS programs generally should encompass these components:

- Emergency Medical Services as an integral part of the total health care system and provides surgical, medical, and mental health priority care.

- Provision for Emergency Medical Services for the country as a whole to include rural and urban; metropolitan and ghetto; and both the medium city and the small town.

- A full spectrum of support for Emergency Medical Service systems to include equipment, consumer information, education and training at the primary care levels, transportation, communications, definitive care facilities; and for planning, management and evaluation.

- Assurance that anyone in need of emergency care will have access to it without regard to financial considerations.

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Implementation of the plan will provide system guidance and support to the community, improved access to health care, reduction of needless death and disability, an improved probability of success, and a plausible return on investment.

Within this frame it is recognized that the rate of local development of EMS plans is modified by:

- the priority given EMS by the citizens of the community
- the current level of EMS capability
- the new level of capability desired by the community
- the magnitude of local, state, regional and Federal support available for EMS

The Department plan for EMS is multiphased in terms of time, Federal participation, and topical areas of involvement.

- TIME - an immediate plan for FY 1973 and FY 1974 with concurrent development of a more comprehensive, long-range plan for 1974-79.
- FEDERAL PARTICIPATION - completion of the immediate FY 1973-74 plan with primary emphasis on the DHEW and reaching out for more total Federal participation in the FY 1974-79 plan.
- TOPICAL AREAS OF INVOLVEMENT - must be considered to match the areas of great frequency and need across the country. Emphasis will be immediately given to assistance in the areas of community planning, training, system implementation, and subsequent generations of improvement.

The Department believes that there is a need at the community and Federal levels to coordinate planning, training and development of personnel, and additional capital investment. Moreover, the Department recognizes the need for cooperative management to be exercised at the local, state and Federal levels during the entire developmental process.

The Department's role for the future, since the technology and management tools exist is:

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- to provide and coordinate the delivery of technical information and assistance to every community

- to stimulate and make known sources for local, state, and national planning and training, and equipment

- to provide the organizational entity through which a community seeking EMS technical assistance, funding, and information (to include technical operational data) may have access to the Federal Government

OPERATIONAL ACTIVITY

To achieve these goals the Department has initiated certain actions within the past ten months:

- The responsibility for EMS has been assigned to the Health Services and Mental Health Administration, Office of the Administrator, and a Special Project Office has been established to coordinate all EMS activities within the Department.

- Five sites have been competitively selected to demonstrate EMS systems of excellence with emphasis on training, communications, ambulance services, emergency departments, record keeping and evaluation.

- Two additional sites have been selected on a competitive basis to demonstrate subsystems with communications capability.

- A National EMS Information Center is being established as a single access point for HEW. Planning continues for formal preparation of a national EMS operational strategy and management plan.

- Through the Regional Medical Programs Service sixty-five projects have been granted funds for implementation of regional EMS plans.

- Division of Emergency Health Services has continued its programs of informational activity, essential seed grants for EMS and disaster stockpile preparedness.

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- A series of CHP conferences are being conducted to enhance participation in planning for EMS at local and regional levels.

- An EMS Interdepartmental Committee has been established by the Secretary of HEW with the Administrator, HSMHA, as Chairman.

- An EMS Administrator's Advisory Committee of the Health Services and Mental Health Administration, composed of nationally recognized consultants, has been established.

- An EMS Technical Committee, composed of the Program Services of the Health Services and Mental Health Administration, has been established.

EMS PLAN - 1973-1974

It is planned that the present EMS operational activities within the Department will continue to assure cooperative, mutually compatible programs to improve the quality of existing emergency medical care.

Currently, operational activities being implemented are:

Careful and critical monitoring of the demonstration projects and coordination of DHEW EMS projects.

Development of an EMS plan for DHEW. The EMS Technical Committee will increase its magnitude of effort to refine cooperative activity and planning among the current health delivery programs.

Development of a single focus for EMS information and activities within the Federal Government.

Completion of a design for a uniform data collection and evaluation mechanism to be used by and for local, state, regional and Federal EMS projects.

Provision of guidelines for EMS support and development of methods of response to HSMHA grant/contract requirements.

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The EMS Administrator's Advisory Committee will be reconstituted to provide greater national scope and will receive support from a group of ad-hoc consultants, experienced in EMS, representing the consumer, local and state governments, professional organizations, social and economic elements.

The EMS Administrator's Advisory Committee, working with other public consultants, will identify the immediate needs of EMS delivery in the country and develop a system of priorities to utilize Federal financial support. The information developed will be used by HSMHA and other EMS funding agencies for coordinated review and establishment of priorities for FY 1974 funds.

The EMS Interdepartmental Committee will be composed of the Departments and agencies (15 in number) directly concerned with EMS activities. Members will be asked to become part of the Department's plan for multi-source funding and participate in a national EMS program. All EMS plans and results will be shared with this Committee.

EMS PLAN - 1974-1979

Concurrent to the immediate 1973-1974 plan and utilizing many of the same resources, a more comprehensive EMS (EMSPP) for FY 1974-79 will be developed for the Department of Health, Education, and Welfare and the other involved Federal organizations.

The Department will take the appropriate actions to convene select public leaders within a workshop forum which will permit them to set forth a long range EMSPP. The public participation should include operational leaders of local community programs, civic leaders, providers, consumers, legislators, and representatives of professional interest organizations.

This public group will have the responsibility for definition of the national EMS goal and objectives. The group will further have the detailed task of setting forth the specific needs and priorities of need in the functional areas of an EMS system. During this period, Federal support will be

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supplied to establish a "current level of capability" within each of the functional areas defined by the public group.

The public members will finally have the task of setting forth recommended approaches for implementation in each of the functional work areas and based upon the current capability information provide preliminary cost estimates for achieving the stated objectives within the FY 1974-79 time frame.

The public group, representing the local community interest and the various public and professional interests, will be instrumental in developing a national operational strategy for EMS.

The DHEW, working with the EMS Interdepartmental Committee, will have the responsibility for translating this operational strategy into a management strategy or implementation plan to be used by the Department and the other Federal agencies.

The task of the Federal participants will be to set forth specific action objectives, assignment of work responsibility, resource allocation, a definition of interface responsibilities and to establish a reporting and evaluation methodology to be used for the management and control of the EMSPP. This approach to an EMS long-range plan provides for maximum involvement at the local, state, and Federal level. It provides for maximum utilization of the expertise which does exist in these communities and provides a continuous communication link among all participants. Finally, and perhaps most important, it provides for on-going review of the program by the President, the Congress and the public as it progresses within the planned time frame.

The Department of Health, Education, and Welfare is aware of the hidden crisis that exists and the need to improve the EMS available to every citizen. The Department is responding to this need and through the Department a major challenge will be placed before Federal organizations to work together on common objectives to pool resources and to share expertise.

Emergency Medical Services Activities Within DHEW

Health Services and Mental Health Administration

This section presents a description of the Emergency Medical Services (EMS) activities of the Health Services and Mental Health Administration.

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Emergency Medical Services Special Projects Office

The Emergency Medical Services Special Project Office (EMS/SPO) was established in March 1972, within the Office of the Administrator, Health Services and Mental Health Administration. As of this date the EMS/SPO has a staff of 13 full-time people including eight professionals; a modest increase in staff is planned.

The EMS Special Project Office, on June 28, 1972, awarded five contracts as a result of a competitive bid process to:

The City of Jacksonville, Florida, for a seven county CHP (B) area in Northeastern Florida.

Present Capabilities

The City of Jacksonville has an advanced rescue ambulance service that has gained national recognition. The service is provided by the Jacksonville Fire Department Rescue Service using well-equipped modular vehicles, highly trained personnel and good communications. Air transportation of the injured is available. The health manpower and hospital complex in Jacksonville is the largest in the New Orleans-Atlanta-Miami triangle. All medical specialties are represented. Jacksonville and Gainesville have good hospitals and good training facilities.

At present, citizens of the counties surrounding Jacksonville cannot receive care comparable to that available in the city. Some counties have only two physicians; other counties face a loss of physicians in the coming year. Each county does have a community hospital but these hospitals are incapable of treating major trauma or critical and unusual illnesses. The six county hospital emergency departments are inadequate. With the exception of the City of Jacksonville, no ambulance service in the entire region now meets the requirements in equipment, training, and personnel required by the National Highway Traffic Safety Administration of HEW.

Future Capabilities

Local ambulance services will be upgraded. Local community hospital emergency departments will be

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upgraded. Ambulance attendants will be trained to an 80-hour level in first aid and CPR. Ambulances will be equipped in accordance with the requirements of the American College of Surgeons. All firemen and law enforcement officers will be trained in first aid and CPR. If patients cannot be treated at community hospitals, they will be stabilized and evacuated to Jacksonville or Gainesville by military helicopter or by an intensive care ambulance.

The City of Jacksonville, acting with the advice and help of the Jacksonville Area Health Planning Council and other professional organizations, will provide direction, leadership, technical advice, and consultation to the seven counties in carrying out the project activities. The same high quality emergency medical care available to the citizens of Jacksonville will be available to the citizens of the seven counties.

The State of Illinois Public Health Department for a Statewide Project.

Present Capabilities

In 1971 the State of Illinois established a Trauma Care System--a system for the orderly handling of patients with serious injuries through the best possible use of existing facilities and medical technology. The system called for the creation of 40 Trauma Centers in the State of three types: Regional, Areawide, and Local. The purpose of the Trauma Care System is to get a seriously ill or injured person to the medical care he needs in the shortest amount of time, and to keep him alive in the meantime. The trauma care program is well launched but it is not completed. Principal accomplishments include establishment of trauma centers, a communications network, and a transportation system including use of helicopters.

Consumer and public information programs have been extensively and effectively undertaken. The citizens of Illinois have been informed of the deficiencies, expectations and achievements of the Trauma Care Program. This community interest is now being

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channeled into effective use through involvement in community emergency service councils.

Future Capabilities

Using the experience gained in developing the Trauma Care Network, the State is now ready to effect a total systems approach to emergency and critical care medicine on a Statewide basis. The entire health community of the State has learned much about and developed a great interest in the development of emergency care systems.

During the past two years, the entire State health community has learned a great deal about comprehensive area-wide planning and implementation of emergency medical care systems. Illinois is now ready to expand its trauma care system into a total emergency medical care system.

Emergency service councils will be developed Statewide. The councils, composed of professional leaders and community participants, will plan for the provision of total emergency care. Emphasis will be on using existing resources effectively--not on building new facilities.

Developing a comprehensive communications system will be a priority project. Radio communication will be possible between hospitals and ground or air vehicles. Physicians in Regional Centers will be able to monitor an ambulance operating out of a local trauma center. A RED (Regional Emergency Dialing) telephone number has been established. Nine hundred and eleven systems will be installed in many communities. Stickers listing RED, fire and police numbers will be distributed in communities. Training programs will be undertaken for communications personnel. A central emergency medical control center will be established in each region and areawide community. Outlying Critical Care Units will be established. Model systems of ambulance services will be established. Well-equipped ambulances will be purchased. Critical care nurse and EMT-A training will be conducted. Residencies for emergency physicians will be established. An Outreach Community Care Bus will be used to extend health education to remote rural areas; the bus will be used as a mobile classroom for health personnel training.

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The Ohio Valley Health Services Foundation for a Seven CHP (B) Area in Southeastern Ohio.

Present Capabilities

The care provided victims of a medical emergency in the Ohio seven-county health demonstration areas has been, and is, quite haphazard. No ambulances in the area meet Federal standards; nonehave radio communications with hospitals. Only 5% of the ambulance attendants have received 72 hours of training. The areas have only 68% of the physicians it needs and hospital emergency departments are inadequately manned and equipped.

Future Capabilities

The area will develop a coordinated ambulance system. The vehicles will be equipped with life-saving equipment. A communications system permitting hospital-vehicle communication will be installed. Training courses for Emergency Medical Technicians--Ambulance (EMT-A) will be conducted throughout the community college system.

Full-time emergency department services will be maintained at emergency departments of regional hospitals. ED equipment and facilities will be upgraded. Physicians will be recruited and placed in the emergency departments.

Training courses will also be established for other medical personnel such as nurses and laboratory technicians.

Education programs will be established to inform consumers that emergency medical services exist and to teach them how to use the system.

The Arkansas Health Services Foundation for a Statewide Project.

Present Capabilities

There are 101 general hospitals in the State; only 11 have as many as 200 beds while 39 have fewer than 50 beds. University Hospital is the only class 1 emergency medical facility in the

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State. Each of the CHP districts does have at least one well equipped community hospital with a competent staff representing practically every medical specialty. State has 1,706 full-time non-Federal practicing physicians for a population of 1,923,295; however, the ratio ranges from 1/428 in the southwest to 1/3,000 in some rural areas. There is a severe shortage of nurses and trained EMT-A's. Arkansas has major problems in the recruitment, training, and distribution of all types of health care personnel. Rural ambulance services, if they exist at all, are usually inadequate. The health manpower situation is worsened because 50% of the citizens have not been graduated from high school.

Future Capabilities

Specific program objectives to establish a comprehensive emergency medical services system include: developing a State plan, developing two sub-regional pilot areas; instituting a State-wide coordinated training program; completing the hospital emergency radio net (HERN) and cross-band with the State Police network, and obtaining necessary State legislation to support the Highway Safety Act of 1966.

To provide a State-wide emergency ambulance service that will provide adequate and efficient transportation to all sick and injured, smaller hospital-based ambulance services will be used as satellite operations of larger Regional Hospital based services. Major emergency care hospitals will serve as the base of operations for communication and coordination of ambulance services in the surrounding counties. The communications system will be expanded to connect helicopter and ambulance personnel at the accident site, central dispatcher, receiving trauma center and emergency physicians. Training courses will be conducted State-wide for physicians and EMT-A's. An associate degree program for EMT-A's will be developed.

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The San Diego County Health Department, Representing a Three-County CHP (B) Area in Southern California.

Present Capabilities

Each county in California is mandated by State Law to provide for the health care needs of its citizens. San Diego, Imperial, and Riverside Counties each have established an Emergency Medical Care Committee to plan, coordinate and implement emergency medical activities. The San Diego Committee has a small professional staff. The Committees in Imperial and Riverside Counties are composed of volunteers. The contract will provide professional administrative staff for these two counties and will further the activities of the San Diego Committee.

San Diego County, working with Imperial and Riverside Counties, has developed long-range plans for the establishment of a comprehensive emergency medical care system. Implementation of the objectives will be accomplished through a series of discrete but inter-related programs. When the programs are fully operational, they will give the people of the tri-county area a sound basis for a total emergency medical care system that can respond effectively to the health needs of the citizens.

San Diego County now has an operational Hospital Administrative Radio Network which allows direct communication between hospitals in the County to coordinate emergencies and to act as a back-up system for commercial telephone company communications. The Emergency Radio Net is not now finished.

San Diego County's 81 privately operated ambulances and its two mobile ICU's are concentrated in the metropolitan area. Services to the rural and mountainous eastern region are sparse and economically unprofitable. To respond to the rural need for ambulance service, rural resident sheriff's deputies have been trained in first aid and rescue equipment.

The area now has one special intensive care unit for infants. The module permits treatment of a child en route to the Perinatal Division of University

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Hospital. The area also has a poison control center staffed by volunteers and a regional burn treatment center recently established at University Hospital.

Future Capabilities

Completing the Emergency Radio Network is an immediate goal of the Emergency Medical Care Committee. When finished, the network will connect all ambulances and ED's of primary emergency facility hospitals. An inter-hospital radio network will be created in Imperial County. A future 911 system is planned for the area.

The contract will enable Imperial and Riverside Counties to have a paid professional staff in their county EMS committees; it will enable San Diego to continue the function of its EMS committee which does have a professional staff. Ambulances will be purchased for rural areas; attendants trained as EMT-A's will be hired.

A full range of training programs in EMT-A will be implemented. Private ambulance attendants, park rangers, and other persons in the remote area of the counties who could provide immediate life-supporting activities will be trained. In Imperial County, EMT-A training will be offered to county ambulance and hospital personnel.

An improved transport unit for perinatal intensive care will be developed.

Health professionals will be hired to staff the poison control center.

The burn treatment center will be expanded. Hospital personnel will be trained to form the nucleus of a highly specialized burn team.

These five contracts were funded during FY 1972 at a level of $7.9 million. The contracts were for three years performance to be completed June 27, 1975. FY 1973 funds in the amount of $7.8 million will be used to complete the funding of these five demonstration contracts.

In addition, on June 28, 1972, HSMHA notified four prospective bidders that negotiations would be undertaken

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for EMS subsystems contract awards in FY 1973. The four organizations were: the Council of Governments for Austin, Texas; the University of Southern California, Los Angeles; the Regional Health Council for the CHP (B) area surrounding Baltimore, Md.; and the Northern Arizona Council of Governments representing the CHP (B) in northern Arizona.

A $1,250,000 contract has recently been awarded to the Regional Planning Council of Baltimore, Maryland, for the demonstration of an emergency medical services (EMS) communication system--a component of a total EMS system. The communications system will improve care for victims of medical emergencies in the Baltimore Metropolitan Area by getting the victim to the best medical facility as rapidly as possible. The project will establish a central dispatch facility, provide twenty-four hour medical consultation, link hospitals with the State Police's Medi-Vac Helicopter program, and provide immediate care for coronary patients through telemetry equipment installed in ambulances. The Baltimore communications project is a component of a total EMS system planned by the State. The project has received initial funding of $200,000 with the remainder subject to approval of the HEW 1973 budget request and completion of the Regional Planning Council's final project plan.

Final technical discussions and review of the other subsystems are being completed; Austin, Texas has declined to negotiate.

The Special Projects Office also provides full-time administrative and secretarial support to and serves as the HEW contact office for the Military Assistance to Safety and Traffic (MAST) program. MAST is a cooperative program of the Departments of Defense, Transportation and Health, Education, and Welfare.

National Center for Health Services Research and Development

National Center for Health Services Research and Development is currently supporting four Emergency Medical Services type projects:

a. "The Development of an Emergency Room Medical Team." This contract with the University of Southern California is for two years (June 1971-June 1973), and has been awarded $399,000 in Government funds to date. It is a developmental

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project, dealing with the problems of inadequately trained emergency room staff in community hospitals, and will include provision for training for both physicians and physician-assistants together, and for maximizing Emergency Room productivity.

b. "A Simulation Model for Emergency Medical Systems." This project at Georgia Institute of Technology was awarded $137,616 for two years. The purpose of this project is to develop a planning tool capable of evaluating the effects of different decisions on the number and location of emergency vehicles, communications equipment, training of emergency vehicle attendants and the treatment provided to the victim at the emergency site.

c. "Systems Analysis of Emergency Care Delivery." This project at the University of Pennsylvania was awarded $59,555 for two years. An extensive information search of previous studies in Emergency Medical Care Delivery will be conducted, and systems analysis techniques will be applied in developing and evaluating a model for emergency care delivery in Philadelphia.

d. "Regional Allocation of High Cost Health Services." This project at the University of Pittsburgh was awarded $262,213 for three years. A principal area of study is the development of a methodology for evaluating alternative locations for high-cost emergency facilities.

It is noted that a previous simulation model developed by Operations Research Incorporated under an NCHSRD contract is now being used by Ohio State University for planning an EMS system for a region in Ohio.

Regional Medical Programs Service

The Regional Medical Programs Service, through the 56 local RMPs, supports activities which promote and put into practice new techniques and innovative delivery patterns to stimulate the local community to carry on more effective services from its own resources. As of July 1, 1972, the Regional Medical Programs Service supported 63 programs with a primary emphasis on Emergency Medical Services activities at a level of $10.8

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million. Ten of these projects were funded for a two-year period. A number of Regions have allocated funds to hold planning meetings and conferences with various agencies and public groups that may eventually lead to development of a local EMS program.

National Institutes of Mental Health

The following activities represent NIMH's efforts in the field of Emergency Medical Services:

A new unit, Mental Health Emergency Section (MHES), was established on July 1, 1972, to coordinate efforts in this area. The Chief, MHES, serves as liaison in coordinating efforts in this area.

An Emergency Mental Health Services Coordinating Committee (EMHS) with representatives from the National Institute on Alcohol Abuse and Alcoholism, the Division of Narcotic Addiction and Drug Abuse, Biometry, Training, MHES, Office of Program Planning and Evaluation, and Community Mental Health Centers programs meets weekly. In this way a planned and integrated program is being developed to incorporate all mental health emergencies into Emergency Medical Services systems.

The (EMHS) committee has performed several functions: site-visited and evaluated EMS pilot program proposals; begun to develop a manual which provides information on how mental health activities should be used in any EMS program, and generally made other units within NIMH aware of their responsibilities and opportunities in this area.

Five hundred and six Community Mental Health Centers have been established throughout the United States, Puerto Rico, and the District of Columbia. One of the five required services in each Center is the provision of Emergency Mental Health Services 24 hours a day.

The Institute has responded to the Hurricane Agnes aftermath with site visits to Richmond, Virginia, and Wilkes-Barre, Pennsylvania disaster areas. Currently, contracts in the amount of approximately $500,000 have been let to train, employ, and evaluate 75 Mental Health Services Aides in Harrisburg and Wilkes-Barre areas.

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Two contracts have been let to provide mental health support and help plan services for Rapid City, South Dakota. In July 1972 a social worker was funded for three months and assigned to the Mayor's Mental Health Advisory Planning Committee. Recently, a psychiatrist was also funded to consult on mental health problems faced by agencies in the city.

Through the Division of Extramural Research programs, there is continuing support of the Disaster Research Center at Ohio State University which is studying how community organizations (governmental and voluntary) prepare for and respond to natural disasters and emergency disturbances. About 12 to 18 different disaster and/or civil disturbances have been studied.

The Institute has conducted a conference with the mental health representatives of the Emergency Medical Services demonstration projects now being funded by HSMHA. This meeting identified key mental health relevant programs which will offer on-going consultation and support for the demonstration projects.

The Institute continues to support research in suicide prevention and crisis intervention as in the past through the Division of Extramural Research Programs, and the Division of Special Mental Health Programs.

Health Services Support

The Health Maintenance Organizations Service now has approximately 70 active planning and development grants. All HMOs include in their benefit package emergency medical services. The HMOs being developed under the HMOs grant program will also include plans to cover such services, either to be directly provided by the HMO or through arrangements with others.

The character and extent of the emergency services will vary among HMOs. At a minimum, all will include the availability of 24-hour emergency medical services. These may be provided at the hospital, at the enrollee's home, or even at the ambulatory care clinic. Some will include coverage for ambulance services as well as including in-transit treatment. All include in their planning coverage for at least some "out-of-area" emergency medical services, i.e., provided to an enrollee who is geographically away from the HMO service area.

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The Center for Disease Control has three programs related to emergency medical services. Two are related to disasters while the third provides a direct diagnostic and therapeutic service for physicians.

a. The Disaster Aid Program assists affected areas in the control of vector borne diseases. It also stands ready to advise the Office of Emergency Preparedness in any manner relating to health.

b. The Epidemic Aid Program assists any health authority in controlling any disease of epidemic proportions. This includes assistance in casefinding and in the provision of personnel and materials where needed.

c. The Center has a complete diagnostic laboratory and associated services to assist any physician in the diagnosis of a communicable or rare life-threatening disease. It also maintains a complete line of rarely used medications. Both services are available on a 24-hour a day, seven-day per week basis.

The Maternal and Child Health Service offers emergency medical services through a number of its projects. For example, 29% of the children and youth projects supported with Maternal and Child Health Service funds offer emergency medical care, 10% emergency medical care only on site, and 61% at the backup facility. While, in general, children seen both through the regional congenital heart centers and through State crippled children's service programs are not handled on an emergency basis, the complexity of the case and the trend toward early identification and treatment of these children in infancy necessarily implies their treatment on an emergency basis when indicated. In the New England Regional Infant Cardiac Program, for instance, in a recent year, 46% of the patients were seen before they were eight days old.

The Community Health Service programs are concerned with meeting the emergency health service needs of the people they serve. The Family Health Center regulations require the basic minimum ambulatory benefit package to include emergency ambulance and attendant services. Comprehensive health service centers provide the emergency services from the center. Naturally, the centers are interested in the means of transportation from the point of recognized need

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to the point of service. Similarly, the migrant health projects are interested in meeting the emergency health service needs of migrants and seasonal farmworkers, although none of these projects are focused on emergency services only. Under formula grants to States for comprehensive public health services, States may useeFederal funds for emergency health services programs.

The Comprehensive Health Planning Service is responsible for health planning including the plans for emergency medical services. As such, it is supporting a series of EMS planning seminars being conducted in FY 1973 around the country.

The Health Care Facilities Service, also known as the Hill-Burton program, has been assisting hospitals since 1946 in construction and equipping emergency department facilities. They also can provide technical assistance on the design of such facilities.

Direct Service Programs

The Indian Health Service has many activities in the direct delivery of Emergency Medical Services as it relates to providing health services for its constituents. In addition, it does provide certain training activities through its Tucson Training Center and is a leader in developing a patient record system that may have direct applicability to Emergency Medical Services.

The main efforts of the Federal Health Programs Service are directed through its Division of Emergency Health Services. This Division, with representatives in each Regional Office and 37 states, provides both financial and technical assistance for all aspects of emergency medical care. Federal Health Program Service also provides some direct emergency services through its nine hospitals and 30 clinics. Four of these hospitals do have mobile emergency medical service teams available in case of major disaster in any part of the country. The emergency medical services activities of the Division of Emergency Health Services (DEHS) are aimed at disaster emergency medical services which operate as a subsystem of the total health care delivery system.

National Institutes of Health

This section presents a description of the Emergency Medical Services (EMS) activities currently being conducted by programs of the National Institutes of Health.

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National Institute of General Medical Sciences

This Institute supports a $3.5 million three-part multi-categorical research program in trauma. There are 29 trauma research grants and 13 training/fellowships. Eight trauma research centers are located in Columbia Presbyterian Medical Center, New York City; Albany Medical Center, Albany, New York; Cincinnati General Hospital; University of Texas (Southwestern), Dallas, Texas; E.J. Meyer Memorial Hospital, Buffalo, New York; University Hospital, Boston University Medical Center; University of Mississippi School of Medicine, Jackson, Mississippi; San Francisco General Hospital (University of California); and the University of Washington Medical Center, Seattle, Washington.

National Institute of Neurological Disease and Stroke

This Institute has two programs that are related to EMS:

> The Head Injury Research Program is composed of about 40 extramural research grants, 33 intramural research projects and six clinical research centers (University of Cincinnati; New York University-Bellevue; University of Kansas; University of Chicago; University of Texas, Galveston; and University of Pennsylvania). The objective of the program is to investigate the physiological change that occurs following head injury and to improve methods of diagnosis and treatment.
>
> The Acute Spinal Cord Injury Program is a new program in 1972. It is composed of six planning grants aimed at establishing four operational centers in FY 1973. The present planning grants are at Yale; New York University-Bellevue; Hahnemann; Northwestern Ohio State University; and the Barrow Neurological Institute in Phoenix, Arizona. The objective of the program is to find out what happens to someone who sustains a spinal cord injury during the first six days of care and what can be done to improve diagnosis and treatment.

National Heart and Lung Institute

The National Heart and Lung Institute has a number of programs aimed at developing new knowledge regarding the onset of

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myocardial infarction and sudden cardiac death in order to improve the identification of subgroups of the population at high risk of suffering one of these events and to develop and assess methods of improved management and transportation of these patients. Projects dealing specifically with emergency medical services are listed and described in the enclosed list.

Under the new legislation the Director of the National Heart and Lung Institute, with the advice of the Council, is required to develop a National Heart, Blood Vessel, Lung and Blood Plan to guide the national effort in the control of cardiovascular, pulmonary and blood diseases. This includes strategic and operational plans for emergency medical services in each of these areas, i.e., to prevent and treat coronary emergencies, to deal effectively with acute respiratory distress, and to respond to the needs for blood and blood products for patients with blood diseases as well as for patients with other emergencies requiring blood transfusions. Panels and satellite task groups are currently at work to develop these plans, and it is expected that the total national plan, including programs for expanded, intensified, and coordinated activities in the area of emergency medical services will be available in May 1973.

Current NHLI Support of Projects in Emergency Medical Services

1. Contracts

The Clinical Cardiac Diseases Branch has several contractors utilizing emergency medical services. Summaries of these projects follow:

University of Miami - In this project specially trained firemen are utilized to provide on-the-scene cardiac resuscitation to heartattack victims. In addition, they send electrocardiograms by radiotelemetry to doctors in nearby hospitals. The firemen then receive instructions regarding administration of certain drugs, intravenous medications, and electrical countershock for serious disorders of the heartbeat. The information on non-survivors is correlated with the autopsy findings and other clinical information, including interviews with relatives and witnesses of the acute event. The ultimate goal is to identify the events leading to sudden cardiac death.

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University of Washington - This operation is similar to that of Miami and involves specially trained firemen in a program aimed at dealing with cardiac emergencies. Again, the electrocardiogram is sent to the hospital and is used to guide the advice on emergency treatment. This is one of the subprojects of the Seattle Heart Watch. In addition to these emergency services, the Heart Watch will provide a central registry and long-term follow-up of patients in the Seattle areas undergoing coronary arteriography and exercise tolerance testing.

Emory University - In this program specially trained paramedical personnel and physicians are stationed in the two major athletic stadia of Atlanta, Georgia, during professional and intercollegiate athletic events. Using portable equipment to aid in cardiac resuscitation, they seek to aid victims of cardiac arrest and provide scientific data on the acute events.

Meadowbrook - In ambulances of the Nassau County Police Department information will be collected on the acute events surrounding sudden cardiac collapse. The major thrust of this study is to assess the value of intramuscular administration of lidocaine and atropine in stabilizing the cardiac rhythms during the early phase of heart attack.

All of the above efforts are integral parts of the sudden cardiac death program of the Clinical Cardiac Diseases Branch. In addition, there are specially equipped ambulances which are designed for similar emergencies. These are located in San Francisco, and Columbus, Ohio. Other NHLI studies of cardiac death are only peripherally related to emergency medical services.

The NHLI also has a number of contracts dealing with problems of peripheral interest to the provision of emergency medical services. Examples are (a) the development of emergency medical devices both for coronary and respiratory emergencies, and (b) research aimed at the development of improved national resources for the provision, management, and distribution of blood and blood products for medical and surgical emergencies.

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2. Grants

The Institute supports a number of grants peripherally related to efforts to improve emergency medical care. Examples of grants which are specifically related to emergency medical care are given below:

Frank Gerbode, M.D., Institute of Medical Sciences, San Francisco - This project is entitled "Physiology, Growth and Development in Cardiac Surgery." The aspects related to emergency care deal with the continuing effort to improve the instrumentation essential to the major goals of the grant. This includes assessment of (1) EKG rhythm analysis and EKG monitoring as well as (2) development, evaluation and assessment of economic feasibility of clinical monitor-measurement systems in clinical care.

Bernard Lown, M.D., Harvard University School of Public Health, Boston - This is an investigation of sudden death and cardiac arrhythmias. The objectives are (1) to develop methods for identifying patients susceptible to sudden death from ventricular fibrillation; and (2) to develop methods for selecting anti-arrhythmic agents for suppressing ectopic activity in patients with coronary heart disease, and thereafter to test the efficacy and safety of long-term drug prophylaxis.

F. John Lewis, M.D., Northwestern University Medical School, Chicago - This project deals with the continued development of an on-line continuous, patient monitoring system controlled by a small digital computer. This system is capable of monitoring patients with only non-invasive sensors as well as patients with intra-arterial, intravenous, and intra-tracheal lines. It is designed both as a practical instrument and as a research system for developing and testing new methods of monitoring cardiac patients.

Thomas N. James, M.D., Alabama University Medical Center, Birmingham - One of the subprojects in this research program deals with automated and semi-automated patient analysis and treatment. The purpose of this project is to accomplish analysis, decision-making and some types of intervention by an orderly set of rules and logic based on numerical data. The use of automation and paramedical personnel can then do many of the individual tasks including in some instances actual

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interventions, freeing highly trained individuals to perform interventions requiring human skills, to supply data requiring human pattern-recognizing abilities, and to generate improved rules, and data collection and analysis.

Jack H. Shore, Institute of Medical Sciences, San Francisco - This project is concerned with the development of a "self-teaching," inexpensive, optical system of EKG monitoring for detection of cardiac arrhythmias. The system will alert personnel and avoid failures due to human inattention in emergency care.

John J. Osborn, M.D., Institute of Medical Sciences, San Francisco - A computer-based quantitative measurement system has been developed for the care of critically ill patients. It has been in use on the intensive care ward for two years and appears to provide important improvement in the quality of medical care. It is now being evaluated in terms of effect on morbidity and mortality, and in terms of cost and benefit. Further development is underway to improve the extraction and display of the most useful information, to extend the system via telephone line communication with the central computer to several community hospitals to demonstrate its effect on the delivery of health care at the local level, and its orderly transfer from research support to health care delivery support.

Bureau of Health Manpower Education

The Bureau of Health Manpower Education (BHME) sponsors manpower training programs and provides funds for training health professionals, nurses and allied health workers which can produce EMS personnel. It has authority to support family practice residencies which could include aspects of EMS training.

Following is a list of projects currently supported by BHME funds:

a. The Office of the Bureau Director is developing a joint contract with the Health Services and Mental Health Administration ($100,000 altogether) to hold a national symposium in the spring of 1973 on the training of physicians in Emergency Health Services.

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b. The Division of Physicians and Health Professions Education has a contract with the American College of Surgeons ($141,000) to develop and present a model seminar program (including appropriate audio-visual materials) which shall instruct non-specialist medical practitioners in the most suitable techniques and measures for treating critically injured accident victims.

c. The Division of Allied Health Manpower is supporting:

(1) A residency training program of one physician in the Management of Emergency Medical Services. This program is located at the Ohio State University School of Medicine.

(2) Had a contract in fiscal year 1972 with the South Carolina Hospital Association ($96,000) to develop a video-tape program for training of emergency medical technicians in that state.

Food and Drug Administration

This section presents a description of the emergency medical services activities being conducted by the Food and Drug Administration.

Two major programs of this administration are currently conducting EMS activities. The activities described are related to EMS through the protection of public health via product safety.

The two activities which relate to EMS are:

The FDA collects, evaluates, and transmits poison and household product information to a National Network of approximately 600 Poison Control Centers. Through these Centers, the information is available to physicians on a 24-hour basis for the emergency treatment of ingestions of toxic substances. An estimated 400,000 inquiries will be handled by the Poison Control Centers in FY 1973. The Agency utilizes reports from the network, as well as other

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epidemiological and clinical data on ingested products to support the enforcement of the Hazardous Substances Act.

The National Electronic Injury Surveillance System (NEISS) uses a probability sample of 110 hospital emergency rooms to project patterns of product-related injuries among the general population. Computer terminals are used at the hospitals to relay the characteristics of selected emergency room injury cases to an FDA computer in Washington on a daily basis. For a sub-sample of these injury reports, prompt on-the-site investigations determine product identification and other details of the injury experience for which hospital emergency medical service was obtained. Identification of dangerous consumer products, including drugs, cosmetics, tools, and appliances, permits appropriate action by FDA.

Social and Rehabilitation Service

The Social and Rehabilitation Service supports payment for emergency services to eligible beneficiaries of the Medicaid Program to the extent that a state makes provision within its state plan for such services. One administration is providing funds, however, for a demonstration project which includes provision of EMS services.

Social Security Administration

Medicare, the Federal health insurance program for people 65 and over, has provisions to help pay for emergency hospital and medical services.

Office of Education

This office, through the Manpower Development and Training Act (MDTA), provides financial assistance to train personnel, including those providing emergency medical services. In addition, the school health program has an impact in the area of accident prevention.

Under Title I, to care for needs of underdeveloped children, OE will provide school health nurses.

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LIST OF LEGISLATIVE AUTHORITIES FOR SUPPORTING EMERGENCY MEDICAL SERVICES PROJECTS

201 - CMHC Act

220 - CMHC Act

247 - CMHC Act

256 - CMHC Act

301 - PHS Act

303 - PHS Act

304 - PHS Act

306 - PHS Act

310 - PHS Act

314a&b - PHS Act

314c - PHS Act

314e - PHS Act

413 - PHS Act (as added by P.L. 92-423)

431 - PHS Act

442 - PHS Act

632 - PHS Act

772 - PHS Act

910a - PHS Act

910b - PHS Act

910c - PHS Act

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EMS demonstration programs

October 1972

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EMERGENCY MEDICAL SERVICES SPECIAL PROJECT

The Emergency Medical Services Project, Health Services and Mental Health Administration, was established under a Presidential Initiative to improve the delivery of emergency medical care in the United States through the application of existing technology and current management concepts.

As the first step in accomplishing this mission, the EMS Special Project Office has selected, through a competitive review process, five areas to develop comprehensive emergency medical services systems. These areas, varied in size, topography, and socio-economic conditions, will serve as demonstration sites.

The Special Project Office will be the planning and coordination center for the Federal EMS effort. It will provide technical consultation and guidance to States and communities. It will establish a national information center to gather and disseminate information; and it will set up a national EMS data collection, analysis, and evaluation system.

Additional information about the EMS Project Office may be obtained from the EMS Program, Parklawn Building Rm. 17-64, 5600 Fishers Lane, Rockville, Maryland, 20852.

EMS DEMONSTRATION SITES

The State of Arkansas
Three County Area of California (San Diego)
Seven County Area of Florida (Jacksonville)
The State of Illinois
Seven County Area of Ohio (Athens)

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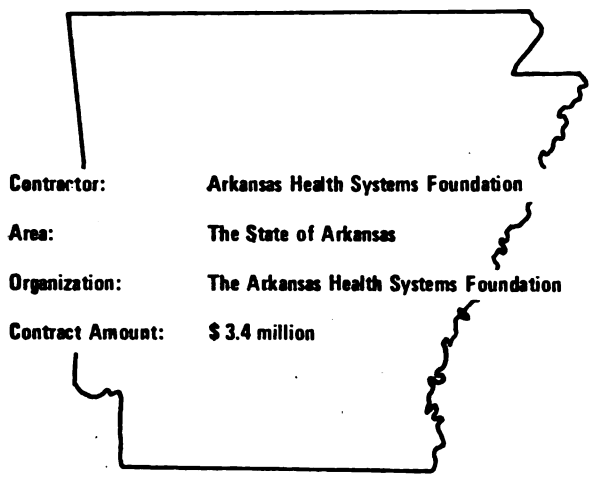
STATE OF ARKANSAS



Contractor:	**Arkansas Health Systems Foundation**
Area:	**The State of Arkansas**
Organization:	**The Arkansas Health Systems Foundation**
Contract Amount:	**$ 3.4 million**

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ARKANSAS

Project Director: Dr. Francis M. Henderson
Director, Arkansas Health Systems Foundation
312 University Tower Building
Little Rock, Arkansas 72204

AREA DESCRIPTION

Topographically, Arkansas is extremely varied. The northern and western areas of the State are hilly or mountainous and contain the highest elevations between the Alleghenies and the Rockies. The eastern area has broad, flat river valleys. 54% of the State's land area is in forest. The State has many rivers and a bountiful supply of water. Little Rock, on the Arkansas River, is a port of entry for the U.S. Customs Bureau.

In 1960 Arkansas was first listed as an urban State; 51% of her population lived in urban centers. 46% of the population, however, is located in 10 counties. 16 of the 75 counties have fewer than 10,000 inhabitants. Over half of the counties do not contain a town of 5,000 population. The largest city, Little Rock, has a population of 323,296.

Although 18.6% of the Arkansas population is non-white, the group is concentrated in the eastern urban counties where the non-white is sometimes more than 50% of the population.

Despite a rather rapid industrialization since 1955, Arkansas remains a relatively poor state. It ranks 49th among the States in per capita income ($2,642.00).

STATISTICS

Population – 1,923,295

Physician population – 1,706
1 to 428 in the Southwest
1 to 3,000 in the more rural areas

Hospitals – 101 general hospitals
most are small hospitals, only 11 have as many as 200 beds

Ambulances – 126

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PRESENT CAPABILITIES

There are 101 general hospitals in the State; only 11 have as many as 200 beds while 39 have fewer than 50 beds. University Hospital is the only class 1 emergency medical facility in the State. Each of the CHP districts does have at least one well equipped community hospital with a competent staff representing practically every medical specialty. State has 1,706 full time non-federal practicing physicians for a population of 1,923,295; however, the ratio ranges from 1/428 in the southwest to 1/3,000 in some rural areas. There is a severe shortage of nurses and trained EMT-A's. Arkansas has major problems in the recruitment, training, and distribution of all types of health care personnel. Rural ambulance services, if they exist at all, are usually inadequate. The health manpower situation is worsened because 50% of the citizens have not been graduated from high school.

FUTURE CAPABILITIES

Specific program objectives to establish a comprehensive emergency medical services system include: developing a State plan, developing two sub-regional pilot areas; instituting a State-wide coordinated training program; completing the hospital emergency radio net (HERN) and cross band with the State Police network; and obtaining necessary State legislation to support the Highway Safety Act of 1966.

To provide a State-wide emergency ambulance service that will provide adequate and efficient transportation to all sick and injured, smaller hospital based ambulance services will be used as satellite operations of larger Regional Hospital based services. Major emergency care hospitals will serve as the base of operations for communication and coordination of ambulance services in the surrounding counties. The communications system will be expanded to connect helicopter and ambulance personnel at the accident site, central dispatcher, receiving trauma center and emergency physicians. Training courses will be conducted State-wide for physicians and EMT-A's. An associate degree program for EMT-A's will be developed.

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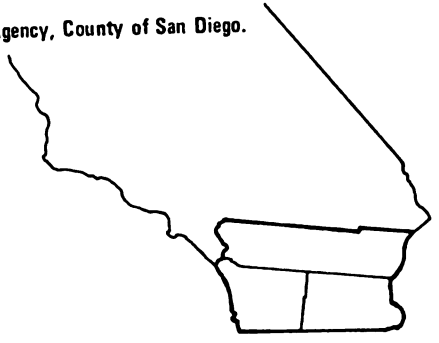
SAN DIEGO, CALIFORNIA

Contractor: County of San Diego, California

Area: San Diego, Imperial, and Riverside Counties

Organization: The Health Care Agency, County of San Diego.

Contract Amount: $ 1.5 million



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SAN DIEGO, CALIFORNIA

(San Diego, Imperial, and Riverside Counties)

Program Director: Mr. William A. Markey
Administrator, Health Care Agency
County of San Diego
1600 Pacific Highway
San Diego, California 92101

AREA DESCRIPTION

San Diego, Imperial, and Riverside counties comprise a 15,700 square mile area in the southern part of California. Almost two million people live in this area. The area is bounded by the Pacific Ocean on the west, the Republic of Mexico on the south, and the State of Arizona on the east. It includes 70 miles of Pacific beaches, deserts, and mountains.

Imperial County, in the southeast corner, has a desert climate. Most of its 75,000 residents live in the Imperial Valley; El Centro is the county seat. The county is principally agricultural. Approximately 70,000 persons, many of whom are migrant workers, are employed in farming occupations. The area has a high minority population with low incomes. It also has a shortage of physician services (only 2 pediatricians) and outdated medical facilities.

The majority of the 450,000 residents of Riverside County live in the northwestern part of the county (including Riverside and a metropolitan complex extending south from L.A.) or in the Coachella Valley, a winter resort. The major industries are agriculture, manufacturing, mining and tourism. The county has 14 general hospitals 1 military hospital, 3 mental hygiene facilities, and one facility for handicapped persons. 550 physicians are in practice.

San Diego County, which contains beaches, mountains, and desert recreational areas, is one of the fastest growing areas in the country. San Diego City is the eleventh largest city in the U.S. The county has good medical facilities, but it also has many problems in the delivery of health care services. The county has a large population of low income or unemployed persons who lack financial resources to obtain medical care.

STATISTICS

Population – 1,882,000
- San Diego County – 1,357,000
- Imperial – 75,000
- Riverside – 450,000

Physician Population – 3,120
- San Diego County – 2,522
- Imperial – 48
- Riverside – 550

Hospitals – 45
- San Diego County – 27 (General)
- Imperial – 4
- Riverside – 14

Ambulances –
- San Diego County – 81

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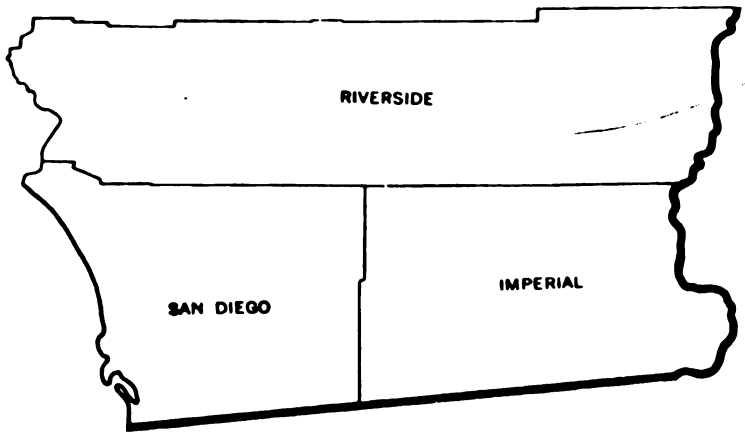

PRESENT CAPABILITIES

Each county in California is mandated by State Law to provide for the health care needs of its citizens. San Diego, Imperial, and Riverside Counties each have established an Emergency Medical Care Committee to plan, coordinate and implement emergency medical activities. The San Diego Committee has a small professional staff. The Committees in Imperial and Riverside Counties are composed of volunteers. The contract will provide professional administrative staff for these two counties and will further the activities of the San Diego Committee.

San Diego County, working with Imperial and Riverside Counties, has developed long range plans for the establishment of a comprehensive emergency medical care system. Implementation of the objectives will be accomplished through a series of discrete but inter-related programs. When the programs are fully operational, they will give the people of the tri-county area a sound basis for a total emergency medical care system that can respond effectively to the health needs of the citizens.

San Diego County now has an operational Hospital Administrative Radio Network which allows direct communica-

FUTURE CAPABILITIES

Completing the Emergency Radio Network is an immediate goal of the Emergency Medical Care Committee. When finished, the network will connect all ambulances and ED's of primary emergency facility hospitals. An inter-hospital radio network will be created in Imperial County. A future 911 system is planned for the area.

The contract will enable Imperial and Riverside Counties to have a paid professional staff in their county EMS committees; it will enable San Diego to continue the function of its EMS committee which does have a professional staff. Ambulances will be purchased for rural areas; attendants trained as EMT-A's will be hired.

A full range of training programs in EMT-A will be implemented. Private ambulance attendants, park rangers, and other persons in the remote area of the counties who could provide immediate life-supporting activities will be trained. In Imperial County, EMT-A training will be offered to county ambulance and hospital personnel.

An improved transport unit for perinatal intensive care will be developed.

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PRESENT CAPABILITIES *(Continued)*

tion between hospitals in the County to coordinate emergencies and to act as a back-up system for commercial telephone company communications. The Emergency Radio Net is not now finished.

San Diego County's 81 privately operated ambulances and its two mobile ICU's are concentrated in the metropolitan area. Services to the rural and mountainous eastern region are sparse and economically unprofitable. To respond to the rural need for ambulance service, rural resident sheriff's deputies have been trained in first aid and rescue equipment.

The area now has one special intensive care unit for infants. The module permits treatment of a child en route to the Perinatal Division of University Hospital. The area also has a poison control center staffed by volunteers and a regional burn treatment center recently established at University Hospital.

FUTURE CAPABILITIES *(Continued)*

Health professionals will be hired to staff the poison control center.

The burn treatment center will be expanded. Hospital personnel will be trained to form the nucleus of a highly specialized burn team.

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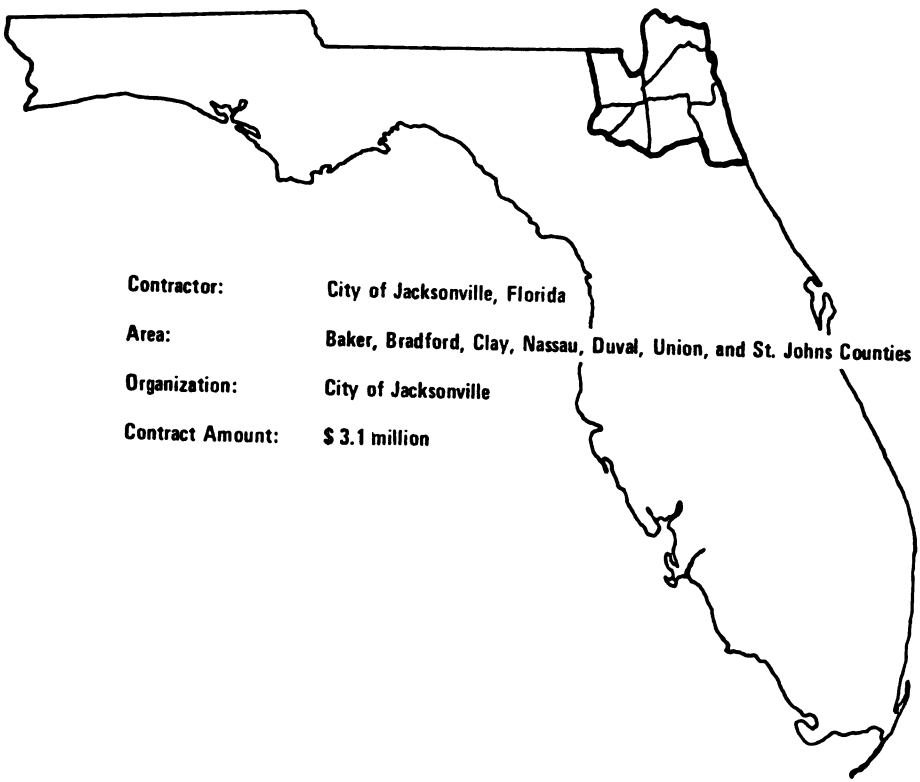
JACKSONVILLE, FLORIDA



Contractor:	City of Jacksonville, Florida
Area:	Baker, Bradford, Clay, Nassau, Duval, Union, and St. Johns Counties
Organization:	City of Jacksonville
Contract Amount:	$ 3.1 million

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JACKSONVILLE, FLORIDA

(Baker, Bradford, Clay, Duval, Nassau, St. Johns, and Union Counties)

Program Director: Captain John M. Waters, Jr.
Director of Public Safety
Jacksonville, Florida 32202

AREA DESCRIPTION

This seven county (Baker, Bradford, Clay, Nassau, Duval, Union and St. Johns) area is located in the northeast part of Florida.

It is an economically deprived area; approximately one-third of its families are near or below the poverty level. In Jacksonville, nearly one-fourth of the citizens, concentrated principally in the core city, are medically indigent. Most of these people rely on University Hospital in Jacksonville for medical treatment. The City of Jacksonville falls below the national average of physicians.

The six rural counties surrounding Jacksonville have, probably, a greater poverty rate than the city. 67 physicians serve the 115,000 citizens which puts them in the lower third of people in the nation in physician availability.

The major industries are lumber and wood products, truck crops, agriculture, dairying and livestock. Two interstate highways cross this area, I-75 in a north-south direction and I-10 in an east-west direction.

STATISTICS

Population – 670,000
- Jacksonville – 125,000

- Baker – 9,242
- Bradford – 14,625
- Clay – 32,059
- Duval – 528,865
- Nassau – 20,626
- St. Johns – 30,727
- Union – 8,112

Physician Population – 662
- Jacksonville – 572

- Baker – 3
- Bradford – 2
- Clay – 20
- Duval – 6,000
- Nassau – 15
- St. Johns – 20
- Union – 2

Hospitals – 16
- Duval – 10
- Six surrounding counties – one each – (Union County Hospital not yet operational)

Ambulances
- Jacksonville – 9
- Six surrounding counties – 20

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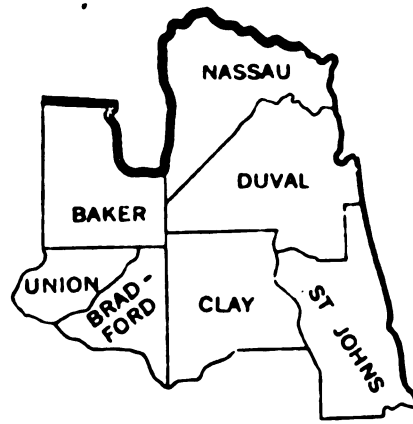

PRESENT CAPABILITIES

The City of Jacksonville has an advanced rescue ambulance service that has gained national recognition. The service is provided by the Jacksonville Fire Department Rescue Service using well-equipped modular vehicles, highly trained personnel and good communications. Air transportation of the injured is available. The health manpower and hospital complex in Jacksonville is the largest in the New Orleans-Atlanta-Miami triangle. All medical specialties are represented. Jacksonville and Gainesville have good hospitals and good training facilities.

At present, citizens of the counties surrounding Jacksonville cannot receive care comparable to that available in the city. Some counties have only two physicians; other counties face a loss of physicians in the coming year. Each county does have a community hospital but these hospitals are incapable of treating major trauma or critical and unusual illnesses. The six county hospital emergency departments are inadequate. With the exception of the City of Jacksonville, no ambulance service in the entire region now meets the requirements in equipment, training, and personnel required by the National Highway Traffic Safety Administration or HEW.

FUTURE CAPABILITIES

Local ambulance services will be upgraded. Local community hospital emergency departments will be upgraded. Ambulance attendants will be trained to an 80 hour level in first aid and CPR. Ambulances will be equipped in accordance with the requirements of the American College of Surgeons. All firemen and law enforcement officers will be trained in first aid and CPR. If patients cannot be treated at community hospitals, they will be stabilized and evacuated to Jacksonville or Gainesville by military helicopter or by an intensive care ambulance.

The City of Jacksonville, acting with the advice and help of the Jacksonville Area Health Planning Council and other professional organizations, will provide direction, leadership, technical advice, and consultation to the seven counties in carrying out the project activities. The same high quality emergency medical care available to the citizens of Jacksonville will be available to the citizens of the seven counties.

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STATE OF ILLINOIS

Contractor:	**The Illinois State Department of Public Health**
Area:	**The State of Illinois**
Organization:	**The Illinois State Department of Public Health**
Contract Amount:	**$ 4.0 million**

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ILLINOIS

Program Director: Dr. David R. Boyd
Chief, Division of Emergency Medical Services
Illinois Department of Public Health
Chicago, Illinois 60612

AREA DESCRIPTION

The state of Illinois ranks 24th in the United States in area; 5th, in population. Approximately two-thirds of the State's population live in the metropolitan area of Chicago, the third largest city in this country. The remaining third of the population lives in either small cities or rural areas. The southern half of the State is basically rural. It is estimated that the Illinois population must experience approximately 70,000 myocardial infarction or sudden coronary deaths per year; an additional 11,000 deaths occur in Illinois due to artherothrombotic disease of major arterial vessels in other parts of the body. Motor vehicle accidents cause 2,683 deaths and all other causes of accidental deaths totalled 2,804. The neonatal deaths in Illinois in 1969 was 3,342.

Illinois must provide care for inter-city urban areas, Chicago suburban and downstate urban communities, and remote rural areas. Some of the rural areas do not have any ambulance services.

Most of the people who live in the sprawling South Side Ghetto in Chicago, are medically indigent. The area has few physicians and inadequate ambulance services. Most citizens must rely on Cook County Hospital's emergency department for medical care even though the great percentage of their injuries or illnesses are not true emergency cases.

STATISTICS

Population – 11,084,300

Physician Population – 15,299

Hospitals – 256

Trauma Centers – 40

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PRESENT CAPABILITIES

In 1971 the State of Illinois established a Trauma Care System – a system for the orderly handling of patients with serious injuries through the best possible use of existing facilities and medical technology. The system called for the creation of 40 Trauma Centers in the State of three types: Regional, Areawide, and Local. The purpose of the Trauma Care System is to get a seriously ill or injured person to the medical care he needs in the shortest amount of time, and to keep him alive in the meantime. The trauma care program is well launched but it is not completed. Principal accomplishments include establishment of trauma centers, a communications network, and a transportation system including use of helicopters.

Consumer and public information programs have been extensively and effectively undertaken. The citizens of Illinois have been informed of the deficiencies, expectations and achievements of the Trauma Care Program. This community interest is now being channeled into effective use through involvement in community emergency service councils.

FUTURE CAPABILITIES

Using the experience gained in developing the Trauma Care Network, the State is now ready to effect a total systems approach to emergency and critical care medicine on a Statewide basis. The entire health community of the State has learned much about and developed a great interest in the development of emergency care systems.

During the past two years, the entire State health community has learned a great deal about comprehensive area-wide planning and implementation of emergency medical care systems. Illinois is now ready to expand its trauma care system into a total emergency medical care system.

Emergency service councils will be developed Statewide The councils, composed of professional leaders and community participants, will plan for the provision of total emergency care. Emphasis will be on using existing resources effectively – not on building new facilities.

Developing a comprehensive communications system will be a priority project. Radio communication will be possible

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FUTURE CAPABILITIES *(Continued)*

between hospitals and ground or air vehicles. Physicians in Regional Centers will be able to monitor an ambulance operating out of a local trauma center. A RED (Regional Emergency Dialing) telephone number has been established. 911 systems will be installed in many communities. Stickers listing RED, fire and police numbers will be distributed in communities. Training programs will be undertaken for communications personnel. A central emergency medical control center will be established in each region and areawide community. Outlying Critical Care Units will be established. Model systems of ambulance services will be established. Well-equipped ambulances will be purchased. Critical care nurse and EMT-A training will be conducted. Residencies for emergency physicians will be established. An Outreach Community Care Bus will be used to extend health education to remote rural areas; the bus will be used as a mobile classroom for health personnel training.

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ATHENS, OHIO

Contractor:	**Ohio Valley Health Services Foundation, Inc.**
Area:	**Gallia, Jackson, Vinton, Lawrence, Meigs, Hocking, and Athens Counties.**
Organization:	**The Ohio Valley Health Services Foundation.**
Contract Amount:	**$ 3.6 million**

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OHIO

(Athens, Hocking, Vinton, Jackson, Lawrence, Gallia, and Meigs Counties)

Project Director: Mr. J. E. Farrington
Executive Director
Ohio Valley Health Services Foundation, Inc.
8 North Court Street, P.O. Box 845
Athens, Ohio 45701

AREA DESCRIPTION

Four of the Southeastern Ohio Counties – Athens, Meigs, Gallia, and Lawrence – are located along the Ohio River and are adjacent to Kentucky and West Virginia. The entire area, the unglaciated part of the Appalachian Plateau, is hilly. Along the valleys, the land is chiefly used for crops and grazing. Many of the hill farm lands have been neglected and returned to scrubland. Beds of clay and coal are found throughout the area.

In general, the counties and communities of Southeastern Ohio are economically depressed. They are characterized by chronic unemployment, low expenditures for needed public services and facilities, and inadequate schools and health facilities. Family incomes are low.

STATISTICS

Population – 213,000
- Athens – 55,000
- Hocking – 20,000
- Vinton – 9,000
- Jackson – 27,000
- Lawrence – 57,000
- Gallia – 25,000
- Meigs – 20,000

Physician Population – 137
- Athens – 48
- Hocking – 9
- Vinton – 1
- Jackson – 13
- Lawrence – 22
- Gallia – 38
- Meigs – 6

Hospitals – 7
- one in each county except;
- Athens – 2
- Vinton – 0

Ambulances – 22
- Athens – 6
- Hockings – 2
- Vinton – 2
- Jackson – 2
- Lawrence – 6
- Gallia – 2
- Meigs – 2

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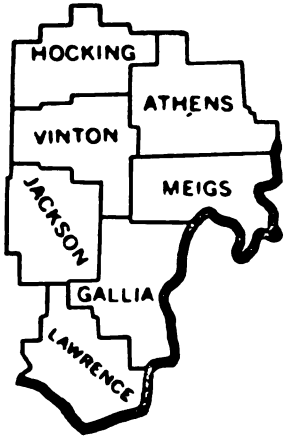

PRESENT CAPABILITIES

The care provided victims of a medical emergency in the Ohio seven-county health demonstration areas has been, and is, quite haphazard. No ambulances in the area meet federal standards; none have radio communications with hospitals. Only 5% of the ambulance attendants have received 72 hours of training. The areas have only 68% of the physicians it needs and hospital emergency departments are inadequately manned and equipped.

FUTURE CAPABILITIES

The area will develop a coordinated ambulance system. The vehicles will be equipped with life-saving equipment. A communications system permitting hospital-vehicle communication will be installed. Training courses for Emergency Medical Technicians – Ambulance (EMT-A) will be conducted throughout the community college system.

Full-time emergency department services will be maintained at emergency departments of regional hospitals. ED equipment and facilities will be upgraded. Physicians will be recruited and placed in the emergency departments.

Training courses will also be established for other medical personnel such as nurses and laboratory technicians.

Education programs will be established to inform consumers that emergency medical services exist and to teach them how to use the system.

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QUESTIONS SUBSEQUENTLY SUBMITTED TO H.E.W. BY SENATOR CRANSTON

In what office is the responsibility for providing this assistance housed?

The EMS Special Project Office has the responsibility to provide technical assistance and to coordinate the DHEW effort in this area. In a few instances technical assistance requested of this office has been provided by other Departments.

What steps has HEW taken to conform interdepartmental regulations and standards for emergency medical services such as ambulance standards under medicare and medicaid?

No action at this time to our knowledge. However it will be discussed by the EMS Interdepartmental Committee.

Who is on the EMS Technical Advisory Committee?

The formal name is the EMS Administrator's Advisory Committee. The Committee was approved by the Secretary, HEW on November 16, 1972. Invitations have been extended to nominees. We will be happy to supply a list of members when the nominees have accepted. No meeting has been held.

What role did that committee play in the development of the "Request for Proposal" and in the selection of the sites which were awarded grants and contracts for EMS Systems?

A group of consultants were used during 1972 by the Administrator to advise on policy of implementing the EMS initiative. Some of the consultants did advise on the content of the RFP for EMS demonstrations. These consultants were not involved in the screening or selection of proposals considered for award.

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From what appropriations authorities were these funds allocated?

From appropriations authorized under Title IX, PHS Act, as amended.

Could we have for the record copies of the original request for proposal, the contracts which were awarded, the preliminary program plans submitted by those sites chosen, and the final program plan submitted by these sites, which I understand was due January 3, 1973?

Attached is a copy of the RFP and also a contract of one project. The conditions of all are essentially the same. Preliminary and final program plans occupy approximately 4 linear feet of file space. The files will be available to the Subcommittee in Room 17-64, 5600 Fishers Lane, Rockville, Maryland.

Reorganization Plan No. 1 submitted to Congress January 26, 1973, describes the distribution of programs formerly the responsibility of the Office of Emergency Preparedness. It indicates that the bulk of the responsibilities dealing with provision of Emergency Health Services would go to the Department of Housing and Urban Development. What input will DHEW have in these programs?

The Department of Health, Education, and Welfare stands ready to provide technical assistance to communities through the regular staff in the Department's ten regional offices. No Federal funds, however, would be provided for hiring State emergency health planning and liaison staff. We believe that these types of activities are properly State responsibilities.

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I note that in the fiscal year 1974 budget, the Emergency Health Service has been eliminated. What were the functions of this office and who will be performing these functions now?

The functions of the Division of Emergency Health Services were

1. To maintain the National Medical Stockpile,
2. To provide plans and cadre for continuity of the health aspects of the Federal Government,
3. To aid States and communities in planning for the continuity of the emergency health services at the State and local levels, and
4. To provide technical information and educational programs for training medical and allied health personnel in the area of disaster health services.

Item 1 is no longer considered necessary and all needs for medical material will be provided from presently available military units and available existing commercial channels.

Item 2 - This function will be supported through FY 1974 as now operating with gradual reassignment of these responsibilities to other DHEW offices prior to June 30, 1974.

Items 3 and 4 will now be performed by the States and communities.

Has HEW made an evaluation of the resources needed nationally for EMS?

The DHEW provided to the Subcommittee in January 1973 our most recent report on the Departments plans, activities, and evaluations for EMS.

Attachments:
RFP
Contract

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
ROCKVILLE, MARYLAND 20852

OFFICE OF THE ADMINISTRATOR

Reference: OS(B)MTD
HSM 110-0A-57(2)

MAR 24 1972

Gentlemen:

You are invited to submit a proposal in accordance with the requirements of this solicitation which are contained in the following attachments.

Attachment A - Instructions to Offerors.
Attachment B - Contract Provisions including Scope of Work.
Attachment C - Representations and Certifications.

Your proposal must be received by the Contracting Officer, Procurement Branch, PMM, Health Services and Mental Health Administration, 5600 Fishers Lane, Rockville, Maryland 20852, Room 16A40 not later than April 14, 1972, 4:00 pm local time at Rockville, Maryland. The Government reserves the right to consider proposals or modifications thereof received after the date and time indicated for such purpose, but before award is made, should such action be in the interest of the Government. The proposal must be signed by an official authorized to bind the offeror, and it shall contain a statement to the effect that the proposal is firm for a period of at least ninety (90) days from the date of receipt thereof by the Government. In the event advance payment is required, such requirement must be indicated in your proposal with reasons therefore.

This solicitation does not commit the Government to pay any costs incurred in the submission of proposals or for studies or designs for the preparation thereof, nor to contract for the articles or services. It is also brought to your attention that the Contracting Officer is the only individual who can legally commit the Government to the expenditures of public funds in connection with this procurement.

Requests for any information concerning this solicitation are to be referred only to the Contract Negotiator, Marcus T. Dodge who may be called on telephone number 301 443-4086.

Sincerely yours,

Marcus T. Dodge

Marcus T. Dodge
Contracting Officer

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Purpose of Contract

Develop no more than five total emergency medical services systems which serve populations residing within the boundaries of one or more Comprehensive Health Planning Agencies to demonstrate that combining known technology and effective management concepts and techniques will result in accessible, quality emergency medical care.

While the entire spectrum of emergency care obviously includes intensive medical and surgical care in specialized in-patient areas within the hospital, this EMS project directs its attention to the problems patients face in obtaining access to the health system and this intensive care. Access to medical care in an emergency situation arising in the community is the most basic and crucial factor of all because of the time requirements inherent in the definition of an emergency, and because resolution of an emergency does not occur until the access problems have been overcome and the patient is delivered to adequate and optimal care.

Community Emergency Medical Services consist of the detection and reporting of medical emergencies, initial care, transportation and care for patients enroute to emergency care facilities, medical treatment for the acutely ill and severely injured within emergency rooms or departments and provision of a linkage to continued care and rehabilitation. The services can be organized into a balanced system which then adds the dimension of regionalized emergency care facilities ambulance services and the radio or other communication devices that tie these services together. To be effective it must have linkages to other systems, programs and services including intensive care units and other inpatient care, ambulatory care services, preventive medical services, accident prevention programs, fire fighting and police services. Adjacent EMS systems must be capable of linkage for efficiency and to cope with disasters.

Overall Objectives of the program include:

1. To provide demonstration and training sites in development and operation of EMS systems for the benefit of other communities.

2. To test whether a community management structure responsible for the organization of emergency health delivery systems can improve performance to achieve the three goals of rapid access, greater efficiency and provision of quality care by trained personnel.

3. To determine whether such an approach can achieve greater integration and coordination of Federal funds and similarly provide integration and coordination of local governmental units and private enterprise that presently deliver such services.

4. To evaluate the effect of new models for systems and sub-systems to upgrade emergency medical services in various types of communities.

The end product of the contract will be a fully operational emergency medical care system including a report of the methods used to achieve such a system.

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BACKGROUND HISTORY

One of the most glaring manifestations of the crisis in health care is the failure to make it possible for the patient to obtain prompt treatment. This deficiency is most evident and most crucial in the provision of emergency medical services. Although emergency medicine is a part of the total health services delivery problem, it is unique in that time is critical to successful performance.

The need for urgent medical care can best be met through a well coordinated system. Planning for such a system involves careful and complete identification and integration of all available resources. Implementation of programs must provide improved public education, coordinated communications, well-designed transportation, highly skilled personnel and specialized equipment, as well as organized hospitals, efficient emergency departments and special care facilities.

Numerous studies have shown that effective systems for emergency care can significantly reduce death rates. Of the more than 115,000 persons who died as a result of accidents last year, it is estimated that 18,000 might have been saved with proper immediate care; many of the 11 million with serious injuries could have recovered more quickly and with less permanent disability. Coronary heart disease kills over 600,000 persons each year, of whom about 350,000 fail to reach the hospital alive - at least 10% of these deaths could be prevented by the proper utilization of available knowledge. Other emergency problems, including poisonings , drownings, obstetrical complications, attempted suicides, and aspiration of foreign bodies, account for at least another 5000 preventable deaths each year.

These lives might be saved by the proper application of information presently available. The problem is in the design, coordination, and implementation of an effective total emergency care system for each community, working in cooperation with regional and state support organizations.

The major elements which should be considered as comprising a total system for delivery of emergency medical services include:

1. Consumer information and education.
2. Training of paramedical personnel.
3. Organization of medical facilities.
4. Design and location of vehicles.
5. Specialized equipment available for each level of care.
6. Integrated communications systems including central dispatch.
7. Initial, on-the-site, and in transit emergency care.

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8. Emergency Department Services available on a 24 hour basis.

9. Definitive and continued medical care.

10. Special care facilities.

11. Relationships of emergency medical system to total medical care delivery.

12. Knowledgeable and interested professional health personnel.

13. Comprehensive plan of action.

14. Organized data collection.

15. Evaluation methodology.

16. Coordination with involved communities.

17. Utilization of engineering and medical technology.

18. Community coordination, cooperation, and leadership.

In each community a responsible group must accept the specific objectives of the proposed contract as a primary responsibility and be the agent assigned to develop and manage the emergency system. Its leadership should represent the interests of provider, payor, public and political sectors of the community.

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SECTION B - TECHNICAL PROPOSAL REQUIREMENTS

Health Services and Mental Health Administration recognizes differences in capability, need, resources, and stage of development will exist among the communities that respond to this RFP and the communities selected for demonstration projects. Therefore the agency cannot and does not want to set forth a highly detailed and elaborate work statement.

It is the intent of the government to award not more than five contracts geographically dispersed for total emergency medical services systems. Each of the following types of communities will be considered: 1) state, 2) rural area, 3) urban/ghetto area, 4) metropolitan area, and 5) medium-sized city.

All proposals are subject to preliminary approval by Comprehensive Health Planning Agencies before submission, and final approval before contract award, and proposals are subject to review and comment by Regional Medical Programs, Experimental Health Services Delivery Systems where they exist, state and local health agencies. They must meet standards promulgated by Federal agencies unless a waiver is granted by the Contracting Officer.

To facilitate proposal evaluation, the offeror shall submit as part of the proposal, a separate enclosure entitled "Technical Proposal."

A. Problem and Approach

The proposal shall provide a statement of the problem, scope and purpose of the project in the Contractor's own words to demonstrate his complete understanding of intent and requirements.

The proposal should present the total community plan and implementation effort considered necessary to meet the emergency medical needs of its population. As a minimum, the following topics must be covered:

(a) Describe a comprehensive overall program plan for an emergency medical system to cover a clearly defined community area, geographically congruent with a Comprehensive Health Planning (B) Agency or multiples thereof.

(b) Define the specific program objectives and include phased efforts in the following areas: 1) consumer information and education, 2) personnel, 3) training, 4) equipment, 5) communication, 6) transportation, 7) inter-and intra-hospital coordination with emergency medical care system, 8) system management, 9) relationships to other involved communities, 10) legislation, 11) other problem areas recognized in the community area including a procedure for handling grievances from the community and 12) vehicle and equipment maintenance program.

(c) Identify existing and operating components of the plan, including subsystems, programs, special facilities, implementing organizations.

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(d) Describe the total demonstration project to be implemented during the contract term. Specify those component parts of the project which would receive partial or full support from the requested contract funds. Identify existing and potential sources of funding for the proposed emergency medical services system.

(e) Describe methodology to be used for evaluation of the system performance, including the data base and resources for comparison of the current system with the anticipated final system.

(f) Describe the EMS management organization for the demonstration project. Identify the individuals to be responsible for program execution and the relationship of the proposed system to the functions of other community organizations and government agencies.

(g) Describe the proposed operation of an information system which will be available to consumers, providers, and health agencies.

(h) Describe the approach to development of linkages to other systems of health care delivery and of consumer education.

B. Personnel

1. The proposal shall specify the names and titles of the Project Director and other existing professional personnel that will be assigned to perform the contract. Also specify other personnel to be employed for work under this contract. Provide a curriculum vitae and pertinent bibliography for each of the foregoing.

2. The proposal shall specify the professional personnel who will operate organizationally under this contract.

C. Facilities

The proposal shall specify the equipment, location and space available for performance of this contract.

D. Experience and Proficiency

The proposal shall identify work performed along similar lines in the past, together with unique resources or capabilities, innovative ideas, and methods of evaluating progress.

A list of criteria and weighting factors by which proposals will be evaluated is included as follows:

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Criteria for Evaluation of Technical Proposals

Factors which will be considered in evaluating each proposal include:

1. The existence of functioning components of the total system and the demonstrated capability and interest to implement, manage, and coordinate a total system in this and related fields.

2. The adequacy of personnel, facilities, equipment, organization, and training capabilities.

3. Proposed plan for meeting the stated objectives at the earliest possible time.

4. The ability to identify, utilize, and coordinate methods and/or subsystems of proven effectiveness.

5. The ability to devise, test, and evaluate methods, subsystems, and the total system.

6. The ability to identify and serve a discrete population.

7. The ability to provide local support for modification, refinement, and operation of the system.

The technical proposal will be evaluated using the following weights:

1.	Existing plans, programs, and resources	25
2.	Personnel, facilities and organization	20
3.	Approach to problem	20
4.	Evaluation techniques	20
5.	Degree of local support	15

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MANDATORY REQUIREMENTS

1. The proposed plan must encompass an area congruent with a areawide Comprehensive Health Planning Agency or multiples thereof. Before submission of the proposal, the plan must have preliminary approval by the CHP Agencies and reviewed and commented on by Regional Medical Programs, Experimental Health Services Delivery Systems where they exist and State and local health agencies. They must meet standards promulgated by Federal agencies unless a waiver is granted by the Contracting Officer.

2. The existence of functioning components of an Emergency Medical System to include the following items:

   a. personnel

   b. training

   c. equipment

   d. communication

   e. transportation

   f. inter-and intra-hospital coordination with emergency medical care system

3. The existence of local funding support for Emergency Medical Care.

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SECTION C BUSINESS MANAGEMENT PROPOSAL INSTRUCTIONS

To facilitate proposal evaluation, the offeror shall submit as part of the proposal, a separate enclosure entitled "Business Management Proposal." The data and information should be keyed to each paragraph of the requirements outlined below:

Administrative Data

1. List the names and telephone numbers of persons authorized to conduct negotiations.

2. The offeror shall indicate whether he operates as an individual, partnership or corporation (showing State where incorporated).

3. Indicate the names and addresses of cognizant Government Audit Agency and cognizant Inspection Agency.

4. The offeror shall state the intended place of performance, including the street address and the names and addresses of owner and operator of producing facilities if other than offeror when it is reasonably expected that such facilities will be used in the performance of the contract.

5. The offeror shall furnish all available information with respect to any Government-owned facilities, industrial equipment or special tooling intended to be used in the performance of work hereunder, the value thereof, identification of the Government contract under which acquired, rental provisions, effect on price structure of proposal if the use of any Government facilities is denied, and any other relevant information pertaining to Government-owned facilities.

6. In the event the offeror contemplates acquiring additional facilities in the performance of this work, such facilities shall be separately identified.

7. The offeror shall list commitments with the Government relating to the specified work or services and indicate whether these commitments will or will not interfere with the completion of work and services as contemplated under this proposal.

8. The offeror shall indicate if he has the necessary financial capacity, working capital and other resources to perform the contract without assistance from any outside source. (If not, indicate the amount required and the anticipated source.)

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General Provisions, Alterations, and Billing Instructions

Any contract awarded will include all clauses required by law and current regulations of the Department of Health, Education, and Welfare. The General Provisions, Alterations, and Billing Instructions are set forth under "Attachment B" to this Request for Proposal. The offeror shall indicate whether the General Provisions are acceptable as part of the proposed contract. If not acceptable, indicate the exceptions taken and the proposed revisions.

Offeror Representations and Certifications

The offeror shall complete and submit the representations and certifications set forth as "Attachment C" of this Request for Proposal.

Cost and Pricing Data

The Health Services and Mental Health Administration requires as a minimum that the offeror submit cost proposals fully supported by cost and pricing data adequate to establish the reasonableness of the proposed amount.

1. Proposals shall be based on a Cost Reimbursement type contract.

2. The offeror shall furnish a total cost breakdown utilizing the enclosed cost and price analysis form.

   a. Include the backup data to support the type of labor and estimated number of hours within each labor category.

   b. Include the breakdown of the amount estimated for travel including destination, duration, purpose and cost (per diem and transportation).

   c. Include backup data to support the estimated amount of material and subcontracting (if applicable) including description of materials to be procured, basis for proposed subcontract, type of subcontract and amounts proposed.

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REPORTS

The Contractor shall submit to the Project Officer the following reports as indicated below:

ITEM	DESCRIPTION	NO. OF COPIES	SUBMISSION DATE
1	Informal progress letters of work performed, problem encountered, anticipated activities, and a summary of expenditures.	12 copies	Monthly
2	Technical Progress Report, technical results, and proposed plan revisions.	12 copies	Every six (6) months after effective date of contract
3	Preliminary Program Plan. A detailed description of activities for the contract period in time-oriented sequence including milestones and dates of completion to be used for contract performance evaluation.	12 copies	Three (3) months after effective date of contract
4	Final Program Plan	20 copies	Six (6) months after effective date of contract
5	Implementation Plan. Presentation of commitments by units of the community, the providers, and the consumers together with time and participation schedules for the remainder of the contract.	20 copies	Nine (9) months after effective date of contract
6	Annual Report. Summary of performance results to date, projection of work and work schedule for remainder of contract.	20 copies	Twelve (12) and Twenty four (24) months after effective date of contract.
7	Draft of Final Report. A detailed technical description of results in terms of:		
	(1) methods and approaches employed	12 copies	Thirty-four (34) months from effective date of contract. (The Government shall provide comments within thirty (30, days.
	(2) needs and problems identified and solutions tested or proposed		

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	(3) Evaluation of system effectiveness (money, personnel, level of care, etc.)		
8	Final Report	60 copies	Thirty (30) days after receipt of Government comments.

DESIGNATION OF PROJECT OFFICER

Dr. John J. Hanlon is hereby designated as Project Officer for this contract. The Project Officer or his aughorized representative's responsibility will be to coordinate with the Contractor in administering the technical aspects of this contract. The Project Officer is not authorized to make any changes which affect the contract amount, terms, or conditions. The Contracting Officer is the only party authorized to bind the Government.

DESIGNATION OF PROJECT DIRECTOR

Work and services shall be conducted under the direction of
The Government reserves the right to approve any necessary successor to the designated Project Director.

REVIEW AND APPROVAL

Review and approval of the work hereunder shall be performed by the Contracting Officer or his duly authorized representative.

NOTICE TO GOVERNMENT OF DELAYS

Whenever the Contractor has knowledge that any actual or potential situation is delaying or threatens to delay the timely performance of this contract, the Contractor shall, within ten (10) days, give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

PROCUREMENT OF ALL MATERIAL, DATA, AND SERVICES

Except as otherwise provided herein, procurement of all material, data, and services necessary for performance under the terms of this contract shall be the responsibility of the Contractor.

COMPETITION IN SUBCONTRACTING

The Contractor agrees to select subcontractors on a competitive basis to the maximum practical extent consistent with the objectives and requirements of this contract.

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SPECIAL PROVISIONS	CONTRACT NO.	PAGE ___ OF ___

CONSULTANT SERVICES

Except as otherwise expressly provided elsewhere in this contract, and notwithstanding the provisions of the clause of this contract entitled "Subcontracting", the prior written approval of the Contracting Officer shall be required:

(a) Whenever any employee of the contractor is to be reimbursed as a "consultant" under this contract; and

(b) For the utilization of the services of any consultant under this contract exceeding the daily rate set forth elsewhere in this contract or, if no amount is set forth, $100.00, exclusive of travel costs, or where the services of any consultant under this contract will exceed ten days in any calendar year.

Whenever Contracting Officer approval is required, the contractor will obtain and furnish to the Contracting Officer information concerning the need for such consultant services and the reasonableness of the fees to be paid, including, but not limited to, whether fees to be paid to any consultant exceed the lowest fee charged by such consultant to others for performing consultant services of a similar nature.

IDENTIFICATION OF DATA

The Contractor shall identify the technical data delivered to the Government pursuant to the requirements of this contract with the number of this contract, and the name and address of the contractor or subcontractor who generated the data.

DEVELOPMENT AND USE OF FORMS

Any forms which may be developed by the Contractor for use in the performance of this contract shall be submitted to the Project Officer for review and approval prior to their use. The Project Officer shall be responsible for obtaining clearance from the Office of Management and Budget, if required, prior to his approval for use by the Contractor.

PUBLICITY AND PUBLICATIONS

A. The Contractor agrees that it will acknowledge Health Services and Mental Health Administration, Department of Health, Education, and Welfare support whenever projects funded in whole or in part by this contract are publicized in any news media.

B. The Contractor shall include in any publication resulting from the work performed under this contract an acknowledgement substantially as follows:

"The Project upon which this publication is based was performed pursuant to Contract No. HSM 110-72- with the Health Services and Mental Health Administration, Department of Health, Education, and Welfare."

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SPECIAL PROVISIONS	CONTRACT NO.	PAGE ____ OF ___ PAGES

CONTRACTOR AND SUBCONTRACTOR LISTING REQUIREMENTS

A. As provided by 41 CFR 50-250, the Contractor agrees that all employment openings of the Contractor which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by the contract and including those occurring at an establishment of the Contractor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall, to the maximum extent feasible, be offered for listing at an appropriate local office of the State employment service system wherein the opening occurs and to provide such periodic reports to such local office regarding employment openings and hires as may be required: Provided, That this provision shall not apply to openings which the contractor fills from within the contractor's organization or are filled pursuant to a customary and traditional employer-union hiring arrangement and that the listing of employment openings shall involve only the normal obligations which attach to the placing of job orders.

The Contractor agrees further to place the above provision in any subcontract directly under this contract.

HEW CONTRACT FINANCIAL REPORT

Financial reports on Form HEW 515-4/69 shall be submitted by the contractor in accordance with the instructions on the reverse of the form, and in an original and 2 copies not later than the 15th of the following quarter. The line entries for subdivisions of work and elements of cost (types of expense) to be reported within the total contract shall be determined by the Contracting Officer after giving consideration to the recommendations of the Contractor. Subsequent changes and/or additions in the line entries shall be similarly determined. The contracting officer shall notify the contractor of each change and additon and the reporting period to which each shall apply. Financial reporting shall commence with a report for the first calendar quarter following the date of this contract.

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EQUIPMENT AND FACILITIES

It is HSMHA policy that Contractors will provide all equipment and facilities necessary for performance of contracts. Exception may be granted to furnish Government-owned property, or to authorize purchase with contract funds, only when approved by the head of the procuring activity. Generally, only special purpose equipment whose usefulness is limited to a particular operation or project may be provided. The Contractor will be expected to furnish all general purpose items for administrative use such as office furniture, typewriters, business machines, or other items normally used in overall operation of the business or institution.

The offeror shall identify all Government-owned property in his possession which he proposes to use in performance of work hereunder, including the value thereof, and identification of contract under which acquired. If additional equipment must be acquired, the offeror shall include the description, estimated cost of each item, and whether the Contractor will furnish such items with his own funds.

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NEGOTIATED CONTRACT

CONTRACT NO: HSM 110-72-344	PAGE 1 OF 17 PAGES
NEGOTIATED PURSUANT TO: 41 USC 252(c)(10)	TYPE OF CONTRACT: Cost Reimbursement

ISSUING OFFICE
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville Maryland 20852

CONTRACT FOR
Demonstration of an Emergency Medical Services Delivery System

CONTRACTOR (Name and Address)
City of Jacksonville, Florida
City Hall
Jacksonville, Florida 32202

ACCOUNTING AND APPROPRIATION DATA
APPN: 7520359 OC 25.31
CAN: 3976047 PC 000/007
ALLOW: 2-6950 VC
(RFP HSM 110-0A-57(2))

PLACE OF PERFORMANCE
Jacksonville, Florida

CONTRACT AMOUNT
Total Contract: $3,100,000.00
FY-72 Obligation: $1,292,279.00

MAIL VOUCHERS TO
See Article XXVIII

SPONSOR
Office of the Administrator

EFFECTIVE DATE
JUN 2 8 1972

EXPIRATION DATE
See Article III

CONTRACTOR REPRESENTS

1. That it [ ] is, [ ] is not, a small business concern. If he is a small business concern and is not the manufacturer of the supplies to be furnished hereunder, he also represents that all such supplies [ ] will, [ ] will not, be manufactured or produced by a small business concern in the United States, its possessions, or Puerto Rico. (A small business concern for the purpose of Government procurement is a concern, including its affiliates, which is independently owned and operated, is not dominant in its field of operation in which it is contracting and can further qualify under the criteria concerning number of employees, average annual receipts, or other criteria, as prescribed by the Small Business Administration. (See Code of Federal Regulations, Title 13, Part 121, as amended, which contains detailed definitions and related procedures.)
2. That it is a [ ] REGULAR DEALER IN, [ ] MANUFACTURER OF, the supplies covered by this contract.
3. That it is an [ ] INDIVIDUAL, [ ] STATE OR LOCAL AGENCY, [ ] PARTNERSHIP, [ ] JOINT VENTURE, [ ] NONPROFIT, [ ] EDUCATIONAL INSTITUTION, [ ] CORPORATION organized and existing under the laws of the State of _____

The Contractor agrees to furnish and deliver all the supplies and perform all the services set forth in the attached special provisions, for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the Special Provisions and the General Provisions. To the extent of any inconsistency between the Special Provisions or the General Provisions and any specifications or other provisions which are made a part of this contract, by reference or otherwise, the Special Provisions and the General Provisions shall control. To the extent of any inconsistency between the Special Provisions and the General Provisions, the Special Provisions shall control.

IN WITNESS THEREOF, the parties hereto have executed this contract on the day and year last specified below.

NAME OF CONTRACTOR	UNITED STATES OF AMERICA
BY _____	BY Marcus T. Dodge
SIGNATURE OF AUTHORIZED INDIVIDUAL	SIGNATURE OF CONTRACTING OFFICER
Hans G. Tanzler, Jr.	Marcus T. Dodge
TYPED NAME	Contracting Officer
TITLE Mayor	TYPED NAME
ATTEST: J.M. Ingram	DATE
DATE	JAN 15 1973

PHS-4310-1 (9-65)

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CONTRACT NO.	CONTENTS OF CONTRACT	PAGE 2 OF 17 PAGES
NIH 110-72-344		

THIS CONTRACT CONSISTS OF:

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2. CONTENTS OF CONTRACT PHS 4910-2

3. SPECIAL PROVISIONS PHS-4910-3

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ARTICLE V	DESIGNATION OF PROJECT DIRECTOR
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ARTICLE XXII	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA
ARTICLE XXIII	SUBCONTRACTOR COST AND PRICING DATA
ARTICLE XXIV	AUDIT AND RECORDS
ARTICLE XXV	NOTICE OF MAXIMUM PERMISSIBLE ESCALATION IN WAGE AND PRICE STANDARDS
ARTICLE XXVI	ALLOWABLE CHARGES
ARTICLE XXVII	ADVANCE PAYMENT
ARTICLE XXVIII	SUBMISSION OF INVOICES AND PLACE OF PAYMENT
ARTICLE XXIX	FORMALIZATION
ARTICLE XXX	AGREEMENT ON PROPERTY

4. GENERAL PROVISIONS. HEW FORM 315 (REV. 8/64) NEGOTIATED Cost Reimbursement Contract, and Alterations thereto dated December 1969, and any alterations currently in effect. Delete Article 22, "Limitation of Cost."

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ARTICLE I - DESCRIPTION OF WORK

The Contractor shall complete plans and implement a model total system of emergency medical services which will improve the time for handling patients and improve the quality of care as part of a comprehensive health care delivery system. This EMS system will demonstrate that existing technology and management can be utilized to deliver a coordinated improved EMS effort. The Contractor shall identify, develop, and test measures of effectiveness of such an EMS system, its subsystems, and component parts. The subsystems considered mandatory for demonstration shall include consumer education and information, training, communications, transportation, hospital coordination of EMS, system management, and linkages to other health delivery systems and to other community activities. Further, the model will demonstrate the system approach to handling the full spectrum of physical, mental, and psychological emergencies. The Contractor shall identify problem areas and proposed solutions. The Contractor shall conduct suitable data collection, analyses, and evaluation procedures to demonstrate the performance of the subject EMS system, subsystems, and components, as more fully set forth in "Statement of Work" dated June 30, 1972, attached hereto and made a part hereof.

ARTICLE II - REPORTS

The Contractor shall submit to the Project Officer the following reports as indicated below:

ITEM	DESCRIPTION	QUANTITY	DELIVERY
1	Informal progress letters of work performed, problems encountered, anticipated activities, and summary of expenditures.	12	Monthly, fifteen (15) days after the last day of each month, commencing August 15, 1972.
2	Technical Progress Report, technical results, and proposed plan revisions.	12	Every six (6) months after effective date of contract. First report shall be due December 29, 1972.
3	Preliminary Program Plan. A detailed description of activities for the contract period in time-oriented sequence including milestones and dates of completion to be used for contract performance evaluation.	12	Three (3) months after effective date of contract. The Government shall have sixty (60) days to approve the Preliminary Program Plan. If the Preliminary Program Plan does not meet with Government approval all work under this contract shall be suspended and the contract shall be terminated as provided herein under Article 28 of the General Provisions.

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ITEM	DESCRIPTION	QUANTITY	DELIVERY
4	Final Program Plan	20	Six (6) months after effective date of contract. The Government shall have thirty (30) days to approve the Final Program Plan. If the Final Program Plan does not meet with Government approval, all work under this contract shall be suspended and the contract shall be terminated as provide herein under Article 28 of the General Provisions.
5	Implementation Plan. Presentation of commitments by units of the community, the providers and the consumers together with time and participation schedules for the remainder of the contract.	20	Nine (9) months after effectiv date of contract. The Government shall have thirty (30) d to approve the Implementation Plan. In the event the Implementation Plan does not meet with Government approval, all work under this contract shall be suspended and the contract shall be terminated as provid herein under Article 28 of the General Provisions.
6	Annual Report. Summary of performance results to date, projection of work and work schedule for remainder of the contract.	20	Twelve (12) and twenty-four (2 months after effective date of contract.
7	Draft of Final Report. A detailed technical description of results in terms of: (1) Methods and approaches employed (2) Needs and problems identified and solution tested or proposed (3) Evaluation of system effectiveness (money, personnel, level of care, etc.)	12	Thirty-four (34) months from effective date of contract. The Government shall provide comments within thirty (30) d If such comments are not provided by the Government, then the draft report shall be considered to be accepted.
8	Final Report	60	Thirty (30) days after receipt of Government comments.

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ARTICLE III - PERIOD OF PERFORMANCE

The period of performance for the completion of the work and reports set forth in Articles I and II hereof is thirty-six months from the effective date of this contract, or June 30, 1975. However, in the event that either item 3, 4, or 5 in Article II herein is not approved and accepted by the Government, then and in that event all work under this contract shall be suspended and the contract shall be terminated as provided herein under Article 28 of the General Provisions.

ARTICLE IV - DESIGNATION OF PROJECT OFFICER

Dr. John J. Hanlon is hereby designated as Project Officer for this contract. The Project Officer or his authorized representative's responsibility will be to coordinate with the Contractor in administering the technical aspects of this contract. The Project Officer is not authorized to make any changes which affect the contract amount, terms, or conditions. The Contracting Officer is the only party authorized to bind the Government.

ARTICLE V - DESIGNATION OF PROJECT DIRECTOR

Work and services shall be conducted under the direction of Captain John M. Waters. The Government reserves the right to approve any necessary successor to the designated Project Director.

ARTICLE VI - ESTIMATED COST, FINANCING, AND LIMITATION OF FUNDS

A. ESTIMATED COST

It is estimated that the total cost to the Government for the performance of this contract is $3,100,000, and the Contractor agrees to use his best efforts to perform the work and services and all obligations under this contract within such estimated cost.

B. FINANCING

The Contractor will be reimbursed for the costs incurred in performing services hereunder in accordance with the applicable provisions thereof, subject to the following limitations made in respect thereto:

1.	Total HSMHA Obligation (Initial Funding)	$1,292,278
2.	Estimated Additional Financing which may be provided if funds are available	$1,807,722
	Total	$3,100,000
3.	Advance of Funds	$ 250,000

C. LIMITATION OF FUNDS

1. The funds presently available and obligated under this contract are $1,292,278. It is anticipated that the Government will from time to time obligate additional funds to the contract but the total of such obligated funds shall in no event exceed the total estimated cost of the contract as indicated in Paragraph A above.

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2. If at any time the Contractor has reason to believe that the costs which he expects to incur in the performance of this contract in the next succeeding 60 days, when added to all costs previously incurred, will exceed 75% of the total amount then obligated under the contract, the Contractor shall notify the Contracting Officer in writing to that effect. The notice shall state the estimated amount of additional funds required to continue performance. If additional funds are not obligated within 30 days after receipt by the Contracting Officer of such notification, he will, upon written request of the Contractor, terminate the contract pursuant to the clause of the General Provisions to this contract, entitled "Termination."

3. Except as required by other provisions of this contract specifically citing and stated to be an exception to this provision, the Government shall not be obligated to reimburse the Contractor for costs incurred in excess of the total amount from time to time allocated to the contract, and the Contractor shall not be obligated to continue performance under the Contract (including actions under the Termination clause) or otherwise to incur costs in excess of the amount obligated under the contract, unless and until the Contracting Officer has notified the Contractor in writing that such obligated amount has been increased and has specified in such notice an increased amount constituting the total amount then allocated to the contract. No notice, communication, or representation in any other form or from any other person other than the Contracting Officer shall affect the amount obligated under this contract. In the absence of the specified notice, the Government shall not be obligated to reimburse the Contractor for any costs in excess of the total amount then obligated under the contract whether such excess costs were incurred during the course of the contract or as a result of termination. When and to the extent that the amount obligated under the contract has been increased, any costs incurred by the Contractor in excess of the amount previously obligated shall be allowable to the same extent as if such costs had been incurred after such increase in the obligated funds; unless the Contracting Officer issues a termination or other notice, and directs that the increase is solely for the purpose of covering termination or other specified expenses.

4. Nothing in this provision shall affect the right of the Government to terminate the contract. In the event the contract is terminated, all equipment purchased under the contract with Government funds shall be subject to the provisions of Article XIX herein. All property which is purchased on a cost sharing basis shall be equitably distributed by negotiation between the parties.

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ARTICLE VII - EMS DATA

It is agreed that the Government will have access to all data associated with the demonstration sites for use and inclusion in a National EMS DATA Analysis and Evaluation capability. Such data as are collected by the demonstration contractor in establishing baselines for measuring the performance of the contract shall be available for Government use in a National System. Further, working with the Project Officer and such other responsible representatives of the Federal Government the demonstration contractor will agree to collect data which is of National interest for inclusion in a National Emergency Data Bank Resource.

ARTICLE VIII - EMS INFORMATION

It is agreed that the contractor will make available to the Federal Government all information brochures, literature, flyers and such other documentation as is created during the course of the performance of the demonstration contract for inclusion in a National Information Clearinghouse. During the performance of the contract certain pieces of information will be created to improve the information and education of the community as related to the EMS demonstration capability. A reasonable number of copies of such information will be made available to the Federal Clearinghouse function for its use in assisting other communities within the country. Further, the Federal Government shall have access to the demonstration site for accumulating and developing other information and educational materials that may be of interest to other communities within the nation as a result of the demonstration sites. Examples of such educational information might include documentary film, filmstrips, preparation of brochures, feature articles, etc.

ARTICLE IX - REVIEW AND APPROVAL

Review and approval of the work hereunder shall be performed by the Contracting Officer or his duly authorized representative.

ARTICLE X - NOTICE TO GOVERNMENT OF DELAYS

Whenever the Contractor has knowledge that any actual or potential situation is delaying or threatens to delay the timely performance of this contract, the Contractor shall, within ten (10) days, give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

ARTICLE XI - PROCUREMENT OF ALL MATERIAL, DATA, AND SERVICES

Except as otherwise provided herein, procurement of all material, data, and services necessary for performance under the terms of this contract shall be the responsibility of the Contractor.

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ARTICLE XII - COMPETITION IN SUBCONTRACTING

The Contractor agrees to select subcontractors on a competitive basis to the maximum practical extent consistent with the objectives and requirements of this contract.

ARTICLE XIII - CONSULTANT SERVICES

Except as otherwise expressly provided elsewhere in this contract, and notwithstanding the provisions of the clause of this contract entitled "Subcontracting", the prior written approval of the Contracting Officer shall be required:

(a) Whenever any employee of the contractor is to be reimbursed as a "consultant" under this contract; and

(b) For the utilization of the services of any consultant under this contract exceeding the daily rate set forth elsewhere in this contract or, if no amount is set forth, $100.00, exclusive of travel costs, or where the services of any consultant under this contract will exceed ten days in any calendar year.

Whenever Contracting Officer approval is required, the contractor will obtain and furnish to the Contracting Officer information concerning the need for such consultant services and the reasonableness of the fees to be paid, including, but not limited to, whether fees to be paid to any consultant exceed the lowest fee charged by such consultant to others for performing consultant services of a similar nature.

ARTICLE XIV - OFFICE EQUIPMENT

Notwithstanding any other provision of this contract to the contrary, the contractor shall not purchase or lease under this contract any items of office equipment, including office furniture or machines. ~~Recovery of cost of such items shall be allowable only to the extent that they are properly includable in the indirect cost charged to this contract.~~

ARTICLE XV - IDENTIFICATION OF DATA

The Contractor shall identify the technical data delivered to the Government pursuant to the requirements of this contract with the number of this contract, and the name and address of the contractor or subcontractor who generated the data.

ARTICLE XVI - DEVELOPMENT AND USE OF FORMS

Any forms which may be developed by the Contractor for use in the performance of this contract shall be submitted to the Project Officer for review and approval prior to their use. The Project Officer shall be responsible for obtaining clearance from the Office of Management and Budget, if required, prior to his approval for use by the Contractor.

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ARTICLE XVII - PUBLICITY AND PUBLICATIONS

A. The Contractor agrees that it will acknowledge Health Services and Mental Health Administration, Department of Health, Education, and Welfare support whenever projects funded in whole or in part by this contract are publicized in any news media.

B. The Contractor shall include in any publication resulting from the work performed under this contract an acknowledgement substantially as follows:

"The Project upon which this publication is based was performed pursuant to Contract No. HSM 110-72-344 with the Health Services and Mental Health Administration, Department of Health, Education, and Welfare."

ARTICLE XVIII - FEDERAL SUPPLY SCHEDULE UTILIZATION

The Contracting Officer may issue and the Contractor agrees to accept an authorization to utilize General Services Administration supply sources for property to be used in the performance of this contract. Title to all property acquired under such an authorization shall be in the Government. All property acquired under such an authorization shall be subject to the provisions of the clause of this contract entitled "Government Property," except paragraphs (a) and (b) thereof.

ARTICLE XIX - ADMINISTRATION OF GOVERNMENT-OWNED PROPERTY

A. In accordance with the Government Property clause of this contract, Mr. Richard Cissel, Health Services and Mental Health Administration, is hereby designated Property Administrator for this contract. The Contractor shall furnish to the Property Administrator an inventory of Government-owned property (Government furnished and/or Contractor acquired) within twelve (12) months after the effective date of this contract, and every twelve (12) months thereafter until completion. The inventory shall be submitted in the format shown in Exhibit A which is made a part of this contract.

B. All Government property acquired by or furnished to the Contractor shall be suitably identified and marked by the Contractor as Government-owned property.

C. Further, the Contractor agrees to provide storage facilities, including proper identification and protection, for all Government-owned property (Government furnished and/or Contractor acquired) upon completion of the contract until disposition instructions are provided, without cost to the Government. Such disposition instructions shall be provided by the Government to the Contractor not later than sixty (60) days after Contractor submission of the final inventory.

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ARTICLE XX - LISTING OF EMPLOYMENT OPENINGS

The clause entitled "Listing of Employment Openings" is attached hereto as "Annex A" and is made a part of this contract.

ARTICLE XXI - HEW CONTRACT FINANCIAL REPORTING

Financial reports on Form HEW-515-(4/69) shall be submitted by the Contractor in accordance with the instructions on the reverse of the form, and in an original and two copies not later than the 15th of the following month. The line entries for subdivisions of work and elements of cost (types of expense) to be reported within the total contract shall be determined by the Contracting Officer after giving consideration to the recommendations of the Contractor. Subsequent changes and/or additions in the line entries shall be similarly determined. The Contracting Officer shall notify the Contractor of each change and addition and the reporting period to which each shall apply. Financial reporting shall commence with a report for the first calendar month following the date of this contract.

ARTICLE XXII- PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA

The Price Reduction for Defective Cost or Pricing Data Clause is attached and incorporated herein as Annex 1.

ARTICLE XXIII - SUBCONTRACTOR COST AND PRICING DATA

The Subcontractor Cost and Pricing Data Clause is attached and incorporated herein as Annex 2.

ARTICLE XXIV - AUDIT AND RECORDS

The Audit and Records Clause is attached and incorporated herein as Annex 3.

ARTICLE XXV - NOTICE OF MAXIMUM PERMISSIBLE ESCALATION IN WAGE AND PRICE STANDARDS

The Contractor is advised of standards established under Executive Orders 11615, 11627, and 11640 setting maximum permissible percentages of escalation in wage rates and price increases. Such standards call for wage rate increases of no more than 5.5 percent per annum unless specific exceptions have been granted by the Pay Board. The price standard established by the Price Commission has the objective of holding economy-wide price increases to 2.5 percent per annum (3 percent per annum in the case of small business firms). To achieve this target, firms are allowed to increase prices to reflect allowable costs incurred since the last price increase or since January 1, 1971, whichever was later, and such costs as firms are continuing to incur, adjusted to reflect productivity gains. These price increases may not result in profit margins on sales which exceed the firm's profit margins for the highest 2 of the last 3 fiscal years ending before August 15, 1971. Average productivity gains are estimated to be 3 percent or higher for the economy annually for 1972 and 1973.

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ARTICLE XXVI - ALLOWABLE CHARGES

A. For the performance of this contract, the Government shall reimburse the Contractor the cost therof (hereinafter referred to as "allowable cost") determined by the Contracting Officer to be allowable in accordance with the clause of the General Provisions entitled "Allowable Cost and Payment," and the provisions below:

1. Purchase Orders and Subcontracts

a. The following shall require prior written approval of the Contracting Officer:

(1) purchase or rental of items of nonexpendable property having unit value exceeding $100.00 (For the purpose of this contract, nonexpendable property means property or equipment having a normal life expectancy of one year or more.) and

(2) purchase orders or subcontracts for any of the work contemplated under this contract exceeding $1,000.00.

b. The Contractor shall give advance notification to the Contracting Officer of all proposed purchase orders or subcontracts which require prior approval in accordance with the clause of the General Provisions entitled "Subcontracts." The advance notification shall include:

(1) a description of the supplies or services to be called for by the subcontract;

(2) identification of the proposed subcontractor and an explanation of why and how the proposed subcontractor was selected, including the degree of competition obtained;

(3) the proposed subcontract price, together with the Contractor's cost or price analysis thereof; and

(4) identification of the type of subcontract to be used.

2. Salaries and Wages

a. Salaries and wages of employees directly employed in performing the work required by this contract.

b. Actual cost of fringe benefits.

3. Travel

Travel and subsistence expenses exclusively in direct performance of this contract.

a. The Contractor shall be reimbursed for actual transportation costs and travel allowances (per diem) of personnel, authorized

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to travel under this contract, in accordance with the established policy of the contractor. Such transportation cost shall not be reimbursed in an amount greater than the cost of first class rail or of economy air travel, unless economy air travel and economy air travel space are not available and the contractor certifies to the facts in the voucher or other documents submitted for reimbursement. Travel allowances (per diem) shall be reimbursed in accordance with the contractors established policy, but in no event shall such allowances exceed $25.00 per day.

b. The Contractor shall be reimbursed for the cost of travel performed by its personnel in their privately-owned automobiles at the rate of $0.10 per mile, not to exceed the cost by the most direct economy air route between the points so traveled. If more than one person travels in such automobile, no additional charge will be made by the Contractor for such travel between such points.

c. Travel for general scientific meetings and foreign travel requires prior written authorization by the Contracting Officer.

4. Rental, Rearrangement and Alteration of Facilities

a. Rental or lease of facilities including office space requires prior written authorization by the Contracting Officer.

b. Rearrangement, alteration, or relocation of facilities is not authorized under this contract.

5. Overtime

a. Overtime, shift or other incentive premimum requires prior written authorization by the Contracting Officer.

6. Indirect Costs

No indirect costs shall be charged to this contract.

B. Except as herein above authorized, the Contractor shall not incur costs unless the prior written authorization of the Contracting Officer has been obtained as required herein. Incurrence with the intent of claiming reimbursement as direct costs shall therefore be at the Contractor's own risk, when without such prior authorization.

ARTICLE XXVII - ADVANCE PAYMENT

(a) Amount of Advance. At the request of the Contractor, and subject to the conditions hereinafter set forth, the Government shall make an advance payment, or advance payments from time to time, to the Contractor. No advance payment shall be made (1) without the approval of the office administering advance payments (hereinafter called the "Administering Office" and designated in paragraph (k)(4) hereof) as to the financial

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necessity therefor: (2) in an amount which together with all advance payments theretofore made, shall exceed the amount stated in paragraph (k)(1) hereof; and (3) without a properly certified invoice or invoices.

(b) Special Bank Account. Until all advance payments made hereunder, and interest charges, are liquidated and the Administering Office approves in writing the release of any funds due and payable to the Contractor, all advance payments and all other payments under the contract shall be made by check payable to the Contractor and be marked for deposit only in a Special Bank Account with the bank designated in paragraph (k)(2) hereof. No part of the funds in the Special Bank Account shall be mingled with other funds of the Contractor prior to withdrawal thereof from the Special Bank Account as hereinafter provided. Except as hereinafter provided, each withdrawal shall be made only by check of the Contractor countersigned on behalf of the Government by the Contracting Officer or such other person or persons as he may designate in writing (hereinafter called the "Countersigning Agent"). Until otherwise determined by the Administering Office, countersignature on behalf of the Government will not be required.

(c) Use of Funds. The funds in the Special Bank Account may be withdrawn by the Contractor solely for the purposes of making payments for items of allowable cost as defined in Article XXIX of this contract, or to reimburse the Contractor for such items of allowable cost, and for such other purposes as the Administering Office may approve in writing. Any interpretation required as to the proper use of funds shall be made in writing by the Administering Office.

(d) Return of Funds. The Contractor may at any time repay all or any part of the funds advanced hereunder. Whenever so requested in writing by the Administering Office, the Contractor shall repay to the Government such part of the unliquidated balance of advance payments as shall in the opinion of the Administering Office be in excess of current requirements, or (when added to total advance previously made and liquidated) in excess of the amount specified in paragraph (k)(1) hereof. In the event the Contractor fails to repay such part of the unliquidated balance of advance payments when so requested by the Administering Office, all or any part thereof may be withdrawn from the Special Bank Account by checks payable to the Treasurer of the United States signed solely by the Countersigning Agent and applied in reduction of advance payments then outstanding hereunder.

(e) Liquidation. If not otherwise liquidated, the advance payments made hereunder and interest charges, if any, shall be liquidated as herein provided. When the sum of all payments under this contract, other than advance payments, plus the unliquidated amount of advance payments and interest charges are equal to the total estimated cost $3,100,000 for the work under this contract (not including fixed-fee, if any), or such lesser amount to which the total estimated cost under this contract may have been reduced, plus increases, if any, in this total estimated cost not exceeding, in the aggregate, $250,000 (including, without limitation, reimbursable costs incident to termination for the convenience of the Government as estimated by the Contracting

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Officer), the Government shall thereafter withhold further payments to the Contractor and apply the amounts withheld against the Contractor's obligation to repay such advance payments and interest charges, until such advance payments and interest charges shall have been fully liquidated. If upon completion or termination of the contract all advance payments and interest charges have not been fully liquidated, the balances thereof shall be deducted from any sums otherwise due or which may become due to the Contractor from the Government, and any deficiency shall be paid by the Contractor to the Government upon demand.

(f) Bank Agreement. Before an advance payment is made hereunder, the Contractor shall transmit to the Administering Office, in the form prescribed by such office, an Agreement in triplicate from the bank in which the Special Bank Account is established, clearly setting forth the special character of the account and the responsibilities of the bank thereunder. Wherever possible, such bank shall be a member bank of the Federal Reserve System, or an "insured" bank within the meaning of the Act creating the Federal Deposit Insurance Corporation(Act of August 23, 1935, 49 Stat. 684, as amended; 12 U.S.C. 264).

(g) Lien on Special Bank Account. The Government shall have a lien upon any balance in the Special Bank Account paramount to all other liens, which lien shall secure the repayment of any advance payments made hereunder together with interest charges thereon.

(h) Lien on Property under Contract. Any and all advance payments made under this contract, together with interest charges thereon, shall be secured, when made, by a lien in favor of the Government, paramount to all other liens, upon the supplies or other things covered by this contract and on all material and other property acquired for or allocated to the performance of this contract, except to the extent that the Government by virtue of any other provision of this contract, or otherwise, shall have valid title to such supplies, materials, or other property as against other creditors of the Contractor. The Contractor shall identify, by marking or segregation, all property which is subject to a lien in favor of the Government by virtue of any provision of this contract in such a way as to indicate that it is subject to such lien and that it has been acquired for or allocated to the performance of this contract. If for any reason such supplies, materials, or other property are not identified by marking or segregation, the Government shall be deemed to have a lien to the extent of the Government's interest under this contract on any mass of property with which such supplies, materials, or other property are commingled. The Contractor shall maintain adequate accounting control over such property on his books and records. If at any time during the progress of the work on the contract it becomes necessary to deliver any item or items and materials upon which the Government has a lien as aforesaid to a third person, the Contractor shall notify such third person of the lien herein provided and shall obtain from such third person a receipt, in duplicate, acknowledging, interalia, the existence of such lien. A copy of each receipt shall be delivered by the Contractor to the Contracting Officer. If this contract is terminated in whole or in part and the Contractor is authorized to sell or retain termination inventory

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acquired for or allocated to this contract, such sale or retention shall be made only if approved by the Contracting Officer, which approval shall constitute a release of the Government's lien hereunder to the extent that such termination inventory is sold or retained, and to the extent that the proceeds of the sale, or the credit allowed for such retention on the Contractor's termination claim, is applied in reduction of advance payments then outstanding hereunder.

(i) Insurance. The Contractor represents and warrants that he is now maintaining with responsible insurance carriers, (1) insurance upon his own plant and equipment against fire and other hazards to the extent that like properties are usually insured by others operating plants and properties of similar character in the same general locality; (2) adequate insurance against liability on account of damage to persons or property; and (3) adequate insurance under all applicable workmen's compensation laws. The Contractor agrees that, until work under this contract has been completed and all advance payments made hereunder have been liquidated, he will (i) maintain such insurance; (ii) maintain adequate insurance upon any materials, parts, assemblies, sub-assemblies, supplies, equipment and other property acquired for or allocable to this contract and subject to the Government lien hereunder; and (iii) furnish such certificates with respect to his insurance as the Administering Office may from time to time require.

(j) Prohibition against Assignment. Notwithstanding any other provision of this contract, the Contractor shall not transfer, pledge, or otherwise assign this contract, or any interest therein, or any claim arising thereunder, to any party or parties, bank, trust company, or other financing institution.

(k) Designations and Determinations.

(1) Amount. The amount of advance payments at any time outstanding hereunder shall not exceed $250,000.

(2) Depository. The bank designated for the deposit of payments made hereunder shall be State Bank of Jacksonville.

(3) Interest Charge. No interest shall be charged for advance payments made hereunder. The Contractor shall charge interest at the rate of 6% percent per annum on subadvances or downpayments to subcontractors, and such interest will be credited to the account of the Government. However, interest need not be charged on subadvances on nonprofit subcontracts with nonprofit educational or research institutions for experimental, research or development work.

(4) Administering Office. The office administering advance payments is designated as:

PAYING OFFICE
DHEW-HSMHA-ACCT/FIN, Rm. 16-36
5600 Fishers Lane
Rockville, Maryland 20852

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(1) Other Security. The terms of this contract shall be considered adequate security for advance payments hereunder, except that if at any time the Administering Office deems the security furnished by the Contractor to be inadequate, the Contractor shall furnish such additional security as may be satisfactory to the Administering Office, to the extent that such additional security is available.

ARTICLE XXVIII - SUBMISSION OF INVOICES AND PLACE OF PAYMENT

Once each month the Contractor may submit to the Government an invoice for the allowable cost to the Contractor for the performance of the work hereunder. The Government shall make provisional payment of all invoices submitted hereunder pending the completion of a final audit of the Contractor's cost records. Invoices shall be submitted in accordance with Billing Instructions, a copy of which is attached hereto and made a part hereof.

Prior to the payment of invoices under this contract, the Contractor shall place on, or attach to, each invoice submitted the following certification:

"I hereby certify that amounts invoiced herein do not exceed the lower of (i) the contract price, or (ii) maximum levels established in accordance with Executive Order 11640, January 26, 1972".

The Contractor agrees to insert the substance of this clause including this paragraph, in all subcontracts for supplies or services issued under this contract.

To expedite payment of invoices or vouchers under this contract, the invoices or vouchers (except COMPLETION INVOICE OR VOUCHER) shall be sent directly to the Paying Office for Payment as follows:

PAYING OFFICE
DHEW-HSMHA-ACCT/FIN, Rm. 16-30
5600 Fishers Lane
Rockville, Maryland 20852

Where applicable, invoices or vouchers shall be sent through the cognizant DCAA auditor.

THE COMPLETION INVOICE OR VOUCHER will be forwarded to the aforementioned paying office through the Health Services and Mental Health Administration, 5600 Fishers Lane, Rockville, Maryland 20852, marked for the attention of the Contracting Officer, Room 16A40.

ARTICLE XXIX - FORMALIZATION

This instrument reflects the entire agreement between the Government and the Contractor. This is the understanding of the parties respecting the rights and duties of the contract and formalizes the Government's Notice of Award dated June 27, 1972, and the Contractor's acceptance thereof dated June 28, 1972.

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ARTICLE XXX - AGREEMENT ON PROPERTY

The Contractor agrees to purchase all property previously obtained with Government funds under this Contract, at a price to be established by the Contracting Officer (purchase price less reasonable depreciation), provided that the State Legislature authorizes funds for the purchase of such property. The Contractor agrees to use his best efforts in having legislation introduced in the State Legislature at the earliest practicable time and to assist in obtaining passage thereof.

and/or local governments

The Government agrees that the purchase price, to be computed as herein above set forth, shall be adjusted for any subsequent extension to this contract. The Government further agrees to delete this article should the Congress of the United States authorize transfer of title to the equipment in question to the Contractor.

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Senator CRANSTON. Our next witness is the gentleman who started us off this morning, Dr. Francis Curry, director of the San Francisco Department of Public Health.

Dr. Curry, we thank you for your help.

STATEMENT OF DR. FRANCIS CURRY, DIRECTOR, SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

Dr. CURRY. Thank you, Senator. It has been our privilege to provide the space and to give an opportunity for you to have these hearings, and also for our community to participate in this and to become aware of this subject matter.

I have thoroughly read and support the statement regarding the Emergency Medical Services Systems Development Act of 1973, S. 504, which appeared in the Congressional Record of January 23, 1973.

The statement is comprehensive and points out both rural and urban problems; the deficiencies in emergency medical care nationwide; the need for basic national standards for ambulances, ambulance crews, and hospital emergency rooms; the need for constant training and trained personnel; the importance of improved ambulance services; the utilization of radio communications and radio telemetry; and the necessity of integrating these services on an area-wide basis, so that they will function properly during a major disaster, such as an earthquake. An earthquake disaster is particularly interesting to the people in San Francisco and the bay area because in this area we live on two major earthquake faults, the Hayward Fault and the San Andreas Fault.

Also the statement spells out the role of specific governmental agencies, such as military, Coast Guard, Department of Transportation, and others are well defined. Furthermore, the need for a universal emergency telephone call system, such as 911, is explained and recommended. The 911 system will enhance the improved emergency care system, and it will have a marked influence on decreasing morbidity and mortality due to medical and surgical emergencies by getting the victim or patient under competent emergency medical care more rapidly. 911 is only a telephone number, however. What happens after 911 is called will indicate whether the system is efficient and effective.

If emergency medical care throughout the Nation is to be improved, it is necessary that all ambulances meet minimum standards for equipment and training of personnel; that hospital emergency rooms are adequately equipped and staffed by trained personnel so that the demands of the service area can be met. An area system for adequate radio communications between ambulances and hospitals should be planned and developed so that supportive services may readily and effectively pass over local borders daily as needed, and in the event of a major disaster such as an earthquake this will just have to be done if adequate care is to be given.

That is the prepared statement that I had for you.

I believe that there are a couple of other remarks that I could make. The previous witness commented about revenue sharing.

Senator CRANSTON. Yes; I wanted to ask you if you had any com-

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ment on Dr. Zapp's testimony for the Department of Health, Education, and Welfare.

Dr. CURRY. Let me first say that in San Francisco we have been actively interested as a community in emergency medical care going back to the preparations for the Midwinter Fair 100 years ago, and we have had an emergency ambulance, emergency hospital system, so that it was with no surprise that recently, with the development of the major trauma center here at our hospital, which is the heart of our emergency system, and with our outpatient ambulances, that we should seek some of this revenue sharing to completely revise and bring up to date and to use the most modern of electronic equipment in providing better emergency services to the people of San Francisco. We, therefore, requested of the mayor and the board of supervisors that $1.4 million be set aside in order that we could completely upgrade our system, and out of all of the revenue sharing money this amount was set aside. It was set aside for immediate funding so that we are now in the process of acquiring 16 new ambulances fully equipped with the latest resuscitative equipment, two radio systems, one the so-called bread and butter, which will communicate directly with the trauma center here, so that when our ambulances reach the scene the patient will be under the care and supervision by way of radio through trained ambulance personnel and that they will have a doctor's orders and control from the time the ambulance is there until they reach the hospital. This is one of the most important means of decreasing morbidity and mortality due to an emergency, whether it be medical or surgical.

We will have a second radio system within these ambulances for telemetry, EKG, and modulating of hearts. This will go directly into cardiac intensive care units that are staffed 24 hours a day with a cardiologist. So these patients will be under the direct surveillance of a cardiologist from the time our crew gets there, so that they can be adequately treated, and I do believe, when you state that there will be a 30-percent decrease in mortality, I feel that there will be at least a 30-percent decrease in mortality, providing we get there early enough so that we can provide these services.

Now, as advanced as this community has been, Senator, in striving to have emergency services for the community, it is rather sad to comment that our radio system for these ambulances until recently has been a part of the police emergency system, that we did not have our own, so that in time of major emergencies, where the police and the health department were in competition, the police took priority. This was brought home to us when we had a catastrophic fire in one area of the city and when police and fire department radio communications were taxed to a maximum and we had to employ a local taxicab company to go to the scene and communicate to their dispatcher and to keep a hot line into our central area so that we could control our ambulances.

I think if, in an area like this where we are this sophisticated, if we are working under these types of handicaps, when one looks at the Nation as a whole, we recognize that there is much to be done. When, as you state, over half, about 80 percent, of the ambulances are not really medically controlled and about half of the ambulances are hearses——

Senator CRANSTON. Did you say 80 percent are hearses?

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Dr. CURRY. No; about 50 percent are of the hearse type, and I think this has to be pointed out to the people across the country, and I think that definitely there has to be support to bring about a change, to upgrade these services.

I think one thing that you should be aware of is the private ambulance sector. I think that they have to be supported and they have to participate with governmental agencies that are trying to provide these services.

Here in San Francisco where we have an emergency care committee we are attempting to revise the total system and we will be working very closely in bringing into this overall system the fire department, which has an excellent emergency resuscitation squad that very frequently gets called for heart attacks because the nearest firehouse is 2 minutes away.

Senator CRANSTON. May I ask if you get into any problems over the fact that San Francisco is so close to San Mateo, Marin, and Alameda Counties, and Contra Costa and Santa Clara Counties to some extent. Do you get into any jurisdictional problems or is there a coordinated approach that works well?

Dr. CURRY. We have not gotten into jurisdictional problems, but we are currently beginning to try to set up a nine-bay-area county task force to study this whole issue of emergency care. This has been brought about, in part, by the Noah study on earthquakes, and with the two major faults in the area, if we would have an earthquake on the Richter scale of 7 or 8, no county would be able to handle their own disaster, and particularly if it got to the 8, and so it is now recognized that we are going to have to get together and on a daily basis have communications so that a person, say, if they were injured in San Jose and for some special reason they wanted to bring them here to the General Hospital to our Trauma Center, that we would be able to monitor him all the way in, and this is what we are working for, and in order to achieve this there will have to be a central control for radio communications, and it is especially important in this area because, in the event of a major earthquake of the magnitude of 7 or more, land communication is going to be out, we will have to rely on radio communication.

Senator CRANSTON. Have all the counties in this area worked out a common program for coping with mass disaster situations?

Dr. CURRY. They all have some kind of program.

Senator CRANSTON. Is that a coordinated bay-area program?

Dr. CURRY. We are working on that.

Senator CRANSTON. Does the use of that 911 emergency number have any problems stemming from the fact that there are different communities and different areas adjacent to one another?

Dr. CURRY. Yes; according to the telephone company, their input to us, it is the jurisdictional boundaries that, if we had it here in San Francisco, it would spill over into northern San Mateo County or somebody there may be calling into our area or somebody from our area may be calling into their area and I think these details have to be worked out, and I personally do not believe that they are insurmountable.

I think the first thing, if the community says we want it, we can

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make it work, and I think this should be on a bay-area- nine-county basis.

Senator CRANSTON. Confining this question just to the San Francisco area where you have responsibilities over a very widespread number of health facilities and specialized medical resources, does the community have a real problem in getting all of that coordinated within San Francisco?

Dr. CURRY. Nobody would believe me if I said we didn't have any problems. But we do have an emergency care committee that is composed of the providers and consumers and governmental agencies that are studying and working on the various problems related to emergency medical care.

In addition to that, the old disaster program, which is now called the Mayor's Committee for Emergency Services, there is a very large medical advisory group, again which is representative of the community, and it is addressing itself to these problems of medical care emergencies and health emergencies and preparing for a major disaster.

Senator CRANSTON. What is your comment on the administration's position that there is no need for categorical legislation for emergency medical services? The administration spoke against the bill because they said they don't want categorical earmarks for specific purposes for those programs.

Dr. CURRY. I would like to begin by saying that I was glad to see that the administration did not object to the content of the message in the Congressional Record, so I think that we can all agree that there is a problem there and that the problem should be resolved. I think when you say that there should not be categorical monies for programs like this, it seems to us at the local level, particularly in the core area, that more and more problems are being told, about more and more problems. It is being said that these are local problems and that they should be cared for there and that there should not be specific moneys spelled out to take care of these, and so more and more of a burden is placed upon us locally and we come into real emotional problems as to where the dollar should be spent.

My feeling is that, if moneys were available from a Federal source, from a categorical source, I think that it would be easier for us to do a better job here locally in addressing ourselves and attacking some of these specific problems.

We have seen where categorical programs have been cut off in the past, and we feel that there will be really unfavorable results in the long run.

Now, the thing is that, if categorical money is not given, how can you say, you know, that it will get worse? Well, it may not get worse, but certainly it isn't going to get better. When categorical funds are cut off in an area where they are really needed, if a good program has been going, it will take 3 to 5 years before the effects of that cutoff are felt and it is my feeling that in certain areas where funding is anticipated that it is going to be cut back, that in the medical field it is going to take us 3 to 5 years to feel the impact of these cutbacks.

Senator CRANSTON. But one aspect of the administration's position

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that struck a sympathetic cord with me relates to the concern over such detailed requirements and such involved paperwork and the incredible number of manhours involved in meetings, specifications, qualifying and requalifying, and resubmitting, and uncertainty about whether the program is going to be continued. How do you feel we might find a middle ground between the position of just leaving it entirely to the local community, perhaps without adequate support, and giving it adequate support but with some requirements to ensure those of us who are responsible for providing the tax laws some feeling that the money is going to be spent wisely in the local community without overburdening the local community with paperwork and with time-consuming activities relating to submitting applications and meeting paper detail requirements? Where is the middle ground on this position?

Dr. CURRY. I think that, No. 1, there should be some local inputs so far as financing of these programs are concerned. I think that the local governmental area has to make some type of contribution or otherwise there is no commitment.

Senator CRANSTON. That is the matching-grant formula, which is fine. But how do we avoid the business of having too many people shuffling forms and requirements and going back to Washington to push their cause and answer questions, which diverts money from medical care or whatever the program may be?

Dr. CURRY. I think that there can be certain formulae that can be worked out and that, if reporting is done on this basis, at least you can compare one area with the other. Now, the Communicable Disease Center has done this in some of its categorical fund grants that it used over the last few years that these were available, and in this way it reduced the amount of paperwork. The other thing is that these figures and these formulae must be accepted at the local and State level also so that you are not making three different types of grants.

Senator CRANSTON. Does the regional HEW office help with their accessibility and staff in reducing the paperwork problems?

Dr. CURRY. Yes, they have been helpful to us here.

Senator CRANSTON. I thank you very much for your very helpful testimony, and also for your hospitality. Thank you very much.

Dr. CURRY. Thank you.

[The prepared statement of Dr. Curry follows:]

PREPARED STATEMENT OF DR. FRANCIS CURRY, DIRECTOR, SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

I have thoroughly read and support the statement regarding the Emergency Medical Services Systems Development Act of 1973, S. 504, which appeared in the Congressional Record of January 23, 1973.

The statement is comprehensive and points out both rural and urban problems; the deficiencies in emergency medical care nationwide; the need for basic national standards for ambulances, ambulance crews, and hospital emergency rooms; the need for constant training and trained personnel; the importance of improved ambulance services; the utilization of radio communications and radio telemetry; and the necessity of integrating these services on an areawide basis, so that they will function properly during a major disaster such as an earthquake. That the role of specific governmental agencies, such as military, Coast Guard, transportation and others are well defined. Furthermore, the need for a universal emergency telephone call system, such as 911, is

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explained and recommended. The 911 system will enhance the improved emergency care system, and it will have a marked influence on decreasing morbidity and mortality due to medical and surgical emergencies by getting the victim or patient under competent emergency medical care more rapidly. 911 is only a telephone number. What happens after 911 is called will indicate whether the system is efficient and effective.

If emergency medical care throughout the nation is to be improved, it is necessary that all ambulances meet minimum standards for equipment and training of personnel; that hospital emergency rooms are adequately equipped, and staffed by trained personnel, so that the demands of the service area can be met. An area system for adequate radio communications between ambulances and hosp'tals, and hospitals and hospitals, should be planned and developed so that supportive services may readily and effectively pass over local borders daily as needed, and in the event of a major disaster such as an earthquake.

Senator CRANSTON. We will now hear from a panel from Superior California:

Mr. Frank Harland, executive director, Superior California Comprehensive Health Planning Association;

Mr. Zack Farmer, deputy coroner, Tehama County, and ambulance driver;

Mr. Jim Glasgow, hospital administrator, Seneca Hospital, Chester, Calif.; and

Mr. Gerald Fikes, R.N. emergency room coordinator, Mercy Hospital, Redding, Calif.

I would like to say that I am particularly interested in hearing from these witnesses from rural California, where many of the worst problems exist in terms of inadequate facilities, inadequate communications, and inadequate transportation. As a result of these problems, one statistic that has come to light during the course of our investigation is that according to a study of the National Academy of Sciences 70 percent of motor vehicle deaths occur in rural areas under 2,500 population simply because in good part you can't get medical assistance quickly enough.

Are you all of the rural panel?

Mr. HARLAND. No, sir. I am Frank Harland.

Senator CRANSTON. What became of the others?

Mr. HARLAND. They are back there (indicating).

Senator CRANSTON. I think if you come up together it would be best.

Mr. HARLAND. We also have with us today Mr. Carl Lindberg, also connected with the Regional Medical Program.

Senator CRANSTON. I would appreciate it, as with the previous witnesses, if you could briefly summarize whatever you wish to say.

For the purposes of the record and for the reporter's guidance, would you please identify yourselves.

Mr. HARLAND. Frank Harland.

This is Carl Lindberg, Mr. Zack Farmer, Mr. Jim Glasgow, Gerald Fikes.

Senator CRANSTON. Mr. Lindberg, will you identify yourself.

Mr. LINDBERG. Yes. I am director of field operations, area 2, Regional Medical Program, which covers 21 eastern counties of California and 3 adjacent.

Senator CRANSTON. Delighted to have you.

Mr. Harland, if you will begin.

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STATEMENT OF FRANK HARLAND, EXECUTIVE DIRECTOR, SUPERIOR CALIFORNIA, COMPREHENSIVE HEALTH PLANNING ASSOCIATION

Mr. HARLAND. Yes. I want to make it clear that I am employed by the Comprehensive Health Planning, 314(b) Agency that serves the 12 rural counties of inland northern California. In the 12-county health planning area I work for, we have 7 of the most deficient counties of the 58 in California in terms of their capability of delivering emergency medical care. Yet, it is these very counties that are providing other Californians with a great bulk of their recreational resource. It is these very counties that are assuming the life-and-death responsibility for people from all over this State and people traveling through from other States. In this time of high mobility and expanded leisure time, the rural communities, in a very real sense, are their brothers' keepers. They are expected to provide emergency medical services, yet struggle to do so on what is often a very inadequate economic base.

The rural American or the hapless traveler in the rural community is taking an unnecessary risk with his life because our institutions, private and public, have not been able to effectively respond to his needs. The rural American needs help in solving emergency medical services problems, needs a lot of help and so far he hasn't received it.

I would quarrel with John Zapp's view that the existing structure, both legislative and financial, does provide support for solving the EMS problems.

Senator CRANSTON. May I ask if any of you in your areas know of any aid that has come from revenue sharing in this program.

Mr. FIKES. None.

Senator CRANSTON. None?

Mr. HARLAND. Not in terms of revenue sharing services.

Senator CRANSTON. Is there any in sight in the future?

Mr. HARLAND. No, sir.

Senator CRANSTON. None?

Mr. HARLAND. I would mention that Regional Medical Program in its later years has become very highly involved in emergency medical care. We have great fortune in having an RMP that has taken an interest in emergency medical care. The Office of Traffic Safety here in California has in the past made money available for planning and organization of EMS systems. These moneys are presently frozen.

I would like to make a side comment and ask Mr. Lindberg to join us today in the agenda.

Senator CRANSTON. I am delighted to have him included.

Mr. HARLAND. His efforts have been tireless in assisting the rural counties in addressing emergency medical problems. RMP has in our area been a very close and effective partner. CHP has organized the planning effort; RMP has provided the vehicle for implementation.

Now, as a result of the administration's, if I may use the term, execution of RMP, we are about to lose Mr. Lindberg and the support that we have had so far. I assure you that this support means a great deal more to us in the rural area than perhaps in many other areas. There haven't been a great many people who have taken the interest in rural problems that our RMP has.

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Dr. Zapp mentioned the 8 million that HEW broughts to EMS programing last year. The President has asked for 15 million. And this amount is still hardly a drop in the bucket in terms of the nature and character of the extent of emergency care and problems in the United States. The rural communities have practically bet that they will be the last to see any of these moneys, with the small amounts of money that are being put into development of the RMP programs, it stands to reason that the administration will most likely put their dollars to the greatest payoff where the winners are.

There are certainly a number of winners. At least they are easy to find in the large, well-organized, well-developed metropolitan areas. Meanwhile, the rural communities remain responsible for providing emergency medical services to a large proportion of the population, yet are receiving little or no financial support relative to the organizational structure necessary to provide such services in an effective, economic or organized way.

The administration has failed the rural communities from my point of view. We need legislation like S. 504 to fill the gap in assisting and solving the rural community's greatest and growing health care problems.

In the interest of brevity, let me jump to a summary of the kind of technical legislative support I believe will be needed. Of course, first of all, we need some evidence of interest that we have on behalf of the administration, both State and Federal legislation.

In terms of legislation, we need legislation that will, first, fix responsibility and authority for the provision of lifesaving services.

Second, assure that emergency medical training is available to all persons responding to emergency or life-threatening situations and that all persons who normally provide lifesaving services are properly qualified.

Third, provide adequate opportunity through consumer education to expand the capability of each individual to respond to life-threatening situations.

Fourth, support the establishment of coordinated emergency communications systems which link ambulances, hospitals, and other emergency services resources and which provide easy access for the consumer.

Fifth, provide incentives to the coordination and organization of resources into regional systems which maximize total resources and fill in gaps in services while containing costs and minimizing overlaps.

Last, allow the consumer an adequate if not dominant voice in the operation of such regional systems.

We believe, I believe, Mr. Chairman, that S. 504 will accomplish these ends.

Senator CRANSTON. Thank you very much, very much. I appreciate that testimony.

[The prepared statement of Mr. Harland follows:]

PREPARED STATEMENT OF FRANK HARLAND, EXECUTIVE DIRECTOR, COMPREHENSIVE HEALTH PLANNING ASSOCIATION, SUPERIOR CALIFORNIA

Mr. Chairman, members of the Committee, my name is Frank Harland. I am employed by the Comprehensive Health Planning, 314(b) Agency that serves the twelve rural counties of inland Northern California.

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In his remarks before the Senate on January 23d, Senator Cranston in introducing Senate Bill 504, made reference to the characteristic problems of delivering emergency medical care and lifesaving services to residents and travelers in the rural parts of our country. I will assume that you are all familiar with the character of rural emergency medical care delivery problems, but let me add a little more detail.

As long as twenty years ago, we began to see a shift from the utilization of outpatient clinics and private physician services into the hospital emergency room. The E.R. has become a surrogate physician for many families. While this trend has been recognized for many years nationwide, it is more pronounced in the rural areas where the supply of doctors is totally inadequate, where the incentives for attracting new physicians are no longer effectively working, and where scarce manpower resources are poorly distributed.

Thirteen per cent of hospital admissions in California come from hospital emergency departments. In the northern rural counties of the state, that figure is 15-½ per cent. Between 1970 and 1972, the E.R. visits in our rural counties increased by 78 per cent. Frankly, I see nothing on the horizon which is going to reverse the trends we see in the declining numbers of physicians and other health manpower in rural areas. We can, therefore, expect a greater and greater demand on our hospital E.R. departments. The hospital may, in time, without planned intervention, become the surrogate physician and the only entry point into the health care system.

Another influence on the hospital E.R. is the increasing incidence of accidental injuries and other trauma. On a percapita basis, this incidence is higher in rural populations. The increase in recreational and visitor traffic can be expected to continue to exert additional burdens on hospital E.R.'s in the future.

In spite of the fact that rural communities are experiencing increased demand for emergency services or services delivered by their emergency resources, the access to those services remains severely constrained. For example, 86 per cent of all of the emergency visits to the hospitals in the northern counties of this state were transported by private automobile, in spite of the fact that half of the E.R. visits were described as true emergencies. This indicates that a substantial number of emergency patients, driven to the hospital by private automobiles, were in need of emergency medical services, either at the scene of the accident or during transportation. In spite of this fact, it is likely that people will continue to be delivered to hospital E.R.'s by private automobiles and the reasons are very simple:

(1) The supply of emergency vehicles is limited because of the shallow economic base, a small population spread over a large geographic area;

(2) There is a general lack of consumer knowledge regarding how you acquire emergency transportation services and first-aid treatment; and

(3) Seldom in rural counties is there any public transportation.

Over 12½ per cent of the emergency visits in hospitals were transported to the hospital by an ambulance or other emergency vehicle. The ambulance services in the rural community, however, frequently take in excess of 20 minutes to respond to an emergency call. In addition, a majority of the ambulance services in the area do not have the authority nor the properly trained personnel and equipment necessary to provide adequate on-site emergency medical care. Yet, a recent article in the Journal of the American College of Emergency Physicians, by Dr. Henry Huntley, indicates that proper personnel and equipment responding quickly to an emergency call can save an estimated 10 to 20 per cent of those who might otherwise have died.

In the twelve-county health planning area I work for, we have seven of the most deficient counties of the fifty-eight in California, in terms of their capability of delivering emergency medical care. Yet, it is these very counties that are providing other Californians with a great bulk of their recreational resource. It is these very counties that are assuming the life-and-death responsibility for people from all over this state and people traveling through from other states. In this time of high mobility and expanded leisure time, the rural communities, in a very real sense, are their brothers' keepers. They are expected to provide emergency medical services, yet struggle to do so on what is often a very inadequate economic base.

The rural American or the hapless traveler in the rural community is taking an unnecessary risk with his life because our institutions, private and public, have not been able to effectively respond to his needs. The rural American

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needs help in solving E.M.S. problems, a lot of help and so far he hasn't received it.

The existing legislative and administrative structure for providing support to rural communities in solving emergency medical care problems has failed or is simply not being employed. In its later years, R.M.P. was seriously getting into emergency medical care. Now their funds have been out. The Office of Traffic Safety here in California has, in the past, made money available for planning and organization of E.M.S. systems. Those funds have now been frozen.

H.E.W. last year had eight million to put into E.M.S. system development contracts. Now the President this year has asked for fifteen million dollars, an amount hardly a drop in the bucket in terms of the nature, character, and extent of emergency medical care problems in the United States. The rural communities can rest assured that they will be the last to see any of these moneys.

It stands to reason, since the Administration is putting such small amounts into the development of regional E.M.S. systems, that it wants to go with the winners. Winners are easy enough to find in large, well-organized, well-developed metropolitan areas. Meanwhile, the rural community remains responsible for providing emergency medical services to a large proportion of the population, yet is receiving little or no financial support in developing the organization structure necessary to provide such services in an effective, economic, or organized way.

The Administration has failed the rural community. We need legislation like S. 504 to fill the gap and assist in solving one of the rural community's greatest and growing health care problems. In most of America today, our emergency medical care system is grossly inadequate. In rural areas it doesn't even exist as a system. As a rule, the emergency medical care resources found in rural areas are inadequate, outdated, poorly distributed, not effectively organized, in a systems sense, at least, undertrained, undermanned, underfinanced, and underequipped.

Now let me address the question, "What has to be done?"

First, the rural community has to get organized. It has to get its own house in order, negotiate agreements, establish linkages, evaluate resources, and identify needs. This takes money which we have been told by the Administration is available "after you're organized". Despite this kind of double-talk there is something we can do and have done.

Two years ago this summer, the area Comprehensive Health Planning Agency identified emergency medical care as its top priority health issue. The agency formed a committee then to develop an areawide plan for emergency medical care and transportation. After several months of research, discussion, and public hearings a plan was produced. It was later to form the basis of an application to H.E.W. for support in organizing our resources and developing a regional E.M.S. system. We were told that we needed to get better organized and that H.E.W.'s money was going with better organized applicants.

Since then we have done more research and we have become better organized. In August of last year we selected a smaller, seven-county, pilot area. We formed a coordinating council whose membership includes representatives of the E.M.C. committees of each county. The appointment of each member has been ratified by his respective County Board of Supervisors. We have experienced many disappointments in finding both technical and financial support for this Council, but continue our efforts to get our own house in order.

Secondly is the question of what our legislative leaders can do for their constituents. The rural community needs technical support and evidence of interest on behalf of the Administration, both state and federal. We need legislation which will:

(1) Fix responsibility and authority for the provision of lifesaving services.

(2) Assure that emergency medical training is available to all persons responding to emergency or life-threatening situations and that all persons who normally provide lifesaving services are properly qualified.

(3) Provide adequate opportunity through consumer education to expand the capability of each individual to respond to life-threatening situations.

(4) Support the establishment of coordinated emergency communications systems which link ambulances, hospitals, and other emergency services resources and which provide easy access for the consumer.

(5) Provide incentives to the coordination and organization of resources into

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regional systems which maximize total resources and fill in gaps in services while containing costs and minimizing overlaps.

(6) Allow the consumer an adequate if not dominant voice in the operation of such regional systems.

We believe, I believe, Mr. Chairman, that S. 504 will accomplish these ends.

Senator CRANSTON. Do any of you wish to make any statement now before I proceed with some questions to the panel generally and specifically to some of you?

Do you each have a statement?

Mr. FARMER. Yes; I have a statement.

STATEMENT OF ZACK FARMER, AMBULANCE DRIVER AND DEPUTY CORONER, TEHAMA COUNTY, CALIF.

Mr. FARMER. My name is Zack Farmer. I am a representative of a private ambulance concern in Tehama County, which is a small, rural community in northern California.

I have been trained as an emergency medical technician and have been for 7 years a deputy coroner in my county.

I say in my statement that it may be cogent that I am also a licensed realtor with a fully staffed office of my own. I think the cogency here is that rural communities are dealing with nuts and bolts problems and they so often have to rely upon volunteerism. Volunteerism can be laudible, but it can also be dangerous and if not properly trained it enters into the realm of the do-gooder which is, as I say, laudible, but it does address itself at all times partly to the problems with which we deal.

In rural California we are dealing with bodies, with nuts and bolts, with problems. We are little communities. I live in a county of 29,000 people that covers 3,000 square miles. In San Francisco you might have 5 square miles and several hundred thousand people, and you have much more coordinated systems. When I receive an ambulance call, I may be dealing with a time and distance factor of 40 miles from the nearest emergency room. I may be dealing with the same traumatic situation of traumatic gravity that the system is dealing with, but I neither have the equipment nor do I have the sympathetic understanding of some of the agencies that have it within their power to be of some assistance.

We feel sometimes a little lonesome. As Mr. Harland said, it is so often that when there is a small pot of money to distribute in this needy area it goes to the winners. The person that I am dealing with that may be 40 miles from my dispatch point is still a person suffering the same trauma in the terms of gravity as he might be in the midtown area of San Francisco. He may, in fact, be from San Francisco. He may be anticipating and expecting, properly so, this same level of care and treatment, which, I feel, having a reasonable amount of training, I feel that I can administer a reasonable amount of care, within the confines of the law as it is now, but it is still up to 2 hours before I can get that man to an emergency room.

When I get him to an emergency room in a small rural hospital, we have a small emergency room. We have no physician in the house. We have personnel that are trained as nurses, and fine people they are, but the emergency room care is a specialty all its own. In the small community, we can't specialize so we have people assigned to these situations rather than in those situations by choice.

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Senator CRANSTON. Have you ever tried to calculate how many deaths could be averted if we had the sort of approach of this bill in an ideal situation?

Mr. FARMER. I would be presumptive to put a statistical figure to this, but I have had many years of experience and have the gut feeling that it is a substantial number. I feel I either don't know enough or I don't have the facilities or the time frame within which I may work toward the saving of a life, and the reception is not good, because, Senator, one of the big problems in this whole EMS situation is teamwork. We are all members of the team, and somewhere along the line everybody in that team has to recognize the other one. The EMT is just an important cog in the team. He doesn't presume into the medical field per se, but there is little understanding.

This takes education; education takes money. We are receiving your people into Tehama County, Shasta County. We are talking about 50, 60, 80 thousand people in the summertime, so we have imposed upon us the potential for disaster that maybe the people in the urban area would have all the time, but we don't have the funds; we don't have the manpower; we don't have the training.

Senator CRANSTON. And some residents of the big cities are the victims of the rural area's inability to provide the services that they may expect there.

Mr. FARMER. We are willing, you know, we are willing, but we just need the help, Senator. This Senate bill that you have propounded here, as I say, in my prepared testimony, is certainly a long step in the right direction. I don't think that you and I have all of the answers, but certainly somewhere we have to find enough guts to cut through the politics and deal with meeting daily needs.

Senator CRANSTON. Is it also your belief that the number of people who become incapacitated permanently because of delay or inadequate aid in an emergency could be drastically cut by improved services.

Mr. FARMER. I would be safe in answering affirmative to that. Yes, because time is a factor, along with ability to handle the situation. We just have time and distance against us.

When you talk about funding, Senator, some of the things you offer here in the rural areas, we don't have the money, whether it be in the public or private sector, to provide centrally or, I would say, strategically located ambulance equipment, so we are forced to operate out of central bases, We have areas in our community where we need ambulance equipment and trained crews. There is nobody there t oput them there, either the political end of the view or the private sector so, therefore, we have to transport ourselves over long distances and that is death.

Senator CRANSTON. Thank you.

[The prepared statement of Mr. Farmer follows:]

PREPARED STATEMENT OF ZACK FARMER, AMBULANCE DRIVER AND DEPUTY CORONER, TEHAMA COUNTY, CALIF.

My name is Zack Farmer. I represent a private ambulance company serving the 29,000 residents of Tehama County, California. I am a member of the National Registry of Emergency Medical Technicians an also serve as county deputy coroner. It is cogent to this testimony that I am also a realtor with a fully staffed office of my own, thus not dependent upon income from the ambulance service for economic needs.

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Tehama County is a rural community whose economy is basically agricultural and recreational. By highway, our borders are 45 miles distance one way and 105 miles the other. In a large metropolitan community hundreds of thousands of people may be concentrated in five square miles. In Tehama County we have 29,000 people scattered over 3,000 square miles of valleys and rugged mountains.

The level of emergency medical care in this rural county is typically inadequate. Our problems are directly related to time, distance, dollars, training, coordination of services and attitude. Our ambulance service, the only one in the county, has three emergency vehicles and one convalescent coach delivering patients to three hospitals with two emergency rooms. We make no attempt to qualify a patient as to his ability to pay and we suffer 35 per cent loss in collections.

Time between response and arrival may vary from five minutes to two hours depending upon the location of the emergency and its accessibility. The tourist-fisherman from San Francisco, used to and anticipating a high level of emergency protection, who experiences a traumatic episode or serious illness forty miles from our nearest ambulance is in trouble. We have capable personnel and reasonably good equipment, but it will be two hours before he reaches an emergency room. When he gets there, usually no doctor will be waiting for him and often the level of care he receives will not be what he has every right to expect. Our doctors are too few in number and overworked in private practice. The hospitals can ill afford the cost of a 24-hour in-house physician or specialized emergency room personnel.

Too often those involved in emergency care do not like their work and are relegated to this duty by assignment rather than by choice, aptitude, or experience. The attitudes of reluctance, fear, or distaste on the part of the practitioner are quickly transmitted to the patient to his detriment. Unfortunately there is still an aura of distrust and resistance on the part of the medical professional to anything or anyone presuming to seek membership on the team. The paramedical person, be he fire, rescue, E.M.T., or ambulance attendant, is too often rejected by the medical fraternity as an interloper. Too often lack of training and education lends justification to this attitude. In any case, the patient is the loser. We must learn to leave the "ego trips" behind, exhibiting mutual respect as members of a team dedicated to the emergency patient's welfare and survival.

We in the rural counties in California desperately need help in the delivery of emergency care. Senate Bill 504 addresses itself well to the solution to our problem. To those who may say that this legislation is not necessary because H.E.W. or any other agency has sufficient statutory authority, I can only ask, so, why, then, is it not being exercised?

We have a desperate need. We have people willing to learn and serve, but we lack the means. Taxpayers, as well as visitors to our rural communities, are entitled to expect and receive the benefits modern, medical technology in their emergency medical care. It is time to come out of the "Dark Ages". To accomplish this we must be educated. We must have help in procuring and staffing strategically placed modern ambulance equipment. We must have good communications equipment. Emergency rooms must be staffed by willing, dedicated professional people. The public has every right to demand and expect an increased level of emergency medical care. Neither the private nor public sector, provider, can afford sophisticated equipment, 24-hour availability, highly trained personnel, adequate insurance protection, and still tolerate 35 per cent collection losses and the over-complicated payment policies of Medicare and MediCal.

The need for an effective and coordinated emergency health care delivery system is urgent and mandatory. To this end we strongly support Senate Bill 504 as a long stride in the right direction.

STATEMENT OF JIM GLASGOW, ADMINISTRATOR, SENECA HOSPITAL, CHESTER, CALIF.

Mr. GLASGOW. Senator, I would like to disagree with your first witness from HEW that this is a community responsibility. I think that in the sense of emergency care it cannot be considered as an individual community responsibility. The individual community

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means that State lines, city lines, everything stops at that border. You can't do that where emergency care is to be considered and to be done in a proper manner. This has been the way that it has been approached in the past, and we will come up with another nonsystem of health care with everybody in the cities entitled to all of our health standards. As long as we consider it in this way, this is the way it is going to be. San Francisco has a wonderful emergency medical care system. In accordance with what we can afford to do in our area, we run 10-year-old ambulances and this takes care of 30,000 people, many of them from the bay area every summer.

We have a population of probably 3,000 residents. We have about 30,000 a day in the summer months. With those two ambulances and the type of training they have—and, by the way, the training that we have had has all been due to Regional Medical Programs over the past 3 years, which now have been stopped, and we have absolutely no idea where our training is going to come from. We are 70 miles from Mr. Farmer's valley's medical arrangements down there, and it is all mountain roads between, with a half-million visitors every year, and we take care of that along with our other things.

I think the main problem is that the States have not accepted their responsibility. In the State of California today there is no law that says that anyone has to operate an ambulance service. It is not a community responsibility. If we decided tomorrow in our little hospital that we could not afford and didn't want to run an ambulance service, we could discontinue this and no one could say anything. This would mean that approximately 500 square miles would be left without ambulance service. I think it must come down from the State level to the community level and be done in an organized manner.

Every time I hear of the community responsibilities, I see it is more disorganized every time it is suggested. I think this is primarily the key. I believe that all of us who have testified today or will testify later know probably 90 percent of the answers to giving good emergency care, the primary problem is organization. Unless we arrive at that, I don't care whether we spend $15 million or $300 million a year, we are not going to get anywhere and I think your bill, by setting things down in a positive fashion, going from the State level and going down to the various communities and insisting on organization and coordination between the various communities and the overall statewide system that accompany this community-wide system will permit this to be done.

Thank you.

Senator CRANSTON. Thank you very much.

[The prepared statement of Mr. Glasgow follows:]

PREPARED STATEMENT OF JIM GLASGOW, ADMINISTRATOR, SENECA HOSPITAL, CHESTER, CALIF.

I am the administrator of two small rural hospitals that are located in the Sierra Nevada Mountains where the only industries are logging and tourism. One hospital has fourteen beds and serves a permanent population of 1,600 and the other is twenty-two beds in a community of 2,000. Both hospitals operate ambulance services with two, ten-year-old pieces of equipment and one that is twenty years old. During the tourist season the combined populations of the two communities expand by over 800 per cent to a daily population of about 30,000. The obvious burden of such a population explosion is a sharp rise in emergencies which must be cared for by the same number of personnel and

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limited facilities that serve the smaller, permanent population. We are not unconcerned with the inadequate training, facilities and communications that we work with, nor are we ignorant of the solutions. But the resources of each community are strained just to keep these hospitals open and are not adequate to support the quality of emergency medical care that should be available to everyone.

It has been said that emergency care has been the neglected stepchild of America's health industry. I think the blame for this should be shared by all governmental units from the federal level down to the smallest community in the state. The most glaring example is that today in the State of California it is not mandatory by state law for any political subdivision, either city or county, to furnish emergency ambulance service. As long as this condition exists, the level of emergency care within the state will not be constant and will vary from excellent to extremely poor, according to the resources of the individual community.

The establishment of responsibility for E.M.C. and the development of uniform standards of quality must be approached on a statewide, rather than a community, level. Acceptance of the responsibility for emergency care has always been left to the conscience and resources of the individual community. With the mobile population we have today, this is no longer adequate.

There have been many statements regarding the non-system of health care in this country. I believe the legislation sponsored by Senator Cranston and many others, namely, S. 504, if used as a tool to develop the first coordinated system of medical care, can be vastly more important than if it were merely to be used to improve individual community capabilities for emergency care. This is not to imply that the upgrading of community and regional medical care facilities is not important, but since the only governmental agency with the power to coordinate, properly finance, and legislate in all areas is the state itself, I feel this is where the basic responsibility should be placed for guaranteeing quality emergency care to all of its citizens.

The state should then delegate authority and responsibility in the amounts necessary to the counties, cities, and regions to enable them to implement quality emergency care systems; yet at the same time should retain enough control so that the involvement of all systems would result in a complete, statewide system, not in many fragmented pieces within the state's borders, as is common today.

For the past two years we have endeavored to set up an areawide emergency medical care system in the seven northeastern counties of California. This has been a most frustrating experience due to the many agencies, both federal and state, with which we have had to deal. No single agency has the necessary authority or funding capabilities to do what needs to be done in the field of emergency care. This piecemeal approach has greatly contributed to our non-system of emergency care.

All the materials necessary to furnish emergency care to the people of the United States are available to us today but without coordination and organization they will never properly be used. Legislation, embodying these basic requirements, is essential and will be of enormous benefit to our society.

Senator CRANSTON. Mr. Fikes.

STATEMENT OF GERALD FIKES, R.N., EMERGENCY ROOM COORDINATOR, MERCY HOSPITAL, REDDING, CALIF.

Mr. FIKES. In my role in Redding, being involved in establishing some of these programs and doing a lot of training that has gone on as far as the emergency technician program at Shasta College, I would like to address a few comments about the training aspect.

I would like to reiterate a point that Zack made in terms of the team, whoever is out there, and the rural situation is what we have to deal with.

If the Park Service employee is the first on the scene, it is imperative that this fellow have a certain level of training so he is all that is going to be up there for an hour or 2 and the person's fate will be settled in that period of time.

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Our approach is to try to look at these rural areas and see who is out there and provide them with the absolutely essential training that they have to have. We are continually faced with the problem of not having the money to pay them to be trained and the money to pay the trainers and what level of training they should receive, so these are areas that are of concern to us.

The EMT program curricula—this is one of the better efforts that has come out of Washington. We have been able to implement this in our area and we feel that this training program was done what it has intended to do.

I would like to address a comment to the notion that ex-corpsmen provide an answer to the problem of manpower. Many people overlook the fact that ex-corpsmen got to be corpsmen sometimes capriciously and arbitrarily. Some of them wanted to be and some of them didn't want to be. They are good, bad, and indifferent. When you get good corpsmen, it is extremely difficult to keep good corpsmen at the wages prevailing for nonlicensed personnel. In order for these people to be effective, I think it is necessary for them to become licensed personnel. Good men can't live on the wages that we are able to pay nonlicensed personnel. Small hospitals particularly just don't have a shot at attracting, keeping these people.

Senator CRANSTON. That is a very constructive point, thank you.

[The prepared statement of Mr. Fikes follows:]

PREPARED STATEMENT OF GERALD FIKES, R.N., MERCY HOSPITAL, REDDING, CALIF.

My name is Jerry Fikes. I am a registered nurse and first aid and C.P.R. instructor. I live in Redding and work at Mercy Hospital as emergency room coordinator. I develop programs for the hospital in emergency care and teach at our local community college. I am a course coordinator for the emergency medical technicians ambulance. I have worked as a consultant for Regional Medical Programs and for rural hospitals' emergency rooms. This is the perspective from which I make the following remarks.

Manpower and training. Manpower requirements for our rural area of northern California are staggering. In the San Francisco metropolitan area with centralized facilities and transport systems, fewer than 100 people are involved with 90 per cent of the care and transport of trauma victims for roughly 1,000,000 people. Training efforts can be directed at this small number of people: They can be identified, can receive enough field experience to retain their skills, can do a superlative job and reach the victim usually in less than ten minutes.

Contrast that with the rural circumstance where an adequate pool of personnel to provide emergency transportation and care may require training several hundred people for a fraction of the population. Many of our volunteer fire departments operate ambulances. In identifying the people giving the care and needing training, you learn that the fifty runs a year made by a volunteer fire department may require the training of fifteen to twenty people for the one department.

It is my feeling that, in the rural circumstance, whoever is involved with providing the care should receive the training. By this I mean if the Highway Patrol, sheriff's office, volunteer fireman, park ranger, California Division of Forestry, game warden are the people working in the area, then these are the people who ought to be trained and made part of a system for keeping people alive. So many areas are hours, not minutes, away from medical resources, that the team members need to be familiar enough with the "system" so that they can make intelligent decisions for the best interest of the victims.

I think I need to clarify this "team" concept a little more. From the man driving the snowplow who first finds the accident, to the Highway Patrolman who arrives to make the accident report, to the ambulance crew, on to the nurse's aide in the small rural emergency room, to the registered nurse who calls the doctor, and particularly to the doctor, this is the team. Everybody

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who accesses the patient must be a member of the team and understand his role on the team or the patient may die when he doesn't have to die. The doctor must understand that the ambulance crew can give him vital information about the patient and circumstances of his accident. Unless there are organized channels of communication so that life-threatening situations such as obstructed airways can be identified and the physician notified, the patients will die that don't need to die.

Some team members in the rural areas need the basic 81-hour EMT-A training. Certainly the hospital personnel, including the doctors, the ambulance crews, and the volunteer firemen, need this level of training. Others on the team require different kinds and amounts of training. But all of this training activity without a system, an organized approach of how best to keep this crunched body alive, is less than effective. Rural rescue teams, comprised of local citizens, organized to take care of each other until help arrives, offers some hope for the area too small to have an ambulance let alone a doctor or other medical facility.

We hear a lot about ex-corpsmen being a great untapped resource. Corpsmen are card-carrying members of the human race and as such there are good, bad, and mediocre corpsmen. Good ones are hard to find: Good ones that will work for the wages that they can make as nonlicensed personnel are practically nonexistent. If some organized program were available to provide a stipend for the ex-corpsmen to supplement what he can make in the small hospital, more corpsmen might get in the game. The small hospital has the greatest need for innovative programs and assistance of all kinds, and is least likely to have the administrative time or talent to get it. Survival is the first order of business and is a full-time job for the administrator and leaves little time left for creating or finding funding for innovative programs.

In reading over S. 504, I was pleased to note that the authors had apparently not succumbed to delusions that there are simple, absolute, and ultimate answers to the many problems of moving sick or injured people from Point A to Point B. They do make reference to the MAST program. Our closest MAST resource would be 150 miles away. This is too far to be of any practical value for the northern California area. Tinkertoys, like helicopters and airplanes, should be used as tools to get the job done not ultimate answers. For the foreseeable future, these tools must compliment existing ground ambulance systems and be coordinated with ground systems to be effective. There are many instances of bad weather, poor visibility, and hazardous terrain where airplanes and helicopters won't work. The need is still there for effective ground systems.

To summarize my remarks, I list these main points:

(1) Rural areas require training of more bodies to take care of smaller populations because the composition of the "team" is much different than in metropolitan areas and because the time and distance problems are so much greater in rural areas.

(2) Whatever public service agencies are out there need to be trained and given as part of their mission the responsibility for preserving human life in the rural situations.

(3) Hospital people, both doctors and nurses, need to receive the same training as other team members because they don't know anything about keeping people alive outside the hospital. If they understand the problems faced by the ambulance/rescue crews, they become more tolerant and effective in working with the crews.

(4) We need a system of emergency health care delivery that will work better than what we have.

(5) Corpsmen are no ultimate answer. We need good ones and we need money to pay good ones.

(6) Helicopters are no ultimate answer either. Exotic toys should be tools to supplement whatever is already there. Until exotic toys can function 100 per cent of the time and some means for paying for them develops, they will remain exotic toys available only to the military and not economically viable.

(7) Rural areas are often the most needy recipients of help and least likely to get it because they are unable to devote enough time, money, and sophistication to work the system of getting money.

Senator CRANSTON. Mr. Lindberg, do you have any comments?

Mr. LINDBERG. Yes.

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STATEMENT OF CARL LINDBERG, DIRECTOR, FIELD OPERATIONS, AREA 2, REGIONAL MEDICAL PROGRAM

Mr. LINDBERG. I find myself in the cleanup position, so I came without prepared testimony today, but I would like to give you some thoughts that have occurred to me in the last year that I have been a member of the regional program staff at the University of California at Davis.

I think during this period Mr. Harland has testified we found ourselves with an amiable relationship existing in the northern counties of California between Regional Medical Programs and health planning.

I have to ask first that nationally we consider the question, "What do we want?" I think all of the testimony that each of us has heard and read thoroughly epitomizes the fact that there is need for improvement, growing need for improvement, in emergency medical services. But I think we have to want this enough to get it, to encourage it, this we are all doing, this is not going to get it. Is it any operating organization that needs to have clean lines of responsibility. One needs to have clean lines of assignment of authority and there is no game in town that doesn't need some physical capability to get it.

Unfortunately I see here an inverse proportionality, which Mr. Harland has referred to and I believe Mr. Farmer following him, that the organization least organized or nonexistent will be the last to the trough because the organized areas which are typified by the metropolitan areas which do have established records are going to be able to pick up their hands and develop a proposal that will be handsome and attractive. It will take the rural communities such as these gentlemen and I are familiar with as much as 3 years to develop a viable proposal that will attract dollars and this is a very real problem.

So I should like to address myself to the question, first, if we are of a mind as a nation to encourage implementation of programs for our emergency care then we have to direct the responsibility upon the States from the Federal level and from the State level to the county level and to the regions that the counties may choose to join them.

I think it is pertinent for the past 2 years in the northern counties of California many of us have worked quite diligently, and I believe you are quite well acquainted with some of our efforts, toward the end of identifying a need and helping to develop awareness on the part of the public and its governments to this need, and, more importantly, to address ourselves to our need for dollars to do something. We are all volunteers. Mr. Harland has been volunteering from his health staff resources and I have been contributing from my offices resources to the tune of one-man level of effort each, I think, to cover 21 counties in my case and 12 in his case in northern California to develop this awareness. These gentlemen have been doing it without compensation and many dollars have come out of their individual pockets so we can get to meetings so we can talk with one another.

Today the witnesses have touched on the hospitals, the doctors, the

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ambulances, nurses, emergency medical care, many of these subjects, and in each case we are confronted with the very real first level of organization. How do you do this? We talk of regional emergency service. We most assuredly are talking of typical, if not universal, case that pertains to, in the most part, rural counties. Rural counties are not organized and are not able financially to deliver the emergency services which you and I expect and should deserve and should be able to obtain.

We would all be aghast if we are a witness to an ambulance operator saying, "I refuse to carry your injured body to the hospital." We would be fully aghast if at the hospital emergency room doors we were refused services. But we have done nothing to require compensation or to direct the existence of the services.

The hospital is there because it has chosen to be there. The ambulance operator is there because he has chosen to be there. We have not sustained them and we have not integrated them—we must.

I look to our efforts in northern California counties to date, covering those seven counties under the Southern California Emergency Medical Care Council, which is all volunteer firemen, which this body aspires to educate the seven counties to the needs within their individual counties and to the regional nature of their need, because none of these counties sustains integral to themselves the full competence for emergency resources that will be called upon in major emergencies or emergencies to an individual.

I think we have to come here to a basic question, "What is a region," because we are going to be doing this on a regional basis, and left to their own judgment a community could construe itself to be a region, a county could construe itself to be a region, and I would subscribe and I would suggest that we do not want to attract regions that do have very little competence to adequately accommodate, by far and above, the emergency cases that arise within the domain. A county can only handle 75 percent of its patients. It needs help from its neighboring counties and it needs help from neighboring State resources.

I am looking at the very real facts of life as an implementor. We haven't yet found the dollars to support this council to the tune of a two-man staff, to educate and convince seven counties, all of the medical resources, all of the people, in their local governments, that they should be attracted to become parties to this agreement.

Senator CRANSTON. Dr. Zapp stated in his testimony that HEW was providing technical assistance to communities. Have any of you had such technical assistance?

Mr. LINDBERG. No, sir.

Senator CRANSTON. You have never heard of it?

Mr. HARLAND. I think he indicated that the five projects funded out of the $8 million last year had technical assistance available to them. We have not had it available, to my knowledge.

Senator CRANSTON. Yes.

Mr. LINDBERG. We have a thing organized that any one of the seven counties could elect simply not to join it, any one of the seven counties has to look at the financial hook that they may be planting in their mouth in asking them to become a part of a region, and regions will not exist unless the counties can be enticed to become a

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part of them, and by seeing that the resources are going to be had that way and that way alone.

I know I am running my time long, but I would like to mention an undeveloped region in the 21 counties of California and three Nevada counties. I visualize the need for some five to six systems to be developed.

Senator CRANSTON. You work as a unit with three Nevada counties?

Mr. LINDBERG. Our area II.

Senator CRANSTON. Does that create any problems statewide?

Mr. LINDBERG. It certainly does and as an example, for purposes of illustrating, Senator, I would like to present some testimony that some national interests need to be expressed.

Lake Tahoe is well known to all of us, I believe. Recently, over the last year's time, it has been surrounded and identified as the Greater Lake Tahoe Basin. This comprises the High Sierra portions of four California counties and three adjacent Nevada counties. The major medical resources are those in Reno. The hospitals adjacent to Lake Tahoe, I might mention, have 20 million visitor-days a year, currently. Our small hospitals are most anxious to become integrated, recognizing a system need. Their outpatient traffic, I might add, is 60 to 75 percent of the traffic in their emergency rooms. Visitors comprise this traffic. The normal population is 25,000, confronted with 12 million visitor-days that requires them to do something beyond the local resources the 25,000 taxpayers contribute.

How do you organize that? Where is this regional authority? Where is the body which can sit down and write a proposal? I believe that we will need to have some way to develop developmental dollars for this organization to the point where regions can be identified, people in the governments can represent themselves through that regional spokesman.

These I point to as lax in the bill as it stands now that I feel are very real needs in order to get this thing going and in order to offset some of the adverse proportionality that I referred to earlier.

In closing, I should like to note the categorical disease mission in life, which was the purpose for which the Regional Medical Programs of the 50 states agree, came up with three diseases which were the major killers of America, heart, stroke, and cancer; more recently, kidney disease has been added to the list.

I have addressed myself and dedicated myself to emergency medical care services because obviously it kills most of our most important Americans, the youth, who die from accidents, injuries, and critical ills.

The major medical programs of the 50 states have been dismantled. I will discharge my staff by the middle of May, and we are to close our books by the 30th of June. Perhaps that office could be an integrated region for emergency medical services, and proposals are to be considered.

Perhaps at the Federal level we need not create new categorical offices but redefine and redirect some of the existing structure which is already a day-to-day liaison with the medical community and with the populace at large.

Thank you.

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Senator CRANSTON. Thank you very much for a very helpful and constructive statement. The fact that medical emergencies kill the most important American, the youth, is a point that I think should be stressed.

I should like to advise you, that before leaving Washington yesterday, that I joined Senator Kennedy in cosponsoring a bill, and incidentally all members of the Health Subcommittee, Republicans and Democrats, alike, joined in this bill, which extends the authorities for Regional Medical Programs as well as other Public Service Act authorities for 1 year. That bill will be taken up immediately on the Senate floor. I hope we can get similar swift action in the House and get the bill enacted. That will meet one of the problems temporarily.

Senator CRANSTON. Do any of you have any further comments on the testimony we heard this morning from HEW?

Mr. FARMER. The biggest comment I might have, Senator, is that if they have this statutory authority, where is it and why is it not being exercised?

Senator CRANSTON. Do you have any comments on the paperwork problem? You allude to it as a particularly difficult problem for the rural communities because they could be overcome and outmanned by the cities, in trying to deal with problems in the applications and so forth. There are programs for which you are trying to qualify and face problems in dealing with the applications and other requirements. I know it is a great burden and I know there are a lot of man-hours and man-years wasted in doing that, more than ought to be used.

What is the middle ground between the Administration's view and just turning it over and leaving it totally to local judgment and some Federal involvement.

Mr. LINDBERG. I would like to address myself to a response, Senator. We have already left it to the local level and it has been unsuccessful and it has clearly demonstrated the inability in the community and the county in the rural section which typifies America and certainly most of the counties in California, with few exceptions, are rural counties. They would be a county to a region. The regional authority does not exist, it cannot write a proposal. It takes a year to peddle its proposals in order that its paper would be cosigned by the participating counties.

Mr. HARLAND. Senator, I think the national health policy is similar to the view that Columbus had when he set out west, he figured he'd run into something eventually. I think clearly we need a more articulate national health policy. If we have those kinds of guidelines established, understood, and accepted, I think communities then are more effective in working within those parameters. It has been the same for years and years, we have needed more articulate national health policy. It is not an easy thing to set out, but I think that is one of the answers to the question.

Senator CRANSTON. Do you think that we should consider trying to get into the bill some language earmarking some specific proportion of the funds for rural communities?

Mr. LINDBERG. I think another category that would be advance funding for the organizational phase where an organization doesn't exist is necessary to facilitate these organisms to come into reality and to encourage the counties to relate to them.

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Senator CRANSTON. I gather you are in general agreement on that point, full agreement on that point?

Mr. FARMER. Yes.

Mr. LINDBERG. Yes.

Sentor CRANSTON. Would you say, and I am asking whoever chooses to answer, would you say that provision of comprehensive emergency care in a rural area just has to be a definite financing proposition? Do you need help from somewhere else, Federal or State?

Mr. FARMER. In answer to that question, from a nuts and bolts standpoint, you find that the ambulance services will very often experience 30 to 35 percent losses in collection. These are the things, one of which is the transient nature of many of their victims.

Then we are the victims ourselves of the clumsy nature of the Government programs, such as medicare and mediCal. I would say medicare is much the least of the terrors that we fight. MediCal is such a monster that I don't think people in Sacramento know where their office is. We lose 20 to 25 percent of the medical collections on the basis of technicalities because we didn't dot an "i". Perhaps that isn't your ball game, Senator, but the little guy gets a beating in this area.

I think, as Mr. Lindberg has said, we must have some coordinated services here. That is the name of the game. There is no coordination or cooperation, everybody runs out in the middle of the street and screams, let's do our thing. It doesn't work.

As I said a little while ago, politically there were proponents of less government or more government. But let's quit playing games of politics in the area where we are dealing with bleeding bodies. Let's decide if they are worth saving or not. If they are worth saving on the basis of the human level it doesn't matter what church we go to or which hospital we run into as long as we know we get them to the hospital, they'll be saved and they won't need the church or the grave-yard. But as it is now we are killing as many as we are saving by our foolishness in dabbling with the little games that people play.

Senator CRANSTON. I fully agree that it should not be a Republican versus Democratic matter. While we have problems with the administration on what should be done here, I am delighted to say that we have very strong bipartisan support developing in Congress, with many Republicans joining with a good many Democrats, feeling there is a very important problem here, and I think we will be able to move in a bipartisan way and move the bill right out.

Mr. Glasgow, you suggested that the State should pick up the money deficiencies of the rural community. Has our State government provided any resources in support of emergency services?

Mr. GLASGOW. Senator, none that I have been able to find. We have the Bureau of Emergency Care, we have all of the various departments. None of them have any money. The State takes the stand they have no responsibility for emergency care. They are very adamant about the type of ambulance, the type of equipment, the type of training, and everything else, but nobody says, how are you going to do it?

Your bill is for a 3-year period. I think this is fine. But I think in

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the long run the States themselves are going to have to pick up the final operating cost. I don't think it is going to be as big a burden in the rural communities as we all think today. Once we get things coordinated and organized, I think we are going to find many things are actually going to be cheaper when there are not so many overlapping areas. But I think, first of all, I don't believe any of this will really work until the State says they want emergency care, and I am willing to support it, and in the final analysis, after the 3-year period of this is up and they are organized, I don't believe the deficit is to that much. The majority of the people have some sort of health care coverage to pay for the emergency bills.

Speaking for our rural hospitals, I don't know of a rural hospital yet that hasn't sent an ambulance out, picked up the person, taken them into the E.R. room and treated them before they ever found out whether they had a dollar in their pocket or not. This is not true in the large cities, and perhaps it has to be this way.

I know in our area alone we have a policy set by our board of trustees in both hospitals that any emergency care, any emergency patient is taken care of prior to any worry about the money. Actually, our bad debts amount to about 2½percent per year, so really it can be done.

Senator CRANSTON. Have you received or are any of you aware of any funding from the programs supported by the Department of Transportation?

Mr. LINDBERG. Yes, sir; we have been working very closely with the California Office of Traffic and Safety and with the Governor's office. We have their support and interest. The only dollars in the game in the seven-county area we described this morning to date are $11,000 I have been able to get out of RMP for 6 months, ending the 30th of June, which compel planning as endorsed to make available this process of development.

Senator CRANSTON. Did you get any money from the Department of Transportation?

Mr. LINDBERG. We are working hopefully with the county of Shasta, the sponsoring county, since a Government agency needs to make the request. The Office of Traffic Safety has reviewed and recommended approval upon receipt of that of $28,900 to assist in this formula phase, which is a bizarre operation which is identical to—sometimes we think there is a realization with our formula. Otherwise, they have been singularly unable to spend money, although they have been highly motivated to do so because they have the need for regional authority to attest to the fact that that ambulance is needed here and could be had from the other resources. Their dollars are good dollars, they propose to use them in full. Their dollars are frozen dollars.

Senator CRANSTON. Mr. Harland, at one time you suggested that one way to deal with the seasonal recreational community problem would be to provide a vacation home for visiting physicians. Has there ever been any experience with that kind of a program?

Mr. HARLAND. I think we would find some examples of health care providers spending their summer months in recreation areas. To my

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knowledge, California, or at least in southern California, has had no organized attempt to lure physicians away from San Francisco, for example, or Los Angeles, which might be easier than San Francisco. It has been a practice in the rural communities during the summer months, recreation months.

May I add one remark here, one comment to what Carl said to your last question. The office of traffic and safety here in California, in spending DOT moneys, looks to the emergency medical care council being formed to make judgments relative to the need for ambulance and other emergency care resources. In other words, when a community asks for money for an ambulance, OTS will ask our EMT council, how does this stack up in terms of priorities to the entire area? There has been a little dribble of that kind of money that comes through the faucet.

As Mr. Harland mentioned, we had a promise of a $20,000 planning grant. Unfortunately, we have to cloak that in all sorts of subterfuge, indicating that it is a traffic safety thing; it is not a general emergency program, it is a traffic safety program.

Senator CRANSTON. On that point, have any of you been able to bring the highway patrol, the sheriff's office, and any of the other groups you have mentioned into your program?

Mr. HARLAND. Yes.

Perhaps Jerry will want to speak on that.

Mr. FIKES. We have recently had a new measure of participation, an organized training program, trying to cover people that we have identified out of these rural areas, that we set up about a 30-hour program of training that covers 30 of the CDF fire captains who will be strategically disbursed throughout the Shasta and other counties, with 18 of the U.S. Forest Service people in our area, with some of the people from the Park Service, State Park Service, some of the people from the other governmental agencies, in key locations, such as Division of Highways. They are located in odd spots that make them strategic, so we have had that measure of participation. There is very little support as far as the highway patrol is concerned. If it does come from Sacramento, they don't know.

Senator CRANSTON. I want to thank each of you. You have been extremely helpful in testifying to a very important aspect of this matter. Thank you.

Mr. FARMER. It has been a privilege.

Senator CRANSTON. Thank you for coming so far.

Our next witness is Dr. J. E. Dunphy, chairman of the Board of Regents, American College of Surgeons, and professor and chairman of the Department of Surgery, University of California, San Francisco Medical School, accompanied by Dr. Oscar Hampton, Jr., director of Trauma Division, and assistant director of the American College of Surgeons.

In order to complete the hearings we have and the schedule we have, I am going to have to ask if you will try to summarize whatever you have in about 5 minutes, to leave me about 10 minutes for questioning.

Thank you very, very much.

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STATEMENT OF DR. J. E. DUNPHY, CHAIRMAN, BOARD OF REGENTS, AMERICAN COLLEGE OF SURGEONS; ACCOMPANIED BY DR. OSCAR HAMPTON, JR., DIRECTOR OF TRAUMA DIVISION

Dr. DUNPHY. Mr. Chairman, I am Dr. J. E. Dunphy, chairman of the Board of Regents of the American College of Surgeons, and professor and chairman of the Department of Surgery, University of California. I am accompanied by Dr. Oscar Hampton, Jr., assistant director, and director of the Trauma Division.

We welcome the invitation to present the views of the college on S. 504, a bill which should lead to improvement of the horrible state of emergency medical services in too many areas of the country.

This statement is a summary of the complete text. I respectfully request the inclusion in the record of the complete testimony and the attachments.

Senator CRANSTON. It will become a part of the record as will all of the prepared statements, at the conclusion of your testimony.

Dr. DUNPHY. The American College of Surgeons during the past 51 years has waged a strictly volunteer effort to upgrade the quality of emergency medical service. This effort has been an activity of the Committee on Trauma and its subordinate regional committees of which there are 50 in State committees except California has two, a northern and a southern committee. There are six committees in large metropolitan areas about the country given State committee status, making a total of 57. Within the States there are over 300 local committees. Altogether over 3,400 physicians serve on the American College of Surgeons Trauma Committees, all strictly as volunteers.

An emergency medical services system is comprised essentially of emergency ambulance service and in-hospital emergency care. An essential part of in-hospital emergency care is the emergency department or emergency room service.

The first standards for emergency ambulance service ever promulgated in this country came from the American College of Surgeons. These include guidelines for each component of an effective emergency ambulance service.

These components are: vehicles, which must afford adequate space in the patient compartment for storage of equipment and for an attendant to provide continuing emergency care during transit.

Personnel, the driver and at least one attendant, must be well trained in emergency care. One method of training such personnel is described in this college publication, "Curriculum for training Emergency Medical Technicians-Ambulance" [indicating.] Emergency medical technicians is a term generally used to denote well trained and qualified ambulance attendants.

Essential equipment: This college document, "Essential Equipment for Ambulances" [indicating,] is the accepted standard nationwide. It is often referred to by both governmental and nongovernmental agencies and organizations.

Two-way radio equipment for voice communications with a central ambulance dispatcher and hospital emergency department is essential. This has been elaborated on by other speakers and I will not spend more time on that.

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The college, during the past two decades, has had an active program designed to improve hospital emergency services. The first published standards for hospital emergency departments in the United States came from the college. These were promptly embraced by the Joint Commission on Hospital Accreditation and distributed to accredited hospitals. Subsequently, the Joint Commission has published its own set of standards for hospital emergency services utilizing members of college trauma committees as consultants.

This college document, "Guidelines for Design and Function of a Hospital Emergency Department", has been widely distributed gratis to fulfill requests for it. It also is in the packets previously distributed to members of the committee.

The college has produced 12 motion pictures on facets of the emergency medical care of the seriously injured. Prints are available for loan or sale to physicians or hospitals.

The crucial ingredient for excellent medical care in the emergency department is physician expertise, skill, and availability. Currently only 17 to 20 percent of hospitals have a physician in-house 24 hours-a-day and a smaller percentage in the emergency department at all hours. If ambulance personnel in transit are to communicate with physicians in the emergency departments by radio, physicians must be physically available to receive the calls.

Deterrents to the development of effective emergency medical care systems are, first, apathy of citizens, governmental officials, the medical profession and hospital administrators, and second, of great importance, the economics of emergency ambulance services and, in many hospitals, the economics of the operation of an emergency department. The cost of a first-class emergency ambulance service requires about six emergency calls per-day per-vehicle to reach the break-even point, provided the service has a 90 percent collection rate. Unfortunately, as we heard earlier today, the collection rate is usually much lower.

Emergency ambulance service should be the third governmental assured emergency service; the first two are law enforcement and fire-fighting services. Emergency ambulance services may be governmental—fire department, police, or tax-supported hospital based—for-profit commercial or funeral director services, or volunteer services. The latter are particularly appropriate for small communities. Governmental-provided services are particularly appropriate for large cities but even in these a for-profit commercial or funeral director service can be franchised and subsidized by the local government. A volunteer fire department provides a good base for the development of a volunteer ambulance service. Volunteers currently provide some of the best emergency ambulance service in this country. Such services could be promoted by Government officials and all others concerned in many relatively rural areas which now lack good services.

The American College of Surgeons would welcome Federal legislation such as Senate bill 504. Actually, Federal legislation can make two major contributions. First, it can establish acceptable standards and see that they are recognized for emergency medical systems and particularly for grants support. Second, for Federal funding, an entire emergency medical system should be required, not merely single

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components. The absence of any component makes the system ineffective. The American College of Surgeons Standards for Emergency Ambulance Services could be the guideline although the standards of both the Department of Transportation and some agencies in the Department of HEW are comparable to the college standards.

The American College of Surgeons urges that any Federal legislation provide for funding of proposals from a community or a group of communities, perhaps irrespective of State boundaries, as well as for statewide proposals. Actually, in many States a statewide emergency ambulance service system is impracticable, although if there is a State plan, it would be reasonable that intrastate regional systems should conform to the State plan. State governmental agencies, just as Federal Agencies, can provide stimulating leadership. However, decisions as to the preferable type of emergency ambulance service, how to obtain and maintain a first-rate service and how to fund it are best made community by community, utilizing the judgment of representatives of local Government, the medical profession, hospitals, ambulance service providers and interested citizens.

Finally, as I interpret it, section 638a of Senate bill 504 would provide some funds for research in the medical care of traumatized patients, as previously funded by the National Institute of General Medical Sciences. Continuing research in trauma is crucial if the care of the injured is to be improved nationwide. Many people believe that surgeons now know everything that is needed to be known about the treatment of the injured patient. This is just not true even though medical care of the injured in this country is probably the best in the world. Just as continuing research is crucial to improved management of cardiac and cancer patients, so it is essential for improved care of the injured.

Mr. Chairman, I want to thank you for the opportunity to present the views of the college on this important issue.

Senator CRANSTON. Thank you very much for a very helpful statement.

I want to take note that the American College of Surgeons has taken a national leadership in developing standards for emergency services. I believe your body was the first to develop standards for the emergency ambulance?

Dr. DUNPHY. That is correct.

Senator CRANSTON. And you also helped develop a training program for paramedics.

First of all, do you have any comments on the HEW testimony this morning?

Dr. DUNPHY. I was pleased to see that the administration was interested in the problem. I think it's a little paradoxical that they don't want a categorical approach to trauma, but they have accepted a categorical approach for heart disease, cancer. From the point of view of people under the age of 35, trauma is a far greater national problem than either heart disease or cancer.

Seantor CRANSTON. That's a very good point. I wish you had given me that question to ask HEW before HEW left with respect to trauma, putting it in context.

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How do you think Federal funds can lead to improvement in emergency medical services for the States and the communities?

Dr. DUNPHY. I think, as I expanded upon in the main statement, the first is, as we have heard repeatedly today, the standards, although they are published by the college and are available, simply are not met, very often due to inadequate funding. And, secondly, you heard repeatedly the difficulties of organization. A Federal program could bring about the type of organization that we need, avoiding duplication of unnecessary facilities and providing relating facilities so that from the farthest community to the main center adequate care can be provided.

Senator CRANSTON. If emergency ambulance services are to be a third governmental service, as you suggest, why did you not include national defense in that? Is that something separate?

Dr. DUNPHY. I think I'd like to have Dr. Hampton answer that. Dr. Hampton has been involved on all scenes in trauma.

Dr. HAMPTON. If I understood your question, Senator, if it's to be a third governmental service, why did we not include national defense?

Senator CRANSTON. You placed it third after police protection, fire protection. National defense protection would possibly be on that list, also.

Dr. HAMPTON. This reference was particularly for the communities that do provide their police and fire protection services. We contend the community government should step in and assure—we use "assure" rather than "provide."

Senator CRANSTON. If it's to be the third governmental service, what do you see happening and what should we do about any problems that would be created for the commercial or funeral director providers of ambulance services, who presently provide those services?

Dr. HAMPTON. I believe in the full statement before the committee this is adequately explained. One of the finest ways for a government of a community to assure an ambulance service is to franchise and subsidize a commercial service.

Senator CRANSTON. You see a contract relationship?

Dr. HAMPTON. That is correct. The people from up in the northeast part of California told of a 30 percent failure of collection rates. It's higher in many other areas in the calls unpaid for, ambulance calls unpaid for. Ninety days after the call has been made, if the community, the government, will pick up that fee, these people can stay in business, and this is done in many communities around the country.

Senator CRANSTON. What do you see as the role for the Department of Transportation?

Dr. HAMPTON. The DOT program has been effective but very spottedly, but effective to some extent in practically every State. They are limited by the fact that they are confined to the highways, they cannot be involved in the hospitals under the legislation of 1966.

I think the deficiency, Senator, is they must go through State governments and the State emergency medical services program must compete with the other highway safety programs for the State gov-

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ernment's priorities. Too often emergency medical services is put at too low a priority. They do not go direct from the DOT or its National Highway Safety Administration to a community or group of communities within a State.

The DOT program has lead to some improvement in woefully weak areas which is commendable. We heard from HEW representatives that their $8 million had been used to support efforts in communities with fairly effective EMS services to improve them so they could be used as demonstration projects. Actually, the communities funded under the HEW program already had services of a quality which, if such quality existed nationwide, you and other gentlemen of the Congress probably would not be advocating EMS legislation.

Senator CRANSTON. What do you see as the potential role of helicopters in providing adequate emergency medical services transportation?

Dr. HAMPTON. Helicopter ambulance service must be supplemental to an effective ground service. The ground ambulance service will always be the major means of transporting patients to hospitals from the scene of an acute illness or injury. Of course the helicopter has a great part to play where there are distances to be covered, where there are terrain obstacles such as lakes to get in to the scene. It is a very expensive service.

All of the demonstration projects of DOT and others have clearly demonstrated that for it to be economically feasible, helicopter service must serve multiple functions, crime detection, traffic surveillance, tornado watches, and be on call for emergency ambulance service. The helicopter is not a good place to transport a seriously injured or critically ill person, although it may be the lesser of two evils.

Senator CRANSTON. Why, is it just not stable?

Dr. HAMPTON. It is so noisy one cannot hear the blood pressure taps and there is tremendous vibration. The space is not good. If there is one patient, there is room for an emergency medical technician to carry on emergency medical care, but, if there is more than one, he is so cramped that he cannot do it.

Senator CRANSTON. They are making some pretty big helicopters now, but I guess they are pretty noisy.

I thank you both very much. You have been most helpful.

[The prepared statement of the American College of Surgeons as submitted by Dr. Dunphy, follows:]

PREPARED STATEMENT OF THE AMERICAN COLLEGE OF SURGEONS AS SUBMITTED BY DR. J. E. DUNPHY, CHAIRMAN, BOARD OF REGENTS

I am Dr. J. E. Dunphy, Chairman of the Board of Regents of the American College of Surgeons and Professor and Chairman of the Department of Surgery, University of California at San Francisco. Accompanying me is Dr. Oscar P. Hampton, Jr., Assistant Director and Director of the Trauma Division of the College. We welcome the invitation and the opportunity to present the views of the College on S. 504, a bill meant to improve the almost nationwide grim state of Emergency Medical Services (EMS).

TRAUMA ORGANIZATION OF ACS

Before proceeding with comments on the legislation, I would like to review with you the deep involvement of the ACS in EMS.

For 50 years, the ACS through its Committee on Trauma has waged a strictly volunteer effort to upgrade the quality of emergency ambulance services.

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The Committee on Trauma has an organized subordinate Committee on Trauma in each state and committees in six large metropolitan areas which are given state committee status so the total is 57 state committees. Within the states, local committees are organized and active. Local committees total 319. Altogether over 3,400 physicians serve on ACS trauma committees, all strictly as volunteers as detailed in the Bulletin of the American College of Surgeons, Volume 57, Page 9, June 1972.

[The material referred to appears at the end of this statement.]

The majority of these state and local committees wage volunteer efforts or participate with governmental agency programs to upgrade EMS in their respective communities. Utilizing the documents prepared by the College Committee and some by federal agencies, they have established many training programs voluntarily for those ambulance personnel who could and would attend them.

They have tried to persuade ambulance service providers to equip their vehicles according to the ACS Essential Equipment for Ambulances, regarded as a national standard by most providers of ambulance services medical organizations and governmental agencies.

Phases of EMS.—The phrase "emergency medical services" is used most often to connote pre-hospital EMS or, in other words, emergency ambulance services, At times, however, the phrase is used to include both pre-hospital and hospital emergency department (ED) services. Both, with adequate communications, should be integrated into a system, the community EMS system.

I address myself first to pre-hospital EMS. The first Standards for Emergency Ambulance Service promulgated in this country were developed by the college's Committee on Trauma and approved by the Regents of the college in 1967. The first nationally accepted list of equipment needed on ambulances was the ACS "Minimum Equipment for Ambulances", 1959. This document was revised in 1969 to become "Essential Equipment for Ambulances". Using a document on training of ambulance and rescue personnel, developed within the National Academy of Sciences, a "Curriculum of Training of Emergency Medical Technicians—Ambulance", a term generally adopted to denote well trained and qualified ambulance attendants, was developed and currently is widely used for training ambulance personnel.

Components of Pre-Hospital Emergency Services.—The components of a first-class community pre-hospital EMS system, emergency ambulance service, are now well known and recognized. They are:

Vehicles affording adequate space in the patient compartment for storage of equipment and for an attendant to provide continuing emergency care during transit,

Personnel; a driver and at least one attendant, both well trained in emergency care,

Essential equipment on the vehicle,

Two-way radio equipment for voice communication with a control dispatcher and between the ambulance and hospital emergency departments (ED) whereby the latter can be alerted to the impending arrival of a critically injured or ill patient. In addition, physicians in the ED may advise the ambulance personnel on the care of such patients.

These components appear so easy to provide, yet relatively few communities have them. To be sure, some do. The volunteer efforts of college committees and those of other medical organizations, such as the American Academy of Orthopaedic Surgeons, plus the efforts of agencies of the Department of Transportation and Health, Education and Welfare, have led to improvement, in some communities particularly during the last decade. Such improvement, however, is very spotty. No state can boast that its entire area has first-rate emergency ambulance service.

Emergency ambulance service should be the third community-provided, or assured, emergency service. The first two are law enforcement and fire-fighting services. Community officials may provide emergency ambulance service directly by means of a fire department service, such as those in Baltimore, Miami, Jacksonville, Houston, Seattle and other cities. They may provide a police department service, but for many reasons a fire department service is preferable. In those cities with a city hospital, a hospital-based and administered service may be established. Community officials may assure an adequate service by utilizing franchised and subsidized commercial ambulance services or funeral director services. In some communities, particularly small ones, officials may lead the development of volunteer rescue and ambulance services. Volun-

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teers currently provide some of the best services in the country, for example, those in New Jersey, Virginia, nothern Wisconsin, Ohio and northern Pennsylvania.

Deterrents to the development of effective services are apathy of governmental officials, citizens—"I won't need an ambulance"—, the medical profession, and hospital administrators, and, of great importance, the economics of emergency ambulance service. One emergency call per day is likely to be generated by each 10,000 population. Six calls a day at average rates are required for the provider to reach a barely breakeven level of income versus expense. Current providers of for-profit services also provide non-emergency ambulance services. Some use income therefrom to stay in business even though the number of emergency calls may be insufficient to balance their books. Moreover, collection rates for emergency services often are not good. Of course, vehicles and personnel on non-emergency calls are not available for emergency calls, an undesirable situation.

The college supports federal legislation designed to overcome public and official apathy regarding emergency ambulance services and to provide financial support, at least in part, for effective emergency services meeting the already known standards. Funding to secure vehicles, equipment including radio equipment, and training of personnel must, in many instances, be supplemented with some operational funds so that salaries paid personnel will be large enough to attract and retain competent people as ambulance attendants and eliminate the currently frequent turnovers in personnel.

A federal program to improve emergency ambulance services should provide a mechanism to support community or a group-of-community services, as well as statewide services. The latter usually are impracticable. State agencies, however, may have the important supervisory function to insure integration with a state-wide plan. The problems and their solutions vary widely between metropolitan areas, moderately sized towns and rural areas. State governmental agencies, just as federal agencies, can provide leadership but decisions as to the preferable type of emergency ambulance services, how to obtain and maintain a first-rate service and how to fund it are best made community by community, utilizing the judgment of representatives of the local government, the medical profession, hospitals, ambulance service providers and interested citizens.

Helicopter Ambulance Services.—Helicopter Ambulances Services currently are widely advocated. They offer advantages in certain specialized situations but the great need across the country is for effective ground emergency ambulance services incorporating the components outlined previously. Helicopter services always should be grafted onto the ground ambulance system and used to overcome obstacles to the latter such as freeway traffic jams, long distances to be travelled and inaccessability to the scene. It appears that if a ground ambulance can reach the scene and then a hospital with a good emergency capability in 45 minutes, it is preferable to a helicopter for that trip.

Helicopter ambulance services have many disadvantages. The aircraft is noisy and creates considerable vibration. Continuing emergency care during transit is difficult as the room for the attendant is minimal. Obtaining accurate blood pressure readings is difficult. The economics of such service requires that the aircraft and personnel be used for multiple purposes such as traffic surveillance, crime detection, tornado watches, et cetera, not merely for ambulance service.

Hospital Emergency Services.—The other segment of the emergency medical services system under its broad definition concerns medical care in hospital emergency departments. Improvement of these is principally the responsibility of hospital medical staffs and administrations rather than of community governmental officials and citizenry.

The college has made voluntary efforts to upgrade hospital emergency department services. Just as for the first U.S. emergency ambulance standards, the Committee on Trauma, with Regental approval, published in 1963 the first "Standards for Hospital Emergency Departments", which were promptly embraced by the Joint Commission on Hospital Accreditation and distributed to accredited hospitals. Subsequently, the latter has published its own set of "Standards for Hospital Emergency Services", utilizing the original college standards as a base. In 1970, the committee published a brochure, "Design and Function of a Hospital Emergency Department", to replace a previously published, 1964, "Model of a Hospital Emergency Department". Each has been

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widely distributed gratis. During the last two years, the college has produced 11 motion pictures on facets of the care of the seriously injured in the ED. Prints are available for loan to physicians or hospitals.

Currently, not enough hospitals provide optimum ED services. The crucial ingredient for excellent medical care at this level is physician expertise, skill and availability. A Public Health Service official stated recently that only 17 to 20 per cent of hospitals have a physician in-house 24 hours a day. Certainly, a much smaller percentage have one in the emergency department at all hours. If ambulance personnel in transit are to communicate with physicians in the ED's by radio, physicians must be physically available to receive the calls.

Hospital administrations must provide adequate emergency department facilities and equipment. The majority currently do so, but very few have provided the necessary radio equipment for two-way communication with ambulance personnel.

While every community with a hospital should have at least one with an emergency department having optimal facilities, equipment and physician staffing and many multi-hospital communities should have several, every hospital does not necessarily need one. Duplication of emergency services in two or more closely located hospitals often is wasteful of money and manpower and tends to create unhealthy competition. Each community's medical profession and hospital administrators should consider this problem and in association with governmental officials select the preferable hospitals to maintain optimal emergency services with, if necessary, improvement in their essential components.

Such an activity is part of categorization of a community's hopsitals. Guidelines for categorization have been developed at a conference of representatives of interested medical organizations under auspices of the Commission on Emergency Medical Services of the American Medical Association. The Committee on Trauma of the college had several conference representatives, and its representation on the Commission chaired an ad hoc committee that arranged it. Copies of the Guidelines are available from the AMA.

Congressional legislation designed to improve hospital emergency services should lead to their improvement as needed and the college would welcome it. The impact of such legislation certainly should motivate all concerned to seek means of improvement.

Adequate funding for necessary improvements would stimulate them. Some hospitals may need funds to improve emergency facility design and size and to overcome equipment deficiencies. Most hospitals are likely to need financial assistance to purchase and install radio equipment for communications with ambulance personnel. Radio voice communications between each hospital in a community are essential for adequate preparedness for a mass casualty situation, as is likely to occur in all kinds of disasters.

In summary, in the opinion of the college, it is desirable to have congressional legislation designed to achieve an optimal emergency medical services system, including both pre-hospital and hospital services, in every community which now is without high quality services. Such an achievement is practically certain to save lives, reduce morbidity and reduce the gross expenditures for hopsitalization and medical services. The college will continue its volunteer efforts to achieve that end but would welcome legislation directed toward the same objective.

Thank you, Mr. Chairman, for the opportunity to present the views of the college on this important issue. We will be happy to try to answer any of your questions.

Addendum to Statement of the American College of Surgeons

Coordination among Federal Agencies and between Federal, State and Local Agencies on Emergency Medical Services (EMS) Activities.—Only the Departments of Transportation (DOT) and Health, Education and Welfare (HEW) have relatively comprehensive programs designed to improve EMS. However, "Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services", a National Academy of Sciences—National Research Council (NAS-NRC) document produced by its Committee on Emergency Medical Services (five of the twelve physician committee members are members of the ACS Committee on Trauma) identifies other federal agencies with some

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EMS activities. These are the Departments of Labor, Commerce and Defense, the Veterans Administration and the Small Business Administration. Each is said to have programs involving one or more elements of an EMS system.

The Department of Transportation—The D. O. T. EMS program is an activity of the National Highway Traffic Safety Administration (NHTSA). The NHTSA program currently is the most significant and effective federal EMS program, probably because NHTSA has funds to offer the states on a matching basis. Moreover, this program under Highway Safety Standard 11 carries the threat of the penalty clause for failure of a state to comply. To the best of my knowledge, however, it has never been imposed either for deficiencies in implementation of Standard 11 on EMS or any other highway safety standard stemming from the Highway Safety Act of 1966.

The EMS program of NHTSA has several weaknesses. On paper, it is limited to the street and highway crash injuries, but fortunately it has been broadened to include EMS for other injuries and for illnesses such as heart attacks. The program involves only pre-hospital EMS, that is, emergency ambulance and rescue services. In-hospital EMS is not included. Although the NHTSA program has led to considerable improvement in some areas of most states, it has not led to any effective statewide system insofar as I know. At the state level, EMS under the NHTSA program must compete for funds with other highway safety programs and, as I understand, what EMS gets in each state depends upon priorities set by the governor. In many states, EMS apparently has not been ranked very high. It appears that benefits in the states have come spottily in relatively rural areas and only a minority in metropolitan areas.

Department of Health, Education and Welfare—The major EMS effort in HEW is an activity of the Division of Emergency Health Services (Div. EHS). This Division has comparable objectives to those of NHTSA, although its programs, as those of other HEW agencies, may and often do include both pre-hospital and in-hospital EMS. In HEW, many—perhaps too many—agencies have some EMS activities on paper. Coordination between them seems to have been less than is desirable, a statement verified substantially by the NAS-NRC publication mentioned above. That report identifies 17 HEW programs involving one or several facets of EMS, nine in the Health Services and Mental Health Administration (HSMHA), five in the National Institutes of Health (NIH) and three in other HEW agencies. Seven other programs involving one or more elements of EMS are identified in other federal departments in addition to the MAST program, a cooperative effort between D. O. T., HEW and the Department of Defense. It appears reasonable that the HEW effort in EMS is severely handicapped by splintering of the responsibilities, a lack of funds and the absence even on paper of a punitive power for non-compliance. Without the latter, HEW agencies can only provide guidelines and advocate improvement in the states and communities. Without funds to help support EMS activities in the states and communities, their guidelines and advice often appear to be ignored.

It seems reasonable that all HEW programs in EMS and the funds appropriated for them should be consolidated in a single HEW agency. In 1972, it appeared that some progress in this direction was imminent when an EMS Special Project Office in HSMHA was announced by the Director. Such a development presumably could coordinate or consolidate all EMS efforts in HSMHA but not necessarily all HEW programs. Insofar as it can be learned the EMS Special Project Office has not reached fruition.

Reorganization and consolidation to place an EMS Special Project Office in the office of the HEW Assistant Secretary for Health and Scientific Affairs appears preferable. Such a plan should lead to fully coordinated efforts in HEW and between it and other federal programs directed toward implementation at the state and local levels. The effectiveness of regional and state representatives of the Public Health Service should be increased particularly with municipal and county health departments, something that, it appears, could be improved.

In addition, HEW needs an office to act as a clearing house for all EMS project proposals requiring federal financial support that are received from state governments, local governments or non-profit private organizations. Reports indicate that too often in the past, meritorious proposals have been submitted to the wrong HEW agency and, therefore, they were rejected. Had these proposals reached another HEW agency, they might have received favor-

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able consideration and funding. It does seem that a single office in HEW could receive all project proposals and then route them to the appropriate agency or agencies in the Department for consideration and reply to those who have proposed them.

In summary, it is reasonable that coordination of EMS programs within HSMHA and throughout HEW should be improved. Coordination could be improved by centralizing all department activities in a high level agency which would receive all project proposals and insure that they are considered by the proper HEW agency. Even with such arrangements, adequate funds to support meritorious proposals from state or local governments of non-profit private organizations and some kind of enforcement powers seem crucial to any nationwide improvement in EMS stemming from HEW or other federal efforts. Coordination for EMS activities in NHTSA and in the Division EHS of HEW has been good and satisfactory. Each, however, must go its own way, NHTSA with funds and with some punitive powers available on paper and the Division EHS with relatively little money and without any powers to enforce what it advocates.

[The following material referred to in Dr. Dunphy's testimony, was subsequently supplied for the record:]

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SUMMARY OF STATEMENT OF AMERICAN COLLEGE OF SURGEONS ON S. 504

March 9, 1973

I am Dr. J. E. Dunphy, Chairman of the Board of Regents of the American College of Surgeons (ACS) and Professor and Chairman of the Department of Surgery, University of California at San Francisco. Accompanying me is Dr. Oscar P. Hampton, Jr., Assistant Director and Director of the Trauma Division of the College. We welcome the invitation to present the views of the College on S. 504, a Bill which should lead to improvement in the deplorable state of emergency medical services (EMS) in too many areas of this country. This statement is a summary of the complete text. I respectfully request inclusion in the record of the complete testimony and the attachments.

ACS during the past 51 years has waged a strictly volunteer effort to upgrade the quality of EMS. This effort has been an activity of the ACS Committee on Trauma and its subordinate regional committees of which there are 57 with state committee status - one in each state except my own state of California has two, a Northern and a Southern California Committee. Also, there are six committees in large metropolitan areas about the country that have state committee status. Within the states there are over 300 local committees. Altogether, over 3,400 physicians serve on ACS trauma committees, all strictly as volunteers.

An EMS system is comprised essentially of emergency ambulance service and in-hospital emergency medical care. An essential part of in-hospital emergency care is emergency department (ED) or emergency room service.

The first standards for emergency ambulance services ever promulgated in this country came from the College. These include

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guidelines for each component of an effective emergency ambulance service. These components are adequate vehicles, trained personnel, essential equipment and two-way radios. College documents on training personnel and essential equipment for ambulances are included in packets previously distributed to the members of the Committee.

Vehicles must afford adequate space in the patient compartment for storage of equipment and for an attendant to provide continuing emergency care during transit.

Personnel - driver and at least one attendant must be well-trained in emergency care. One method of training such personnel is described in this College publication, Curriculum of Training of Emergency Medical Technicians - Ambulance. Emergency medical technicians (EMTs) is a term generally used to denote well-trained and qualified ambulance attendants.

Essential equipment on the vehicle - This College document, Essential Equipment for Ambulances, is the accepted standard nation-wide; it is often referred to by both governmental and non-governmental agencies and organizations.

Two-way radio equipment for voice communications with a central ambulance dispatcher and hospital EDs is essential. The lack of two-way radio communications currently is probably the most glaring deficiency in EMS systems. Such communications are crucial if the ED is to be alerted to the impending arrival of a critically injured or ill patient and if physicians in the ED are to advise ambulance personnel at the scene and enroute on the care of such patients.

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The College, during the past two decades, has had an active program designed to improve hospital ED services. The first published standards for hospital emergency departments in the United States came from the College. These were promptly embraced by the Joint Commission on Hospital Accreditation (JCAH) and distributed to accredited hospitals. Subsequently, JCAH has published its own set of standards for hospital emergency services, utilizing members of College trauma committees as consultants during their development. This College document, Guidelines for Design and Function of a Hospital Emergency Department has been widely distributed gratis to fulfill requests for it. It also is in the packets previously distributed to members of the Committee. The College has produced 12 motion pictures on facets of the emergency medical care of the seriously injured in the ED. Prints are available for loan or sale to physicians or hospitals. The crucial ingredient for excellent medical care in the ED is physician expertise, skill and availability. Currently, only 17 to 20 per cent of hospitals have a physician in-house 24 hours a day and a smaller percentage in the ED at all hours. If ambulance personnel in transit are to communicate with physicians in the EDs by radio, physicians must be physically available to receive the calls.

Deterrents to the development of effective EMS systems are first, apathy of citizens, governmental officials, the medical profession and hospital administrators, and second, and of great importance, the economics of emergency ambulance services and, in many hospitals, ED services. The cost of a first-class emergency ambulance service requires about

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six emergency calls per day per vehicle to reach the break-even point, provided the service has a 90 per cent collection rate. Unfortunately, the collection rate is usually much lower.

Emergency ambulance service should be the third governmental assured emergency service; the first two are law enforcement and fire fighting services. Emergency ambulance services may be governmental (fire department, police, or tax-supported hospital based), for-profit commercial or funeral director services, or volunteer services. The latter are particularly appropriate for small communities. Governmental-provided services are particularly appropriate for large cities but, even in these, a for-profit commercial or funeral director service can be franchised and subsidized by the local government. A volunteer fire department provides a good base for the development of a volunteer ambulance service. Volunteers currently provide some of the best emergency ambulance services in this country. Such services could be promoted by governmental officals and all others concerned in many relatively rural areas which now lack good services.

The College would welcome federal legislation such as Senate Bill 504. Actually, federal legislation can make two major contributions. First, it can establish acceptable standards for EMS systems to be supported by grants. Second, for federal funding, an entire EMS system should be required, not merely single components. The absence of any component makes the system ineffective. The ACS Standards for Emergency Ambulance Services could be the guidelines, although the current

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standards of both the Department of Transportation and of some agencies in the Department of Health, Education and Welfare are comparable to ACS standards.

ACS urges that any federal legislation provide for funding of proposals from a community or a group of communities, perhaps irrespective of state boundaries, as well as for state-wide proposals. Actually, in many states, a state-wide emergency ambulance service system is impracticable, although if there is a state plan, it is reasonable that intra-state regional systems should conform to the state plan. State governmental agencies, just as federal agencies, can provide stimulating leadership. However, decisions as to the preferable type of emergency ambulance service, how to obtain and maintain a first-rate service and how to fund it are best made community by community, utilizing the judgment of representatives of local government, the medical profession, hospitals, ambulance service providers and interested citizens.

Finally, as I interpret it, Section 638a of Senate Bill 504 would provide some funds for research in the medical care of traumatized patients, as previously funded by the National Institute of General Medical Sciences. Continuing research in trauma is crucial if the care of the injured is to be improved nationwide. Many people believe that surgeons now know everything about the treatment of traumatized patients. This is just not true even though medical care of the injured in this country is probably the best in the world at this time. Just as continuing research is crucial to improved management of cardiac and cancer patients, so

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it is essential for improved care of the injured.

Thank you, Mr. Chairman, for the opportunity to present the views of the College on this important issue. We will be happy to try to answer any of your questions.

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Essential equipment for ambulances

THE EQUIPMENT shown in the accompanying photographs is considered by the Committee on Trauma to be that which is essential if the emergency medical technician (ambulance attendant) is to provide adequate care for the critically ill and injured at the emergency scene and during transport to medical facilities.

These items are:

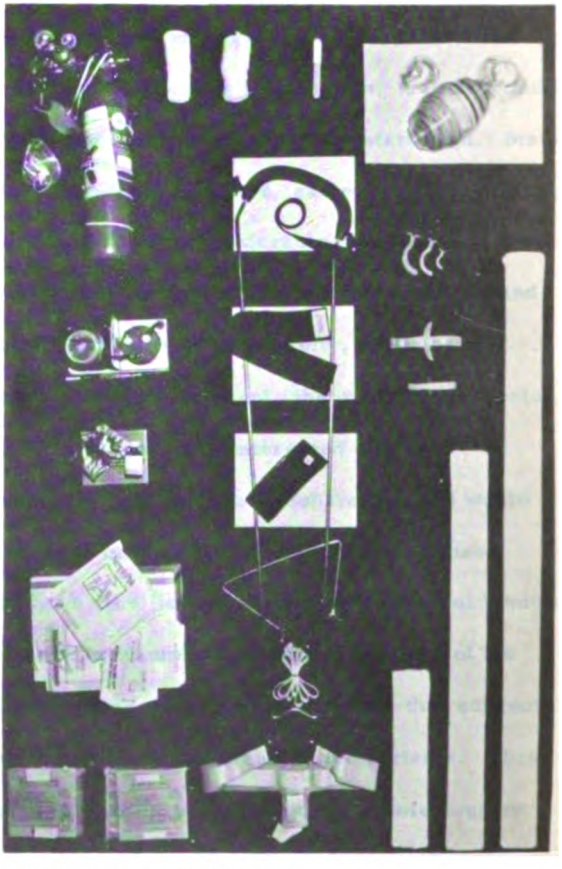
1. Portable suction apparatus with wide-bore tubing and rigid pharyngeal suction tip

2. Hand operated bag-mask ventilation unit with adult-, child-, and infant-size masks. Clear masks are preferable. Valves must operate in cold weather, and unit must be capable of use with oxygen supply

3. Oropharyngeal airways in adult, child, and infant sizes

4. Mouth-to-mouth artificial ventilation airways for adults and children

5. Portable oxygen equipment with adequate



Essential equipment for an ambulance shown here is (left from top down) oxygen; foot powered suction pump; poison kit; obstetrics kit; inflatable splints; (center from top down) soft roller bandages and mouth gag; traction splint with slings, ankle hitch and traction strap; (right from top down) bag-mask resuscitator; oropharyngeal airways; two-way airways; padded boards.

Reprinted from BULLETIN, AMERICAN COLLEGE OF SURGEONS, May 1970

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tubing and semi-open, valveless, transparent masks in adult, child, and infant sizes

6. Mouth gags, either commercial or made of three tongue blades taped together and padded

7. Sterile intravenous agents, preferably in plastic bags, with administration kits

8. Universal dressings, approximately 10 inches by 36 inches, compactly folded and packaged in convenient size

9. Sterile gauze pads, 4 inches by 4 inches

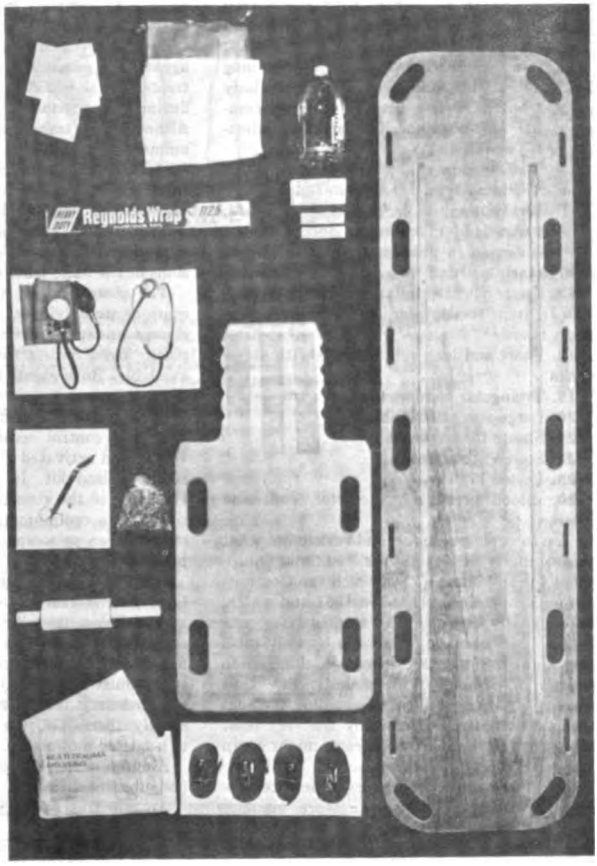
10. Soft roller self-adhering type bandages, 6 inches by 5 yards

11. Roll of aluminum foil, 18 inches by 25 feet, sterilized and wrapped

12. Two rolls of plain adhesive tape, 3 inches wide

13. Two sterile burn sheets

14. Hinged half-ring lower extremity traction



Shown here are (left from top down) gauze pads and burn sheets; aluminum foil; blood pressure manometer cuff and stethoscope; shears; safety pins; adhesive tape; universal dressing; (center from top down) infusion agents, tubing, needles; short and long spine boards; straps for boards.

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splint (ring 9 inches in diameter, over-all length of splint 43 inches) with commercial limb-support slings, padded ankle hitch, and traction strap

15. Two or more padded boards, 4½ feet long by 3 inches wide, and two or more similarly padded boards, 3 feet long, of material comparable to four-ply wood for coaptation splinting of leg or thigh

16. Two or more 15-inch by 3-inch padded wooden splints for fractures of the forearm.

(By local option, similar splints of cardboard, plastic, wire ladder, or canvas slotted lace-on may be carried in place of the above 36-inch and 15-inch boards.)

17. Uncomplicated inflatable splints in addition to Item 16 above or as substitute for the short boards

18. Short and long spine boards with accessories

19. Triangular bandages

20. Large-size safety pins

21. Shears for bandages

22. Sterile obstetrical kit

23. Poison kit

24. Blood pressure manometer, cuff, and stethoscope

The foregoing is the second revision of what was formerly described as a "*minimal* equipment for ambulances" list which the Committee on Trauma established in 1961 and which, subsequently, became the standard for ambulance services throughout the United States and Canada. Its name has been changed to "*Essential* equipment for ambulances," thus giving it more meaning and avoiding the suggestion that it represents only the very least equipment with which an operator might equip his vehicle.

The present list contains seven new items—intravenous agents, blood pressure manometer, cuff and stethoscope, an obstetrical kit, a poison kit, inflatable splints, aluminum foil, and burn sheets.

The tourniquet and elastic bandages which were on the 1961 list are purposely omitted here. In thus forcing a technician to improvise a tourniquet, the Committee on Trauma hopes to make him think carefully before he uses one, thereby minimizing the indiscriminate use of same.

To eliminate the danger of deleterious pressure if improperly applied, elastic bandages have been replaced by soft roller-type bandages.

Of the seven new items, the intravenous agents are essential if the patient is to be treated for shock at the emergency scene and during transportation to medical facilities. Although the technique of infusion is a recommended part of the basic training program for technicians, the exact agents to be used and their use should be determined by the local physician and preferably via radio control.

The technique of blood pressure monitoring is readily acquired during the in-hospital sessions of the basic training program.

The obstetrical kit should contain a minimum of sterile gloves, scissors, umbilical cord clamps or tapes, sterile dressings, towels, and plastic bags. Satisfactory disposable units are available. Burn sheets may be used as drapes if necessary.

Consultants knowledgeable in the field of poisoning control recommend that syrup of Ipecac and activated charcoal be the contents of the poison kit. In the conscious patient, emptying of the stomach by vomiting is considered the optimum treatment in poisoning, except when poisoning is due to corrosives or petroleum products.

Uncomplicated inflatable splints are satisfactory for fractures at and below the knee and at and below the elbow. The hand and foot must be included, and the splint is to be inflated only by lung pressure. Pressure in the splint must be controlled, especially in situations where it is applied in cold weather and, shortly thereafter, the patient is transferred to a heated ambulance.

Aluminum foil is useful as an occlusive and nonadherent dressing.

An effective emergency incubator may be

The Subcommittee on Pre-hospital Emergency Services which on behalf of the Committee on Trauma developed the accompanying list of essential ambulance equipment consists of J. D. Farrington, Minocqua, Wisconsin, chairman; Robert H. Brown, Bethesda; Francis J. Cox, San Francisco; Walter A. Hoyt, Jr., Akron, Ohio; William R. MacAusland, Jr., Boston; Charles S. Neer II, New York; and Watts R. Webb, Syracuse.

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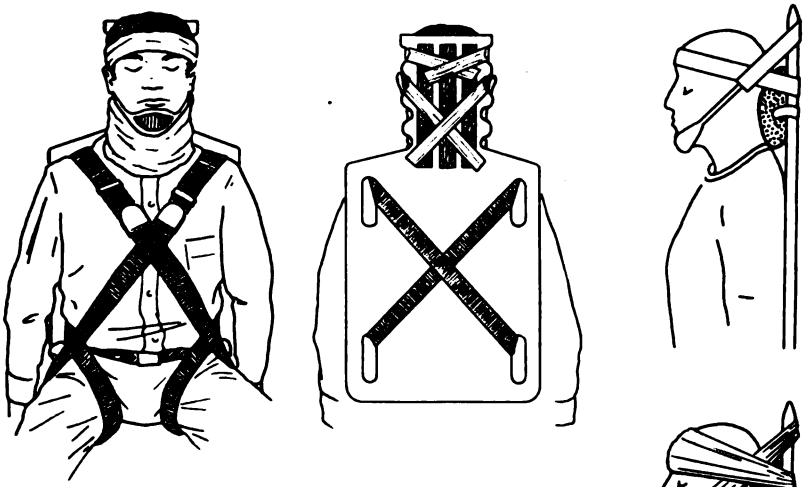


Two 9-foot straps are passed through the upper handholds, crossed behind the board, passed through the lower handholds, passed around the thigh from outside to inside, and finally drawn under and over the thigh to the chest buckle. The straps remain as close as possible to the groin. In the rear view of the short board the position of the straps and fixation of the Velcro fastenings are shown. In the profile view the position of the headband, chin strap and neckroll is demonstrated. End of short board is blunt-tapered. At right is alternate method of fixation (E, page 11).

Equipment for the short board consists of headband, chin strap and neck roll.

Headband (Fig. 1), which measures 42 inches, has:

a. Padded section;
b. Thin webbing 2 inches wide;
c. Strip of looped or pile Velcro.

Fig. 1

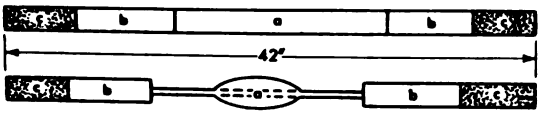
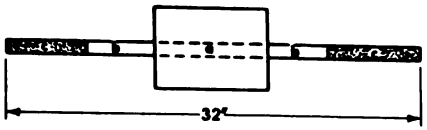


Fig. 2

Fig. 3



Chin strap (Fig. 2), which measures 42 inches, has:

a. Regulation football chin strap;
b. Thin webbing 2 inches wide;
c. Strip of looped or pile Velcro.

Neck roll (Fig. 3), which measures 32 inches, has:

a. Foam rubber roll 8 inches wide and 6 inches in diameter, covered for protection first with plastic, then stockinette, both disposable and easily replaceable;
b. Thin webbing 1-inch wide;
c. Strip of looped or pile Velcro.

Ends (looped or pile Velcro) of straps grab strips of Velcro with hook surface affixed to back of head piece on the short board.

The neck roll is seldom used. It is necessary in rare fracture-dislocations of the neck in which the head is fixed in an awkward position. A heavy folded towel will serve well as a substitute.

Velcro is a fastener. It consists of two strips of nylon tape—one covered with minute hooks, the other with minute loops forming a pile surface—which lock securely when pressed together, open when peeled apart.

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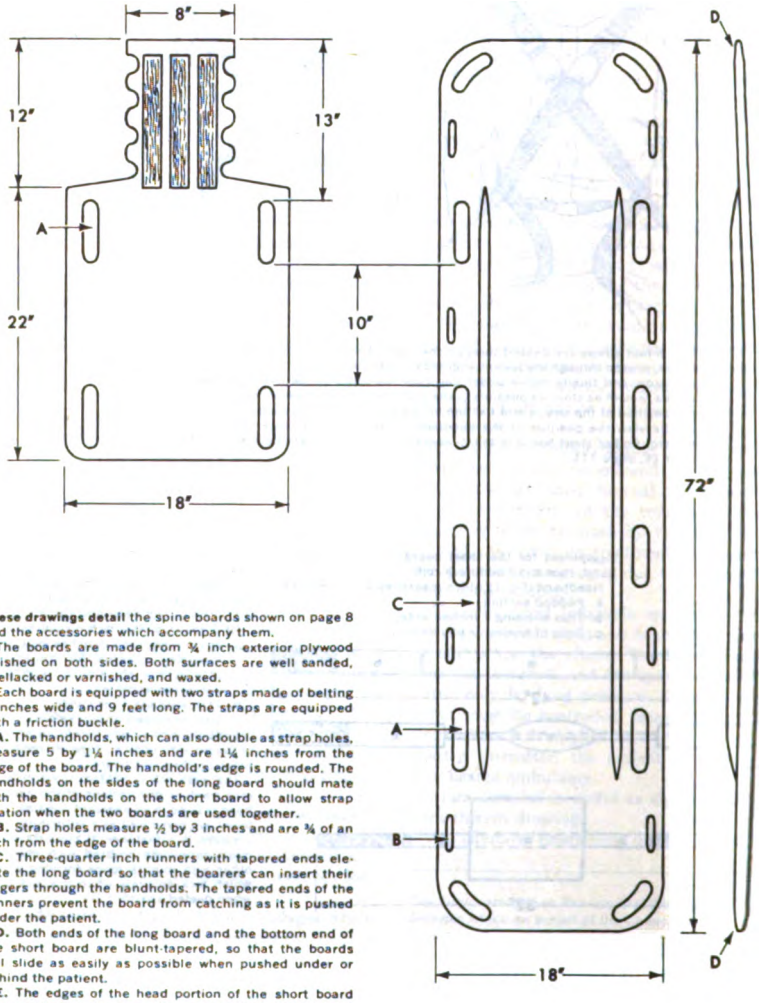

These drawings detail the spine boards shown on page 8 and the accessories which accompany them.

The boards are made from ¾ inch exterior plywood finished on both sides. Both surfaces are well sanded, shellacked or varnished, and waxed.

Each board is equipped with two straps made of belting 2 inches wide and 9 feet long. The straps are equipped with a friction buckle.

A. The handholds, which can also double as strap holes, measure 5 by 1¼ inches and are 1¼ inches from the edge of the board. The handhold's edge is rounded. The handholds on the sides of the long board should mate with the handholds on the short board to allow strap fixation when the two boards are used together.

B. Strap holes measure ½ by 3 inches and are ¾ of an inch from the edge of the board.

C. Three-quarter inch runners with tapered ends elevate the long board so that the bearers can insert their fingers through the handholds. The tapered ends of the runners prevent the board from catching as it is pushed under the patient.

D. Both ends of the long board and the bottom end of the short board are blunt-tapered, so that the boards will slide as easily as possible when pushed under or behind the patient.

E. The edges of the head portion of the short board are serrated to allow an alternate method of fixation of the head. One or more 6-inch soft roller bandages are wrapped about the board, forehead and chin. The serrations prevent the bandage from slipping.

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constructed by wrapping a premature infant in foil, leaving its face free.

Ordinary bed sheets—wrapped sterilized, and packaged in plastic bags—provide excellent dressings for burns of any magnitude.

The short and long spine boards are essential for safe removal of various injured patients, especially those with actual or suspected damage to the spine. Either board is also useful in providing a firm surface on the wheeled stretcher for performance of cardiopulmonary resuscitation. The straps of 2-inch belting should be at least 9 feet long and equipped with slip-through friction catches. While various kinds of short boards are in use, the one shown here is similar to that described by Louis C. Kossuth in the September 1966 *Journal of Trauma*.

Both spine boards have been modified as a result of extensive use. Drawings on pages 10 and 11 give details.

The Universal dressing unfolds to 10 inches by 18 inches or to 10 inches by 36 inches and affords adequate coverage for any wound. It may be used also as padding for splints. When two dressings are folded together lengthwise,

Hand operated bag-mask ventilation units *for ambulance use**

*As evaluated by Emergency Care Research Institute, Philadelphia***

Name	One-year shelf life	Low-temperature operation 32° F. or below	Clear mask	Ease of cleaning	Comments
Resusci folding bag Mark II Laerdal Medical Corp.	good	good	yes	good	Oxygen reservoir supplied
PMR Puritan-Bennett Corp.	good	good	no	good	relatively heavy
AGA Revivator AGA Aktiebolag	good	good	no	poor	oxygen reservoir permanently attached; relatively fatiguing to operate
Hope Ohio Chemical & Surgical Equipment Company	good	valve freezes	no	good	with high oxygen flow, valve may lock in inspiratory position
Ambu Air-Shields, Inc.	fair	valve freezes	no	poor	valve may lock (see comments on Hope, above)
Air-Viva Bird Corp.	good	valve freezes, bag inoperable	yes	poor	10 to 20 per cent of expired air is rebreathed with each cycle
Pulmonator Corbin-Farnsworth, Inc.	good	bag inoperable	no	good	relatively fatiguing to operate; manufacturer states unit tested no longer produced
Porton Greiner Scientific Corp.	good	good	no	poor	mechanical defects cause large leaks to develop in folds of bellows
Clar Aire** Clar Aire Corp.					
Res-Q-Aire** Res-Q-Aire, Inc.					

*In "estimated order of preference," according to the Emergency Care Research Institute.

These two units, **Clar Aire and **Res-Q-Aire**, were listed by the Emergency Care Research Institute and described as "ineffective and dangerous; should be removed from service." In a letter to the editor of J.A.M.A. (vol. 210, no. 7) Joel J. Nobel, M.D., Director of Research, E.C.R.I., drew attention to the widespread distribution of these two dangerous emergency respiration support units and urged all physicians, other health authorities, and health organizations to destroy all of the devices in their possession and to encourage others to follow suit. In the *EHS Memo* of December 30, 1969 is a report on the manually operated emergency ventilation devices tested by the Emergency Care Research Institute.

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they form an effective cervical collar which may be held in place either by safety pins or by wrapping with a soft roller bandage.

The Universal dressing is available commercially but is easily made locally by cutting bolts of standard "A.B.D." material into 36-inch lengths, folding these from each end to the center three times, and packaging each in a paper bag, the end of which is sealed by stapling. After sterilization, each packaged dressing is placed individually in a plastic bag which also contains a 6-inch soft roller bandage.

The hand operated bag-mask ventilation unit is superior to the mechanical resuscitator or pulmotor. It is simply constructed, it performs adequately, and the operator may make immediate pressure adjustments simply by changing his hand pressure. The unit is also much less costly than the mechanical resuscitator or pulmotor.

The major advantage of the bag-mask unit is that it permits the technician to direct attention to the patient rather than to apparatus.

For effective pharyngeal suction a minimum vacuum of 12 inches of mercury (20 inches optimal) and free air flow of over 30 liters per minute at the delivery tube, with rapid drawdown time, is required.

Some types of bag-mask ventilation units and portable suction apparatus, with a description of their characteristics, are named on opposite page and this page, respectively.

Litters, and safety and housekeeping equipment, are not specified, since it is assumed that basic items, as well as *installed* suction . oxygen, will be carried.

In anticipation of more advanced training in the use of specialized equipment for greater numbers of technicians, and the occasional presence of physicians at the scene of emergencies, additional equipment may be carried in a sealed container, depending on local conditions and decisions.

These items are:

Tracheal intubation kit
Pleural decompression set
Drug injection kit
Venous cut-down kit
Minor surgery kit
Tracheostomy or cricothyrotome set
Urinary catheters
Portable cardioscope and defibrillator

Suction units for ambulance use*

Name and manufacturer	Vacuum in inches of mercury	Rate of air flow per minute
Vaculette Corbin-Farnsworth Inc.	25	17 liters
Laerdal suction unit Laerdal Medical Corp.	25	50 liters
Ambu foot-powered unit Air-Shields, Inc.	12	12 liters**

* Performance data supplied by manufacturer
**Approximately

Unless a rescue vehicle accompanies an ambulance on every accident call, certain access and extrication equipment should be carried. The time element in life-threatening problems is so critical that, if the technicians must await the arrival of such equipment, lives that could be saved will be lost.

Specifically, these items are:

One wrench, 12 inches, with adjustable open end
One screw driver, 12 inches, with regular blade
One screw driver, 12 inches, Phillips type
One hacksaw with 12 wire (carbide) blades
One pliers, 10-inch vise-grip
One 5-pound hammer with 15-inch handle
One fire axe butt with 24-inch handle
One 24-inch wrecking bar (bar and two preceding items can either be separate or combined as a forcible entry tool)
One crowbar, 51 inches, with pinch point
One bolt cutter with 1¼-inch jaw opening
One portable power jack and spreader tool
One shovel, 49 inches, with pointed blade
One double-action tin snip, minimum, of 8 inches
Two manila ropes, each 50 feet long and ¾ of an inch in diameter

A power winch is optional. A front-mounted winch, with a minimum capacity of two tons, is recommended, particularly in areas where it would not otherwise be readily available. In addition to rated cable, ambulance should carry a 15-foot rated chain with one grab hook and one running hook.

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Standards for *emergency ambulance services*

These standards, developed by the **Committee on Trauma** of the American College of Surgeons, were first approved by the Board of Regents in February, 1967. Since then, they have been revised and again approved by the Board of Regents in February, 1971.

These standards include requirements for emergency care at the site of injury or illness, and for safe and comfortable transportation to a hospital. The Committee on Trauma believes that lives can be saved if ambulance personnel are well trained as emergency medical technicians-ambulance; if ambulance vehicles are equipped adequately and operated safely, and if all communities and operators insist on meeting and maintaining high standards for the organization and operation of emergency ambulance services. The committee recommends that every community or groups of small communities, regardless of size, organize a council on emergency medical services to coordinate all lay and professional activities that encompass emergency care, transportation, and definitive treatment of patients with an acute illness or accidental injury in hospital emergency departments.

Organization and operation

IN EACH COMMUNITY the health department or other governmental agency should obtain the authority to regulate all public and private ambulance services. (If enabling legislation is required for such authority, the local government should request it from the state legislature.)

A state, county, or municipal agency, perhaps a community council, should determine the need for volunteer, tax supported or proprietary ambulance services, and procedures for licensing and enforcing standards for each service. Twenty-four hour, year-round coverage should be available.

The operator of an ambulance service should be legally and morally responsible for the conduct and operation of the organization. The employer should be accountable for the character and moral conduct of those whom he employs.

A manual of ambulance service policies and standards should be available for use by all personnel.

A privately owned ambulance company should be financially responsible, and should carry adequate public liability insurance. Reasonable charges, predicated on services provided and operating costs, should be posted with and approved by the licensing authority.

All ambulance personnel should respect local fire, building, health and traffic regulations and be familiar with community disaster plans.

Standby emergency ambulance service should be established and coordinated with other operators of other services in adjacent areas.

A record of all violations of the law by his personnel should be kept by the operator of the ambulance service. He should also keep a record of any accidents in which his vehicles are involved.

All communities should have an ordinance regulating ambulance service. The Committee on Trauma recommends that "*A Model Ordinance or Statute Regulating Ambulance Service*,"* as revised in 1970, be used as a guide by local authorities for any necessary legal action.

Personnel

At least two persons, equally trained as emergency medical technicians-ambulance (EMT), should man each emergency ambulance.

Each EMT's ability to drive and his competence in emergency care should be certified by the licensing authority. Before an applicant is certified, the licensing authority should determine that he is not addicted to alcohol or drugs and has not been convicted of a felony. He should read, speak, and write English.

Physical examination by a physician should confirm that the applicant has a sound body; has distant visual acuity of at least 20/40 (Snellen) in each eye without corrective lenses or visual acuity separately corrected to 20/40 (Snellen) or better with corrective lenses; distant binocular acuity of at least 20/40 (Snellen) in both eyes with or without corrective lenses; field of vision of at least 70° in the horizontal meridian in each eye; the ability to recognize the colors of traffic signals and devices showing standard red, green and amber, as recommended in April 1970 by the Federal Highway Administration for drivers engaged in interstate commerce, and has no physical defects which might impair his ability to serve as an EMT. Provisions for periodic re-examination should be made.

He should hold a current advanced first aid certificate of the American National Red Cross or its equivalent, and in addition should have received basic training and demonstrated proficiency in all phases of emergency care and protective extrication. Recommended training** and refresher programs of several days'

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duration should be provided by physicians. EMT's should avail themselves of refresher courses and other meetings which could enhance career development.

Ambulances

The patient-carrying vehicle should provide easy loading, privacy, and comfortable riding. There should be adequate space for essential equipment and for an EMT to continue emergency care in transit. Driver's and patient's compartments should be separate. Good illumination and temperature control of the patient area are required.

The ambulance should start and stop slowly and smoothly and travel at a safe speed. Jostling and speed may be harmful and dangerous to the patient.

An ambulance should be kept clean and supplied with fresh linen for each call. After it has transported a patient with a contagious disease, the vehicle must be cleansed thoroughly before it is used for another call.

Equipment

The ambulance must be adequately equipped, according to the American College of Surgeons' "Essential Equipment of Ambulances",*** with which an EMT may provide adequate emergency care for the critically ill or injured at the scene and during transport to medical facilities.

Unless a rescue vehicle accompanies the ambulance on every emergency call, certain access and extrication equipment should be carried on the vehicle, as the time element in life-threatening situations is critical.

Communications

All vehicles should be equipped with a two-way radio capable of clear transmission and reception over not less than 20 miles. There should be two-way radio communication between the ambulance, hospital emergency department, and dispatcher.

A central dispatching office for all emergency ambulances should be established. It should be equipped with an adequate communications system, a time-recording device, and adequate space for records. On all shifts the dispatcher should have at least as much training as the EMT's on ambulances so that he can receive and transmit reliable information as to the illness or injury of the patient.

Ambulance-Hospital Emergency Service Liaison

There should be a close working relationship between ambulance services and the hospitals of the community. The hospital staff should provide training for ambulance personnel. There should be an agreement for exchange of appropriate items of equipment.

Verbal report should be made to the personnel of the emergency department at the time of delivery of the patient. A report, either written or dictated, to be part of the patient's permanent record, should be made by the EMT prior to leaving the medical facility.

The hospital staff should conduct critiques with EMT's on all patients at regular intervals depending on day-to-day experience.

Ambulance personnel should know the hospital to which patients should be taken, according to degree and nature of their injuries or illnesses.

Ambulance Esprit de Corps

Ambulance services should be conducted in such a manner as to espouse esprit de corps among all members of the staff of the ambulance service. All members should wear neat, clean uniforms.

Speed and Use of Sirens and Flashing Light

Ambulances on emergency calls should obey, under most circumstances, the regulations controlling speed, and the traffic signs and signals which apply to ordinary non-emergency traffic. On rare occasions, speeds above the established limit and certain other traffic violations may be justified. The use of flashing lights at the scene of the incident and low-key use of sirens for clearing traffic is recognized as a necessity.

* *"A Model Ordinance or Statute Regulating Ambulance Service." Developed by the American College of Surgeons, the American Association for the Surgery of Trauma, and the National Safety Council under their Joint Action Program. The model ordinance may be obtained from the National Safety Council, Traffic Department, 425 North Michigan Avenue, Chicago, Illinois 60611.*

** *Recommended basic training for EMT's may be found in:*

1. *"A Curriculum for Training Emergency Medical Technicians", Bulletin, American College of Surgeons, Sept. Oct., 1969. ACS, 55 East Erie Street, Chicago, Illinois 60611.*
2. *"Basic Training Program for Emergency Medical Technicians Ambulance", Instructor's Lesson Plans. Feb. 1970. U.S. Dept. of Transportation, National Highway Safety Bureau, Nassif Building, Washington, D.C. 20591.*
3. *Ambulance Design Criteria, A Report to the National Highway Safety Bureau, FHWA, DOT, June 30, 1969, National Academy of Engineering, Washington, D.C.*

*** *Essential Equipment for Ambulances may be obtained, single copies free, from the American College of Surgeons, 55 East Erie St., Chicago, Ill. 60611.*

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A curriculum for training emergency medical technicians

J. D. FARRINGTON, M.D., F.A.C.S., Minocqua, Wisconsin
and
OSCAR P. HAMPTON, JR., M.D., F.A.C.S., St. Louis

SEVERAL MONTHS AGO the American College of Surgeons entered into a contract with the Division of Emergency Health Services, Public Health Service, whereby representatives of the College would carry out several missions related to the training of ambulance attendants. The first was the development of a curriculum for a basic training course in consonance with "TRAINING of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport," a document developed within the Division of Medical Sciences, National Academy of Sciences-National Research Council.

The second mission called for a list of training aids to be used with the curriculum.

In consonance with current concepts for courses of training for emergency medical technicians, the curriculum for a long-term, continuing course of 24 sessions of three hours each, to be given at the rate of one or two per week, was developed. After these were completed, four additional in-hospital training sessions were provided. These supplemental sessions in the hospital are necessary. A prerequisite to the entire curriculum of training is the completion by each participant of both the Standard and Advanced First-aid Courses of the American Red Cross, or their equivalent.

The list of training aids which was developed includes printed material for instructors and for students, reference material for students, audio-visual aids for each of the sessions, and the equipment necessary for the instructional and practice sessions.

In the anticipation that they will be of value to those interested in instituting courses for training emergency medical technicians in their localities, the outline of the curriculum and the list of aids follow.

Reprints will be available on request from the College, 55 East Erie Street, Chicago, Illinois 60611.

Curriculum
24 three-hour sessions
72 hours plus four in-hospital training sessions

Session	Topic	Content and objectives
		These sessions are designed to—
1.	General information and orientation	describe ambulance and its equipment; objectives of training; responsibilities to patient, family, religion; police and news media; public relations; control of scene; handling of the deceased; sorting multiple casualties; defensive and emergency driving*; communications; reports and records.
2.	General information and orientation	
3.	Anatomy and physiology	describe, using visual aids, anatomical structures as they should be understood by emergency medical technicians; physiology of respiration, circulation, nervous, osseous and muscular systems; and how to evaluate diagnostic signs.
4.	Anatomy and physiology	
5.	Review, questions and evaluation session	make certain students have assimilated material presented in previous sessions and are prepared for those to follow.
6.	Life-threatening problem—pulmonary	emphasize necessity to establish and maintain airway. describe artificial ventilation such as mouth-to-mouth and other methods (bag-mask resuscitation units and manually triggered units). Demonstrate use of suction equipment and airways.

(*Continued*)

*In this course, defensive and emergency driving are discussed in general terms. It is highly desirable that emergency medical technicians avail themselves of the present courses given in each state in defensive and emergency driving.

Reprinted from BULLETIN OF THE AMERICAN COLLEGE OF SURGEONS September · October 1969

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Session	Topic	Content and objectives
7.	Life-threatening problem—cardiac arrest	teach how to recognize arrest and perform external cardiac compression, using inflatable mannequins, and film *Pulse of Life*.
8.	Practice session—cardiopulmonary resuscitation	review techniques of providing and maintaining an open airway, using equipment; artificial ventilation; use of oxygen and external cardiac compression. (Students are separated into groups depending on number of inflatable mannequins available but never in a group of more than ten per instructor and mannequin.)
9.	Review, questions and evaluation session	make certain students have assimilated material in lessons 6, 7 and 8; re-instruct them in techniques covered in those sessions.
10.	Life-threatening problem—bleeding and shock	teach how to recognize and control bleeding, using pressure dressings; explain limited use of tourniquet; give measures to overcome shock, including intravenous fluids; conduct general discussion and demonstration using training arm (actual performance during training in hospital sessions).
11.	Acute medical problems	instruct on heart attack, stroke, diabetes, contagious disease, allergic reactions, convulsive disorders, unruly patient, nosebleed, poisonings, exposure to heat and cold; heart failure; pulmonary edema; emphysema and unconscious states.
12.	Acute medical problems	
13.	Review, questions and evaluation session	make certain students have assimilated material in lessons 10, 11 and 12; and re-instruct them in techniques covered in those sessions.
14. (a)	Emergency obstetrics and care of infants	instruct on physiology of childbirth; how to deliver infant, protecting it and mother; ligation of the cord; afterbirth; care of infant, including transportation of the premature infant. Film *Medical Self Help*, Lesson 11 (page 4) is excellent for teaching.
14. (b)	Eye, body cavity and genitalia injuries	instruct on care of eye injuries; protective dressings; care of thoracic cage injuries, including fractures, crushed chest, flail chest and sucking wounds; care for evisceration and blast injuries of the abdomen; protect genitalia and transport avulsed genital parts.
15.	Wounds, burns, and environmental injuries	Instruct on soft tissue injuries, including thermal, electrical and radiation injuries.
16.	Fractures and dislocations of long bones and pelvis	instruct on anatomy and terminology of fractures; how to suspect fractures; reasons for splinting; splinting equipment and its use. Demonstration.
17.	Spinal fractures and head injuries	instruct on danger of spinal fractures; reasons for protecting spine against movements; extrication, including use of backboards; dressings and splinting prior to movement; significance of head injuries and handling the unconscious accident victim.
18.	Practice session	apply dressings, bandages, and splints.

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Session	Topic	Content and objectives
19.	Movement of patients	describe lifts and carries; use of litters and stretchers, including movement of patients under difficult circumstances; prosentation of slides and demonstration of lifts and carries by instructors.
20.	Extrication	describe surgical principles—presentation and demonstration by instructors.
21.	Practice session	practice use of lifts and carries, litters and stretchers, including movement of patients under difficult circumstances.
22.	Practice session	practice extrication, including care of patient, dressing, bandaging and splinting prior to movement.
23.	Practice session	
24.	Written and practical examination	determine proficiency of technicians.
		The four supplemental sessions are designed to— supply in-hospital training with exposure to cardiopulmonary resuscitation, obstetrical problems, general care of patient, intravenous fluids and blood pressure monitoring.

Printed material for instructors

Topics	Session
Curriculum for Training Emergency Medical Technicians, Division of Emergency Health Services, Public Health Service (First Report under American College of Surgeons—Public Health Service Contract No. 110-69-10).	1 - 23
Cardiopulmonary Resuscitation, A Manual for Instructors. Published by the American Heart Association, Catalogue #EM408. One for each course.	1 - 23

Reference material for instructors

Topic	Session
Emergency Medical Guide, Second Edition. John Henderson. (New York: Blakiston Division, McGraw-Hill Book Co., Inc., 1969)	1 - 23
First Aid, Diagnosis and Management. Edited by Warren H. Cole and Charles B. Puestow. (New York: Appleton-Century & Crofts, sixth edition, 1965) One for each course.	1 - 23
Emergency Victim Care and Rescue Textbook for Squadmen, 1965. Ohio Trade and Industrial Education Service, Division of Vocational Education, State Department of Education. (Published by Instructional Materials Laboratory, Ohio State University, Columbus)	1 - 23

Printed material for students

Topics	Session
Wonderful Human Machine, The. (Published by American Medical Association, Catalogue #OP9) One for each student.	3 - 5
Training of Ambulance Personnel in Cardiopulmonary Resuscitation (Discussion guide published by American Heart Association, Catalogue #EM386A) One for each student.	6 - 9
Emergency Measures in Cardiopulmonary Resuscitation. (Discussion guide published by American Heart Association, Catalogue #EM376A) One for each student.	6 - 9
Minimal Equipment for Ambulances. Committee on Trauma, American College of Surgeons (Bulletin, A.C.S. March-April 1967) One for each student.	10, 14(b), 15 - 17
First Aid for Laryngectomees. International Association of Laryngectomees-American Cancer Society, 219 East 42 Street, New York 10017. One for each student.	6 - 9

(*Continued*)

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A curriculum *for training emergency medical technicians—continued*

Reference material for students

Topics	Session
Emergency Care of the Sick and Injured. Edited by Robert H. Kennedy, and sponsored by the Committee on Trauma, American College of Surgeons. (Philadelphia: W. B. Saunders Co., 1966)	1 - 23
First Aid for Emergency Crews: A Manual on Emergency First Aid Procedures for Ambulance Crews, Law Enforcement Officers, Fire Service Personnel, Wrecker Drivers, Hospital Staffs, Industry, Nurses. Carl B. Young, Jr. (Springfield, Illinois: Charles C Thomas, Publishers, 1966)	1 - 23
Pennsylvania Ambulance Attendant Training Manual. Edited by Dan D. Gowings, Pennsylvania Department of Health, Harrisburg.	1 - 23

Audio-visual aids

Topic	Session
A.C.S slides set: Series A (Sessions 1, 2); C (3, 4); F (6, 7); G (10); M (11, 12); N (14-a, 14-b); H (15); J and K (16); L (17); B (20). One set (560 slides) for each course.	
Training of Ambulance Personnel in Cardiopulmonary Resuscitation. American Heart Association. Slide set, Catalogue #EM386. One set for each course.	6 - 9
Emergency Measures in Cardiopulmonary Resuscitation. American Heart Association. Slide set, Catalogue #EM376. One set for each course.	6 - 9
Medical Self-Help. Lessons 1-11 (motion pictures). U.S. Public Health Service. Available through: Regional Program Director, P.H.S.	1 - 23
Breath of Life, motion picture. American Heart Association.	6 - 9
Pulse of Life, motion picture. American Heart Association.	6 - 9
Cry for Help, motion picture. U.S. Public Health Service Audio-Visual Facility, Atlanta, Georgia. Code MIS 682.	12

Equipment

	Session
Blackboard, chalk and eraser	1 - 23
Mannequins	
Resusci-Anne or equivalent	6 - 9
Thoracic cut-away or equivalent	6 - 9
Anatomic-Anne or equivalent	6 - 9
Clothes mannequin and moulages provided locally for simulated injuries	10, 13 - 17, 20 - 23
Simulated or outdated blood (simulated blood made with liquid starch and food coloring) to pour on rugs, carpet, car seats, clothes, etc., to simulate injuries and aid in instruction in estimating blood loss.	10, 13 - 15
Long and short spine boards (use of a scoop-type stretcher optional)	16 - 18, 20 - 23
Automobile front seat affixed to table to demonstrate proper application of short board to sitting injured and application of long board	20 - 23
Minimal Equipment for Ambulances. Committee on Trauma, American College of Surgeons (BULLETIN, A.C.S., March - April, 1967). One of each item listed, and, in addition, inflatable splint, blood pressure manometer, two-way teaching stethoscope.	10, 13 - 17, 20 - 23
Aluminum foil, roll 18 inches wide, for wrapping premature infant, except for face, when ambulance does not carry incubator, and also for covering eviscerations and sucking wounds of the chest.	14(a), 15
Doll, approximately 17 to 20 inches long, for practice of above.	14(a)

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Special issue

Commemorating the 50th anniversary of the Committee on Trauma

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Chest injuries page 21

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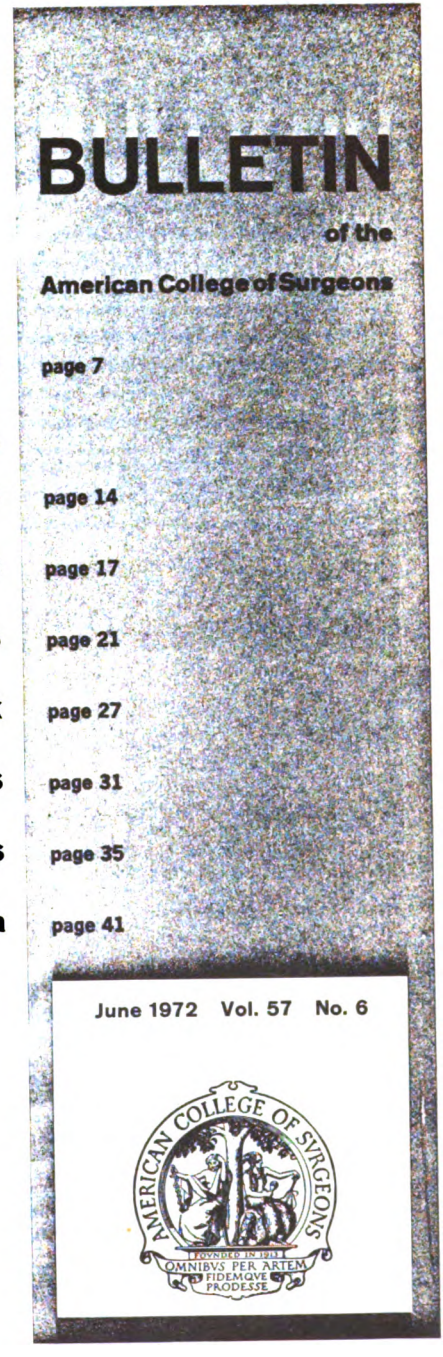
Neurological trauma page 41



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HEINZ R. KUEHN, EDITOR-IN-CHIEF

GORDON L. BRIGGS, EDITOR

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Introduction

The Committee on Trauma of the American College of Surgeons held its annual meeting in Charleston, South Carolina April 13–15, 1972. Because this was the Fiftieth Anniversary meeting, it was decided that this should be in the form of a special celebration. The Medical University of South Carolina served as the host institution. Current and previous members of the committee, officers of the College, section chiefs, and state/provincial chairmen attended.

The clinical program was held in the new Basic Sciences Auditorium of the Medical University of South Carolina. After appropriate introductory remarks by William M. McCord, MD, President of the Medical University of South Carolina, and Jonathan E. Rhoads, President of the American College of Surgeons, an outstanding scientific program followed. The Golden Anniversary Orations were given by distinguished lecturers who reviewed fifty years' progress in specific aspects of trauma.

Curtis P. Artz, MD, FACS
Chairman, ACS Committee on Trauma

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Richard J. Field, Jr. (*center*) received one of the two Trauma Achievement Awards presented during the 50th anniversary celebration. Doctor Field, chairman of the Mississippi Committee on Trauma since 1963, was honored for his extensive and effective program to improve athletic standards for high school and grade school competitors, for his efforts as section chief of an eight-state area, and his development of active committees in three of the states. The award was presented by Robert W. Gillespie (*left*) chairman of the subcommittee on regional committees, and Curtis P. Artz (*right*) chairman of the Committee on Trauma.

C. Thomas Thompson (*center*) chairman of the Oklahoma Committee on Trauma, also received a Trauma Achievement Award for his activities toward the improvement of the status of the burn patient in northeast Oklahoma, actions to improve emergency medical care through the development of a statewide program of emergency transportation and medical services, and the preparation and publication of extensive audio-visual training programs for emergency medical technicians. Doctors Gillespie (*left*) and Artz (*right*) made the presentation.

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William M. McCord, President of the Medical College of South Carolina, which was host to the meeting, Curtis P. Artz, chairman of the ACS Committee on Trauma, and Jonathan E. Rhoads, President of the American College of Surgeons (*left to right*) during opening ceremonies of the clinical program of the 50th annual meeting of the Committee on Trauma.

The Authors

HAMPTON

MONCRIEF

FITTS

SAMSON

GURD

WADE

RICH

MEACHAM

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Foreword

One of my greatest privileges as President of the American College of Surgeons is to felicitate the Committee on Trauma on the completion of fifty years of service.

The Committee on Trauma, originally the Committee on Fractures, was, I believe, the first committee of the College to address itself to a categorical problem. It was followed much later by the group interested in cancer, another group interested in pre- and post-operative care, one on graduate education, and others. Possibly my first opportunity to go to a College meeting arose when I was working for Dr. Walter Estell Lee who asked me to help with some fracture demonstrations he had organized for one of the congresses in Atlantic City before world war II.

Not only have you had a great cause, but you have had a succession of great people as members of this committee. Beyond this, it is a committee which has brought together people from many disciplines, particularly after it broadened its charge from fractures to the whole field of trauma. Yours is one of the proudest traditions of the American College of Surgeons and your activities have reached out more broadly perhaps than any other program of the College, unless it be the program in hospital accreditation now carried on as a joint enterprise through JCAH.

As some of you know, this group recommended to the Regents of the College that the College endorse the formation of an American Trauma Society with a purpose of raising more money to improve surgical care in the field of trauma by research, education and increased recognition of the problem by the public. This group is now moving forward under strong leadership with William T. Fitts, Jr. as president and John M. Howard as secretary-treasurer, both members of this committee. Some money has been raised through founder memberships and more is anticipated.

An encouraging sign is that Congress is showing an increased interest in programs in emergency medical care. At a recent meeting of the ACS Committee on Pending Legislation, under the chairmanship of William A. Altemeier, we had the opportunity of asking one of the staff members of the House Committee on Interstate and Foreign Commerce how to go about giving testimony at hearings of Rep. Rogers' sub-committee on health. The method is simple: one writes to the clerk of the House Committee on Interstate and Foreign Commerce, identifying oneself and asking to be notified when hearings will be held on bills concerning emergency health care, indicating that one would wish to offer testimony.

I am very hopeful that one or more representatives of the American Trauma Society can be heard, and I should think it very important also that representatives of this committee be heard. Oscar P. Hampton, Jr. is taking steps to provide appropriate witnesses. I think there is some chance that some federal funding in the area of emergency care might be enacted in 1972, and if not in 1972, in 1973. I gather that the kind of things which some congressmen are concerned about relate to evacuation, improvement of practices in accident wards and better communications. There are several bills which have been introduced. It is believed that if Representative Rogers held hearings on them, the sub-committee would address itself to the whole area rather than to one specific bill. The sub-committee might then write its own bill embodying those features which seem to it most pertinent and practical.

It is high time that we moved to employ in civilian life some of the advanced techniques, including those dependent on helicopter evacuation, which have been so well worked out in Viet Nam.

There never has been adequate funding for research in trauma and shock, but the current interest of some of our health statesmen in the Congress may well bring forth significant government support if we can agree on meaningful programs and then point the way.

I congratulate the Committee on Trauma on its great record, its fine program and believe that the time is ripe for even more rapid advances in the years immediately ahead.

Jonathan E. Rhoads, MD, FACS
President
American College of Surgeons

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"No argument is necessary to convince surgeons that results of fracture treatment in the U.S. and Canada are deplorably bad . . . there are good results, there are remarkable results but, generally, by and large, the results are poor—poor anatomically and poor functionally. We are surgeons desiring improvement in the results of fracture treatment."

ACS Yearbook, 1923

The Committee on Trauma
of the
American College of Surgeons
1922-1972

OSCAR P. HAMPTON, JR., MD, FACS, Chicago
Assistant Director, Trauma, ACS

THE COMMITTEE ON TRAUMA, a standing professional committee of the American College of Surgeons, was established 50 years ago this May and, while its name has changed several times during the span, has kept its original objective—improvement in the care of the injured. In 1922 the Regents appointed the first committee and named it the Committee on the Treatment of Fractures. In 1933, it was renamed the Committee on Fractures and kept this title until 1939, when it merged with the College's Board of Industrial Medicine and Traumatic Surgery, and came out as the Committee on Fractures and Other Trauma. In 1941, "Fractures and Other" was dropped, and the committee came into existence as we know it today.

Actually, its history antedates 1922. Ten years earlier, and one year prior to the founding of the College, the American Surgical Association passed a resolution calling for an ad hoc, five-man committee to prepare a statement on the relative value of operative and non-operative treatment of long bone fractures, and to offer an opinion on the value of radiography in the choice of a treatment method.

John B. Roberts chaired the ASA Committee of Five from 1912 through 1914 and William L. Estes, Sr., from 1915 until it was disbanded in 1921. In 1914, Charles L. Scudder and six others were made associate members to broaden its geographic representation. In 1921, the committee's final report to ASA concluded:

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"The first step in the betterment of fracture treatment is the study of results achieved by present day methods. An adequate study is impossible without complete records."

The report led the ASA to suggest that the eight year old American College of Surgeons continue the work of the Committee of Five, anticipating that adequate fracture records could be obtained by the College through its hospital inspection activities, then three years old. Indeed, as a part of its accreditation program, College inspectors investigated organization and records of fracture treatment in hospitals.

The following year, in May of 1922, the Board of Regents of the College appointed the first Committee on Treatment of Fractures, with Doctor Scudder of Boston, who had organized the first fracture service in the U.S., as chairman.

The first committee report to the Regents was published in the 1923 *Year Book* of the College. The report set a pattern for committee activities to the present. Many of the goals outlined remain current objectives. The report read, in part, as follows:

"Surgeons are today, as never before, interested in fractures of bone. A well-grounded, latent enthusiasm exists which may be advantageously utilized. There is no recognized authoritative standardization of principles governing their treatment . . . and the teaching of fractures in medical schools varies and is most unsatisfactory. No argument is necessary to convince surgeons that results of fracture treatment in the United States and Canada are deplorably bad . . . there are good results, there are remarkable results but, generally, by and large, the results are poor—poor anatomically and poor functionally. We are surgeons desiring improvement in the results of fracture treatment. This Committee on Fractures has recently been formed and, with the regional committees, over 200 men are serving. The committee has already asked three questions of the regional committees: (1) What principles underlie first-aid treatment, including transportation? (2) What are the means by which these principles may be carried out? and (3) What are your recommendations as to the equipment of ambulances, first-aid agencies, including hospital receiving wards, in the effort to establish standardization of this phase of treatment? In due time, a study of teaching methods in medical schools will be made by your committee. The committee is alive to the grave situation in fracture treatment. There are many suits for malpractice and 60 percent of malpractice suits brought in New York State alone are because of fractures. Cases of blackmail exist—"send me a bill and I will sue you"—and are rapidly increasing in number. There is ignorance regarding simple and efficient methods of treatment of fractures. There is need for improvement in both graduate and undergraduate medical school instruction. Your committee will spare no pains in its investigation and deliberations to help remedy these evils."

In 1926, the Regents of the College appointed the Board of Industrial Medicine and Traumatic Surgery, with the task of gaining improved medical service in industry in the elimination of industrial health hazards. Frederick C. Besley of Waukegan, Illinois, served as board chairman until its merger with the Committee on Fractures in 1939. Three Fellows were members of both the committee and the board. Seven other board members became committee members following the merger.

THE BOARD was joined by medical departments of insurance carriers and industrial corporations in their studies and attempts to institute improvements. Surveys by members of the board of large industrial plants at various locations revealed several deficiencies. Generally, industrial injuries had not been treated by the better qualified surgeons. Physicians serving industry appeared disinterested in administrative and preventive phases of industrial medicine, partly because appropriate authority had not been delegated to them by their employers. Smaller industrial establishments lacked adequate medical service. From its findings, the board formulated a set of minimum standards for medical service in industry which was applicable to plants of all sizes. Just as compliance with current standards and recommendations of the Committee on Trauma is voluntary, any improvements in industrial medical services are based on voluntary compliance with board recommendations.

In 1933, a list of approved industrial medical services was published. By 1937, 50 percent of 1,657 industrial establishments surveyed had been approved. Interestingly, the board granted a certificate of approval. Currently the Committee on Trauma avoids issuing certificates of approval because of medical legal implications. The committee and its regional committees issue certificates only to show that individuals have attended a specific educational or training program.

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Doctor Scudder terminated his tenure as chairman in 1932, but he continued as honorary chairman. Fred Bancroft of New York became chairman in 1933. Robert Kennedy of New York, an appointee in 1931, was secretary from 1933 until he was made chairman in 1939.

Bob Kennedy served until 1952, the longest tenure of any chairman. He was succeeded by Arnold Griswold of Louisville, who established the practice of a five-year tenure for committee chairmen. Griswold was succeeded by Preston A. Wade of New York in 1957, who served only two years, resigning to become a Regent.

In 1959, Harrison L. McLaughlin of New York became chairman and, in line with the Griswold concept, served for five years. A bleak period in the Committee's history followed as your author was appointed chairman in 1964. The College terminated his tenure in 1968, by putting him on the payroll as an assistant director. Things improved promptly when Curtis P. Artz of Charleston was appointed chairman.

Since the first appointments five decades ago 161 Fellows of the College have been committee members. The first Committee on Fractures was composed almost entirely of general surgeons, the single exception being one orthopedic surgeon. Through the decades of the 20s and 30s, general surgeons predominated as authorities on fractures. As orthopedic surgeons moved into the field of trauma, particularly the treatment of fractures, an increasing number became committee members during the 30s, 40s and 50s and made splendid contributions to committee activities. Currently, about half of the committee are orthopedic surgeons, specialists who naturally accept and meet responsibilities.

THE COMMITTEE currently has 41 active members, representing practically every surgical specialty concerned with trauma, and in line with the goal established in the 1930s. Until 1959, active members, on request or on committee action without request, could be given emeritus status with indefinite tenure. In 1959, the Regents limited senior membership to six years. However, at that time, the Director of the College ruled, without being over-ruled by the Regents, that all current senior members would have indefinite tenure. He couldn't bear the thought of telling the likes of Paul Magnuson, Bob Kennedy, Isidore Cohn, Bill Estes, Pep Wade and Phil Wilson, that they were no longer senior members of the committee. Paul North had been an active committee member until he became Director. In 1968, the Regents made him a senior member with indefinite tenure. Currently, the committee has 49 senior members, many of whom continue to participate and render valuable service.

Regional committees, that is, state/provincial and local committees, are currently and apparently always have been action arms of the Committee on Trauma. Each member of the first Committee on Fractures was charged with the development of a regional committee in his home area. The first report to the Regents indicates regional committee membership of about 200. As of January 1, 1972, there were 66 state/provincial committees and 341 local committees. The number of state committees is 58 because committees in six metropolitan areas are given state status and California and Florida both have northern and southern committees. While the degree of activity among these committees varies, all but one have projects underway designed to improve prehospital or hospital care of the injured. On January of this year, 1,953 members, about 90 percent Fellows, constituted the state/provincial committees. Including the membership of local committees, the total network numbers about 3,400.

AS PART OF the regional committee organization, state/provincial committees are grouped into sections, each with a chief. Currently, there are 10 U.S. Sections, the boundaries of which conform to those of the U.S. governmental regions. Two sections cover Canada. The majority of section chiefs are not members of the Committee on Trauma.

From the beginning, regional committees have provided periodic courses in continuing education for physicians, first on the management of fractures and later on the management of various phases of care of the injured. The Chicago committee, one of the most productive regional committees, initiated the first of 15 annual courses in 1957 under the leadership of Doctors Sam Banks and John Fahey. Thereafter, other regional committees periodically have sponsored similar programs. In line with the efforts of the first fracture committee to achieve splinting of fractures by ambulance personnel, regional committees over the years have provided hundreds of training programs for ambulance attendants. For example, the

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Chicago committee has provided one or two courses annually during the past 11 years. In fact, until about 1960, trauma committees constituted the only physician groups striving to improve emergency ambulance service. They were essentially voices in the wilderness and their volunteer efforts were often scorned by local governmental officials. Regardless, regional committees worked diligently and undoubtedly achieved improvement in their respective localities. They were organized and ready to participate when the National Highway Safety Bureau came into existence with funds to help support state activities to improve emergency ambulance service. In almost every state, ACS committees have been involved in governmental efforts to upgrade emergency care and transportation of the injured.

REGIONAL committees have had many other kinds of projects. A number, following the format established by Doctor George Anast for the Chicago committee, have provided highly successful courses for emergency department nurses. Many, following the example of the New Jersey committee, have made surveys on request of hospital emergency departments, offering constructive advice on organization, facility design, equipment and staffing. A great many have participated in local and regional disaster preparedness, often serving as the stimulus for efforts at improvement. The Nebraska committee waged a state-wide campaign for active immunization against tetanus. The Oklahoma committee participated in the establishment of a regional burn center and is the leader in efforts to improve the state's emergency services.

One of the most important assignments to a member of the Committee on Trauma is that of chairman of the subcommittee on regional committees, which is made up of section chiefs. This subcommittee has had great leaders as chairmen. To name some, Wade (1949–1954) who wrote the first guide for regional committees; George Curry, (1955–1959); Vernon C. Abbott, (1960–1966); and Robert W. Gillespie, (1967–to date). The Committee owes much of its success to these men.

In 1949, following the death of Doctor Scudder, the committee adopted a resolution which ends "The regional committee idea represents a fitting memorial to his zeal for widespread education in fracture problems".

Activities, more than personnel, are the *raison d'être* for the Committee on Trauma. Although several activities have extended through the 50 years, committee activities could be grouped into those of (*A*) the Scudder era, 1922–32 (*B*) Committee on Fractures, 1933–39, (*C*) Committee on Fractures and Other Trauma, 1939–49, and (*D*) Committee on Trauma, 1949–71. It seems preferable, however, to divide them into only two phases, the first 1922–1959, and second, the decade of the 60s.

The Committee on Fractures in 1922 recognized two needs, improved emergency ambulance service and improved definitive care of fractures. For the first, interestingly, only emergency splinting of fractures was sought. During succeeding years the committee urged, additionally, maintenance of open airways, dressing of wounds, control of hemorrhage and other items taught in the advanced course of the American National Red Cross, the training standard until the decade of the 60s, when protective extrication, cardiopulmonary resuscitation, poison control, emergency childbirth, care of the newborn and other items were added and published in the ACS *Curriculum of Training for Emergency Medical Technicians-Ambulance*.

During early committee days, several regional committees, such as those in New York-Brooklyn, Boston and Philadelphia, initiated fracture conferences and later joint conferences or Fracture Days.

AS EARLY AS 1922, efforts were initiated to improve fracture treatment. Deficiencies in medical school teaching of fracture treatment were emphasized. All subsequent committees have sought improved undergraduate teaching, first for fractures and later for all trauma. In this effort, the committee has been less than totally successful.

In the 1920s the committee recognized the need for "a safe and ready guide" to fracture treatment. In its March 1931 Issue the ACS BULLETIN carried what is now considered as the first edition of the *Outline of Treatment of Fractures*. Bob Kennedy has said that heated disputes over contents of the guide led to two threatened or actual resignations from the committee. With some revisions, the material was published in booklets in 1932 and 1939 as second and third editions. Each was reprinted several times, particularly the third because the armed forces requested a large quantity during World War II.

The Fourth Edition in 1949 was made to fit in the pocket of a house officer's short white

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coat. This volume sold for fifty cents. Directors of training programs were urged to purchase a copy for each intern and resident.

In 1954, a fifth edition of the *Fracture Manual* and a first edition of *"Early Care of Soft Tissue Injuries"* were published in paper back pocket size, each to be sold for $1.00 by the College. The editions were reprinted several times. Over 24,000 *Fracture Manuals* and nearly 22,000 *Soft Tissue Manuals* were sold.

In 1960 and 1965, paperback pocket-size seventh and eighth editions of the *Fracture Manual* and second and third editions of the *Soft Tissue Manual* were published and marketed by W.B. Saunders Company, on whose recommendation the two manuals were combined within a hardback cover as *"The Management of Fractures and Soft Tissue Injuries"*. Saunders has sold over 16,000 *Fracture Manuals*, over 100,000 *Soft Tissue Manuals* and over 36,000 *Combined Manuals*, and has paid royalties to the College in excess of $29,000.00. Currently in press is a combined, completely rewritten edition under a new title, *"Early Care of the Injured Patient"*.

Each edition of each manual was the product of hard labor by expert members of trauma subcommittees.

Each committee tried by precept and example to improve the definitive management of fractures and later of all injuries. As program participants at medical meetings. committee members "preached the gospel" of how-to-do-it for specific fractures or other injuries. In an effort to obtain data on the results of fracture treatment, in the late 1920s, a fracture report form to be part of the hospital records was published in the BULLETIN. Reprints in quantities were furnished on request to hospitals or surgeons.

The committee chairman or his designee has been responsible for portions of Clinical Congress programs since the 1920s. During the period of "wet clinics", Committee members usually made certain that clinics on fracture treatment were included. Every year since post-graduate courses replaced wet clinics, the committee has provided a four-day course on fractures or other aspects of trauma. Annually, for two decades, a Symposium on Trauma has been a committee responsibility. A trauma field program panel, initiated by Doctor Kennedy, has been provided each year since 1961.

FRACTURE ORATIONS for the Clinical Congresses under committee sponsorship began in 1929. The first was given by Doctor Scudder. Annually thereafter, except for the World War II years, an oration on the definitive management of fractures was given until 1952 when it was replaced by an oration on trauma. This oration was provided annually until 1963 when it became the Scudder Oration on Trauma, honoring the first chairman.

At various times the committee has made incursions into socio-economic areas. In 1931, it developed guidelines which led to standards published by the Department of Commerce regarding metal for internal fixation of fractures. In the 1940s, a subcommittee, in cooperation with committees of orthopedic associations, developed other guidelines on quality and design of internal fixation equipment. In 1955, the committee prepared a resolution calling on automobile manufacturers to stress occupant safety in automobile design by providing doors that do not open, seats and cushions that do not displace on impact, energy absorbing interiors and adequate seat belts and other passenger stabilizing devices that resist impacts of 20 Gs. The resolution was recommended by the subcommittee on crash injury, and by committee chairman Griswold. The committee and the Regents, which approved the resolution, were more than a decade ahead of the almost identical proposed requirements of the Department of Transportation.

PERHAPS the most significant socio-economic effort resulted from the 1950 57 efforts of Alexander Aitken of Boston and his subcommittee on industrial relations. Doctor Aitken had become deeply concerned about inadequate medical care for injured workmen and deplorable efforts toward their rehabilitation. After speaking before the National Rehabilitation Association in 1950, he heard the medical profession castigated for lack of efforts in these areas. In subsequent discussions, he admitted medical profession deficiencies but took labor unions to task for depriving injured workers of the opportunity to work because of seniority rights. He was able to organize a committee comprised of members of his subcommittee, representatives of labor organizations such as Phillip Murray and William Green, the Department of Labor, Bureau of Labor, Bureau of Labor Statistics, Office of Vocational Rehabilitation, the U.S. Public Health Service, and the insurance industry. Efforts to involve the National Association of Manufacturers

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and the U.S. Chamber of Commerce were unsuccessful.

From information gained at several committee meetings, Doctor Aitken in 1952 proposed "*Principles for Rehabilitation of the Injured Worker*", which received committee and Regental approval for publication in the July-August 1952 BULLETIN. Soon thereafter, Aitken was appointed to the President's Committee on Employment of the Handicapped. In testifying before a House subcommittee in 1953, Michael J. Quill of the CIO called for a coordinated effort between all federal and state services concerned with workmen's compensation and rehabilitation under the Department of Labor. He singled out the College as the one medical organization active and organized to participate.

THE FIRST principles were followed by "*Operating Principles for a Modern Workmen's Compensation System*" that was published, following Regental approval, in the January-February 1955 BULLETIN. Aitken subsequently reported improved workmen's compensation laws in several states and increased interest of the insurance industry in better regulations for rehabilitation of injured workmen, both in part because of the 1955 operating principles.

In 1957, through the committee, the College, the American Association for the Surgery of Trauma, and the National Safety Council formed the Joint Action Program for a joint effort to minimize the incidence and serious effects of accidents. Within this program, a nationwide survey of emergency ambulance services was made, a model ordinance regulating emergency ambulance service was developed and the NSC's Surgeons' Award for Meritorious Service to Safety was initiated. To date, all except one of the recipients of the award have been active or senior members of the committee.

The decade of the 60s, with a year or two added at each end, is outstanding in the history of the Committee on Trauma. For the first time in its history, sufficient funds were available for activities through three grants from the John A. Hartford Foundation. These funds permitted establishment of the Trauma Field Program with Doctor Kennedy as the Director, the first College staff member full time in trauma. Previously staff duties for trauma were really part-time added duties.

In 1959 two significant events occurred. First, a nationwide survey, using a routine questionnaire of the National Safety Council, was made on emergency ambulance equipment and service, a study that documented their grim state. Second, the committee developed a list: *Minimum Equipment for Ambulances*, an enthusiastically accepted document which received the largest distribution of any BULLETIN trauma reprint. The list was improved and updated in 1969, by J.D. (Deke) Farrington and his subcommittee, into *Essential Equipment for Ambulances*, which today is the nationally accepted standard. In 1970, largely through Deke's expertise, a *Curriculum for Training for Emergency Medical Technicians—Ambulance* was developed and published. This is equal, if not superior, to the training program of the National Highway Traffic Safety Administration.

USING FARRINGTON'S collection as a model, sets of 560 slides to be used in training ambulance personnel were developed. There were eight sets for loan to regional committees and others, and 125 sets for sale; these were exhausted long before requests to purchase ceased.

In 1969–70, using a small grant from the Insurance Institute for Highway Safety, which was matched by the Regents, a series of continuing educational programs on "*Life-Saving Measures for the Critically Injured*" was provided in four states for rural physicians. Finally, the committee supported the concept of community and regional categorization of hospital emergency capabilities. A set of guidelines, provided by Andy Ruoff and his ad hoc subcommittee, was used in the AMA Conference on Categorization in February 1970, a report of which has now been distributed.

In 1964 John Moncrief and his subcommittee on burns produced *The Initial Therapy of Burns*. In 1965, largely through the work of Wesley Furste and Paul Skudder, *Prophylaxis Against Tetanus in Wound Management* was published. Reprints and emergency department posters of each, and their subsequent revisions, are among the most widely distributed trauma literature.

Bob Kennedy, almost single-handedly, was responsible for the other achievements in this expanded decade as follows:

(1) Production of two motion pictures: *Emergency Ambulance Service: Organization and Operation*, and *Emergency Department: Organization and Operation*. Copies in the College motion picture library were among those

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films backlogged with requests. Today, they remain well worth showing.

(2) Developed in 1963 a widely distributed brochure, *Model of a Hospital Emergency Department*, which went through three printings, totaling 25,000 copies. A heavy cardboard model of an emergency department was constructed and shown in an exhibit at several Clinical Congresses and other medical meetings. The model brochure was replaced in 1970 by *Guidelines for the Design and Function of a Hospital Emergency Department* as a project of a subcommittee chaired by Roger Sherman.

(3) Developed a set of *Standards for Emergency Ambulance Service* in 1967 which received committee and Regental approval. These standards were a pattern for those eventually established by the National Highway Safety Bureau.

(4) Made extensive studies of hospital emergency departments and compiled data on them submitted by others. In 1963 this activity culminated in a set of standards for emergency departments which was approved by the committee and the Regents. These standards remain sound today.

(5) Proposed a Conference on Emergency Medical Services which culminated in the Airlie House Conference of May 1969, cosponsored by the Committee on Trauma and the Committee on Injuries of the American Academy of Orthopaedic Surgeons. The proceedings of this conference is a unique document containing information on each facet of emergency ambulance service.

(6) Concurred in the production from 1969 to 1972 of 10 short motion pictures on various facets of the emergency treatment of the seriously injured in the emergency department. Four other films to complete the series were produced with Insurance Institute for Highway Safety funds. Prints are now available for purchase.

(7) Edited, with encouragement from the committee, a small pocketsize paperback manual entitled *"Emergency Care"* for rescue, ambulance, fire and police personnel, as a sorely needed pioneer text and reference book for such personnel. Published in 1966 by W.B. Saunders, over 57,000 copies have been sold. Dr. Kennedy demanded that the cost of the book be held to $2.00, the College foregoing royalties on the first 20,000 copies. The College has received nearly $7,000.00 as royalties on the remainder. The book is one of several deserved monuments to Bob Kennedy.

This account of Doctor Kennedy's activities is too brief for justice to them or to him. He never hesitated in his efforts to achieve improvement in pre-hospital, emergency department and in-hospital care of the injured. I doubt if anyone will ever carry the torch of the College's program on trauma higher than did Bob Kennedy.

Many items and personalities deserving of comment in this history have been omitted in the interest of brevity. The hope is that enough has been included to serve as a guide for future Committees on Trauma in their efforts to improve all phases of care of the injured.

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"Doing away with the cumbersome dressings which had been used for many years was not taken to heart by many people in this country until the exposure method was brought back from England. It remains our primary method of treatment of major thermal injury."

Fifty years' progress
in burns

JOHN A. MONCRIEF, MD, FACS, *Charleston*
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Medical College of South Carolina

IN CONSIDERING the progress in the treatment of burns over the past 50 years, time is going to limit me to those contributions which were made by American physicians, with a few exceptions.

Just one year after the beginning of the Committee on Trauma, in 1923, Frank Underhill of Yale demonstrated the striking hemoconcentration that occurs as the result of thermal injury. This formed the basis of the further development of fluid resuscitation therapy. Underhill was a physiologist and pharmacologist, not a practicing physician, but his clever observations of what occurs in thermal injury are certainly a landmark. It was not for several years after this, however, that we really made any great strides in applying Underhill's knowledge to the treatment of the burn patient.

In 1925 Edward Clark Davidson, working at the Henry Ford Hospital, introduced 2.5 percent tannic acid for the local treatment of the burn wound. Although it became quite popular, it was quite some time before we realized that tannic acid was really not the panacea it had claimed to be.

It came to our attention, again through Frank Underhill, that something else should be done to the burn. "Why stop drainage by application of substances like trinitrophenol or tannic acid? Why not treat a burn like any other wound?" Underhill published this idea in 1930, but the work was largely overlooked. It was not until many years later that the chemical escharotics were abandoned and we began to treat the burn as we would any other wound. However, Vilray Blair and James Barrett Brown took some of this advice to heart, and began to treat the burn wounds by applying wet saline soaks and compresses to the wound, and changing them frequently—as

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often, actually, as the nurses could get around to it—thus preparing the wound more rapidly for ultimate graft coverage.

In 1933 Robert Aldrich, working with Firor at Johns Hopkins, published a classical article in the *New England Journal of Medicine*, in which he expressed the thought that "there is enough infection in the burn area to account for all the symptoms and physical signs" that physicians had been ascribing to the "toxemia" which occurred, supposedly, as a result of thermal injury. Today, unfortunately, history repeats itself and the subject of "toxemia" is coming back to the fore. Many are still trying to implicate nebulous toxins in the problems of the burn patient.

THE INTRODUCTION of gentian violet by Aldrich was another step forward in the attempt to control surface infection in the burn wound. However, this did nothing to the gram negative organisms, so he later introduced triple dyes in an effort to control them. As you know, this also was not effective.

In 1935 Bettman wrote an article for *Surgery, Gynecology and Obstetrics* in which he advocated the use of five percent tannic acid plus ten percent silver nitrate for the treatment of the burn wound. This was a combination of an active antibacterial, silver nitrate, with an escharotic, five percent tannic acid, and was used quite popularly for a number of years.

In 1937 an article appeared in the *British Journal of Surgery* implicating tannic acid in central lobular necrosis of the liver, but this connection was not proven until 1942, when tannic acid was demonstrated to cause liver necrosis.

Henry Harkins, in 1942, published a monumental treatise, *The Treatment of Burns*; a volume which even today is a good guidepost to burn treatment. Also in 1942, Harvey Allen, working in Chicago with Sumner Koch, demonstrated that cleaning the wound and wrapping in gauze pressure dressings would result in a mortality rate 25 percent of that of other types of therapy. This gauze pressure dressing technique was used extensively during world war II and the years that followed. Allen was unalterably opposed to the use of chemical escharotics and substances which were placed on the burn wound and, as Underhill did, felt that the burn wound should be treated as any other wound.

The disastrous Coconut Grove fire in Boston in 1942 gave Oliver Cope and others, including Francis Moore, a chance to study the problems associated with thermal injury on a large scale, as well as problems of the individual burn patient. As you no doubt recall, Doctor Cope studied the effect of pressure dressings on the fluid exchange from the vascular compartment to the extravascular space in the burn area, and demonstrated very clearly that the pressure dressing, contrary to popular belief, had no real effect on the rate of fluid loss from the vascular compartment.

In 1949 A. B. Wallace introduced the exposure method of treating burns, doing away with the cumbersome dressings which had been used for many years. This was not taken to heart by many people in this country until Edwin Pulaski, on a trip to England, heard about this and brought the method back to this country. It has remained the primary method of treatment of thermal injury to this day.

One of the prime movers in the treatment of the burn patient and the investigations of the changes dependent upon thermal injury was Everett I. Evans who, in 1950, set forth his fluid formula for the resuscitation of the burn patient. This was twenty-seven years after Underhill's paper. It was the first formula based upon the extent of burn and the size of the patient. Immediately this became popular, and has since been used widely as a primary means of determining the type of fluid and the amount and rate of fluid to be administered. Also about the same time, he began publishing articles advocating the use of sulfanilamide ointment for the treatment of burn wounds. Although this fell into limbo for many years, it was effective.

THE POSSIBILITY of thermonuclear warfare really became the impetus for the advancement of burn care in this country. Prior to this awakening, very little money had been made available for the study of the care of the thermally injured. Thanks to the hysteria surrounding the possible use of A, H, and XYZ bombs, considerable amounts of money were made available. Everett Evans, fortunately,

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was a recipient of some of this money. In the early 1950's Colonel William Stone of the Army Research and Development Board was authorized to provide money for the study of burns. He established, with Doctors Pulaski and Seeley, the Surgical Research Unit in San Antonio, recently renamed the Institute of Surgical Research. Many significant developments in the field have come from workers in that facility. In 1950 Edwin Pulaski introduced the exposure method of treatment to this country. Curtis Artz helped popularize it and along with Eric Reiss, Harry Soroff, and Charles Fox, developed the Brooke Burn Formula.

Truman Blocker and his lovely wife, Virginia, contributed much to the care of the burn patient: Dr. Virginia Blocker with her interest in nutrition and Dr. Truman Blocker with his plastic surgery training, and his primary emphasis on the care of the burned child. Both continue to work actively in the field, and their contributions are numerous.

In 1960, at the urging of Curtis Artz, the first International Congress on Research in Burns was held in Washington. Since then two subsequent Congresses have been held, one in Edinburgh and the second in Prague in 1970. Doctor Artz was also a moving force in the organization of the American Burn Association in 1967, and became its first president.

Then in 1964 the late Carl Moyer presented, at the New York Academy of Medicine, his results in 17 cases of extensive burns treated with 0.5 percent silver nitrate. His presentation, first viewed with skepticism, was accepted by others after experimentation. About this same time we were working in San Antonio on the control of burn wound infection in the burn patient. The work of Teplitz demonstrated that the burn wound itself is indeed the primary source of fatal sepsis in the burn patient. We tried something different, a sulpha derivative, which has been used rather extensively with success that equals that of the silver nitrate. A number of other types of topical therapy have been brought into use, such as gentamicin, silver sulphadiazine and silver lactate and other silver compounds that are presently being tried, both clinically and in the laboratory.

IN RECENT YEARS Charles Baxter has contributed much to our understanding of the immediate postburn period and has introduced treatment innovations of great merit. Most recently he has demonstrated the prominence of the sodium ion in effective resuscitations and developed a new type of burn formula.

In 1965 the second International Congress in Burns, held in Edinburgh, further stimulated the study of burn patients in the laboratory and clinical situations. The main thing these congresses have accomplished is the bringing together of people from various parts of the world, not only physicians, but paramedical personnel, biochemists, bacteriologists and others, allowing them to exchange ideas and better understand the problems which each of them faces. The annual meeting of the American Burn Association has been a forceful stimulus to this end in this country. Indeed, progress has been quite evident in many areas of the burn field previously left untouched such as immunology, vaccine therapy, pulmonary function, Curling's ulcer, and the practical aspects of burn prevention and delivery of burn care.

To sum up, progress in therapy for burn injuries has been slow. In the last ten to fifteen years, the pace has picked up. I am hopeful that in the near future, it will be even more so.

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"A great deal remains to be done, not the least of which is to assure that what is now known and applicable is indeed available to the injured."

Fifty years' progress in abdominal injuries

WILLIAM T. FITTS, JR., MD, FACS, *Philadelphia*
Professor of Surgery
University of Pennsylvania

I CONSIDER IT an honor to take part in this Golden Anniversary Program. The Committee on Trauma of the American College of Surgeons has greatly influenced my professional life, and my associations with its members have been as close as any I have ever had. Although I have had considerable experience in abdominal surgery, I am not nearly so well qualified as many others to discuss injuries to the abdomen. Many have made important contributions in this field, and to them I apologize. However, I can view the scene from firsthand, having participated at resident level in the management of abdominal injuries in world war II, and I have closely followed progress since that time. In the last few years, the editorship of *The Journal of Trauma* has allowed me to view current progress in treating abdominal injuries from the review of many manuscripts on such injuries, both from Vietnam and from trauma centers in this country.

It is interesting to consider the orations that have been sponsored by the Committee on Trauma, beginning in 1929 when Dr. Charles L. Scudder gave the first "Oration on Fractures". The first ten orations were restricted to injuries of bones and joints. In 1940, however, Dr. Frederic W. Bancroft spoke on "Treatment of Traumas of Skin and Subcutaneous Tissues". He was followed the next year by Dr. Walter Estell Lee who spoke on "The General Surgeon's Approach to the Problems Presented by Fractures and Other Traumas". The first Oration on Trauma, as opposed to the Orations on Fractures, was given in 1952 by Dr. Sumner L. Koch whose topic was "The Working Man's Hand". The next year, Dr. William L. Estes, Jr., of Bethlehem, Pennsylvania spoke on "Present-Day Problems in Non-Penetrating Abdominal Trauma". Since that time two other orations have featured abdominal injuries, that of Dr. R. Arnold Griswold in 1959 on "Wounds of the Abdomen and Pelvis", and Dr. Rudolf J. Noer in 1969 on "Liver Injuries".

PROGRESS in the management of abdominal injuries has been tremendous in the last 50 years, both in penetrating and non-penetrating types of trauma.

The study of abdominal injuries due to blunt trauma has been carried on for many centuries. Aristotle has been given credit as being the first to record visceral injury from blunt trauma.[1] He noted that the intestine of the deer was so delicate that a slight external blow might rupture it without injuring the skin. This could have been the first recorded observation of visceral injury from blunt abdominal trauma. Blunt abdominal trauma carries a higher mortality rate than penetrating trauma, the rate being at least 20 to 30 percent.

Twenty years ago Dr. Estes[2] summarized progress to that time in the management of non-penetrating abdominal injuries. He told

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of improvement in the mortality rate over the preceding thirty years, which showed a drop from 30 percent in 1900 to 14 percent in 1950, and attributed these improvements to several factors: better treatment of shock; operation while in shock; exploratory operation in selective cases; certain ancillary aids, such as antibiotics, better anesthesia, definitive means for the control of hemorrhage, and better therapy in trauma of the solid viscera.

It is not difficult to explain a great deal of the progress when one considers how non-penetrating abdominal injuries were viewed just a half century ago. A paper published in *The Annals of Surgery*, from an excellent trauma service at that time, is noteworthy.[2] This paper stated that in ruptures of the liver, conservative treatment is more desirable than an exploratory laparotomy, because surgery is of no avail. Caution was advised in giving blood in abdominal injuries, because of the fear of dislodging a clot. Ruptures of the spleen were treated expectantly. Progress in the supportive care and resuscitation of the patient have been great in the last fifty years and logically account for the greatly reduced mortality.

Progress just as striking appears to have been made in the management of penetrating abdominal injuries over the last fifty years. In world war I, the mortality was 50 percent, in world war II 25 percent, in the Korean Conflict 12 percent, and in Vietnam, 8.5 percent.[3] Many of the factors already mentioned are responsible for this improvement, plus the more rapid evacuation of casualties from Korea and Vietnam battle areas using helicopters.

THE VALUE of antibiotics in penetrating abdominal wounds is well illustrated by the work of Fullen, Hunt and Altemeier.[4] When antibiotics are given early in the course of penetrating wounds of the abdomen, the incidence of wound infection and intra-abdominal abscess is sharply reduced.

The use of x-rays in diagnosing intestinal injuries was first described slightly over 50 years ago. The development of better techniques, and especially the use of angiography, have allowed more precise diagnosis in certain instances of abdominal injury. Abdominal damage to large vessels can be diagnosed by arteriography. Angiographic techniques are especially helpful in instances of suspected injuries to the kidney and other viscera.

Although diagnostic abdominal tap was also first described more than 50 years ago, or before the period we are considering, it has been used much more frequently in the last few years.[5] Abdominal paracentesis is helpful only when positive, since significant intra-abdominal injuries can be present even with a negative tap. Peritoneal lavage is more sensitive, but false positives may be obtained.

THE DEVELOPMENT of newer methods of diagnosis should not let us overlook the contribution made by Shaftan[6] and his colleagues. Shaftan states: "When adequate facilities for the careful observation and investigation of these wounded patients are available, superior mortality and morbidity statistics can be expected by judiciously selecting those patients requiring exploratory laparotomy. The technique uses the same surgical judgment based on training and experience exercised in evaluating the need for abdominal exploratory for intra-peritoneal inflammation". Shaftan's experience was confirmed by Nance and Cohn,[7] who felt that they lessened their mortality from 27 percent to 12 percent by the use of this technique. Not all surgeons agree with this approach. In an editorial in *The Journal of Trauma* in December 1969, as a companion editorial to that of Dr. Shaftan,[10] Dr. Carleton Mathewson, Jr.[11] gives evidence to support the routine exploration of stab wounds of the abdomen.

Dr. Rudolf J. Noer[12] summarized progress in liver injuries in his Scudder Oration of 1969, when he stated: "Severe injuries of the liver can now be effectively managed by early diagnosis and prompt adequate treatment: *1*) aggressive resuscitative measures with blood replacement supplemented by lactated Ringer solution; *2*) thorough exploration with adequate exposure and effective vascular control to determine laceration type and extent of injury; *3*) individual ligation of bleeding vessels and of bile ducts as indicated; *4*) repair when or as indicated, always with drainage, dependently placed and brought out through separate incision; *5*) resection or resectional debridement in the presence of severe damage with devitalized or non-viable tissue present; *6*) common duct drainage in all injuries involving damage to biliary ductal system, and *7*) careful attention to the postoperative metabolic needs of the patient".

However, the mortality in severe blunt hepatic injuries remains high. Some believe that lobectomy has been carried too far, when

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lesser and safer procedures would be just as effective.

Dr. E. Truman Mays[13] has reported on the control of exsanguinating liver injuries by the ligation of the lobar arteries to the liver. In 13 patients, when traditional methods of controlling hemorrhage either failed or were not applicable, the lobar artery was ligated: the right hepatic artery in nine; the left hepatic artery in three, and the medial segmental artery in one.

Drs. Lucas and Walt[14] have done a prospective randomized clinical evaluation of the use of T-tube choledochostomy in liver injuries. Their results failed to demonstrate any advantage of such drainage, and show a significant increase in morbidity when choledochostomy was employed. Complications that have increased significantly with T-tube choledochostomy were intra-abdominal abscess, "stress" gastric bleeding, "septic jaundice", and cholangitis. They warn against the use of T-tubes in very small common ducts.

INJURIES to the vena cava and the hepatic veins and retrohepatic vena cava continue to be associated with a high mortality, and present one of the most formidable therapeutic challenges in surgery. Difficulties of gaining control and performing an accurate repair of this thin walled vessel are well known. The number of such injuries is increasing, and a recent report from Baylor College of Medicine[15] notes that more patients with such injuries have been seen in the last six years than in the previous 20. This increase in frequency also has been paralleled by an increase in the magnitude of the problem occasioned by the use of more destructive weapons, with an attendant increase in the number of severe associated injuries. In spite of this, the mortality rate has been reduced from 50 percent in the earlier series to 40 percent in the latter. Utilization of an internal vena cava shunt, or a tamponading balloon catheter, may allow precise repair in a bloodless field, and has been reported to be life-saving in some cases. Schrock, Blaisdell, and Mathewson[16] reported such a technique in 1968.

Accidental Death and Disability: The Neglected Disease of Modern Society, published in 1966 by the Division of Medical Sciences, National Academy of Sciences, National Research Council, recommended the development of trauma registries. The publication pointed out that emergency case records are often inadequate, and stated that sufficient thought has not been given to extracting information concerning the nature of the accident, the clinical condition at the time of injury and during transportation to the emergency department, the resuscitative measures used, the response of the patient, the initial laboratory and x-ray records, and finally, the ultimate outcome with or without temporary or permanent disability. It recommended the establishment of trauma registries within hospitals similar to registries for cancer.

THE USE OF a computerized trauma registry has been reported in the study of abdominal injuries by Chilimindris, Boyd, Carlson, Folk, Baker and Freeark.[17] The data collection and retrieval are facilitated by new specialized computer methodology. Their trauma registry utilizes up to 13, 80 column computer cards for each trauma patient. These record mutually exclusive data, events of epidemiological, clinical, surgical and bacteriological nature.

Adequate nutrition is a difficult goal to achieve in the presence of the increased metabolic requirements of the injured patient. Anatomical or functional disruption of the gastrointestinal tract further increases the feeding problem by precluding adequate enteral alimentation. Following trauma and subsequent operation, fistula formation is not an uncommon complication, and contributes significantly to morbidity and mortality. This is particularly true of fistulas of the pancreas and upper gastrointestinal tract. The technique of intravenous hyperalimentation allows adequate nourishment, while physically bypassing the gastrointestinal tract, thus minimizing its secretory mechanical stimulation and promoting conditions conducive to spontaneous fistula closure.[18]

Recent reports have described postoperative acute cholecystitis, often associated with gangrenous changes, in young men initially wounded in Vietnam. Gangrenous cholecystitis develops without the presence of gallstones. The mortality rate has been significant and the cause of this entity remains unknown.[19] In most instances of this entity there was a preceding abdominal wound. Patients had suffered severe blood loss, multiple surgical procedures, wound infections, and frequently had had septicemia. An increased index of suspicion should lead to earlier surgical intervention, and a decrease in the high mortality rate.

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ALTHOUGH many problems remain in the management of abdominal injuries, which will be solved by research, it is distressing that many are now dying in this country because of lack of application of what is already known. A study that we did in Philadelphia, and reported in 1964, convinced us that this was especially true for abdominal injuries.[20] Out of the group of 950 deaths from accidental injury, we thought that fifty were salvageable. A number of these had abdominal injuries. Errors made included failure to diagnose a ruptured viscus, and death resulted from hemorrhage because of lack of readily available blood. A recent study from Baltimore tends to confirm our findings.[21] Hospital records and postmortem findings were reviewed for 33 highway deaths in which the main injuries were intra-abdominal. Only one patient out of the 33 died before reaching the hospital. It was estimated that half of these lives might possibly have been salvaged by prompt and proper diagnosis and treatment. The investigation suggests that there is much room for improvement, even in the application of the most basic principles of the management of the injured. In particular, over one third of the cases showed a need for more aggressive treatment of patients in shock. Nearly half involved either failure to operate or excessive delay in operation, despite symptoms of abdominal injury. The results suggest that greater attention should be given to transporting injured patients to facilities which are best equipped and staffed to handle major trauma.

I hope I have pointed out the great advances which have been documented during the last 50 years in the management of abdominal injuries. Many of these have been made by members of the Committee on Trauma of the American College of Surgeons. A great deal remains to be done, not the least of which is to assure that what is now known and applicable is indeed available to the injured. In this regard, no group has done more than this committee in the past, or will have a greater influence on the future.

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"Paracentesis of the pericardium approaches that kind of intervention which some surgeons would term a prostitution of the surgical art and other madness. The surgeon who would attempt to suture a wound of the heart would lose the respect of his colleagues . . . Perhaps another generation will think otherwise about it."

T. Billroth, 1882

Fifty years' progress

in chest injuries

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An overview of the treatment of thoracic/thoracoabdominal wounds and injuries shows that distinct advances were made during the wars of this century, particularly world war II. While many of the precepts proven practical in the second world war have remained valid, the amazing advances in medicine have added refinements to the management of thoracic wounds and have resulted in further improvements in technique.[1] Through the years there have been, of course, lessons in trauma which had to be relearned by following generations of civilian surgeons; even in world war II, reasonably established principles were sometimes ignored or forgotten during succeeding campaigns in different theaters. On balance, however, the pace of improvement has been steady and sometimes spectacular.

In 1922 I was an undergraduate, two years away from entering the University of Michigan Medical School. The armistice was only four years old. The American Association for Thoracic Surgery had been founded five years before. It had been only four decades since Billroth[2] and Paget[3] uttered their now famous prophecies followed closely by Rehn's[4] first successful closure of a heart wound. In 1882 Billroth said, "Paracentesis of the pericardium approaches that kind of intervention which some surgeons would term a prostitution of the surgical art and other madness. The surgeon who should attempt to suture a wound of the heart would lose the respect of his colleagues . . . Perhaps another generation will think otherwise about it". Paget, in 1886, added, "Surgery of the heart has probably reached the limits set by nature to all surgery. No new method and no new discovery can overcome the natural difficulties which attend a stab wound of the heart".

Since many of the attitudes on thoracic injuries during the twenties and thirties came from world war I experience, I will attempt briefly to sum up such thinking.

In the *Medical History of World War I* there was no discussion of thoracic surgery as such, but it was covered in approximately 100 pages under general surgery.[5] Empyema[6] had the big play of 360 pages, and resulted in the tradition that all thoracic surgery was dirty. Even in early 1941, in a named general hospital, I, as a thoracic surgeon, was assigned to the septic service under general surgery. In regard to empyema, it is a pity that no real distinction was made between post-traumatic and post-pneumonic empyema. As some of you may remember, post-pneumonic empyema was a tremendous problem during and immediately following world war I. Graham[6] showed the

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necessity for closed drainage with acute empyema, particularly that due to the streptococcus. In the cronic stage he advised adequate dependent drainage. He noted that both the Estlander and the Schede operations left considerable deformity, both anatomical and physiological, as well as increased mortality. "Extensive decortication is usually accompanied by a large amount of hemorrhage, is extremely difficult and, at times, impossible because there is generalized fibrosis both in the pleura and subpleural tissues", he stated.

Colonel Keller[6] made a name for himself in the treatment of refractory empyema. In 40 closely supervised cases, 173 operations were performed. The average patient was cured at 18 months, but over half were of four years duration at the time of cure. There were but three deaths. Thirty-six of the 40 cases had had multiple operations prior to admission to his service.

Lilienthal[7] had presented his work on "primary major intercostal thoracotomy with lung mobilization" in 1914, but this direct ancestor of modern decortication was literally buried in the surgical literature for the next 30 years.

At the end of world war I, both boldness and reticence characterized the treatment of thoracic wounds. Unfortunately, neither precept has stood the test of time. It was believed that the parietal pleura as the main organ of defense must be preserved and closed airtight. "*This layer is no more amenable to plastic surgery than a wet drum head*". Operations on the lung were done primarily to protect the pleura. Portions of the injured lung were removed "*to insure pleural integrity*". "*Any lung tissue which cannot be inflated or is 'splenized' (i.e., contused) is without function or blood supply and should be removed*". Of course there was a fearful mortality with these operations.

On the other hand, there was great reluctance about draining the pleural space ("*increased risk of empyema*"). Where possible, thoracotomies were closed without drainage. Hemothorax was seldom aspirated unless it was massive and the patient dyspneic. Only then was thoracentesis undertaken; air replacement was almost always practiced "*to prevent bleeding from the lung*".

A careful follow-up of a series of patients stressed the need for continuing rehabilitation and demonstrated the limitations of operative procedures alone as a means of restoration of function.

In the years between the wars, the switch blade and ice pick wounds of the twenties and thirties gave Beck,[8] Elkin[9] and others, particularly in the south, ample opportunity to demonstrate the value of early operation in wounds of the heart. There were no great advances that I can recall in the general treatment of thoracic wounds. During my residency years, John Alexander gave the bulk of his attention to surgery of the thoracic wall and of tuberculosis, and helped with the gradual development of intrathoracic expertise. Looking back on those days, I wonder sometimes what I ever saw in thoracic surgery.

While in Ann Arbor, I can remember a "decortication" for empyema following traumatic infected hemothorax. It was a fairly prodigious undertaking—multistaged of course, including two drainage procedures, several rib resections and a temporary phrenic paralysis: a prolonged clinical exercise but eventually successful. I can remember a student nurse who was admitted following an auto accident. She was in grave shock, and a ruptured diaphragm was diagnosed. But we never operated because we "never could get her in shape for an operation". Of course, she died. It was still years before the universal acceptance of the dictum that early thoracotomy may at times become a necessary extension of the resuscitation process.

And so to the dawn of world war II. Our main guide was the *Manual on Neurosurgery and Thoracic Surgery*.[10] The thoracic portion of some 80 pages was written by our foremost thoracic surgeons of the day: Graham, Bigger, Churchill and Eloesser. A few excerpts show the state of the art in 1940.

Table 1: Treatment pearls from military surgical manual

Non-penetrating chest wounds with hemoptysis:	*If bleeding severe, induce artificial pneumothorax.*
Penetrating injury to internal mammary or intercostal vessels:	*Expose and ligate artery. Close thoracic wall without drainage. "Observe for empyema".*
Penetrating injuries from HEF:	*X-ray. Immediate thoracotomy and removal.*
Penetrating injuries with bleeding and lung contusion:	*Thoracentesis and air replacement. May do thoracotomy and resect lacerated lung. Air-tight closure of chest.*
Rupture of diaphragm:	*If repair is transpleural, crush phrenic nerve.*

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There was also an historic issue of the *Hawaii Medical Journal*, now all but forgotten in the dusty archives of medical history. I am sure some of you will remember that John J. Moorhead[11] was giving lectures on traumatic surgery in Honolulu at the time of the attack on Pearl Harbor. The January 1942 issue recorded some of the agonizing trials and tribulations of the army, navy and civilian medical services. At Tripler General Hospital, for instance, 400 major casualties were admitted on December 7, 1941 between 8 am and 2 pm.

For the first time, thoracic surgeons came to be recognized as specialists. Indeed, advances in the management of chest injury were legion, and were made by general as well as thoracic surgeons, chest internists and anesthesiologists. I can list but a few which I believe were outstanding. For the most part, these are still valid today. They have been cited in considerable detail in the two volume, 900-page *History of Thoracic Surgery in World War II*, authored by Berry, Blades, Brewer, Burford, Carter, DeBakey and Harken.[12] In particular, I am proud of the contributions by thoracic surgeons of the Second Auxiliary Surgical Group.[13]

Following is a brief tabulation of some of the contributions from world war II.

1. In the initial management of thoracic trauma, the primary emphasis was on resuscitation: establishment of a patent airway; cessation or control of hemorrhage; relief of thoracic wall pain usually by regional intercostal nerve block and continuing correction of the impaired cardiovascular physiology.

a. Prompt and repeated aspiration of hemopneumothorax until the pleural cavity was dry, without air replacement.

b. Recognition of the traumatic wet lung syndrome. Development of the attendant philosophy that excessive bronchopulmonary secretions needed constant attention, including catheter suction and bronchoscopy. In the field hospitals of Italy, France and Germany, our nurses and corpsmen all became particularly adept at catheter suction.

c. Correction of impairments in the thoracic wall, whether due to a sucking wound, flailing or crushing.

d. Recognition and correction of pericardial tamponade.

e. Recognition that contused hearts and blast lungs withstood anesthesia poorly, and that all but the most necessary life saving surgery should be postponed.

2. It was soon recognized that at times early thoracotomy might become necessary as an integral and continuing part of resuscitation. Implicit were the dicta that thoracotomy was not indicated just for a "look-see", nor was the mere presence of an intrathoracic foreign body or even a large hemothorax per se, indication for immediate surgery. Specific indications for emergency or early thoracotomy included the following: continuing hemorrhage; massive uncontrollable pneumothorax (probable rupture of main bronchus or trachea); recurrent pericardial tamponade; mediastinal traverse (esophageal or great vessel injury); massive sucking wound (traumatic thoracotomy), and thoracoabdominal wounding.

3. A completely conservative attitude on pulmonary resection if prompt thoracotomy was necessary. It was learned that contused, lacerated lung possessed great recuperative powers. Therefore, an early operative repair rather than resection became the motto.

4. Aggressive approach to wounds of the heart. This writer personally supervised treatment of nine of the 75 wounds and injuries of heart and pericardium cared for by surgeons of the Second Auxiliary Surgical Group.[14] Under field hospital conditions, I had the opportunity to close successfully a through-and-through wound of the left ventricle, and on another occasion, remove an embolic 45 caliber bullet from the right ventricle. In a more formal setting, Harken[15] reported on the removal of 134 foreign bodies from in and around the heart without fatality.

5. The finding that blood in the pleural cavity would clot and organize, with the attendant rediscovery and reapplication of the old principle of decortication for organizing hemothorax and hemothoracic empyema, but at a much earlier stage than before.[16, 17]

As described above, much of what was learned in world war II has become doctrine. Brewer[1] has nicely delineated many of the more recent discoveries in new techniques and in advanced technology, and I am borrowing freely from his excellent presidential address before the Society of Thoracic Surgeons in 1968. Our more recent conflicts, including the present and continuing unpleasantness in Vietnam, have each added its ration of expertise to the general care of the patient with thoracic wounds.

One of the outstanding technical advances

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has been the early and rapid removal of the injured from the field of battle to a unit equipped for expert surgical care. Originally heralded by the limited use of C-47 "ambulances" in Sicily and Anzio, and individual patient evacuation by L-5 planes in the mountains of northern Italy, such transport has been brought to a high state of art in Vietnam by helicopter evacuation. This almost certainly explains the increased mortality in forward hospitals in Vietnam as compared to the best figures in world war II (*see table 4*). Heaton[18] has rightly emphasized that seven of the 15 deaths in his group of 159 soldiers occurred in patients who were in fact mortally wounded but who survived to reach the hospital because of rapid helicopter evacuation. Three died shortly after hospital admission, and four died in the operating room. Even in world war II, there was noted an increased mortality when the evacuation time was shortened. Already there have been a number of experiments in civilian helicopter evacuation in an effort to speed the victims of auto accidents or medical emergencies to a hospital center.[19]

During the past 25 years there have been changes in the approach to thoracoabdominal and esophageal wounds. Many more primary laparotomies have been done with closed chest drainage, and repair of the diaphragm from below. In general, thoracotomies are not performed unless a specific indication exists. Advances in the treatment of abdominal viscera have included improvement in diagnostic procedures including angiography and other radiologic techniques; peritoneal aspirations; Hypaque injection of the wound; improved electrolyte balance; emphasis on thorough abdominal exploration in thoracoabdominal wounds, and improved surgical techniques both for the alimentary tract as well as for abdominal vascular catastrophes. In particular, esophageal wounds and ruptures have received increasing attention. We now know that the only hope of salvage lies in prompt recognition of a rent, whether in the neck or chest; the earliest surgery possible consistent with preliminary efforts to stabilize vital signs, wide debridement of the mediastinum and primary closure of the perforation. This is an outstanding example of corrective surgery as an extension of resuscitation.

Table 2: Advances in respiratory care—diagnosis and surgery[20]

1. Better understanding of pulmonary function, pulmonary dead space, shunts, etc.
2. Lung scanning and angiography.
3. Blood alveolar gas studies (ph, pCO_2, PO_2).
4. Improved use of endotracheal tubes.
5. Greatly widened use of tracheostomy techniques.
6. General use of IPPB and CPPB, both volume and pressure machines.
7. Better surgical techniques:
   a. tracheobronchial repair
   b. pulmonary salvage
   c. use of extrapleural techniques.

Table 2 outlines the general advances made in respiratory care during the past 25 years. Shortly after the war there were early publications by Baronofsky[21] and by B. N. Carter[22] on the value of tracheostomy in caring for the lower airway in trauma. We rapidly came to realize that tracheostomy had been performed very rarely during world war II. My recollection is that I performed only two tracheostomies and in both the indications were laryngeal injury. Two classic papers then set the stage for combining tracheostomy and mechanical respiration in cases of crushed chest with flailing. In 1956 Avery[23] described his combination of an uncuffed tracheostomy tube and Mörch respirator to produce "alkalotic apnea" and "internal pneumatic stabilization". In 1957 Björk[24] introduced cuffed tubes with the Engström volume ventilator.

Shortly after world war II it became routine to drain extensive hemothorax with large intercostal tubes in a closed system; this has continued in wide usage today.

Tracheobronchial repair including local excision and end-to-end anastomosis has gained increasing popularity. Pulmonary surgery including resection has become commonplace and the techniques have greatly improved. Over the years there has been increasing appreciation of the surgical significance of the extraparietal pleural plane. It has been learned that this plane may give rapid access to the mediastinum when there is obliteration of the interpleural space. This has resulted in the techniques of extrapleural pneumonectomy, and closed ex-

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enteration without spillage of a pocket of organizing hemothorax or of empyema.

Nevertheless, conservation continues in the performance of prompt thoracotomy. Thus from 75 to 80 percent of chest wounds in Vietnam[16] did not require early thoracotomy. Figures from our own civilian experience[30] have shown the need for immediate or early thoracotomy to be slightly more than five percent.

Table 3: Advances in cardiovascular diagnosis and surgery

1. Improved diagnosis
   a. cardiac catheterization
   b. cardiograms
   c. angiography
   d. isotopes
   e. monitoring
2. Cardiac resuscitation—rhythmic closed chest compression and defibrillation
3. Cardiac pacemaker
4. Better vascular techniques
5. Superior prostheses
6. Better management of stab wounds
7. Better closed heart surgery
8. Open heart surgery for trauma
   a. hypothermia
   b. cardiopulmonary bypass

As indicated in Table 3, some of our more striking technological advances have come in the cardiovascular field. The pre- and postoperative care of cardiac surgical patients has improved immeasurably. Steady progress in closed heart surgery has continued, including better handling of wounds of the heart. The brilliant achievements of open heart surgery during the past 20 years are too familiar to recount in detail. Both hypothermic techniques and cardiopulmonary bypass have their advocates and their indications. As applied to thoracic cardiovascular wounds and injuries, there is now the opportunity to correct all sorts of previously nonrepairable types of cardiac and great vessel trauma, such as interventricular septal defects and other internal shunts, torn valves and aortic disruptions or aneurysms.

Finally, comparative statistics of our major wars and of civilian practice (*Table 4*) show progressively faster evacuation, superior resuscitation, more expert surgery, lower case fatality, and better rehabilitation, to the end that not only have we continued to add years to life but we are also adding life to years.

Table 4: A comparison of case fatality rates through the years

Period	*Case*	*Fatality rate*
World war 1	Intrathoracic wounds	50 percent
World war 2 Second Aux[13]	1-intrathoracic wounds (1942-44)	10 percent
	in 1945	7 percent
	2-thoracoabdominal wounds (1942-44)	27 percent
	in 1945	20 percent
Korea MASH-1951[16]	1-intrathoracic wounds	3 percent
	2-thoracoabdominal wounds	21 percent
MASH-1952-53[16]	Thoracoabdominal wounds	4.7 percent
Korea-Tokyo G/H[17]	Intrathoracic wounds	0.4 percent
Vietnam-Fwd Surg[18] (Rapid Evac)	Intrathoracic wounds	9.4 percent
Vietnam-Fixed AFH[28]	Intrathoracic wounds	0.2 percent
Beall[29] (County hospitals—1955-1965)	Major hemothorax-intraabdominal trauma	7.9 percent
Jones-Samson[30] (County hospitals—1955-1965)	Major chest injury	1.8 percent
Brewer[1] (County hospitals—1948-1968)	1-thoracoabdominal wounds	7.2 percent
	2-Major chest injury excluding heart	0.7 percent

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"A turning point came for many of us in 1960 at a conference in Washington . . . He referred to his personal experience . . . and made a comment: 'It seems to me that what we need now is not so much more and better animal experiment but rather more and better observation of the injured man.'"

Fifty years' progress in shock

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IT IS A PRIVILEGE to have been asked to speak to this imposing title. Upon reflection it has seemed more suitable to concentrate on how advances have been turned to useful treatment, than to spend so short a time in following the ebb and flow of theories about shock. The Committee on Trauma has a lineage of fifty years of surgeons of the practical variety, prepared to move ahead in practice despite confusion in the field of theory, never unmindful of good scholarship and good research, but interested morning, noon and night in what can be applied to injured patients. In line with this tradition I shall deal with progress in the management of shock, risking the accusation of neglecting work of scientific merit in the process.

How did our founders view the field of shock in 1922? Rest, saline, blood and morphia were established as prime elements in treatment. In world war I splinting of major fractures had been introduced. My father, Dr. Fraser B. Gurd, who was active as a front line surgeon, described the Thomas splint as the single most important contribution of the first world war in the control of shock.

Saline was used with caution on the basis that it would dilute the toxins of infection and disintegrating proteins. The concept of a deficit of fluid was not entirely new. Its role in the mortality of bowel obstruction had been noted in the dog, but the need for salt solution in substantial quantities was slow to be appreciated. Obsession with the toxic theory of the cause of shock diverted the direction of research and delayed the rational evaluation of results of treatment. The strongest advocacy of intravenous saline in shocked patients in the early 1920's came from Dr. Rudolph Matas.[1] The story has been told by Louis Mengoli in a most charming paper published just a year ago.[2]

Blood transfusion was gaining in respectability. However, as with fluids and electrolytes, its application was not soundly based, for the techniques were not available whereby a protocol to monitor its quantitative use could guide the therapy. In 1922 a normal transfusion was a pint of blood.

The years from 1922 to 1940 reveal a curious lack of effectiveness on the part of basic scientists to help in the elucidation of the process known as shock. Changes in the contractility and in particular the permeability of capillaries were considered all-important. The new endocrinology blamed adrenal insufficiency. On balance, the scientists were more often wrong than right, their teachings actually impeding the work of a new breed which was emerging, the surgical investigator. The critical corrections in the course of shock research were made by a small group of able surgeons. Dr. Blalock

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in 1927 showed that shock after muscle trauma could be explained by hemorrhage and local fluid loss.[3] Drs. Phemister, Freeman and, before long, Wangensteen were likewise active in the laboratory, studying the nervous system, venous return, cardiac output, and adding to our knowledge of blood volume. Most important of all, these men were taking what was learned in the laboratory and putting it to practice on the wards.

By the outbreak of world war II it was agreed in general that shock was largely a form of circulatory failure in which low venous return and venous pressure were commonly associated with low volume states. This much was good and led to more attention being directed to volume replacement. However, there were negative considerations to contend with, such as the exaggerated importance which was attached to generalized capillary damage. Toxemia in shock was felt by some to be inevitable, or at least predestined, in severe injuries. The presence of hypoxia went undetected and inadequately treated. Not least, precise diagnosis was neglected, and the blanket use of the term shock covered a multitude of sins.

IT WAS FORTUNATE for thousands of the wounded that world war II was preceded by the introduction of blood banks. The psychological acceptance of voluntary blood donation and the technology of banking were happily established just in time to meet the need. Plasma was also made available, replacing other substitutes inherited from prewar years. Those of us then engaged in early treatment of the wounded were now adequately equipped, for the first time in history, to replace the losses seen in battle casualties. The new and wonderful world of penicillin promised to displace sepsis as a major cause of death. Blood, penicillin and aggressive fluid therapy improved the tolerance of healthy men for shock and cleared the way for better early surgery, with both survival and return of function being assured as never had been possible before.

During this period the first good information on the dynamics of the circulation in the human during shock was being obtained by Cournand[4] and others. In many minds the management of shock was blood, and if enough was given by transfusion all problems would resolve.

However, it has been an axiom of progress in the management of shock that each advance has introduced what we might call the complications of survival. The first organ to display a lesion attributable to shock survived was probably the kidney, followed in certain cases by the liver and in short order by the lung.

The limitation which became apparent with the greater use of blood and plasma was the effect of overtransfusion upon the cardiopulmonary apparatus. It took close observation to identify the line between too little and too much, and sometimes it was not within the limits of clinical judgement to be sure which way to turn. My own military service gave me a large experience with freshly wounded men in Italy and Holland, and like many among you I knew the anguish of repeated failure. I hoped that the return of peace would bring a chance to study shock in greater detail, to learn how to resuscitate and hold our gains.

In 1947 Eaton described the pulmonary fluid load and increase in lymph flow in shock and in resuscitation,[5] and Moyer was working on congestive atelectasis, expanding the attempt to understand, prevent and treat the pulmonary changes which remain a major problem to this day.[6] From that year of 1947 to the present time the history of progress in the fields of shock and the related care of threatened systems is written in the volumes of the Surgical Forum of the American College of Surgeons.

The 1950's were a time of detailed study of the circulation, some marvellous applied technology and a succession of false hopes. The application of the flame photometer to measurement of sodium and potassium in fluids, together with dilutional studies of the composition of the body, led to a quantitative view of fluid and electrolyte requirements. The advent of the gas electrodes enabled us to recognize hypoxia and acid-base disturbances. Plasma expanders were improved. Owens and Wilson were working to define the indications for the use of central venous pressure.[7]

AT THIS JUNCTURE I would like to comment on a unique and particular privilege of my own, namely to have served the full nine active years on each of two great sister committees of ACS, Trauma and Pre- and Postoperative Care. I would like to pay a tribute to the Pre- and Postoperative Care Committee, a child of Dr. I.S. Ravdin, my old chief. In my opinion this one group deserves the major credit for our progress in supportive care in the last 20 years.

Despite the gains which have been noted, actual improvement in the care of the severely

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injured was disappointing in the 1950's. Knowledge gained was slow to be applied on a broad scale. Progress bogged down repeatedly in endless arguments about the merit of details of treatment. Great effort was expended studying vasopressor drugs and autonomic blocking agents, research which helped our understanding but did little for our patients. Techniques like artificial hypotension, artificial hibernation and intra-arterial transfusion had their day. Corticosteroids seemed a two-edged sword, while protease inhibitors failed to control presumed destructive enzymes.

The war in Korea showed that fast evacuation of the wounded was rewarded by success in many types of wounds thought to be lethal. Major contributions to the management of shock were being developed by Curtis Artz and several other members of the Committee on Trauma.[8] Their work supported views congenial to this committee, namely, that one should not give up the struggle to resuscitate a patient despite the consolation of irreversibility as an excuse for failure.

The discovery that the tolerance to shock was linked to the degree of damage to the bowel was an important event. In 1957 Lillehei established that perfusion of the bowel could give survival in the shocked dog.[9] A little later our own studies showed that dogs protected against damage to the bowel by any means no longer showed the usual irreversibility but resisted shock, thereby persuading the authors at least that canine irreversibility was an accident of species, and that the term should not be used in human shock.[10, 11]

A TURNING POINT for many of us came in 1960 at a conference in Washington on shock, called largely through the initiative of Drs. Jonathan E. Rhoads, John M. Howard and Sam Seeley. To me, the key which opened a new door was the presence of Drs. R.T. Grant and E.B. Reeve. Some twenty years before, these men were driven from their laboratory in London by a German bomb. No longer able to continue their research, they went to work on the wards. There they found that the shocked patients were being undertreated in terms of blood replacement. They said so in clear terms, and their ideas became enshrined in War Office directives and saved untold lives during the war.

Therefore, on this day in 1960, we listened carefully when Dr. Grant presented his discussion on shock models. He gave examples of how animal experiment had actually misled us in the past. He referred to his personal experience in studying patients and then made a comment which I quote: "It seems to me that what we need now is not so much more and better animal experiment but rather more and better observation of the injured man".[12]

No one took this to mean the end of work with animals, for we all knew that we must have the controls which animals make possible. However, I know that I went home determined to set up a clinical shock study unit. During the middle 1960's several studies parallelled our own,[13, 14] and from the demonstration of the value of a formal protocol in managing refractory shock, emerged a concept of intensive care. It became clear that the objectives of the treament of shocked patients must go beyond the simple restoration of effective circulation and must provide for and maintain effective tissue gas exchange. The new art of ventilatory care was found to be as important for survival as the support of the blood volume in many types of patient. In addition, the general term "shock" came to be recognized as an inadequate diagnostic label. The influence of Francis Moore and others was seen in a more versatile clinical terminology, better defining the mechanisms actually involved in severe injuries.[15]

The consequences of this shift of emphasis brought a special thrill to me. It was about five years ago that I recall discovering that our staff could carry patients with critical multiple injuries through their resuscitation to immediate definitive surgery at the hands of multiple teams, with acceptable safety, under monitored control before, during and after the operation. The expectation not only of survival, but also of good function in an unbelievably short time, became the goal which spurred our men to greater efforts. A potent factor in this breakthrough, a vital complement to our new mastery of controlled therapy of shock, was the new and more integral role played by our specialist teams in the total care of the patients, and perhaps most important of all, their increased interest in basic physiology as well as specialized techniques.

THE CURRENT SCENE presents its share of challenges. Three major problems dominate the clinical care of ill and injured patients who have accumulated complications subsequent upon a period of shock. The first of these concerns the cardiopulmonary circuit and the

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transport of oxygen. The second concerns sepsis, the third the matter of nutrition. At present we appear to be held up in gaining understanding of the lung in shock, but despite these frustrations the quality of pulmonary care is constantly improving. Erythrocyte dysfunction as a detrimental factor in overall oxygen transport is becoming better understood. Measurements can now be made in man from both sides of the pulmonary circuit. The role of insulin in shock is under active study. Models in animals are used to mimic stressful situations and to dissect details of morphology by means of the electron microscope. This new approach to pathological histology, coupled with molecular biology, offers new insights into pathogenesis of organ change in shock and stress.

Alimentation in the grosser sense is at long last available to patients limited in their ability to handle normal food. The long-term work of Rhoads, Vars and Dudrick have put central venous feeding on a solid footing. This method can be teamed with oral elemental diets to provide support to a wide range of patients otherwise condemned to gradual starvation.

The protective effect of an elemental diet upon the gastrointestinal mucosae, described in shock, burns and stress ulcer by the group in Montreal,[16] undoubtedly is but one clue to possibilities in further study of the micronutrients. Precise demands of body cells for metabolic substrates have never been defined in relation to resistance and repair. Chiu has already shown that glucose in the lumen of the bowel protects it in an instant therapeutic sense.[17] A major study is now underway on the repair of tissues after insult, with special reference to patterns of nutrient metabolites which will enhance recovery.

In closing, I believe that both our Colleges, American and Canadian, are now embarked on steady courses towards their main objectives. The application of our present knowledge calls for educated team work, crosslinks with other specialties, sound standards and the finest training for all members of the team. A more inspired administrative stance is also needed if our profession is to play its part in organizing channels guaranteed to funnel injured patients to the best of treatment.

Both these progressive streams meet in this College, and perhaps they meet to best effect in this committee, combining as it does imagination in administrative matters with a solid academic base.[18]

There is surely much for this Committee still to do, enough to keep it busy for another fifty years.

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". . . many methods of treatment, techniques and new instruments were introduced, to become popular for a time, only to fall into disrepute and then be discarded. A few have stood the test of time."

Fifty years' progress in **skeletal injuries**

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Fifty years ago the treatment of fractures was, in the light of today's standards, primitive and slip-shod. The field was mostly presided over by general surgeons and a few orthopedic surgeons and, as in recent years, dominated by strong and sometimes controversial personalities. As a matter of fact, all of the significant steps in the progress of the specialty over the years have been marked by one man's or another's personality. In many instances the struggle for recognition and prestige sometimes outweighed and overshadowed the value of the issue in question. In certain instances the strength of will and the ability to convince his peers sometimes allowed a proponent of an outmoded idea to perpetuate his thinking years and generations beyond its possible value.

Witness the fact that Royal Whitman, even while in retirement in the later years of his life, continued, with the help of his son Armitage, to impress the profession with the value of the Whitman method of the treatment of fractured hips. His influence, even ten or fifteen years after Smith-Petersen had brought forth the three flanged nail, was responsible for slowing progress in this field for many years.

A similar story is that of the development of the hanging cast by John Caldwell. This clumsy, useless and harmful cast caught the imagination of the fracture surgeon and is used to this day by surgeons whose only excuse for using it is "I get such good results with it". Of course they would get as good results with less trouble if they applied the cast to the sound arm. McLaughlin called this "the elbow stiffening device". The drama of the story of fracture treatment over half a century is primarily the story of strong surgical personalities and the mere recital of the events in the careers of a dozen or more surgeons would cover most of the progress in the field.

When I was in medical school in 1922, the treatment of fractures at The New York Hospital was undertaken by general surgeons only. Lewis Atterbury Stimson, the first professor of

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surgery at Cornell and chief surgeon at The New York Hospital until 1913, and a commanding figure in surgery, had written a text book on fractures and dislocations which had gone through many editions. His work, carried on by his assistant James Morley Hitzrot in the 20's, was confined for the most part to closed reductions, applications of plaster, Whitman treatment for fractured hips and occasional open reductions for femurs and tibias.

INTERNAL FIXATION was used sparingly, employing Lane plates and screws, later to be supplanted by Sherman plates of vanadium steel, a development of William O'Neil Sherman, one of the original members of the fracture committee. Sherman's work as chief surgeon of the U.S. Steel Company in Pittsburgh gave him the opportunity to treat many serious fractures in steel workers, as well as to obtain the help of metallurgists and engineers in improving the strength and composition of the early vanadium steel plates.

We were still under the influence of world war I experience, and the Balkan frame and Thomas splint were the standbys for fracture traction and suspension. The frames were all home made of simple boards held together by bandages and adhesive. The plaster bandages were rolled with loose plaster and crinoline in each hospital, a tedious task. Plaster spicas were reinforced with wooden slabs and these clumsy thick objects were removed by interns by means of a hand knife only. There were no motor saws.

AS A COROLLARY to operative treatment, the Carrell-Dakin solution was popular and was used extensively, a very difficult and time consuming method, painful to the patient and irksome to the younger surgeon. The solution was quite unstable, and there was no way to check the rate of oxidation of the chlorine and thus the efficiency of the solution. After Sir Arbuthnot Lane brought open reduction and plating of fractures to America, Sherman improved the method and advocated it so earnestly that it became widely used, often with disastrous results. Darrach and Clay Ray Murray also were strong advocates of open reduction and plating of femurs and tibiae. They advocated certain technical details that made the "Presbyterian method" popular, but other surgeons were not able to achieve the results reported by Murray.

Lorenz Böhler, an advocate of conservatism in fracture treatment, warned of the dangers of indiscriminate operations and showed that closed reduction and plaster immobilization was the best treatment for most fractures. As late as 1950 he made the statement that he had never had an infection of a plating operation on a tibia, because, he added, he had never plated a tibia. His unpadded plaster and walking plaster became very popular, but the misuse of the unpadded plaster caused serious complications too.

During the 20's Baer at Baltimore advocated the maggot treatment for infected fractures. This rather distasteful technique did indeed clean up the wounds and kept them debrided constantly, but the preparation and application of the maggots was most annoying to the patients and all concerned. It was with relief that most surgeons discarded this means of wound care. Shortly thereafter another unsavory type of treatment was advocated by Orr for the treatment of osteomyelitis. This was applied to infected fractures where the wound was filled with vaseline gauze and a circular cast applied and left in place "until the odor became too foul to bear". Only then was it removed and replaced. This method was continued and used widely by Trueta in the Spanish revolution and great claims were made of excellent results. These methods preceded the discovery of antibiotics and were fortunately supplanted by other methods in later years.

AS A MATTER OF FACT the combination of antibiotics, improved anesthesia and the discovery of non-electrolytic metals, all appearing at about the same time, did much to change the operative treatment of fractures and place it on a safer plane. It then became possible to treat many fractures in a way that was not considered safe in early days.

Venable first used vitallium, a chrome cobalt and molybdenum alloy, in the manufacture of implantation devices in 1937. Later SMO-18-8 stainless steel was found to be almost as inert and in some ways more serviceable since it was a rolled alloy and not a cast alloy as vitallium was. Venable fought for his alloy (it was patented) and kept it going for many years. Finally it was supplanted by other metals, similar but with some advantages. Venable became bitter over the criticism of vitallium and he and Clay Ray Murray, once the closest of friends, became bitter enemies because Clay

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Murray was advocating stainless steel instead of vitallium.

During the 30's and before world war II, the instrument makers got into the field and a number of apparatuses for fracture treatment were developed. One, the Ambulatory Splint (the name was retained by a brace maker for years) for fractured hips was supposed to hold the fractured fragments in place while the patient walked in the supporting long leg splint. Many wild claims were made of excellent results by this method, but the advent of nailing finally and kindly consigned this splint to oblivion.

THEN JUST BEFORE world war II came a rash of external fixation splints championed by Roger Anderson of Seattle and the veterinarian Stader in Philadelphia. These expensive and clumsy machines were sold by the manufacturers to both army (Roger Anderson) and navy (Stader) and put in almost every military hospital in the service. It has taken years to undo the damage that enthusiasts perpetrated on the unsuspecting public, all with the help of the army and navy departments. The method was so actively pushed that a Society for External Fixation of Fractures was formed and for a few years membership was solicited, but when the method fell into disrepute the name was changed to the American Fracture Society. *Sic transit gloria!*

A much more dangerous and vicious method of treatment was the plastic glue (Ostamer) treatment advocated and fiercely fought over by a few surgeons and a manufacturer. Only by strong measures was this harmful material taken off the market.

During the war the American army discovered, in prisoner of war camps, German pilots with intramedullary rods in femurs. Designed by Küntscher, this surprising method was found to be useful and became popular in this country after the war. It became one of the major developments of fracture treatment after world war II.

After the war Böhler continued to advocate conservatism in the treatment of fractures as did Watson-Jones. Watson-Jones became the hero of fracture care after the war and his excellent courses on fracture treatment did much to improve fracture care in America and maintain a perspective which had respect for open reduction but a preference for conservative care. His influence has probably done more to temper the popularity of open reduction than any other factor.

The improvement in metallic implants, as well as in the manufacture of fracture instruments, together with antibiotics, better anesthesia and more meticulous surgery, has allowed the operative treatment of fractures to become popular, useful and comparatively safe. In the past few years the Swiss Group, (AO or ASIF group) headed by Müller, has proposed its new principle of open reduction and internal fixation, the compression method, and has given courses in various centers in the world, more especially in Switzerland, to thousands of young men, advocating internal fixation by its method. It has sold thousands of very expensive sets of instruments and metallic devices to young surgeons the world over, who are encouraged to use the method in many fractures. The method is good in expert and experienced hands for a limited number of fractures, but, as in the past with other popular and dangerous methods, the indiscriminate use of the method and its misuse have caused many serious complications and given a bad name to the whole method.

AN EXCELLENT example of the course of progress in the treatment of fractures is that of the fractured hip, which has gone through the throes of development with improvement at each step. In the days before Whitman, the fractured hip was treated with little effort at permanent cure. Whitman is said to have been the one individual to lift the fractured hip into the realm of good treatment. He did indeed change the treatment, but did little to heal the fracture and held back the nailing method by his persistent criticism and unwarranted claims of good results by his method. Fred Cotton's impaction hammer was a vicious looking instrument which was impressive in its force, but surely did nothing to improve the condition of the fractured hip. It is now useful only as a museum piece in the Association for the Surgery of Trauma.

Smith-Petersen's development of the three flanged nail was one of the greatest steps in progress in the past fifty years of fracture care. He made operative treatment of the hip possible and although there have been many improvements since, in the type of metal alloy, in the design of the nail and in the addition of other types of nails, the contribution he made still stands as one of the greatest of the half century. The recent corollaries to hip surgery

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in the prostheses of Austin Moore and others, and the development of the total hip replacement by Charnley, are further chapters in the fascinating story of skeletal surgery.

THE DESCRIPTION of the treatment of fractures of both bones of the leg over the past fifty years will chronicle a story of a variety of treatments that have gone full circle from Böhler who, after world war I, advocated conservative treatment of leg fractures and advised closed reduction and walking plaster, through the era of operative treatment suggested by Lane, advocated by Sherman and made popular and fashionable by Clay Ray Murray and Darrach. The advent of external fixation became a semi-conservative method which competed with plates, Parham bands and circumferential wires of the French, until Lottes advocated his intramedullary nail for "most" tibial fractures. This method became popular, especially in St. Louis, and was reasonably countered by the surprising advocacy of conservatism by Col. Dehne who again has suggested that no tibiae be operated upon. His results have by and large been accepted and considered favorably by most American fracture surgeons to date.

However, in the very period of proof by Dehne of the advantage of conservative treatment, we have the recent compression plate treatment of the Swiss again capturing the imagination of the young venturesome surgeon. It is to be hoped that the young will learn from history and perhaps take up the new methods with at least an open mind.

The history of skeletal injury care over the past fifty years reveals that many methods of treatment, techniques and new instruments were introduced to become popular for a time, only to fall into disrepute and be discarded. A few have stood the test of time and there has been significant progress in the field. Improvements in surgery in general in the fields of resuscitation, blood replacement, antibiotics and anesthesia have given fracture treatment new horizons in which to develop the newer operative methods. New instruments and improved implant materials are adding to the surgeon's ability to use operative methods more safely. However, conservative methods are even now the safest and best treatment for many, probably most, fractures. The general principles of fracture care do not change, as do techniques and methods, and these principles must be adhered to as we continue the quest for progress in the field of skeletal injury.

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"Opportunities for carrying out the more modern procedures for the repair or reconstruction of damaged blood vessels were conspicuous by their absence during the recent military activities. . . . Not that blood vessels were immune from injury; not that gaping arteries and veins and vicariously united vessels did not cry out for relief by fine suture or anastomosis. They did, most eloquently, and in great numbers, but he would have been a foolhardy man who would have essayed sutures of arterial or venous trunks in the presence of such infections as were the rule in practically all of the battle wounded."

. . . Bertram M. Bernheim, 1920.

Fifty years' progress in vascular injuries

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THE QUOTE ABOVE emphasizes the status of vascular surgery approximately fifty years ago. Despite the fact that the principles and techniques of vascular surgery have been practiced both experimentally and clinically, the potential complications of infection and exsanguinating hemorrhage loomed as formidable threats to any attempted vascular repair. Without the availability of antibiotics and blood transfusions, the general consensus following the experience in world war I was that it was safer to ligate a major vascular injury than to repair it. An extremity might be lost; but there would not be the danger of a disrupted suture line with ensuing hemorrhage, which was frequently fatal.

The experimental and clinical contributions of pioneers in vascular surgery around the turn of the century provided a firm foundation for the development of successful repair of arterial and venous injuries. Despite the disastrous results associated with some attempted vascular repairs during world war I, there were individual surgeons who continued to encourage vascular repair in selected situations. In reviewing his experience at the No. 1 (Presbyterian U.S.A.) General Hospital, B.E.F. France, in 1918, Goodman suggested the suture of blood vessel injuries from war projectiles:

"The ligature of the main vessels of an extremity for the control of hemorrhage seriously jeopardizes the life of that extremity, but this danger may be averted in many instances by suture, prorided a certain degree of care be exercised in this attempt by the operator."

During more than the first half of the past fifty year period, the attention of those interested in vascular surgery was focused on the management of arteriovenous fistulas and false aneurysms. Even during world war II there were very few attempts made to repair acute vascular injuries.

One of the greatest contributions that resulted from the Korean conflict approximately 20 years ago was the demonstration that repair of acute vascular injuries could be successfully carried out, even under combat conditions. This has again repeatedly been demonstrated in the more recent experience in the combat situation in Vietnam. There has also been an equal interest, and frequently somewhat more favorable results, obtained during the past 20 years in civilian communities.

Hallowell is generally given credit for performing the first crude arteriorrhaphy more than 200 years ago. The account of this outstanding contribution is documented in a letter

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dated June 15, 1761, from Lambert, surgeon at Newcastle-upon-Tyne, to Hunter giving an account of a new method of treating an aneurysm. Lambert wrote:

"I consider the coats and motions of arteries, and compare their wounds with the wounds of veins and other parts. I reflected upon the process of nature in the cure of wounds in general, and considered in particular, how the union of divided parts was brought about in the harelip, and in horses' necks that are bled by farriers. Upon the whole, I was in hopes that a suture of the wound in the artery might be successful; and if so, it would certainly be preferable to tying up the trunk of the vessel. I communicated my thoughts to Mr. Hallowell. . . . He put it into execution on June 15, 1759. Everything was done in the usual method, til the artery was laid bare, and its wound discovered; and the tourniquet now being slackened, the gush of blood . . . . showed there was no deception. Next, two ligatures, one above the orifice, and one below, were passed under the artery, that they might be ready to be tied at any time, in case the method proposed should fail. Then a small steel pin, rather more than a quarter of an inch long, was passed through the two lips of the wound of the artery, and secured by twisting a thread around it, as in the harelip. This was found to stop the bleeding; upon which the arm was bound up, the patient put to bed, and ordered to be kept quiet, etc. as usual in such cases . . . . and July 19, the patient was discharged from the hospital perfectly well, and with a pulse in that arm nearly as strong as in the other. . . . If it should be found by experience, that a large artery, when wounded, may be healed up by this kind of suture, without becoming imperrious, it would be an important discovery in surgery. It would make the operation for the aneurysm still more successful in the arm, when the main trunk is wounded; and by this method, perhaps we might be able to cure the wounds of some arteries that might otherwise require ampulation, or be altogether incurable."

The above description emphasizes the fact that 213 years ago it was recognized that amputation of an extremity might be avoided if a major extremity artery could be repaired rather than ligated.

Following the Lambert-Hallowell success, it was more than a hundred years before significant additional contributions were made. There were some individual contributions during this interim, but they created little influence. G. J. Guthrie in 1830 reported closing the internal jugular vein by placing a tenaculum through the cut edges of the vein followed by tying a suture around the tenaculum which created a lateral type of ligature. Eck was the first surgeon to permanently provide a union between two blood vessels when he created his portocaval anastomosis in 1879, which became so important to physiologists (*Table I*).

In 1882, in Germany, Schede advocated the successful closure of the femoral vein in man by lateral suture. According to many, this accomplishment, together with reports by Glück and Braun, has marked 1882 as the birth of modern vascular surgery.

CONSIDERABLE experimental work was carried out during the 20 year period prior to 1900 by many individuals including Von Horach and Abbe. However, Jassinowski of Odessa is frequently recognized as being one of the most accomplished vascular surgeons of his era. In 1889 he published experimental work on the successful suture of carotid arteries in horses. He also emphasized the use of fine needles and silk in performing arterial repairs (*Table II*). In 1890 Burci advocated the use of continuous fine silk sutures in arterial anastomoses.

Table I: major contributions to the development of vascular surgery

Surgeon	Procedure	Year
Hallowell	Lateral repair of a brachial artery in man	1759
Eck	First permanent union of two blood vessels	1879
Schede	First lateral vein repair in man	1882
Murphy	First end-to-end suture of an artery in man	1896
Goyanes	First vein graft repair of an artery in man	1906
Lexer	First saphenous vein graft of an artery	1907
Carrel and Guthrie	Established many basic principles	1902 thru 1912

Table II: early contributions to vascular repair technique

Year	Surgeon	Method
1759	Hallowell	Pin and thread
1881	Glück	Small ivory clamps
1889	Jassinowski	Fine needles and silk
1890	Burci	Continuous suture
1896	Murphy	Invagination technique
1899	Dörfler	Suture all layers
1902	Carrel	Triangulation technique

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In 1897 J. B. Murphy of Chicago reported the first successful end-to-end anastomosis of an artery in man which he had performed October 7, 1896. He utilized the invagination technique after resection of a femoral arteriovenous fistula. Kummel is given credit in 1899 for performing the first clinical end-to-end anastomosis of a femoral vein. In the same year Dörfler advocated including all three layers of the artery in the suture line rather than avoiding penetration of the intima, as had previously been advocated.

In the first ten years of this century significant contributions were made both experimentally and clinically. In his work of 1902-1903, Carrel advocated end-to-end arterial anastomosis by the triangulation technique. Carrel combined his efforts with those of Guthrie and their contributions were summarized in *Blood Vessel Surgery* in 1912. They gave impetus to vascular transplants using both autografts and homografts. The first clinical application of a vein graft to repair a missing arterial segment was performed in Madrid by Goyanes in 1906. The following year in Germany Lexer performed the first saphenous vein graft of an artery.

AS EARLY AS 1910 Stitch had collected over 100 reports of arterial repair by lateral suture and 46 by end-to-end anastomosis or vein graft substitution in man. Nevertheless, because of the high failure rate, usually from thrombosis, few surgeons at that time considered arterial repair as worthwhile. In the early part of world war I, when low velocity small arms bullets caused most of the limited arterial trauma, German surgeons had an interest in repairing these wounded arteries. But by 1915, with the widespread use of high explosives and high velocity bullets, there were wounds with more massive tissue destruction, which, together with mass casualty situations and slow evacuation of the wounded, made arterial repair less practical. As previously mentioned, the lack of antibiotics and blood transfusions, combined with the frequently fatal exsanguinating hemorrhage associated with infected vascular repairs, contributed to the continued acceptance of ligation as the preferred method of managing vascular injuries. This persisted into the early part of the Korean conflict.

Major interest in vascular surgery between 1920 and 1950 centered on the management of arteriovenous fistulas and false aneurysms. Outstanding leaders included Holman, Matas and Reid. The practical application of managing large numbers of arteriovenous fistulas and false aneurysms was accomplished during world war II. With the establishment of the first vascular center at the Greenbriar General Hospital at White Sulphur Springs in 1943 by Seeley, several hundred arteriovenous fistulas and false aneurysms were operated upon by Elkin. Other vascular centers were established, and Shumacker also had extensive experience in managing arteriovenous fistulas.

Discouraged by the world war I results, surgeons began to use various types of prostheses and tubes in an attempt to repair arteries. In 1942 Blakemore, Lord and Stefko advocated the use of a vitalium tube combined with a vein to bridge the gap between two arterial ends. Although their method was utilized in world war II, complications eliminated its acceptance.

While ligation was accepted during this 30 year period for arterial injuries, considerable controversy existed concerning concomitant ligation of the uninjured accompanying vein. This procedure had previously been advocated, and it was not until 1950 that it was finally generally accepted by everyone that ligating the accompanying vein was not only unnecessary but also harmful.

WITH THE ONSET of world war II, a National Research Council committee outlined recommendations for the care of combat-incurred vascular injuries. Published in a military surgical manual in 1943, the information was based to a great extent on the world war I experience, and proved greatly misleading when put into actual practice. An example from the published table suggested that ligation of the popliteal artery along with its accompanying vein would not result in gangrene!

During world war II numerous surgeons such as Rose, Hess, Wells, Smith, Stewart, Bradford, Moore and others attempted acute arterial repairs; but the results were little better than those following ligation. The classic review of the world war II experience by DeBakey and Simeone in 1946 evaluated 2471 acute arterial injuries from the American experience. The overall amputation rate was approximately 49 percent following arterial ligation. There were only 81 repairs with only three of these performed by end-to-end anas-

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tomosis. Nevertheless, the amputation rate following repair was lowered to 36 percent.

As a result of the world war II experience, there was a great interest created in vascular injuries and vascular surgery in general. The continued interest and research by many individuals including Blakemore, De Bakey, Elkins, Freeman, Gross, Holman, Lord, Shumacker, Simeone, Swan and others helped set the stage for the great progress in vascular surgery of the last 20 years. Also, during the world war II period, Murray inserted one of the earliest successful vein graft repairs when he repaired the popliteal artery by this method. He also entered his first successful use of heparin.

With the above mentioned contributions, plus the development of new drugs and instruments, the stage was set during the time of the Korean conflict when large numbers of patients provided the opportunity to test the practicability of repair of acute arterial injuries. Early in the Korean conflict, however, vascular ligation was practiced with conservative care of arteriovenous fistulas and false aneurysms. Again, under the direction and encouragement of Seeley, the major vascular center was established in 1950 at Walter Reed General Hospital. Several hundred arteriovenous fistulas and false aneurysms were treated by Hughes and Jahnke with an attempt made in their later experience to restore the continuity of the blood supply (*Fig. 1*).

With rapid evacuation in Korea, new vascular instruments, antibiotics, blood replacement, and stabilization of the fighting, acute vascular repair was begun in the MASH hospitals. Early members of the Army Surgical Research Team, which included Artz, Howard, Hughes and Jahnke, reported their first 130 cases with an average 11 percent amputation rate. Spencer worked in a Navy hospital under similar circumstances, but utilized more homografts than did the Army team. The majority of the repairs were by direct anastomosis with a liberal use of autogenous vein grafts and lateral suture. An overall study of the vascular injuries in Korea reported in 1958 by Hughes showed 304 major arterial repairs with an amputation rate of 13 percent (*Table III*).

Following the Korean conflict, both civilian and military interest in the field of vascular surgery was stimulated and expanded. A large number of civilian hospitals reported sizable numbers of vascular repairs (*Table IV*). For these large groups the overall amputation rates ranged from three to 16 percent. Because a number of the reports contained a significant number of minor arteries, arteriovenous fistulas and false aneurysms, it is difficult to compare statistical results. While some considered retention of a viable limb a success, others used the criteria of adequate pulses distal to the repair. A compilation of the available data suggests that the amputation rates in larger civilian hospitals ranged from approximately five to seven percent. While this percentage is markedly better than that achieved in Korea or Vietnam, it is not expected that the results in battlefield wounds created by high velocity missiles and repaired under mass casualty conditions in a battlefield hospital, will ever equal the results achieved in large fixed civilian or military hospitals. (*Fig. 2*).

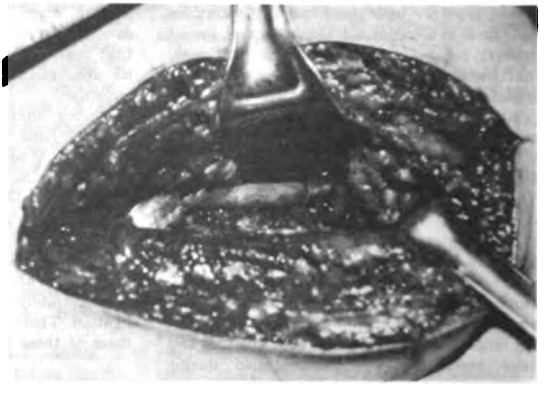

Figure 1: A contralateral autogenous greater saphenous vein graft was used by Hughes in 1952 to replace a missing segment of the popliteal artery shown above. (*U.S. Army photo, Walter Reed General Hospital*)

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When various plastic prostheses for blood vessel replacement were developed, they were used in the repair of acute vascular injuries. However, there has been, in general, a higher percentage of complications from infection following placement of a foreign body in a contaminated wound. Although the use of arterial and venous homografts has continued, there has been a trend toward the use of replacement grafts by utilizing autogenous vein grafts, usually the greater saphenous vein.

Table III: the results of managing arterial trauma

	Method	Amputation rate
WORLD WAR II	Ligation	49%
KOREA	Repair	13%
VIETNAM	Repair	13%

Table IV: documentation of arterial trauma

War series	Author	Arteries
WW I	Makins (1919)	1,202
WW II	De Bakey & Simeone (1946)	2,471
Korean	Hughes (1958)	304
Vietnam	Rich, et al (1970)	1,000
Civilian series		
Houston	Morris, et al (1960)	220
Atlanta	Ferguson, et al (1961)	200
Denver	Owens (1963)	70
Detroit	Smith, et al (1963)	61
Dallas	Patman, et al (1964)	271
Los Angeles	Treiman, et al (1966)	159
St. Louis	Dillard, et al (1968)	85
New Orleans	Drapanas, et al (1970)	226
Dallas	Perry, et al (1971)	508
Galveston	Moore, et al (1971)	250

At the time of the onset of the Vietnam fighting, the Army had developed what was considered to be proper guidelines for the repair of acute vascular injuries in the combat zone. For the first time in any war, a surgeon capable of performing vascular repair was assigned to every military hospital in Vietnam. Coming from all areas of training over the United States, hundreds of surgeons brought their own ideas with them which often raised old controversies to be studied once again.

The Vietnam Vascular Registry was established at Walter Reed General Hospital in 1966 to document and follow all who sustained vascular trauma in Vietnam. To date, there have been approximately 7500 individuals' names and copies of military records included in the Registry. In addition to the preliminary and interim reports to evaluate the success of the various methods of vascular repair, other areas of study have been pursued by the registry where there has been controversy. These included the extent of arterial resection during debridement; the repair of venous injuries; the use of external fixation rather than internal fixation for concomitant fractures accompanying arterial wounds; the use of vascular prostheses in contaminated wounds; the repair of carotid injuries; the use of fasciotomy, and the management of wounds of the heart and great vessels. Approximately 1500 of these patients in the registry have been evaluated at

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Figure 2: The recent increased use of high velocity missiles has compounded the already complex problem in managing vascular injuries. There may not only be arterial damage such as the above thrombosis of the brachial artery, but there can also be massive soft tissue destruction, osseous damage, interruption of venous return and trauma to adjacent nerves. (*Rich, et al, J Trauma 10:359, 1970, the Williams & Wilkins Company*)

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the Peripheral Vascular Surgery Service Clinic and Registry at Walter Reed General Hospital (*Fig. 3*). The fact that the overall amputation rate has remained approximately 13 percent is due to many factors. There have been more high velocity missile injuries as the etiology factor for the arterial trauma in Vietnam. On occasion, the over-enthusiasm of young surgeons has created a situation where an attempt to salvage a limb has been made when primary amputation should have actually been carried out. Because of rapid helicopter evacuation, many patients are seen in the hospitals in Vietnam that would not have survived in previous wars. Of all the extremity vessels (approximately 90 percent of arterial injuries in both civilian and military practice have been in the extremities) the popliteal artery remains the real enigma with approximately 30 percent amputation rate (*Table V*).

Table V: Vietnam amputation rate in 950 major arterial injuries* **

	Artery	Injuries	Amputation	Percent	Total percent
UPPER EXTREMITY	AXILLARY	59	3	5.1	2.0
	BRACHIAL	283	16	5.7	
ABDOMEN	COMMON ILIAC	9	1	11.1	0.1
	COMMON FEMORAL	46	7	15.2	11.4
LOWER EXTREMITY	SUPERFICIAL FEMORAL	305	37	12.1	
	POPLITEAL	217	64	29.5	
	TOTAL		**128**		**13.5**

**Excluding 50 carotid arteries. Arteries repaired without subsequent amputation—innominate, subclavian, aorta and external iliac—are not listed in this table.*

***Rich, et al, J Trauma 10:359, 1970.*

Figure 3: Approximately 1500 of the 7500 patients included in the Vietnam Vascular Registry have been evaluated at Walter Reed General Hospital. Marked stenosis of the proximal suture line with interpositioned autogenous greater saphenous vein graft in the right distal axillary artery is demonstrated angiographically in a man who developed pain in his extremity with use. (*Rich, et al, Arch Surg 100:646, 1970*)

Summary

Although some of the basic thoughts in the repair of vascular trauma occurred more than 200 years ago, it has only been in the past 20 years that large numbers of vascular injuries have successfully been managed by various methods of repair. With increasing numbers of reports of successful vascular repair, certain technical aspects have become readily accepted. Nevertheless, there do remain differences of opinion which warrant additional investigation.

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"We can point with some pride to the current concern regarding the maintenance and restoration of physiological priorities in the management of the acutely traumatized patient."

Fifty years' progress in neurosurgery for trauma

WILLIAM F. MEACHAM, MD, FACS, *Nashville*
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I SALUTE the Committee on Trauma on this occasion, which attests to its dedication and motivation toward a problem that long has beset mankind. The advances in the knowledge of the general subject of trauma have obviously been the result of cumulative experiences shared by all who profess concern about this tremendous clinical problem.

As exemplified by this program, we have witnessed a fragmentation of the topographic areas of the human body, dictated by our own special interests and talents. Yet we all recognize that the injured human cannot be left to a strict and arbitrary parcellation for fear of ignoring the basic fact that a biological system such as ours must be considered as a whole. It is not neurosurgical heresy to admit that I am very concerned and vitally interested in the fractured femur, the ruptured spleen, and the tension pneumothorax in a brain injured patient.

Certain modern concepts and principles in the management of craniocerebral injuries can be dated from the experiences of Harvey Cushing and others in world war I. The realization that every penetrating wound of the brain was not necessarily fatal was the result of the meticulous surgical care imposed upon those victims, which consisted of the arrest of hemorrhage, the removal of foreign bodies and indriven bone fragments, and the general supportive care of the total patient. In the preantibiotic era, infection was, of course, a major complication (as it sometimes is today) and with no specific method to combat it. Yet, the lessons learned from those experiences have become axioms of therapy today.

THE PASSAGE of these past five decades coincides almost identically with the age of neurosurgery as a specialty, since it was at a meeting of the American College of Surgeons in New York in 1919 that Dr. William Mayo announced that the specialty of neurosurgery had been born. We have witnessed, through several generations of neurosurgeons, many innovative methods in the management of the injured brain and spinal cord—many of which proved valueless and were abandoned—but the stimulus resulting from the constant flow of the injured has kept our motivation high and

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has militated in favor of many principles which are essentials in contemporary management. We have seen the magnet for the removal of metal foreign bodies come and go; we have witnessed the birth and demise of profound hypothermia in the treatment of the contused brain; we have used and discarded the methods of stringent dehydration, multiple lumbar punctures, massive atropine administration, subtemporal decompression, magnesium sulphate by rectum, and the "woodpecker" procedure of multiple inspection burr openings for suspected intracranial hematoma. The conversion of the human calvarium into a saltshaker has always been reprehensible to most of us!

In lieu of these discarded concepts, we can point with some pride to the current concern regarding the maintenance and restoration of physiological priorities in the management of the acutely traumatized patient. As neurosurgeons, we have learned the proper order of priorities in the care of the multisystem injured patient. We are concerned with and agree that there should be, in such instances, a "captain of the team". The devastating effects of hypovolemic shock, metabolic acidosis, inappropriate ADH secretion, and failure of capillary perfusion are the concern of every neurosurgeon. The requirements of the "milieu interior" are known to be essential if recovery is to occur. The degree of therapeutic sophistication in the care of the long-term coma patient is a monument to these principles.

THE LAST DECADE has brought into routine employment the use of high potency glucocorticoids and mannitol for cerebral and spinal cord edema, the routine use of echo-encephalography, angiography, and brain scanning for the diagnosis of traumatic mass lesions (subdural, epidural, and intracerebral hematoma), thus obviating the "exploratory" burr opening. In the area of acute trauma to the spinal cord, there is experimental and clinical evidence to support the premise that the liberation by norepinephrine promotes the ischemic necrosis of the cord which may produce a permanent sensory motor loss. Local cooling of the cord combined with decompressive laminectomy, it is hoped, will prove beneficial in minimizing the devastating neurologic deficits so common to such injuries. Current investigations into the pharmacologic changes in traumatized central nervous system tissue and the peculiarities of the involved enzyme systems may yield further practical information that will lead to progressive improvements in our therapeutic approach. In concert with our orthopedic confreres, we have more efficient and practical methods of vertebral realignment and fixation after spinal trauma.

We recognize that the injury produced by severe acceleration-deceleration impact injuries, as well as penetrating injuries, will damage sensitive nervous tissues to a degree that may prohibit functional recovery—a *fait accompli* in the mechanistic sense—but there is every reason to continue our attempts to minimize the total effects of such trauma upon human performance. Hence, a new era of rehabilitation and functional restoration has evolved utilizing early physical therapy, speech and occupational therapy, and replacing the ghastly scenario of the once daily visit to the neurosurgical "vegetable garden".

Neurological surgery, like other surgical specialties, has not been remiss in the modification and development of advances in the area of technical skills. The use of power tools, visual enhancement through magnification and improved illumination, hemostasis by bipolar coagulation and gelatin foam and oxidized cellulose, and the corrective replacement of skull fragments by bone grafts and the acrylic resins, testify to the continuation of improvements in the technological area. The use of siliconed latex tubes for shunting, the use of inert metals (tantalum) for metallic inserts and hemostatic clips, and vastly improved radiographic technics with less toxic contrast materials for diagnostic angiography and myelography should be mentioned.

IN THE AREA of prophylaxis, we have worked with the auto manufacturers in the development of certain safety features in the modern cars, as well as to support the generally adopted crash helmet statutes for motor bike riders which now exist in most communities. Neurosurgeons, concerned with injuries occurring in sports, have been in the forefront in influencing the design and construction of protective headgear and other equipment and have also influenced certain rules changes that

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prohibit such potentially dangerous technics as "spear tackling". Published indictments of the hazards of professional and amateur boxing indicate our concern for the risk factor inherent in such activity.

Agonizing over the plight of the paraplegic and quadriplegic has resulted in a concerted effort to improve the rehabilitation of these unfortunates and to promote legislation to support their care, since the medical expense attending such injuries is virtually prohibitive for the average family. A cooperative study on a national basis is being conducted regarding the spine injured and his care and long-term management. Furthermore, the establishment of centers for the acute and chronic care of the head and spine injured victim is proving practical and will certainly militate in favor of more intensive research into the problems relating to central nervous system trauma.

BENEFITTING from the experiences in world war II and the Korean and Vietnam conflicts, we have learned much concerning the care and management of peripheral nerve injuries, the value of rapid transportation of the injured to a definitive treatment center, and the value of triage systems in mass casualty situations.

Furthermore, central nervous system trauma is being given a more prominent role in the academic aspects of medical training, and in many institutions has once again assumed an important niche in the medical school and residency teaching curricula.

A quantitative concept of the problem of post-traumatic convulsive seizures is still receiving extensive study and evaluation so that this important aspect of trauma may be predicted with greater accuracy and the efficacy of treatment substantiated.

The names of the hundreds of persons who have made significant contributions in the field of nervous system trauma cannot be listed here, but suffice it to say that we are all standing on the shoulders of those who have gone before.

IN SUMMING UP, I would propose that four essentials in the management of the trauma problem have occurred in the past fifty years of neurological surgery:

1) The recognition of the need for prevention of central nervous system trauma wherever possible, and research into its causes;

2) The management of the traumatized patient on a basis of physiological principles with concern for all of the biological systems involved;

3) The ability and willingness of the neurosurgeon to perform as a member of a treatment "team" and to participate in the treatment arena on the basis of priorities where indicated, and concerted, simultaneous action when necessary, and

4) The refusal to delineate the subject of trauma to sidelines in our teaching and training curricula, but to make it a major item and *tour de force* in our academic settings.

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Meetings of the American College of Surgeons

Clinical Congresses

1972	San Francisco	October 2–6	1976	Chicago	October 11–15
1973	Chicago	October 15–19	1977	Dallas	October 17–21
1974	Miami Beach	October 21–25	1978	San Francisco	October 16–20
1975	San Francisco	October 13–17	1979	Chicago	October 8–12

Spring Meetings

1973	New York	April 1–4	1976	Boston	April 5–7
1974	Houston	March 25–27	1977	Los Angeles	March 28–30
1975	Atlanta	April 21–23			

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AMERICAN COLLEGE OF SURGEONS

STANDARDS FOR EMERGENCY DEPARTMENTS IN HOSPITALS

The accompanying standards for Emergency Departments in Hospitals were formulated by the Committee on Trauma and approved by the Board of Regents at its meeting on February 23 and 24, 1963.

The function of an emergency department is to give adequate appraisal and initial treatment or advice to any person who considers himself acutely ill or injured and presents himself at the emergency department door. This should assume the probability of obtaining care of the highest order.

The fact of constantly increasing emergency department use must be recognized. This use is not limited to real emergencies, since to the individual any complaint may become an emergency if he cannot locate his physician at the moment. This makes the hospital and its medical staff responsible for the organization and operation of the emergency department in a manner that will insure the same high standard of care as prevails in other areas of the hospital.

****

The following standards are desirable. In certain institutions many of them may be impractical. Under the latter circumstances, they should remain as ideals to be approached as nearly as possible.

AUTHORITY. Policy should be formulated and the emergency department should be operated under the auspices of an emergency department committee, representing the major medical services and the hospital administration, including the nursing service.

STATUS. The emergency department is important in public relations. It should have departmental status.

DIRECTION. There should be a single director.

. He should be responsible only to the emergency department committee or its equivalent for the implementation of policy and the supervision of professional services.

. His tenure should be sufficient to provide directional continuity.

PERSONNEL. Medical staff coverage should be adequate to insure that an applicant for treatment will be seen by a physician within a reasonable period of time after arrival.

. A physician on second call should be available against unexpected or unusual contingencies.

. There should be a mechanism whereby specialized medical services can be obtained as promptly as possible when needed.

. A roster of available specialists should be posted in the emergency department.

. The nursing staff should be adequate to handle the average load with provision for additional nursing help during peak hours or unusual circumstances. Permanent tenure of the senior nursing staff or supervisor is essential to good patient care.

. Whenever practicable the nursing staff should not be required to carry out administrative duties normally performed by the business office.

RECORDS. Every patient should have a permanent record containing the history, findings and treatment or disposition.

. The physician involved is responsible for the record

. Periodic spot reviews of records should be made.

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GENERAL POLICIES. The emergency department should be open 24 hours a day.
. Every applicant for treatment should be seen by a physician.
. Privileges of the attending staff relative to fee for service in the emergency department should be specified by the emergency department committee.
. The scope of treatment allowed in the emergency department should be specified by the emergency department committee and enforced by the director.

As a rule, patients requiring general anesthesia should be admitted and treated in the hospital operating suite, and surgical procedures in the emergency department should be limited to the suture of lacerations and the reduction of fractures amenable to local or regional block anesthesia. Serious conditions of acute nature may have resuscitative or supportive treatment started in the emergency department when necessary.

Revisits should not be permitted except by reason of special medical indications or in institutions where the emergency department also serves as an outpatient department during the day hours.

FACILITIES. The emergency department should be located on the ground floor, easily accessible from the main hospital but separated from the main entrance.
. The emergency department entrance should be well marked and illuminated, easily accessible from the street, without curbs or platforms, and sufficiently covered and enclosed to protect ambulance patients from the elements during unloading.
. Space for stretchers and wheel chairs should be reserved immediately adjacent to the entrance. Stretchers should be sturdy enough to serve as examining tables and ideally should be x-ray permeable.
. There should be waiting room space, separated from the working area of the emergency department, and containing telephone, toilet and drinking fountain. An explanatory brochure for patients and relatives is valuable.
. X-ray and laboratory services in or easily accessible to the emergency department should be available at all times.
. Laboratory facilities sufficient for urinalyses and blood counts should be present in the emergency department.
. A poison control chart and the telephone number of the nearest poison control center should be displayed in a prominent place.
. A manual of standard emergency department rules and routine procedures, both administrative and professional, as formulated or approved by the emergency department committee, up-to-date textbooks and a poison manual should be available for the guidance of the staff.
. All instruments in the emergency department should be of the same quality as prevails throughout the hospital.
. Air conditioning in many parts of the country and good communications are essential.
. The necessity for observation beds, doctors' call room, security room for disturbed patients, police, ambulance attendants' and reporters' room, and pantry should be considered, according to the community.

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(Minimally revised from that published in the Bulletin, American College of Surgeons, May-June 1963)

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guidelines for design and function of a hospital emergency department

THE COMMITTEE ON TRAUMA / 70
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guidelines for design and function of a hospital emergency department

The American College of Surgeons is grateful to The John A. Hartford Foundation, Inc., New York City, for making possible the publication of this revised edition.

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PREFACE

The first edition of this brochure was printed in 1961, following a study of conditions in the emergency departments of many American hospitals by the Field Program of the Committee on Trauma of the American College of Surgeons. Using its findings, the Committee put together a concise outline of facilities and professional services necessary to the efficient functioning of a modern emergency department. This outline reflected those trends which had altered substantially many of the traditional concepts relating to emergency department functions. Titled "A Model of a Hospital Emergency Department," the first edition went through four printings.

The trends in emergency department utilization by the public have continued, as has the need for expanded, renovated, and new facilities, and the demands for staffing predicted in 1961. The hospital and its medical staff are responsible for the organization and operation of the emergency department in a manner that will insure the same high standard of care as prevails in other areas of the hospital.

It is hoped that this revised edition will prove as helpful to those assigned the task of emergency department management as was the first.

Committee on Trauma
American College of Surgeons

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Standards for Emergency Services in Hospitals*

PRINCIPLE

Adequate appraisal and advice or initial treatment shall be rendered to any ill or injured person who presents himself at the hospital.

Standard I: A well-defined plan for providing emergency care, based upon community need and the capability of the hospital, shall exist within every hospital.

Interpretation: The hospital must have some procedure whereby the ill or injured person can be assessed and either treated or referred to an appropriate facility, as indicated. Most hospitals that offer a broad range of services can provide effective care for any type of patient requiring emergency service. Hospitals that offer a partial range of services may be capable only of operating a limited emergency service and, therefore, must arrange for the transfer of certain patients to other facilities. Other hospitals may elect to transfer all emergency patients.

The degree to which a hospital provides emergency care should be guided by a community-based plan.[1, 2] If such a plan exists, the hospital and its medical staff should demonstrate evidence of participation in its development and implementation.

Standard II: The emergency service, when maintained, shall be well organized, properly directed and integrated with other departments of the hospital. Staffing shall be related to the scope and nature of the needs anticipated and the services offered.

Interpretation: The emergency service must be organized and competently directed. When warranted by its activities and the degree of complexity, the emergency service should be organized as a department.[3] An organizational plan must be developed that identifies the emergency service, its place in the overall hospital organization plan and its relationship to other community emergency services. There should be a chief of emergency service who is a member of the active medical staff and who implements the policies and supervises the professional medical services. In the absence of such an individual, the direction of the medical services may be provided through a multidisciplinary medical staff committee, the chairman of which serves in the capacity of chief of emergency service.

The hospital and the medical staff are responsible for ensuring that emergency patient care meets the same standards of care that prevail in other areas of the hospital. Service must be available 24 hours a day and medical staff coverage must be adequate to ensure that an applicant for treatment will be seen within a reasonable length of time relative to the illness or injury that exists.

Additional members of the medical staff should be on call for consultation and for unusual contingencies. The services of specialists should be made available by prearrangement. Acceptable methods of providing medical coverage include the use of house staff under adequate medical staff supervision, rotating panels of staff physicians and contracting groups whose members are members of the medical staff.

There must be an adequate number of nurses for the amount and type of care to be provided. These nurses must have had special training and must possess the necessary professional skills for the adequate performance of their duties. In hospitals providing complete emergency service, every effort should be made to assign a permanent nursing staff to the area. Hospitals providing limited emergency service should assign an adequate nursing staff that is continuously available for providing this care.

Participation in emergency care conferences for ambulance personnel,[4] emergency service personnel and medical staff should be considered one of the educational responsibilities of the hospital.

Standard III: Facilities for the emergency service shall be such as to ensure effective care of the patient.

Interpretation: The emergency service area should be in proximity to the emergency entrance and also should be easily accessible from within the hospital. The emergency receiving area should be kept free of obstruction at all times. The emergency ser-

*From the October, 1969, edition of *Standards for Accreditation of Hospitals*, Joint Commission on Accreditation of Hospitals, Chicago, which is annotated as containing Principles and Standards approved; interpretations only accepted for field testing.

[1] *Emergency Services in the Hospital*, 1966, American Hospital Association, may be referred to for further guidance.

[2] *Accidental Death and Disability: The Neglected Disease of Modern Society*, 1966, National Academy of Sciences, National Research Council, may be referred to for further guidance.

[3] *Emergency Department, A Handbook for the Medical Staff*, 1966, American Medical Association, may be referred to for further guidance.

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vice area should have adequate space and should be separate from the surgical suite of the hospital. Reception, examination, treatment and observation rooms should be provided in such numbers, sizes and arrangements as to ensure effective care of emergency patients.[5]

In hospitals providing extensive emergency care, work areas must be large enough to accommodate the efforts of a multidisciplinary team whenever needed. It is preferable that all severely traumatized patients be treated in an area apart from other patients. It is desirable that there be separate rooms for urgent but limited surgery and for the treatment of fractures. Because many people with a diversity of diseases pass through this area, special emphasis must be placed on procedures designed to avoid contamination and cross-infection.

All instruments and supplies used in the emergency service should be of the same high quality as those that prevail throughout the hospital. Suction and oxygen equipment and cardiopulmonary resuscitation units must be available and ready for use.

Standard drugs, parenteral fluids, plasma substitutes and surgical supplies must be on hand for immediate use in the case of life threatening problems such as shock, hemorrhage, impaired airway, convulsive disorders, lacerations, burns, snakebites and fractures. All resuscitation equipment and supplies, including those used for tracheal intubation, tracheotomy, ventilating bronchoscopy, intrapleural decompression and intravenous fluid administration, must be suitable for adults, children and infants.

Radiologic and clinical laboratory facilities should be readily available for use at all times. Whenever necessary, patients should be escorted by hospital personnel to the areas for laboratory tests and radiological services.

When possible, emergency service personnel should prepare in advance for the arrival of a critically ill or injured patient. The planned reception of patients may be enhanced by a communications system that provides information from persons at the site of an accident or disaster, or in a moving ambulance.

Rapid communication with other departments of the hospital shall be ensured. This may necessitate a separate communications system connecting the emergency service and all functionally related areas, such as the blood storage area, surgical suite, clinical laboratories and diagnostic radiology.

Standard IV: Emergency patient care shall be guided by written policies and shall be supported by appropriate procedure manuals and reference material.

Interpretation: There shall be written policies concerning the extent of treatment to be carried out in the emergency service. Such policies must be approved by the medical staff and by hospital management and should be reviewed periodically; revised as necessary; and dated, to indicate the time of the last review. Written procedures should be developed that are based upon these policies. The policies and procedures should include at least the following:

- Explicit directions as to the location and storage of medications, supplies and special equipment;
- Methods for around-the-clock procurement of equipment and drugs;
- Specification of medical staff coverage, lists of medical staff members who are on call, and lists of available special consultants;
- Instructions relative to the notification of the patient's personal physician and the transmission of relevant reports;
- Plans for communication with the nearest poison control center and with police and local health authorities relative to accident victims and to patients who are in other reportable situations such as having contagious diseases or being victims of suspected criminal acts;
- Instructions relative to the handling of persons who are emotionally ill, under the influence of drugs or alcohol, victims of suspected criminal acts, contaminated by radioactive material,[6] diagnosed as dead on arrival and in other such situations requiring special instructions; and
- Explanation of the disaster plan, and how the emergency service is integrated into it.

Policies and procedures specifically for the medical staff shall include at least the following:[7]

- Clarification of the levels of professional responsibility;
- Listing of permissible procedures that may be performed in the emergency area; for example, good patient care dictates that procedures requiring general or major regional anesthesia should be performed only in the surgical suite;

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[4] *Standards for Emergency Ambulance Services*, 1967, American College of Surgeons, may be referred to for further guidance.

[5] *A Model of a Hospital Emergency Department*, 1963, American College of Surgeons, may be referred to for further guidance.

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- Circumstances under which definitive care should not be provided and procedures that should be followed in referring the patient to a more appropriate facility;
- The utilization of primary or secondary wound closure at the time of a major disaster;
- Appropriate utilization of observation beds;
- Circumstances that require the patient to return to the hospital for treatment, for example, when treatment is impossible to arrange otherwise; and
- Procedures for early transfer of severely ill or injured patients to special treatment areas within the hospital such as the surgical suite, the intensive care unit or the cardiac care unit.

Cardiopulmonary resuscitative training[8] should be required for the physicians, nurses and all allied health personnel who work in the emergency service.

Authoritative, current toxicology reference material and antidote information shall be readily available, along with the telephone number of the regional poison control center. Charts relating to poison control, the initial treatment of burns, cardiopulmonary resuscitation and tetanus immunization shall be prominently displayed.

Standard V: A medical record shall be kept on every patient receiving emergency service and shall become an official hospital record.

Interpretation: The medical record shall contain adequate patient identification; the time of arrival, by what means and by whom transported; the pertinent history of the injury or illness including details relative to first aid or emergency care[9] given prior to arrival at the hospital; a description of significant clinical, laboratory and roentgenologic findings; the diagnosis; the treatment given; the condition of the patient on discharge or transfer; and the final disposition including instructions given to the patient relative to necessary follow-up care. The patient and/or the patient's family shall be instructed regarding needed follow-up care. The record shall be signed by the physician in attendance, who is responsible for its clinical accuracy.

It is desirable that the patient's emergency record be incorporated in his previous hospital record, if he has one, and that a copy be sent to his physician. A review of these medical records should be conducted regularly to evaluate the quality of emergency medical care. Medical records of patients whose death occurred within 24 hours of admission to the emergency service should receive particular attention.

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[6] *Emergency Handling of Radiation Accident Cases*, 1969, United States Atomic Energy Commission, may be referred to for further guidance.

[7] *Management of Fractures and Soft Tissue Injuries*, 1965, American College of Surgeons, may be referred to for further guidance.

[8] *Emergency Resuscitation Team Manual: A Hospital Plan*, 1968, American Heart Association, may be referred to for further guidance.

[9] *Emergency Care of the Sick and Injured*, 1966, American College of Surgeons, may be referred to for further guidance.

Trends Affecting Emergency Services Function

1. Very few hospitals have met the needs imposed since World War II for the vast expansion in facilities, equipment, and personnel demanded by society for routine off-hour treatment of non-emergency conditions and for treatment of accidental injuries, which continue to steadily increase in number. Society, in fact, now looks to the hospital emergency department as a community center for outpatient care. Of the 40 million "emergency room" visits in 1966, more than two-thirds cannot be classified as emergencies. Past and projected estimates of this increasing load are as follows:

	Estimated Total Number of Hospital Outpatient Visits (in millions)	Estimated Emergency Room Visits (in millions)
1958	84.5	18.0
1960	91.9	23.0
1962	99.4	28.5
1968	121.6	44.1
1970	129.0	49.3

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This social change has been paralleled by a decrease in the number of house calls and by a closer adherence to regular office hours by physicians. In utilization, these figures dramatically point out that emergency department facilities can be potent public relations instruments available both to the hospital and to the medical profession. The emergency department must be planned with this in mind.

2. Surgeons still man the emergency department even though less than 40 per cent of all cases are surgical or traumatic in nature. The emergency department must become the combined responsibility of all branches of the hospital staff.

3. Emergency department patients now come from all walks of life. Charges must be reappraised accordingly.

4. Every patient must be examined prior to treatment. Triage (sorting) can no longer be relegated to an inexperienced house officer. It must be carried out promptly by competent and experienced members of the medical profession within adequate facilities.

5. The public has come to look upon the emergency department as the community medical center where anyone with any complaint may apply, at any hour of the day or night, and expect prompt and courteous attention. This concept must be accepted as a community obligation by governing boards, hospital administrators, and the medical profession.

Emergency Department Renovation or Replacement

General Considerations

That existing emergency department services usually constitute the weakest, most neglected link in the chain of hospital care is a well established fact. Equally clear is the fact that emergency departments of many general hospitals are in need of renovation or replacement. Few persons responsible for these changes have any valid notion of how and what to plan for, and adequate plans cannot be designed without this knowledge. Therefore, the primary objective of this outline of requisites for a modern emergency department is to provide the assistance and guidance needed in this area.

The planning of new or remodeled emergency facilities should not be made on the basis of subjective impressions, but on the basis of an orderly survey of existing and foreseeable future needs.

General factors to be considered in planning for new or remodeled emergency facilities should include:

- Patient load for the past several years and the projected yearly load.
- Hours of maximum patient load.
- Type of patient presenting for care (out-patient, true emergency, etc.).
- Community plan delineating responsibility for the various aspects of emergency care.
- Other emergency facilities serving the same area.
- Geographic location of the institution, and whether urban, suburban, or rural.
- Industries located or proposed in the area and industrial growth potential.
- Population of the area served, population growth in the past 15 years, and population trends.
- Type of neighborhood served and such neighborhood trends as increasing slum areas, urbanization, suburbanization, industrialization, etc.

Architects' plans should be designed to satisfy predetermined medical and administrative needs, and must be subject to the combined approval of all concerned. The hospital administration will be concerned primarily with size, cost, and mechanics of the contemplated emergency department. Size should be predicated upon a comparison of past and present patient loads, the types of patients seen, and a projection of anticipated increases based upon pertinent statistical data pertaining to local conditions. Development and analysis of this information will provide the cornerstone for plans that may satisfy future requirements.

The breadth and limitations of function of the proposed emergency department are a primary responsibility of the medical staff. The answers to many questions must be integrated with early planning:

Is the emergency department to double as the main admitting office?

Is it to be used as an out-patient department during the day?

Are the surgery and fracture rooms to be used for elective procedures?

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Are patients to be held in the emergency department overnight or admitted to the hospital?

Is the emergency department to be manned by attending staff or house officers?

Are lacerations to be sutured in the examining cubicles or only in the surgery room?

Are patients with major injuries to receive definitive treatment or resuscitation only and then be transferred?

Is there a central record system, or will emergency patients have separate charts?

These and many other questions must be answered before the architect can be provided with valid instructions.

If the contemplated emergency department is to be used for purposes beyond the reception, examination, and treatment of emergency patients, such functions and their extent must be predetermined in detail if the final product is to satisfy the estimated demand.

All of the features to be described are not necessarily suitable for any one specific institution. They are outlined merely as facilities necessary, or useful, to the efficient functioning of an emergency department in any general hospital. The facilities however, are essential to the reception, examination, and treatment of emergency admissions. Each unit must be available in or accessible to the emergency department. For each individual institution, specific requirements will dictate the elements of its program.

Physical Requirements

Location

The emergency department should be conveniently accessible to the "hospital core" and permit easy admission to the hospital of patients treated in the emergency department. It should also be readily accessible to pedestrian and vehicular traffic. It must be situated at grade level. It is desirable that the entrance to the emergency department be somewhat removed from other entrances to the hospital, and provide ample and separate space for vehicle movements and parking.

Ventilation

Adequate ventilation with filtered fresh air is essential. Air conditioning for cooling and heating is desirable.

Communications

The electric system should include a nurses' call system connecting all patient areas with the nurses' station. Telephone outlets provide adequate communication with the hospital switchboard. In larger installations, a complete intercommunication system may be desirable.

Two-way radio communications with ambulances serving the hospital can provide valuable information on incoming patients. Facilities providing radio communication with other community hospitals, and with existing central disaster headquarters, will be quite useful in the event of a major catastrophe.

If the hospital building is equipped with a pneumatic-tube system, a station should be available to both the registration area and the nurses' station of the emergency department.

Lighting

All work areas should be equipped with recessed fluorescent light fixtures providing a lighting intensity of between 40- and 50-foot candles. For corridors, storage rooms, etc., an intensity of between 15- and 20-foot candles is sufficient. Special lights are required for the surgery, fracture, and examining rooms.

Component Units of an Emergency Department

Entrance

The entrance must be clearly marked, well illuminated, and easily accessible from neighboring thoroughfares. The ambulance port should be sufficiently covered and enclosed to protect patients from the weather as they are transferred from the casualty-carrying vehicle to the emergency department. In approaching the entrance, the vehicle should not be forced to back into the doorway. The entrance should be on the ground level and free from saddles and other hazards to unhampered movements. Attendants should stand on the same level with the entrance when removing a stretcher from the ambulance. If a separate approach is provided for ambulatory patients, any difference in levels should be bridged by a ramp rather than by steps. The doors should be wide and, preferably, auto-

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matic. Stretchers and wheel chairs should be stored immediately adjacent to the emergency department entrance. The area immediately inside the entrances should be sufficiently large to provide space for triage in the event of mass casualties.

Waiting Room

Relatives and friends of patients should not be allowed access to the work areas of the emergency department. A comfortable, well appointed waiting room should be provided for them outside the main flow of traffic. Lavatory facilities should be included in this area if public rest rooms are not nearby. The decor and comfort of the waiting room reflect a hospital's attitude toward patients and visitors, and therefore have considerable public relations value. The waiting room may offer literature describing the purpose, functions, and rules of the emergency department.

Police, Press, and Ambulance Attendants' Room

Police, press, and untrained ambulance personnel should also be kept out of the work areas of the emergency department. A small room equipped with desk, telephone, and chairs will serve their needs and promote good public relations. Qualified, well trained ambulance attendants, however, should be permitted to enter work areas where they can assist the professional staff in treating the acutely ill or injured.

Registration Area

Administrative functions of the emergency department should be centered on and carried out in the registration area. The unit should be immediately adjacent to the nurses' station and quite near the emergency department entrance. The functions of the registration area include record keeping, admissions, discharges, making appointments with physicians in private practice, billing, and taking care of patients' valuables. In some situations it may double as the admitting office for the institution; in others the nursing staff may be required to perform administrative functions at night.

Doctors' and Nurses' Station

This unit should be next to the registration area. It should be glass enclosed above the counter level for maximum visibility of the remainder of the emergency department. It should have ample counter space and should contain a bulletin board upon which are posted rosters of doctors on call and recent directives pertaining to the emergency department. Policy and procedure manuals, reference books, and records of requisitions for supply and diagnostic procedures should be kept here. Doors should be omitted in this area because of the heavy traffic.

Work Room

For functional reasons this room should adjoin the doctors' and nurses' station. It should contain an icebox for storage of biologicals and specimens requiring refrigeration. There should be counter space with cabinets below and above for storage of drugs, intravenous fluids, and materials used in the emergency department. The poison control center should be located in this room. A small boil sterilizer is a desirable part of its equipment, even in institutions where all sterile sets are furnished by the central supply department. All cabinets and shelves must be clearly marked to show their contents, and a key storage plan must be kept at a central point in the work room.

Examining Rooms

The number, character, and furnishing of these units must be predicated on the anticipated patient load and a clear concept of their use. Are they to double as out-patient areas during the day? Are they to be used for treatment as well as examination? Are they to be used for patients requiring observation? These and other questions relative to the use of these units must be answered before their number can be determined.

It is advantageous for hospitals whose emergency department volume is considerable to provide for large examining areas divided by curtains and containing at least four tables, as well as for some smaller rooms with a one- or two-patient capacity.

In any event, the existing units require certain facilities for the management of emergency admissions. One unit should contain a chair suitable for eye, ear, nose, throat, and dental examination and treatment. This unit should be equipped with a slit lamp and permit complete darkening. Another unit should be adequately equipped for gynecological examination. Each of the remaining units should contain an examination table. These tables should be stable and should lock. They should be adjustable to provide a back rest when it is necessary to raise the patient's trunk; it should also be possible to tilt the entire table for procedures requiring positions such as the Trendelenburg and Reverse Trendelenburg positions, and to elevate or lower the table, with the patient in any position. Other desirable features are side rails, attachments for infusions and administration of oxygen (including a tank), easy mobility, and light weight so that the table can be used as a transporting stretcher. Tables which can be penetrated by x-rays are a great asset.

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They eliminate the necessity of stretchers and moving a patient from the stretcher to the x-ray table and back to the stretcher. A variety of mobile examination tables and stretchers which possess all of these features are available commercially.

Slide tables, stools, kick buckets, etc., should also be mobile to permit rapid rearrangement of examination areas.

Utility Room

A utility room is necessary not only for storing instruments and containers which belong there, but also for rinsing those which are soiled.

Patients' Clothes Room

The emergency department should provide a patients' clothes room for the clothes of patients who are admitted as in-patients through the emergency department at hours when the hospital's central clothes storage room—usually open only in the daytime—is closed. In this room the clothes of the patient admitted after hours can be stored in a locker until the attendant of the central clothes storage room takes charge of them the following morning.

Storage

Several spaces are recommended for storage and linen. A central supply section may furnish the emergency department with most of its daily needs so that the supply of instruments, syringes, and quantities of dressings may be kept to a minimum. Bulk dressings for burns should be kept in the storage area. Separate spaces for clean and soiled linen are required. New emergency departments are usually short of storage space. Therefore, in planning an emergency department as much space as possible should be assigned to storage purposes.

Doctors' On-Call and Conference Room

Probably the majority of emergency departments are currently staffed by practicing physicians on rotation. There must be a place for them to rest when they are called for duty at night. Moreover, in hospitals with interns and residents, many are married and live outside the hospital. A bedroom, therefore, may be required for the house officer on night duty. This space may also be used for confidential conferences with relatives or friends of patients.

Observation Room

In some institutions, it may be advisable to have a room with hospital beds where patients who are not ready for immediate discharge from the emergency department—and who do not require hospital admittance—can be retained for observation for a limited time. Also, persons suffering from a mild degree of alcoholism may be kept here prior to release. Formal admission to the hospital, with all attendant details, should not be required. The number of beds in this area will depend on the patient type and load for a particular hospital. The holding period in this area for any patient should not exceed 24 hours. Patients in the observation room must have constant surveillance by someone designated for this duty by the nursing department. Local nursing conditions will determine whether these beds should be occupied through the night.

Resuscitation Room

It is important that there be a specific area of the emergency department for resuscitation of patients in severe shock or cardiac arrest, whether from medical or surgical causes. All patients with life-threatening conditions should be managed in the resuscitation room. The room should be large enough to allow sufficient working space for the personnel necessary to manage these cases. Resuscitation, ECG, pacemaker, defibrillation, and respiratory support equipment, emergency drugs, etc., should be available in this area.

Surgery Room

A room properly equipped for minor surgery, including the adequate management of lacerations, etc., should be provided. Other surgical procedures should be performed in the major operating suite, not in the emergency department. Since most of the work to be done here can be done in adequately equipped examining areas, the question of whether there should be a surgery room at all—and, if so, how complete—must be determined by the range of functions for which it is intended.

If used for general anesthesia, the surgery room should be equipped with conductive flooring and explosion-proof switches. Anesthesia should be administered only by those assigned regularly to this duty, and only if the patient can be transferred to a post-anesthesia recovery room where adequate supervision is available. It is advisable, of course, that general anesthesia be given only when proper facilities, equipment, and personnel are available—requirements that are best met in the operating suite of the hospital.

Instruments should be new and not hand-downs from the operating room. Hemostats, forceps, needles, needle holders, retractors, and other surgical instruments should include small types, since many of the wounds will be of face and fingers.

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A complete sterile tracheostomy set should be kept in this room, and tubes in sizes suitable for use with children should be available. Special instruments and extra procedure trays should be kept available in sterile packages.

Fracture Room

This room should be used primarily for treatment of fresh closed fractures, but by prearrangement may be employed for changing the plaster casts of out-patients. For emergency work, only a stable stretcher is needed. If extensive fractures are to be treated, however, a fracture table may be required, with overhead and wall hooks, as well. Reduction of a fracture should be started here only if the procedure can be carried out completely under local or properly managed general anesthesia. The fracture room may serve as a second surgery room. In institutions with a small patient load, the surgery and fracture rooms may be one and the same; in others, one examining room may be supplied with plaster sink, etc. It is convenient if the fracture room is located near the x-ray facility.

X-ray Facility

The processing of patients through required x-ray examinations is the most frequent, time-consuming cause of delay in the emergency department. Therefore, adequate x-ray facilities must be available in or close to the emergency department. Transportation by elevator to another floor should not be necessary, inasmuch as this can delay treatment of a patient by an hour or more. If the hospital x-ray department is easily accessible on the same level, this arrangement is adequate. Available portable apparatus may be useful in critical cases where movement of the patient is inadvisable, but it is seldom satisfactory.

If the x-ray department is not nearby on the same floor, a complete x-ray unit with an assigned technician is required for the emergency department. Such a unit might be a necessity if the emergency load amounts to a thousand cases a month or if fractures are frequently encountered. The x-ray requirements for emergency work are continuous and extremely pressing.

The doors to the x-ray unit must be wide enough to admit a bed with traction apparatus in place. If a backlog of stretcher patients waiting for x-ray service is anticipated, provision for adequate space in the corridor leading to the x-ray room, and nursing personnel to observe them, should be provided.

Security Room

In many institutions a security room is a most valuable facility. Past experience will determine whether or not it is needed. Only a small room is required. It should be soundproof so that other patients are not likely to be upset or disturbed.

The prime purpose of a security room is the safe keeping of the acutely manic patient until arrangements can be made for transfer to the proper institution. Of course, if the hospital is set up to accommodate these patients, a separate security room may not be necessary.

A secondary purpose of the security room is to accommodate the patient suffering from alcoholism to an objectionable degree. If it is obvious that three or four hours of rest without another drink of alcohol will enable the patient to proceed on his way, this may be preferable to submitting him to arrest or hospitalization.

Clinical Laboratory

The necessity of having laboratory services available promptly for emergency patients cannot be overemphasized. If technicians are not on duty at night or on weekends, tests must be made by interns, residents, or practicing physicians.

An emergency department laboratory should be equipped to perform at least the following tests: hemoglobin, hematocrit, white blood count, blood smear, Gram stain, and routine urine examination, including microscopic examination.

Basic Staffing Patterns*

Five basic staffing patterns, generally, are used in hospital emergency departments. One fully satisfactory basic pattern has not yet been established. The five are:

1. Rotation of all or part of the attending staff.
2. Interns and or residents.
3. Salaried physicians (full- or part-time).
4. Medical group or partnership.
5. Various combinations of these patterns.

Rotation

Rotation of emergency room duty among members of the medical staff is a standard method of providing physician coverage for this facility. Many variations of this pattern exist, most of which are not too popular with the medical staff. Some hospitals require compulsory service by all staff mem-

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bers, under the concept that all physicians, whatever their specialty, should be qualified to provide emergency medical services. Other plans utilize junior staff members only, or base emergency department duty on age, distance from home to the hospital, specialty, etc. Many combinations of duty hours are possible, with physicians actually on the premises, or on call, depending upon the particular needs of the institution.

Interns and Residents

Only 20 percent of U.S. hospitals have internship and/or residency training programs. Of these, many do not have a full complement of such house officers. This pattern of staffing, therefore, is limited by size and competence of the in-house personnel. Sufficient medical attending staff for proper supervision of emergency departments utilizing house officers is mandatory.

Salaried Physicians

The number of full- or part-time salaried physicians employed for emergency department staffing is steadily increasing. Full-time physicians are employed to supervise interns in some teaching hospitals, and to cover the night and/or weekend shifts in community hospitals. Part-time physicians are employed for various shifts during the week.

Recruiting for these positions is usually among physicians starting to practice, those who are retired, and those who are unwilling or unable to carry the load of full-time private practice.

Hospitals planning to utilizie salaried physicians for emergency department duty should be familiar with the official policy of the Judicial Council of the American Medical Association regarding employment of physicians on a salaried basis. In addition, the responsibilities of salaried physicians for supervision and direction should be carefully outlined.

Partnership of Physicians

A hospital's entire medical staff, or a portion thereof, may form a partnership or association of physicians for staffing the emergency department. The staff can use its own members, or engage other physicians to supply professional coverage on a 24-hour basis. Depending on the decision of the medical staff, participating physicians may or may not carry on separate private practices or have hospital privileges.

This system solves many of the problems generated by the rotating system and appears to be working successfully in many areas.

Combinations

Combinations of two or more of the above-mentioned staffing patterns are frequently used.

*Condensed from *Emergency Department, A Handbook for the Medical Staff*, American Medical Association, 1966.

Auditing for Quality Care

Special techniques for review of professional service in emergency departments have proven valuable. For example, ad hoc committees either from the medical staff, or by request from the committee of the American College of Surgeons, may be used to check facilities, equipment, procedures, and personnel. To assist them, check list outlines are available on request from the Headquarters of the American College of Surgeons.

Further, audit control and review methods for emergency department charts afford an analytical evaluation of specific cases and are recommended by the Joint Commission on Accreditation of Hospitals:

A. Daily chart check. While daily review of all emergency department charts by the clerk and supervisor should be routine, more is needed. Spot checks of a day's total charts by the director of the emergency department, or by members of the Records Committee, are needed to evaluate their adequacy, both as to services rendered and medical legal responsibility.

B. An analytical chart audit on trauma patients who have died within 24 hours of admission affords an excellent survey of the strength and weakness in patient care. Provision for treatment of the critical trauma patient, usually the one with multiple injuries, sets the standard for the whole unit. By reviewing the cases of those who die within 24 hours, attention is focused on the quality of emergency department care.

These audit forms are also available through the Headquarters of the American College of Surgeons. The breakdown of categories is as follows:

1. General information.

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2. Condition on arrival—diagnostic information.
3. Laboratory—special tests.
4. X-ray.
5. Staff present.
6. Diagnosis.
7. Airway—resuscitation.
8. Blood—fluid replacement.
9. Operations.
10. Review.
    Autopsy.
    Staff Conference.

C. Interdepartmental trauma conferences are strongly recommended to review any gaps in cooperative team effort, and to coordinate the efforts of the multiple specialties.

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Senator CRANSTON. Our next witness is Mrs. Eloise Westbrook, chairman, grant advisory board, Bayview Hunters Point project, member of the Mayor's committee on revenue sharing.

Eloise, we are delighted to see you here.

STATEMENT OF MRS. ELOISE WESTBROOK, CHAIRMAN, GRANT ADVISORY BOARD, BAYVIEW HUNTERS POINT PROJECT

Mrs. WESTBROOK. Glad to see you again, Senator.

Senator CRANSTON. I understand you don't have a prepared statement, so I would like to ask you first if you have any comment on what has gone on here up to this point.

Mrs. WESTBROOK. I really don't think I need this microphone. I think everybody can hear me because I have such a mild voice.

Senator CRANSTON. Turn off the microphone.

Mrs. WESTBROOK. Yes; I have heard quite a bit that has gone on. I was kind of late because I went down to your office because I thought that was where you were. I am always getting things mixed up. However, I heard about some of the rural areas and I heard about some of the hospital status, how they felt some changes needed to be in the rules and regulations, but I became greatly concerned because each time I heard all of that it was mostly on the hospital basis or something that would benefit some people who were in some kind of category.

Now, I might step on some people's toes and that's good because I love to step on people's toes. Senator Cranston knows me and I am a very hostile, mean, black woman, and one of the reasons that makes me mean is the condition that our President put us all in, that is, that we are all trying to survive.

When I begin to think about the consumer's side, as I am a consumer, and I might not use all of the eloquent words that some of the doctors before me presented, but I began to get hostile again because sometimes people give you a little piece of pie and before you can take a bite of it it's all gone. We wonder about those things.

When you begin to talk about the services that everybody is given in the local communities, and let me say again, one gentleman said he didn't know how to organize regions. I happen to be the acting chairman of region 10, which I didn't set up, but the Government set up, where we thought we might get some moneys from HEW and OEO where it contains Hawaii, Guam, Nevada, California, and Arizona. I am trying to represent all of those consumers who have health incidents in their communities who, as I said before, got a little piece of pie. If you realize the inadequate service that has gone on in some of those centers and not because people weren't willing to work in those centers, but because we didn't have the funds to function in the capacity that we thought would be beneficial to all of the people. We found out a few days ago by me being chairman of a board out here in San Francisco General—somebody might want to know how much I do, but I am in everything, you name it and I'm a part of it. We found out here that we were under OEO and we were supposed to get x number of dollars to help motivate and to try to help the outpatient department here be better for the whole total community, because we found out that people who came out here, if you came out in the morning you had a long wait. We are

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trying to build up the service so that the people could have more adequate service and they wouldn't have to wait so long.

We are also trying to put services over in Potrero Hill and south of Market, which doesn't have any facilities at all. South of Market we have a lot of people——

Senator CRANSTON. What kind of facilities are you talking about?

Mrs. WESTBROOK. The facilities are what you would call outpatient facilities where it would tie into this hospital. The hospital would be the main base, but they would have to come to the hospital and sometimes people have minor illnesses that don't require a hospital. Yet without that kind of facility in that kind of community, with no doctors and no kind of medical facilities there, it's kind of hard for people sometimes to come way out to the hospital. We are trying to set up these kinds of facilities in these two communities that will tie in with the hospital.

Senator CRANSTON. Eloise, what is your knowledge as you have seen it and know about it of the availability of emergency medical services in San Francisco when they are needed, when there is an emergency and somebody has to get to the hospital and when that person has to have help?

Mrs. WESTBROOK. I was talking to a lady a few minutes ago. I said, "It's lousy." She said, "Oh, no, it's not." I said, "Then it must have been changed since you took over." It is horrible.

I am from Hunters Point, U.S.A., which is a community off by itself, which is denied and deprived of a lot of services the other parts of Greater San Francisco get. We had an incident where a little girl had gotten run over by a truck. The little girl stayed there for 2½ hours before we got ambulance service. I know that when the little girl did arrive at the hospital she was dead.

We feel that if we had some kind of ambulance service in our community where it would be ready then we can save lives. We have a lot of people who have heart attacks where you call the ambulance and it's quite a length of time getting there. I am not saying that it's San Francisco General's fault, I am saying that we don't have the kind of service we need in San Francisco to go out into the areas where people are calling and they have an emergency and they can get to the hospital in a certain length of time.

Let me say this, Senator, I get very disturbed when a person does come into a hospital that you happen to know when he was born, how come he was born, who his mother was and what his mother died with. To me an emergency is something where you take care of the patient and then, if he lives, then find out where he was born and what his mother died of.

Senator CRANSTON. More importantly, what about the bank accounts? How many problems are you aware of where people haven't gotten care because they hadn't the ability to pay?

Mrs. WESTBROOK. That is right. One of the things about it is, with medicare and medicaid, which is not adequate but a lot of people have those cards, and that is one of the things that we are trying to do with the two facilities that we are trying to set up, that they will have these cards and take them with them at all times so when they

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do come in they will know that they are registered patients and they can be served immediately.

There are some people who do not have these cards, there are some people who feel like they do not want to be on that medicare or medicaid, who have their own business, who have to go through all of that. I do feel like, and I might be wrong, that anybody who is a citizen of the United States should have the privilege of going to any doctor or hospital in the United States, and that is a privilege.

It has to be a must, because as I think about the people who have died, the people who have suffered in the wars and things like this, to go up and fight so that we have these rights and dignities in these United States, but we don't have them, Senator.

When I heard and looked at what Mr. Nixon was doing the other day, going back over to Vietnam and giving all those big privileges to those people who they went over there and killed and crippled and all those things, I feel sorry for those people but I have always been taught that charity begins at home and can then be spread abroad.

To me when you begin to talk about the consumer, the consumer is the one, and sometimes people say, "Eloise, what are you talking about the consumer because everybody is the consumer." Everybody is not the consumer when it comes down to the Government. Consumer is defined when you have been poor, I mean poor, but when you get ready to get on some of these different organizations to begin to make policy, then the poor are not considered any more as being a consumer because it would be some doctor's wife, or some lawyer's wife or some Senator's wife who is considered to sit on that organization to consider these problems because they do not understand my problems, and it begins to make more problems for me because they don't understand what it is to be poor. They don't understand what it is to go to a hospital, they don't understand how it is to stand and wait. You see, the only person who is served and who gets the medical service is the very rich. I used to say the near poor, but it's not the near poor any more, it's the poor. The reason why the poor get it is because you have that medicare and medicaid. Now the doctors are saying they don't want that because it's too hard to get the money.

I was going to try to tell you more about this here, Senator, if you would like to hear it. You know me, I haven't even gotten wound up yet, I've just got started. Maybe it might be best if you ask me some questions because I can talk for 30 minutes, which I did in Detroit the other day.

Senator CRANSTON. I do have questions, however I do have to limit your appearance to 15 minutes in fairness to the other witnesses.

Mrs. WESTBROOK. Very good.

Senator CRANSTON. Let me ask you one thing about the families of people who land in an emergency situation and are suddenly knocked out of earning a living. Do you feel that there is anything like adequate support to the family under those circumstances?

Mrs. WESTBROOK. No; I don't.

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Senator CRANSTON. You didn't answer one question I asked you specifically. Are you aware of specific situations where people have not gotten emergency treatment because of a question about their ability to pay?

Mrs. WESTBROOK. Not lately, but we have had a lot of cases like that 4 or 5 years ago. I haven't heard of any yet. I will be looking around with Mr. Monedero, you know, who is director of this hospital. I'll sneak into his files and see what I can come up with and write you a letter.

Senator CRANSTON. I wish you would.

Are there any examples that have come to your attention where the ambulance has been unwilling to pick up somebody because of the question of their ability to pay?

Mrs. WESTBROOK. That comes up because we don't have private ambulances that come out to Hunters Point. There are only city ambulances.

Senator CRANSTON. Are there some ambulances that refuse to go out there?

Mrs. WESTBROOK. I think they would come if they belonged to some private health group, but most of the time we call for the city ambulances and they come out. They have been very nice about coming, but it's always an hour or 2 hours late when they get there. I don't say they don't come, but they are slow.

Senator CRANSTON. Why does it take them so long to get there?

Mrs. WESTBROOK. O.K., that's a good question. It's because they don't have enough of them to service San Francisco. I feel if we had more ambulances at this hospital we could get better service in San Francisco. We don't have enough so often-times when you call out here the ambulance is in some other area and it just can't get there at that certain time. Then we will try to put the patient in cars and bring them over here, but most of the time the doctors don't like you to move the patient, so they just lay there for that length of time.

Senator CRANSTON. Eloise, I may have some more questions to submit to you in writing but in order to let the other witnesses make their statements we had better move along.

Mrs. WESTBROOK. I certainly appreciate you allowing me the opportunity to come before you once again. I think this is about the millionth time.

I do feel you can do one thing for me, that is that you would get HEW straight, get Mr. Nixon straight, and also try to get more money into San Francisco so our health centers, that work so hard, will not be closed.

I do feel like I have a lot of faith in you, Senator Cranston, and others who are representatives of California, hoping with your ability and others like you we will not have to close our health centers, which do very, very adequately serve our communities.

Thank you very much.

Senator CRANSTON. We will do our best to help you keep them open. Thank you very much.

Senator CRANSTON. Our next witness is Dr. George Pickett, San Mateo County Department of Health and Welfare, and member Executive Board, American Public Health Association, representing the American Public Health Association.

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STATEMENT OF GEORGE PICKETT, M.D., SAN MATEO COUNTY DEPARTMENT OF HEALTH AND WELFARE; MEMBER EXECUTIVE BOARD, AMERICAN PUBLIC HEALTH ASSOCIATION

Senator CRANSTON. Dr. Pickett, we welcome you.

Dr. PICKETT. Thank you, sir.

I have given you a statement which I didn't proofread until I was sitting here this morning. I will skip through it quickly.

Senator CRANSTON. Thank you.

Dr. PICKETT. The American Public Health Association has established a new section on control of emergency medical services that is, in part, a culmination of a long-standing interest which basically, from our association standpoint, is aimed at the prevention of injuries and the prevention of the need for an emergency medical services system.

We would like to support S. 504, support its approach to systems managers. I think its focus on the need for the development of standards is important, the focus on interdisciplinary training is important. I think the caveats in there with regard to the possible duplication of services are extremely important. I think particularly important are the emphases which are unique in bills related to emergency medical services on the need for an adequate, effective referral from the emergency medical services center to an effective rehabilitation program.

I am not impressed by the provisions of S. 654 which would establish another State, Federal, and local bureaucracy. I think you will find there is strong concern about the duplication of services on the Federal and local level.

We do have two concerns about your bill, S. 504. I think the task of developing and planning areawide emergency health services is a formidable one and is going to take a considerable amount of time The 3-year proposal currently envisioned in your bill I think envisions faster progress than is possible given the present state of confusion in the medical services in this country. I hope you will stress planning and implementation of that planning before allowing local jurisdictions to become part of the medical-industrial family and purchase more trucks and radios.

Second, I think S. 504 proposes the establishment of an area emergency medical services planning council. While I cannot precisely define the membership of that, the provisions of section 636(a) would, in my opinion, require the constitution of a council consisting of about 120 members.

I am concerned about legislation which defines advisory or planning bodies in such highly specific terms. The bill does provide for leadership by comprehensive health planning agencies. I would personally prefer to leave it at that but to include provisions that CAP agencies have to touch base with the interests envisioned in section 636(a) of the bill.

We would like to support your effort to develop better emergency health services in this country. I think you will find the chairman and members of our association's section on injury control and emergency health services would be very pleased to work with your staff in an effort to help shape some national policy in this regard.

Thank you.

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Senator CRANSTON. Thank you very, very much.

Were you present when Dr. Zapp testified earlier today?

Dr. PICKETT. Yes; I was.

Senator CRANSTON. Do you have any comments on his testimony?

Dr. PICKETT. I think the inadequacies of the administration's position have been adequately described by the other witnesses, Senator.

Senator CRANSTON. I am delighted to have your comments on the immense task involved in putting together a representative council for the bay area to provide for any emergency medical services system.

In a complex governmental area like the one in which you operate, do you think it would be feasible to have a smaller group which could represent all of those elements?

Dr. PICKETT. I think it is necessary, Senator. Obviously any small, tight planning group is going to have to listen very carefully to all the interests expressed in the section of your bill relating to involvement. I think there is no argument but those interests should be involved and play a part in it.

In terms of extracting the necessary kinds of trade-offs and jurisdictional dispute settlements that are necessary to do anything effective in the bay area, or any other complex region such as this, a 120-man council when we already have so many regional planning councils in this area is perhaps a device that is additionally confusing. I think this is generally so in the rest of the country.

We are, in my own little department, now required by State regulations and Federal regulations to have 17 different advisory councils. They have produced now a bureaucracy larger than the one which is supposed to deliver the services.

Senator CRANSTON. Where would consumers or people who would like to be represented but aren't permitted for one reason or another to be so play a role in the approach that you suggest?

Dr. PICKETT. I think if we honor the provisions in section 314 (a) and (b) of the Public Health Service Act, that is taken care of in what I think is a simple and effective way, which has, since 1965, been not altogether adequately implemented. It simply states there shall be a council whose membership should be made up of consumers of health services rather than providers. I think those councils which have attempted to honor the provisions of that act have moved us forward from where we were in 1965. I think that simple statement can stand if it is backed up by Federal muscle and those dollars to effectively bring in the consumer participation.

Senator CRANSTON. Do you think it is possible to have for the bay area a coordinated system of emergency medical services or does that have to be broken down into smaller units?

Dr. PICKETT. I have some questions. I am only a 2-year resident in the bay area coming here from Detroit. I wouldn't want to get into such treacherous grounds as the east and the west sides of the bay. It seems to me it is possible and desirable. I do think the bay interposes some obstacles that might better sort out parallel systems going up and down the east and west side of the bay.

As Dr. Curry pointed out, with those two earthquake faults going under this area, the necessity to crawl across that bay for manpower support in case of a true emergency will be apparent to all of us.

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Senator CRANSTON. With the San Francisco Airport in your bailiwick, what provision is there for emergency medical services at the airport or near the airport in the event of a mass casualty situation?

Dr. PICKETT. There is an emergency medical services committee within San Mateo County which works with the staff and administration of the San Francisco International Airport. It has formulated plans. They have been moderately effective, I think. They are a long way from being perfect.

During the 747 crash of about a year or so ago a lot of us were very much dissatisfied with the kind of response patterns that were uncovered. Some very funny things happened. We found the emergency radio net that was maintained in the county does not cross over to the emergency radio net that was maintained in the airport. We had to station the sheriff patrol car and airport car side by side to verbally talk back and forth in order to patch communications. I asked why they didn't run a simple patch cord from one system to the other and they said the FCC had some regulation forbidding that. I would allow if the 747 crashed, the FCC might not prosecute the culprit who did patch the two radio networks together on the spur of the moment in order to solve the problem.

But it did uncover lots of those kinds of confusing areas. I think it has doubled the efforts of the people in the hospitals and in the medical design of the airport to solve those problems. My understanding is they have dealt with the problem of the emergency radio network system.

I think that crash, which was fortunately not a disaster, served as an unanticipated, monumental training exercise and has helped us a great deal. It is a terrible way to get help.

Senator CRANSTON. Thank you very much.

Dr. PICKETT. Thank you, senator.

Senator CRANSTON. I appreciate your speed, also.

[The prepared statement of Dr. Pickett, follows:]

PREPARED STATEMENT OF GEORGE E. PICKETT, M.D., MEMBER OF EXECUTIVE BOARD, AMERICAN PUBLIC HEALTH ASSOCIATION

Gentlemen: I am George Pickett, a physician and a member of the Executive Board of the American Public Health Association.

The APHA has had a long standing concern about emergency health services. Our position has been to encourage accident prevention—in the home, at work and on the highways. We have also advocated the development of comprehensive health services delivery systems, including emergency services, and rational, community-based planning. The Governing Council of the Association approved the formation of a new section of Injury Control & Emergency Health Services in order to bring together the interdisciplinary team necessarily involved in the effective delivery of emergency health services. This new section grew out of the Conference on Injury Control which was established November 11, 1969, in Philadelphia.

The report to the Association, recommending establishment of the new section, concluded as follows: "Accidents are a public health problem of major proportions. The health professional has a growing major role in the development of research, education, environmental modification, and emergency care to prevent and ameliorate injury, disability, and economic loss from accidents.

"The American Public Health Association has long been in a leadership position to encourage program development for injury control within the health care system.

"The Conference on Injury Control and Emergency Health Services as a related organization of the American Public Health Association believes that

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there can and should be a strong commitment of public health to the control of accidents and that the most feasible way to develop this commitment is through active participation in public health's professional association.

"The Conference has, over a two-year period, established the fact that scientific programs of high quality can be conducted in injury control for the health professional, that the problem has wide interest and is of concern to many health disciplines."

We support S. 504 as a comprehensive approach to a national problem. We particularly support the emphasis on system managers, the need for the development of standards, interdisciplinary training, the caveats re duplication of services and the provision requiring effective referral from the emergency system to further treatment and rehabilitation.

S. 654 places stronger emphasis on federal efforts to consolidate activities and to avoid confusion which we support but we are not in favor of the creation of a new administrative agency at the federal level and the related bureaucracies at the state and local level as proposed in S. 654.

I have two concerns about S. 504. The task of planning and developing area-wide emergency health service systems is formidable and will take time. The bill probably proposes faster progress than is possible, given the present state of confusion. I hope you will stress planning and implementation of that planning before allowing local officials to use grant money for expensive new trucks and radios.

Secondly, S. 504 proposes the establishment of a new Area Emergency Medical Services Planning Council which would, in the San Francisco Bay Area, have to include approximately 120 members according to the provisions of Section 636 (a). I am concerned about legislation which defines advisory or planning bodies in such specific terms. The bill provides for leadership by comprehensive health planning agencies. I would prefer to leave it at that but to include provisions which would require the 314 (b) groups to take into consideration the interests and expertise of those elements noted in Section 636 (a).

Gentlemen, we support the effort to develop effective emergency health service systems. I am sure that the Chairman and members of the American Public Health Association's section on Injury Control and Emergency Health Services would be happy to assist you in developing S. 504 into sound and effective national policy. They may be contacted through the office of the Executive Director, American Public Health Association, 1015 Eighteenth Street N.W., Washington, D.C., 20036.

Thank you.

Senator CRANSTON. I am delighted to welcome an old friend whom I haven't seen for too long, Judge Kenneth Andreen. He is chairman of the California Regional Medical Programs, area IV (UCLA), Central San Joaquin District.

STATEMENT OF JUDGE KENNETH ANDREEN, CHAIRMAN CALIFORNIA REGIONAL MEDICAL PROGRAMS, AREA IV (UCLA), CENTRAL SAN JOAQUIN DISTRICT

Judge ANDREEN. Thank you, senator. I am pleased to be here.

Our regional medical programs district includes the four central California counties of Madera, Fresno, Kings, and Tulare. Those four counties have enough area to stick the States of Massachusetts, Connecticut and Rhode Island in there and still have enough territory to lay out a track for one whale of a cross-country track bed.

In that area there is only one town that has a class A emergency medical services facility and that is Fresno.

I think most of us here can readily visualize the remoteness of this area, Yosemite, Kings Canyon and Sequoia National Parks, and perhaps the remoteness of the other side, the coast range. The corporate farming has brought remoteness to the San Joaquin Valley.

My business in law has made me acutely aware of the need for

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emergency medical services out in such places as the west side of the San Joaquin Valley.

Senator CRANSTON. How do you mean corporate farming has caused remoteness to the Valley?

Judge ANDREEN. As they farm thousands of acres, there is no need for the little townships with the facilities little townships have. You can drive for miles out there and not find much in the way of facilities, not even service stations.

Senator CRANSTON. Are there ghost towns where they were?

Judge ANDREEN. No, there aren't. The towns weren't much anyway. That area built up after corporate farming began, the Mendota Canal and things like this. Those ghost towns that are there are just shacks of migrant laborers.

Senator CRANSTON. What you are really saying, in former days, as farming spread out, there would have been communities developed. Now, this just simply is not the case.

Judge ANDREEN. Yes.

I represented a family once which was involved in an accident out there. Their 9-year-old daughter was seriously injured. It took an excruciatingly long time—I have forgotten now just how long before the child could get some medical care, because of the distance and the time and the child expired before medical care arrived. I recall the testimony of her 16-year-old sister in the court. She talked about the injuries to the child, that she called out, "I'm dying, I'm dying." I recall thinking here this 9-year-old child had never really learned to live and yet she knew she was dying.

I'd like to go into three programs the Regional Medical Programs has instituted in Fresno County as an indication of what we see as our problems and as approaches to solve those problems.

To the east of Fresno are four rancherias that contain about 2,000 migrants. In each of the four we trained a health aide and gave her a four-way radio link-up to the Valley Medical Center. These people were trained as to vital signs, symptoms. This was a very successful program and it has been carried on, now, after our program by the Central Valley Indian Health Project.

I talked to their congressman a few days ago who was called on by some Indian leaders. The one thing they did not gripe about was paramedical services, so this is an indication of some progress.

In Visalia we have the program for training emergency medical technicians. We have trained 58 people. You mentioned the highway and the sheriff's office. They've been there. Forest Service personnel and fire department personnel have been there.

In the materials that we have, and I was told to bring these for you, you will see a letter from the assistant chief of one of the fire districts in which he talks about the help this training has been to one of his people who is over by Interstate 5.

That brings me to my last discussion of one of the programs that we have which needs the type of support you're giving to emergency medical services.

Millions of people travel through Fresno County each year; 99 has adequate medical services. Interstate 5 has not. It is an engineering marvel——

Senator CRANSTON. Is that the westside?

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Judge ANDREEN. Yes; it's the new one. In the back of that material you will be given there is a map of that.

Senator CRANSTON. That's because it goes through brand new areas?

Judge ANDREEN. Yes.

Senator CRANSTON. What happens when there is a crack-up on that highway?

Judge ANDREEN. It takes a while to get somebody there. The fire department at Coalinga is providing an ambulance service. There is a small hospital in Coalinga and another hospital in a town further south but for something really big, you have to come all the way into Fresno.

We have been planning for a demonstration emergency medical services program for that ribbon of concrete that goes through Kings and Fresno Counties. Imagine the problems. They have placed a great deal of population along a thin ribbon of concrete in a completely desolate area. We have two approaches, we think, to that problem which we would like funded. We would like to have the chance to try out our solutions to this problem on Interstate 5.

All of these have been made possible by Regional Medical Programs. I especially appreciate your comment earlier about your support for the Regional Medical Programs. This is one agency, at least in our county and our district, that has been working on emergency medical services.

Senator CRANSTON. Thank you very much. It has been very helpful and sheds some new light on a couple of points I had not thought of regarding the problems of remoteness you face in rural communities with big farms and big highways.

Do you have any comments on the HEW testimony?

Judge ANDREEN. I missed it. I can't see——

Senator CRANSTON. In effect, they said "No."

Judge ANDREEN. We are willing to do what we can to provide services to the people on Interstate 5 but the Federal Government helped put it there. I think the Federal Government ought to assist us in providing emergency medical services to it.

Senator CRANSTON. I thank you very much, Ken. It is very nice to see you.

[The prepared statement of Judge Andreen follows:]

PREPARED STATEMENT OF JUDGE KENNETH ANDREEN, CHAIRMAN, CALIFORNIA REGIONAL MEDICAL PROGRAMS, CENTRAL SAN JOAQUIN DISTRICT

Mr. Chairman: As Chairman of the Central San Joaquin District Committee of the California Regional Medical Programs, I am pleased to have the opportunity of appearing before this committee today to tell you of our concern for the improvement of emergency medical services in our area.

Our Regional Medical Programs District includes the four central California counties of Madera, Fresno, Kings and Tulare and covers a land area of almost 15,000 square miles with a resident population of nearly 700,000 persons. It is primarily a rural area characterized as one of the richest agricultural-producing areas of the world as well as an area containing some of the most beautiful and famous forest parks—Yosemite, Kings Canyon and Sequoia National Parks. It is an area through which millions of people travel each year primarily by automobile on highway 99 and the Interstate 5 freeway. It is also an area that until a little over two years ago had only one (1) Class A emergency facility (staffed by a physician 24 hours per day) and that was located at Valley Medical Center in Fresno. The area now has three (3) Class

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A emergency facilities, all in Fresno plus one available on week ends in Visalia, Tulare County.

While the hospital emergency room—properly staffed and equipped is obviously important in the delivery of emergency medical services, it is no more important than other elements of an emergency medical services system: detection and reporting of emergencies, prompt dispatching of proper equipment and trained personnel for stabilization of the patient at the scene and en route and safe transportation to an appropriate facility. These elements, too, are woefully lacking in our area and are costing lives and increased disabilities.

We need the improvement and upgrading of all elements of the emergency medical services system in our area. Indeed, this is a recognized need statewide as indicated on Page 210 of the *California State Plan for Health* which sets out the following goal: "Development and enforcement of suitable minimum standards to ensure uniform quality and availability of emergency services." The Comprehensive Health Planning Association of central California in their *Areawide Plan for Health* lists this goal: "To develop a system of quantitatively and qualitatively adequate emergency medical care."

Our local District RMP Committee has recognized emergency medical services needs in our area and I would like to briefly describe three of our activities illustrative of some of our needs and our attempts to alleviate them.

1. *Training of indigenous Indian health aides*—over 2,000 Indians reside on isolated, mountainous rancherias in our area. By isolated, I mean up to 50 miles from Fresno, with no phone communication and dirt roads that many times require four-wheel drive for negotiation. Through a small RMP grant four Indian women, residents of four separate rancherias, were trained as health aides to their communities and supplied with short wave radios for communication directly to Valley Medical Center in Fresno. These aides were trained in such things as: symptom description, taking of vital signs, health education, simple treatment procedures and similar subjects that enable them to act as the immediate health resource person to their communities. The value of this small project has proven to be great and the project is now continued through funding by the Central Valley Indian Health Project.

2. *Training of emergency medical technicians (Tulare County)*—with RMP financial assistance a training program utilizing the Dunlap Curriculum (approved by the American College of Surgeons) was initiated in Tulare County under the direction of Harold Jakes, M.D., and the College of the Sequoias. To date this program has trained 56 persons such as ambulance attendants, police officers, forest service personnel and firemen. The value and worth of this training program is most clearly indicated in the attached letter from assistant Chief Cloyd E. Fall of the Kings County Fire Department.

3. *Development of a demonstration emergency medical services system for the Interstate 5 freeway*—in early 1972 this freeway was completed and opened for use in a totally rural environment and without apparent consideration to emergency services (see map attached). This freeway stretches in nearly a straight line for over 220 miles and bypasses by several miles the closest small urban area. The average daily traffic of this freeway is about 11,000 cars—3,000 above the estimated; injuries and fatalities in 1973 are estimated to be in excess of 180 and 25, respectively. We think this is a serious problem now and that it will grow unless dealt with immediately. Therefore, RMP funded and is now completing the design of an experimental regional system of emergency medical services to serve part of this freeway and adjacent areas.

These three activities, I hope, will indicate to this committee some of the emergency medical service needs of our area as well as our concern that something be done about them. The Regional Medical Programs, as you know, will cease to exist as a Program as of June 30, 1973, due to the decision of the Administration to withhold its re-funding. In our area this is a most disappointing and frustrating situation because Regional Medical Programs is the one agency that has really done something to address the emergency medical services problem.

I most sincerely urge this committee to continue its efforts to obtain legislation and appropriations to improve emergency medical services. I am appreciative of your efforts, Mr. Chairman, on behalf of this very important part of health care and I stand ready to assist in your efforts in any way I can.

[The material (letter, map, and article) referred to in Judge Andreen's statement follows:]

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KINGS COUNTY FIRE DEPARTMENT

KENNETH D. HARP
CHIEF

1333 WEST LACEY BLVD.
HANFORD, CALIFORNIA
93230

PHONE
(209) 582-3531

February 2, 1973

T. M. Johnson, Administrator
Tulare District Hospital
869 Cherry Avenue
Tulare, California 93274

Re: Robert C. Mullen
Emergency Medical
Course

Dear Sir:

Per your request for comments on the Emergency Medical Technicians Course completed by Robert C. Mullens. This man has since been assigned duty at our Kettleman City Station which is responsible for the stretch of Interstate I-5 that crosses Kings County.

Mullens has made many responses to accidents on this highway where he was the first emergency personnel to arrive. He has many times demonstrated his skills and the knowledge he has gained from this course. This enables him to give aid and comfort far beyond the little knowledge gained through a first-aid course.

I believe, due to the increase of traffic over our high speed highways and the remoteness of some of these highways with the accompanying distances from medical services, that there is a great need for this type of training.

The coming semester will see two more of our personnel enrolled in the existing course offered by the College of the Sequoias.

Yours very truly,

Cloyd E. Fall
Assistant Chief

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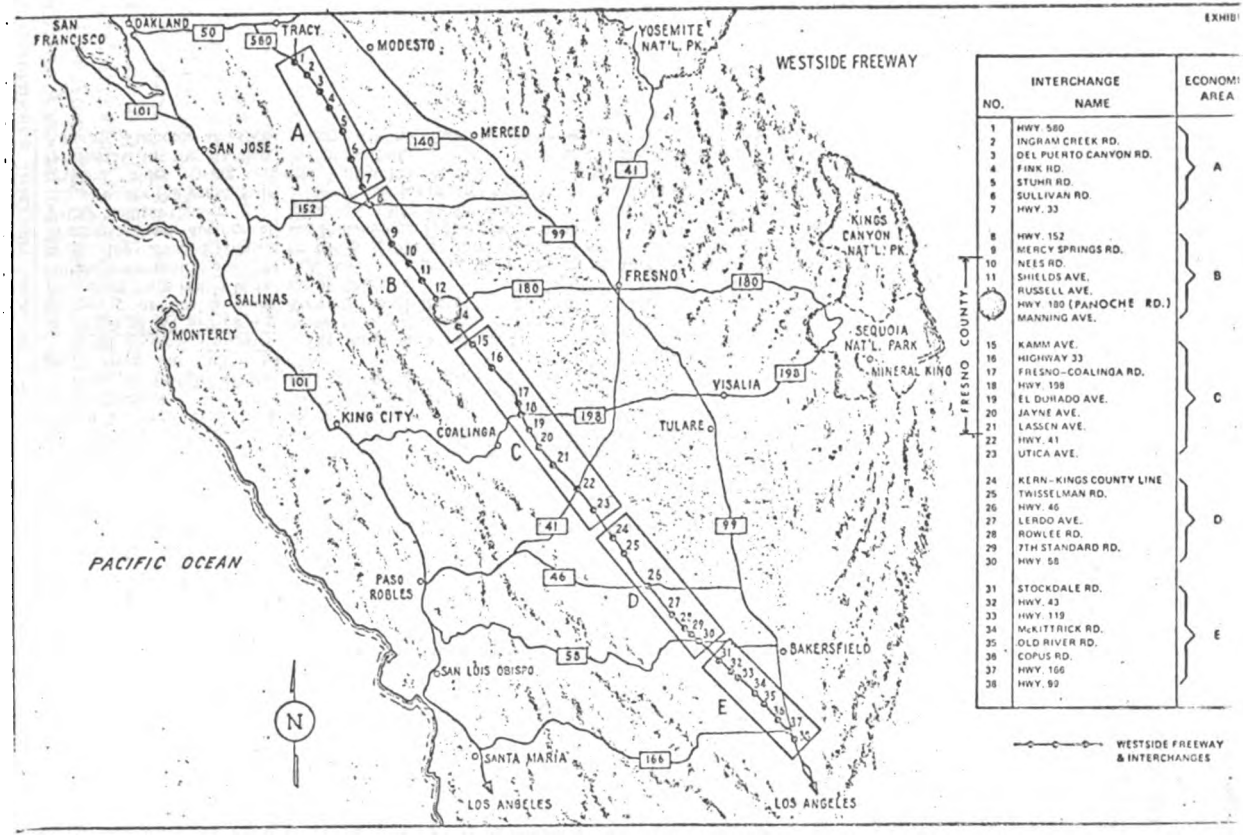

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Valley Indian Health Project Gets $149,973 Grant

The Central Valley Indian Health Project, based in Clovis, has been awarded a $149,973 federal grant to improve health care services to some 2,000 rural Indians living in Madera, Fresno and Kings Counties.

A unique feature of the grant from the California Regional Medical Programs (RMP) Area IV, will be the equipping of health aides with short wave radios to facilitate communications between the isolated Indian Rancherias and doctors at Valley Medical Center.

Also under the grant, four resident aides living on rancherias in the Dunlap, Auberry, Tollhouse and Oakhurst areas will be trained in first aid, symptom recognition, nutrition and other aspects of health care.

The resident aides will augment the two traveling aides already employed by the health project. All six will be equipped with radios.

The program is expected to be in operation by mid-November, said James Ricketts of RMP.

A major stumbling block to bringing health care to the Indians now is their isolation according to Richard Johnson, director of the Central Valley Project and an Indian himself.

Many of the Rancherias are several miles off paved roads, lack any telephones, and may have only one working automobile, he said.

The resident aides besides providing a radio link to physicians also will provide transportation for the sick.

In some cases the Indians are still using old remedies like wild peach leaves, Johnson said. Another important job of the aides will be to make them aware of the modern health care available and encourage its use.

A major objective of the program will be preventive medicine. According to national statistics the average life span of the American Indian is only 44 and his attraction of major diseases is many times that of other Americans.

Another function of the aides will be to find out from their fellow Indians what their needs are. "Too many times in the past people have told the Indians what's good for them," Johnson said.

The funding of the project by RMP is an indication of the federal government's renewed interest in making medical care accessible to the rural Indians, Ricketts said.

The Central Valley Indian Health Project, financed by the Department of Health, Education and Welfare, has been in operation since last May. Its major accomplishment so far has been a dental program in which 211 Indians, mainly in the three to 15 age group, have received dental treatment. In nearly all cases it was their first contact with a dentist.

The success of the program has fueled interest in the setting up of a permanent dental facility in Clovis and contracting with a dentist to perform the work, Johnson said.

Now a pool of six dentists, organized by Dr. Charles Nalchajian, are performing the duties in their own offices, he said.

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Senator CRANSTON. Our next witness is Mrs. Gladys Jones, R.N., head nurse supervisor, Emergency Department, San Francisco General Hospital, for the American Nurses Association.

STATEMENT OF GLADYS JONES, R.N., DIRECTOR OF NURSING, EMERGENCY ROOM, SAN FRANCISCO GENERAL HOSPITAL, ACCOMPANIED BY LAUREN LOUGHRIDGE

Mrs. Jones, we are delighted to have you with us. Would you identify your companion.

Mrs. JONES. This is Lauren Loughridge. She is one of the staff nurses in our Emergency Department, San Francisco General Hospital, known to most of us as "mission emergency."

I would like to go over a lot of this testimony but since you have it and time is short I will try to cut down some. Listening to most of the people talking, I would like to comment on a few things.

One of them is that we can no longer staff an emergency room with an attendant and any doctor or specialist who happens to be in the area at the time or someone simply listed as "on call."

Emergency medical care is directed to prevent the premature death, to minimize disability, to relieve suffering, and provide comfort and reassurance to the ill and injured. To accomplish this goal, nursing and staffing patterns must change and improve. Many hospitals throughout the country have no permanent, professional emergency room personnel. Nurses are pulled from other areas of the hospital to man or relieve in the emergency rooms. Knowledge and technology has become so advanced that emergency medicine and emergency nursing has become a speciality in its own right. Personnel who are not trained to exercise judgment and skill in the use of monitoring equipment, cardiopulmonary resuscitation, and the triage of seriously ill and injured victims may actually do more harm than good. We believe that each emergency area should be well supplied and have well-trained permanent personnel and have departmental status. Equally important is an active, ongoing, inservice training program and standardized postgraduate programs.

Following up on the idea of departmentalization of emergency areas in hospitals, it is vital there be a system of categorization or regionalization of emergency care on an areawide basis. There are too many areas where there is duplication of emergency services by hospitals in close proximity. On the other hand, there are many rural areas without services of any kind. We should address our energies to providing a system for availability of emergency care in rural areas and to prevent duplicating the services in urban areas.

The American Nurses Association and the Emergency Department Nurses Association is aware and has been aware of the deficiencies in emergency medical care and service systems. The lack of a forum to exchange ideas and upgrade services was the motivating force behind EDNA's nationwide inception.

Right here, I'd like to have Lauren just give you briefly the daily occurrences in an emergency room and just where the nurse fits in.

Senator CRANSTON. That would be very helpful.

Miss LOUGHRIDGE. I am pleased to have this opportunity to tell you about the importance of developing the standards of excellence.

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Let me tell you about a typical day in the emergency room. Organization, to me, is of the utmost importance to enable the emergency department to function smoothly. With the expectation of seeing 120 patients in the next 8 hours, it is imperative that I know exactly what is happening and be able to form a plan of action.

I make my initial rounds. I ascertain the needs of the patients in the acute treatment area and in the male and female observation wards.

In the treatment area I see a patient, and let's call him Mr. Sanchez, who fell from a ladder and is awaiting suturing. He is afraid and speaks no English. I see Susie Cooper who fell from her bicycle and broke her arm. Her older sister is with her and a nurse is trying to reach their mother. There are several other patients in various stages of treatment, either waiting for test results or talking with their doctors.

As I go to the female ward, I see Mrs. Jones, who is 4 months pregnant, and having severe abdominal pains. I see Norma Scott using a special breathing machine to help her get over an asthma attack. There are several other ladies being observed by the doctors and nurses for any change in their condition.

In the male ward, there is Bob Stone, a teenage drug overdose, who is despondent and needs more understanding than physical care at this time. In the next bed is elderly Mr. Hampton, brought in by his landlord. He was found on the floor of his apartment, no longer able to care for himself. He will need a physical checkup and a visit by the social worker. There are several other men waiting for X-ray results.

As I leave the male observation ward, I hear the trauma phone ring. It tells us to get prepared for a GSW of the chest. The whole emergency team is alerted. Surgeons, anesthesia, interns, nurses, the priest, and the messenger to be on hand to run for blood. The patient arrives with the ambulance crew doing cardiopulmonary resuscitation on the patient. The team goes into action. After half an hour of hard work, the patient is breathing on his own and is on his way to the operating room. The nurses quickly prepare for the next emergency which is not long in coming. The trauma phone rings again.

A 7-year-old boy has been hit by a car and has received a severe head injury. When he arrives, he has no heart beat and is not breathing. He has been in that condition since the ambulance picked him up. Again the team does everything possible but this time unsuccessfully. Then comes the really difficult part, talking to the family, also telling the lady, standing off to the side, that the boy that she inadvertently hit when he darted into the street is dead. Dealing with families, relatives, and friends in such stressful situations takes a special kind of understanding.

Back to rounds. New patients waiting to be seen, new patients in the wards being observed. In the male ward are several alcoholics "sleeping it off". Like other large cities, San Francisco has a large alcoholic population; an unfortunate and usually homeless group of people who seek medical treatment and even warmth and nourishment at the emergency department.

This man presents a common problem. He smells and acts intoxicated, yet he may have a deep cut in his scalp. Did he fall, did he

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have a seizure, was he hit? We will have to observe him for a head injury, trying to separate the underlying alcoholic problem from the question of a traumatic one.

Just an overview in a constantly changing pattern. Inflow always seems greater than outflow. There always seems to be a pressure, whether moving a critical patient to surgery or getting the less emergent patient problems sorted and solved.

As you might surmise, it takes a special type of person, a special training to become a part of this active emergency room. I think I know special people in our emergency department. Nurses must be first quality; not only must they be well versed in general nursing skills, they also must have an applied education of the emergency department functions. They must be able to react quickly and in a manner appropriate to a given situation. They must be persistent; pushing, nudging, even nagging, yet at the same time compassionate and understanding. They must be pressure-sensitive, yet always pressure-resistant.

These are difficult qualifications and none of us bat 100 percent but as a group and with continued education, we are approaching this goal.

Senator CRANSTON. That is a superb statement. I thank you for it very much. It is obvious you are the special type of person that is needed.

Let me ask you, is 120 people the average that is treated in an 8-hour time?

Miss LOUGHRIDGE. I think daily we usually see about 250 patients. That would sort of be a busy evening, you know.

Senator CRANSTON. How large is the hospital emergency department?

Mrs. JONES. Senator Cranston, our emergency department is a comprehensive one. We have one major trauma room, two treatment rooms, backed by two X-ray rooms. The operating room is directly above us. We are also closely associated with our trauma team.

Senator CRANSTON. Do people have to wait their turn very often in order to get in?

Mrs. JONES. Unfortunately; yes. The acute trauma can get in right away. This has been one of our growing pains and we have tried to do something about it. One of the things we have so far is three established triage nurses to check the patients when they first come in and to see they get to the right places and at the right time.

The other thing, we have done some expansion so that nonemergency patients but with an urgent need can get immediate help but will not be in the same area with the acute trauma patients.

Senator CRANSTON. How can the acute trauma patient get in if several show up all at once?

Mrs. JONES. We handle that very well. Things move into action. The patients are sent into the correct area and the doctors are right there to take care of them.

Senator CRANSTON. Congratulations.

Mrs. JONES. I have something else I would like to add.

With expansion of our facilities, we are lacking properly trained personnel. A specialized training program is badly needed. Recently we submitted a Regional Medical Programs proposal to train physician-nurse teams throughout all of area I in northern California. I

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must say the proposal was presented and accepted with enthusiasm. Everyone involved was very interested in it but it was not funded. In other words, it was shelved.

I read with enthusiasm the Emergency Medical Services System Development Act of 1973, S. 504, and I am encouraged that problems of emergency medical care are being considered at the congressional level.

I most heartily support your legislation. However, I believe that the following would broaden the scope of your legislation and better meet the needs of the taxpayers:

To provide proper care involves major capital many areas and many emergency rooms cannot afford. They need Federal subsidy;

Federal subsidy should be available without bureaucratic redtape and assurances that the subsidy assistance will get to the local areas;

There should be specific guidelines regarding regionalized services and uniformity of training of emergency personnel, professional, vocational, and emergency first aiders;

There should be medico-legal relief beyond the Good Samaritan law;

There should be incentives to obtain and keep well-trained persons in rural areas.

I think this bill is an important first step in trying to solve our problems related to emergency medical services. As a representative of the American Nurses Association and the Emergency Department Nurses Association we strongly support it.

Part of your bill is the establishment of a planning council and I would like to take this opportunity to publicly volunteer my personal services as well as other qualified registered nurse colleagues working at the grassroots to be members of this council.

The committee is to be commended for their wonderful work on this bill.

Senator CRANSTON. Thank you very, very much. I hope there will be such a council and you will be a member of it. I know you will be a very fine member of it.

Do you have any comments on the HEW testimony?

Mrs. JONES. I wasn't surprised. In some of the work of the ANA and EDNA, I felt HEW could have done a lot more to assist the nurses and the emergency medical services.

Senator CRANSTON. What percentage of the people who require an ambulance actually turn out to be an emergency patient?

Mrs. JONES. I would take a rough guess and say about 35 percent of the people really do need an ambulance but, then, there again, it is a medical decision versus a patient who is in great pain.

Senator CRANSTON. I was interested in your comment that the Emergency Department Nurses Association had been organized to provide a forum for an exchange of ideas on approaching and upgrading emergency medical services. Has there been any effort by the association to actively work toward regionalization and categorization of hospital facilities?

Mrs. JONES. This last year was the first national meeting and the organization is almost 2 years old. They are all working on that right now.

Senator CRANSTON. You have given a very clear picture of the tremendous amount of service the county hospital is providing to the

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San Francisco community. Do you think it would be feasible for some of those services to be provided by other hospital facilities in the community?

Mrs. JONES. I think it would result in duplication here. I think we could do more if we established a method where if a hospital is not able to handle an emergency, there would be some commnication and coordination in transportation of the patient so we could all work together.

I think in the rural areas you need more help right now than establishing another major unit in the city.

Senator CRANSTON. What limits are there presently on their ability to provide services?

Mrs. JONES. The hospitals?

Senator CRANSTON. The other hospitals.

Mrs. JONES. Some of them do not come up to the level of comprehensive care. I think they could provide backup if San Francisco General needed extra help.

Senator CRANSTON. May I ask you Miss Loughridge, what your reaction was to what HEW had to say.

Miss LOUGHRIDGE. I will have to admit before I was asked to speak, I am really not too up on what all has been going on. I don't think I have enough understanding to answer you.

Senator CRANSTON. The President's budget wipes out institutional support for training of nurses. What do you think the effect of that would be?

Mrs. JONES. Disaster.

Senator CRANSTON. I think we should close with that word. Thank you very, very much. You have been most helpful.

[The prepared statement of Mrs. Jones follows:]

PREPARED STATEMENT OF MRS. GLADYS JONES, R.N., SAN FRANCISCO GENERAL HOSPITAL

Chairman and Members of the Senate Committee on Emergency Medical Services Systems: I am Mrs. Gladys L. Jones, Head Nurse and Supervisor for the Emergency Department (Mission Emergency) at the San Francisco General Hospital, City and County of San Francisco and a member of the Advisory Committee on Emergency Medical Services for the State of California, alternate member of the Emergency Medical Care Committee, City and County of San Francisco, member and past president of the Emergency Department Nurses Association for the Greater Bay Area, a member of the American Nurses Association and a member of the California Nurses Association. I am speaking today as a citizen and nurse who is deeply concerned about the emergency medical care in this country and as a representative for the California Nurses Association and the American Nurses Association.

For decades emergency facilities of hospitals throughout the United States have consisted only of "accident rooms", poorly equipped, inadequately manned and used for limited numbers of seriously ill persons or for charity victims of disease or injury. Very few hospitals have met the need imposed by increased incidents of automobile accidents, violence and trauma since World War II. Expert consultants returning from both Korea and Vietnam have publicly asserted that if seriously wounded the chances of survival would be better in combat zones than on the average city street. The estimated total number of visits to emergency rooms in 1968 was 13 million; in 1970 that number increased to 49.3 million and is steadily rising. This increase is not due to absolute increase in visits by the critically sick and injured, but part to the increase in patients seeking primary medical care. We can no longer staff an emergency room with an attendant and any doctor who happens to be in the area at the time. Emergency medical care is directed to prevent premature death and disability, relieve suffering and provide comfort and reassurance to the ill and injured. To accomplish this goal, staffing patterns must change.

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Many hospitals throughout the country have no permanent emergency room personnel. Nurses are "pulled" from other areas of the hospital to man or relieve in the emergency rooms. Knowledge and technology has become so advanced that emergency medicine has become a speciality in its own right. Personnel who are not trained in the use of monitoring equipment, cardiopulmonary resuscitation, and the triage of seriously ill and injured victims, may actually do more harm than good. We believe that each emergency area should have well trained permanent personnel and have departmental status. Equally important is an active ongoing in-service training program.

Following up on the idea of departmentalization of emergency areas in hospitals, it is vital that there be categorization or regionalization of emergency care on an area-wide basis. There are many areas where there is duplication of services of hospitals in close proximity. On the other hand, there are many rural areas without services of any kind. We should address our energies to providing good care in rural areas and to prevent duplicating services in urban areas.

Relief from medicolegal pressures are mandatory. Confusion regarding liability and the granting of enormous awards by the courts has hindered prompt action which might save lives by non-physician personnel. This is especially true in time-related emergencies. Most emergency departments do not have physicians on duty 24 hours a day and the nurse is the first person to see these patients. It appears now that persons rendering pre-hospital emergency care have more legal protection than do persons in hospitals who have more expertise and training.

The American Nurses Association and the Emergency Department Nurses Association is aware and has been aware of the deficiencies in emergency medical care. The lack of a forum to exchange ideas and upgrade services was the motivating force behind EDNA's inception.

The Emergency Department at the San Francisco General Hospital is a comprehensive emergency unit with complete 24-hour coverage of doctors, nurses, laboratory, blood bank, X-ray, operating room, recovery room and intensive care unit. The staffing consists of 24-hour coverage by a staff of three surgical residents, two medical residents and ten interns. The in-house specialist cover age consists of orthopedic surgery, OB-GYN and neurosurgical 24 hours a day. In addition to this, there is the supporting Trauma Team which is headed by one full-time surgical faculty member from the University of California School of Medicine, Chief Surgical Residents, two 4th year Senior Surgical Residents, two first year Assistant Surgical Residents and four interns. The Trauma Team is divided into two teams and provides 24-hour coverage for all trauma and emergency problems. The nursing and paramedical emergency room staff consists of three to four registered nurses, three to five L.V.N.s and two to four orderlies per eight-hour shifts. We have capabilities of resuscitating all emergencies to include resuscitating the patient by putting them on cardiopulmonary (heart-lung) bypass in the emergency room. We have an on-going in-service training program in conjunction with the Department of Surgery and the Trauma Center at the San Francisco General Hospital to provide upgrading and maintaining efficiency of our staff.

In the last year, we treated a total of 70,935 patients. Of these patients, 1616 were secondary to ingestions and suicidal attempts, 885 from gunshot wounds, 529 from stab wounds, 1,838 from assaults and 2,919 from auto accidents. Like all emergency departments we suffer growing pains, congestion in the waiting area and long waiting periods for the non-emergent patient with urgent needs. We took a long hard look at this problem and came up with partial solutions to this problem. Triage nurses to evaluate the patients when they first arrive and see that they are sent to the proper area for care. This helps in the initial evaluation and contact of the patient but does not relieve the congestion nor the long wait. Our next step was to expand and create a waiting area and an area to handle the nonemergent patient, i.e., a drop-in clinic.

With expansion of our facilities we are lacking properly trained personnel. A training program is badly needed. Recently we submitted a Regional Medical Program proposal to train physician-nurse teams throughout all of Area 1 in northern California. The proposal was presented and accepted with enthusiasm by all groups concerned, namely, all major hospitals in the area dealing with emergency care, comprehensive health planning groups and district advisory groups of regional medical programs. To make a long story short, we

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worked hard on this proposal for more than one year and it was finally accepted by the State Review Committee. However, because of cutbacks in federal funds this proposal to upgrade emergency medical care for the people of northern California was accepted and approved but not funded. In other words, it was shelved.

I read with enthusiasm the Emergency Medical Services System Development Act of 1973 (S.504) and I am encouraged that problems of emergency medical care are being considered on the congressional level. I must support your legislation, however, I believe that the following would broaden the scope of your legislation and better meet the needs of the taxpayers:

1. To provide proper care involves major capital—many areas and many hospitals cannot afford—need federal subsidy.
2. Federal subsidy should be available without bureaucratic red tape and assurances that the subsidy will get to the local areas.
3. There should be specific guidelines regarding regionalization training of emergency personnel.
4. Should have medico-legal relief-Good Samaritan Law.
5. Incentive to obtain and keep well trained persons in rural areas.

I think this bill is an important first step in trying to solve our problems related to emergency medical services and we strongly support it. Part of this Bill provides for an establishment of a Planning Council, and I would like to take this opportunity to publicly volunteer my personal services as a qualified individual working at the grass roots to be a member of this Council.

The Committee is to be commended for their wonderful work on this Bill.

Senator CRANSTON. Our final witness is Dr. George Gay, director of clinical activities of the Haight-Asbury Free Clinic.

STATEMENT OF GEORGE GAY, M.D., HAIGHT-ASBURY FREE CLINIC, SAN FRANCISCO, CALIF.

Senator CRANSTON. Dr. Gay, we are delighted to have you here.

Dr. GAY. Thank you, Senator Cranston. I hope I can add some specific information with regard to our particular population.

As a representative of the free clinics, and we were the first of the free clinics that first started in 1967—there are now 360-some-odd free clinics throughout the United States, Canada, France, and Germany—we see in the free clinics an estimated 10 million clients per year.

At our particular clinic——

Senator CRANSTON. How many such clinics are there now?

Dr. GAY. There are 363. They are scattered throughout. They cater to a wide variety of people, mainly the dropouts, the disenfranchised, the young individuals, the minority groups, the Black free clinics, the Chicano free clinics, what have you, women's free clinics. These are people who will not be served by existing public facilities. They are people who have been turned away and not served by the existing public health facility or by the emergency rooms in the area. These are people who have chosen or have set up, mainly on their own initiative, an alternative system of health care delivery. This is the free clinic concept, the concept that health care will be available on a community level provided by community services and resources.

Our main problem and our problem since the beginning is there has been a lack of coordination between existing, more established facilities and those of the free clinic and other community resources. What we have tried to do is provide our own spectrum of health care at the street level for the street people.

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This includes in this area and, again, I mention this is the oldest and most established of the free clinics, we have established a medical section, a dental section, a women's need section, a child day-care center, a rehabilitation section, a drug detoxification and aftercare section. We now have a retail store outlet for our patient crafts and what not during the period of time they are being rehabilitated.

What we can particularly add or what we can give to any health care delivery system is our particular "street" expertise. This is working with kids who walk in off the street seeking help either from drug problems or health problems related to drugs or from the various spectra of health related problems. This would be malnutrition, hepatitis, infected cuts and wounds and what have you.

We have particularly been engaged in working with the city in the past 3 or 4 months and talking with the emergency rooms and the hospitals throughout the city on methods of acute drug detoxification and care; in other words, caring for the comatose individual and the individual who has acute anxiety inherent to a bad drug reaction. This is something we can add.

We also can add a particular understanding of this young type of person who comes to our facility, that is, the young dropout, the individual who would not go to the public health facility or who would not go to the emergency room.

We have been training on an unofficial basis since 1967, medical students, pharmacy students, and nursing students. We have an excellent background of professional people who, for their own reasons, have chosen to work in this facility and to serve in this capacity.

On the other hand, we have what we call paper professionals and we have our street professionals. So we have two groups of people who have developed a particular expertise directed toward the street person. We can provide that expertise to emergency rooms, to hospitals throughout the city.

This is basically the essence of what I would have to say. There are particulars as regards specific problems on the counterculture but I would like to close on the statement that we were founded as a social statement, that health care delivery systems needed to be provided at a community level. We have endeavored to do so.

Senator CRANSTON. Was yours the first in the country?

Dr. GAY. Yes; it was.

Senator CRANSTON. How is your clinic financed?

Dr. GAY. Our clinic is financed in its drug program and its rehabilitation program through NIMH. The government, the city, prefers to think of any particular medical problem, psycho-social problem, as an isolated problem that exists in a vacuum. We prefer to think of any problem as a wide spectrum of social problems that exist over a wide range of medical and psycho-social problems.

We just can't take care of the drug problem. That would be easy enough to do. We have to deal with the individual and with his family. We have to deal with the medical problems attendant to his drug problem.

Senator CRANSTON. How do you finance your training programs?

Dr. GAY. Our training programs are financed through six different medical schools throughout the country who send their medical students to us as fellows on a fellowship basis. We also now have an ar-

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rangement with the Government of Canada to train their medical students in like manner.

Senator CRANSTON. Do community centers like yours provide psychiatric services?

Dr. GAY. We are very recently a new member of Westside Health Center so we have access to the facilities there. Previously, it was a matter of "Catch-22" as far as referral and hoping to get our people admitted to mental health services.

Senator CRANSTON. Do you feel there is adequate provision for psychiatric emergency care in San Francisco?

Dr. GAY. No, sir, I do not. I feel we have a particular group of people here who we refer to as the "walking crazies." These are the people who are ambulatory schizophrenics who exist in this particular nondemanding situation and who we deal with on a daily basis with medication, counseling, who would much better be dealt with by a more thorough backup of psychiatric care.

Senator CRANSTON. Is this sort of care available at most hospitals in San Francisco or is it limited to San Francisco General?

Dr. GAY. Oh, no, sir. I would say this problem is prevalent throughout the city. Certainly the people we see come from throughout the city and throughout the bay area.

Senator CRANSTON. My question was, is emergency psychiatric care available in all the hospitals in the city or is it limited to San Francisco General?

Dr. GAY. It is available in several of the other hospitals, not all of of them.

Senator CRANSTON. Do you have any comments on the HEW testimony? Did you hear it?

Dr. GAY. I heard only portions and excerpts. It is a rather horrifying statement so far as I am concerned. We must provide medical care. Medical care is not a privilege, it is a necessity. We must provide it; we, as citizens, must provide it.

Senator CRANSTON. Has the Department ever helped your free clinic directly?

Dr. GAY. Yes, sir; through NIMH.

Senator CRANSTON. Have you ever had any just straight HEW help.

Dr. GAY. No, sir.

Senator CRANSTON. From the Health Services Division?

Dr. GAY. No, sir; not to my knowlege.

Senator CRANSTON. Thank you very much. You have been a very helpful witness.

[The following was subsequently supplied for the record:]

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drug abuse: street level emergency

By George R. Gay, MD
San Francisco, California

EDITOR'S NOTE: This article is based on remarks made by Dr. Gay during the Third Annual ACEP Scientific Assembly October 12-14, 1971.

10-SECOND SUMMARY

Current drug abuse patterns in the Haight-Ashbury area of San Francisco indicate that cocaine and multiple drug abuse were "in" in 1971, and that 1972 will be the year of the "Viet Nam" junkie. Practical emergency treatment is discussed.

Changing drug patterns in the Haight-Ashbury area of San Francisco serve a predictive function on both the national and international levels. This first became apparent with the epidemic use of Methamphetamine ("speed") in the summer of 1967. We predicted then that such a pattern of "speed" use would appear in other cities; that there would be what has come to be known as the "ripple effect," an epidemiologic after-shock to be felt in other portions of this country and elsewhere within 6 to 18 months. And, indeed, this did occur.

We predicted a similar phenomenon with "barbs." In the fall of 1969, we predicted the same for heroin, and now we've seen that this, too, has come to pass. It is apparent that we can rely on the Haight (and several other "core" areas of the country) as a "barometer" for drug abuse. The patterns that we see in the Haight are those for which you should prepare yourselves. And this article discusses what is happening now in the Haight.

VIET NAM JIUNKIE IS NEXT

Just as 1970 is recognized as the year of the middle-class junkie, 1971 has been the year of the multiple-drug user and next year (1972) will probably be the year of the Viet Nam junkie. I've mentioned the Viet Nam junkie because I want you to spot him, and to be able to help him when he starts showing up in the emergency department.

Right now, the Viet Nam junkie is out there on the streets! But he's not being seen in large numbers in health care facilities as yet because he's enjoying the junkie life style too much right now. He's in the middle of the "lag phase" period. The "lag phase" is that time between which an individual becomes introduced to heroin and that time when the physical and psychological pain of the heroin life style becomes so intolerable to him that he first seeks professional help. The lag phase may run from one to three years (and it has been just a little more than two years since heavy use of heroin was first reported among our Viet Nam troops). We're now in the eye of the hurricane and, within the next year, we can expect the number of Viet Nam junkies we see to increase by geometric progression.

In our heroin clinic, we're seeing more women than ever. Currently, about one-third of the patients seen in our heroin clinic are female. That's up from 25% just six months ago. Ten years ago one out of every six or seven patients on hard drugs was a woman; today it's one out of three.

Also, we're seeing more white patients than ever before. We're running about 75% to 80% white kids right now compared to 70% to 75% prior to March, 1971. This is the white Middle Class Junkie.

BLUE COLLAR JUNKIE

If we use a restrictive definition of "middle class," ie, suburban, well-to-do, college-educated, etc, then I would estimate that only 10% to 15% of our patients fall into that category. What we're seeing now is the "Blue Collar" Junkie. Only 40% of our patients have had white collar experience (attended college, had parents of college background or held "white collar" jobs). This compares with 65% of Americans of the same age.

The age of our patients remains very much as it was, 23.3 years of age. This is very remarkable because more than 90% of the patients that we see (up to 70 cases

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a day) have a primary problem of heroin addiction. Ten years ago, the average was 33.

The fact that we're dealing with a younger and younger population has some very optimistic overtones. Seventy-five percent of the kids have been into the drug for less than six years. These are not hopeless cases, they are people who can be helped. In emergency terms these youngsters are resuscitable.

"SNOW" NEXT YEAR ?

There is no doubt in my mind that cocaine will be *the* drug for 1972. More than 25% of our population at the Haight are into cocaine heavily at this time. At least, what they call "cocaine" on the street. (Cocaine is going for about $10 a snort right now and that's a high mark-up.) And you would be surprised to recognize labeled hospital and emergency room bottles out in the street. There it'll be, with a skull and crossbones on the label. It really *can* be "poison" (less than a gram can prove fatal) and yet these kids have got it out there. We see a lot of phony mixtures simulating cocaine, such as procaine, or novocaine, mixed with methamphetamine to give the local numbing effect, like cocaine; this mixture also gives the high, or exhilaration, of both cocaine and speed.

The youngsters of the Haight, most of whom are not indigenous —were attracted to the area early in the game by the siren song of Ken Kesey and Tim Leary. (Leary appealed to the eastern establishment intellectual hippies while Kesey was the hero of the street hippie.) There were others—Jerry Garcia, Allen Ginsberg and Augustus Owsley Stanley III, the "acid king" (who is now in temporary enforced retirement). These kids have adapted over the years to a program of preferential drug use, built upon the consequence and attainment of a desired "stoned" feeling or pharmacologic effect. We must recognize that there is tremendous peer pressure among these kids; and a widespread universal availability of drugs of every nature, heretofore unseen and unimagined.

"KNOW YOUR DEALER"

The kids have their own pharmacopoeia out there on the street and true to the American system, the drugs are sold by "brand name." There's been the "pink wedge," the "paisley wedge," the "paisley cap," "orange sunshine," "clear light," to name a few. Just as anyone can go into a drug store and buy little blue Compoz for their frazzled nerves or Sominex for a good night's sleep, they can now go onto the street corner and buy drugs which are infinitely stronger, infinitely more dangerous and infinitely more suspicious, as far as contents are concerned. There's a saying on the street, "Know your dealer." This is very valid because much of the stuff that's out there is quite the opposite of what it's labeled. For example, "THC" *can't* be sold there because it's so unstable that it is not a routine street corner preparation. The "THC" that we see out there then, on analysis, turns out to be anything from oregano to acid (and not very good acid at that).

But the kids are not dumb. They are quite sophisticated in their use of drugs and know the drugs that may have deleterious physical effects. Those that are lacking in the propensity for giving a satisfactory psychedelic experience or "trip" are studiously avoided, as are those drugs which produce liver, brain or kidney damage. They know glue sniffing may produce nausea without a particular mind-bending effect. And they know those drugs which have a low margin of safety in relationship to their psychotropic effect. Yet, the kids, for all their sophistication, may take a pure depressant, sedative hypnotic drug such as PCP or "angel dust" (Sernyl), which may cause a deep coma. Drugs such as this that are obviously more dangerous are relegated by this drug-using population to the lower echelons of illicit drug preference.

DIONYSIANS AND GLUTTONS

One problem that we've dealt with in our profession is to psychiatrically pigeonhole the drug taker as an individual with a specific personality defect. We have, through our labeling, artificially created an individual capable of rehabilitation only through prolonged hospitalization and intensive psychotherapy. The unhappy result of this attitude has been a very low incidence of success with the drug user as a patient, and with the psychiatrist as a therapist.

Early in the game we were guilty of this pigeonholing when we called drug users "experimenters," "users" or "abusers." Later, Wolfram Keup differentiated "conformity seekers," "dionysians," "searchers," "experimenters," and "gluttons." Again, psychiatric pigeonholes. The different classes were supposed to be characterized by discreet personality problems, and each was to be approached as a psychopathic entity with therapy dictated through actuated pattern or motive of abuse.

I would suggest here that modes or patterns of drug abuse are *socially activated*, and that a societal hierarchy is accordingly established. Any drug abuse pattern can then be seen to be a selective end process in itself. There may be a wide range of factors that contribute to any drug abuse pattern. These are personal, social, pharmacological and even geographical. There are then seen to be many variable but interdependent factors that come together to determine a drug pattern prevalent at any particular time.

CURRENT DRUG PREFERENCES

We have in the Haight at this time a multi-layered pattern of drug preference. Down at the bottom are the glue-sniffers. (Actually we've been a little bit too sophisticated

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In the Haight for patterns of glue sniffing. Go up to Montana or Idaho, that's where you're going to find glue sniffing or gas snarfing. It'll be in the hinterlands, not in San Francisco.) Right above the sniffers come the "dopers," the "barb freaks." These are the barb, tranquilizer, sedative hypnotic users; especially if they have signs of dissipated health and sloppiness. They drool. They "fall out." And they have a general lack of personal appearance and care. (There's a marvelous quote by William Burroughs, who says "goofball bums, they got no class to them, the next step down is coal gas and milk, or sniffing ammonia in a bucket . . . the scrubwoman's kick.")

Next up on the list are the "juiceheads" or alcoholics (our population calls these people "rednecks" or straights.")

Then come the cigarette smokers: those people with persistent cough, bad breath, stained teeth, and incipient emphysema. Just above them come the "speed freaks." And if the speed freak is malnourished, paranoid or violent in any way, or if he is obviously secondarily infected (hepatitis, abscesses, etc), he may fall a lot lower on the scale. The acid head comes above the speed freak. Acid heads are generally well regarded, unless they grossly overuse the drug. The acid user is generally quiet, peaceable, introverted and gives off "good vibes." Next comes the "coke-head." The rich-man, dealer, or pimp's drug, cocaine may be doled out "like Champagne."

At the top of the list comes the "smackhead" or heroin user. Whatever his faults may be, this fellow has reached the nirvana, or present end point, of social drug abuse.

You notice I haven't mentioned marijuana—marijuana, the "killer weed." This is because marijuana is the ubiquitous drug of social relaxation and social acceptance in my patients' particular subculture. Statistical review shows that more than 97% of the patients of the Haight-Ashbury Free Medical Clinic have used marijuana, and more than two-thirds have used marijuana daily at one time. Isn't that fascinating? They use it in place of the evening cocktail. They put down the "juiceheads" and the "rednecks," but they almost always will supplement their own dope (marijuana) pattern with a little wine at night. Paradoxical? Perhaps not, if we consider moderation.

SOCIOLOGY

Let's get into sociology and try to figure out who these crazy people are. Lou Yablonski characterized these people who invaded the Haight-Ashbury in the early 1960's. First, he said, came the core hippie, the true "guru," who used acid and other psychedelics as an integral part of an almost religious ethic of love, brotherhood and good vibes. Second came the "hangers-on," the plastic, weekend hippies or "Clark Kent" variety. (I think all of us who are into the counter-culture have gone through this phase. You step into the Free Clinic phone booth and emerge as "Super-Guru." This happens!) Next came the "teeny-boppers." When those of us over 30 were youngsters, we found the teeny-boppers were out on the beaches at Fort Lauderdale consuming large quantities of beer. Now their younger sisters are in the Haight and they're consuming large quantities or drugs which are unmarked and infinitely more potent than beer. Last, of the personality types, came those marginally-compensated individuals who we call the "walking crazies." (They're also known as "psychopathic deviates.") These are the people who cannot "make it" in a larger, more structured, less permissive society than what we have to offer in San Francisco and the Haight.

These segments, then, make up the drug-using subculture of the Haight-Ashbury. And whatever the current composition of the Haight may be (it totals about 4,000 to 5,000 people), we see the bizarre results of widespread indiscriminate drug use daily in our Clinic.

RESUSCITATING THE OVERDOSE

Now that we've reviewed the drug patterns seen in the Haight (and I've tried to give you a glimpse ahead by outlining some of our current trends), let's turn to the problem of the comatose overdose (OD) victim. This problem hits close to home with every emergency physician; and with the trends to heroin and to multiple drug abuse (often multiple *depressant* drug abuse), the very practical importance of overdose management becomes clear. I hope that sharing some of our experience with you will contribute to your emergency department techniques and effectiveness.

In the past three or four years we've seen innumerable OD's at the Haight-Ashbury Free Medical Clinic, and we see no end in sight. There's one kid that I've personally resuscitated seven times. I look on him as a brother. I wish he looked on me the same way because he just goes right back out and gets stoned, and sooner or later they drag him back in again. Sometimes these OD's are dumped right on our doorstep. Or an actual call for help will come over the telephone from several doors or blocks away, and then we grab our bags and our "crash team" makes the run for resuscitation. And of the people that we've gotten to who have had a heartbeat when we arrived, we haven't lost one yet. And I think that this means that somebody is doing something right.

TREATING OD'S

As our experience has broadened . . . as we've seen and treated these many, many OD's . . . we've found several rules of thumb to be of help. First, some "don'ts." *Don't* stop to look for pinpoint pupils. Pinpoint pupils are fun to look for after a while, but that's *not* the first thing to do. Hypoxia or mixed

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drugs may definitely mask the sign of the opiate or pinpoint pupil. The second thing that you *don't* do is to waste time looking for intubation equipment. Put this stuff aside and get back to it later when you have time and the patient is pink. Anyway, by then, he'll have his reflexes back and will bite your fingers when you put them in his mouth. The main problem is to get that airway open and to get the patient to breathe. He may be dropped on your doorstep as blue as his jeans. Get his airway open and breathe for him! If you've got an Ambu bag available, that's fine. But I've found that all of the equipment that is really needed is readily available between my diaphragm, my nose and my mouth. This is the breathing equipment that always works! This will restore his heartbeat back to a regular rhythm and pink him up. Then you can fool around and do all those wonderful things that differential diagnosis textbooks tell you to do.

Third, don't waste time looking for fresh needle marks. These people (who use needles regularly) may have run out of arm veins a long time ago. They may have needle marks from the feet to the penis. And sometimes in other places that you wouldn't even think of looking. If you've read Burroughs, you'll recognize some of these obscure spots for a hit.

MULTIPLE DRUG ABUSE

Now, before we get into a list of the *do's* of resuscitating the OD, let's examine the problems you may be facing in your patient. In this day and age, in this age group, in this drug-abusing population, you look for multiple drug abuse . . . you expect it! You see respiratory depression, or apnea, and you immediately suspect an etiology of multiple depressant drugs. You can expect to see profound respiratory depression as a result of heroin alone in only two situations: both are patients who suffer an overdose because they have not developed a tolerance. This includes the complete novice in the field and the guy who's been clean for a while and then has shot up again. He's the individual who's been in jail, or the fellow who's been in an Army "drug rehabilitation" or "amnesty camp."

But, first of all, when you see a profound respiratory depression, suspect the use of multiple depressants concurrently. This will include barbiturates, alcohol, any number of sedative hypnotics and tranquilizers and heroin. There are more tranquilizers out on the streets in the Haight-Ashbury than you'd find in any pharmacy. There's Valium, Thorazine and Librium, any depressant or "downer" you name is right out there on the street. These drugs are taken concurrently either to supplement the very poor grade heroin available or else to tide the taker over until (miraculously) some good "stuff" shows up on the street again.

And beware of Quaalude! It's a very, very much sought after drug of abuse . . . as much as Doriden (or glutethimide) The drug-using population really digs it because it makes them goofy as hell. They mix sedative hypnotics with alcohol or wine, as well as tequila and other hard liquor. Then they "top it off" by shooting up a little bit of smack that's available on the street. That poor grade, 1% stuff. And this is the time that you may see a person "fall out" and stop breathing. If he shoots up *first* and he's nodding out then everything's cool. Then he can sit there and drink and titrate his level of intoxication just as you or I would sit on a barstool and have a drink or two. But if he's drunk already or full of sedative hypnotics, and then shoots up, WHAMO! A potentiating depressant effect occurs, he "falls out" and stops breathing.

Now, if you have a guy who's got a little vial from Saigon sequestered away (this is pure heroin), then you may see the classical picture of the pure opiate OD: pinpoint pupils (unless anoxia has caused dilation), areflexia, marked respiratory depression (anywhere from apnea to two or three shallow, gasping respirations per minute) and a cyanotic clammy skin And when you see a young fellow like that come into your emergency department, treatment *must* be prompt.

Here, briefly, are the measures that we go through in our emergency treatment of acute heroin overdose.

THE TOOLS OF THE TRADE

Suppose a junkie just wandered in off the street, flaked out and flopped down right there. First thing to do would be to clear his mouth, get out the chewing gum. Pull the chin back and extend the angles of the mandible upward and outward. Then watch to see if the patient's epigastrium is moving. Make sure that air is entering the chest in four quadrants.

If the patient is not breathing properly, the first thing to do is breathe for him and pink him up. Check the pulses right away in any case. If respiratory assistance is

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needed, apply mouth-to-mouth respiration. I watch the easy bilateral rise and fall of the patient's chest and epigastrium. By the time he has taken several good breaths, his pulse will be nice and full and regular. Then, look for veins. Put the tourniquet on the patient's arm and watch to see that he's breathing and in good shape. Now, the patient needs to be "reversed." Take a narcotic antagonist (I use either Nalline or Lorfan) from your bag, take 1 cc and inject it intravenously. Within one circulation time (or 20 seconds), the patient should be sitting up. If he isn't you have made a *differential diagnosis* that you are dealing with drugs other than the opiates, probably multiple drug abuse, involving barbiturates, alcohol, PCP or other sedative hypnotics. However, if this is a pure heroin overdose, he will rouse and awaken at this point and may cuss at you a bit. A junkie doesn't like his "nod" to be disturbed, but he'll be breathing and that is your reward.

All other efforts at resuscitation will fail if mechanical obstruction to the airway is not removed. So listen for the "snoring" or "crowing" sounds of a partially occluded airway. Remember, complete obstruction is silent, partial obstruction is noisy (a noisy warning). But a partially occluded airway is *also* a partially open one (and thus it gives the gift of time to work!)

The only drug other than Nalline or Lorfan that I carry in my bag is a drug that I like because it's a gimmicky drug and that's Dopram (Doxapram HCl). It's a non-specific respiratory stimulant and it will work. It will cause the "physiological sigh," it will make the lightly narcotized patient begin breathing like a locomotive. I don't use it if there's *any* question in my mind of acidosis or prolonged, unattended unconsciousness, or if it's a patient in whom I would not like to see a little hypertension (eg, with a head wound). It's a drug that I use in my particular young population because it does have a dramatic, immediate effect on respiration, and also has a cerebral arousal effect. The dosage is about 5 cc given one time.

These are the simple, easy steps of primary resuscitation. (They get a great deal easier after the first 100.)

After the airway is established, and the patient is pink, breathing well and has a good heartbeat, then take care of secondary matters. Take a urine specimen (catheterize, if necessary); assess the blood and urine levels of barbiturates; draw blood for chemistries and level of acidosis, and accordingly inject bicarbonates and steroids and all those little wonder drugs that you have in your crash cart. If you have problems such as regurgitation and aspiration of vomitus, this should be approached as a pneumonia, and must be treated in a hospital.

STREET LEVEL OD TREATMENT

I want to briefly go into the street level treatment for overdose, ie, what the junkie does for a friend who has overdosed. A knowledge of what other (less professional) resuscitative measures may have taken place before you receive the patient may alert you and protect you and your patient from the secondary consequences of such treatment.

First of all, if you are an out-and-out junkie and your buddy overdoses on you, this is an extremely impolite thing to do because it upsets your whole evening and ruins your own high. And if this guy threatens to die on you, well this is very poor manners! These people are non-violent, all they want to do is to have a little "nod" all by themselves; they don't want to hit or fight that guy with the OD, but they will if he looks like he'll die. To stimulate him, they slap him around. So the doctor may encounter a patient with blood or broken teeth in his mouth, and perhaps a number of superficial bruises, pinches or other abrasions. The junkie is well aware of the effectiveness of stimulus to the skin. He will get the OD'd individual up and walk him around the block, maybe put him in a cold shower. If it's a male, they undress him and put ice on his testicles; if it's a female, they twist her nipples for painful stimulus. They really can be effective because stimulus works.

Another technique is to shoot up the OD'd junkie with "speed."

There are a couple of street methods that don't particularly work, but are fascinating. It is worthwhile to be aware of these modalities and the problems which they may produce. The first is the intravenous injection of strong saline solution. Junkies may take a spoonful of regular table salt and mix it up with a little water. (The amount of salt is equivalent to the amount of "junk" that was taken.) Sometimes it's given subcutaneously on the back or elsewhere and this really causes pain—as well as subsequent tissue slough and abscess. Another "technique" is the IV injection of milk! This may add some calories, but it can also produce lipoid pneumonia. So beware of it, and watch out for it!

CASE REPORTS

In closing I want to present several case histories. In their content are many of the problems that you may commonly encounter.

The first case history concerns a young man who "shot up" in the bathroom of the Clinic, took two steps outside of the bathroom and collapsed. I got to him immediately and saw that he wasn't breathing, that he was ashen and without reflexes . . . but his pulses were strong and regular. Time was on my side. I had three minutes at least, in which to work. I cleared his mouth of mucus, pulled his tongue forward, breathed for him several times, gave him 1 cc of Lorfan, 5 cc of Dopram and with-

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DRUG ABUSE *From Page 22*

in one circulation time he was coughing, sitting up, looking around and saying: "Where am I? Why did you wake me up?" We watched him for several hours, (you must watch these people for several hours, keep this in mind!) With the current fad for Methadone on the street, these fellows may have Methadone in them which may long outlast the antagonist given, whereupon they may lapse back into coma and die! So be aware that you must watch these people for an extended period of time. . . . We watched this young man for six hours and then discharged him back onto the street, presumably to his connection.

The second case history, and this is in retrospect, was Jimi Hendrix. Jimi Hendrix died on September 30, reportedly on an overdose of white wine and sleeping pills. (See the combination of drugs?) And this was questionably combined with heroin. He died of aspiration pneumonitis in an ambulance en route to the hospital. This should never happen to any of us. We should never allow it to happen. Jimi said, "You know the drug scene came to a big head. It was opening up things in peoples' minds giving them things that they just couldn't handle. Well, music can do that too, you know, and you just don't need drugs." Well, Jimi did, and for some reason, for whatever reason, he was whistling in the dark, and he needed drugs and he overdosed, and he died. "Rolling Stone" said, "Jimi Hendrix made powerful magic dope music. There will never be another like him." And Jimi said, "If I don't meet you no more in this world, I'll meet you in the next one, so don't be late."

The last case is that of Janis Joplin, an old patient of ours. Janis died on October 4th at the age of 27. She died of a combined overdose of tequila and Methadone. (She had given up drinking Southern Comfort and had taken to drinking tequila.) She had taken heroin about six hours before, and this was also undoubtedly involved. Then she took some street Methadone, which she thought would allow her to kick. She was drunk when she took the Methadone. She was in a motel room; she collapsed, breaking her nose as she fell. She probably stopped breathing immediately. There were no resuscitative measures available and therefore she died. "Rolling Stone" said, "Super Stars just fade, but culture heroines die hard." And Nick Gravenitis summed it up this way, "There's a lot of people using junk on the Rock scene, the ones that abuse themselves most in terms of hard drugs or really anything, drinking or whatever . . . they are automatically on death row. It's just a way of enduring, because you know they are going to die, you know it. You get calloused in a way about it. How can you relate to a friend of yours that is using junk? What do you do? So you just put them in a bag. You say, "This person is going to die on me, get ready for it." And Ralph Gleason said, "Laughing just to keep from crying, little girl lost. She showed them all right, she showed them that the dues she paid proved too much in the end. A girl who insisted on drinking like an F. Scott Fitzgerald legend. Little girl blue, with the floppy hats and a brave attempt to be like one of the guys. She took a little bit of each of us when she went. She was beautiful, that's not corny, that's true. The Haight-Ashbury, (like Jimi and Janis) are tuned to self destruct.

And we know, we know (in our own experience we can remember back), that multiple drug abuse and its related deaths are not new to us. All of us can remember Tommy Dorsey, Alan Ladd, Marilyn Monroe, Judy Garland, Dorothy Kilgallen . . . all of them victims of multiple drug abuse. And I suggest that who's left in the Haight with us may not be the talents that Jimi or Janis were, but many of them are on the same train ride. And that is what you are going to see next year. Multiple concurrent drugs abused to the unexpected point of respiratory depression and death. □

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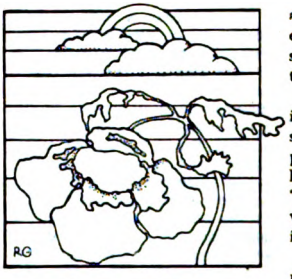
Recognizing the battered flower child

When a comatose drug victim presents in the E.R., there are other things to look for besides the obvious signs of overdose. His well-meaning friends may have complicated the problem with their own brand of "street therapy."



By George R. Gay, M.D., and Jonna Vega

With the widespread use of heroin among middle-class youth, a frightening phenomenon is appearing in E.R.s throughout the country: the battered flower child, comatose from heroin or multiple depressant-drug overdose.

Often with these patients, the classic differential diagnosis should be temporarily shelved. Look for the following:

¶He—or she—may very likely be white, middle-class, in the teens or twenties, with long hair or hippie patina. Needle marks may or may not be evident.

¶He may have superficial trauma. There may be blood, mucus, or broken teeth in the mouth; abrasions or bruises may be apparent.

¶He may be unconscious, perhaps unresponsive even to deep pain stimuli. Deep and superficial reflexes may be absent or obtunded. Respiration may be minimally effective or absent. Pupils may be pinpoint, or widely dilated, depending upon the degree of hypoxia and the drugs involved.

¶All vital signs may be depressed. Cyanosis will probably be present, and an irregular pulse (bigeminy or PVCs) is not uncommon.

The overdose victim may be dumped at the E.R. door, or he may be accompanied by one or two frightened and reticent friends who can provide an all-important account of what has occurred. Invariably, they will have instituted their own "street" methods of resuscitation before consulting you. So not only must you deal with narcotic reversal,* or with multiple-drug depression—perhaps a combination of alcohol, barbiturates, tranquilizers, and heroin or methadone—but you also must deal with possible adverse consequences of "street" resuscitation. You may confront:

¶*"Boxer's mouth."* "Stimulation" is the common form of street resuscitation—sharp slapping that causes blood, mucus, or broken teeth in the mouth; walking the victim around; putting him in a cold shower; applying ice to his testicles; or squeezing sensitive areas, such as testicles or nipples.

¶*"Speed reversal."* "Knowledge" in the street recognizes that depressant overdose can respond to amphetamines. Thus, your patient may have been recently dosed with "speed." This *really* muddies the waters—and it can cause convulsions in a comatose, hypoxic patient.

¶*"The heavy salt trip."* Street mythology holds that table salt will "take up" or "bind" heroin and nullify its depressant effects. A volume of salt corresponding to the amount of heroin used (e.g., one teaspoonful) is diluted with tap water and injected IV. This strongly hypertonic solution, in the presence of an already severely depressed cardiovascular system, may well contribute to pulmonary edema. (There's perhaps some basis for perpetuation of the salt-injection theory in the not-uncommon occurrence of missing the addict's sclerosed veins and injecting subcutaneously. The intense attendant pain has an arousal effect.)

¶*"The milk run."* A drug user may also nurture the common myth that milk, injected IV, will "reverse" an overdose. Actually, lipoid pneumonia may result.

¶*"Cotton fever."* Acute septicemia—or an allergic reaction, ranging upward to anaphylactoid shock and death—may occur as a consequence of using drug-injection "outfits" infected with unknown foreign material. You must also watch for problems such as abscesses, bacterial endocarditis, bacterial emboli, and malaria or syphilis transmitted by unsterile syringes. □

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*See "Treating Acute Heroin Toxicity," HOSPITAL PHYSICIAN, May 1971, and "Managing Narcotic and Sedative Withdrawal," January 1972.

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Senator CRANSTON. That concludes our hearing. This committee is going to conduct a hearing in Los Angeles Monday and I hope thereafter we can move the legislation expeditiously after we review what we are learning in the course of these hearings.

I want to thank each of you very, very much for your presence. I thank you, also, for being here representing others on the committee and the minority.

[Whereupon, at 12:30 o'clock p.m., the hearing was concluded.]

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EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1973

MONDAY, MARCH 12, 1973

U.S. SENATE,
SUBCOMMITTEE ON HEALTH,
OF THE COMMITTEE ON LABOR AND PUBLIC WELFARE,
Los Angeles, Calif.

The Subcommittee on Health met, pursuant to notice, at 9 o'clock a.m., in the auditorium of the University of Southern California, Los Angeles County Medical Center. Senator Alan Cranston of California presiding pro tempore.

Present: Senator Cranston.

Committee staff present: Leroy Goldman, professional staff member, Jay B. Cutler, minority counsel; and Louise Ringwalt, research analyst.

Mr. HAHN. Good morning, Senator, and ladies and gentlemen.

Senator CRANSTON. Good morning.

Mr. HAHN. I believe it proper that we now have an official welcome by the Board of Supervisors of Los Angeles County to our distinguished senior senator of the State of California, U.S. Senator Alan Cranston.

We are delighted to have you here in the county of Los Angeles this Monday morning, and particularly to be at General Hospital. USC General Hospital is one of the great medical centers of the world. At one time I would have just said a great medical center of California. Certainly now it ranks as a greater center of research treatment and complete medical care.

I am delighted that you are holding the hearing right here at this great medical center. I think it is very impressive that you would come here rather than just go to a Federal building to hold a public hearing on health needs.

On behalf of the county of Los Angeles I am proud of your interest in public health, the time that you are going to have to listen to expert testimony, and I hope that from these hearings, Senator, that you will be able to persuade your colleagues in the Senate and the House to support the bill that you have introduced. You have a great record for all the people, and this is the proper time to say it, in a public place. I just want to put that in the record of your distinguished service to the people of California and to the Nation.

I have a few words that I want to talk about the paramedic program.

Senator CRANSTON. Thank you very much, Kenny, for those very generous words and for your presence and, most of all, for your leadership in this field. I know you have done so very much to generate better emergency medical care for the people who certainly

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need it, in your community. For that and for your leadership in many, many other fields. I am most grateful to you. After a few words of my own, setting the stage for this hearing, I will turn back to you as a witness.

This hearing is being held on the emergency medical care legislation that I have introduced with Senator Kennedy, who is the chairman of the Health Subcommittee, as principal cosponsor of the bill. He has already held hearings in Washington. I held hearings in San Francisco Friday, and continue with this hearing today. Shortly we hope to begin markup which is the final drafting and revising of the bill, reflecting testimony presented at hearings such as testimony from those who will be with us today and witnesses at previous hearings. Then we plan to move this legislation.

Accidents are now one of the leading causes of death in our country, coming closely after heart, stroke, and cancer.

One hundred thousand Americans were killed by accidents in 1 recent year. Accidents constitute the cruelest killer because they strike young Americans the hardest. There are 10 million cases annually of temporary disability from accidents, and 400,000 cases annually of permanent disability from accidents. Much of this could be eliminated with swifter and more effective help which would save lives, which would save temporary or permanent disability and prevent the loss that accompanies that and the great expense that is involved.

Experts have told us that they believe that legislation along the lines of this bill properly implemented could save 5,000 deaths annually from poisonings, drownings, and drug overdoses alone. They believe we can overall reduce deaths from accidents from 10 to 20 percent and prevent roughly 30 percent of heart attack deaths.

The basic problem that we are seeking to deal with is the inability of most communities, if not all communities, to respond swiftly and effectively to an accident. There are too many ambulance attendants who are inadequately trained, some not at all. There is a lack of coordinated planning at the local and at the Federal level for dealing with accidents.

The bill basically, in a very rough summary, would propose support to States and to local governments to expand systems for providing emergency medical care services. The objective would be to improve coordination, communications, transportation, and training. We would hope to create what would constitute, in effect, a national corps of ambulance emergency medical technicians and, incidentally, here there are great opportunities for medical corpsmen with experience in the armed services. That experience can be carried into this field on the home front and create a great benefit to those individuals who would have an opportunity to render real service and be of great benefit to the community generally as well.

We hope to be able to improve and support ambulance services. We hope to, for example, have the ambulance driver able to learn by a communication system where the nearest emergency room is to which he can take the victim where he could get the best and swiftest and most immediate treatment. There is not adequate communication facilities for that purpose presently.

One outstanding figure that we developed is that 15 million visits are made annually in our country to emergency rooms by individuals, and that number is rising by 10 percent a year.

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The bill would provide $315 million to support this program over 3 years, $55 million of that to be spent the first year and rising gradually in the second and third years.

I am delighted now to turn back to Kenny.

Let me say one other thing first, in preparing for this hearing today I have been very impressed both here and in the north with the number of outstanding figures that California has developed in this field. As always, California is leading the Nation in the experts and varieties of care that are developed and I think that this particular hospital is way out in front, perhaps out in front of the whole Nation, in terms of the services that it is able to offer.

I would like to mention in passing that Dr. Max Harry Weil, chairman of the Committee on Emergency Medical Care of Los Angeles County, has already testified on this legislation in Washington. We will be hearing from other experts today.

Because of the limitations timewise on this hearing I have had to ask many witnesses who are here to present written testimony rather than testifying orally and because of the number of witnesses who will be testifying orally today I do want to ask each of you to try to summarize your statements in a relatively few minutes. The entire statement will appear in the record, of course, in its entirety. If we follow this procedure we will be certain to hear every witness who is scheduled and there will be adequate opportunity for me to ask some questions which I wish to ask of quite a few of the witnesses.

With that, Kenny, I am delighted to turn back to you as our first witness.

STATEMENT OF KENNETH HAHN, SUPERVISOR, COUNTY OF LOS ANGELES

Mr. HAHN. Thank you very much, Senator.

I would just like since this is being recorded and transcribed, to give this committee a little history of the paramedic program in Los Angeles County.

First of all, the fire department rescue squad that you inspected, Senator, about 9 o'clock, it is now 10 o'clock, you saw that fire department rescue unit. It was built pretty well by custom for our county fire department. That was about an hour ago. Since that time, from the facts that I have, three persons died in this county from a heart attack. There were 25,230 persons who died last year from heart attacks. That is three an hour. When we think that we can save one of those three by having an emergency paramedic squad available, that means that a life could have been saved that is sometimes lost because there are not emergency rescue units at the scene. There are some heart attacks and you will hear from expert medical people that nothing can save them. But of those who can be saved I think it is up to us in local government and national government to save them.

About two and a half years ago, my doctor, Dr. William Atland, who is the school physician for the Pepperdine University, stopped me in church one Sunday and said, "You know, Kenny, you can save a life a day if you establish in the county an emergency rescue squad. Why don't you do it?" I said, "How do I do it?" He said, "You ought to train firemen to do it." He said, "Why don't you talk

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to Dr. Walter Graf, who is a heart specialist who wants to talk to you about it, about how we can implement it." He came into my office, Dr. Graf, he said, "You know, I am a specialist in heart care," and he said, "I just think that is a tragedy that we can't save victims of heart attacks because there is no one there to give them the first aid the first hour." He explained it to me in very simple terms, and I hope I am quoting it correctly. He said, "Kenny, if a person is drowning in a swimming pool, if you can get someone in there quickly to save them, get them out of the swimming pool, and give them emergency treatment within 5 minutes, you have a good chance of saving them, but if he is in that swimming pool a half hour, you are lost, you are lost." He said, "From heart attacks, if you can get somebody there the first hour, if you can bring someone to help reduce their heart trouble right away," he said, "you can save one out of three heart attacks."

So we started a program with the help of Harbor General Hospital, Dr. Criley down there, a very, very fine man who took this, adopted this program. We appointed seven doctors to be a paramedic committee to certify the course of training and the curriculum and we used Freeman General Hospital, Centinela General Hospital, and Harbor General Hospital first. We found out we needed a State law to allow a fireman to give drugs, only an R.N. or a doctor could give certain drugs. So I had the county council prepare legislation. I called a good friend of mine, James Wedworth, who is the State senator from my district. Daniel Freeman, and Centinela Hospitals are in his district, and I said, "Will you introduce a bill for me." I explained it to him and he said he would. I called Larry Townsend, my assemblyman, who had the Harbor General Hospital in his district and, I said, "Why can't both of you introduce a bill and call it the Wedworth-Townsend Act to permit Los Angeles County on a pilot study for just 2 years to use our firemen on this program and I explained to them." Tragically Larry Townsend died a week ago today from a heart attack. But both of them were so willing to sign it.

After we got it through the assembly and the Senate we got some flack that certain medical groups were going to oppose it and urge Governor Reagan to veto it. I called Governor Reagan. Then we went up and explained it to him. He says, "You know, Kenny, I am going to sign this bill for 2 years." He says, "You know, my own father died in Beverly Hills when there was a jurisdictional argument whether the ambulance could go here [indicating] or stay on this side of the street [indicating]." He says, "That will save some lives and I will sign it." That is how the bill got into effect.

The first heart ambulance we built was right across the street in the county garage. It was supposed to be a parking meter thing. We converted that into the first heart ambulance.

We started the training, with some opposition, some ambulance operators thought that we were going to invade their private enterprise field, thought it was a duty for private enterprise. Some doctors thought this was the first step toward socialized medicine, because I wrote a letter to every doctor and asked if they would support it. Some who answered that way we would write them and say, "Would you accept a call at 2 o'clock in the morning to go into Watts or to go into Gardena, Inglewood and give treatment in someone's home? Are you willing to get up at 2 o'clock in the morning

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and give someone treatment?" I narrowed it down to find out what the facts were on heart attacks and how to save them. I said just the purpose of government at the National and State and local level protected citizens, even these without and even these within. I don't know more about the purpose of our government than to save the citizens' lives, and this is the goal that I hope that you can sell your colleagues in the Senate to do this program nationwide.

Senator CRANSTON. I think we can.

Mr. HAHN. I hope so.

By the way, you know, Senator Kennedy saw this paramedic unit. He was very impressed. Senator McGovern saw it and he was impressed with it. I showed it to Senator Muskie. So I do hope that we can move it out.

With that in the background I want to pay special tribute to Dr. Anderson who will testify later on. He is in charge of our emergency unit here at big general, and I hope he will give you the testimony that many other States can copy our emergency training program here and give strong support to this program.

What happens now, Mr. Cranston, is this, our county fire department takes a hospital to the patient. When they get a call, someone has a heart attack, by voice communication, by radio, using the most modern techniques the firemen can give the treatment to the heart attack victim within the first hour. He is in radio contact with a heart specialist at a hospital.

Now, I have been in office for 25 years, and some of my opponents think that's too long, but I got elected for another 4 years, so if I don't get a heart attack I will be all right for the next 5 years. I don't know of a project that I have been more thrilled with in all of my 25 years than of developing this paramedic program. I take great pride everytime I read a report that someone's life was saved by the fire department's rescue unit.

Since this bill was enacted, just since 1970, Senator, 35,000 emergency runs have been made, just in Los Angeles County, 35,000 since 1970. About one-fourth of them or 22 percent were heart attacks, 7,900 cases, and most of us have witnessed on channel 4 that emergency program which describes the Los Angeles County fire department.

We have trained 182 paramedics and trained 111 nurses. They have served practically the south, well, first of all, all of my district is taken care of by the paramedics, I saw to that, and then after my district I said let us send these squads throughout the county. We haven't yet got all the county protected. The San Fernando Valley, except Monrovia, does not have any. I have had a little trouble with my own board of supervisors selling this program so I hope that you will have an easier job in the Senate.

Senator CRANSTON. Let me ask you a question that relates to what the administration said. A representative from HEW testified at the hearings that I held in San Francisco Friday, that the administration does not believe that this legislation is necessary, although it agrees that the development of emergency medical services is a critical need.

The administration bases its objections on two grounds. First there is no need, they said, for a specific categorical program to support emergency medical services because these services HEW can

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support through general revenue sharing and demonstration projects by HEW. Let me ask you if Los Angeles has been able to get any such funding, to your knowledge.

Mr. HAHN. No, not to my knowledge. We did get funding out of the State to pay for the firemen while they were being trained, but the county equips the ambulance, we bill the fire department rescue squad, we pay the firemen their salaries.

Let me say this, that we have 77 cities in Los Angeles County, Long Beach, Torrance, Beverly Hills, Redondo Beach, Gardena, Monrovia, and Inglewood are the only cities that have trained firemen, with the exception of two units that serve San Pedro for the city of Los Angeles. The county has 27 units in a county of 7 million people. Now, I would say that your bill—your bill is probably one of the most important bills that you can authorize.

Senator CRANSTON. I think it is.

Mr. HAHN. I think there are some 60,000 people, I read this somewhere, some 60,000 people die of heart attacks and what if you can just save one-third of them and what if in that one-third it is someone in your own family. How important is a life? It is whose life that is being saved.

By the way, Senator, everyone who has written to me that has been saved, you know, they can't express their appreciation.

I would just like to say this, the opposition has come and maybe it is being toned down by private ambulance operators who think that this will invade their business. I think they can go hand in hand. You know, if the Federal Government can give to Lockheed and can give to ship building companies and can give to Northrup and all the rest for fighting programs for our Nation, and I am not against it, then certainly we can give Federal funds to the private ambulance people to equip their vehicles, if necessary, to save human life, and to train their personnel. I don't really care if I have a heart attack if the Los Angeles County Fire Department comes up with a siren and red light and I can see the words county of Los Angeles on the vehicle or whether a private ambulance comes up and they are both trained and both have the equipment. Too often private ambulance operators not only out here in Los Angeles but elsewhere have just worn a white coat and might not have any training at all. I think 5 percent in the Nation right now have drivers that are just taken off of the street. So I think we can say why fight this program, why should private enterprise fight it. Why shouldn't the American Medical Association stand four square for it.

It is a strange thing, Senator, let me tell you this, this program never started with the Los Angeles County Medical Association or the American Medical Association or even the Los Angeles Heart Association. They never said let us do it. It just took two or three or maybe four doctors who, once they saw it, said push it, push it, push it, it's good.

I have a letter from Fire Chief House who just sent it to me March 7, by the way, it was even difficult to sell the fire departments at one time. Let me tell you what, most firemen think their job is just to prevent a fire or put one out, and this was an extra duty for them, and I think that we should have this kind of training for firemen just like they have to have first aid so they will know what to do in case a rattlesnake bites them and how many times do they

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have a rattlesnake bite here in Los Angeles, or, anyway, in my district? If we make a fireman know what to do there, why shouldn't we have a fireman know what to do with a heart attack? I think it should be standard for firemen in the Nation. If they have to be 5 foot 5 or 5 foot 10 and weigh 180 pounds and know what to do to stop bleeding, they should know what to do to treat a heart attack because we have many more victims of that.

Fire Chief House said this, sent me a letter and said there was one of the units out in West Covina, one of the units out there that has worked with Monrovia said this person in charge of the training and education in that hospital said, "Lastly, I must pass on a comment made by one of our most capable staff physicians. He said if I ever need emergency attention I hope I will be lucky enough to have a paramedic at my side." Doctors have told me personally that when a person gets through the paramedic training of the county they are better qualified in some cases for heart attack victims than graduates of nursing schools that are fully accredited by the State of California.

I will submit to you statistics that you can put into the program of how many heart attacks we have had, how many runs we have made, by month. Just think, the county squads that I have listed and the cities that I have listed, just those in this county, run 2,212 cases just during the month of February. The grand total has been, as I said previously, 35,000. Like I say, if we could just save one-third of them.

Senator CRANSTON. Kenny, we will take all of that for the record. I appreciate that very much.

Let me ask you one question related to the one I asked you before. The other objection of the administration was that the money authorized by this legislation, $55 million the first year, is in excess of the amount that can be soundly invested. Do you agree with that position?

Mr. HAHN. No, I don't. Our county, and, of course, you can have expert testimony which cannot be challenged with our medical people here who will testify today. Politically as a supervisor in this county that has the responsibility of public health and governs this county politically, we have many county hospitals that have intensive cardiac units in them where the doctors and nurses could train the firemen if they had the funds.

I moved up a program that would train the firemen in the county 7 years, using Harbor General Hospital only, we expanded it this year for big general. We have already cut the time in half. We can use every public hospital, both private and religious, that have the standards for intensive cardiac units in them. We could train every fireman in California if you used the hospitals in San Francisco, the hospitals that are fully accredited in Bakersfield, the hospitals that are accredited in San Diego or Sacramento, all of those hospitals that meet the high standards of intensive units, the doctors have their degrees or belong to the Association of Heart Specialists or emergency care. If we can do it in California, why shouldn't every State have it?

Let me tell you how simple it is. You have the firemen, they have already been employed, they sit in the fire station, I like them all. But they just sit there a lot of the times. As long as the taxpayers

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are going to pay their salary, as long as taxpayers have built the fire station, provided the vehicle, why shouldn't they when they respond to an emergency case do something more than just put oxygen on their face. I say make the firemen work. At one time I was criticized. I said there are too many firemen sitting around that could save a life that are not saving a life because they are not trained. You are going to have trouble with some fire chiefs in the Nation. Some old-fashioned fire chiefs would say it is not their job. You know, we could have a crash program, that of saving a life in America. That would astound the medical world history. If we can have crash programs for getting men to the moon, if we can have crash programs for mathematics in our schools after sputnik, if we have proper support, proper direction, you know, we can have a program that people will say why didn't they do it before, it is so simple.

Senator CRANSTON. I am counting on you to develop public support in this community behind this legislation, which I know you can do. You have set an example here. I thank you very, very much for what you have done and for your presence and for your testimony.

Mr. HAHN. I sincerely say this, you don't know how proud I am that you have taken the trouble to come here and look into this program.

Senator CRANSTON. Thank you. Thank you very, very much.

[The prepared statement of Mr. Hahn follows:]

PREPARED STATEMENT OF KENNETH HAHN, SUPERVISOR, COUNTY OF LOS ANGELES

Los Angeles County's paramedic fire rescue system is the most advanced form of immediate emergency care in the United States.

It "takes the hospital to the patient" through a mobile intensive care unit manned by firemen specially trained as paramedics and linked by special equipment and voice communication to base hospitals.

I have been a public official in Los Angeles County 25 years and have worked on thousands of projects. This paramedic rescue system is the effort for which I take the most pride.

Since being authorized in 1970 by the legislature through the Wedworth-Townsend Paramedic Act, which State Senator James Wedworth and the late Assemblyman Larry Townsend sponsored, there have been 35,718 emergency rescue runs.

Of these, 22 percent, or 7,968, were coronary cases. The remainder ranged from spectacular rescues at traffic accidents to delivering babies. The television show "Emergency" describes the Los Angeles paramedics.

In Los Angeles County, 25,230 persons died last year from heart attacks.

That is three persons an hour. We will save one-third of those lives in the future, or a life an hour, when the paramedic program is expanded countywide as is planned by the Board of Supervisors.

So far, the county has certified 182 paramedics and 111 specially trained registered nurses for the base hospitals. These men are working in 26 mobile intensive care units in almost all of South Los Angeles County and areas including West Hollywood and Norwalk. One hundred thirty-four more paramedics are in training at our two paramedic training centers at Harbor General Hospital and County-U.S.C. Medical Center. Our schedule calls for 188 more paramedics to be trained or enrolled by July.

The county fire department has 27 rescue units. All of these will be converted to paramedic units within the next two years. We also are training men for the cities, including the City of Los Angeles. We already have trained men for Long Beach, Torrance, Beverly Hills, Pasadena, Redondo Beach, Gardena, Monrovia and Inglewood.

It is an inexpensive program using existing men and vehicles. A small amount of equipment is installed in the vehicles and intensive paramedic training is given firemen.

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Our program has been the pilot for the nation and has proven its worth.

The nationwide problem, particularly in the major cities, can be improved by adopting Los Angeles County's paramedic system.

The Department of Health, Education and Welfare has estimated 60,000 persons who died from heart attacks, accidents and other sudden illnesses could have lived last year if they had received proper emergency care.

Fifty-three percent of the nation's ambulances do not have equipment specified in American College of Surgeons standards. A H.E.W. survey showed 5 percent of the nation's ambulance attendants have no training in first aid.

Without any doubt, a program similar to ours is needed throughout California and the United States so every community and every citizen may receive this live-saving care.

There also should be an effort to give all firemen what we call Emergency Medical Technician I status, which is 60 hours of paramedic training. This gives firemen basic knowledge for treating heart attack and accident victims. This should be a part of a fireman's basic training, just as they now are required to have first aid knowledge to treat persons in shock, suffering from snake bite and drowning.

Similar training should be given law enforcement officials, such as Highway Patrolmen, who often are the first on accident scenes.

The county has started this EMT-I training for ambulance operators.

Your bill, S. 504, is vitally needed to expand these programs, and others to be developed nationwide.

Los Angeles County urges the adoption of S. 504.

(The Mobile Intensive Care-Paramedic Program Statistical Report, March 7, 1973, follows:)

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MOBILE INTENSIVE CARE-PARAMEDIC PROGRAM
STATISTICAL REPORT

March 7, 1973

Rescue Squad	Date of Operation	February Responses	Cardiac	Non-Cardiac	Total to Date Cardiac	Total to Date Non-Cardiac	Total Activity Responses to Feb. 28, 1973
County Squads 36 & 59	12/8/69	226	71	155	1244	3064	4308
County Squad 18	10/1/70	111	19	92	829	3690	4519
County Squad 209	11/15/71	363	64	303	760	3738	4504
County Squad 20	8/1/72	122	32	90	173	486	4659
County Squad 11	8/1/72	65	15	50	106	280	386
County Squad 7	8/1/72	51	8	43	121	409	530
County Squad 94	8/1/72	179	45	135	203	591	793
City of Inglewood	8/1/70	150	13	137	821	3593	4414
R. Amb. L.A. City #53	10/1/70	114	6	108	827	3515	4074
R. Amb. L.A. City #38	8/1/72	37	8	29	82	339	510
City of Redondo Beach	1/23/72	126	16	110	180	1138	1264
City of Beverly Hills	1/23/72	60	13	47	230	796	1026
City of Pasadena	4/1/72	231	14	217	123	1227	1350
City of Long Beach	11/15/72	133	45	88	197	360	557
City of Torrance	9/23/72	96	22	74	95	434	529
City of Monrovia	11/23/72	78	16	62	38	193	231
City of Gardena	12/18/72	44	5	39	22	125	147
Heart Ambulance	8/21/69	26	26		1917		1917
TOTAL		2,212	438	1,779	7,968	23,978	35,718

Cardiac responses totaled 22 + %

Paramedics trained and certified to date	182
Paramedics in training - - - - - - - - - -	134
Paramedics to be trained or enrolled this fiscal year - - - - - - - - - - - -	138
Registered Nurses trained and certified as Mobile Intensive Care Nurses - - - - - -	111

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MOBILE INTENSIVE CARE UNIT PROJECT

INTRODUCTION

A pilot project utilizing fire rescue personnel as paramedics to provide Mobile Intensive Care has been developed and conducted at Harbor General Hospital since July, 1969. It has been a joint effort of the Hospital, the Los Angeles County Fire Department, and the Los Angeles City Fire Department in conjunction with the Emergency Medical Systems Project at the University of California at Los Angeles.

The aim of the project has been to provide quality Mobile Intensive Care service to the community by upgrading the knowledge and skills of existing fire rescue personnel through intensive training and utilizing existing emergency services in the area.

LEGISLATION

The Wedworth-Townsend Mobile Intensive Care Unit Paramedic Act was signed into law in July, 1970. This law allows certified paramedics to perform cardiopulmonary resuscitation and defibrillation, start intravenous fluids, perform gastric suction by intubation, and administer parenteral injections of any of the following classes of drugs: antiarrhythmic drugs, vagolytic agents, chronotropic agents, analgesic agents, alkalinizing agents, and vasopressors. These functions, except for cardiopulmonary resuscitation and defibrillation, are dependent upon direct radio or telephone communication with a physician or a certified mobile intensive care nurse at a base station. The original legislation was amended in June, 1971, to allow any County in California to participate in such a Mobile

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Intensive Care Project and to specify that the [illegible] Training Program shall consist of a minimum of 220 hours of [illegible], but not limited to, didactic and clinical experience in a Cardiac Care Unit and in an emergency vehicle unit. This legislation will be in effect only until the 91st day after the final adjournment of the 1974 Regular Session of the California Legislature.

TRAINING

The Paramedic Training Program has evolved since September, 1969, into a five month course, two months of didactic classes followed by a three month internship. This internship is broken into two phases. [illegible] phases. The first phase is four weeks of clinical experience in the hospital. The second phase consists of eight weeks where the trainees ride with an established Mobile Intensive Care Unit and under the supervision of experienced certified paramedics. To date forty-seven paramedics have been trained and certified by the Director of Hospitals in the County of Los Angeles.

The training objectives were established as follows: (1) to provide properly trained personnel for the delivery of fast, efficient emergency medical care for the sick and injured at the scene and during transport to a hospital care facility, (2) to reduce the mortality rate during the first critical minutes following an accident or the onset of a serious physical condition such as an acute myocardial infarction, (3) to relieve the pressure created by a critical shortage of professionally trained medical and nursing [illegible] available for on-the-scene emergency medical care and (4) to provide an organizational system for the delivery of improved quality emergency medical care.

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The didactic portion of the training program, consisting of cardiac and non-cardiac lectures, totals approximately 170 hours with 40 hours of homework review, quizzes, and discussion periods. To the didactic segment is added 240 hours of clinical experience in hospital setting perfecting technical skills.

COST

The approximate cost of putting the first Mobile Intensive Care Team into operation(excluding salaries and cost of training) was $10,000. Of this amount, $7,000 was spent on field equipment (portable battery operated radiotransceiver, oscilloscope, defibrillator, oxygen and suction apparatus, drug boxes, etc.) The remainder was used to equip the base station (radiotransceiver, demodulator, cassette tape recorder, and strip chart recorder.) The two additional MICU teams also necessitated the purchase of the field equipment as outlined above. The vehicles used by these teams were already in service in the fire departments.

At the present time the cost of maintaining these units is largely the responsibility of the fire departments. However, repair of electronic equipment and replenishment of drugs and solutions used in the field remain the responsibility of the hospital.

The cost of training paramedics to man the MICU is somewhat dependent upon the size of the class and availability of staff physician lecturers.

OPERATION

Each of the three Mobile Intensive Care Units now operating out of Harbor

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General Hospital is unique in some manner, but all have similar mobile equipment and all provide essentially the same emergency care. Outlined below are the units and their operating procedure:

1. Rescue Ambulance 52 (RA-52) is a Los Angeles City Fire Department Ambulance, manned by two certified paramedics, which transports patients to a hospital after emergency care has been administered at the scene and the patient's condition has been stabilized. Radio or telephone communication is established with the base station in the Cardiac Care Unit at Harbor General Hospital and a physician directs all care given in the field and during transport. This unit, stationed in the city of San Pedro, only responds to rescue calls and does not accompany the engine to fires.

2. Rescue Squad 36 (RS-36) is a Los Angeles County Fire Department rescue vehicle, manned by two paramedics and stationed in the community of Carson. RS-36 responds to fires as well as all rescues and is utilized as "back-up" manpower in the fire department as well as a MICU. It is equipped with the same mobile equipment--Alter head resuscitator, radio telemetry, oscilloscope, defibrillator, suction apparatus, and drug and I.V. kits - as the other two units. This MICU does not transport patients, but instead accompanies the patient (with all mobile equipment) to a health care facility in a private ambulance which has been summoned to a scene by the Fire or Sheriff's Departments. Intensive care is continued during transportation: voice and EKG communication are continued with the base station physician at Harbor General Hospital. The need for Red Light and Siren responses back to the hospital is decreased since the patients condition has been stabilized, if possible, and continuity of care is maintained.

3. Rescue Squad 59 (RS--59) is a Los Angeles County Fire Department unit stationed at the Fire Station on the Harbor General Hospital grounds.

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It is a station wagon, equipped as the other two units and operating like Squad 56. However, because of the proximity to the hospital, the paramedics have an opportunity to work in the Cardiac Care Unit, Emergency Room, Coronaries, and Intensive Care Units between responses to increase their knowledge and maintain skills while on duty. The County firemen are rotated between Squad 56 and Squad 59, eight shifts at a time, in order to take advantage of this opportunity.

[illegible]

The MICU operational experience at Harbor General Hospital has now involved more than 2,5000 patients since December 8, 1969. Based upon this experience, we feel that there are two areas of paramount importance for a successful paramedic program.

First, the paramedics must be thoroughly trained so that they can reliably fulfill the responsibilities imposed upon them by the Wedworth-Townsend Paramedic Act.

A second point of importance involves the selection of the base station. The most versatile method is radio. The major disadvantage of this method is the scarcity of available radio frequencies. The second method of communication for both voice and EKG data is the telephone. The obvious disadvantage is the necessity to have a telephone available where the patient becomes ill or is injured. Furthermore, communication during transport to the hospital becomes impossible with this method.

FUTURE

The expansion of the paramedic training program during the current year has been funded by the Office of Traffic Safety. The plans are to train a minimum of 90 paramedics in the year to man 10 MICU's in L.A. County.

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Senate Bill No. 953

CHAPTER 421

An act to add Article 3 (commencing with Section 1480) to Chapter 2.5, Division 2 of the Health and Safety Code, relating to paramedics, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor July 14, 1970. Filed with Secretary of State July 14, 1970.]

The people of the State of California do enact as follows:

SECTION 1. Article 3 (commencing with Section 1480) is added to Chapter 2.5, Division 2 of the Health and Safety Code, to read:

Article 3. Mobile Intensive Care Paramedics

1480. Any hospital operated by, or contracting with, a county with a population of over 6,000,000 may conduct a pilot program utilizing mobile intensive care paramedics for the delivery of emergency medical care to the sick and injured at the scene of an emergency and during transport to a hospital, while in the hospital emergency department, and until responsibility is assumed by the regular hospital staff.

1481. (a) As used in this article "mobile intensive care paramedics" means persons who have been specially trained in emergency cardiac and noncardiac care in a training program certified by the county health officer and the director of hospitals designated by the board of supervisors, and who are certified by the officer as qualified to render the services enumerated in this article.

(b) As used in this article "mobile intensive care nurse" means a registered nurse who has been certified by a county officer designated by the board of supervisors as qualified in emergency cardiac care.

1482. Notwithstanding any other provision of law mobile intensive care paramedics may do any of the following:

(1) Render rescue, first-aid and resuscitation services.

(2) During training at the hospital and while caring for patients in the hospital administer parenteral medications under the direct supervision of a physician or a registered nurse.

(3) Perform cardiopulmonary resuscitation and defibrillation in a pulseless, nonbreathing patient.

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(4) Where voice contact or a telemetered electrocardiogram is monitored by a physician or a certified mobile intensive care nurse where authorized by a physician, and direct communication is maintained, may upon order of such physician or such nurse do any of the following:

(a) Administer intravenous saline or glucose solutions.

(b) Perform gastric suction by intubation.

(c) Administer parenteral injections of any of the following classes of drugs:

(i) Antiarrhythmic agents.

(ii) Vagolytic agents.

(iii) Chronotropic agents.

(iv) Analgesic agents.

(v) Alkalinizing agents.

(vi) Vasopressor agents.

1483. No physician or nurse, who in good faith gives emergency instructions to a paramedic at the scene of an emergency, shall be liable for any civil damages as a result of issuing the instructions.

1484. This article shall remain in effect only until the 91st day after final adjournment of the 1972 Regular Session of the Legislature, and shall have no force or effect after that date.

1485. This article shall be known and may be cited as the Wentworth-Townsend-Farr-Brown Act.

SEC. 2. This act is an urgency statute necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting the necessity are: There is a critical shortage of professionally trained medical and nursing personnel for the delivery of fast, efficient emergency medical care for the sick and injured at the scene and during transport to a health care facility. Improved emergency service is required to reduce the mortality rate during the first critical minutes immediately following an accident, or the onset of a serious physical ailment, such as acute myocardial infarction. Pilot projects of the type provided for in this act are required in order to develop and evaluate a program for the provision of the best and most economical delivery of emergency medical care.

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CHAPTER _____

An act to amend Sections 1480 and 1484 of, and to add Section 1481.1 to, the Health and Safety Code, relating to paramedics.

The people of the State of California do enact as follows:

SECTION 1. Section 1480 of the Health and Safety Code is amended to read:

1480. Any hospital operated by, or contracting with, a county may conduct a pilot program utilizing mobile intensive care paramedics for the delivery of emergency medical care to the sick and injured at the scene of an emergency and during transport to a hospital, while in the hospital emergency department, and until care responsibility is assumed by the physician or hospital staff.

SEC. 2. Section 1481.1 is added to the Health and Safety Code, to read:

1481.1. The training program specified in Section 1481 shall consist of a minimum of 290 hours of training including, but not limited to, didactic and clinical experience in a coronary care unit and in an emergency vehicle.

SEC. 3. Section 1484 of the Health and Safety Code is amended to read:

1484. This article shall remain in effect only until the 91st day after final adjournment of the 1974 Regular Session of the Legislature, and shall have no force or effect after that date.

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PARAMEDIC TRAINING PROGRAM
WEEK I

	Dec. 20	Dec. 21	Dec. 22	Dec. 23	Dec. 24
8:30 a.m. 9:20 a.m.	Welcome Introductions	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Holiday
9:30 a.m. 10:50 a.m.	Pictures	Introduction to Medications - Vocabulary R.N.	Administration of Medications R.N.	Terms relating to musculo-skeletal system and nervous system, and circulatory system R.N.	Holiday
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	Holiday
11:00 a.m. 12:30 p.m.	Procure Uniforms	Introduction to Abbreviations R.N.	Practical Exercise R.N.	Musculo-skeletal system R.N.	Holiday
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	Holiday
1:30 p.m. 2:50 p.m.	Tour Hospital	Introduction to Medications R.N.	Introduction to A & P R.N.	Musculo-skeletal system R.N.	Holiday
3:00 p.m. 4:20 p.m.	Issue books, Class schedule Pre-test	Introduction to Medications (continued) R.N.	Normal Body Plan, Terms relating to A & P R.N.	Nervous System R.N.	Holiday
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Holiday

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PARAMEDIC TRAINING PROGRAM
WEEK XI

	Dec. 27	Dec. 28	Dec. 29	Dec. 30	Dec. 31
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Holiday
9:30 a.m. 10:50 a.m.	Circulatory System Dr. Zielenga	Terms relating to Endocrine - Male & Female Repro. Systems Digestive System R.N.	Terms relating to Urinary system & EKG's (electrodes) R.N.	EXAM	Holiday
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	Holiday
11:00 a.m. 12:30 p.m.	Circulatory System (continued) Dr. Zielenga	Endocrine System R.N.	Application of electrodes - 12 lead EKG R.N.	EXAM	Holiday
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	Holiday
1:30 p.m. 2:50 p.m.	Special Senses R.N.	Male & Female Reproductive System R.N.	Urinary System R.N.	Normal Heart Dr. Criley	Holiday
3:00 p.m. 4:20 p.m.	Respiratory System Mr. Davis	Digestive System R.N.	Review of A & P R.N.	Normal Heart (continued) Dr. Criley	Holiday
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Holiday

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PARAMEDIC TRAINING PROGRAM
WEEK III

	Jan. 3	Jan. 4	Jan. 5	Jan. 6	Jan. 7
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework
9:30 a.m. 10:50 a.m.	Fractures Dr. Levey	Problems in Ventilation Mr. Davis	Drugs and Solutions Mr. Todini	Nasogastric Intubation R.N.	Shock - Physiology basis & Recognition Fellow, Cardiology
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30	Control of Hemorrhage & Bandaging R.N.	11:30 - 12:30 Psychology Dr. Ford	Drugs and Solutions (continued) Mr. Todini	Review R.N.	Drug Abuse Sgt. Rudolph
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Legal Aspects Chief Page	Abnormal Heart Dr. Criley	Vital Signs & Blood Pressure R.N.	Shock & Syncope (Cardiogenic) Dr. Chambers	Diabetes Dr. Wolleson
3:00 p.m. 4:20 p.m.	12 Lead EKG & Practice R.N.	Abnormal Heart (continued) Dr. Criley	Practical Exercise R.N.	Shock & Syncope (continued) Dr. Chambers	Surgical Emergencies Surgery Resident
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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PARAMEDIC TRAINING PROGRAM
WEEK IV

	Jan. 10	Jan. 11	Jan. 12	Jan. 13	Jan. 14
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework
9:30 a.m. 10:50 a.m.	I.V. Movie ITRAN - EKG's R.N.	Emergency Birth & Reproduction Dr. Bragonier	ITRAN - History & Physical R.N.	Head Injuries Dr. Needham	Life in the Balance Prescription for Life (FILMS)
10:50 - 11:00 a.m.		BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30 p.m.	Venipuncture Technique PSV - Needles R.N.	Emergency Birth (continued) Dr. Bragonier	History & Physical Examination Dr. Clifton	Respiratory Disease Resident - Respiratory Disease	CPR Squad 59 & R.N.'s
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Venipuncture Medicuts R.N.	Introduction to Electrocardiography Dr. Lewis	Unconscious Patient R.N.	Basic Principle of Arrhythmia Dx. Dr. Lewis	Practical exercise CPR R.N.
3:00 p.m. 4:20 p.m.	Venipunctures R.N.	Intro. to EKG (continued) Dr. Lewis	Tracheal Suction R.N.	SupvraVentricular Arrhythmias Dr. Lewis	Burns Surgeon
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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PARAMEDIC TRAINING PROGRAM

WEEK V

	Jan. 17	Jan. 18	Jan. 19	Jan. 20	Jan. 21
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review homework
9:30 a.m. 10:50 a.m.	Common Medical Emergencies and Overdose Dr. Rigler	RoCom - Introduction to CCU R.N.	Technique for Defibrillation R.N.	Congestive Heart Failure Fellow, Cardiology	MID TERM EXAM
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30 p.m.	Common Med. Emerg. & Overdose (continued) Dr. Rigler	RoCom - Ventricular Arrhythmias R.N.	Differential Dx. of Chest Pain Fellow, Cardiology	Rotating Tourniquets R.N.	MID TERM EXAM
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Aseptic Technique R.N.	Ventricular Arrhythmias Dr. Lewis	Review R.N.	AV Conduction Disturbances Dr. Lewis	Ventricular Conduction Disturbances Dr. Lewis
3:00 p.m. 4:20 p.m.	Practical Exercise R.N.	Ventricular Arrhythmias (continued) Dr. Lewis	Alcoholism R.N.	AV Conduction Disturbances (continued) Dr. Lewis	Ventricular Conduction Disturbances (continued) Dr. Lewis
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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PARAMEDIC TRAINING PROGRAM
WEEK VI

	Jan. 24	Jan. 25	Jan. 26	Jan. 27	Jan. 28
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework
9:30 a.m. 10:50 a.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30 p.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Pediatric Emergencies Pediatric Resident	Coronary Artery Disease Dr. Lewis	CVA Neurology Resident	EKG in CAD Dr. Lewis	Arrhythmias - Rx R.N.
3:00 p.m. 4:20 p.m.	Review R.N.	Coronary Artery Disease (continued) Dr. Lewis	Hoart & Breat Sounds Dr. Clifton	EKG in CAD (continued) Dr. Lewis	Review Tapes of Runs R.N.
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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PARAMEDIC TRAINING PROGRAM
WEEK VII

	Jan. 31	Feb. 1	Feb. 2	Feb. 3	Feb. 4
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework
9:30 a.m. 10:50 a.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30 p.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Cardiovascular Drugs Dr. Criley	Cardiovascular Drugs Dr. Criley	Cardiovascular Drugs Dr. Criley	Cardiovascular Drugs & Intra-cardiac Injection Technique Dr. Criley	Arrhythmias - Treatment Review R.N.
3:00 p.m. 4:20 p.m.	Cardiovascular Drugs (continued) Dr. Criley	Cardiovascular Drugs (continued) Dr. Criley	Cardiovascular Drugs (Continued Dr. Criley	Cardiovascular Drugs (continued) Intra-cardiac Inj. Technique Dr. Criley	Tapes of Runs R.N.
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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PARAMEDIC TRAINING PROGRAM
WEEK VIII

	Feb. 7	Feb. 8	Feb. 9	Feb. 10	Feb. 11
8:30 a.m. 9:20 a.m.	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework	Quiz Review Homework
9:30 a.m. 10:50 a.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	FINAL EXAM
10:50 - 11:00 a.m.	BREAK	BREAK	BREAK	BREAK	BREAK
11:00 a.m. 12:30 p.m.	Clinical Experience	Clinical Experience	Clinical Experience	Clinical Experience	FINAL EXAM
12:30 - 1:30 p.m.	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1:30 p.m. 2:50 p.m.	Voice Communications	Equipment Maintenance	DRILL	Project Procedures	Tour of Hospitals
3:00 p.m. 4:20	Mobile Equipment	Trouble Shooting	Review	Practical Exercise	Tour of Hospitals
4:30 p.m. 5:00 p.m.	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework	Discussion Homework

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Senator CRANSTON. Our next witness is Mr. Liston A. Witherill, director of health services, Los Angeles County; accompanied by EMT–I crewman Robert Moore, former medical corpsman, presently U.S. Military Reserve, currently with Dolphin Ambulance Co., Los Angeles, and also accompanied by EMT–II Bob Hoff, MICU paramedic, career county fireman, currently assigned to a rescue squad serving southwest Los Angeles County.

We are delighted to have you with us. I appreciate very much your presence.

If you could summarize verbally whatever you propose to say so I can cover the questions which I want to cover with you. Your full testimony will be in the record.

STATEMENT OF LISTON A. WITHERILL, DIRECTOR OF HEALTH SERVICES, LOS ANGELES COUNTY, ACCOMPANIED BY ROBERT MOORE AND ROBERT HOFF

Mr. WITHERILL. I will be glad to do that, Senator. Good morning.

I am Liston Witherill, director of health services for Los Angeles County.

Senator CRANSTON. Would the other two identify themselves.

Mr. HOFF. I am Bob Hoff.

Mr. MOORE. I am Robert Moore, private ambulance service.

Senator CRANSTON. Please proceed.

Mr. WITHERILL. On the Los Angeles scene, as many of you know, we have had a county emergency aid program for some 25 years under the leadership of our local board of supervisosrs. This program initially covered only the unincorporated area of the county. Today it covers 69 of the 77 cities in Los Angeles County.

More recently we have had innovations in the program, mainly through the efforts of the county's emergency medical care service committee which is ably chaired by Dr. Max Weil. The program is twofold.

First, to promptly transport ill or injured persons to an appropriate accredited medical facility.

Second, to provide skilled and prompt medical attention for such persons.

The provision of this necessary ambulance transportation and medical treatment is primary. The fiscal arrangements follow the treatment. Currently, 79 hospitals, 25 ambulance companies dispersed in 63 locations participate in this program.

Despite its pioneering interest, we must confess, the County of Los Angeles had generally relegated emergency medicine, not unlike other private and public jurisdictions, to a "back of the bus" medical status. So we are delighted with your bill, Senator, which will change this.

Senator CRANSTON. Thank you.

Mr. WITHERILL. Emergency medical services have been too long ignored, but, finally, the Nation is waking up to the fact that we must do something to improve our emergency service systems. Well, what needs to be done in this community, we ask? A great deal. Our emergency aid program has been described by some as a model of emergency response for a major urban center and by others as liter-

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ally a nonsystem. Whichever side you take I think you have to agree that we need to do at least five things.

First, establish a countywide communication network to make possible a true system.

We are all acquainted with the "Balkanization" of the southern California area. This division is evident in the number of overlapping dispatching systems, inadequacy of channel allocations, and virtual noncontact between private and public emergency communication systems. We are currently studying how we can have an adequate communication system.

Second, we need to expand training programs for physician assistants and traumatologists.

We have several excellent programs that have been started principally by Dr. Gail Anderson here in the medical center. We need to build on these.

Third, we need to continue to refine the standards for participation by hospitals and ambulance operations.

Only hospitals and ambulance operations which offer the necessary range of services, who have access to medical specialists, who meet high standards of local, regional, and national inspection boards should participate in such a system.

Fourth, we need to categorize facilities so that the patient will be transported to the emergency department which is best prepared for his particular medical problem.

Lastly, we have to have input not only from other specialists or experts but also from the consumer. We need this input. The one source that we have been able to obtain of consumer input has been through the Regional Medical Programs.

Summing up, Senator, in this local area, which is urban, suburban, and rural, if you would, with some 7 million people, we think we have the energy, the leadership, and the need.

The provisions of your comprehensive bill would significantly assist in meeting the need to update the emergency response of the County of Los Angeles.

Thank you, sir.

Senator CRANSTON. Thank you very much, for that direct and succinct statement.

Do either of you have anything to say at the outset before I ask you some questions?

Mr. MOORE. No, sir.

Mr. HOFF. No, sir.

Senator CRANSTON. First, do you have any comments on the administration's objections, first, that these services can be supported through general revenue sharing and demonstrations, therefore, this approach is not needed and, secondly, there's too much money authorized in the bill, anyway?

Mr. WITHERILL. First of all, Senator, we were able several years ago to obtain a grant from the Department of Transportation, a Federal grant of some $243,000 for instructor personnel and training programs for the paramedic program. That has now expired and we have been looking for a source of funding and have not found it. I think the use of general revenue sharing funds will be rather difficult for several reasons.

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Senator CRANSTON. They have already been put elsewhere, have they not?

Mr. WITHERILL. Not only that, sir, but, as you know, in California local government is now locked into Senate bill 90, which means that the property tax may rise only on the increase in assessed valuation, so I am sure, with that kind of virtually national tax rate much of the revenue-sharing funds will have to be used for that, so I would say we still need special funding for the emergency medical care programs, particularly the communication network that we are going to have to create which will be quite costly.

Senator CRANSTON. Do you have any estimate of the minimum amount needed to organize a well-coordinated and truly efficient emergency system in a county like Los Angeles?

Mr. WITHERILL. I could tell you what we are spending for our present program. To do a really first-class job we would have to have double or triple this.

As you know, in this county the emergency aid program is a combination of a private and public sector effort. Where the patients do pay for the service, the Government pays only for those patients who are not able to pay. We have about 120,000 runs a year under the emergency aid program, about 80 percent, 75 to 80 percent of the patients, pay for their care and we pick up about 20 percent where we are currently investing in the neighborhood of $70,000 or $80,000 a year for the medical indigent, so if you multiply that times five you have about the cost of the program as it stands now, some $3.5 million.

I would think for a first-class system, including the communication network, the additional paramedics, et cetera, we are talking probably in the neighborhood of double that amount, which sounds like a lot, but it really isn't when you are servicing 7 million people.

Senator CRANSTON. Could you explain in more detail the participation of the 79 hospitals and 25 ambulance companies in the county with the emergency medical system, how they fit in?

Mr. WITHERILL. Yes, sir. The county contracts with the 79 hospitals and with the ambulance companies. Under the terms of the contracts, when there is an accident, the local ambulance company that is under contract, the nearest one, is called to the scene of the accident. The patient is taken to the nearest contract facility that has appropriate facilities for the care of that patient. Treatment is rendered. We worry about the financing later. What happens with that, very simply, the patient is billed by the ambulance company and by the hospital. If he is unable to pay, if he is a medical indigent, they then bill the county and the county pays the bill. The county looks to the patient should he acquire assets later on. So treatment first, collecting later.

Senator CRANSTON. How does the one calling the ambulance know who to call?

Mr. WITHERILL. The police principally and the fire departments throughout the county have information on the location of the ambulance companies' offices, so they call the nearest one. If an ambulance is not available, they go to the next nearest back-up ambulance under contract.

Senator CRANSTON. If the victim can get to a phone himself, does he know to call the fire department or the police department?

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Mr. WITHERILL. You have hit on one of our problems here in Los Angeles. We do not have a single emergency response telephone number. This is being worked out. I think most people in the community are able to call their local police department, who are then able to handle it. We would much prefer a single emergency response telephone system, such as 911.

Senator CRANSTON. That has not been established yet?

Mr. WITHERILL. No, sir. As I understand it, there is a very complicated technical problem here in Los Angeles for these reasons, one of them being there are multiple telephone companies here in Los Angeles.

Senator CRANSTON. Are there any present plans to deal with that?

Mr. WITHERILL. Yes, sir. It is under study and it is being worked on.

Senator CRANSTON. In the case of those companies with which you contract for these services, do you require they meet certain standards and what supervision is there to see that those standards are met?

Mr. WITHERILL. Yes; we have a staff that responds not only to complaints but also routinely inspects the ambulance vehicles and the quarters for the ambulance personnel at their headquarters. We do the same thing in the hospitals. The county emergency medical care committee is very active in establishing standards. There is also the Los Angeles City Medical Care Committee that, together with our staff, does provide supervision of the standards. We are constantly refining the standards.

Senator CRANSTON. Could we have a copy of those standards for the record?

Mr. WITHERILL. Yes, sir; we would be glad to supply them.

[The information referred to and subsequently supplied follows:]

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Subcommittee (ad hoc) on
CRITERIA FOR AWARD OF EAP CONTRACTS TO HOSPITALS

Members: Graf, White, Boudreau, Cavaliere

This subcommittee met on November 22, 1972 at the Education and Training Building of the Daniel Freeman Hospital in Inglewood, California.

The committee unanimously adopted the recommendations contained in this report.

This committee was charged by Dr. Max Weil, Chairman of the County of Los Angeles Committee on Emergency Medical Care, with developing some type of formula or point rating system for assessing the relative worth of hospital emergency departments.

The committee considered the value of simplicity in devising a yardstick. In addition, we recognized the need for ease of completion of any evaluation. This would be done preferably by the hospital administrator with possible later confirmation by the Department of Health Services. We also recommend that the rating system be re-formulated as needed and that hospitals be re-rated periodically.

The rating formula consists of six factors, which are:

1) Whether or not the hospital has been in operation for at least one calendar year.

2) Whether or not there is twenty-four hour, seven day week physician coverage in the emergency department.

3) The degree of local need for that particular facility.

4) Evaluation of the hospital.

5) Evaluation of the Emergency Department of that hospital.

6) Certain aspects of community relations, communications, training, and procedures of the hospital emergency department.

Based on these six factors we propose a code formula of six components - each component will reflect the performance relative to a single factor:

1)____ 2)____ 3)____ 4)____ 5)____ 6)____.

Since the first two factors are either "yes" or "no" we can say:

Yes = A
No = B

For a hospital which meets the requirements of factor 1 and factor 2 we would have a partial rating of:

A A ____ ____ ____ ____

The third factor, "community need for that particular facility", shall be rated

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on a scale of 1 to 4 where:

1 = Obvious or great need.
2 = Possible or probable need.
3 = Unlikely that a need exists
4 = Obviously no need

The formula now can be extended to:

A A 1 _____ ____ _____

for the previous example if the facility had a "1" need rating.

The definition of "need" is deferred. Such factors as emergency caseload, quality and quantity of neighboring facilities, patient population, and geographical location must be considered.

The fourth factor, "Hospital Evaluation", is expressed as a capital letter derived from a point rating system:

A = 85 to 115
B = 70 to 84
C = 50 to 69
D = less than 50

To obtain the point total one would add the total points which relate to a hospital based on allocation of points for various items. These items are chosen so that they are easily identifiable and reflect on the total hospital facilities; e.g., no points are allocated for X-Ray service since it is assumed that all hospitals have such service. Yet points are given for radiation therapy and isotope services since these services are associated with more sophisticated X-Ray departments. Again, no points are assigned for having a pathologist but points are assigned for having an autopsy room, since that is usually associated with a better developed pathology department.

The following items relate to the hospital:

1 - Non-profit status.....5
2 - Supportive medical staff composition:
Surgery.....1
Orthopedic.....1
Gynocological.....1
Thoracic Surgery.....1
Neurosurgery.....1
3 - Size of hospital:
over 150 beds 20
over 99 beds.....10
over 49 beds..... 5
4 - ICU (3 beds of more)..... 5
5 - CCU (3 beds of more)..... 5
or,
(4 & 5) Combined ICU/CCU (5 beds or more).....10
6.- Surgical ICU (3 beds or more)..... 5
7 - Separate service for:
Pediatrics..... 5
Orthopedics..... 5
Maternity..... 5

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Psychiatry.....5
Neurosurgery.....5
Burns.....5

8 - Lab technician availability within fifteen minutes.....5
9 - Blood bank.....5
10 - Autopsy room.....5
11 - Radiation therapy department.....5
12 - Isotope diagnostic facilities.....5
13 - Certification by JCAH, CMA and CHP.....5
14 - Record librarian (full time).....5
15 - Certification by LACHA.....5

The maximum number of points is.....115

The hospital we have used as an example then would have a rating of:

A A I A _____ _____

If it obtained over 84 points for the hospital evaluation portion.

It is re-emphasized that the point allocation is structured to avoid judgemental scoring and to reward items which are usually associated with a more comprehensive level of health delivery service.

The next factor is "Evaluation of the Hospital Emergency Department." This is also rated in capital letters where:

A = 50 to 60
B = 40 to 49
C = 30 to 39
D = less than 30

The points scoring here is derived from a total of the following:

1 - Emergency Room on same floor level as XRay Department.....2
2 - Waiting room for relatives.....2
3 - Doctor's Room for ER physicians.....2
4 - Police room.....2
5 - Distinct clerical and nursing station.....2
6 - Physician specializing in Emergentology in charge of ER.....5
7 - At least one R.N. on duty in ER for entire 24 hours, 7 days per week.....5
8 - Continuous personal availability of specialty consultation in:
Orthopedics.....2
Neurosurgery.....2
Plastic Surgery.....2
9 - The following equipment is kept in the ER:
Defibrillator.....2
Cardioscope.....2
EKG machine.....2
10 - There is a separate room for minor surgery.....2
11 - There is a holding or observation room.....2
12 - A Policy and Procedures manual is kept in the ER.....2
13 - There is an Emergency Department Committee which meets at least monthly.....5
14 - Patient records are stored and easily retrievable.....2
15 - A log of patients is kept in which EAP patients can be identified.....2
16 - All nursing department personnel are qualified to perform CPR....2

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17 - There is direct ambulance access to the ER.....2
18 - The entrance to the ER IS well identified by one or more signs outside the building. (These are illuminated at night).....2
19 - There are hospital emergency directional signs on major arteries.....2
20 - The routine patient charge for an ER visit is $20 or less.....5

The maximum number of points for this factor is 60.

If our hospital example received 50 or more points in this category we would now have a rating of:

A A 1 A A ____

The final factor in this evaluative formula is "Community Relations and Other Factors". For the sake of symmetry we have assigned a 1 through 4 rating here. Based on point score (total) we have:

1 = 45 to 60
2 = 30 to 44
3 = 20 to 29
4 = less than 20

Points are totaled from the following:

1) E.R. accepts all patients for initial care independent of financial status or insurance coverage.....10
2) Number of drug overdose patients constitutes at least 4% of all patients examined in the ER..... 6
3) Number of alcohol intoxicated patients constitutes at least 4% of all patients examined in the E.R..... 6
4) The hospital is part of the HEAR network..... 3
5) The hospital has direct line or radio-communication with an ambulance company or the police..... 3
6) The hospital participates in EMT-1 training for ambulance attendants..... 3
7) A formal cooperative community advisory imput program has been established..... 3
8) The hospital serves as a base station for a fire/rescue paramedic program.....6
9) There are medical resident, medical intern, or registered nurse training programs at the hospital.....10
10) Auditable records are kept and subject to review by County Auditor...10

The maximum points is 60. Should our hospital example score over 44 points we would then have completed our rating:

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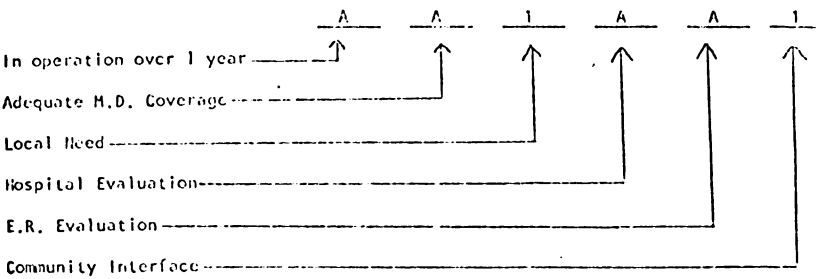

There is nothing absolute about the factors chosen or the points assigned to each item. Certainly these may be changed or re-rated by those who utilize the formula.

As constituted this formula gives a terse profile of an E.R. facility which will have particular usefulness when used comparatively to assess priority values.

Respectfully submitted:

WALTER S. GRAF, M.D.

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LOS ANGELES COUNTY/DEPARTMENT OF HEALTH SERVICES - EMERGENCY AID PROGRAM

GUIDELINES FOR HOSPITAL PARTICIPATION IN THE LOS ANGELES COUNTY EMERGENCY AID PROGRAM FOR THE PROVISION OF EMERGENCY MEDICAL SERVICES.

The following procedures will be followed for initial inclusion of a hospital in the program.

I. Application Procedure

A letter of application requesting participation in the program may be sent to the Director of Contract Services, Los Angeles County Department of Health Services. A short outline of services offered will be helpful. For those hospitals within the City of Los Angeles, the letter may be addressed to the General Manager, Personnel Department, City of Los Angeles. The City, together with the County, will evaluate the application, and a recommendation will be made to the Medical Advisory Council of Los Angeles City, which will then make a recommendation to the Board of Supervisors.

A hospital will normally only be considered for participation if the following conditions are met:

A. The hospital has been in operation for at least one calendar year.
B. There is twenty-four hour, seven day week physician coverage in the emergency room.
C. The need is clearly established for provision of an additional emergency medical facility in the area.

II. Determination of Need

The following factors will be considered in determining need. If the need is not evident, no further evaluation will be made.

A. Emergency Caseload. This will be supplied by sheriff, police, and fire services in the area, as well as caseload of neighboring facilities.
B. Neighboring Facilities.
   1. Distances from applicant hospital
   2. Quality
      a. Evaluation of Hospital (see III)
      b. Evaluation of Emergency Room (see IV)
C. Geographical Location - service area - terrain - accessibility
   1. Unincorporated county area served
   2. Cities served
D. Patient Population
   1. Census
   2. Socio-economic makeup
   3. Community need

When a need for an additional facility is clearly established, the Survey of Hospital Emergency Services will be forwarded to the applicant hospital for completion. The form may be returned to the Chief of the Emergency Aid Program who will review the following factors. If no need exists, this will be reported to the County Committee on Emergency Medical Care for their

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III. Evaluation of Hospital

This information will be obtained from the Survey form and a personal visit to the applicant.

A. Ownership and management
B. Medical staff makeup
   1. Supportive specialties for Emergency Department - Surgery, Orthopaedic, etc.
C. Physical plant
   1. Number of beds
   2. Services
      a. ICU
      b. CCU
      c. Pediatric
      d. Orthopaedic
      e. Maternity - Bassinets
      f. Psychiatric
      g. Neurosurgery
      h. Burns
      i. Other
D. Diagnostic Service
   1. Pathology and Laboratory
      a. Staff - M.D. and technician coverage
      b. Facilities
      c. Blood Bank
   2. Radiology
      a. Staff - M.D. and technician coverage
      b. Facilities
E. Certification
   1. License
   2. JCAH
   3. CMA
   4. Medicare - Medical
   5. Comprehensive Health Planning
   6. Heart Association
F. Patient Review, Records and Statistics

IV. Evaluation of Emergency Department

A. Physical Plant
   1. Size and description - patient privacy
   2. Location - diagnostic backup accessibility
   3. Waiting room - relatives
   4. Doctor's room
   5. Police room
   6. Clerical and nursing station
   7. Surgical ability
B. Staff
   1. M.D.
      a. Reimbursement arrangement
      b. Coverage - physician training
      c. Specialty backup
   2. R.N. Coverage
   3. Other staff
   4. Scheduling patterns
C. Equipment and supplies
D. Policy and procedure manual
E. Peer review - emergency department committee

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IV. Evaluation of Emergency Department continued

F. Records
   1. Patient record
   2. Logs
G. Training programs - CPR
H. Access
   1. Ambulance dock
   2. Heliport
   3. Emergency sign
I. Fees

V. Community Relations

A. Acceptance of patient
   1. Indigents
   2. "Undesirables" (overdoses, alcohols, etc.)
B. Community advisory input
C. Affirmative Action Program
D. Physician fees

VI. Other Characteristics

A. Communications
   1. Ambulance
   2. Police
   3. HEAR network
   4. Other
B. Ancillary programs
   1. Ambulance training
   2. Paramedic participation
C. Professional training programs
D. Billing procedures - auditable records to be reviewed by County Auditor

VII. Upon completion of the above review, a recommendation will be made to the County Committee on Emergency Medical Care.

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THE FOLLOWING PROCEDURES WILL BE FOLLOWED FOR CONTRACT RENEWAL:

I. An inspection will be made of all Emergency Aid Program Contract Facilities within a two year period for contract renewal. The review will generally follow the pattern for initial inclusion of a hospital in the Program, and the following items will be reviewed:

   A. Evaluation Of Hospital
   B. Evaluation Of Emergency Department
   C. Evaluation Of Community Relationships and Other Characteristics
   D. Complaints
   E. County Audit
      1. Charges
      2. Billing procedures
   F. Inspection Of Records
      1. Emergency Department logs
   G. Patient Disposition
      1. Transfers to a County facility
      2. Transfer of patient records

II. Upon completion of the above review, a recommendation will be made to the County Committee on Emergency Medical Care for continuance of contract or termination of contract.

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Senator CRANSTON. As I understand it, Los Angeles County uses a mix of private ambulance companies and local fire departments. How are responsibilities and jurisdictions divided between the public and private companies?

Mr. WITHERILL. Generally, sir, in the county area first, the unincorporated area, we utilize private ambulance companies with the exception of the county rescue squads that are called on in certain cases. These are the paramedics that Supervisor Hahn discussed. When we contract with the city on a program, if the city has its own ambulance service with the fire department, that becomes the source for the contract program. If they do not, we contract with the private ambulance companies. In some cities, such as the city of Los Angeles, they use a mixture of their own fire department and private contract personnel for ambulance service.

Senator CRANSTON. You mentioned communications is one of the major problems in Los Angeles. Do you have any difficulties resulting from inadequacies at the Federal level, for example, of the allocation of frequencies by the Federal Communication Commission?

Mr. WITHERILL. Yes; we have had difficulty getting enough channels. Recently we got enough channels for the paramedic program, but that was quite a battle.

Senator CRANSTON. Do you have a program underway to categorize facilities that are available?

Mr. WITHERILL. Yes; we are in the process of doing that. Southern California has five categories. We are in the process of refining those further so we can match the patient's need with the facility that has facilities for that patient.

Senator CRANSTON. Is this resulting or will it result in improvement of services without unnecessary duplication?

Mr. WITHERILL. We certainly think so, definitely.

Senator CRANSTON. How is the consumer presently involved in the development of the emergency program? My bill calls for consumer participation. I am all for it and I am glad you are. What have you done up to this point?

Mr. WITHERILL. We haven't done too much, Senator. There is no formal consumer advisory council here in Los Angeles. The consumer input has been through agencies such as regional medical programs, comprehensive health planning, public hearings by our emergency medical care committee, these kinds of input we have had. We do not at this point have a consumer advisory council. I would say that we should have definitely more formalized consumer input than we have had so far.

Senator CRANSTON. If it is finally worked out to have one phone number that is called in an emergency, what sort of personnel would you have at that center?

Mr. WITHERILL. I would hope the personnel answering at that center would be specially trained personnel in our country's emergency program so that they could quickly dispatch the appropriate vehicle. I don't think it needs to be physicians, nurses, or highly trained personnel, but specially trained personnel.

Senator CRANSTON. You wouldn't have nurses there to evaluate the extent of the medical emergency?

Mr. WITHERILL. I wouldn't think we would need them, sir, if we have properly trained individuals.

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Senator CRANSTON. Do you plan to have a public education program to acquaint residents and transients with means of entering the emergency program?

Mr. WITHERILL. Yes, sir, and funding is a problem.

Senator CRANSTON. How does the city of Los Angeles and the county jurisdiction overlap in the problems of emergency care? Does that create a problem?

Mr. WITHERILL. No, sir; they are under contract to us so we hope we don't have any overlapping. We had some trauma when we first came into the program, but we hope it is resolved.

Senator CRANSTON. Have you been able to reduce the duplication of services and get coordination of these services and resources?

Mr. WITHERILL. We think so. There is more to be done, but we think we have made real progress in this area.

Senator CRANSTON. Thank you very much.

I want to turn to the two gentlemen accompanying you at this point.

Mr. Hoff, do you remain with the emergency medical unit for a prescribed length of time on some periodic basis or how does that work?

Mr. HOFF. After completion of training you are required to spend at least 1 year serving on a paramedic squad, but most men serve longer than that.

Senator CRANSTON. What do you do then, go on to firefighting or what?

Mr. HOFF. If you move out of the program?

Senator CRANSTON. Yes.

Mr. HOFF. You can promote on up, you know, into the higher ranks of the fire department or you can go out on another job of the firemen.

Senator CRANSTON. Is there a decent career ladder in this field to work your way on up to?

Mr. HOFF. The paramedic?

Senator CRANSTON. Yes.

Mr. HOFF. Well, they are funding one right now.

Senator CRANSTON. I would like to ask each of you about whether this emergency medical field offers an attractive lifetime career.

Mr. MOORE. It does to me, if I can get together as far as benefits and retirement and everything else goes, but it is an exciting career. It is a very rewarding job, too.

Mr. HOFF. I think so, too.

Senator CRANSTON. Do you get decent retirement?

Mr. MOORE. To my knowledge, there are no benefits set up now for a private concern.

Mr. HOFF. I agree with him that it is a very good program. In the county fire department we receive our own benefits. You are still a fireman so long as you are a paramedic also, so it is the same benefits that you receive.

Senator CRANSTON. Are the benefits and salaries paid to men assigned to fighting fires different from those paid to those assigned to the emergency medical unit?

Mr. HOFF. No, sir.

Senator CRANSTON. The same pay?

Mr. HOFF. The same pay.

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Senator CRANSTON. Do you use the portable equipment for providing emergency medical care?

Mr. HOFF. Yes, sir.

Senator CRANSTON. What equipment do you utilize, Mr. Moore, in your work?

Mr. MOORE. Right now, due to the fact that none of the private ambulance services in Los Angeles County have paramedics, we are restricted in the equipment that we can use, such as tracing machines, defibrillator, injections, so right now we are still giving primary first aid care.

Senator CRANSTON. When you are providing treatment to an accident victim, what sort of guidance do you receive? Does some guidance come by radio to you?

Mr. MOORE. No, sir.

Senator CRANSTON. It all depends on the training you have had?

Mr. MOORE. It all depends on the training and the knowledge we have.

Senator CRANSTON. How about you?

Mr. HOFF. As far as the radio communications?

Senator CRANSTON. Yes, sir.

Mr. HOFF. We have radio communication with the hospitals at all times, either it is coronary care units or the emergency section at the hospital.

Senator CRANSTON. Do you have a system as they have in this hospital where you can communicate some of the information back to the hospital as you pick it up in the process of giving treatment to the patient?

Mr. HOFF. Yes; we communicate everything back, E.K.G.

Senator CRANSTON. It can be evaluated by specialists while you are working on the scene?

Mr. HOFF. Yes, sir.

Senator CRANSTON. Did both of you participate in an education program?

Mr. MOORE. No, sir.

Mr. HOFF. Yes, sir.

Senator CRANSTON. Where does the private ambulance company personnel get training?

Mr. MOORE. Up until just recently there was really no formal education required. Now the private ambulance owners get together and they are enrolling their personnel into local colleges for the E.M.T. I training and they finance this by salary when he is going to school, but it has sort of come to a halt because the paramedic program has been closed to us, so that's where it lies right now.

Mr. WITHERILL. I might add in our contracts now with the ambulance companies we are requiring E.M.T. I training, special State legislation has been obtained to permit private ambulance company personnel to be trained as paramedics also. So we hope to have manpower trained as paramedics. This was not possible before.

Senator CRANSTON. Do you have any material—I am asking you, Mr. Witherill—from that conference on emergency medical care that was held last June that you can submit for the record?

Mr. WITHERILL. Yes, sir; we do, and we will.

Senator CRANSTON. I thank the three of you very much. You have been most helpful.

[The prepared statement of Mr. Witherill is as follows:]

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PREPARED STATEMENT OF LISTON A. WITHERILL, DIRECTOR OF HEALTH SERVICES, LOS ANGELES COUNTY, LOS ANGELES, CALIF.

Mr. Chairman, Senators, honored guests: in your early bill, S. 3716, which was the forerunner of current Senate Bill 504, the Los Angeles area was noted as one of the three jurisdictions in the country being in the forefront of emergency medical care. This accolade is both welcomed and flattering; but, if true, points up the pressing national need to significantly improve emergency care in all of our communities.

On the Los Angeles scene, the Board of Supervisors, the county's elected governing body, had the foresight a quarter of a century ago, in 1947, to establish a unified emergency aid response arrangement for the unincorporated area of this large county. Since that time 69 of the 77 cities in the county have joined in this cooperative lifesaving network.

What is the Emergency Aid Program?

Simply stated, its objectives are dual:

First, to promptly transport ill or injured persons to an appropriate accredited medical facility.

Second, to provide skilled, compassionate and prompt medical attention for such persons.

The provision of this necessary ambulance transportation and medical treatment is primary. The fiscal arrangements follow the treatment. Currently, 79 hospitals, 25 ambulance companies dispersed in 63 locations participate in this program.

Current Status. Despite its pioneering interest, the County of Los Angeles had generally relegated emergency medicine, not unlike other private and public jurisdictions, to a "back of the bus" medical status. Within the past five years, this critical area—too long ignored—has developed into one of the "hottest properties" on the health care scene. The changes in the Department of Emergency Medicine in this great Medical Center which you toured today reflect the growing concern and status for emergency medical care.

What needs to be done?

A great deal. Our Emergency Aid Program has been described by some as a model of emergency response for a major urban center and by others as, literally, a non-system or loose network arrangement.

Whichever side you take, you have to agree that we need to:

(1) Establish a county-wide communication network to make possible a true system. Yet to be developed, this is a difficult and sensitive area only because of the political "Balkanization" of the southern California area. This division is evident in the number of overlapping dispatching systems, inadequacy of channel allocations, and virtual non-contact between private and public emergency communication systems. Currently, the County's Department of Communications is studying the scope of such a project with funds from our Department of Health Services.

(2) Expand training programs, already begun, for physician's assistants and traumatologists.

Excellent programs, such as emergentologists, emergency medical technician III's, have been initiated under the direction of Dr. Gail Anderson, Professor and Director of Emergency Medicine at the County-U.S.C. Medical Center.

(3) Continue to refine the standards for participation by hospitals and ambulance operations. Only hospitals and ambulance operations which offer the necessary range of services, who have access to medical specialists, who meet high standards of local, regional, and national inspection boards should participate in a system.

(4) Categorize facilities so that a patient will be transported to the emergency department which is best prepared for his particular medical problem.

(5) Receive input not only from other specialists or experts in emergency response but also from the consumer. The valuable and ongoing input from the resources of Regional Medical Programs and other public and private groups should be even further expanded. There has been evident locally a need to "come together" to make available to the program all needed expertise and relevance.

Summation. Locally, in this urban/suburban/rural setting of seven million people, we have the energy, leadership, and the need.

The provisions of your comprehensive bill would significantly assist in meeting this need to update the emergency response of the county of Los Angeles.

[Information subsequently supplied for the record follows:

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COUNTYWIDE CONFERENCE ON EMERGENCY MEDICAL SERVICES

Los Angeles Convention Center, June 19-20, 1972

Dear EMS Conference Participant:

Last June we had a successful Conference regarding emergency medical services in Los Angeles County, the proceedings of which were recently mailed to you.

A grant application was submitted just prior to the Conference for (1) training of ambulance drivers up to the level of EMT-1, and (2) development of a system plan for delivery of emergency medical services in Los Angeles County. This application was approved by the California Regional Medical Programs. Because of the Presidential veto of the HEW appropriations bill, we have only received partial funding on a contract basis from CRMP for the project effective January 1, 1973.

This will enable us to continue this effort that was started with the Countywide Planning Conference. Immediate activities will be:

(1) Continue the training program for ambulance drivers by the Hospital Council of Southern California, already proceeding on a volunteer basis.

(2) Establish a Los Angeles Emergency Medical Services Coordinating Council.

(3) Develop planning tools (a system framework and a work plan) in order to allow for examination of the major alternatives which must be considered in developing a recommended system for Los Angeles County. The work plan will include regional and functional conferences, including a consumer conference recommended last June.

(4) Seek continuing funding to carry out the purposes of the Grant.

As spelled out in the grant, certain organizations have named representatives to an interim executive committee (see below). This group has met several times and as a first step has reviewed the Conference Proceedings.

As you know the recommendations of the 15 workshops overlapped. Some were general; some were specific. It was felt that the material needed to be sorted - keeping the recommendations fairly broad and general - yet maintaining the flavors of the Conference.

Attached is a brief summary of the background of the Conference and a draft set of recommendations. Our purpose in sending this to all conference participants is to

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COUNTYWIDE CONFERENCE ON EMERGENCY MEDICAL SERVICES

obtain comments and reactions. Would you please return the enclosed card indicating your pleasure or displeasure with this effort. If there are significant omissions or errors, a letter describing your reactions would be valuable as the interim Executive Committee (still not completely formed) goes about its mission of developing the Coordinating Council and the necessary planning capabilities.

Sincerely,

George C. Griffith, M.D.	Project Director and Chairman of the Interim Executive Committee
Gail V. Anderson, M.D.	Director of Emergency Medical Services at LAC/USC Medical Center and representative from CRMP (Area V-USC)
H. Martin Baker	Assistant Executive Director of Los Angeles County Medical Association and representative from LACMA
William Bennett	Review and Comment Staff and representative from Los Angeles Comp Health Planning (B-Agency)
James C. Brill, M.D.	Director of Emergency Department at UCLA and representative from CRMP (Area IV-UCLA)
Alfred Cavaliere	Chief, Emergency Services, Emergency Aid Program and representative from Department of Health Services, Los Angeles County.
Sandy Sanford	Director, Neighborhood Adult Participation Program and representative from CRMP (Area IX-Charles R. Drew Postgraduate Medical School)
Vera Saucedo	Consumer representative from East L.A. Task Force
J. Walter Schaefer	President, Shaefer Ambulance Company and representative from the Los Angeles County Committee on Emergency Medical Care
Robert B. Smith	Administrator of Harbor General Hospital and representative from the Hospital Council of Southern California.

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John Stevens	Vice President Local 1014 Firefighters and consumer representative from Los Angeles AFL/CIO Labor Council

Staff

Adelbert L. Campbell (Area IX, RMP)
Mitchel D. Covel, M.D. (Area IV, RMP)
Leon Hauck (Area V, RMP)
Lee Horovitz (Area IV, RMP)
Frank St. Denis, (Hospital Council of Southern California)

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SUMMARY OF RECOMMENDATIONS OF THE LOS ANGELES COUNTYWIDE CONFERENCE ON EMERGENCY MEDICAL SERVICES

LOS ANGELES CONVENTION CENTER
JUNE 19-20, 1972

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FORWARD

In early December, 1971 the Coordinators of the three Regional Medical Programs in Los Angeles County (Areas IV-UCLA; V-USC; IX-Charles Drew Postgraduate Medical School), the Executive Director of the Comprehensive Health Planning Association of Los Angeles met with the Chairman of the Los Angeles County Committee on Emergency Medical Care, an advisory body appointed by the County Board of Supervisors.

The purpose of the discussion was to determine what could be done to improve emergency medical services. It was agreed that the first step should be a countywide planning conference.

Coincidentally, shortly afterwards the President identified emergency medical services as a priority concern of his administration and the availability of limited Federal monies for EMS projects was announced. Unfortunately funding deadlines would not permit waiting for the planning conference to set priorities.

The initial planning committee of over 25 individuals identified 1) training of ambulance drivers and 2) EMS system planning as the priorities and charged the RMP's with developing a grant application.

The Committee also urged holding the conference as soon as possible. Over 60 people were involved in the planning and funding came from the three RMPs in LA County and the Division of Emergency Health Services, Retion IX, HEW.

Attendance was limited to 500 and selection was made from over 1000 suggested participants based on obtaining broad representation geographically, institutionally and functionally. Special efforts were made to obtain consumer representation by the employment of community organizers to contact community groups.

At the Conference there were 15 workshops, with assigned topics selected as the major areas of concern. Each workshop chairman prepared a final report of proceedings and recommendations which are included with keynote speeches and background information in the Conference Proceedings.

Not unexpectedly there was considerable redundancy in the recommendations of the workshops. It was felt that in order to make the Conference

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efforts more useful, there should be a synthesis and summary of the recommendations. Although this inevitably meant that some of the richness of detail of the workshops would be lost, the advantage was the ordering of the material which hopefully would provide guidance to the Los Angeles County Emergency Medical Services Coordinating Council - an organization about to be born.

These recommendations should not be considered as fixed, but rather as the beginning step in developing a systems plan for Los Angeles County.

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I. Emergency Medical Services in Los Angeles County

Los Angeles County is considered by many to have good quality emergency medical services compared to other urban areas in the United States. Yet others are extremely critical declaring that there is a non-system in Los Angeles - that though good services are available in some places and at some times, there is no co-ordinated approach to planning and there is poor distribution of service.

The magnitude of the problem in Los Angeles is not clearly defined and accurate statistics are not available. National statistics and data available from the Los Angeles County Emergency Aid Program give some indication of the size and complexity of the problem.

Statistics from the National Research Council show that every person in the United States on an average will require emergency rescue services on two occasions during his lifetime. Accidents are the leading cause of death among persons between the ages of 1 through 37 and are the fourth leading cause of death at all ages. When these statistics are compared with the number of medical and surgical emergencies not a result of accident, the magnitude of the need is apparent.

Of the 700,000 medical and surgical emergencies each year in the United States which result in death for the victims, a substantial number could be prevented by applying presently known and available techniques at the right time. No one has measured this number with precision but projections from statistics that have been made indicate that mortality from accidents alone could be reduced 20% by proper care at the scene and enroute.

There is no reason to believe that the problems or the potential number of lives that could be saved in Los Angeles would be different than projections based on the national estimates given above. There are many complexities, however, which stand in the way of meeting the challenge.

The area is large - 4,083 square miles, includes 77 different cities and unincorporated areas and a population of over 7,000,000

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I. Emergency Medical Services in Los Angeles County (Cont.)

people. There are many hospitals, ambulance companies, patterns for dispatch of ambulance, methods of obtaining help, manpower needs.

There are more than 200 hospitals in the County of which almost 100 state they provide emergency services. Of these, 78 facilities are available to deliver services under the Los Angeles County Emergency Aid Program. There are an estimated 125,000 admissions to emergency departments per year through the Emergency Aid Program. This is only a part of the problem - because the bulk of all admissions to emergency departments is for ambulatory care and non life threatening emergencies.

Emergency ambulance services are provided by 26 private companies under contract with the County Emergency Aid Program. 15 cities provide their own rescue and ambulance services. The County Fire Department is responsible for rescue and resuscitation but not for transport. There were approximately 182,500 ambulance runs in 1971 at an estimated cost to the taxpayer of almost $8,000,000.

Dispatch of ambulances is the responsibility of fire departments in 8 cities, of police departments in 18 cities, of both in 14 cities, of the Sheriff's 14 stations in 19 cities and unincorporated areas.

There are 54 identifiable telephone numbers in the County to call for emergency medical services.

One dimension of the manpower need is the fact that there are approximately 1100 ambulance and emergency rescue personnel in Los Angeles (public and private) with an estimated turnover in the private sector of 70-75% per year. Only 400, approximately are trained to the level of EMT-1 and 120 to the level of EMT-2 as of the end of 1972.

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II. Elements of an EMS System

In considering the elements of an EMS system one can identify the following (arranged in time sequence):

A. Prevention (public education)
B. Occurrence of an emergency
C. Detection
D. Notification
E. Dispatch
F. On-the scene treatment, extrication
G. Transport and treatment enroute
H. Emergency room
I. Intensive care unit
J. General hospital ward or graded care facility
K. Rehabilitation

For purposes of grouping the recommendations of the Conference the following functional classification was used:

A. Objectives
B. Coordination and Control
C. Data Collection and Patient Records
D. Facilities
E. Communications
F. Transportation
G. Manpower and Training
H. Financing
I. Public Education

III. Objectives

1. The EMS System should provide high quality emergency care with dignity for all.

2. EMS should be part of the total health care system.

3. Emphasis should be placed on emergency health care services not just medical care.

4. Health, specifically emergency medical care should be declared a legal right.

5. Emergency medical care should be oriented to the culture and language of those served.

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III. Objectives (Cont.)

6. The emergency medical service system should be coordinated with planning for disaster situations.

IV. Coordination and Control

1. Responsibility should be fixed on a single, adequately funded agency to assume overall responsibility for emergency medical services - to include planning, coordination of services, establishment of standards, evaluation, and accreditation of institutions and organizations which may receive public funds, coordinated with existing political jurisdictions, health agencies and consistent with affirmative action programs.

2. Political sub-divisions forming a community of interest or a community of solution should be responsible for implementation (regionalization).

3. Consumers should be involved politically, legislatively and organizationally (monitoring, evaluation, grievances) to promote change in and make policy decisions with regard to the emergency medical service system.

4. The Board of Supervisors and Los Angeles County Committee on Emergency Medical Care should consider retaining conference participants as the nucleus of a Countywide Council, advisory to the L.A. County Committee on Emergency Medical Care.

V. Data Collection and Patient Records

1. A task force should be established to design and develop an Emergency Medical Care Information System which would include exploration of the following data capabilities:

   a. Location, level and nature of emergencies
   b. Location and types of services provided
   c. Costs and methods of payment
   d. Communications
   e. Transportation
   f. Manpower
   g. Facilities

2. Standardized emergency and treatment forms should be developed

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V. Data Collection and Patient Records (Cont.)

for use by all emergency medical care providers. It should include:

a. Identification of patient
b. What happens to the patient
c. Status of the patient
d. Treatment of patient
e. Patient's medical background
f. Past medical history.

3. The system should be designed to be compatible with future data systems.

VI. Facilities

1. A body supported by the County should be responsible for certifying and monitoring all county emergency facilities. Such certification would require an appropriate sign indicating that the institution has an emergency facility and that the institution receives patients delivered by a licensed emergency vehicle, and would entitle the institution to enter into an EAP contract.

2. Two levels of certification should be established --

A. Basic - which would require that the emergency department be physically attached to a licensed hospital approved by JCAH and CMA Medical Staff survey, have available ICU and CCU, have trained physicians on the premises 24 hours per day with backup services and equipment available 24 hours per day, including X-ray, blood, lab and inhalation therapy, and meet staff requirements of ACEP.

B. Comprehensive Emergency Centers - which would be able to care for all emergency problems, including specialized services for burns, management of severe trauma, neurosurgery, etc.

3. In addition, a third type of service was noted - which would provide rehabilitative and long term follow up care; - orthopedic, pediatric, psychiatric, child abuse, alcoholism and drug abuse services.

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VII. Communications

1. A universal emergency number should be established as soon as possible.

2. There should be an immediate process initiated leading to the establishment of a unified dispatching and response system. The system should have the capability of two-way voice communication between ambulance and emergency department as well as telemetry from ambulance to emergency department.

3. A number of interim measures are recommended which include emergency stickers for telephones, foreign language telephone operators, etc.

VIII. Transportation

1. Transportation should be assured for everyone in a medical emergency.

2. A single county agency should have responsibility for setting standards for certifications of vehicles and inspection procedures.

3. Equipment should be standardized and exchangeable.

4. Operations should decrease response time, decrease interfacility transfer and be monitored for quality control.

IX. Manpower and Training

1. There should be adequate training and continuing education for personnel providing primary care at the scene, enroute and at medical facilities.

2. The immediate objective for ambulance personnel is to train to the level of EMT-1; the long range objective, EMT-2. Such training should be done in conjunction with community colleges and hospitals to insure upward career mobility and facilitate development of standards.

3. Specialized training programs need to be developed for all levels of nursing and for physicians who work in emergency departments with active participation by medical specialty associations and appropriate professional and other organizations.

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X. Financing

1. Everyone should have access to emergency medical care without regard to ability to pay.

2. EAP contracts determine the pattern of emergency care in Los Angeles County. Standards for facilities, equipment, training and staffing should become part of the requirements of EAP contracts.

3. EAP contracts should be designed so that they eliminate discriminatory practices with regard to patient care and physician payment, encourage transfer of patients only for medical rather than financial reasons, eliminate the need for prior approval by law officers for county payment for emergency medical services.

4. A special committee should be established to gather data regarding coverage provided by third party payors, redefine "emergency" for insurance purposes, redefine benefits and develop programs to improve insurance coverage.

XI. Public Education

1. A public education effort should be undertaken by Los Angeles County (Government) regarding recognition of and response to medical emergencies, etc., recognizing special needs of bylingual groups.

2. Community resources, including voluntary, public agencies and mass media, should be coordinated in this effort.

3. First aid instruction should be part of the curriculum in public schools and adult education programs, and CPR should be taught to high exposure groups.

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Senator CRANSTON. Our next witness is Dr. Tom Lyons, chairman, Committee on Emergency Medical Care, California Medical Association.

Dr. Lyons, thank you very much for being here. I appreciate your presence. If you could hold your verbal testimony to about 5 minutes, your entire statement will go in the record.

STATEMENT OF DR. TOM LYONS, CHAIRMAN, COMMITTEE ON EMERGENCY MEDICAL CARE, CALIFORNIA MEDICAL ASSOCIATION

Dr. LYONS. I will try, Senator.

My name is Dr. Thomas Lyons. I am a physician practicing in private medicine in San Diego, and at the present time I am chairman of the Committee on Emergency Medical Care of the California Medical Association. I am here representing about 25,000 physicians within the State of California.

First, on behalf of the California Medical Association, I and my associates would like to express their appreciation for this opportunity to present our views on the subject of emergency medical services, which at the present time is being considered by your subcommittee.

Emergency medical services in this country, as you know, are inadequate at times. They are certainly overburdened, and this fact underscores the need for action in development and improvement of these services throughout this country.

The members of this subcommittee are well aware of the deficiencies that do exist in the area of emergency medical services and it is hardly necessary for me to emphasize the seriousness of the problem further in these remarks. The California Medical Association shares your desire to find solutions to these deficiencies and I would like to take this opportunity to offer you our support and assistance as you seek solutions.

CMA's interest in the field of emergency medical services is an active one. Our Committee on Disaster Medical Care, chaired by Dr. Myron Cisgro, is seeking to increase the necessary close cooperation among the many organizations essential in dealing with a disaster situation. Most recently the committee organized and created the California Air Safety Council to help avert air disaster or prepare for any that might occur. CMA's Committee on Emergency Medical Services, of which I am the chairman, is working toward the overall improvement of emergency medical care services in California. It recently formed the Subcommittee on Emergency Medical Care in Rural Areas which concerns itself specifically with those problems encountered in rural areas of the State.

To give you an example, and we touched on this in the last testimony, of CMA's activities, the Committee on Emergency Medical Care, in cooperation with the California Hospital Association, developed the CMA–CHA Classification System and Criteria for Emergency Medical Care for use as a basic guideline for classifying California hospital emergency rooms. This past year, the document has been revised and updated and its criteria made more detailed, and as of just the last month and this morning particularly it has been approved by the councils of both organizations.

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Another good example of our activities is a Special Conference on Disaster and Emergency Medical Services, which coincidentally is meeting at this moment in Anaheim. Among the subjects being covered at this conference are "Lessons Learned from the 1971 Los Angeles Earthquake", "Training of New Emergency Health Professionals" and "In-Hospital Disaster Planning".

We in California at the present time are fortunate to have many areas with excellent disaster medical services. I am pleased to note that the medical profession has played an important leadership role in their development. The Shasta-Trinity Foundation for Emergency Medical Care is a particularly good example. We feel their experience in this area serves to illustrate the commitment of local physicians throughout California and will prove of interest to this subcommittee.

Very briefly, about 4 years ago, a small group of physicians in Redding, Shasta County, became interested in attempting to improve the emergency medical care of patients in their large and generally rural areas. As this subcommittee is aware, the extremely inadequate emergency medical care throughout the nation is compounded in rural areas, such as Shasta and Trinity Counties of California. This is due to the sparse population and long travel distances and to small, inadequate and widely scattered country-type hospitals, which may have from 5 to 20 beds. In order to improve emergency care in rural areas, it is necessary for intensive education of the population, education of the local physician and the help and cooperation of local government bodies.

The Redding doctors, with some interested fellow citizens and financial help from the county medical society, set about making constructive plans to improve emergency services. A nonprofit Emergency Medical Care Foundation was formed to act as the planning body, consultative organization, and general liaison to local government. After 2 years of surveys and general education, the Shasta County Board of Supervisors designated a primary emergency medical care center for this large area and gave support to the concepts of improving communications, transportation and training of personnel.

The plans and functions of this organization and the activities in this rural area are being closely followed by other localities throughout the nation and generally are considered highly innovative. Moreover, they have markedly improved the care of the emergency patient in this rural area. Improved communications, utilizing centralized dispatch, have been instituted. Training programs for all of the health care personnel have been intensified. Life support ambulances have been brought into use and a specially equipped medical evacuation airplane is quickly available. Physicians specially trained and certified in the care of the emergency patient furnish 24-hour coverage in the primary emergency care center in Redding. All of these accomplishments had to be achieved with local enterprise and initiative since the area was unable to obtain any government funds.

Dr. Louis Nash, chairman of the Shasta-Trinity organization, commented recently, "We believe that we have demonstrated that it is possible for rural areas to greatly improve their emergency medical care with planning, hard work and private initiative and, of course, backing and cooperation by local governmental bodies."

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The experience of Shasta-Trinity provides valuable insights. And other communities in California also have acted resolutely to upgrade their emergency services, have organized community committees responsible for governing the services and have demonstrated success in reducing or eliminating conflicts between various local agencies. They have actually established speaking acquaintance between local agencies that for years have never talked to each other.

On the basis of the information gained from these efforts, as well as our continuing concern with emergency medical care generally the California Medical Association has certain recommendations to make regarding national emergency medical legislation.

CMA feels that any effective legislation on this subject must incorporate a number of specific points. First, it should include provisions for well-equipped emergency vehicles which are staffed by emergency medical service technicians who have the training and the equipment to provide all necessary life-support at the scene of the accident and during transport of the patient. In addition, it should provide for systems of communication that assure prompt response to the need and allow communication between hospital and ambulance, with law enforcement agencies and, if necessary, even communication to areas that are outside the particular hospital area, or area where they have a particular problem.

Of course it should provide high-quality emergency care facilities, with adequate and well-trained staffing and equipment at the hospital level to back up the emergency room receiving area. Also important, we feel, are medical self-help training programs that will reach a large number of the residents of the particular area. Such programs would educate residents about problems that require prompt emergency medical care and probably as important, if not more so, educate them to medical problems that do not require prompt emergency medical care, thereby relieving some of the overload that is present on many of our emergency facilities. They also would provide education in the care of minor injuries, which now sometimes overload our emergency rooms and can bog them down to the point that major emergencies cannot be adequately handled.

Effective national legislation in this field also should act to assure that emergency medical services are adequate to meet the needs of the community and geared to those needs. In other words, an area requiring only a small component of emergency medical services should be discouraged from overbuilding and thereby taxing members of the community and government funds unduly for needless expansion or overly sophisticated equipment. By the same token, the planning developed for an area that requires extensive emergency facilities should have some certainty of producing services equal to the need. We feel the best method of accomplishing this objective is by having the emergency medical services plan proposed for a particular area reviewed by the local medical society for its approval. Relatedly, State medical societies do possess the expertise to evaluate an emergency medical services plan on the State level and they should be provided similar review opportunities. As another safeguard for seeing that planning actually serves the best interests of the emergency patient and represents good medical care, we feel it to be essential that medical societies also be included in any local, State, or national planning agencies in this field.

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Certainly one of the most basic and necessary elements would be periodic evaluation of the quality of services to be provided. We feel this should be accomplished through systems of quality control inspection and would be handled best by special emergency medical services committees of local or State medical societies.

A final element we judge to be important for good emergency services legislation is registration of ambulance attendants through a national registry program, such as the National Registry of Emergency Medical Technicians, which would provide for periodic review of personnel. This would assure that an emergency technician in California and one in any other part of the country had equivalent training, educational background, and equivalent skills. In short, the level of skills, developed through emergency medical technicians' training programs, would be interchangeable nationwide. Here again, we would emphasize the importance of including the medical profession in the process of evaluation.

These are CMA's major concerns regarding legislation in the field of emergency medical services. However, to be more specific, this subcommittee has before it two bills, Senate bill 504, which I believe is your bill, Senator, and Senate bill 654. They are both concerned with this subject of emergency medical care. In commenting on these bills, our task is made more difficult by the fact that each bill seeks to bring some order out of the present haphazard approach to emergency services in this country. The CMA and the AMA have read both bills and they have tried to evaluate objectively what is included in them. They feel that both bills have excellent points as far as legislation goes.

Senate bill 654 has included in it some items, particularly the inclusion of the medical profession in the training provisions, in the continuation of the programs that are not contained in Senate bill 504. We feel that if it is at all possible, that a compromise could be worked out on both bills, incorporating the facts in these bills that are separable and are excellent. This would probably serve the Nation in the best way.

In light of the several considerations I have discussed and firmly believing that major emphasis on emergency medical services is urgently needed, we respectfully urge this subcommittee to give S. 654 your favorable consideration.

Once again, the California Medical Association appreciates this opportunity to present our views on emergency medical services.

Mr. Chairman, if there are any questions, I will try to answer them. I do not claim to be an expert on all of them.

Senator CRANSTON. Thank you very much for coming and for giving us that testimony. I have a number of questions but because of our time problem I will ask you only one at this time.

Regarding the concept of quality control inspection, which you mentioned as a means of evaluating the quality of services, give me a bit more detail on that.

Dr. LYONS. The basic element of quality control would be a local or regional—when I say local, it can be an area of a county such as Los Angeles City as opposed to Los Angeles County—it can be a

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county or it can be a regional emergency medical services committee. This committee should be composed of providers—when I say providers, we are speaking of physicians, we are speaking of hospital representatives, and we are speaking of paramedical and ambulance transportation individuals. It should as well be composed of those that are involved in emergency medical care. This would be firemen, police, sheriff, forestry, California Highway Patrol. It should as well be composed of knowledgeable, so-called consumers. These would be individuals who would be able to intelligently and objectively evaluate both situations as they exist and complaints as they exist.

Senator CRANSTON. Have you carried out this sort of evaluation up to this point?

Dr. LYONS. Some areas of the State have such committees. San Diego is one. The hospital is inspected for its initial classification. The hospital is reinspected annually. If there is any question about or complaint of the quality of care or the hospital's inability to render the type of services that in their classification application they promised that they would render, the hospital is reinspected and rejected.

Senator CRANSTON. Thank you very much. I appreciate your helpfulness a great deal.

[The prepared statement of Dr. Lyons follows:]

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STATEMENT OF THOMAS W. LYONS, M.D.

CHAIRMAN, COMMITTEE ON EMERGENCY MEDICAL CARE

CALIFORNIA MEDICAL ASSOCIATION

BEFORE THE SUBCOMMITTEE ON HEALTH

LABOR AND PUBLIC WELFARE COMMITTEE

UNITED STATES SENATE

LOS ANGELES, CALIFORNIA

MONDAY, MARCH 12, 1973

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STATEMENT OF THOMAS W. LYONS, M.D.
CHAIRMAN, COMMITTEE ON EMERGENCY MEDICAL CARE
CALIFORNIA MEDICAL ASSOCIATION

BEFORE THE SUBCOMMITTEE ON HEALTH
LABOR AND PUBLIC WELFARE COMMITTEE
UNITED STATES SENATE
LOS ANGELES, CALIFORNIA
MONDAY, MARCH 12, 1973

Mr. Chairman, Members of the Subcommittee:

My name is Doctor Thomas Lyons. I am a physician practicing in San Diego and Chairman of the Committee on Emergency Medical Care of the California Medical Association. I am here today as a representative of the California Medical Association and its approximately 25,000 physician members.

First, on behalf of CMA, I would like to express our appreciation for this opportunity to present our views on the subject of emergency medical services, which is currently being considered by your Subcommittee.

Emergency medical services in this country are sadly inadequate. The fact that every year thousands of people may be dying needlessly because of poor or non-existent emergency services is a deplorable situation. And it underscores the need for action in development and improvement of these services throughout our country.

The members of this Subcommittee are well aware of the deficiencies that do exist in the area of emergency medical services and it is hardly

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necessary for me to emphasize the seriousness of the problem further in these remarks. The California Medical Association shares your desire to find solutions to these deficiencies and I would like to take this opportunity to offer you our support and assistance as you seek solutions.

CMA's interest in the field of emergency medical services is an active one. Our Committee on Disaster Medical Care is seeking to increase the necessary close cooperation among the many organizations essential in dealing with a disaster situation. Most recently the Committee created the California Air Safety Council to help avert air disaster or prepare for any that might occur. CMA's Committee on Emergency Medical Services, of which I am the chairman, is working toward the overall improvement of emergency medical care services in California. It recently formed the Sub-committee on Emergency Medical Care in Rural Areas which concerns itself specifically with those problems encountered in rural areas of the state.

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The Redding doctors, with some interested fellow citizens and financial help from the county medical society, set about making constructive plans to improve emergency services. A non-profit Emergency Medical Care Foundation was formed to act as the planning body, consultative organization and general liaison to local government. After two years of surveys and general education, the Shasta County Supervisors designated a primary emergency medical care center for this large area and gave support to the concepts of improving communications, transportation and training of personnel.

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The experience of Shasta-Trinity provides valuable insights. And other communities in California also have acted resolutely to upgrade their emergency services, have organized community committees responsible for governing the services and have demonstrated success in reducing or eliminating conflicts between various local agencies. On the basis of the information gained from these efforts, as well as our continuing concern with emergency medical care generally, the California Medical Association has certain recommendations to make regarding national emergency medical legislation.

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CMA feels that any effective legislation on this subject must incorporate a number of specific points. First, it should include provisions for well equipped emergency vehicles which are staffed by emergency medical service technicians who have the training and equipment to provide all necessary life support at the scene of the accident and during transport of the patient. In addition, it should provide for systems of communication that assure prompt response to the need and allow communication between hospital and ambulance, with law enforcement agencies and, if necessary, even communication to areas outside the particular hospital area.

Of course, it should provide high quality emergency care facilities, with adequate and well-trained staffing and equipment at the hospital level to back-up the emergency room receiving area. Also important, we feel, are medical self-help training programs that will reach a large number of the residents of the particular area. Such programs would educate residents about problems that require prompt emergency medical care. They also would provide education in the care of minor injuries, which now sometimes overload our emergency rooms and can bog them down to the point that major emergencies cannot be adequately handled.

Effective national legislation in this field also should act to assure that emergency medical services are adequate to meet the needs of the community and geared to those needs. In other words, an area requiring only a small component of emergency medical services should be discouraged from overbuilding and thereby taxing members of the community and government funds unduly for needless expansion or overly-sophisticated equipment. By the same token, the planning developed for an area that requires extensive

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emergency facilities should have some certainty of producing services equal to the need. We feel the best method of accomplishing this objective is by having the emergency medical services plan proposed for a particular area reviewed by the local medical society for its approval. Relatedly, state medical societies do possess the expertise to evaluate an emergency medical services plan on the state level and they should be provided similar review opportunities. As another safeguard for seeing that planning actually serves the best interests of the emergency patient and represents good medical care, we feel it to be essential that medical societies also be included in any local or state planning agencies in this field.

Certainly one of the most basic and necessary elements would be periodic evaluation of the quality of services to be provided. We feel this should be accomplished through systems of quality control inspection and would be handled best by special emergency medical services committees of local or state medical societies.

A final element we judge to be important for good emergency services legislation is registration of ambulance attendants through a national registry program, such as the National Registry of Emergency Medical Technicians, which would provide for periodic review of personnel. This would assure that an emergency technician in California and one in any other part of the country had equivalent training, educational background and skills. In short, the level of skills, developed through emergency medical technicians' training programs, would be interchangeable nationwide. Here again, we would emphasize the importance of including the medical profession in the process of evaluation.

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These are CMA's major concerns regarding legislation in the field of emergency medical services. However, to be more specific, this Subcommittee has before it two bills -- S. 504 and S. 654 -- both concerned with this subject. In commenting on these bills, our task is made more difficult by the fact that each bill seeks to bring some order out of the present haphazard approach to emergency services in this country. Nonetheless, our reading of these two bills convinces us that S. 654 would create by far the more comprehensive emergency medical service system across America. In addition, it best fulfills our requirements for an effective program.

The importance of action in regard to emergency medical services was further underscored recently by the information that among the Administration's proposed budgetary cutbacks will be elimination of funding for the Division of Emergency Health Services of the Department of Health, Education and Welfare. Doctor Wayne P. Chesbro, Chairman of CMA's Committee on Disaster Medical Care, observes, "The elimination of this federal program would have a devastating effect on the country's ability to recover from major disasters which produce mass casualties."

In light of the several considerations I have discussed and firmly believing that major emphasis on emergency medical services is urgently needed, we respectfully urge this Subcommittee to give S. 654 your favorable consideration.

Once again, the California Medical Association appreciates this opportunity to present our views on emergency medical services. Mr. Chairman, if there are any questions, I would be pleased to respond to them at this time.

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Senator CRANSTON. Our next witness is William Markey, administrator, Health Care Agency, county of San Diego. Mr. Markey, we appreciate your presence.

STATEMENT OF WILLIAM A. MARKEY, ADMINISTRATOR, HEALTH CARE AGENCY, COUNTY OF SAN DIEGO

Mr. MARKEY. Thank you very much.

As administrator of the Health Care Agency, my position is somewhat comparable to that of Mr. Witherill who spoke with you earlier.

San Diego County itself, in contrast in size, has about 1½ million people and comprises about 4,200 square miles of both urban and rural areas of this coastal, mountain, border, and desert region of southern California.

The comments that I will make today are those of myself as a professional in the health field over a number of years. They are not policy statements by our board of supervisors, but I think that we offer a view of this bill, particularly S. 504, that may be different from some that you have previously heard.

Senator CRANSTON. Fine. I would appreciate it if you could do it in about 5 minutes. The whole statement will go in the record.

Mr. MARKEY. All right, thank you.

San Diego County is a primary contractor for one of the 5 emergency medical service demonstration programs currently sponsored by the Health Services and Mental Health Administration of the Department of Health, Education, and Welfare. Now, well past the halfway mark of the first of 3 years of this contract, we welcome the opportunity to comment on some aspects of the current efforts and of S. 504, the Emergency Medical Services Act of 1973.

Our program covers not only San Diego County but two additional counties, Imperial and Riverside, which make up the local "B" comprehensive health planning area in that part of the State.

The remarks that we are going to make, I think, will respect primarily our experience in the program that we have had; although some may have come out earlier, I think the viewpoint of someone working in the demonstration area might be valuable.

The first point is that the availability and access to emergency medical services are highly local circumstances. There is lack of uniformity within a given city, great differences between urban and rural locations, and even major differences in need and service availability from one time to another in the same place. Some medical facilities are open only during the working day, and some areas, most especially recreational areas, may have remarkable increases in demand and service availabilities by season or even day of the week.

Similarly, quality of service elements is highly local in nature. Where only one transportation resource and one emergency room is reasonably available, upgrading means something different from where there is a choice, as in a city, and access may vary by nonemergency factors, such as medical staff membership, public service contracts, and so on.

My reason for bringing up these examples is to request allowances for local adaptation and methodologies. The development of guidelines for access, availability, and quality on a nationwide basis is

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most important, but, if the program is to be effective, the ability of local groups to organize, choose the most appropriate first steps, and set priorities to implement the guidelines, should be protected.

The second point that I wish to bring out is that there needs to be care in establishing regional areas. Our demonstration projects include 3 counties, and the citizens and staff of each county interested in emergency medical services have been most cooperative in enhancing the regional aspects of our project; however, the medical marketing flow does not normally follow the regional geography in all circumstances. We are articulating basic, backup, and disaster service patterns, but in the instance of one of our counties, backup services logically and traditionally flow outside the region.

A third point that we wish to bring out very briefly on this is that we are working toward a rather complex problem and long-range solution and that the total authorization period, 3 years, may well not be enough to achieve what needs to be done. The need to become visible early in the program may or may not work to the best long-range effectiveness.

An example of this might be the immediate purchase of more ambulances for a given area when we know somewhere in the area of 15 percent of the emergency room services result from ambulances; whereas, the training of personnel who would be both in the ambulances and elsewhere might be a more logical step, so that maybe a phased funding program, one which extends over a longer period of time, might be worthwhile.

The fourth point, we are impressed that the early implementation steps for an improvement in emergency medical services at a local or regional level require major effort in coordination of existing resources. For example, in our county itself we have some 33 fire jurisdictions, 12 police jurisdictions, and, when you add this to other counties with established patterns, there is real need to achieve, generally through negotiation and working with people, to get this coordination going and visible at an early point. So that we would recommend that possibly early funding be specifically designated for organizational staff, and that perhaps this portion be on a nonmatching or at least minimal matching, or inkind basis. If anything with lasting results is to get going quickly, there should be a visible office or coordinating staff with the specific responsibility to get the program underway in a tangible fashion, with a demonstrable involvement of those who will eventually be responsible for maintaining the improved services with high quality standards. This may not be possible if high local matching support is needed.

The last point that I wish to express in terms of our experience is that we are appreciative of the cooperative efforts of the military in making emergency services and disaster support available to the communities surrounding or near installations. It occurs to us that a great benefit at relatively low cost could be obtained, should the military be able to use its training capabilities, both personnel and facilities, to assist its civilian neighbors in upgrading emergency medical service personnel. New investment by local school and college districts might be minimized in this way.

These comments are in basic and strong support of S. 504. They are offered in terms of the amendment process, and in the hope the further study may yield a pattern of appropriation timing and

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amount which can meet practical local needs, and they are supported by our early experience in an emergency medical services demonstration project which we are certain will improve the availability, accessibility, and quality of these services for the people of Imperial, Riverside, and San Diego Counties, as well as for others who may learn from our experiences.

Thank you.

Senator CRANSTON. Thank you very, very much.

I am particularly interested in your testimony because your project is one in the Nation that HEW has supported up to this point.

Has HEW provided you with technical advice and assistance in your program?

Mr. MARKEY. In many ways they have. We feel that the state of the art is such that anyone giving a demonstration of this kind will need to fly by himself a lot of the time. We feel that the central input has been helpful and we have also had some guidance from it.

Senator CRANSTON. What particular difficulties have you encountered in developing your project?

Mr. MARKEY. I think one of the problems in the demonstration program that we have been discussing quite a bit lately is that the investment in emergency services in this region is very high. The contract support, although most welcome, represents a very small portion to serve as leverage in improving the program, and that the expectations of the contract go far beyond what is essentially being purchased; the contract itself states what we may be expected to deliver, and we are expected to deliver a much larger package than the dollar support of the contract provides. To a great extent, the hope and the real feeling is that we can make this small amount of leverage money yield something worthwhile over a 3 to 5-year period. All these counties' emergency medical care committees, other local support and commitments, the need to reduce this to writing, into several subcontracts, etc., all of which requires negotiating, and it has taken us a longer time than we thought it would at the first, and we are still hopeful we will be able to produce what is called for within the overall time guidelines.

Senator CRANSTON. You apparently have to spend an awful lot of time on paperwork requirements?

Mr. MARKEY. This is true, we have.

Senator CRANSTON. I am hoping we can find some way to work out some categorical aid that doesn't overburden those involved with paperwork.

Mr. MARKEY. Yes, this would be most appreciated. It is not that we didn't get into this with our eyes open and recognize that the major component of the contract was to report. Sometimes the timing and content and systems methodologies involved in the reporting are hard to reconcile with the people who haven't decided yet on how they wish to participate.

Senator CRANSTON. Was there a lot of paperwork involved in getting that contract in the first place?

Mr. MARKEY. Not too much. We felt we had a fairly straightforward request for proposals. We received considerable help from regional medical programs, also from comprehensive health planning in preparing documents, and we have been building our staff up from scratch to catch up with what the contract itself requires.

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Senator CRANSTON. If you could give us in writing any suggestions as to how the paperwork can be reduced while ensuring that there is adequate understanding in Washington or HEW generally of what is going on and what standards are to be met, it will certainly be very helpful to us.

Mr. MARKEY. We certainly shall try to do that.

Senator CRANSTON. Has your experience generally been summarized and evaluated for the benefit of other communities? I am asking for a bit more paperwork.

Mr. MARKEY. Yes, we have made monthly reports but our first interim report that would be, interpretable from one group to another, is not yet ready. It has been largely organizational in effort. We have a number of components underway but not as yet delivered and operating.

Senator CRANSTON. The area that you work in is certainly a classic example of an urban community with quite substantial resources and a rural community without those assets. Have you been able to coordinate the services in these diverse situations?

Mr. MARKEY. There are already coordinated efforts for such things as critically ill children, methods to bring them from parts of Imperial County into the University Hospital. There are other aspects that are underway. One component of our contract is to provide supplemental service through the San Diego Sheriff's Department, there will now be three ambulances and trained crews for these at the EMT I level, hopefully at a later date perhaps to paramedic-type activity. This will enable areas that have a great influx of people on weekends and during tourist seasons to have access to emergency care, particularly the high-risk kinds of tourists like dune buggy operators and the like.

Senator CRANSTON. Do you have any comment on the HEW position that my bill authorizes more money, 55 million in the first year, than could be usefully spent?

Mr. MARKEY. I think my comment would be that it is not enough to get a program of this type going in a 3- to 5-year period. That would be my general comment on it.

Senator CRANSTON. Do you have any estimate of the minimum amount needed to organize a truly efficient emergency care program similar to that in San Diego County?

Mr. MARKEY. I think this is something we are experimenting with. We are having funds of something like $300,000 a year for the three-county area, some of which are one-time equipment purchases such as radios. We estimate that in the area of $200,000 to $250,000 would be the minimum for office staff for ongoing, well-coordinated programs so that I would suspect the startup of this would be probably to do this more comfortably than we are now but I think to achieve time goals it probably ought to be in the range of $400,000 a year.

Senator CRANSTON. How much local financial support has been made available to the development of the program from each of the counties?

Mr. MARKEY. This is hard to reconcile because this is extra work from numbers of interested departments and our program got started with a State grant for highway safety programs and I am not able to give a fixed amount. There is a tremendous public and

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private investment in facilities, vehicles, and training. One estimate has been forthcoming in the area, I believe, of $100 million a year in our region, for total cost of the emergency care.

Senator CRANSTON. Have any of the counties gotten help from the Highway Safety Act?

Mr. MARKEY. I believe so.

Senator CRANSTON. Is that coordinated into the general fund?

Mr. MARKEY. We are working toward that coordination.

Senator CRANSTON. How much consumer participation is involved in the problem, do you know?

Mr. MARKEY. We would use comprehensive health planning and regional medical programs to a degree for this. We are re-organizing at this time our county emergency medical care commitee to include consumer representation and we are working at a similar level with respect to a tri-county coordinating committee for the three counties that are involved. I would say that this is one area that needs more effort.

Senator CRANSTON. Thank you very much. It has been most helpful to have you with us.

Mr. MARKEY. Thank you.

[The prepared statement of Mr. Markey follows:]

PREPARED STATEMENT OF WILLIAM A. MARKEY, ADMINISTRATOR, HEALTH CARE AGENCY, COUNTY OF SAN DIEGO

Mr. Chairman and Members of the Subcommittee:

My name is William A. Markey. I am Administrator of San Diego County's Health Care Agency, the single agency with local governmental responsibility for health services to the public in San Diego County, some 1.5 million people in 4,200 square miles of both urban and rural areas of this coastal, mountain, border, and desert region of Southern California.

San Diego County is the primary contractor for one of the five Emergency Medical Service Demonstration programs currently sponsored by the Health Services and Mental Health Administration of the Department of Health, Education, and Welfare. Now, well past the halfway mark of the first of three years of this contract, we welcome the opportunity to comment on some aspects of the current effort and of S. 504, the Emergency Medical Services Act of 1973. The current San Diego County contract covers development and improvement of emergency medical services in the Comprehensive Health Planning "b" area, consisting of Imperial, Riverside, and San Diego Counties.

Most important, we wish to use this opportunity to express our strong support for S. 504, and the major improvements in emergency medical services that it can bring to many parts of our country. We have had opportunity to review testimony presented by others at earlier hearings on S. 504, and shall attempt to restrict our remarks to items which our experience in undertaking the E.M.S. demonstration have emphasized. Some of these have undoubtedly been touched upon earlier, but in context of a working demonstration program may be of assistance to the Subcommittee.

First, as has been indicated, availability and access to emergency medical services are highly local circumstances. There is lack of uniformity within a given city, great differences between urban and rural locations, and even major differences in need and service availability from one time to another in the same place. Some medical facilities are open only during the working day, and some areas, most especially recreational areas, may have remarkable increases in demand and service availabilities by season or even day of the week.

Similarly, quality of service elements is highly local in nature. Where only one transportation resource and one emergency room is reasonably available, upgrading means something different from where there is a choice, as in a city, and access may vary by non-emergency factors, such as medical staff membership, public service contracts, et cetera.

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My reason for bringing up these examples is to request allowances for local adaption and methodologies. The development of guidelines for access, availability, and quality on a nationwide basis is most important, but if the program is to be effective, the ability of local groups to organize, choose the most appropriate first steps, and set priorities to implement the guidelines should be protected.

Second, based on our limited experience in improvement program development and implementation, we would suggest that some care be used in establishing regional emergency medical service activities. Our demonstration projects include three counties, and the citizens and staff of each county interested in emergency medical services have been most cooperative in enhancing the regional aspects of our project; however, the medical marketing flow does not normally follow the regional geography in all circumstances. We are articulating basic, back-up, and disaster service patterns, but in the instance of one of our counties, back-up services logically and traditionally flow outside the region.

Third, from the standpoints of funding levels and timing efforts, we suggest that effort might well be made to extend the total authorization and appropriation period from three to five years. This is in no way intended to reduce the impact of this Act on the immediate very serious problems in emergency medical service access and delivery, but rather to recognize that the real, long-range effectiveness will be dependent upon the local or on-the-scene organization and commitment for delivery of a higher level of service.

For example, an early major investment in new ambulances may not be as beneficial a first step as higher level training of ambulance personnel, police and firemen, park rangers, and others with first-in responsibilities, and the upgrading of emergency room facilities and staffing. These alternatives take more time to achieve, with longer tooling-up times, but will yield far better use of the new ambulances, which we believe now account for less than 15 percent of transportation to emergency facilities. In this context, we support a longer time period to achieve a better product.

Fourth, we are impressed that the early implementation steps for an improvement in emergency medical service at a local or regional level requires a major effort in coordination of existing resources. This implies major work in negotiating and participation of citizens, local governments, and service providers. This, in turn, means capable and committed staff for organizing and planning. This appears to be an immediate need, but one whose importance may not be appreciated fully. In this, we would recommend that a portion of each region's early funding support be specifically for organizational staff, and that perhaps this portion be on a non-matching or at least minimal matching, or in-kind basis. If anything with lasting results is to get going quickly, there should be a visible office or coordination staff with the specific responsibility to get the program underway in a tangible fashion, with demonstrable involvement of those who will eventually be responsible for maintaining the improved services with high-quality standards. This may not be possible if high local matching support is needed.

Finally, we are appreciative of the cooperative efforts of the military in making emergency services and disaster support available to the communities surrounding or near installations. It occurs to us that a great benefit at relatively low cost could be obtained should the military be able to use its training capabilities, both personnel and facilities, to assist its civilian neighbors in upgrading emergency medical service personnel. New investment by local school and college districts might be minimized in this way.

These comments are in basic and strong support of S. 504. They are offered in terms of the amendment process, and in the hope the further study may yield a pattern of appropriation timing and amount which can meet practical local needs, and they are supported by our early experience in an Emergency Medical Services demonstration project which we are certain will improve the availability, accessibility, and quality of these services for the people of Imperial, Riverside, and San Diego Counties, as well as for others who may learn from our experiences.

Thank you for the opportunity to appear before you.

Senator CRANSTON. We will now hear from a panel from Martin Luther King, Jr., General Hospital, Dr. Theodore Schlater, director of emergency services; Mr. Charles Windsor, administrator; Dr. Phillip Smith, medical director.

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We are delighted to have you with us. If you would, from left to right, introduce yourselves for the record. Again I ask, if you can, to be brief in your statements.

STATEMENT OF DR. THEODORE SCHLATER, DIRECTOR OF EMERGENCY SERVICES, CHARLES WINDSOR, ADMINISTRATOR, AND PHILLIP SMITH, M.D., MEDICAL DIRECTOR OF MARTIN LUTHER KING, JR., GENERAL HOSPITAL, A PANEL

Mr. WINDSOR. I am Charles Windsor, administrator, Martin Luther King Hospital.

Dr. SCHLATER. I am Theodore Schlater, director of emergency Services.

Dr. SMITH. I am Dr. Phillip Smith, medical director of Martin Luther King, Jr., General Hospital.

Senator CRANSTON. Thank you.

Dr. SCHLATER. Senator Cranston, I would like to address myself on behalf of three institutions, the Martin Luther King Hospital, the Martin Luther King Committee on Emergency Care, and the Citizens Committee on Emergency Care.

First, I would like to give you some background on the history of our hospital.

Martin Luther King Hospital is a county hospital. It has been open less than a year. It will be 2 weeks before we will have our first year's anniversary.

This hospital has risen as a phoenix from the ashes of Watts. As you know, we had a terrible citizens' uprising in Watts in 1965, followed by a commission that endeavored to find out and to investigate some of the ills of Watts, and one of the reports of that commission was that the medical care of the area was inadequate. Of course this was obvious to the citizenry previously. We had an area of 400,000 people served by two small proprietary hospitals with 160 beds with very inadequate emergency facilities.

Even following, despite the commission's reports, the popular vote still did not support the funding of this hospital. It required the concerted efforts of Mr. Hahn in order to make the hospital an entity. Nevertheless we do have a hospital now, and we are endeavoring to provide emergency care that is now needed for our community.

Along the lines of the American Medical Association and communications of other emergency care resources in the area, we think it is quite evident that the hospital itself cannot provide all that was needed in emergency care, so we formed a council composed of providers and consumers of the area. This council has been in operation now for more than a year. We have monthly meetings in which the consumers and the providers are utilized to monitor and plan for emergency care. This group has been funded by a grant from Regional Medical Programs of a modest nature to provide plans for the system within the overall system to provide resources for additional training programs, and this will apparently be undertaken in light of the Citizens Committee on Emergency Care.

This began as an ad hoc committee which was organized by Dr. Weil in January of 1972 and as an outcome of this committee, we did provide a plan for the coalition of the three regional medical pro-

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grams areas to provide a plan for emergency care for this entire county and also a coordinating council in June of last year. At the end of the council, the current systems provided no way for continuing the council; however, we felt that there was a need for continued citizens' participation and planning, so on a voluntary basis we continued to meet locally from that day when the official means would be made to provide the input of such a citizens' committee.

In general, the emergency problems that we have in the Martin Luther King area are shared with the county and with the Nation as a whole. In brief, I might say, in the line of transportation we are quite aware, as previously indicated by Mr. Witherill, that we do have a number of systems operating within this area.

We, too, support the training of personnel of the private companies because we feel, unlike many areas where the major private carriage service may be low, we have very high quality private ambulance services and we feel that we should continue with this system.

We do feel that a career line should be created within the services because it is necessary for advancement to be possible with additional education and learning. Also in our own area we have particular needs for employment and we feel that a career ladder will create additional job opportunities from the level of emergency medical technician I on to the paramedic.

As far as communications are concerned, we feel there is a vast problem in communications. The Los Angeles central directory has 43 numbers listed for emergency care, and there are other special numbers there that we feel, even though you reach the operator, she is not in the best position to ascertain exactly what is best to call, and when she does call she has to use the current existing lines. Despite the mandate, the 911 that is to come about in 1977, quite a bit of planning has to go forth in advance in order to make this a reality, so we think this planning should occur now, and to my knowledge the funding to support this planning and the activities to support it is inadequate to meet that deadline.

So far as the utilization of facilities in the area, we feel in the emergency medical technician, the emergency plan has gone a fair way to utilizing the facilities to the best advantages, however, we do see that some of the institutions being used are unable to provide care of the scope that is presented to them. I advocate the abolishment of such institutions. We feel that since they habitually transfer cases of a certain nature they obviously are unable to give them complete care and that a plan should be set up so that certain categories of facilities can be bypassed and brought direct to institutions that can give the care.

In light of this, the evaluation of the emergency rooms has been great as far as evaluation of equipment. However, little has been done to evaluate the manpower resources. We feel the manpower resources should be evaluated, the quality of care that they can deliver and that systems should be set up as a mandate for further training, particular education, and also provisions be made for training personnel from the level of the hospital corpsman, through nursing, through the physicians to specifically staff emergency facilities.

We have to feel that in our own institution, we have a marvelous opportunity, because of our newness and a wealth of clinical mate-

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rial, to provide for knowledge, advanced knowledge, in the field of emergency medical care through research. We know on that basis we can indeed participate in the over-all movement to improve emergency medical care.

All of this we hope not to obtain on an insular basis because we realize everything we do in our area has to be coordinated with a countywide or communitywide plan, and in this effort certainly we do have our Citizens Emergency Council and I have participated in the county overall emergency aid plan, which is being supported by a planning grant for the three Regional Medical Programs.

I thank you very much.

Senator CRANSTON. Thank you. I appreciate very much that very lucid ad lib testimony. It is very helpful to us.

Do either of you have any comments to make before I move to questions?

Dr. SMITH. I would just like to make one statement. Approximately 50 percent of the people enter into the health care delivery system by going first to the emergency room because of inadequacy of primary health care provided in the area. This is one of the problems that increases the flow to emergency rooms, people in the emergency rooms.

Senator CRANSTON. Mr. Windsor, do you have any comment?

Mr. WINDSOR. No, sir.

Senator CRANSTON. I will ask a few questions. Whoever it most appropriately should have been addressed to may answer.

First, what are your comments on the Administration's objections to the bill on the grounds: (a) that legislative authority is not needed and (b) that the money authorized could not be invested soundly?

Dr. SCHLATER. I think it is totally ridiculous. Certainly in our area that has been obvious. As far as its being invested soundly, I do think we have the planning of members already involved on a volunteer basis, so that certainly we do have the nucleus already to begin prompt action on such a bill, if it is funded.

Senator CRANSTON. Do you think there are problems created unnecessarily in the case of the individual who needs help quickly and could be served by two separate jurisdictions and there is an uncertainty as to who is to come?

Dr. SCHLATER. I think so. I think we do have to have a central dispatch system.

Senator CRANSTON. What programs for providing training and career opportunities for residents of the community served by Martin Luther King Hospital have been developed?

Dr. SCHLATER. They are in the planning stages. One of them that is beginning within a week is dealing with a physician's assistant type of personnel who is to staff the emergency facilities and render care at the physician's order to fill somewhat the void that exists as far as delivery of medical care between the nurse and the physician.

Senator CRANSTON. Do you use team training?

Dr. SCHLATER. Yes, we do use team training.

Senator CRANSTON. What provision is made for emergency psychiatric treatment at the hospital?

Dr. SCHLATER. Emergency psychiatric treatment is presently in its initial stages because we have a large mental health facility that

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is in the planning stages for initiation in the near future. However, we do have the psychiatric staff on board and they do provide care within the emergency area and also followup care, although to a limited degree within the clinics. Currently we do not have any beds available for psychiatric patients. They are referred to State institutions or one of our sister hospitals that has inpatient psych beds.

Senator CRANSTON. Regarding the problem that you mentioned of the individual patient being taken to the wrong facility in terms of the specialized treatment that he needs, how do we deal with that problem, in your opinion?

Dr. SCHLATER. By and large it is a little bit less than desirable. The institutions do provide whatever care they have to deliver; however, there is some time lost and we think that the time in transportation could be better spent, than to have the patient arrive at one facility, get part of what is needed, and then be hustled on to another facility.

Senator CRANSTON. Is the main solution to have the ambulance driver acquainted with the capabilities of the facilities in the community so that when he finds out what the problem is he will know immediately where he should take the patient?

Dr. SCHLATER. We feel there is a better way to do it, sir. We feel if we have a dispatcher who is informed on a continuous basis of the current resources and facilities in the area and response and radio communication to the vehicles with this current information it would be better than setting a standard rigid categorical research facility.

I might add that even in a facility such as ours, we do have limitations where some of our sister hospitals at any given moment might be better prepared to give assistance in a better way.

Senator CRANSTON. How many transfers do you receive of emergency patients from other hospital emergency rooms?

Dr. SCHLATER. Approximately anywhere from a half dozen to a dozen a day.

Senator CRANSTON. Why are they transferred?

Dr. SCHLATER. Primarily because they don't have the money to be admitted to a hospital or they don't have a staff physician at the hospital who is available at that time to provide the ongoing definitive care needed.

Senator CRANSTON. Are critically ill people transferred?

Dr. SCHLATER. I would say yes.

Senator CRANSTON. Are they sometimes not even allowed in the first hospital?

Dr. SCHLATER. By and large no. They are allowed in and they are given the initial, I would say, first-aid care that can be rendered within the confines of the emergency room itself. However, that is where it stops, and then they have to be transferred.

Senator CRANSTON. What sort of adverse consequences can flow from that sort of a transfer?

Dr. SCHLATER. Certainly we have not received any large number, but the patient can be dead on arrival because, if a patient is severely ill, the care in transit certainly does not meet the level of care that can be given within a facility, so that it is sometimes a risk of life, even with all of the things being done that currently would support life in transit.

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Senator CRANSTON. That is really a shocking situation that this bill will seek to deal with.

You have very strong consumer involvement in the administration of your hospital programs. How effective is consumer involvement in the administration and in the implementation of the programs?

Mr. WINDSOR. Consumer involvement at our hospital, of course, is considered by those of us there as absolutely essential to the achievement of the health care delivery because without it I think we would many times have "barked up the wrong tree," so to speak and we might have gone down the wrong path quite a way toward developing programs which would have had no real meaning or real priority within the community itself. Therefore community involvement has been accepted, adopted almost from our very beginning as an absolute essential in the development of programs.

We have also found it on occasions to be somewhat politically helpful in securing the funding for those programs. We have found that the union is one which has paid all who are involved, has rewarded all of us, and we just don't see any way to proceed except with it, and we plan to continue in that fashion.

Senator CRANSTON. Does your hospital have adequate provision for followup social services after emergencies have been treated?

Dr. SCHLATER. Yes, we do. In fact, we are fairly proud of our social services. We have made some followup. Also during the course of, at least the immediate completion of treatment within the emergency facility of itself, the social services play a strong role in placement and continued followup of the patients receiving care.

Mr. WINDSOR. I would like to make a comment about that, though. In terms of funding for this, we are presently hampered, as you might well expect, by some of the recent provisions of price control and the like, which govern in effect the wage structure that we are able to use to support our activities that might be different, but we think necessary, and that frequently our community certainly has expected in the way of support programs, because these are not programs that normally can be considered part of the essentials of medical service that are recognized by such things as Medicare, MediCal, in the provision of service, and yet I don't know how we can expect to consider ourselves truly concerned about comprehensive health service if we don't incorporate elements like this in our planning.

A good example is some of the recidivism that is recognized in the emergency rooms where patients return with new wounds even before the stitches have been removed from the last ones, with no adequate way of investigating the social problems that give rise to this kind of, I guess you would say, "repeat performances" that we so often see.

I know Dr. Schlater has a great deal of concern in this area and yet I see, administratively, big problems just around the corner in terms of continuing to support, for instance, with adequate social service followup, with psychiatric consultation, even as a followup measure, when the regulations surrounding the provision of payment for medical services are becoming so constrictive.

Senator CRANSTON. The followup includes adequate referral to appropriate rehabilitation services?

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Dr. SMITH. Yes. We do refer these individuals to the rehabilitation source. We also are making referrals to the rehabilitation hospitals in the county system. I would like to say it also is very important and, as Mr. Witherill stated, I think we suffer from a nonsystem. I think a bill of this sort will enable one to combine facilities within a given area into a type of system that can meet the needs. Without it, I think we are lost.

I thank you.

Senator CRANSTON. That is what we hope to accomplish.

Thank you each very much. You have been most helpful. I will submit some more questions to you for answering in writing, if I may.

[The questions submitted by Senator Cranston and referred to above, follow:]

QUESTIONS SUBMITTED BY SENATOR ALAN CRANSTON TO DR. PHILLIP SMITH, WITH RESPONSE

Question. You mention the area serviced by Martin Luther King General Hospital falls within the jurisdiction of both the city and county, and that there is an effort to coordinate this service provided by these two governmental jurisdictions—Does this overlap of jurisdiction sometimes lead to confussion or duplication?

Answer. Yes.

Question. Do you have continuing education programs for all your emergency room personnel?

Answer. Yes but it is limited. Funding for this is becoming more restrictive as it is no longer possible to include it as part of the cost of care.

Question. Have you encountered legal limitations in the latitude for independent judgement these trainees can use in caring for a patient?

Answer. Yes.

Question. Given the 43 different numbers listed in the telephone directory for emergencies, how long does it take from the time a patient suffers an illness or injury to the time he receives appropriate care?

Answer. Varies but, could be much improved through continuing and progressive education of EMT personnel who are first to reach the patient.

Question. What provision is made for emergency psychiatric treatment and, how do you think it can be improved?

Answer. By developing our planned inpatient psychiatric care facility. It is presently in plan development stages with construction to begin in 1974 or 1975, ⅓ Federal Funding.

Question. Do the community mental health centers work closely with the county and city in providing treatment in cases of drug crises or psychiatric crises or suicide prevention?

Answer. They have expressed such an interest and we are working toward coordination.

Senator CRANSTON. Our next witness is Mrs. Carmen Guzman, East Los Angeles Health Task Force.

Mrs. Guzman, thank you very much for being with us.

STATEMENT OF CARMEN GUZMAN, EAST LOS ANGELES HEALTH TASK FORCE

Mrs. GUZMAN. My name is Carmen Guzman, I am a community organizer of the East Los Angeles Health Task Force.

The East Los Angeles Health Task Force is one of the best community organizations. I have been with the task force since 1969 and I consider it one of the most beautiful, one of the most effective

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agencies in the whole country because of the consumer and because of the community being involved. I think we very well represent the many thousands in cooperation with the other agencies.

While other witnesses have voiced their needs, mostly on providers' and administrators' points of view, our recommendation deals with the needs of the Spanish speaking consumer and all other consumers residing in the area of East Los Angeles, Northeast Lincoln Heights, or wherever the Spanish-speaking consumer is affected by emergency health services.

What is the definition of emergency health services? To some it would be a person dying from an accident, to another a simple gas pain might feel like an appendix. Many babies die from pneumonia because the parents didn't realize the danger of illness until too late.

A child I know was playing with his brother with a toy airplane tied to a string and was hit in the eye while they were playing. He is my little Indian. The mother didn't know where to go or what to do and did nothing because she could not afford a doctor. The family had no insurance and her husband at that time worked in a small shop that didn't carry insurance for employees. Yet he was not eligible for medi-cal or medi-care because his wages were a little above the poverty level. Many people of this category are suffering for need of not only emergency but any type of a health service. I am sorry to say that the child did lose his eye.

Anything I say, I do back up with the facts and the witnesses who would be at your disposal. This is hearsay, but I believe the person who told it to me, a man who died because he was given a shot of penicillin and he was allergic to it. The man could not speak English. The man was asked if he could take penicillin and, not understanding what he was told, he just kept answering, "Si, si, estoy infermo, si," I am sick, give me something, you know, just give me something to get well.

Some of us consumers do not know we are allergic to some medication but not knowing the language is a sad thing because if you cannot understand a patient, you cannot cure him either. Also, you run the danger of killing him. They say that man did die.

Senator CRANSTON. Do people have trouble getting the services, any services, like the ambulance ride to a hospital because of a language barrier in addition to getting improper service such as you described?

Mrs. GUZMAN. Yes; if he calls for an ambulance and he doesn't know English, the person on the other side doesn't know what to think, there is no communication.

Senator CRANSTON. Are there any problems that arise that you would call cultural instead of language difficulties?

Mrs. GUZMAN. Yes; we have that also. I have heard a lot about it from others, I have seen it, I have experienced it. Many of our men say, you know, "I'm all right," or elderly ladies, or just we don't have the money, we don't want someone to give us something, "Oh, I'm all right" if they have an accident or something. Just like that lady, that lady refused to take her child to any doctor, or didn't even know where to go. Even with myself as a neighbor, I told her

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where to go. She said, "We have no money and we're not going to ask for anything." So the child did lose his sight.

Senator CRANSTON. Have you heard of people brought to a hospital and then refused admission because the hospital feels they can't pay for the service?

Mrs. GUZMAN. This other one that I haven't talked about is, yes, such a case. They did take the child. First I want to talk about the grandfather they told me about.

The grandfather is my friend. He was picked up as a drunk but he wasn't drunk, he was a diabetic patient. When he was taken to the hospital it was hours before the grandmother found him and she was furious when she found him almost in a coma. She was able to get the doctor in that ward to care for the grandfather and it probably saved his life because they thought he was just a drunk, not knowing English and slurring the words, too.

This same friend, who I talked to just yesterday at our church, took his 18-month-old child to a hospital for an emergency. While he was being questioned about money his child was choking with the phlegm. The child was given first aid but later was sent to the General Hospital because the father could not afford it.

Now, of these other cases of Spanish-speaking people, it is not only the emergency—it might be an emergency, you know, I don't think the doctors are that bad they would turn someone away because they are Spanish but—could I continue? I think it would be faster.

Senator CRANSTON. Yes.

Mrs. GUZMAN. The poor usually wait till the last minute to go see a doctor. Often they go to overloaded emergency facilities hoping to have their internal problems treated. The emergency room with its gunshot wounds and knifings to take care of will usually send this patient home only to have him return some other day to emergency. Some patients are referred to outpatient clinics where the period is usually 2 to 3 months away. These patients usually return again as emergency patients before the 2- or 3-month period.

Consumers of health services must be involved in the future planning of all health facilities and services in their own communities and on policymaking and hiring. With the cooperation of the community, we could all work together to make our community a healthier community, a better United States of America. There is a lack of understanding of English, people who are coming in.

I always repeat this, that the United States has no laws refusing people of any denomination, language or country, not knowing English, they are not refused to come in here. This is part of the thing we should do. We should treat them humanely and try to have interpreters or have people trained in every area because knowing more languages that person must be, you know, knowing that they can serve more people of all languages, it makes common sense to prepare for these people.

Now, what kind of emergency health services do we need? Every man, woman, and child must be eligible to receive medical care with or without money, insurance, medical, medicare, or any prepaid health plan. A person, any human being, must be saved first and

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talk about money later. They will receive their money. Many patients, either medical or another of the poverty programs, will pay. Most patients want to do this. We must not kill people because of not being able to pay, let them die. We would be killing people if we let them die.

Health services must reflect the needs of the people using them: language whether Spanish or other; culture, transportation; 24-hour service; instant information where to get help, we don't know what it will take to do it but we might, when we get together, come up with some solution through our agencies; the community blood bank that we have, we hope supported by the total community, which will help all people living or working in the area, a gift from our community without asking them to pay or replace it. We are doing this already but we would like to emphasize it's an emergency to have blood available and the Red Cross says it is getting worse. A central information center who could contact the right emergency medical facility to which a patient should be sent; follow up after being sent home so the patient knows where to go for further treatment that is needed be it social, psychiatric, or medical services.

The community of east Los Angeles is in dire need of Spanish speaking personnel at all levels, health providers with the emphasis on the Spanish speaking even when hiring the professionals and on down the line for health services wherever they are needed. We need an adequate amount of Mexican-Americans in the medical field on every level, from specialists to nurses. We need training programs where these people can be trained, including physicians, specialists, or whatever.

Senator CRANSTON. Are there any such training programs now?

Mrs. GUZMAN. We only have now in the east Los Angeles health task force a retention program, a recruiting program, for the nurses which included close to 200 nurses. We found that some of the great problems were these young people have the potential but they also have many, many problems; either economic, they have to drop out because they have to help their families, had to go to work. We try to keep them in through the district retention program.

A young man by the name of Chico who worked with Dr. Pattit, they were wonderful to hire a young man who was very qualified. He helped in the forming of this recruiting of the nurses.

Many of the problems that came from that made all of us realize, even if they have a potential, the young people want to do something. Because of their language or culture, I don't care if it is Japanese or Spanish or any other, they must be helped in every way to stay in school. This is what they really want. They do have the qualifications and the potential but because of either their culture or economically they cannot continue, or psychologically or whatever. We must help them in every way. Now, this retention program we have now is really helping a lot.

Senator CRANSTON. Do you know how many Spanish speaking personnel are involved in rendering emergency medical service at the present time?

Mrs. GUZMAN. No, sir, I don't, but I can get you the information.

Senator CRANSTON. Would you do that?

Mrs. GUZMAN. I sure will.

[Information subsequently supplied follows:]

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EMERGENCY DEPARTMENT, RACE DISTRIBUTION REPORT, MARCH 1, 1973—Full-time employees

	Code[1]								No code	Total employees
	1	3	5	6	7	9	2	4		
Physicians	23	—	—	—	—	1	23	1	1	25
Hospital corpsmen	19	4	6	—	—	—	23	6	—	29
Clerical	3	2	2	—	1	—	—	8	—	8
Nursing	65	80	47	2	3	5	53	149	—	202
Total	110	86	55	2	4	6	99	164	1	

[1] See following code:
1 White
3 Black
5 Mexican American
6 Indian
7 Asian
9 Other
2 Male
4 Female

Mrs. GUZMAN. We would also like that the hiring of Spanish speaking medical personnel should be a rule to better serve the people of east Los Angeles and the Spanish speaking communities throughout the country. You may bring the most beautiful, technical, emergency health services but if you cannot help that person who died, it's no use having the moon, having all of the most beautiful things in the world in this area, if you are not going to help our people.

Now, by involving people of the community in the decision-making and planning, not only would you maybe save money by giving the correct services to our people but, also, you may find some volunteers. Once we know we are being helped we can find many volunteers who might help in the translating—this doesn't mean to take away a job that people need, because the economic problems here in east Los Angeles are very bad. Many of our young people are dropping out of school not because they don't have the potential or don't have the interest but because many times they don't even have shoes or food to eat. Even programs for children are available where they can have free lunches.

They are too proud to ask for it and many times the kids who do have the money will lie that they need it and sign their mother's name—I know—because they have more security.

That any health facility, be it government or private, hire the personnel from the community and when the position cannot be filled because of qualifications and training, training programs should be created to help our people go into these fields of medical services.

If you want to ask any questions, I am pretty sure, or at least I will try to get all of the information you need through the health task force. I know Jose Carlos is in a very fine position to help us, too.

Senator CRANSTON. Thank you very much.

Do you have any statistics on how long the average time is between when a request first goes in for emergency ambulance service and when the ambulance arrives?

Mrs. GUZMAN. Just from what I have heard, I have never been in that predicament myself. I have heard sometimes they have to wait 10, 15 minutes, a half hour, or sometimes 2 hours. If that person is

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really very, very ill, I mean really at the point of losing a lot of blood or something, sometimes a minute is too long.

Senator CRANSTON. Is there a problem in East Los Angeles in terms of the distance someone has to be taken to an emergency room?

Mrs. GUZMAN. Not all of our hospitals take emergencies, like some of the private ones. Many people go to these hospitals thinking there are emergency facilities and there is quite a loss of time there.

The distance, also, is when you don't have a phone, by the time you go to the neighbor's, wake them up if it is in the evening, or nobody is home, and decide where you are going to call, all of this plays a large part in being able to get the service.

Sometimes, even if you know where to go, if you don't have the money they won't take you.

Senator CRANSTON. Thank you very much. It was very good of you to be with us. You have been very helpful.

Our next witness is Dr. Gail Anderson, director, Department of Emergency Medicine, Los Angeles County, University of Southern California Medical Center; chairman and professor, Department of Emergency Medicine, University of Southern California School of Medicine.

Dr. Anderson, thank you very much for your help today and for your presence.

Dr. ANDERSON. Thank you.

STATEMENT OF DR. GAIL ANDERSON, DIRECTOR, DEPARTMENT OF EMERGENCY MEDICINE, LOS ANGELES COUNTY, USC MEDICAL CENTER; CHAIRMAN AND PROFESSOR, DEPARTMENT OF EMERGENCY MEDICINE, USC SCHOOL OF MEDICINE

Dr. ANDERSON. I think in the interests of time perhaps I will just go over what I have written down, which represents what I have thought out, and then answer any questions which you may have.

Senator CRANSTON. Thank you, doctor.

Dr. ANDERSON. Senator Cranston and all interested persons, I am pleased to have the opportunity to speak in support of legislation that is probably the most significant and long overdue health legislation proposed in this century.

It is not necessary for me to repeat the very complete and comprehensive statements made by the senator in his introduction to S. 504. The justification for this legislation should be known by everyone. Emergency medical services have been since time immemorial the most neglected aspect of health services and continues to be even in modern times. This is exemplified by the fact that little or no attention has been given to the training of personnel involved with emergency medicine from the ambulance driver responding to emergency calls to the physician who cares for the patient in the emergency department.

Within the field of medicine, little has been accomplished in establishing some sort of coordinated, consistent approch to emergencies. We readily admit that the Committee on Trauma of the American College of Surgeons and the American Academy of Orthopaedic Surgeons have attempted for years to establish some system out of the chaotic approach to the trauma aspect of emergency manage-

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ment, and the "crying need" is the establishment of some discipline at the professional level as well as the paraprofessional level.

While I recognize the importance of equipment such as ambulances and communications gear, these things cannot be allowed to become a substitute for the more demanding aspect of an emergency care system which is the development of adequate and continuous training programs for all levels of personnel who administer emergency care.

It is to this aspect of Senator Cranston's bill that I would like to direct my attention. He indicated great concern in his introduction by singling out training as a special section of his address and in the first paragraph stated, "To be eligible for a grant or contract, the plan must include provision for the training of sufficient numbers of specialized professional and paraprofessional staff as well as providing for their continuing education."

Through funds from the Department of Health, Education, and Welfare and support from the Board of Supervisors of Los Angeles County, the Los Angeles County-USC Medical Center and the University of Southern California School of Medicine, we have gained some experience and developed programs for the training of several levels of professional and paraprofessional personnel.

A residency training program has been established here and at several other centers for physicians wishing to specialize in emergency medicine. It will be necessary to expand and update these training programs as changing needs dictate. The development of other programs will not be possible unless some financial help becomes available from the Federal Government.

Training programs for those physicians who already staff emergency departments must be established. Otherwise, the skills and training of the paramedical personnel will be for naught. We have barely scratched the surface in this regard, and funds will be necessary to establish and maintain these urgently needed post-graduate programs for physicians.

We have established a training program for physician's assistants in emergency medicine who work at the physician's side and relieve him of many functions that really do not require the physician's direct action. With proper funding, it would be possible to develop other programs of this type. This would go a long way in solving the manpower needs of emergency medical services.

The paramedical training program for firemen in Los Angeles County has been expanded into this facility which has doubled the output of men well trained to recognize and treat certain emergency conditions at the scene.

I will add my agreement, in general, I'd rather have these people taking care of me at the scene of a cardiac attack then my own physician because he doesn't treat emergencies very often.

This program needs to be expanded and others developed at a much more rapid rate and in the future should include highway patrolmen, patrolmen, police officers, and any other personnel likely to be the first person at the scene of an accident or life-threatening incident.

We have also had some experience with the Dunlap-type curriculum for ambulance drivers and attendants. While we agree that the conception of this curriculum by the Department of Transportation

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was a significant beginning, better techniques of presentation and training as well as evaluation will have to be developed. To make this program effective and develop proper methods of evaluating personnel performance will require funds from some source, and I presume it will have to come from legislation of this type. Evaluation is a most important aspect of this type of program. Otherwise, the processing of people through a course and merely stamping them "certified" at the end may not improve the situation.

We are presently discussing the possibility of developing a training program for nurses wishing to specialize in emergency medical services. This could be an important source of untapped manpower or woman power. This type of legislation will stimulate the development of programs of this type as well as other types of programs.

Finally, while I have stressed the training aspect of the bill, I agree totally with the senator's statement, "This bill does not provide a separate authorization for training programs since it is our conviction that training for emergency medical services must be integrated with an emergency medical services system operating in a community. Provision for training programs and continuing education programs are required elements of any comprehensive plan submitted with an application for funding support."

In addition, the position that the bill takes with regard to development of a comprehensive plan with full cooperation and coordination from all facets of emergency medical services in the community has my complete and full support. We have and will continue to support the various efforts of the Los Angeles community to coordinate and develop a system in this area.

In Los Angeles County we are not far from having the type of emergency medical services planning council spoken of in the bill. A representative council of that type has already had several meetings. At its last meeting, firm plans were beginning to emerge with all aspects of emergency care represented. A special emphasis was placed on a systems approach involving the complex aspects of developing a coordinated emergency care system for this large area.

In summary, I support S. 504 because it is urgent and long overdue. Every day of delay in developing an adequate emergency care system in this county and country means lost lives, lives that are young lives and lives that need not be lost if a proper system exists.

Senator CRANSTON. Thank you very much, Dr. Anderson.

First, let me ask you if you have any comment on the reasons given by the administration for opposing this bill.

Dr. ANDERSON. It is sort of like saying we have always had a Committee on Trauma of the American College of Surgeons, and say therefore nothing more needs to be done. I am more concerned with what's going to happen and what's going to be accomplished in the future. To me it seems to be a dodge to gloss it over and not to get at the problem. I don't think anything is going to happen if the administration's approach is followed. I don't think anything is going to happen to emergency services in this country.

Senator CRANSTON. I agree with you.

Are there continuing education programs for emergency room professionals and paraprofessionals available in Los Angeles County now?

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Dr. ANDERSON. Really not to any great extent. We are developing programs here. We do have, as I mentioned, the residency training program. We are developing programs for physicians. We have put on several we think can be improved and updated.

We are training ambulance personnel at the EMT–1 level and also the EMT–2 level. We are also designing some kind of system that provides continuing education because it is very important that this be a continuing, ongoing thing.

Senator CRANSTON. How many are participating presently in such programs?

Dr. ANDERSON. We have completed, I think, about four ambulance training programs with about 30 people in each class. We are now on our third group of paramedics. There are about 30 in each group. That's at least a beginning. The job is tremendous but at least it's a start.

Senator CRANSTON. Is USC Medical School the only medical school in the country with a department of emergency medicine?

Dr. ANDERSON. Yes, it is, and I think that's the reason we have been able to get done what we have done. It just does not make sense that you can put emergency medicine under surgery or under community medicine or anything else.

Senator CRANSTON. How long have you had a department of emergency medicine, now?

Dr. ANDERSON. Since October 1, 1971.

Senator CRANSTON. I can't understand why there are no others in view of the fact so many people are affected by this. How do you explain it?

Dr. ANDERSON. It's primarily inertia.

Senator CRANSTON. Are there others planning to follow suit now?

Dr. ANDERSON. There's a lot of talk about it, quite a few schools have visited us. I really think it is very important for the solution of the problem, you have to have status and you have to attract people, just like you do in surgery or any other profession of medicine. You can't do it if you're always going to be an "unwanted child".

Senator CRANSTON. Will you submit for the record an outline of the curriculum?

Dr. ANDERSON. I would be glad to, sir.

[Information subsequently supplied follows:]

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A PROGRAM FOR THE EMERGENCY MEDICINE ASSISTANT

Los Angeles County/USC Medical Center
in affiliation with
East Los Angeles Community College

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INTRODUCTION

The concept of a trained physician's assistant is new in the United States. It is hopefully representative of medicine's desire to improve the delivery of medical services to the public.

The Emergency Department as a newly evolving area of medicine is the most rapidly enlarging area of medicine presently. Studies conducted by both private and public agencies have indicated that this growth rate will continue. Los Angeles County/USC Medical Center's Emergency Department patient load has increased 30% during the first 6 months of 1971.

To justify a need for a new approach in the delivery of emergency care, 3 problem areas were identified through a survey completed in 1970:

1. Emergency care is not uniform and often inadequate in the majority of emergency departments studied.
2. The pool of physicians available to work in emergency departments is not increasing as fast as the demand for services.
3. All emergency departments surveyed indicated an interest and need for new sources of help.

To meet present and future needs of the emergency department, a sophisticated team of specialists has been proposed. The leader of the team shall be a physician specially trained in Emergency Medicine. Another member of this team shall be the physician's assistant, who is specially trained in Emergency Medicine. The remainder of the team will be nurses, aids, technicians and ambulance drivers, who will receive additional training to enable them to be more effective members of the team. Los Angeles County/USC Medical Center with support from Health, Education and Welfare grant, #MSM 110-71-119, Model Cities grant #9-14%-0-0, and Emergency Medical Technician Training Program (Ambulance Drivers Training Course) grant, #5 C03 HS00019-03, presently offer a two-year residency program in

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Emergency Medicine, a one-year program for a Physician Assistant specializing in Emergency Medicine and is preparing to offer an intensive training course for ambulance drivers. The program for the Emergency Medical Assistant was tailored to the needs of the emergency department and was developed in conjunction with this total team concept.

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HISTORY OF PRESENT PROGRAM:

Due to the stress of a constantly increasing service load and the lack of available trained personnel, the Los Angeles County/ USC Medical Center in conjunction with the Emergency Department in April 1970, agreed to hire 10 discharged service corpsmen, on an experimental basis for use in the emergency department. The role of the corpsman in this setting was that of a poly-technician performing limited tasks, such as casting, wound dressing and wound care. The training consisted of "on the job" training experiences under the supervision of the emergency department's staff. Two factors became apparent immediately:

1. The individual corpsman varied tremendously in their abilities to acquire new skills and in their previous background experiences.
2. Training on an informal "on the job" situation basis does not result in a standardized product.

The present program has attempted to expand the role of this newly created paramedic (Emergency Medicine Assistant) within the context of our "team approach" for the delivery of emergency medical services. Emphasis is placed on the necessity for our program to result in a standardized product which when used by the medical community will be in the best interest of the public which it serves.

Our present program will graduate its first class of ten Emergency Medical Assistants in March, a second class of five in July and is in the process of expanding its total number of trainees in the program to 35, with new sources of funding.

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INTRODUCTION TO TRAINING PROGRAM

The Emergency Medicine Assistant Training Program is based at Los Angeles County/USC Medical Center and was developed in affiliation with the East Los Angeles Community College. The training program is specifically designed to produce a Physician Assistant specializing in Emergency Medicine. This health care assistant training program is one year long and is divided into three 16-week blocks for which the student receives 12 units of college credit per semester. The remaining 4 weeks allows for a 2 week vacation and a 2 week elective period. The didactic and clinical phases move along concurrently.

The didactic phase is made up of lecture-discussions and selective clinical experiences in a laboratory setting. It is conducted by the staff of Los Angeles County/USC Medical Center. Each instructor is selected for his appropriateness for the particular topic.

The bulk of the clinical phase is conducted in a vocational atmosphere. The trainee is put into service in the various areas of the emergency department under the supervision of the emergency department staff. Here he develops his skills and techniques under the guidance of a preceptor, who uses a "certification by task" approach as a guideline for increasing the role and responsibilities of the trainee.

In accordance with the suggestion of the California State Board of Medical Examiners, the entry requirements for the program have included those requirements listed by East Los Angeles Community College so that the Associate of Science degree in Life Science can be awarded to the student upon completion of our one year training program. This program is committed to the principle of giving credit for previous vocational experience. In accordance with this policy, East Los Angeles Community College has agreed to accept the recommendations of the American Council of Education for granting unit credit to corpsmen trained in the Armed Forces. The college representatives have agreed to explore other avenues for awarding unit credit to applicants such as those already set

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down by the California Board of Nursing, Education and Nurse Registration which allow corpsmen to challenge for Registered Nurse licensure and allow Licensed Vocational Nurses to receive unit credit for their previous training (criteria AB845; criteria AB-877).

The program also is committed to the principle of career mobility and in accordance with this is attempting to evaluate the 35 units awarded for our one year of training into the maximum number of transferrable units in accordance with the standards of 4 year colleges.

ENTRY REQUIREMENTS

The entry requirements have been divided into 2 categories, academic background and clinical background. The academic background requirements can be met with traditional college units, vocational units or a combination of both. The clinical background is met by different sources of vocational training and experience.

ACADEMIC BACKGROUND

The student must have adequate previously acquired unit credits in accordance with the standard set by East Los Angeles College so that he can be awarded the Associate of Science degree in Life Science upon completion of our one year training course. This amounts to about 30 units of freshmen college courses which are discussed in detail in the college catalogue.

CLINICAL BACKGROUND

The student must have adequate previous clinical experience so that upon completion of our one year training program he will achieve an acceptable level of expertise. This clinical requirement may be met by any of the 4 types of previous training listed below.

1.0 Corpsman Training Programs

1.1 Army

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1.1.1 Completion of Medical Corpsmen's basic Training Program Course Code 300-91A10, which is a 10-week course and at least one years experience in that MOS (war zone experience preferred)

1.1.2 Completion of Medical Corpsmen Specialist Training Program Course Code 300-91C20. This course includes 760 hours of clinical experience and is felt to be adequate for entry level into this program.

1.1.3 Other Specialists Training Programs, such as operating room specialists. All of these are evaluated on an individual basis with emphasis placed on the actual experiences of the applicant after he has completed his training experience..

1.2 Navy

1.2.1 Completion of basic training Hospital Corpsmen class A School, Course Code B-300-10 and B-300-11 which is a 14-week course, and one year of actual experience in a war zone or independent duty status or some other equivalent.

1.2.2 Completion of Class A and Class B advanced training course, Course Code description B-300-15 and B-300-16 which is a 20-week course. Completion of these 2 schools allows adequate clinical background for entry into this training program.

1.2.3 All other specialists again are evaluated on the basis of their actual experiences after their training program..

1.3 Air Force

1.3.1 Completion of basic training medical service fundamentals course code AOR910 which is 4 weeks and completion of specialist school course code ABR9230 which is 9 weeks and then one year

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of active duty preferrably in a war zone or in independent duty status.

1.3.2 All other specialists again must be evaluated on the basis of their individual experiences and their relevancy to the specific goals of the training program.

2.0 Completion of an accredited nursing school with eligibility for a Registered Nurse licensure.

3.0 Completion of an accredited school for Licensed Vocational Nurses and a Licensed Vocational Nurse license and at least one year's experience in an intensive care area.

4.0 Completion of a newly developed health care assistant program which appears to develop clinical skills relevant to our program. Each program will have to be evaluated on the basis of its clinical merits and its applicability to our training program.

SELECTION PROCEDURE

1. Submit formal application.
   Includes:
   A. Proof of completion of high school education or equivalent (G.E.D.)
   B. Transcripts from all colleges attended.
   C. Proof of successful completion of military medical training and Honorable Discharge (includes diplomas and form #DD214).
   D. Proof of successful completion of relevant clinical training, such as Licensed Vocational Nurse, Registered Nurse, or other equivalent training and respective transcripts when available.
   E. At least two letters of recommendation, preferably from sources relevant to clinical background.
   F. Proof of length of employment where relevant to acceptance criteria.

   Interview with selection committee.

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BASIS FOR SELECTION

The applicants which meet the entry requirements of the program are rated numerically (total points possible 100) on the strength of their academic and clinical background and their performance in the interview. Total points available for academic and clinical background ranges from 70 to 85. The remaining 15 points are given on the basis of the interview, where personal traits and motivation are evaluated. The candidates are then placed on a list in numerical order and taken into the program as places become available. Due to Civil Service regulations, the list can only remain active for 3 months and then must be revised.

CRITERIA FOR SUCCESSFUL COMPLETION OF TRAINING PROGRAM

The trainee's progress is evaluated on a continuing basis. Presently, trainee progress is measured by final written and practical examinations at the close of each topic area. Intrinsic to the vocational training is "certification by task". Each vocational classification has a definitive number of tasks associated with it. Successful performance of these tasks within the vocational time alloted is a prerequisite for continuation in the program. Trainees failing to successfully complete a topic area or task will not be certified.

EVALUATION

The Emergency Department Assistant Program (EDA) is developing the mechanism to measure expected learning outcomes against actual outcomes. Three distinct areas have been isolated in order to assess them from relevancy to training.

1. Curriculum choices
2. Instructional relevancy
3. Learner progress

CURRICULUM EVALUATION

Curriculum evaluation often is confounded with instructional

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evaluation. It has been suggested that one must put the curriculum into use, and then measure the results in terms of student achievement and other specified criterion. Curriculum implies intent and answers the question, "What should be taught". One inherent strength in the Emergency Medicine Assistant Program is that training is conducted in a clinical setting, and preceptors are chosen from the various medical disciplines. They are instrumental in selecting the appropriate learning experience relevant to their specialty.

For example - The chief of obstetrics analyses carefully the needs in dealing with obstetrical emergencies and is instrumental in selecting out of a wide universe of obstetrical medicine the knowledge, skills, and attitudes relevant to handling emergencies in obstetrics. He also aids in developing instructional strategies for appropriate learning to take place.

INSTRUCTIONAL EVALUATION

Evaluation of the instructional program is ongoing and is usually informal and subjective. A number of training dimensions are isolated for the purpose of evaluation. The instructional dimensions include various strategies to produce optimum learning. Scope and sequence are assessed for breadth and depth, while sequencing is scrutinized for proper ordering of curriculum choices. Time allocations are constantly reassessed to determine if the proper time commitment has been made. Methodologies are evaluated for their appropriateness to the proposed learning outcomes.

In general, the total instructional program is constantly being reassessed by an instructional planning committee made up of a number of physicians and a trained medical educator.

EVALUATING THE LEARNER

Evaluation of learner progress is done on a continuing basis. Although pre-testing the trainee to determine level of knowledge or skill is not an intrinsic part of the training program, provisions for this diagnostic approach are evolving. At present, student progress is measured by taking final examinations at the close of a

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topic. Quizzes also are used as a means of determining student progress. Didactic learning is made relevant by reinforcement during clinical training when the trainee is often on a one-to-one basis with physician preceptors. During these periods, any confusion or misunderstandings developed during the didactic period can be clarified.

Written exams:

95 - 100% - upper third
85 - 95% - middle third
70 - 85% - lower third
70% - not acceptable level of knowledge

Skill testing in work areas:

Excellent - upper third
Above average - middle third
Performs safely - lower third
Inadequate

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CURRICULUM AND INSTRUCTION

THE CURRICULUM

The curriculum is a structured series of intended learning outcomes. Learning outcomes consist of three categories: Knowledge, Skills, and Attitudes. Knowledge includes:

1. Facts which are items of verifiable information.
2. Concepts which are mental constructs.
3. Generalizations which include laws, principles, and rules.

Attitudes are subsumed under the heading values and includes such things as societal prescriptions and individual preferential dispositions.

Not only is the curriculum divided into knowledge, skills, and attitudes, but these also are related to the various medical specialities that are taught. All curriculum decisions are based upon relevancy to the clinical tasks to be performed. Once curriculum choices are made, then appropriate learning goals are formulated and learning objectives develop to meet those goals. The following list is included as a curriculum outline only, and is designed to show the range of topics included in the program.

CURRICULUM OUTLINE

The curriculum will be divided into didactic lectures, laboratory and preceptorship training as described in the general curriculum outline below.

Orienting the trainee to the Curriculum and Instructional Program.
General Principles of Medicine
Introduction to Pharmacology
Topographical Surface Anatomy
General Principles of Surgery
Acute Medical Emergencies
Emergency Room Procedures
Laboratory Procedures

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Nursing Procedures
Organ System
- Eye
- ENT
- Pulmonary
- Cardiac
- Genito-Urinary
- Abdomen
- Neurologic
- Extremities (upper and lower)
- Endocrine
- Hematologic

Internal Medicine Problems
- Pulmonary and Cardiac
- Alcohol Abuse
- Drug Abuse
- Diabetes

General Medicine - Acute
Acute Respiratory Problems
Acute Cardiac Problems
Psychiatric Problems
Pediatrics
Obstetrics and Gynecology
Dental Problems
Rehabilitation Medicine
Community Medicine
Medical Administration

INSTRUCTION

The instructional component may be viewed as an output system. Included in this system is a teaching behavior repertoire and various teaching strategies. The various parts of the instructional program are designed to deal with relevant topics, as versus "courses" or "instructional units." It is during the instructional planning phase that curricular choices are selected and organized into scope and sequence, time allocations are made, and appropriate faculty assigned. Instruction answers the question, when will it be taught, where will it be taught, and who will teach it.

All instruction in the Emergency Assistant Program is divided into

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three categories under the general label "teaching strategies." These are. Methodology, Arrangement, and Setting. Teaching methodologies concern themselves with manipulating the training environment to gain optimum learning. This includes selecting and determining the appropriate time for the various methods of teaching such as the lecture, the lecture-discussion, and the seminar. Arrangement of the learning environment includes large group presentation, small group, and an individual learning experience. The setting includes the physical layout for the teaching-learning process and includes formal classrooms, clinical areas, laboratories and the library.

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LOS ANGELES COUNTY-UNIVERSITY OF SOUTHERN CALIFORNIA MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

Information On The Residency Training Program In Emergency Medicine

This bulletin replaces our previous one written in September, 1972. It reflects significant changes in the curriculum, especially the first-year residency.

The Los Angeles County-University of Southern California Medical Center is one of the largest hospital facilities in the world. The Emergency Department sees approximately 850 patients per day and is organized into three sections: (1) The Emergency Clinic (ambulatory, walk-in patients) has approximately 24 cubicles and sees 300-400 patients in 24 hours, (2) Emergency Admitting Area (stretcher evaluation cases) processes approximately 200-300 patients per 24 hours, and (3) the Emergency Minor Trauma section sees 100-150 patients daily. Each of these three sections has a section head and a staff of full-time salaried physicians. Within the next 12 months, the Department will add a large additional fourth section, The Emergency Diagnostic and Evaluation section. This will be a 50-bed facility which will be comprised of 15-18 Medical/Surgical Acute Care guerneys and 38 "holding" beds for patients requiring up to 24° of further evaluation and/or treatment for disposition.

Some background of the genesis of the Residency Training Program at LAC-USC Medical Center is appropriate. Despite the special comprehensive skills necessary for the competent practice of medicine in an emergency department, until recently there were no appropriate training programs. Lack of a physician so trained has long been known to the profession and more recently to lay persons and government circles. At the LAC-USC Medical Center, the very size of emergency services has made it a focal point of both lay and medical community attention. These services have also gained the understanding and support of the Medical School and Administration through the years. In this context the previous Director of the Emergency Department, Dr. Ann Elconin, conceived a program to train Emergency Physicians, Physician's Assistants, and Emergency Medical Technicians. Subsequently, these plans were formalized and supported financially in part by a federal contract. These programs began in July, 1971, with the Department under the direction of Dr. Gail V. Anderson. Crucial to the development of these programs has been recognition of the Emergency Department as a separate academic, as well as an administrative department.

We envision the Emergency Physician practicing in the community solely within the confines of an Emergency Department. Our objective is to train him to 1) provide definitive care of acute and/or episodic minor medical/surgical problems, 2) evaluate and stabilize acute major medical/surgical problems (for at least the first hour), 3) be able to understand and utilize community "out-reach" services, and 4) be knowledgeable about staffing, function, and financing of Emergency Department operations.

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Towards these objectives a two-year residency program has been extant since July, 1971, with five Residents in each year. Our experience and anticipated changes are as follows: Up to the present time, the greatest part of the Resident's time has been spent rotating through other services. This has been necessary because until the Diagnostic and Evaluation Unit is built very little care of acutely ill or injured patients can be delivered in the Emergency Department. Rather, they are quickly delivered to "2° admitting areas" of Surgery, Medicine, etc. for definitive acute care. The completion of the Diagnostic and Evaluation Unit (estimated completion: Winter 1973-74) will correct this unfortunate situation. Rotating the Residents largely through other services has not proved satisfactory. Since the Resident "class" has rotated as a group, other services have had six "extra" Residents one month and none the next, making participation and true patient responsibility difficult to obtain. Rotations in such a manner have relegated the Resident to "second-class citizen" status. Despite good didactic teaching by other departmental faculty, it has been impossible to always maintain pertinence to the Emergency Department situation; also, such teaching involves prohibitive financial outlays by the Emergency Department. Then, too, it has been difficult to obtain appropriate clinical experience in in-patient and out-patient clinic settings. Also, it has not been possible to order a curriculum that teaches subjects with proper emphasis and in a logical temporal progression. Finally, it cannot develop in Residents the attitudes and type of decision-making unique to Emergency Physicians.

For these reasons we will, beginning in July, 1973, bring the majority of first-year resident experience and teaching into the Emergency Department.

The First-Year Residency 1973-74

The first year has been designed to cover the areas of adult Ortho, Medicine, Surgery, and OB-GYN - all as an Emergency Physician. Two consecutive weeks vacation during the second six months are planned.

The Following description is current and obviously subject to modification before July, 1973:

About three-fourths of the Resident's time will be spent in the Emergency Department. The balance will be spent in appropriate Outpatient Clinics (Hand, Trauma Followup, etc.), Medical ICU, and "free time." Until completion of the Diagnostic and Evaluation Unit, evening shifts will be spent on the 2° admitting areas of the Medical, Surgical, and Ortho. Time in the Emergency Department is estimated in the following tentative proportions: 4 shifts in 1350 (stretcher or "horizontal" patients), 4 in 1060 (trauma area), and 1 in 1050 (drop-in or "vertical" patients). Both day (8 a.m. - 3:30 p.m.) and evening (5 p.m. - 12 M) shifts will be manned. Formal teaching sessions will be held in the 1½-hour period between these shifts, enabling all Residents to attend. Such sessions will be held Monday through Friday.

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(See attached a sample two-week schedule.) The teaching sessions will be arranged in such a manner that the most critical skills and knowledge will be taught in the beginning of the year (airway, intubation, C.P.R., I.V.'s, and C.V.P.'s, shock, etc.) with less critical areas dealt with throughout the rest of the year in a "tapered fashion." (The following section, "Teaching Techniques," outlines the types of sessions anticipated.)

Residents will work 7 shifts/week - not necessarily, although usually, predominantly days. A Saturday evening shift will occur about every three weeks. There will be no Sunday or early morning hour shifts. The work week figures out to just under 60 hours of which 7.5 hours will be formal didactic instruction. There will not be any "on call" duty in addition. Such a schedule is rather benign - consonant with the concept that a well-rested Resident can be an enthusiastic and eager one. (We don't believe in "purification by fire.") On the other hand, there are inherent definite service obligations, heavy background reading requirements, and resident teaching preparation, some of which is expected to occupy time in addition to the 60-hour.

Teaching Techniques

A. Reading - probably the most important part of the Resident's training is self-training. This is most readily performed by an active pursuit of pertinent literature throughout his training. This should include the standard textbooks, monographs, and pertinent current periodicals. In this regard, the Department has constructed a Department Library to include all of these reading materials which are available 24 hours a day.

B. Lectures - this form of presentation of didactic material has always been and will continue to be an important part of the teaching program. Most lectures have previously prepared bibliographies, the salient articles of which are available for prereading. Outlines of the lecture content are the rule. Some are videotaped.

C. Case conferences - these can be organized in many ways: 1) Death Conference, 2) CPC, 3) Morning Report, 4) In-patient followup rounds, etc.

D. Resident presentation of conferences - it is extremely important that the Resident be responsible for developing conference material on a given subject himself from time to time. This enables him to go into a subject in depth, organize subject material, review literature, and develop teaching aptitudes, and public speaking abilities.

E. Preceptorship - the Resident should be taught on a one-to-one basis at frequent intervals in order to give him individualized attention. Also it allows the preceptor to evaluate his skills and knowledge.

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F. Practicals - certain procedures (e.g., casting, estimation of pulsus parodoxicus, etc.) can be learned by one Resident performing upon another. Others can best be done with cadaver, D.O.A., or animal material (suturing, C.V.P., etc.).

G. Simulation - the use of the "Sim I" (computerized intubation model which feigns apnea, arrhythmias, cardiac arrest, etc.) and "Resusci-Ann" (for cardiopulmonary resuscitation) are available at U.S.C. and have proven invaluable to develop the habit of correct techniques.

H. "Video-reviews" - by the actual videotaping of patient care situations, insights into "goofs" and their resolution can be gained in the non-crisis atmosphere of the conference room. The videotape can also be used to capture salient points in the presentation of unusual patients.

I. Commercial film, audiovisual material - quite a number of these have been reviewed and are frankly disappointing. We do not anticipate using many.

J. Teaching - is one of the most effective means of learning. The Department trains all levels of Medical Students, Interns on elective, Emergency Physician's Assistants, and ambulance attendants. The Residents very appropriately participate in their training.

K. Free time (!) - this is important for use in following up admitted patients, prereading references for future lectures, reading to clarify recent patients, etc.

All of the above techniques are already or will soon be used by the Department.

Second-year Residency Program 1974-75

At this time it is too early to outline precisely the second-year experience for 1974-75. However, in a general way, this year is designed to give the resident experience in smaller specialties and also act in Senior Resident role in the Emergency Department. Residents will rotate singly in a staggered fashion through the given services. On a specific service, they will carry the responsibility deemed most appropriate by the given service, usually that of a Junior Resident. Here they will act in the capacity as a member of the service team with Interns functioning beneath them and Senior Residents above them. These rotations will be tailored to give the Resident appropriate experience, e.g., emergent and episodic outpatient clinic problems, and not ordinarily in-patient responsibilities.

The following are approximate time allocations: Ophthalmology - 4 weeks; Dermatology - 4 weeks; Burn Unit - 4 weeks; Pediatrics - 8 weeks; Psychiatry - 4 weeks; Radiology - 4 weeks; Elective - 4 weeks; Vacation - 2 weeks. Total: 34 weeks.

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The remaining 16 weeks would be spent in the Emergency Department as follows:

Days: The Resident will probably be assigned in 4-week blocks to specific areas (probably 1060 and 1350) where he will assume a supervisory and teaching role.

Nights: As in the first year, the second-year Resident will work about two evening shifts per week. In a month's time the shift would be allotted roughly as follows:

Los Angeles County Emergency Department - 4 shifts
Community Emergency Department - 2 shifts
Neurosurgery - 1 shift
Urology - 1 shift

During the second year a regular time must be set aside for workshops and seminars on the non-clinical aspects of Emergency Medicine. The following areas are some of those to be included: Medical-legal implications of rape, crimes of violence, drug and alcohol abuse and coroner cases; ambulance services; extrication and rescue; hospital and area-wide disaster and emergency care planning and execution; city, county, and state laws regarding delivery of emergency services; emergency department functions, staffing, financing, and administration; types of contractual agreements between hospital and emergency physicians; emergency communications and transport systems; safety and accident prevention programs, etc., etc.

The above represents the formal curriculum of the first and second years. As stated before, it is subject to change, but interested parties will be notified of significant abridgments - as with this bulletin itself.

Thirteen first-year Residents have been selected for the academic year 1973-74 (one is being financed by the Air Force).

Applications for 1974-75 must be completed by November 2, 1973. Letters of decision will be mailed by November 16, 1973, informing applicants of one of three statuses: acceptance, waiting list, or rejectance.

The Residency stipend is $1,195/month for the first year and $1,294/month for the second at present.

Finally, for the present the American Medical Association has denied specialty status to this emerging specialty. But recent developments make us quite optimistic this will change in the near future.

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SAMPLE TWO-WEEK SCHEDULE

FIRST-YEAR RESIDENCY

	Mon	Tues	Wed	Thurs	Fri	Sat
WEEK #1						
Day 8:00-3:30	1060	1350	Hand Clinic	1050	"Free Time"	
Conference 3:30-5:00	Preview for Tues.: anatomy and techniques of CVP's	CVP cadaver practical	Grand Rounds	Case Conference: Surgical	Lecture: Adult Asthma	
Evening 5:00-12 Mid.	1350			1060		
WEEK #2	Mon	Tues	Wed	Thurs	Fri	Sat
Day 8:00-3:30	1060	1350	Trauma P.U. Clinic	1060	1350	
Conference 3:30-5:00	"Video Review"	Pharmacology Seminar: Anti Arrhythmics	Grand Rounds	Case Conference: Medical	Lecture: Elbow injuries	
Evening 5:00-12 Mid.			Surgical 2° Adm. (or D & E)			Ortho 2° Adm. (or D & E)

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FRIDAY WEEKLY DEPARTMENTAL TEACHING CONFERENCE ("GRAND ROUNDS")

This conference has evolved considerably since its "inauguration" in April 1972, and it has now achieved, I believe, a successful format. Thus, this bulletin is designed to supplant that of April 1972 and should be used by conference leaders for preparation. All Residents and Department Faculty will participate.

The conference objective is to present some subject of specific interest to the Emergency Physician. The presentation may be a lecture, demonstration, combination of both, or any other imaginative format. Please consult Dr. Dailey well beforehand on choice of subject, teaching materials, and mode of presentation. The presentation should be limited to 60 minutes, in order to leave 15 or more minutes for discussion and questions.

Since we are anxious to "capture" these sessions, they will be audio or audiovisually taped. Thus, please discuss with Neena Lyon (Room 1345) preparation of slides, blackboard use, etc., so we can be assured of sufficient technical quality.

We insist upon submission of a bibliography at least one week in advance of the conference. Please list the references in order of their general salience and importance. We will Xerox copies of the first 4 references which will be kept in a folder in the Emergency Department Library (Room 1345) for pre-reading the week before the conference. Thereafter, these articles will be filed in our departmental reprint collection. Also annotate some helpful comment to each reference (e.g., "brief superficial review of subject", or "very practical points in approach", or "comprehensive basic science review", etc.); this will be very helpful in future retrieval of articles.

Also an outline of your presentation should be handed out at the session. This will allow organized note-taking, anticipation, appreciation of organization, etc.; most important it gives the audience substantive material for future reference.

For preparation of conference material, we suggest the following sources:

1) The Lange publication: "Current Med. References"
2) The Index Medicus
3) The AIM-TWIX computerized service of our library, which searches out pertinent material from the world's literature. Call USC (7-2091) and ask for Susan Marquez (Ext. 346) and she will assist you.
4) Search out appropriate faculty members for advice and references. In a Medical Center of this size, there is always a little man in some closet or dim corridor who is an expert in the topic of your choice.

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For secretarial help, you should use the services of Dr. Dailey's secretary, Janet Saito.

Present Conference Time: 8:30 - 10 A.M., Fridays, beginning October 27, 1972

Present Conference Place: Lounge of Interns and Residents Dormitory

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STATE OF CALIFORNIA—AGRICULTURE AND SERVICES AGENCY RONALD REAGAN, Go

DEPARTMENT OF CONSUMER AFFAIRS
BOARD OF MEDICAL EXAMINERS
1020 N STREET, SACRAMENTO, CALIF. 95814
TELEPHONE: 916—445-4954

GENERAL INFORMATION REGARDING CALIFORNIA
LICENSURE BY RECIPROCITY OR ENDORSEMENT

1. Reciprocity licensure is permitted by California law to applicants who hold credentials issued by the NATIONAL BOARD OF MEDICAL EXAMINERS or ANOTHER STATE OF THE UNITED STATES ... provided such persons are graduates of medical schools located in the United States and Canada which are approved by this Board, and their credentials were issued as a result of satisfactory completion of the full examination given by the NATIONAL BOARD OF MEDICAL EXAMINERS or the LICENSING STATE.

2. If the credentials, upon which your application is based, are more than FIVE years old from the date of issuance to the date the application is received in this office, you must successfully pass an ORAL examination.

   There is no provision in the law which authorizes the Board to grant an exemption to the five-year oral examination requirement of reciprocity applicants for the time spent in the military service.

3. The oral examination usually covers the general areas of medicine--and also takes into account the applicant's area of medical specialty.

4. If you are a graduate of a foreign medical school (located outside the United States and Canada) you do not qualify for reciprocity. Please request further information regarding your credentials and the application form for Foreign Medical School Graduates.

5. There is no provision in the California Medical Practice Act which permits the Board to grant licensure by reciprocity on the basis of credentials issued by the Canadian Medical Council.

6. Reciprocity without examination is not granted to an applicant who has failed in the written or oral examination previously given by this Board.

7. United States citizenship (either pending or granted) is not an additional requirement of the California law.

8. The California law does not provide for the issuance of any temporary, limited or special type of license--even though an application for a California Physician's and Surgeon's certificate has been filed and is pending.

ADDENDUM: One must obtain California license within 8 months after beginning Residency at LAC-USC Medical Center.

Form ME XC(Rev 4/72)

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Senator CRANSTON. Your department trains all members of the emergency medical staff, does it not?

Dr. ANDERSON. Yes.

Senator CRANSTON. What types of personnel are currently being trained?

Dr. ANDERSON. Doctors are in residency training and there will be 24 next July, we will be graduating 12 each year. I spoke of the physician's assistant earlier, but that is another level of training we haven't talked about.

We take former corpsmen, whom we were speaking about, who have some college background and add a curriculum of a year to that. They are well trained physician's assistants who really do relieve the physician from many responsibilities and upgrade care.

Senator CRANSTON. Are paramedics who have completed their training limited by local or State laws in the full utilization of their skills?

Dr. ANDERSON. The paramedic people, I think, have adequate legislation to permit them to utilize their skills. The physician's assistant, though, is a level working in the department. We have had considerable difficulty getting organized medicine to accept it.

Senator CRANSTON. If you could give us any specific suggestions for the record as to an appropriate way to deal with that problem I would be grateful.

Dr. ANDERSON. I wish I could do it without risking professional suicide.

Senator CRANSTON. I'm working on the bill to shield confidential sources of information.

Dr. ANDERSON. All right.

Senator CRANSTON. Perhaps we could figure out some confidential way to get this from several sources and have all of the sources confidential.

I thank you very much for your very helpful testimony and the hospitality you have shown.

Dr. ANDERSON. You are most certainly welcome.

Senator CRANSTON. Our next witness is Deputy Fire Chief Kenneth Long, Commander of Operations, Los Angeles City Fire Department.

Chief LONG. Good morning, Senator.

Senator CRANSTON. Chief, we welcome you.

If you could be brief in your verbal testimony, I would appreciate it.

STATEMENT OF KENNETH LONG, DEPUTY FIRE CHIEF, COMMANDER, OPERATIONS, LOS ANGELES CITY FIRE DEPARTMENT

Chief LONG. If I could, I would like to move to my recommendations and then the summation.

Senator CRANSTON. That would be great.

Chief LONG. We appreciate very much, of course, the opportunity to testify before the committee. In our testimony we felt it was important to take Senate bill 504 and also Senate bill 654 because of their parallels and make our recommendations based on those.

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The first recommendation we made, of course, is the committee consider the consolidation of the bills, taking the best of both and add new provisions to make the final bill more realistic and practical in its application. We felt there were some negatives in each bill and positives in each bill, and they should be consolidated.

We felt the establishment of an "Emergency Medical Services Administration" within the Department of Health, Education, and Welfare should be a top priority requirement of the bill. We feel the administration of the funding and the setting of minimum standards, et cetera, should not be by a committee but by a single, responsible administrative head under the Secretary.

We do not believe the responsibilities of that agency should, in any way, move toward, or could we endorse any concept that would establish a Federal agency with the responsibility of supervising and/or operating a nationwide emergency medical system.

We endorse the consolidation of all Federal funding for emergency medical services under one controlling agency.

We believe there should be provision for financial aid to communities in the expansion, development, and betterment of their existing emergency medical systems with the intended goal of establishing an optimum system at some point in time.

We believe there should be assurance for financial assistance to smaller geographic areas than the county level for improvement of emergency medical services.

We believe there should be provisions for financial assistance to communities so that personnel currently involved in providing some aspect of emergency medical services can be trained to a higher capability without placing the entire burden on the community. For example, most emergency ambulances are manned on a fixed-post basis; in other words, there is always someone there who has an ambulance. Then those persons have to go to a central location to receive their training and other crews have to back them up. It places a burden on the community we believe could be well shared by the Nation as a whole. Keeping in mind Los Angeles City where we have a commitment to move ahead, it is very significant here. Moving to a smaller locale, the burden could be staggering on the budget of a small community.

We believe the statement beginning on line 8 and continuing through line 13 on page 7 of S. 654, should be eliminated or modified. This does not in any way indicate we are interested in eliminating or curtailing private enterprise; in fact, we encourage it. However, when private enterprise does not provide adequate services, the appropriate governmental agency must step in and take action to provide services as needed. The agency involved should be eligible for assistance under the provisions of the bill.

We believe the bill should provide for the encouragement of private medical centers to become involved in providing emergency medical services including emergency care rooms, intensive care rooms, and full care follow-up treatment as necessary.

Here in the city of Los Angeles and I believe in Los Angeles County, the paramedic concept is not going to be fully utilized unless the hospitals in the area become involved in an established com-

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munication network and have the capability of working with the paramedic in supplying service.

We believe any bill adopted should stimulate and encourage the Nation's medical schools to establish a field of specialization in emergency medical skills.

We believe research funding in the emergency medical field should be for the analysis of the results of emergency care. Enough has been done at this point in time as to what care should be given. We believe we should move ahead and give that care and analyze the results of it. Then perhaps at some point, in time, recommend changes to improve it.

I think, to move on, one of the key problems in developing mobile heart units is the provision of additional radio frequencies so that telemetry equipment can be fully utilized.

The solution of all of the above problems cannot be resolved at the local level. Hopefully, actions taken by you and your colleagues in Congress will assist us in our endeavors to provide quality emergency medical services.

I would like to talk on the so-called single emergency number, 911. Even though the State adopted legislation making it mandatory in 1977, we have severe reservations on it locally. In reviewing the emergency telephone calls coming into the Los Angeles Fire Department switchboards and to Los Angeles Police Department switchboards on an annual basis there are an average of 200 calls per hour. Unfortunately, the peak load, peak hourly load, comes at about the same time for all three needs: fires, ambulances, and police services, at about 6 p.m. in the evening. We feel the 911 system, unless there are some improvements made, is going to be nothing more than an answering service that is going to have to funnel calls to emergency services and the cumulative problem will be staggering.

Senator CRANSTON. What do you recommend?

Chief LONG. We really don't have an answer. We do believe the telephone company should have an automatic number of identification so the incoming calls could be identified by the locale and the call could be funneled to the right jurisdiction more easily.

Also, we believe there is a danger—we know we have problems in our own service today—of losing callers because people will say, send an ambulance, and fail to give you the information you really need in order to send that ambulance.

Senator CRANSTON. How would automatic number identification work?

Chief LONG. I don't know exactly the technical answer but I believe it is possible. Essentially what it does is hold the caller some way so the telephone number is held, can be identified readily at the telephone company, to the emergency service.

We believe local input is essential to any system that is developed. We believe the local people should be involved in the development of any plan that is submitted for funding.

On funding, we think that salaries of the people undergoing training should be supported federally for reasons I have already stated.

I think that sums up the comments I would like to make at this time.

Senator CRANSTON. Thank you very, very much.

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I would like to say, first, I am delighted to have your comments on the immense task involved in putting together a representative council for the L.A. area to provide for an emergency medical system.

In a very complicated governmental area, including so many jurisdictions, do you think it would be feasible to have a smaller group that could adequately represent all of the elements that ought to be represented?

Chief LONG. Yes, I do. We have sort of that type organization in the county now working with the various communities. I believe it is quite effective, although I can't speak for the smaller communties. I know the city of Los Angeles and the county of Los Angeles liaison is very good and I think they are supportive of each other.

Senator CRANSTON. Would you think the larger group might delegate responsibility, on the other hand, to a smaller group?

Chief LONG. I couldn't address myself to that without being quite concerned about the lack of coming to decision by a committee. I don't like large committees. I think there is difficulty in coming to agreement on issues. I really think there are some serious dangers.

Senator CRANSTON. Have you had problems in getting adequate radio frequencies?

Chief LONG. Not at this point in time but we are looking ahead and we do see problems. As you may know, the city council in Los Angeles has committed itself to bring all of the emergency ambulances up to paramedic level. We have 27 ambulances operating now and intend to put four additional in tomorrow morning. That is 31 ambulances and that would probably be the third largest system of completely emergency ambulances in the country. If our budget requests are approved, and I believe they will be, July 1 we will add four additional ambulances which will make us the second largest emergency ambulance system in the country, second only to New York City hospitals.

If we are going to have all of the ambulances committed to the paramedic level service and providing the hospitals in the area will get on board and provide the hospital base station capability, I am sure we are going to have to have additional radio frequencies. It should be a must to begin planning for it now.

Senator CRANSTON. How do you go about assigning firemen to emergency medical duty?

Chief LONG. Mainly it has been on their request for the most part although we are moving away from that. We are going to the ambulance technician. Within six months to a year, all of our ambulances will be manned by nonfiremen, specialists in the emergency ambulance field.

Senator CRANSTON. Do firemen who are doing that work receive the same benefits in pay for both types of duty?

Chief LONG. Yes, sir, they do.

Senator CRANSTON. Do firemen have a preference one way or the other for one type of duty?

Chief LONG. Speaking very subjectively, most firemen would rather not do the ambulance work. However, there is a corps of people who are very dedicated, and have been for years, they are involved in it and they love it. They just enjoy every minute of it.

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Senator CRANSTON. Do you get into problems over city and county jurisdiction?

Chief LONG. No, I don't believe I could say we have a problem. We go to the emergency and handle the emergency in the best way possible. I think Los Angeles County operates the same way.

As to the communities in our county, the boundary lines aren't a significant problem. As you probably know, the State of California has the best highway system in the country, or, in fact, in the world. Here in Los Angeles County I believe the relationships are outstanding.

Senator CRANSTON. Do you feel there is adequate coordination between the city and the county?

Chief LONG. No, I think it could be improved. I don't think it is ideal, it could be improved. We are working in that direction.

Senator CRANSTON. When you do assign firemen to the emergency medical unit, where do they get their training?

Chief LONG. Of course, all firemen have their advanced first aid card, and we start them on an internship program right out with the ambulance, getting as much experience as they can. We feel this is one place we really lack. All of the attendants and a great number of firemen have attended the EMT-I level training and many firemen have moved on their own to receive the EMT-I level training.

In the future, as we hire new people, we will be hiring classes in ambulance drivers probably at the end of April and the beginning of May. They will go into a regular recruit training program and graduate from a recruit academy at the EMT-I level of training and certification before they ever go out into internship.

Senator CRANSTON. I thank you very much. You have been most helpful to us.

Chief LONG. Thank you.

[The prepared statement of Deputy Chief Kenneth Long follows:]

PREPARED STATEMENT OF KENNETH LONG, DEPUTY FIRE CHIEF, LOS ANGELES CITY FIRE DEPARTMENT, LOS ANGELES, CALIF.

Thank you for your invitation to appear before your Committee Hearing on Senate Bill 504.

It is obvious that there is a need for legislation in the field of emergency medical services and your statement before the Senate while introducing the bill brought forward the serious need for improvement in emergency medical systems throughout the United States.

The following comments are meant as constructive criticism of the bill and are offered with the intent of pointing out areas in which the bill might be improved. Also, a question is raised as to the advisability of combining Senate Bill 504 with Senate Bill 654, taking the better points of each and making improvements so that the end product will lead us to our ultimate goal of improved emergency medical services for all citizens.

Senate Bill 504 appears to require the ultimate in an emergency medical system; i.e., each plan submitted has to contain provisions for many items and theoretically, failure to provide for each item would invalidate the request for assistance.

The bill appears to fail to take into consideration the existing emergency medical services available in communities. With respect to the greater Los Angeles-Long Beach area, it fails to take into consideration the complexity, organization, and number of local governments.

It appears that the benefits of the bill are more likely to be enjoyed by a community without any existing emergency medical system rather than assisting these communities that have already taken steps and committed themselves to making emergency medical services available to their citizens.

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The bill fails to provide incentives to local government to expand, improve, and build on existing capabilities.

Section 635 of the bill requires the submission of a "plan" and then, as an element of that "plan", the establishment of an "Area Emergency Medical Services Planning Council". It would seem that the Planning Council should be established first and then the "plan" be submitted as a result of that Council's best judgment on the needs of the community.

Section 635(c) requires that a universal emergency telephone number be an element of the plan. This has the effect of eliminating any community from consideration if such a telephone number is not available.

As you may know, there are many problems in the adoption of such a telephone number in the greater Los Angeles area both by reason of the many local jurisdictions and communities and also because of the tremendous emergency telephone call work load experienced during peak load hours. It is our belief that before such a system can be implemented there must be a provision for automatic number identification of incoming calls. At this point in time, the local telephone agencies have not demonstrated the ability to provide such a service.

Section 636(a) of the bill specifies the composition of the "Area Emergency Medical Services Planning Council". As has already been mentioned, the Council should be established before a plan is submitted. In addition, it is our belief that the specified make-up of the Council may not provide adequate local representation. It is questionable that all public safety agencies must be represented. For example, if the local police department has no administrative or operational involvement in the providing of emergency medical care, why should they be represented on the Council other than on a token basis? In Los Angeles County with its 76 cities and vast unincorporated area, the problems of attaining proper local representation can readily be seen.

Section 638 of the bill calls for the Secretary of HEW to establish a "National Emergency Medical Services Advisory Council". Here again, it appears that local representation is inadequate.

Recommendations: That the Committee considers the consolidation of S. 504 and S. 654 taking the best of both and adding new provisions to make the final bill more realistic and practical in its application.

That the establishment of an "Emergency Medical Services Administration" within the Department of Health, Education, and Welfare be a top priority requirement. However, the responsibilities of such an agency should be limited to the establishment of minimum standards according to local conditions and the awarding of grants and contracts as funds are available. We do not endorse any concept that would establish a federal agency with the responsibility of supervising and/or operating a nationwide emergency medical system.

We endorse the consolidation of all federal funding for emergency medical services under one controlling agency.

Provide for financial aid to communities in the expansion, development, and betterment of their existing emergency medical systems with the intended goal of establishing an optimum system at some point in time.

Assure provisions for financial assistance to smaller geographic areas than the "county" level for improvement of emergency medical services.

Make provisions for financial assistance to communities so that personnel currently involved in providing some aspect of emergency medical services can be trained to a higher capability without placing the entire burden on the community. For example, most emergency ambulances are manned on a "fixed post" basis; i.e., there is always someone available for ambulance response. If ambulance crews are to be trained more adequately (at least to EMT I level and at some point in time to EMT II level), the financial burden is considerable. If the crews are trained at some centralized facility and unavailable for duty on their ambulances, other personnel must be used to fill for them during their absence and this most generally requires the payment of overtime.

That the statement beginning on Line 8 and continuing through Line 13 on Page 7 of S. 654 be eliminated or modified. This does not in any way indicate that we are interested in eliminating or curtailing private enterprise, in fact, we encourage it. However, when private enterprise does not provide adequate services, the appropriate governmental agency must step in and take action to provide services as needed. The agency involved should be eligible for assistance under the provisions of the bill.

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That the bill provide for the encouragement of private medical centers to become involved in providing emergency medical services including emergency care rooms, intensive care rooms, and full care follow-up treatment as necessary.

That the bill stimulate and encourage the nation's medical schools to establish a field of specialization in emergency medical skills.

We believe that research funding in the emergency medical field should be for the analysis of the results of emergency care. Enough has been done at this point in time as to what care should be given.

It is hoped that your Committee will recognize that these recommendations are based on conditions as observed in the Los Angeles area and that they may or may not be valid when applied to the nation over all.

The Los Angeles City Fire Department operates one of the largest fleets of emergency ambulances in the country. The City Council of Los Angeles has committed itself to raise its ambulance personnel to paramedic level and equip its ambulances so that their expertise can be utilized.

Los Angeles City, Los Angeles County, and private enterprise are involved in providing emergency care in hospitals and emergency care centers. If the "paramedic" concept is to be fully utilized, more and more coronary care units are going to have to be established throughout the area. There are many problems entailed in the establishment of such centers, including funding for equipment and training of personnel.

One of the key problems involved in developing "mobile heart units" is the provision of additional radio frequencies so that telemetry equipment can be fully utilized. The solution to all of these problems cannot be resolved at the local level. Hopefully, actions taken by you and your colleagues in Congress will assist us in our endeavors to provide quality emergency medical services.

Senator CRANSTON. We will now hear from a panel from the Ambulance Association.

STATEMENT OF WALTER SCHAEFER, PAST PRESIDENT CALIFORNIA AMBULANCE ASSOCIATION, SCHAEFER AMBULANCE COMPANY; REXFORD D. CRANDELL, VIETNAM VETERAN; RAND BROOKS, PRESIDENT LOS ANGELES COUNTY AMBULANCE ASSOCIATION, PRESIDENT PROFESSIONAL AMBULANCE, GLENDALE; WALTER HOWELL, PRESIDENT CALIFORNIA AMBULANCE ASSOCIATION, GOODHEW AMBULANCE, LOS ANGELES; AMBULANCE ASSOCIATION PANEL

Senator CRANSTON. Mr. Schaefer has a paramedic that he would like to bring up.

Please bring him up now.

Mr. BROOKS. Senator Cranston, may I have the pleasure of introducing Mr. Rex Crandell, a Vietnam veteran?

Senator CRANSTON. Mr. Rex Crandell, a Vietnam veteran.

Are you going to lead off, Mr. Crandell?

Mr. CRANDELL. Mr. Senator, I was asked here today by Mr. Schaefer to share something that has happened to me, and I am sure it has happened to several other medics that's been in the service. I have prepared a statement here, you have a copy of it on your desk. Also with this statement there is a record of my qualifications and certificates that I have earned. I guess I should read them.

May I respectfully present my personal opinions regarding the amount of federal monies invested in my training and education and limitations I encountered in attempting to utilize my skills in civilian life. Upon contacting civilian hospitals, I was offered $1.85 an hour. This is hardly living wages and the work did not utilize my skills at all.

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I then realized my skills would be useful in the field of Emergency Care and Transportation and have obtained gainful and satisfying employment with Schaefer Ambulance Service.

Now I have been informed of the fact that I must complete a very basic, Emergency Medical Technical Course I, consisting of 71 hours of classroom training, and a minimum of ten hours of "in hospital observation." If this is so, Mr. Senator, our government has wasted money in my training. I would not hesitate to write—take a written or oral examination, administered by a civilian board, to establish my qualifications and skills.

I sincerely trust that due to your vital interest in our health care and transportation system, you may influence and institute a program effecting the efficient transfer of service-learned skills to civilian life.

Senator CRANSTON. Rex, let me say I am deeply interested in that problem. I think people like you have a great deal to offer to society, a great deal to offer in terms of medical care to people who need it and a great background in rendering care. You are not, all of you, being given adequate opportunities to put those skills to work and I am going to do all that I can to see that those areas are not neglected. I thank you very much for coming to give us the benefits of your thoughts.

What salaries are paid paramedics at the present time, what do you get?

Mr. CRANDELL. Right now I am earning $525 a month, plus all the overtime I can handle.

Senator CRANSTON. Do you get much overtime?

Mr. CRANDELL. Yes, we do.

Senator CRANSTON. How much are ambulance drivers paid?

Mr. CRANDELL. As a driver, you get a 10 cent an hour raise.

Senator CRANSTON. Somebody who is a driver and not a paramedic, what does the average driver get paid?

Mr. CRANDELL. This I really wouldn't know, sir.

Senator CRANSTON. Can one of you tell me that?

Mr. SCHAEFER. Yes, sir. Mr. Senator, the basic scale runs between $2.72 and $2.97 per hour.

Senator CRANSTON. What does that work out to on a monthly basis?

Mr. SCHAEFER. It works out to an average of about $600 per month.

Senator CRANSTON. So that the drivers are paid more than the paramedics.

Mr. SCHAEFER. Right at this particular moment.

Senator CRANSTON. How does that happen?

Mr. SCHAEFER. Until we change the union contract.

Mr. CRANDELL. As an Army Medic, I took an annual military occupational specialty test to test my current knowledge in my field of duty.

[The prepared statement of Mr. Crandell follows:]

PREPARED STATEMENT OF REXFORD D. CRANDELL, VIETNAM VETERAN

Formerly U.S. Army Medic, Specialist 4.
Summary of Army training and duties.
Entered basic training, Fort Ord in January, 1968.

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ENTERED MEDIC TRAINING APRIL 1968 THROUGH JULY 1968
FORT SAM HOUSTON, TEX

Courses of Study

1. Introduction to Military Medicine and Surgery.
2. Orientation to Military Preventive Medicine.
3. Medical Records and Patient Administration.
4. Supply in Medical Units.
5. Emergency Medical Care.
6. Orientation to Environmental Medicine and Management of Mass Casualties.
7. Nursing Service in Army Hospitals.
8. Communicable Diseases.
9. Management of Chemical Agent Casualties.
10. First Aid.
11. Military Sanitation.
12. Medical Prescription Interpretation.
13. Isolation and Sterilization.
14. General Nursing Procedures.
15. Drug Dosage and Therapy.
16. Nursing Care of Surgical Patients.
17. Scrub, Gown and Glove Procedures.
18. Environmental Sanitation.

FIRST MEDICAL ASSIGNMENT—ARMY AIR MISSILE DEFENSE COMMAND AID STATION IN PAINSEVILLE, OHIO, JULY 1968 TO JANUARY 1969

Duties and Staff

1. Two Medics and one civilian doctor.
2. Duties—hold sick call for 190 men, give shots, administer routine medications, treat and dress minor wounds.

VIETNAM DUTY—JANUARY 1969 TO APRIL 1970—93RD EVACUATION HOSPITAL—LONG BIHN POST

Assignments

1. *Emergency Ward*—treat patients brought in on emergency basis—clean wounds—take vital signs, restrain when necessary—obtain medical history—start I.V.'s—suture, and assist doctor.
2. *Disease Ward*—medical hygiene, administer drugs, vital signs, respiration, therapy, patient charting, taking lab test samples, treatments and quarantine procedures.
3. *Post-Operative Ward*—general post-operative patient care, vital signs, inhalation therapy, patient charting, change dressings, run EKG and EEG readings, catheterize and general patient care.

FORT KNOX, KENTUCKY—MAY 1970 TO OCTOBER 1971

Squadron Medic for 1000 men

1. Held sick call.
2. Administered emergency first aid.
3. Performed medic evacuation from the field.
4. Taught classes on first aid and dangerous drugs and narcotics.

BAD HERSFELD, GERMANY

Line Troop Medical Section Chief—Reported to and supervised by company doctor—Duties:

1. Held sick call.
2. Emergency first aid.
3. Field sanitation.
4. Medical evacuation and transportation.
5. Medical supply ordering.
6. Ambulance maintenance.
7. Administering drugs.

[Documents submitted pertaining to the above statement follow:]

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HEADQUARTERS

U.S. ARMY MEDICAL TRAINING CENTER

Fort Sam Houston, Texas

This is to certify that

PVT REXFORD D CRANDELL RA 18 859 465

has successfully completed

Advanced Individual Training, MOS 91A10

Given at Fort Sam Houston
This 5th day of July 1968

CHARLES C. PIXLEY
Colonel, Medical Corps
Commanding

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Department of the Army

Certificate of Training

This is to certify that

[illegible] TRAINING CENTER
FORT SAM HOUSTON, TEXAS

has successfully completed

DRIVER TRAINING COURSE (44 HOURS)

Given at HEADQUARTERS CAMP BULLIS, FORT SAM HOUSTON, TEXAS

W. A. SIMPSON
LTC Armor
Commanding

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Department of the Army

Certificate of Training

This is to certify that

RUFORD C. [illegible], PA 18620455

has successfully completed

Driver Safety Education Course

Given at

Battery A
3d Bn ([illegible]) 68th Arty
Jeffersonville, Ohio
[illegible] October 1950

EDWARD J. FINK
CPT, ARTILLERY
Commanding

REPLACES DA FORM 87, 1 JAN 48, WHICH IS OBSOLETE.

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FOR MORNING REPORT PURPOSES (WHEN CHECKED)

DEPARTMENT OF THE ARMY
HEADQUARTERS, THE UNITED STATES ARMY MEDICAL TRAINING CENTER
Fort Sam Houston, Texas 78234

SPECIAL ORDERS 25 April 1968
NUMBER 89 EXTRACT

9. TC 254. REASSIGNMENT dir as indic this sta. NTI. Fol data appl to all indiv UNOINDC. Fol PVT E1 09F00 (AIT MOS 91A10) Co D 4th Bn The USAMEDTC
Asg to: Co D 1st Bn The USAMEDTC
Rept date: 28 Apr 68
COA: NZ
ADC: RA 3 yrs AUS 24 mos
BASD: RA Same as BPED AUS NA
BPED: Jan 68
ETS: RA Jan 71 AUS Jan 70
EDCSA: 28 Apr 68
Sp Instr: E4 for AIT

BOLLEN, THOMAS E US51624433 (SSAN 121-38-5266) PVT E2
BRINLOW, JOHN P RA11865736 (SSAN 171-34-0320) BPED: Dec 67 ETS: Dec 70 PVT E2
BROOKS, WILLIAM H JR RA54977132 (SSAN 370-48-0663)
BRUNAIS, STEVEN L US54977096 (SSAN 377-46-4363) PVT E2
CHRISTIANSEN, VERNON W RA18981825 (SSAN 533-46-6744) ADC: 4 yrs ETS: Jan 72
CRANDELL, REXFORD D RA18859465 (SSAN 556-76-6301) BPED: Feb 68 ETS: Feb 71
CRAWFORD, ALLEN B RA56934565 (SSAN 540-54-6777)
DALE, GORDON F RA56649566 (SSAN 529-68-3048) PVT E2
GOODPASTER, WEBB US51646089 (SSAN 299-44-6989)
HALL, RONALD L RA56824315 (SSAN 559-74-3256)
HATFIELD, HAROLD G JR RA18922331 (SSAN 559-76-5768)
HATTON, CHARLES H III RA11937086 (SSAN 223-68-0693)
HOUCK, JOHN [illegible] RA12[illegible] (SSAN 246-[illegible]) BPED: Feb 68
HOYLE, JOE W RA18926565 (SSAN 560-66-4894)
HRUBY, ALLAN J III RA16983896 (SSAN 508-64-6248)
JACKSON, MICHAEL E RA17[illegible] (SSAN 275-[illegible]) PVT E2
KANTERS, DAVID J RA18[illegible] (SSAN 337-48-9048)
KENNEDY, GLEN K RA16919139 (SSAN 564-82-8937)
KETS, RUSSELL M RA11936397 (SSAN 223-62-4680) BASD: Jan 68 BPED: Nov 67
KIPER, CHARLES E US5[illegible] (SSAN 405-60-4[illegible])
KOWALLEK, PAUL J RA56835948 (SSAN 530-32-1255)
KRYCIELSKI, RONALD J US5[illegible] (SSAN 389-40-9427)
KUSAMOTO, RODERICK D JR RA16983437 (SSAN 264-86-4694) BPED: Feb 68
LATELAER, ROBERT RA12891071 (SSAN 264-78-7371)
MAGNARD, MICHAEL R RA17[illegible] (SSAN 292-48-5424)
MC GARRAHEN, PETER J RA17904921 (SSAN 047-[illegible]-4675)
MC KENZIE, JOEL L RA17[illegible] (SSAN 4[illegible]-[illegible]-9766)
OLSON, STEPHEN D RA18981894 (SSAN 533-52-3965) BPED: Feb 68 ETS: Feb 71
PAULEY, WILLIAM M RA17[illegible] (SSAN 1[illegible]-[illegible]-[illegible]) PVT E2 BPED: Dec 67 ETS: Dec 69
PLAMONDON, DENNIS J RA54076595 (SSAN 373-50-2385)
SHAND, DAVID D US67[illegible] (SSAN 556-62-[illegible]) BPED: Dec 67 ETS: Dec 69 PVT E2
SHEFFIELD, DONALD W US54[illegible] (SSAN 466-70-1041) PVT E2 BPED: Nov 67 ETS: Nov 69

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[illegible]gA IN) [illegible] Inf & Ft Ord, Calif 26Mar68

Asg Instr EPRDT-T 0-1-1-667 (S) dtd 15 Mar 68
BASD&8PED: NA ETS: NA EDCSA: 7 Apr 68
[illegible]: Rept to PCS Bd Bldg 2356 1300 hrs 3 Apr 68. WP: 6 Apr 68. GR. PVT E1. Indiv is ad that if he takes his depn, HHG and/or POV to his tng sta it could cause him fin embarrassment, work a severe hardship on his depns, and interfere with his tng and asg. Trans by Govt TR dir. MOS. 09800. EM for tng as indic Bag lmt: 66 lbs.

SICILIAN, PATRICK L RA18859443 (SSAN. UNK)
ASG to USATC (6036) Ft Lewis, Wash 98433
Sp Instr: EM for tng in MOS 63A10

[illegible]INN, DENNIS R RA18859396 (SSAN: 557-80-1700)
TAYL[illegible] EDWARD G US56718851 (SSAN. UNK)
ASG to. USAARMS (2018) Ft Knox, Ky 40120
Sp Instr: EM for tng in MOS 11E10. Rept to bldg 6301 on arrival

ASATO, WALLACE S US5001367[illegible] (SSAN: 576-50-5957)
ASG to: USATC Ft Jackson, SC 29207
Sp Instr: EM for tng in MOS 11B10

CRANDELL, REXFORD D RA18859465 (SSAN 556 76-6501)
ASG to. USAMEDTC (4006-08) Ft Sam Houston, Tex 78234
Sp Instr. EM for tng in MOS 91A10

FOR THE COMMANDER:

OFFICIAL:

JOHN J. PAVICK
Colonel, GS
Chief of Staff

HEADQUARTERS USATC INF OFFICIAL POST MAIL CLERK

[illegible] KNOLL
LTC, AGC
Adjutant General
(rec)

DISTRIBUTION:
1 - Postal
13 - Ea indiv indic
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65 - TD 201 Files
5 - Disp 4
5 - Disp 5
5 - AMNOR-AGAO
20 - Co D 4th Bn Third BCT Bde
20 - Co C 2d Bn [illegible] Bde
6 - USAMEDTC (4006-08) Ft Sam Houston Tex 78234*
6 - USATC Ft Jackson, SC 29207*
6 - USAARMS (2018) Ft Knox, Ky 40120*
6 - USATC (6036) Ft Lewis, Wash 98433*
6 - USA Sig Sch (6100) Ft Monmouth, NJ 07703*
5 - Co C USASATR (AS 10,0) Ft Devens, Mass 01433*
10 - USAMA EP&P Det, Ft Ord

*Deliver Air Mail (5 Dist for MR & other Admin pur, 1-Post Off)

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IMMEDIATE DELIVERLY TO_____Para_____

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY MEDICAL COMMAND, VIETNAM (PROV)
APO San Francisco 96384

SPECIAL ORDERS
NUMBER 83
EXTRACT

1-J-85-0640

24 March 1970

122. TC 469. Following orders are changed as indicated.

Action: AMENDMENT
So much of: Para 71 SO 51 this HQ dtd 20 Feb 70
Pertaining to: RSG of SHEPPERSON, RAYMOND E JR [illegible] SP4 [illegible]020 935th Med Det (WFHS-AAA) APO SF 96491
As reads: DEROS: 14 Apr 70
EDCSA to USARV Rtnee Det (or other org): 10 Apr 70
Reporting date to proper rtnee org: 12 Apr 70
How changed: IATR: DEROS: 1 Apr 70 (Adj)
EDCSA to USARV Rtnee Det (or other rtnee org): 28 Mar 70
Reporting date to proper rtnee org: 29 Mar 70
Authority: USARV Unclas Msg 121126Z Mar 70 fr AVHAG-EA

Action: AMENDMENT
So much of: Para 34 SO 72 this HQ dtd 13 Mar 70
Pertaining to: RSG of SPROWLES, RICHARD L 288407819 SP4 91020 [illegible]th Med Det (WFHSAAA) APO SF 96491
As reads: DEROS: 20 Apr 70
EDCSA to USARV Rtnee Det (or other org): 16 Apr 70
Reporting date to proper rtnee org: 18 Apr 70
Reporting date to ultimate unit of asg: 25 Apr 70
How changed: IATR: DEROS: 4 Apr 70 (Adj)
EDCSA to USARV Rtnee Det (or other rtnee org): 31 Mar 70
Reporting date to proper rtnee org: 1 Apr 70
Reporting date to ultimate unit of asg: 3 Apr 70
Authority: USARV Unclas Msg 121126Z Mar 70 fr AVHAG-PA

Action: AMENDMENT
So much of: Para 26 SO 72 this HQ dtd 13 Mar 70
Pertaining to: RSG of CRANDELL, REXFORD D 556766501 SP4 91[illegible] [illegible] Evac Hosp (WBJFAAA) APO SF 96491
As reads: DEROS: 12 Apr 70
EDCSA to USARV Rtnee Det (or other org): 8 Apr 70
Reporting date to proper rtnee org: 10 Apr 70
Reporting date to ultimate unit of asg: 12 Apr 70
How changed: IATR: DEROS: 31 Mar 70 (Adj)
EDCSA to USARV Rtnee Det (or other rtnee org): 27 Mar 70

[illegible] DIVISION
[illegible] U. S. ARMY PERSONNEL CENTER
[illegible] CALIFORNIA 94625

Processing completed [illegible] AG 201 [illegible] APR 1971 and file released

(Date)

[illegible]

Signature

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FOR IMMEDIATE DELIVERY Para

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY MEDICAL COMMAND, VIETNAM (PROV)
APO San Francisco 96384

SPECIAL ORDERS 13 March 1970
NUMBER 72
EXTRACT

26. TC 202. Following reassignment directed. Individual will proceed on PERMANENT CHANGE OF STATION as indicated.

COE, DANIEL J 116244606 MAJ 3445 24th Evac Hosp (WBH8AAA) APO SF 96491 ANC

ADMINISTRATIVE ACCOUNTING DATA
Auth: Surgeon General Autodin dtd 24 Feb 70
Aloc: 02A8902
OF: C&L No: NA
adrs: 1024 Cheryl Ave. Savannah GA
Mo OS (curr tour): 12
PCS MDC: 5000
MDC to USARV Rtnee Det: NZOO
CIC: NA
Ultimate asg: Valley Forge GH MD WOQ5AA Phoenixville, PA 19560
DEROS: 21 May 70
DDUS: 22 May 69

FOR THE INDIVIDUAL
Assigned to: USARV Rtnee Det (WOBR05D) APO SF 96307 for further assignment to Valley Forge GH MD WOQ5AA Phoenixville, PA 19560
EDCSA to USARV Rtnee Det (or other rtnee org): 17 May 70
Reporting date to proper returnee org: 19 May 70
Leave data: 30 DDALV
Availability date: NA
Port call date: NA
Reporting date to ultimate [illegible] 29 Jan 70
Report to: 90th Repl Bn APO SF [illegible] for further assignment to Valley Forge GH MD WOQ5AA Phoenixville, PA 19560
Special Instructions: (a) Comply with following [illegible] (AR 310-10). 1, [illegible] 64, 65.
(b) Comply with [illegible] VN(P) Supplementary Instructions" B, [illegible]

RUNDELL, [illegible] 566766501 [illegible] Evac Hosp (WBH[illegible])

ADMINISTRATIVE ACCOUNTING DATA
Auth: DA Ltr EAVHD-O 26 Feb 70
Aloc: NA
OF: C&L No: 02A 8903
Ty adrs: 2000 S. Ethel St. [illegible]
Mo OS (curr tour) 11
PCS MDC: 5000
MDC to USARV Rtnee Det: [illegible]
CIC: NA
Ultimate asg: [illegible]
DEROS: 1? Apr 70
DDUS: 27 Jun 69

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Senator CRANSTON. Mr. Brooks.

Mr. BROOKS. Senator Cranston, my name is Rand Brooks, I am president of the Los Angeles County Ambulance Association and I have been authorized to speak for the California Ambulance Association, consisting of some 325 members.

It is our interpretation of your bill, Senator Cranston, 504, sections 634 and 635, that private ambulance operators become a part of governmental jurisdiction's requirements to have as a part of their qualifying conditions for funding, a provision for an emergency medical transportation system, and thus, through moneys granted from this bill, we will share in funding allocated to achieve the bill's intent.

We wish to point out the example of private ambulance participation in the Los Angeles County emergency aid program. Through contracts, we supply emergency ambulance service to all of the county and to the majority of its incorporated cities, with Los Angeles city being the major exception. Cost to the county in 1970 for a total of 60,000 calls was $300,000; in 1971 for 61,000 calls, $320,000. This is an average cost to the county of five dollars per call. This low cost is maintained through our dual utilization of vehicles and personnel in rendering nonemergency, as well as emergency, transportation, plus the ability of private ambulance operators to recover from third party payees and patients a total of 67 percent of fees charged. The participating cities reimburse the county moneys paid the operator for indigent cases, therefore, no one is discriminated against for the lack of ability to pay. This emergency aid program, conceived in 1947 for Los Angeles County, has been successfully copied in many other counties of California and in other areas of this country.

Our county ambulance system incorporates a network of 25 ambulance companies, 160 emergency vehicles operating from 80 locations. These vehicles are all licensed and inspected by the California Highway Patrol and the County of Los Angeles. We provide an average response time of 14.5 minutes for the entire county. This is a composite, taking into consideration the very long distances traveled in rural and suburban areas. Through the community colleges and participating hospitals, and at our own cost, we have trained the majority of personnel to the level of Emergency Medical Technician I, the Department of Transportation's recommended program for ambulance drivers and attendants. We have committed ourselves by contract to the County of Los Angeles to have all personnel trained to this level by the end of 1973.

We recommend that any funds granted under Senator Cranston's bill shall not be utilized to duplicate or compete with any existing private operator who can accomplish through these funds the standards established by the bill. We know from your statements contained in the Congressional Record, Senator Cranston, that it is your intent to use existing facilities and to upgrade and coordinate these services. It is our belief that all citizens should have first class treatment when it comes to emergency medical care, regardless of which area in any State in which he or she may become ill or injured.

We realize that there are many areas in the State and country which lack an adequate ambulance service from any source; there-

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fore, we recommend that private enterprise be given opportunities through your bill to furnish adequate service to these areas.

We support your bill, Senator Cranston, as it is our interpretation that private ambulance companies will be utilized to the fullest extent in accomplishing the upgrading of emergency medical services.

That is the end of my authorized speech, Senator. I would like to speak for myself as an ambulance operator who is most interested in your bill to upgrade emergency medical care.

We in the ambulance field are the first contact on the scene of that emergency care.

I personally have been able to attract and to keep men with the promise that our situation will be similar to the one the registered nurses had a few years ago, quite a few years ago, it was corrected and may now need adjusting again.

The creating of Emergency Medical Technician I and Emergency Medical Technician II, which is the paramedic, has given these men a promise of a respected status and future in the ambulance service. We have been able, without help, to bring them to this first promise of Emergency Medical Technician I. The second stage, Emergency Medical Technician II, is now being worked on through the University of Southern California and the local community colleges, but it is most difficult to finance this training under the current rates set by local government and the Medicare-Medi-Cal programs.

For over 50 years, private ambulance operators have served this county, and not one operator in this county has been able to give this service without having an additional business to support his ambulance service.

The inequities I wish to point out are: The current average cost to admit a patient to a hospital which usually involves one telephone call is $35—the average cost we charge to send two emergency medical technicians in fully equipped ambulances costing somewhere between fifteen and twenty-five thousand dollars to any given point where a patient may be ill or injured, 24 hours a day, 365 days a year.

Senator CRANSTON. How do private ambulance companies deal with the problem of the accident victim who may be in no position to pay for that service?

Mr. BROOKS. We are required by our contract with the county and the Board of Public Utilities to respond to any call before asking for any money for this thing and then we fight it out later.

Senator CRANSTON. If the victim has no resources, then what do you do?

Mr. BROOKS. Well, from a county emergency aid program, sir, then the county pays a lesser amount.

Senator CRANSTON. How much do you get, what is that lesser amount?

Mr. BROOKS. The rate at present is $27.

Senator CRANSTON. Thank you.

Mr. BROOKS. Point 2. Salary structures today locally pay television repairmen and plumbers as high as $17.50 an hour for their services, and a garbage collector close to $5.00 an hour, while our average wage to men making decisions involving a human life in the handling of the ill and injured is $2.50 an hour. You can plainly see the imbalance.

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Therefore, I personally, with all my heart, support your plan, your bill, which will upgrade emergency ambulance service in this country.

Thank you.

Senator CRANSTON. Thank you very, very much. I appreciate your support of the bill and your confidence in the importance of what we are seeking to undertake.

Mr. Howell, do you have anything to add?

Mr. HOWELL. No, sir.

Senator CRANSTON. I'd like to ask this one question, is there a problem of maldistribution of ambulance services presently in the county? Is there a concentration of too much service in one place and not enough service available elsewhere?

Mr. HOWELL. I don't believe so, Senator, I made a map outlining all the ambulances on the emergency program, the locations, operating locations, there are trouble spots in the valley areas, but the gentlemen there are covering them very well, a little long response sometimes—that what averages—our local response breaks down to just a little over 7 minutes.

Senator CRANSTON. Seven minutes average to get to the site of the emergency?

Mr. HOWELL. A little over seven minutes.

Senator CRANSTON. Do you have any problem in servicing some parts of the community where the drivers don't particularly want to go?

Mr. HOWELL. No, sir, not in my particular area that I cover.

Senator CRANSTON. I thank you very much.

Our next witness is Dr. James Brill, Chairman, Los Angeles County Project Executive Committee for Systems Development of Emergency Medical Service; Member of Los Angeles County Committee on Emergency Care; Director of Emergency Department, UCLA; and Assistant Professor of General Surgery, UCLA.

Thank you very, very much for your presence. I want to pose a problem I have. I have 35 minutes left before I have to take off for one brief meeting before flying to Washington and I have you and three other witnesses, so if you can be very brief I would appreciate it.

Dr. BRILL. I'll try to be brief and to the point.

Senator CRANSTON. Thank you.

STATEMENT OF DR. JAMES BRILL, CHAIRMAN, LOS ANGELES COUNTY PROJECT EXECUTIVE COMMITTEE FOR SYSTEMS DEVELOPMENT OF EMERGENCY MEDICAL SERVICE; MEMBER OF LOS ANGELES COUNTY COMMITTEE ON EMERGENCY CARE; DIRECTOR OF EMERGENCY DEPARTMENT, UCLA; AND ASSISTANT PROFESSOR OF GENERAL SURGERY, UCLA

Dr. BRILL. I welcome this opportunity to testify on behalf of the Los Angeles County Emergency Medical Services Project for Senate bill S. 504.

This legislation speaks to the heart of the troubled emergency medical services industry and mainly the lack of coordination and planning, and I commend your insight into the problem which we in

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the field have been grappling with for some time. Many others have discussed the difficulties, the problems that we face in Los Angeles County, but I would like to interject an optimistic note. We have already begun to put together the kind of planning council that you call for in your bill.

Senator CRANSTON. Did you have difficulty putting that together?

Dr. BRILL. Well, it has had some fits and starts, but I think now we are well under way. I think the biggest problem in putting together a council like that is to get the initial funding to put a council of that representation together. In a county of 7 million people, to find adequate representation requires a conference as we had in July and, of course, the conference is expensive and the staff work for putting together that kind of conference is expensive, and I can see trouble in establishing planning councils under a granting mechanism without advance funding to make the council.

At any rate, the initial impetus for the development of a county-wide project for the development of emergency medical systems came from Regional Medical Programs and many other agencies within the county of Los Angeles, including the County Committee on Emergency Care and the Heart Association and the Hospital Council. We now, as I mentioned, have representatives from all these groups put together for a forum to develop a systems approach for emergency medical care, which is what I believe your bill suggests as a solution to the emergency medical care problem.

We are trying currently to identify the services that are required by the consumer. We are trying to identify what management functions are necessary to produce these services, what elements of the system are present already and which ones need to be enhanced, and instead of taking a band-aid approach and supplying a lot of capital for equipment and facilities, we are trying to decide what actually needs to be done and then hope to fill in the gaps where necessary and even perhaps suggest legislative changes, if need be.

We have four specific recommendations that we would like to make in regard to your bill.

The first is that fully trained physician specialists be recognized as an integral part of any comprehensive emergency medical system and that specific support be provided to medical residencies for post-graduate training.

I personally feel that long after Federal support vanishes from the scene of emergency medical systems someone will have to continue the day-to-day service of education and research in emergency medical systems. The leadership for that activity and continuity of high-quality services naturally is led by physicians interested in the field. It is my personal opinion that transient physician manpower has been responsible for retarding the development of emergency medical systems, much as transient ambulance attendants have made it difficult to maintain high standards of training for ambulance personnel.

The second item we wish to call attention to is the paramedic training programs, which have resulted in improved emergency care to victims of trauma and illness in both urban and rural areas, and should be singled out in the bill and strongly supported.

Three, that the support for on-going data systems be strengthened. This need has already become apparent to us as we try to design an

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emergency medical care system in a systems approach. We have very limited data that tell us about response times, about numbers of people going into facilities, numbers of acute diseases in the community, these numbers are very difficult to come by, and we are finding it necessary to develop a data system as almost the first step in our planning.

The fourth thing is that the role of area medical services planning councils be clarified with respect to their relationship with State agencies and other geographic sub-divisions, especially in so far as they are eligible to receive Federal funds either directly or on a subcontract basis. We feel that there is some ambiguity with reference to the way funding will come or how specifically one intends to support such a planning council in the local community.

I think that is really the sum and substance of what I wanted to say.

Senator CRANSTON. Thank you very much.

Have consumers played a constructive role as members of the committee?

Dr. BRILL. I think the consumers have really been the vital force of our planning effort. They have provided tremendous input with regard to the identification of the services and needs of the people of Los Angeles County and I think they have really been the most vital force in our group.

Senator CRANSTON. What roles have Regional Medical Programs and county health programs played?

Dr. BRILL. Well, Regional Medical Programs of course, in this county has done an heroic job in trying to keep together a county-wide planning effort. County health programs has not been as interested in emergency care, but has looked to the support that regional medical programs has initiated.

We have currently a small grant of about $44,000, $22,000 of it for ongoing ambulance training on the emergency medical technician I level, and $22,000 for the development of the systems project, that has been funded by California regional medical programs. That will expire in June.

Senator CRANSTON. When the Los Angeles County system is ready for implementation, do you see your committee as being the unit to be responsible for carrying it out?

Dr. BRILL. I think that we're chiefly a planning committee, and that implementation will have to be done by, presumably, governmental agencies that are already very active in the implementation of emergency medical services. The planning, I think, sometimes is better done by a more broadly-based group than the governmental implementation is.

Senator CRANSTON. Thank you very, very much. I want to thank you for your briefness and for the conciseness and for the constructiveness of your statement.

[The prepared statement of James C. Brill, M.D., follows:]

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Statement of James C. Brill, M.D.

Director, UCLA Hospital Emergency Department
Chairman, Los Angeles County Emergency Medical
Services Development Project

to

Senate Subcommittee on Health
Labor and Public Welfare Committee

March 12, 1973

in

Los Angeles

Mr. Chairman and Fellow Committee Members, I welcome this opportunity to testify in behalf of the Los Angeles County Emergency Medical Service Project on S. 504. This legislation speaks to the heart of the troubled emergency medical services industry, namely the lack of coordination and planning. I commend the bill's author, Honorable Alan Cranston, California's senior senator for his insight into the problems with which we in the field have been grappling for some time.

Los Angeles County not only mirrors the complexity of emergency medical services on national scale, but in many ways it magnifies them. Consider for example, emergency and rescue services in a county which has 77 different municipalities. Fifteen cities provide their own rescue and ambulance services. In eight cities emergency ambulances are dispatched by fire departments, in 18 others by police departments, 14 cities by both fire and police departments and in 29 cities and unincorporated area through the sheriff's 14 stations.

Greater coordination of these and other emergency services was urged at Los Angeles' first Countywide Conference convened by Regional Medical Programs last June in cooperation with 22 other community groups and organizations. The 500 participants, included not only directors of hospital emergency departments such as myself, but also representatives of various County and City Departments--police, sheriffs, fire, ambulanc which play a key role in the delivery of emergency care. Special effort also was made to obtain consumer involvement.

This group expressed concern about many elements of emergency care in Los Angeles--the lack of public information on how to procure emergency aid, inadequately trained rescue personnel, pass communication between hospital emergency rooms and ambulances, and the unavailablity of quality care on a 24-hour basis.

Translating these concerns into an overall plan is a difficult and cumbe some process. But there is a strong commitment to move in this directio in Los Angeles County largely as a result of RMP's impetus. A coordinati Council, similar in representation to the proposed Area Emergency Medical Services Planning Councils recommended in S. 504 is being formed in

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cooperation with the Los Angeles County Department of Health Services and its Committee on Emergency Care, the Hospital Council of Southern California and various voluntary and consumer organizations. We expect to have close to 100 individuals directly involved in both the Council and its three Tasks Forces.

The Council's efforts are directed toward developing a "systems approach" to emergency care. This approach, unlike most, is not initially concerned with what resources are available, but rather with what kind of services people need and what kind of management is required to provide them? Only after answering these questions is it possible to deal with the individual support systems--transportation, manpower training, health education, communications etc. The more "traditional band-aid" approach may upgrade the individual components of the emergency system, but we believe it offers little assurance that they will function well together.

We support S. 504 which seems to reinforce this "systems" method of planning and seeks to provide necessary financial support we and others throughout the country will require to tackle emergency medical services on a comprehensive basis. There are, however, some specific recommendations we would like to make:

1. THAT FULLY-TRAINED PHYSICIAN-SPECIALISTS BE RECOGNIZED AS AN INTEGRAL PART OF ANY COMPREHENSIVE EMERGENCY MEDICAL SYSTEM AND THAT SPECIFIC SUPPORT BE PROVIDED TO SUPPORT MEDICAL RESIDENCIES FOR POST-GRADUATE TRAINING.

2. THAT PARAMEDIC TRAINING PROGRAMS WHICH HAVE RESULTED IN IMPROVED EMERGENCY CARE TO VICTIMS OF TRAUMA AND ILLNESS IN BOTH URBAN AND RURAL AREAS BE SINGLED OUT IN THE BILL.

3. THAT SUPPORT FOR AN ON-GOING DATA SYSTEM BE STRENGTHENED. THIS NEED HAS ALREADY BECOME APPARENT TO US IN CONSIDERING THE COMPLEX PROBLEMS OF A SYSTEM APPROACH TO EMERGENCY CARE.

4. THAT THE ROLE OF AREA EMERGENCY MEDICAL SERVICES PLANNING COUNCILS BE CLARIFIED WITH RESPECT TO THEIR RELATIONSHIPS TO STATE AGENCIES AND OTHER GEOGRAPHICAL SUBDIVISIONS, ESPECIALLY IN SO FAR AS THEY ARE ELIGIBLE TO RECEIVE FEDERAL FUNDS EITHER DIRECTLY OR ON A SUBCONTRACT BASIS.

I would like to take a moment to further elaborate on our specific recommendations to the committee.

Long after federal support vanishes from the scene of EMS, some one will have to continue the day to day service, education and research in EMS. The leadership for that activity and continuity of high quality service is naturally led by physicians interested in the field. It is my personal opinion that transient physician manpower has been responsible for retarding the development of EMS, much as transient ambulance attendants have made it difficult to maintain high standards of training for ambulance personnel.

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As it seems logical to encourage career ladders in EMS it seems just as logical to encourage physician specialists i.e. to start rendering training programs in emergency medicine and therefore, I respectfully request that adequate recognition be given to this need specifically in S. 504.

One can conceive of an argument that may come forth saying how can such a council actually improve EMS?

It is already clear to us that even now as we begin the earliest phases of planning that both the private sector and the public sector are beginning to focus their internal planning groups on our progress. We do not at this time conceive of this planning council as an implementation body because that function is well covered by government. However a planning council with very broad based political input, consumer input, provider input generates enough support for its master plan that no special interest group stands much of a chance of disrupting it.

As a word of caution I would like to further suggest that every effort be made to protect the broad and equal representation of the planning councils lest idealistic plans succumb to the interests of special factions.

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Senator CRANSTON. I would like to note the presence of a good friend of all of us, Supervisor Ernie Debs.

Ernie, delighted you are here. I know you have been interested in this, Ernie, and I need your help in implementing what I hope is going to be a good law on the subject.

Mr. DEBS. May I just say one word, I know you're in a hurry. Yes, I am vitally interested in that law, but I am also vitally interested in not only training our firemen, but I am also interested in training our private sector. It does no good to train the firemen and then the private ambulance arrives and they are not properly trained to take them to the hospital, that is where you lose many lives, so we are hoping that somewhere along the line we'll be able to train the private sector as well.

Senator CRANSTON. This legislation is designed to cover the whole field.

Mr. DEBS. I know that, and I have already congratulated you on that.

Senator CRANSTON. Right. Thank you very much, Ernie.

Our next witness is Mr. Leslie R. Smith, executive director Los Angeles County—University of Southern California Medical Center; chairman, California Hospital Association committee on emergency health services; and chairman, American Hospital Association committee on emergency health services.

Mr. Smith, I welcome you, I appreciate very much your presence, and I would appreciate your brevity also.

Mr. SMITH. I certainly will be brief sir.

STATEMENT OF LESLIE R. SMITH, EXECUTIVE DIRECTOR, LOS ANGELES COUNTY-USC MEDICAL CENTER; CHAIRMAN, CALIFORNIA HOSPITAL ASSOCIATION COMMITTEE ON EMERGENCY HEALTH SERVICES AND CHAIRMAN, AMERICAN HOSPITAL ASSOCIATION COMMITTEE ON EMERGENCY HEALTH SERVICES

Mr. SMITH. I will not quote from our printed document, you have that on file.

Senator CRANSTON. That will appear in the record.

Mr. SMITH. Yes, sir. I would like to make about three brief comments.

Speaking to the planning facilities issue, for example, we see this, as Supervisor Debs has, and others, as really a joint public and private sector problem. There are many disciplines involved, and we are very much in favor of the emergency medical service council concept, going from the local level up to the State, up to the national council as well, which your bill includes.

The California Hospital Association has a contract now for a very small amount of money to develop a training program to explore and orient hospital medical staff and community groups with the council concept and we hope that will do more for the orientation of our colleagues.

In the areas of facilities and services, which are an important part of planning, Dr. Lyons spoke earlier of the work we've done in

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terms of developing a realistic way of categorizing hospital emergency department services and those other services of the community. We would like to stress the fact that any national system that is developed must have input from local groups which have had efforts to demonstrate successes or difficulties with their systems. I am sure your plan includes that.

Senator CRANSTON. We will certainly see to it.

Mr. SMITH. Training, you have heard a great deal about that. We certainly speak for uniform standards of training efforts and programs where we can all agree to levels of training so we are not working at odds with each other. Hospitals are very much interested in providing their clinical services in affiliation with ambulances, with fire district services and others.

Communication services, the same thing. In southern California, hospitals have voluntarily spent half a million dollars to develop their radio network which served us so effectively, we think, during the earthquake. I think that is an example of where large sums of money are necessary. When you speak of your bill—there has been some criticism of—perhaps too much money there. I assure you there is a great need for money. In just communications alone of this type, we will require great sums of money for the vitally needed equipment that hospitals need to be able to provide this two-way communication between the hospital emergency department and the provider of primary care out on the scene and enroute to the hospital. With all of the criticism of health care cost today, we feel that we have to look to federal or State support for funds to have this equipment, we feel it's an important part of that chain between the patient and the physician.

That concludes my brief summary, Senator.

Senator CRANSTON. Thank you very much, that is very concise, Mr. Smith.

One of the provisions of my bill would require uniform patient recordkeeping, do you agree with that?

Mr. SMITH. Yes, sir, we certainly do. We are trying to do some work ourselves now on the national level, and support any help or direction that we can get in that direction. We have had some experience with our paramedics program here in Los Angeles and found that the ability to follow that record from the time of the injury through his care in the hospital has helped orient the staff to the skills these paramedics have and provides a good evaluation on a peer review process, much as we do in hospitals for other forms of care.

Senator CRANSTON. Can hospitals adapt to that requirement without a great deal of difficulty?

Mr. SMITH. We found that we could adapt to it here in Los Angeles on a pilot scale and I think we see no difficulty. New York has adopted a plan of this nature, and we're studying it, and I think we'd be very much in favor of that type of a chart review.

Senator CRANSTON. The California Hospital Association has made some, I think, truly giant strides in categorizing hospital facilities in our State. Do you see any difficulty in getting hospitals to accept the fact that they may not have been categorized as comprehensive emergency facilities?

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Mr. SMITH. Well, I suppose it's the way it's phrased with the public. We feel that a hospital should be able to designate its ability to perform certain services as a basic emergency department, and that it isn't necessarily detracting from the hospital's service if it chooses, through a comprehensive community plan, to jointly select one of their member hospitals in the community to provide a much higher level of service. I think once the community understands that they cannot expect a neurosurgeon, for example, to be on duty around the clock in every hospital, we'll make some progress. I think this helps move in that direction.

Senator CRANSTON. Have the local communities cooperated in the determination of the categorization of their specific hospital?

Mr. SMITH. Yes, sir, we've had good luck with that in our State through—primarily through our professional organizations, the Medical Association, and the Hospital Association's joint statement, and the communities where we have had educational programs have cooperated quite well.

Senator CRANSTON. Where a community doesn't have adequate emergency facilities, what steps can be taken by the CHA and the community to develop them?

Mr. SMITH. We are working on that, now, in terms of it coming up quite often in rural areas. We want to point out to the public in those areas what is reasonable to expect, and develop a plan where they can find ways to relate to the nearest hospital, which may be some distance away, and establish an effective means of communication and transportation. I think that seems to be the area most difficult to finance, and yet which provides a greater service, and that's where your bill speaks to the issue of transportation.

Senator CRANSTON. Thank you very much, you have been most helpful.

[Information subsequently supplied for the record follows:]

QUESTIONS SUBSEQUENTLY SUBMITTED FOR THE RECORD BY SENATOR CRANSTON AND RESPONSES BY LESLIE R. SMITH

Question. Do State or local legal restrictions prevent hospitals from participating to the fullest extent in an emergency medical services system?

Answer. I know of no actual restrictions which limit our maximum participation. However, in those counties in our state such as Los Angeles where a Master Plan exists for emergency systems including ambulance service and reimbursement to hospitals for emergency department services rendered to patients unable to pay, hospital participation has been facilitated. Some form of guaranteed reimbursement for hospitals and other providers extending services to patients in an emergency should be a requisite of any emergency medical service program for a community, we feel.

Question. Have you run into difficulties in obtaining frequencies or channels needed for adequate communications systems?

Answer. Recently, additional frequencies were made available after two years of efforts by hospitals in our state and nationally to increase our ability to communicate with ambulances and other emergency response vehicles. The major problem at this time, we feel, is not the lack of frequencies but the ability to master plan a communication network which would make the maximum use frequencies within a community. Such a Master Plan has been implemented for disaster communication between hospitals and in the metropolitan Los Angeles area utilizes only two basic radio frequencies. We feel such a plan for hospital-to-emergency-vehicle communication, including telemetry, could function with perhaps as few as ten frequencies or less. Without a Master Plan it might require expensive duplication of equipment and misuse of frequency allocations.

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Question. Do State or other restrictions on the use of paramedics inhibit their use in emergency rooms?

Answer. Paramedics can only be used in emergency rooms in a training situation. This can be inferred, then, that they can work there as long as there is an element of training going on. We feel, however, that the emergency medical technician concept including personnel working in the emergency department with the same abilities and legal authorization as the paramedic in the field would be extremely effective. There have been proposals submitted through the California Legislature regarding identifying and certifying these men as physician's assistants and authorizing their performance of functions now limited to nurses and physicians. Present restrictions, however, preclude this other than in the training mode, as mentioned above.

PREPARED STATEMENT OF LESLIE R. SMITH, CHAIRMAN OF THE CALIFORNIA HOSPITAL ASSOCIATION

Mr. Chairman, my name is Leslie R. Smith, Executive Director, Los Angeles County—University of California Medical Center, Los Angeles, California. Presently, I serve as the chairman of the California Hospital Association's Committee on Emergency Health Services, as well as the chairman of the American Hospital Association's Community Emergency Health Services Committee. I am here today on behalf of the California Hospital Association to testify in support of S. 504—"The Emergency Medical Services Systems Development Act of 1973."

The demand for national legislation on emergency health services is well documented. Medical emergencies can be viewed as a national problem. The California Hospital Association views medical emergencies as a statewide problem and there is well documented evidence that much needs yet to be done in attacking the problems of accidental injury and sudden illness, such as automobile accidents, heart attacks, strokes, poisonings, acute medical illnesses and others. The death toll from accidental injury and illness could be significantly reduced if adequate emergency medical treatment were rendered to the victims. In large measure, the problem of medical emergencies is a national, state and local one and searching for a viable solution to this problem requires the commitment and cooperation of all three levels and of the private and public sectors within them. It can be said that we already have existing laws at all three levels to adequately deal with the problems of medical emergencies. However, in my opinion, there is much more that needs to be done, for when the nature and scope of the problems significantly change, the strategies by which society deals with the problems must also change.

The California Hospital Association believes that in the development of emergency medical systems, the following functional components must be considered:

(1) injury or sudden illness discovery,
(2) communication of such,
(3) dispatch of emergency medical assistance,
(4) initial emergency medical treatment at site of injury or sudden illness,
(5) transportation (with life sustaining capacity) and
(6) hospital-based definitive medical care.

In addition to these functions, there must be an organizational unit to coordinate, monitor and evaluate the effectiveness of the emergency medical services system. Also, there must be support services to the functional components such as public information and manpower training programs. These functional components should be the skeleton to any legislation dealing with the development of emergency medical services systems.

During the past several years, the California Hospital Association, through its Committee on Emergency Health Services, and in cooperation with the four regional hospital councils, the California Medical Association, the California Ambulance Association and other professional groups and agencies from both the private and public sectors, has been developing and advocating policy guidelines concerning the functional components mentioned above. As supporting testimony for introducttion into the record, we are submitting some of these policy guidelines, two of which are in draft stages. These are found in Attachments A through C.

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PLANNING

In order for these functional components described above to work as a system, there must be a planning body which will coordinate, plan, monitor and evaluate the effectiveness of the delivery of an emergency medical services system. S. 504 advocates such a body (i.e., "Area Emergency Medical Services Planning Council") having representation from both the private and public sectors and which is necessary for the continuing viability of an emergency medical services system. In California, there is a provision in the Health and Safety Code (Section 1750) that requires an emergency medical care committee to be established in each county of this state. We believe that S. 504 will provide added impetus to their development and effectiveness. California and the rest of the nation witnessed the value of areawide coordination and planning when on February 9, 1971, a major earthquake occurred in the San Fernando Valley. Without such coordination of emergency care community resources and prior planning of those public and private groups and agencies involved, many more lives would have suffered. Also of significance was the fact that this disaster operation involved not only the resources of the local communities affected, but, also, the resources of state and federal agencies.

The concept of an area emergency medical services planning council is not only applicable to large urban areas, such as Los Angeles County where resources are relatively abundant, but also in rural areas where resources are indeed scarce. A few days ago, you heard testimony from the Superior California Comprehensive Health Planning Association regarding the application of this concept to a rural area. Finally, the California Hospital Association is under contract with the Department of Health, Education and Welfare to conduct an analysis of emergency medical services planning councils which, hopefully, could be used by other parts of the country. We are pleased that the proposed legislation before you provides for the development of such councils.

MANPOWER TRAINING

The need to train and continually train manpower in the delivery of emergency medical services cannot be stressed enough. We realize that there is a great need for the development of uniform training standards for health professionals and paraprofessionals. Such training standards should be ultimately developed at the national level; however, high consideration must be given to state and local situations. Therefore, we suggest that in the developmental process of such national standards, state and local input be considered to assure an adequate level of practicality. As you note from Attachment A, the California Hospital Association, in cooperation with other organizations, has developed a policy position with respect to the training of ambulance personnel. We are also concerned with training for health personnel based in the hospital emergency room or department, as well as those personnel in public safety agencies such as fire and law enforcement. National training standards must also consider health personnel in those areas. Finally, there is not only a need for standards for manpower training but there is also a need for standards for the individual training programs.

COMMUNICATIONS

For any emergency medical services system to effectively operate, there must be a well designed and coordinated communications network that will meet the needs of the emergency medical services system and that will assure voice linkage between the major emergency care resources in an accurate fashion in the shortest period of time. Attachment B will provide you with the California Hospital Association's view of what ought to be included in guidelines with regard to two-way radio voice communications. The Hospital Council of Southern California was instrumental in the development of these guidelines since they developed and implemented an interhospital emergency radio communications network. It was this communications network that played a major role in the emergency operations during and after the San Fernando Valley earthquake. The response to this disaster demonstrated the need for a two-way radio network that must be well coordinated by a central communications center and have linkages between emergency care resources, allowing particularly for hospital-to-hospital, hospital-to-ambulance and ambulance-to-ambulance communications. All of these should have interfacing capability with a centralized communications center which, in turn, should have linkages to other area-wide communications networks.

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Although telephone communications systems are oftentimes disfunctional during a major disaster, they do have value in day-to-day medical emergencies. This year the California State Legislature enacted legislation which requires the establishment of specified uniform emergency telephone services by December 31, 1982. There are already several California communities that have implemented such a system and many more that are in the planning stages. We believe that such a system, as S. 504 advocates, will allow for greater public accessibility into an emergency medical services system.

TRANSPORTATION

The supporting of life during transport from the site of injury or sudden illness is crucial to the well being of the emergency victim. To support a victim's life requires not only the necessary supplies and equipment, but also requires that ambulance personnel be trained to perform life-support procedures such as maintaining an airway, circulation and control of blood volume.

Particular areas in California lack the necessary emergency transportation; many times a victim of an automobile accident must rely solely on volunteer ambulance services and personnel. A study conducted in California revealed that mortality from motor vehicle accidents was higher in rural and mountain counties than in urban counties. It has been submitted that the mortality rate could be reduced by better transportation. We believe that S. 504 will provide for further development of the transportation component in an emergency medical services system, not only in rural areas but also in urban settings.

EMERGENCY FACILITIES AND SERVICES

Emergency medical facilities and services provided by adequately trained emergency medical personnel are as crucial to the well-being of the emergency victim as are on-site emergency medical care and life-support procedures during transport.

Attachment C describes the proposed revisions of the "California Medical Association-California Hospital Association Classification System and Criteria of Emergency Medical Facilities," which we believe represents a realistic approach to the classification of the levels of emergency medical services rendered in California hospitals. We are aware that there have been several classification systems recommended by national medical associations and have included many of their recommendations in the revised document just mentioned.

In 1969, the Caifornia Hospital Association participated in a survey of hospital-based emergency medical services. Of the 459 (78 percent) of 575 responding hospitals, 34 percent have "Basic 24-Hour Emergency Services" (staffed with a licensed physician and registered nurse), 41 percent had an "Emergency Standby Service" (staffed with a registered nurse 24 hours a day with a licensed physician on call), 18 percent had an "Emergency First Aid and Referral Service" (staffed with a registered nurse on call from within the hospital 24 hours a day) and 7 percent reported having no emergency services at all. In 1972, the California Hospital Association participated in a similar survey of hospital-based emergency medical services. Of the 457 (76.8 percent) of 595 responding hospitals, 42 percent had 'Basic 24-Hour Emergency Service," 35 percent had "Standby Emergency Service" and 23 percent had "Emergency First Aid and Referral Service."

These statistics, which reveal a trend in the upgrading of hospital-based emergency medical services, suggest that California hospitals are concerned with the improvement of emergency medical services. Nevertheless, there are still problems regarding the development of hospital-based emergency medical services, in both rural and urban settings, which we believe S. 504 recognizes.

Also, we believe that not all hospitals having 24-hour physician coverage can support specialized critical care units and services. Therefore, the proposed classification system allows for each hospital to designate what specialized units and services it does provide. We anticipate that this method of identifying specialized units and services will reduce underutilization and allow for better use of manpower and financial resources.

Finally, we wish to emphasize that a classification system of emergency medical facilities and levels of services, including specialized units and services, will allow for a rational identification of such. This system will provide a tool for those engaged in areawide planning for emergency medical services systems. Furthermore, any development of a national classification system

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should consider input from those groups and organizations which have demonstrated the usefulness and practicality of such a system.

We have briefly commented in support of Paragraphs (a) through (f) of Section 635; additionally, we lend general support to Paragraphs (g) through (l) as well as to the remaining sections of S. 504.

Mr. Chairman, we appreciate having been given the opportunity to share with you the views of the California Hospital Association regarding S. 504 and will be pleased to answer any questions which members of the Subcommittee may have.

Attachment A—October 7, 1971.

POLICY STATEMENT ON THE TRAINING OF EMERGENCY MEDICAL PERSONNEL BY THE CALIFORNIA MEDICAL ASSOCIATION; THE CALIFORNIA AMBULANCE ASSOCIATION; THE CALIFORNIA HOSPITAL ASSOCIATION AND OFFICE OF THE CHANCELLOR, CALIFORNIA COMMUNITY COLLEGES

An integral element of community emergency health services is the care given prior to arrival of the patient at a hospital or other emergency service. The quality of that care is dependent on the training and skills of the responsible personnel. Their skills should exceed those provided by the advanced first aid course of the American Red Cross.

The Dunlap Curriculum for Emergency Medical Technician I, developed by the U.S. Department of Transportation, includes classroom and clinical experience requiring the use of physicians and hospital staffs as instructors, both for initial training and for refresher and follow-up training. Many experienced national organizations including the American Medical Association and the American Hospital Association have endorsed this curriculum and its concepts.

Therefore, the California Medical Association, California Ambulance Association, California Hospital Association and the Office of the Chancellor, California Community Colleges do jointly recommend to their members and others:

1. Adoption of the Dunlap Curriculum as a preferred program for training of ambulance drivers, attendants, rescue personnel and others whose work entails provision of emergency medical care;

2. That local medical societies, hospitals and hospital medical staffs offer their direct assistance to local organizations responsible for providing emergency care. This assistance should include provision of course coordinators, space and clinical experience;

3. That these four Associations encourage their members in each community to implement this training program at their earliest convenience.

Attachment B—Third Draft—January 18, 1973

CALIFORNIA AMBULANCE ASSOCIATION, CALIFORNIA HOSPITAL ASSOCIATION, CALIFORNIA MEDICAL ASSOCIATION PROPOSED EMERGENCY MEDICAL/DISASTER RADIO COMMUNICATIONS' GUIDELINES

The capacity of a hospital to provide emergency care to the public on a day-to-day basis and in disaster situations is largely dependent on the effectiveness of its communications. Therefore, the California Hospital Association has developed the following guidelines to assist its member hospitals in community planning and development of such radio communications' systems and to ensure a reasonable compatibility of hospital emergency radio communications throughout the state. It is hoped that if the basic guidelines outlined below are followed, the net result will be a fully integrated statewide emergency medical radio communications' network that can be expanded and adapted to all projected needs.

I. INTER-HOSPITAL RADIO COMMUNICATIONS

A community or regional plan for an emergency medical service system must include a communications' network that will assure "voice" linkage between the major emergency care resources—one of which is the emergency department of the hospital. Hospitals not only must be linked to other resources such as ambulances, but also must be linked to one another. Such an inter-hospital radio communications' capability requires a "Base Station System" for each hospital that is included in the community's emergency medical services plan. This "system" should include a transmitter-receiver and antenna, either locally or remotely controlled as well as the following prerequisites:

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A. It must be linked to a central control center which could be another hospital.

B. It must be simple to operate, requiring no special training or experience.

C. It must be reasonable to purchase or lease and to service so that all hospitals in the community's emergency health services plan can participate.

D. It must have the capability to continuously monitor one prescribed radio frequency but remain "inactive" until signaled.

E. It must have effective range to cover the predetermined area as defined by the community's emergency medical services plan.

F. It must have equipment, i.e., hardware, that is compatible with other equipment used for the same purpose, assuming that the allocated frequency-(ies) and signaling mechanism meet the same specifications.

G. There should not be paging systems on frequencies which are allocated for inter-hospital communications.

H. Its operations must comply with the rules and regulations of the Federal Communications Commission.

II. HOSPITAL—OTHER EMERGENCY CARE RADIO COMMUNICATIONS

Just as hospitals must communicate with one another, so must they communicate with other major emergency care resources such as ambulances, fire departments and other public safety agencies. Two essential types of communications are "voice" and "non-voice." Such inter-agency emergency communications' capability requires the following prerequisites for these two types of communications:

A. Voice Communications

1. Access to the same radio frequency and compatible radio communications' equipment of the hospital and the other agency.

2. A central control center to coordinate and dispatch emergency care resources.

B. Non-Voice (Telemetry)

The Federal Communications Commission's frequencies for telemetry use must be allocated according to a community plan where telemetry is being considered.

Attachment C—Fourth Draft—December 15, 1972.

PROPOSED REVISIONS TO THE CMA-CHA CLASSIFICATION SYSTEM AND CRITERIA OF EMERGENCY MEDICAL FACILITIES

I. BASIC 24-HOUR EMERGENCY SERVICE

The hospital shall be fully equipped and prepared to render resuscitation and life-support for patients of all ages. It shall also supply definitive care for all such patients except for the occasional patient who requires follow-through care in very specialized units. The hospital shall have established a referral and transfer system under prior agreement with other health facilities when transfer is necessary for further emergency or definitive medical care.

A. Staffing

1. The emergency department shall be under the medical direction of a physician and staffed 24 hours in the emergency department by a licensed physician(s) approved by an appropriate medical staff committee. A full-time physician-director or chairman of the hospital medical emergency care committee shall have overall responsibility for the operation of the emergency department. Other personnel shall include registered nurses and/or licensed vocational nurses and other allied health personnel, such as emergency medical technicians, each with appropriate special training in emergency lifesaving procedures, including, but not limited to, airway breathing, circulation and control of hemorrhage.

2. Members of the medical staff shall be available on call for medical specialty consultation services to patients in need of specialized emergency medical care and treatment. A roster of those specialty physicians on call shall be maintained in the emergency department indicating name, specialty and method of contact, i.e., phone number, etc.

B. Essential Emergency Department Equipment.

Equipment adequate for the care of direct admissions or referrals from other hospitals shall be available in the emergency department. The equipment

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shall include, but not be limited to (as determined by the hospital medical staff) the following:

1. Airway control and ventilation equipment.
2. Suction devices.
3. Cardiac monitor-defibrillator.
4. Pacemakers.
5. Apparatus to establish central venous pressure monitoring.
6. Intravenous fluids and administration devices, including blood expanders.
7. Sterile surgical sets.
8. Gastric lavage equipment.
9. Appropriate drugs and supplies.
10. Blood pressure apparatus.

C. Physical Facilities and Supportive Services

1. The patient/visitor waiting area shall be separate from the emergency treatment area. An isolation area is recommended.

2. The hospital shall have readily available the facilities and services of a blood bank in the hospital or community containing conventional types of blood and blood derivatives and have ready access to a supplemental supply. "Readily available" may be defined as a Walking Blood Bank; consideration should be given to an ambulatory blood bank. In addition, blood storage facilities shall be in or adjacent to, or near to the emergency department.

3. Laboratory service shall be capable of performing analyses and procedures appropriate for emergency medical care as determined by an appropriate committee of the medical staff. This service shall be staffed by qualified personnel available on the premises or on call 24 hours a day.

4. Radiological service shall be in or adjacent to the emergency department, and shall be capable of providing appropriate studies and procedures as determined by an appropriate committee of the medical staff. This service shall be staffed by qualified personnel available on the premise or on call 24 hours a day.

5. Operating room(s) shall be ready and promptly available to patients from the emergency department for emergency surgical procedures, and staffed by appropriate surgical specialists including an anesthesiologist or nurse anesthestist and operating room personnel available on the premises or on call 24 hours a day.

6. Postoperative recovery care shall be rendered in a unit adjacent to the operating suite and staffed by trained personnel when the unit has patients or in other special care areas.

7. Intensive care unit or area shall be available and have adequate monitoring and therapeutic equipment and specially trained personnel shall be available at all hours when the unit or area has patients.

D. Emergency Communication Services

1. A telephone or two-way radio communications in accordance with a community plan shall be available on a day-to-day basis to arrange for referral to a qualified health facility and/or for immediate medical consultation with a qualified physician to assist in resuscitation and/or direction of further emergency or definitive medical care. A list of supporting community resources shall be available.

2. Communications equipment for inter-hospital coordination for direct two-way communication between the emergency department and ambulances, dispatchers, law enforcement personnel, when and where appropriate, is recommended. The development of future plans for two-way communication is recommended as appropriate for the community.

E. Medical Records

Records are maintained on all patients presented or presenting themselves for emergency medical care. Patient records of the emergency department shall be regularly reviewed by an appropriate medical staff committee. It is recommended that upon discharge, each patient or patient's relative be given a post-emergency instruction sheet.

F. Public Information Services

1. There shall be markings on the hospital that would indicate to the general public that emergency medical services are available.

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2. The hospital shall provide an information sheet and/or post signs for each patient or those accompanying the patient which would clearly explain the following: (a) the triage process[1] which would provide possible reasons for delay whenever immediate treatment cannot be given; (b) the "on-call" procedure for medical specialists, radiological, laboratory and other medical support service personnel and (c) the concept of charges for emergency medical care services, including laboratory, Xray, physician's fees and hospital charges.

II. EMERGENCY STANDBY SERVICE

The hospital shall be equipped, prepared and adequately staffed to initiate emergency resuscitative and life-support medical services for patients of all ages. The hospital shall have established a referral and transfer system under prior agreement with other health facilities when transfer is necessary for further emergency or definitive medical care.

A. Staffing

1. The emergency department shall have as a minimum a physician available on call 24 hours a day. A part-time physician-director or chairman of the hospital emergency care committee shall have overall responsibility for the operation of the emergency department. A registered nurse or licensed vocational nurse, supported by other allied health personnel, all with special training in emergency lifesaving procedures, including but not limited to airway breathing, circulation and control of hemorrhage, shall be assigned to the emergency department as their primary duty 24 hours a day and shall be immediately available on the hospital premises.

2. A roster of those physicians on call and sources of specialty medical services shall be maintained in the emergency department indicating name, specialty and method of contact, i.e., phone number, etc.

B. Essential Emergency Department Equipment

Equipment adequate for the care of direct admission or referrals shall be available in the emergency department. The equipment shall include but not be limited to (as determined by the hospital medical staff) the following:

1. Airway control and ventilation equipment.
2. Suction devices.
3. Cardiac monitor-defibrillator.
4. Pacemarkers.
5. Apparatus to establish central venous pressure monitoring.
6. Intravenous fluids: and administration devices, including blood expanders.
7. Sterile surgical sets.
8. Gastric lavage equipment.
9. Appropriate drugs and supplies.
10. Blood pressure apparatus.

C. Physical Facilities and Supportive Services

1. The patient/visitor waiting area shall be separate from the emergency treatment area. An isolation area is recommended.

2. The hospital shall have readily available blood storage facilities containing conventional types of blood and blood derivatives and have ready access to a supplemental supply. "Readily available" may be defined as a Walking Blood Bank; consideration should be given to an ambulatory blood bank.

3. Laboratory services shall be available and staffed by qualified personnel available, as a minimum, on call 24 hours a day.

4. Radiological service shall be available and staffed by qualified personnel available, as a minimum, on call 24 hours a day.

5. The operating room(s), staffed by operating room personnel, including an anesthesiologist or experienced nurse anestheist, shall be available, as a minimum, on call 24 hours a day for emergency surgical procedures.

6. Postoperative recovery care shall be rendered in a unit adjacent to the operating suite and staffed by trained personnel when the unit has patients or in other special care areas.

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[1] The emergency department triage process is defined as the provisions of prompt, brief medical evaluation of all incoming patients to determine the nature of the medical problem, the level of emergency, the identification of the kind of service needed and assignment of emergency attention.

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7. Intensive care unit or area shall be available and have adequate monitoring and therapeutic equipment and specially trained personnel shall be available at all hours when the unit or area has patients.

D. Emergency Communication Services

1. A telephone or two-way radio communications in accordance with a community plan shall be available on a day-to-day basis to arrange for referral to a qualified health facility and/or for immediate medical consultation with a qualified physician to assist in resuscitation and/or direction of further emergency or definitive medical care. A list of supporting community resources shall be available.

2. Communications equipment for inter-hospital coordination for direct two-way communication between the emergency department and ambulances, dispatchers, law enforcement personnel, when and where appropriate, is recommended. The development of future plans for two-way communication is recommended as appropriate for the community.

E. Medical Records

Records are maintained on all patients presented or presenting themselves for emergency medical care. Patient records of the emergency department shall be regularly reviewed by an appropriate medical staff committee. It is recommended that upon discharge, the patient or patient's relatives be given a post-emergency instruction sheet.

F. Public Information Services

1. There should be markings on the hospital that would indicate to the general public that emergency medical services are available.

2. The hospital shall provide an information sheet and/or post signs for each patient or those accompanying the patient which would clearly explain the following: (a) "on-call" procedure for physicians, radiological, laboratory and other medical support service personnel and (b) the concept of charges for emergency medical services.

III. EMERGENCY FIRST AID AND REFERRAL SERVICE

The hospital or acute care facility shall be equipped, prepared and adequately staffed to initiate emergency resuscitative and life-support medical services for patients of all ages. The hospital or acute care facility shall have established a referral and transfer system under prior agreement with other health facilities when transfer is necessary for further emergency medical care.

A. Staffing

A registered nurse, licensed vocational nurse or emergency medical technician, all trained and qualified in emergency lifesaving procedures, shall be on call from within the hospital and be available 24 hours a day. The qualifications, level of ongoing training and function of these staff people shall be the responsibility of the medical staff or the medical director of the hospital.

B. Emergency Medical Care Treatment Area and Equipment

The hospital shall have a treatment area available for emergency medical care and have available, but not limited to (as determined by the hospital medical staff) the following equipment:

1. Airway control and ventilation equipment.
2. Suction devices.
3. Cardiac monitor-defibrillator.
4. Pacemakers.
5. Apparatus to establish central venous pressure monitoring.
6. Surgical and intravenous administration sets.
7. Emergency resuscitative intravenous fluids.
8. Gastric lavage equipment.
9. Emergency drugs and supplies.
10. Blood pressure apparatus.

C. Emergency Communication Services

A telephone or two-way radio communications in accordance with a community plan shall be available to arrange for referral to a qualified health facility and/or for immediate medical consultation with a qualified physician to assist in resuscitation and/or direction of further emergency medical care.

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D. Medical Records

Records are maintained on all patients presented or presenting themselves for emergency medical care. Medical records of those patients who received first aid treatment shall be regularly reviewed by an appropriate medical staff committee.

E. Public Information Services

There should be no markings on the hospital which might indicate any form of outpatient emergency service. If the hospital maintains an ambulance or emergency entrance for the limited purpose of admitting critical patients of medical staff physicians, such an entrance should be clearly marked in a way that would not mislead the general public into thinking emergency medical services are available. It may be designated simply as "Ambulance Entrance." If referral is necessary, the patient or those accompanying the patient shall be given clearly stated instructions and assistance on how to reach the nearest "Basic 24-Hour Emergency Service" or "Emergency Standby Service" facility.

ADDENDUM

It must be recognized that there is a need for the identification of additional specialized emergency medical services for which provision should be made in the three-level classification system delineated in the preceding pages. This classification system would assist the public in identifying the three general levels of emergency services in hospitals while the identification of additional services would be to assist health professionals and emergency care support agencies (i.e., fire, police and ambulance) to plan and utilize such services.

It is recommended that the following additional specialized emergency medical care and support services be identified and clearly defined:

1. Antivenin Service. Regularly stocking antivenin for the treatment of rattlesnake bites.

2. Burn Center. A separately organized unit under the direction of a specifically trained physician and supported by additional qualified professional personnel with specialized equipment for the handling of major burns.

3. Communicable Disease Department. A unit capable of accepting all types of communicable diseases in both adults and children for diagnosis and treatment.

4. Coronary Care Unit. A specialized area of the hospital operated on a 24-hour basis with permanently assigned, especially skilled nursing personnel and necessary treatment and monitoring equipment for the care of coronary patients.

5. Heliport. A licensed and marked facility on or adjacent to hospital property for the landing of a helicopter.

6. Neurosurgery Department. A separately organized department equipped and staffed by specially trained personnel capable of providing services in the diagnosis, repair and rehabilitation of the nervous system.

7. Organ Bank. ( ) Bone, ( ) Kidney, spleen, ( ) Vessels, ( ) Eye, ( ) Liver, ( ) Other.

8. Orthopaedic Department. A separately organized department equipped and staffed by specially trained personnel capable of providing services in the diagnosis, repair and rehabilitation of the skeletal system and associated structures.

9. Poison Information Center. A department staffed 24 hours a day by qualified professional personnel to maintain indexed information on the chemical makeup and toxicity levels of food, commercial and plant products and provide clinical information regarding the suggested mode of treatment and clinical signs related to the ingestion of foreign elements.

10. Psychiatric Emergency Service. Organized facilities and services of the hospital for emergency outpatient care for psychiatric conditions considered to require immediate care. Staff must be available 24 hours a day.

11. Radiation Accident. A specific plan to cover the exacting requirements for the handling of radiation accident victims, including designation of appropriate isolation facilities, procedures for handling and removal of waste, and the maintenance of trained personnel under the direction of a radiologist.

12. Premature Infant Service. A separately organized unit under the direction of a specifically trained physician and supported by additional qualified personnel for the care of premature infants.

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13. Emergency Maternity Care Unit. A separately organized unit under the direction of a specifically trained physician and supported by additional qualified personnel for the care of maternity patients on an emergency basis.
14. Emergency Paramedic Services. A separately organized service staffed by personnel specifically trained in a recognized emergency medical care program and who are under the direction of a qualified physician specifically trained in emergency medicine. Paramedics can staff either or both the hospital emergency department or emergency mobile intensive care vehicles.
15. Cardio-pulmonary Center with Bypass Ability. Organized cardio-pulmonary unit with bypass ability.

Senator CRANSTON. Our next to the last witness is Dr. Walter A. Graf, Past President and Member of Board, Los Angeles County Heart Association, Project Director, Los Angeles County Heart Association Coronary Ambulance Paramedical Pilot Program.

Dr. Graf, Kenny Hahn spoke very highly of you this morning, I don't know if you were present or not.

Dr. GRAF. I was not. Thank you.

STATEMENT OF DR. WALTER S. GRAF, PAST PRESIDENT AND MEMBER OF BOARD, LOS ANGELES COUNTY HEART ASSOCIATION; PROJECT DIRECTOR, LOS ANGELES COUNTY HEART ASSOCIATION CORONARY AMBULANCE PARAMEDICAL PILOT PROGRAM

Dr. GRAF. I will be brief in my remarks.

Senator CRANSTON. Thank you.

Dr. GRAF. I will just touch on the last portion of my remarks which relate to my involvement in a 3-year evaluation of paramedics emergency heart care functioning. I'd like to make the following statements:

(1) That the majority of lives that can be saved under any emergency program will relate to patients with heart attacks. This is by numbers involved and by virtue of the fact that such a large percentage of them are salvageable.

(2) That properly trained firemen can deliver a level of emergency heart care which is equivalent to that of a coronary care unit nurse. We say this now with documentation after a 3-year program. We are fortunate in being able to compare coronary care unit functioning during the first year with paramedic functioning during the third year, and we were able to compare the types of cases they dealt with, the types of services they rendered and the results.

(3) The results are identical from the two groups. We found that an intensive public education program regarding the importance of calling for help and calling for paramedical or physician's involvement at the time of a heart attack raised the number of calls very much, but did not alter the number of proper calls. In other words, there was not abuse of the system because of the public education programs.

(4) We found that the nurses and the physicians and the public accepted the role of the firemen paramedics, and we found that the public is generally less resistant to calling for help when they are calling the paramedic or, in our case, the fire department, than when they call a physician, there's a much shorter time period.

I think it would be appropriate to make a comment on the word paramedic, it means different things to different people, and to many people the word paramedic means somebody who's a physician's as-

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sistant, either in the office or in the hospital; as someone who may be trained to assist in surgery or delivery or taking care of pediatric problems. To other people it may mean someone who has been an Army medic. But here in Los Angeles, when we say paramedic, we mean someone who has been certified by the Paramedic Committee of the County of Los Angeles, who has had a minimum of 300 hours of training as an emergency specialist under the Wedworth-Townsend Act. So paramedic means one thing to me and perhaps something else to other people.

That's the conclusion of my remarks.

Senator CRANSTON. Thank you very, very much.

I have a few questions to ask you. First, what latitude does a paramedic have to treat a coronary patient at the time of the emergency?

Dr. GRAF. Under the existing State law, he cannot treat a patient independently other than to render the usual first aid and to administer oxygen or do defibrillation if he is a certified paramedic. In order to give drugs, he must be in radiotelemetry contact or voice communication by telephone with either a physician or a certified nurse.

Senator CRANSTON. Is that the way it operates in your pilot program?

Dr. GRAF. Yes, that's correct. Our pilot program was initiated with borrowing a nurse from a coronary care unit to make the run with the coronary ambulance. Shortly after the program went into effect, the Wedworth-Townsend Act passed, which permitted us to use firemen provided they were properly trained and certified and were in communication with a nurse or physician.

Senator CRANSTON. Are there legal restrictions on the paramedic's ability to perform lifesaving techniques?

Dr. GRAF. Well, the legal restrictions, as I understand, would be those which are delegated in the law. There are certain drugs or classes of drugs, which they can give, others which we would like to give which have not yet been adopted, so they have a certain range of action as delegated by law.

Senator CRANSTON. Do you think that range should be expanded?

Dr. GRAF. Yes.

Senator CRANSTON. If you could give us in writing your recommendations on that score, I would be very grateful.

Dr. GRAF. I would be delighted.

[The information requested and subsequently supplied follows:]

THE RECOMMENDED SCOPE OF PARAMEDIC ACTIONS

(a) Administer intravenous saline, glucose or volume expanding agents or solutions.
(b) Perform pulmonary ventilation by use of esophageal airway.
(c) Perform gastric suction by intubation.
(d) Obtain blood for laboratory analysis.
(e) Apply rotating tourniquets.
(f) Administer parenterally, orally or topically any of the following classes of drugs or solutions:
(i) Antiarrhythmic agents.
(ii) Vagolytic agents.
(iii) Chronotropic agents.
(iv) Analgesic agents.
(v) Alkalinizing agents.

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(vi) Vasopressor agents.
(vii) Narcotic antagonists.
(viii) Diuretics.
(ix) Anticonvulsants.
(x) Ophthalmic solutions.
(xi) Hypertonic glucose.
(xii) Antihistaminics.
(xiii) Bronchodilators.
(xiv) Emetics.

Senator CRANSTON. Finally, let me ask how you see the results of your study being applied in the countywide effort now under way to develop a comprehensive system?

Dr. GRAF. I think that the fire department offers an excellent method of delivering emergency health care. I'm not sure it's the only method, but it's an excellent method, because they have people who are on salary already, who are housed, who have vehicles and who can be dispatched with an excellent system to the point of need. I visualize the day, however, when such fire rescue personnel who are functioning as paramedics could easily be part of a separate department and could provide health delivery much the same way as we get fire help or police help as a separate, independent arm of government.

Senator CRANSTON. Thank you very much, you have been most helpful and I appreciate your presence.

PREPARED STATEMENT OF DR. WALTER A. GRAF, PAST PRESIDENT AND MEMBER OF BOARD LOS ANGELES COUNTY HEART ASSOCIATION, PROJECT DIRECTOR LOS ANGELES COUNTY HEART ASSOCIATION CORONARY AMBULANCE PARAMEDICAL PILOT PROGRAM

I am Dr. Walter S. Graf. My credentials include:

1. Project Director of the Pilot Project on Emergency Coronary Care, (Coronary Ambulance/Paramedic Evaluation), sponsored by the Los Angeles County Heart Association, the County of Los Angeles, Area IV (U.C.L.A.) Regional Medical Programs, and three private hospitals.
2. Past president of the Los Angeles County Heart Association.
3. Chairman, Paramedic Committee of the Los Angeles County Board of Supervisors.
4. Member, Committee on Emergency Medical Care of the Los Angeles County Board of Supervisors.
5. Clinical Professor of Medicine at the University of Southern California School of Medicine.
6. Past Consultant and District Coordinator for the Regional Medical Programs, Area IV (U.C.L.A.).

I have read S. 504 and the senator's relevant remarks recorded in the Congressional Record of January 23, 1973.

The senator deserves congratulations and support for his concern with the important subject of the delivery of emergency medical care.

Certain problems relevant to the senator's proposed program deserve being stated.

The concept is advanced by the senator that we possess the technical and medical capabilities for correction of emergency medical services deficiencies. The process for such correction is directed towards coordinated planning as well as community involvement.

The Regional Medical Programs were initiated on analogous premises. Many hundreds of millions of tax dollars were spent because of the concept that there was significant medical research knowledge which was not being delivered to the public. Multiple planning committees in every state were funded to correct such health delivery deficiencies.

The sad history of the Regional Medical Programs includes an extremely varied and shifting set of goals and objectives, the eventual abandonment of major diseases as primary concerns, to concentration on socio-economic programs which bore little relationship to the legislation. Finally, there evolved a

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commitment to changing the existing system of health care. I avoid debate about the wisdom of these developments, but do wish to underline that they were not the intent of the legislation and that the attainment of significantly improved medical care was not accomplished by the Regional Medical Programs.

The senator's bill appears to be creating a new nationwide system of planning committees which will probably involve many of those previously employed by the Regional Medical Programs, and with a fair chance of the same types of functioning.

These brief remarks do not imply that the senator's bill must suffer the same fate as the Regional Medical Programs. The senator's concept of supporting the development or expansion of comprehensive area emergency medical service systems is superb. That sums of money could be used to train appropriate manpower, and support other components of an emergency medical service system, has great merit. My prime concern relates to the inefficiency of having hundreds of planning committees throughout the country all doing similar planning processes simply because there would be federal money available to any properly constituted planning committee.

The ultimate goals of the senator's bill, S. 504, must be to save lives, reduce disability and minimize suffering. Funding should involve some measurable criteria of success. "Annual reports" are not the same as a true evaluation or demonstration of achievement of purpose.

Another concern which I shall express relates to Section 636 of S. 504. Therein it is stated that Area Emergency Medical Services Planning Councils shall have consumer representation of at least one-third of the Council's voting membership. More specifically, the bill defines such persons as "of the general public who are not related to the provision of health care." Such emphasis on consumer involvement implies one or all of three possibilities:

1. The consumers possess an expertise or knowledge that is not available or known to the providers of health care, or

2. The consumer interests must be protected from those who are providers of health care, or

3. The expansion of such planning committees by persons unskilled or unknowledgeable in problems related to providing health care will improve the fruitful functioning of such committees.

I would ask the senator to seriously reconsider the formula for constituting such committees.

The last point of my concern is that adequate emergency medical services may never exist until such services are delivered as a function of the government. The public should be entitled to emergency medical services just as it is to fire and police protection. It is possible that the senator's bill could serve as a prelude to such governmental service, or, on the other hand, that S. 504 would defer governmental involvement in this area.

Finally, as a result of my involvement in a three-year evaluation of an emergency heart program, I would like to make the following statements:

1. The major salvaging of lives in an emergency care program will come from early treatment of patients with a heart attack.

2. Properly trained firemen can deliver a level of emergency care equal to that of skilled Coronary Care Unit nurses.

3. Such skilled paramedics can salvage as many lives with simple portable equipment as with more sophisticated cardiac ambulances.

4. In our project, an intensive public education program resulted in a marked increase in utilization of the emergency system without any disproportionate increase in unjustified calls.

5. The public, the nurses and the physicians accepted the new role of the fire/rescue paramedic.

6. The public is less resistant to calling the paramedic than the physician for acute heart attack. The "call-for-help" time was about half as long when the fire/rescue paramedic was called rather than a physician.

In conclusion, I hope that my remarks may be useful to the senator. I fully support his concern for the improvement of emergency medical services.

Senator CRANSTON. Our final witness is Mr. Robert B. White, Los Angeles County Federation of Labor, AFL-CIO, Member of the Los Angeles County Committee on Emergency Medical Care.

Bob, we are delighted to have you with us.

Mr. WHITE. Thank you very much.

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STATEMENT OF ROBERT B. WHITE, LOS ANGELES COUNTY FEDERATION OF LABOR, AFL–CIO, MEMBER OF THE LOS ANGELES COUNTY COMMITTEE ON EMERGENCY MEDICAL CARE

Mr. WHITE. I have not a prepared statement this morning, Senator, and I appreciate this opportunity to speak off the cuff.

I have been off work one week, troubled with the one thing modern medical technology has failed to do anything, about, the common cold.

I am representing this morning the Los Angeles County Federation of Labor and Sigmund Arywitz, who is the executive secretary, and in that context I guess I am the only representative of the organized consumer.

I might indicate that we are proud and privileged to serve on the Los Angeles County Committee on Emergency Medical Care where, again, I am the only consumer representative and somewhat of a problem child occasionally.

We have looked at both S. 504 and S. 654, and my remarks are directed solely to S. 504 this morning. There is not much wrong with S. 654 except we can't buy the philosophy that we should take all the loot and turn it over to the tender mercies of our fifty governors, because we don't have that kind of faith in the humanitarianism of all of our 50 Governors, including our own.

I just want to make a few brief remarks about items contained in the bill.

You have mentioned the matter of a returning veteran, a corpsman. We are very concerned about that, too, and we would suggest that the bill needs to be beefed up by putting some teeth in it regarding opportunities for the veteran to find his way into the health delivery industry, whether it be emergency medical care or in some other area. In this State we had legislation in 1969 that was put under the tender mercies of that other union and so far nothing has happened in the way of opening doors unless the paramedic who has been given training by the taxpayers is willing to go to work for $1.85 or $1.90 an hour and we certainly can't see any rationale in that.

The matter of communication in emergency medical care, to us, is the number one item, and one of the great items, of course, is this matter of allocation of channels, and it seems to me that to be effective, legislation must mandate some priorities for the Federal Communications Commission in the allocation of channels so that sophisticated and complete emergency medical communication systems can be developed. Of course, here in this county, we have that NIH syndrome, Los Angeles City is still not a part of the county, but that is a problem we will resolve in our own back yard.

One other item that I have discovered that, as a consumer, concerns me. Your legislation touches on the need for some comprehensive and universal records keeping for patients who enter the emergency medical care system. We couldn't agree more, but we need in this legislation some mandate to organized medicine that those records travel with the patient.

It is a sad fact in this county, as advanced as they are, that the Dun & Bradstreet is still the top line on the form, and while all the agencies do provide the emergency medical care, they are also check-

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ing that D.B. thing. And when it is discovered that the patient needs to be transferred somewhere, they do so, but the problem is they do not send any of the records concerning the medication, the X-rays, et cetera that they have already acquired, thus, the receiving agency, which is generally this institution or Harbor General, et cetera, has to start from scratch in many cases in discovering the medical needs of the patient. We think this is a horrible waste, not only of taxpayers' money, but the fact that it might lead to some additional problems for the patient.

I would also like to suggest we love this idea of an area committee, we have one here in this county, and the idea of a national committee that oversees it, but I would like to suggest that perhaps this area committee, since it is to be at least 50 percent composed of consumer representatives, could also be empowered to act as a consumer hearing board and a buffer between the consuming public and the delivering industry and thus, perhaps, avoid some conflict.

That about covers the points I have. I certainly appreciate having this opportunity to testify.

Senator CRANSTON. Thank you very much, Bob, I deeply appreciate your coming and your helpful testimony and your interest.

That completes our hearing and I want to thank each of you for your presence, for your interest in this, for the helpfulness that many of you have rendered this morning and the helpfulness that I trust all of you will be providing in an effort to move this legislation, to improve it, to make people understand and to make it the law of the land.

At this point I order printed all statements of those who could not attend and other pertinent material submitted for the record.

[The material referred to follows:]

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COMMUNITY CONGRESS OF SAN DIEGO
1194 BROADWAY, SAN DIEGO, CA 92101
P. O. BOX 2671, CA 92112, 239-0351

March 9, 1973

STATEMENT ON S. 504 "THE EMERGENCY MEDICAL SERVICES SYSTEMS DEVELOPMENT ACT OF 1972" GIVEN MARCH 12, 1973 IN LOS ANGELES, CALIFORNIA.

The Medical Committee for Human Rights, San Diego Chapter, applauds and strongly endorses Mr. Cranston's efforts withS 504 to promote improvements on an equitable basis in the delivery of Emergency Medical Services. In order to strengthen this effort, we would suggest a few specific changes which should be made to eliminate some of the means by which providers have escaped their responsibilities to the people, as can be richly documented from experiences in San Diego. The clause "to the maximum extent feasible" (section 635, part G) should be deleted entirely, as it is precisely on the grounds of economic infeasibility that emergency medical care has been most frequently denied. Legislation should also recognize drug, alcohol and mental health crises as emergencies as great as more traditionally labeled "medical" ones. The federal government, through a contract mechanism, has attempted to support an expanded voluntary Emergency Medical Care Committee in San Diego County but exclusive representation of providers has promoted chiefly technological advances and obviated concern for the needs of the people at large in terms of accessibility of emergency services, both geographically, financially and attitudinally.

Contact: Sheryl Lee Sloat, R.N.
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DIVISION OF HEALTH AFFAIRS

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UNITED STATES
CATHOLIC CONFERENCE

SISTER VIRGINIA SCHWAGER, S. P.
DIRECTOR

March 19, 1973

The Honorable Alan Cranston
Senate Labor and Public Welfare Committee
Suite 4230
United States Senate
Washington, D. C. 20510

Dear Senator Cranston:

We are pleased to note that the Senate Labor and Public Welfare Committee will soon make its report on S. 504, the Emergency Medical Services Systems Development Act of 1973.

During the Conference on Emergency Health Services, held by the Department of Health, Education and Welfare in December, 1971, it was disclosed that approximately 60,000 accidental deaths a year could be prevented if a comprehensive emergency medical system were in operation. In fact, if such a system existed, it was estimated that preventable deaths from heart attacks alone would number approximately 35,000. Faced with the possibility of such promising results, it is imperative that this country attempt to substantially upgrade its emergency health service capabilities.

Because of the magnitude of such an effort, state and local jurisdictions, in addition to private institutions, will need considerable federal assistance, Regretfully, the proposed budget for fiscal year 1974 provides no direct aid to communities for the enhancement of emergency medical services. It is essential than that Congress assert its initiative in this area.

Congress could accomplish this objective, we feel, with its timely passage of S. 504 which would authorize 300 million dollars over the next three years for projects, grants and contracts for the planning and development or expansion of comprehensive area emergency medical service systems.

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Because we are deeply concerned with the great loss of human life due to the insufficiencies of our present emergency medical service system, it is our hope that a prompt enactment of this important legislation will be forthcoming.

Sincerely yours,

Sister Virginia Schwager, S. P.
Director

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CALIFORNIA

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PERSONNEL DEPARTMENT
100 CITY HALL SOUTH
111 EAST FIRST STREET
LOS ANGELES, CALIF. 90012

MURIEL M. MORSE
GENERAL MANAGER

March 6, 1973

Honorable Alan Cranston
United States Senator
Federal Building, Room 13220
11000 Wilshire Boulevard
Los Angeles, California 90024

STATEMENT ON S.504

The effort embodied in S.504 to provide assistance and encouragement for the development of comprehensive emergency medical service systems is highly laudable. It is so, for the following reasons:

-- it stimulates developments in an area easily neglected, but very much needed. Attention may be lavished on all phases of medical care, yet the all-important step of getting those suddenly taken ill or injured to a place where they can be properly cared for is frequently overlooked or poorly performed, and the treatment received upon arrival, inadequate.

-- it helps in the financing for a broad range of activities where local entities may be severely limited in their resources.

-- it can lead to greater uniformity nationally where conditions might otherwise be quite varied.

As one example of the kinds of problems that arise as a part of the last point made above, your Committee might consider the situation in the San Fernando Valley. Here we have a continuous land area of approximately 275 square miles, relatively self-contained, with a population estimated as close to 1,300,000 overall. It is served by 29 hospitals, containing 4,300 beds. These hospitals are largely proprietary, the predominant number are less than 150 beds in size, and they provide a capacity at least 1/3 greater than the estimated need. As a result, the Medical Advisory Council, that I chair, has initiated through the staff of the Personnel

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Department an overall survey of hospital facilities in the San Fernando Valley. Its objective is to develop a set of criteria for a model emergency medical service, to complete a survey of all existing facilities, and in the application of the model to existing facilities, to arrive at an optimized network of emergency hospitals to serve San Fernando Valley residents. I am attaching for your interest, the most recent draft of the criteria for a model San Fernando Valley Emergency Medical Service, on which work continues.

Still another facet of this problem is the relatively large number of organizations at the local level concerned with the problems of providing effective emergency medical care. For a recent meeting held in the San Fernando Valley by our Medical Advisory Council, as a part of the completion of our survey, invitation were sent to 15 organizations. These included such organizations as the Los Angeles County Committee on Emergency Medical Care, Los Angeles County Department of Health Services, Comprehensive Health Planning Agency of L. A. County, California Regional Medical Programs, Hospital Council of Southern California, L. A. County Medical Association, and a number of other providers and consumers.

There is evident a critical need for the development of uniform standards for the provision of emergency medical services, and for bringing together the many agencies concerned. I hope these comments will prove useful in the deliberations of your Committee, and I would be glad to provide additional information if the opportunity presents itself. I wish you every success with S.504.

Lester Breslow, M.D., M.P.H.
President
Medical Advisory Council

LB:pa

Enclosures

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December 6, 1972

LOS ANGELES CITY PERSONNEL DEPARTMENT

CRITERIA FOR MODEL MEDICAL EMERGENCY SERVICES IN THE SAN FERNANDO VALLEY

Hospitals to be included in the emergency aid plan will be evaluated in terms of the criteria for a model medical emergency service contained in the following pages. These criteria will be considered in their totality, recognizing that a single hospital may not possess all of the characteristics described.

I. Hospital Functional Characteristics and Capacity

A. Size: a bed capacity of 150 or more.

B. Location:

1. The hospital, during peak traffic hours, shall be within:

---15 minutes by surface transport of 80% of the population to be served;

---20 minutes of the next 15%, and

---30 minutes of the remaining 5%.

2. The hospital shall be located close to main highway arterials and/or freeways, approachable from any direction, and free of barriers to access such as railroads, rivers, hilly terrain, freeways. Alternate access shall be available, but shall not increase the previously stated transport times by more than 50%.

3. Sufficient population and number of cases by type to justify service provided. The populations served by each hospital shall not be overlapping.

C. Services: The hospital shall be able to diagnose and treat definitively the broadest spectrum of adult and pediatric medical problems, including:

1. Major single or multiple trauma involving any bodily part

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arising from mechanical, chemical, thermal, electrical asphyxiant, pneumatic, barometric, hydraulic, hydrostatic, or radiant causes.

2. Acutely life-threatening disease states or sequelae arising from internal or external sources.

3. Acutely life-threatening psychiatric disorders.

D. Full facilities, equipment, supplies and medications shall exist for the spectrum of emergencies listed above, organized as follows:

Radiography Department[1]	Obstetric/Gynecology Unit[1]
Clinical Laboratory[1]	Orthopedic Department[2]
Pharmacy[1]	Ophthalmic Care Unit[1]
Blood Bank/Storage[2]	Pediatric Department[2]
Major Surgery[1]	Poison Center[3]
Neurologic Surgery[2]	Urologic Care Department[1]
Recovery Rooms[1]	Renal Failure Unit[3]
Inhalation Therapy Unit[1]	Communicable Disease Isolation Unit[3]
Intensive Care Unit[1]	Decompression Unit[4]
Cardiac Care Unit[1]	Hyperbaric Unit[4]
Major Burn Unit[2]	Psychiatric Unit[4]
Physical Therapy Unit[2]	Alcohol and Drug Abuse Unit[2]
Infant Care Unit[1]	

II. Hospital Quality Characteristics

A. Approvals and Licensure: Continuing approval, on the basis of initial and periodic evaluation, by the following agencies:

---

1 Mandatory services for any hospital

2 Highly desirable services

3 Desirable services

4 Mandatory services for hospitals serving special or very large populations

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1. State of California
2. Joint Commission on Accreditation of the American Hospital Association and the American Medical Association.
3. California Hospital Association Medical Survey Team.
4. Comprehensive Health Planning Agency.
5. American Heart Association or Los Angeles County Heart Association (CCU).
6. Medi-Cal/Medicare Agencies.
7. Local Agencies (name).
8. Special Agencies (for example, U.S. Navy, for decompression units, Atomic Energy Commission, for ionizing radiation isolation units).

B. Medical Staffing:

1. Coverage: Minimum staff coverage shall be 24 hours daily, 7 days per week, by at least one of each of the following personnel -- physician, registered nurse, licensed vocational nurse, x-ray technician, clinical laboratory technologist. These minima shall be appropriately increased as case load requires. Adequate standby specialist staff shall be available within the critical time period required by each type of service the hospital provides.
2. Medical Staff Participation Requirements:
   a. Physicians: Pertinent specialty Board requirements for each special service provided. For a service not under Board regulation, the requirements shall be a minimum of three years' full-time supervised practice in the type of service covered, or an equivalent period of formal training and practice.

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b. Paramedical Staff: For lead RNs, LVNs, paramedics, technicians, and technologists, the requirements shall be those of the licensing agency, and a minimum of two years' full-time experience in the type of service covered, or an equivalent period of training and experience.

3. Continuing Education Policy and Practice: Continuing medical staff membership shall be contingent upon participation in educational programs specified by the pertinent Board for each type of service provided, or by standards promulgated by national organizations in the field or, in the absence of such programs, in an educational program formally defined and supervised by the hospital's medical staff.

C. Administration:

1. Managerial Functions: The hospital shall provide effective administration for all services, with full control and direction of medical activities by the medical staff. Ongoing administration shall identify system functions, and provide policies, procedures, and standards not otherwise imposed by regulatory or contracting agencies to cover operations, training of staff, records and associated data storage, retrieval and analysis, systems evaluation, and quality controls.

2. Operations Evaluation and Control:

a. Record keeping in accordance with standards established by community or national organizations in the hospital field, to provide sufficient uniform data for meaningful program evaluation and control. In the absence

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of such standards, a uniform system of record keeping for each type of service shall be defined in the hospital rules, bylaws or operating manual.

b. As a minimum, evaluations shall include analysis of the nature and frequency of services provided, application of measures of efficiency and adequate response, and appraisal of the quality of services. Wherever appropriate and feasible, evaluations shall be conducted by peer review in accordance with procedures outlined in the hospital rules, bylaws, or operating manual.

5. Related Administrative Policies and Practices:

a. All emergency patients shall be accepted regardless of prior demonstration of ability to pay.

b. The hospital shall provide for and carry out the following:

1. A satisfactory affirmative action program.
2. A consumer input plan.
3. A community education plan.
4. Participation in community medical emergency planning.
5. A bilingual, bicultural staffing program as needed.
6. Membership in community organizations.
7. Participation in government projects as required.
8. Knowledgeable and efficient referral of social problem cases to outside agencies.

c. Financial stability: Evidence must be submitted showing financial stability.

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III. Emergency Room Functional Characteristics

A. Management: Direct ownership and operation of the emergency room by the hospital, and properly directed and integrated with other departments with review and supervision by a designated medical staff group, but maintaining separate departmental status.

B. Facilities: The emergency room shall have:

1. Adequate, efficiently designed space apart from routine hospital and out-patient functions, but physically attached to the main hospital premises.
2. Diagnostic x-ray, basic laboratory, inhalation therapy and EKG services available on premises 24 hours daily.
3. Suitable blood bank or blood storage units and components.
4. On its own premises, the full range of equipment, instruments, supplies and medications needed to care for any emergency case it might reasonably be expected to receive.
5. Ambulance docking and approaches free of encumbrances, adequate to all but disaster-level case loads and clearly identified.
6. Adequate space for post-delivery parking of private vehicles.
7. A minimum of two emergency shower compartments, each to accommodate at least four adults and a minimum of two eye bath fountains and other eye-irrigation facilities.
8. Effective communications facilities including:
   a. A simple notification system, such as a universal emergency telephone number;
   b. Two-way ambulance-to-hospital and hospital-to-hospital communications system; and
   c. Participation in the emergency communications network of the region and state.

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9. A helicopter pad.

IV. Emergency Room Quality Characteristics

A. Approvals and licensure: Continuing approval on the basis of initial and periodic evaluation by the following agencies:

1. City-County Conference
2. California Medical Association Emergency Room Survey
3. Los Angeles County Heart Association
4. Los Angeles City, County, or Hospital Council of Southern California annual or periodic inspection program.
5. Other agencies as determined by the emergency services to be provided.

B. Emergency Room Staffing

1. Physicians: Each lead emergency physician per shift shall have specific knowledge of traumatology and emergency medicine, and shall have a minimum of three years full time practice in emergency services or an equivalent period of training and experience. A physician (or paramedic) trained in cardio-pulmonary resuscitation shall be available on premises 24 hours per day. Sufficient personnel shall be on duty so that each arriving emergency case is seen at once by a person trained in emergency service, and in almost all cases by a physician within 5 minutes. Adequate backup specialist staff shall be available to the emergency room from the hospital's regular medical staff within time limits appropriate to the various types of emergency cases.
2. Paramedic Staff: Specialized laboratory, x-ray and operating room personnel, and additional nursing staff shall be available on the hospital premises 24 hours a day as the case load may require.

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C. Emergency Room Paramedic Staff Basic Training:

1. RNs shall have had 240 hours or its equivalent of formal emergency care training and practice, the course content to consist of material such as that defined by the U.S. Department of Transportation (DOT).

2. Paramedics shall have had 480 hours of formal emergency training and practice, the course content to consist of the material defined by the U.S. Department of Transportation (DOT).

3. LVNs shall have had a minimum of 80 hours of training and practice, the course content to consist of material such as that defined by the U.S. Department of Transportation (DOT).

4. Technicians and technologists working in or with the emergency services shall have as a minimum, the basic training prescribed by the applicable licensing authority, plus further instruction and practice in emergency teamwork procedures carried out by qualified emergency physicians.

E. Emergency Room Refresher Training:

1. Each emergency physician shall have:

a. A minimum of 40 hours of formal refresher course participation annually in subjects related to emergency medicine.

b. A minimum of 240 hours of self-instruction annually in medical and allied fields tending to enhance competency in emergency medicine.

2. Paramedic Staff:

a. Each staff member shall be given instruction by staff physicians during and pursuant to the daily ER operation.

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b. Each member shall have a minimum of 40 hours biannually of formal emergency refresher or advanced training.

c. Each member will engage in self-instruction using programs developed by the emergency medical staff and approved by the hospital education committee, and related subject matter of interest to the individual.

F. Administration:

1. An emergency room manual covering rules, administrative and medical procedures, professional qualifications and privileges, organization and duty assignments, staff training, plans for specific actions shall be maintained on a current basis.

2. Records: Record keeping in accordance with standards established for emergency rooms by community or national professional organizations. In the absence of such standards, the emergency room manual shall specify a uniform record system which shall be coordinated with that used for the hospital overall.

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HOLY CROSS HOSPITAL
15031 RINALDI STREET, SAN FERNANDO, CALIFORNIA 91340 TELEPHONE (213) 365-8051

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March 12, 1973

To: Senator Edward Kennedy

From: Stephen A. Letourneaux, M.D.
Director Emergency Medical Service

RE: CONTINUING EDUCATION FOR PHYSICIANS IN EMERGENCY MEDICINE

In so far as it is possible, concerned physicians in emergency medicine are able to enhance their skills with the help of the specialists on staff at their particular hospital; as is especially true of Holy Cross Hospital; however, formal post graduate education for the working physician who is unable to stop working for a formal residency is generally unavailable in California with the significant exception of U.C.L.A.'s preceptorship under Dr. James Brill.

I feel compelled to disclose that those institutions that have both the material and the talent to organize preceptorships, excepting U.C.L.A., have not responded to their responsibility to either the community at large or the medical community specifically.

Thus in summary, I feel for the improvement of emergency medical care for Los Angeles County, some liaison for inception of training and retaining programs for the working emergency room physician must be accomplished soon if the public mandate is to be served.

Sincerely yours,

Stephen A. Letourneaux, M.D.

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Statement of
HOLY CROSS HOSPITAL, SAN FERNANDO, CALIFORNIA

Before the
SENATE HEALTH CARE COMMITTEE MEETINGS RE. EMERGENCY SERVICE
Los Angeles
March 13, 1973

Mr. Chairman and Members of the Committee:
On behalf of the board of trustees, medical staff and administration of Holy Cross Hospital I thank you for this opportunity to present our report of emergency service rendered to the citizens of the San Fernando Valley.

On February 9, 1971, a disaster created by an act of God demolished a community nonprofit health care institution which contained 259 licensed beds and an excellent emergency service with ancillary facilities providing high quality medical care in the Northeast section of the San Fernando Valley which today has in its primary service area half a million residents. Holy Cross Hospital opened June 26, 1961. At the time of its construction an additional emergency room was added to the original plans because of its location near the junction of the proposed San Diego and Golden State Freeways. From its inception the hospital had City and County emergency service contracts and rendered a constantly increasing amount of care, especially in the emergency area. So much so that in the summer of 197o arrangements were made for a contract physician service to provide physician coverage of the emergency area 24-hours a day.

On the morning of the earthquake, despite the severe damage to the hospital, 285 patients were seen in the emergency service, while at the same time the hospital was evacuating 165 patients in the main tower building of the hospital. The hospital was in the center of the devastated area, near the communities of San Fernando and Sylmar which suffered the most severe distress at that time.

An emergency meeting of the board of trustees was called immediately. On February 13, 1971, the board agreed unanimously that emergency service should be restored as soon as possible to the area, due to the dire need of the community for the services at this special time. This step was taken even though there was no source of income available to cover the expense of operating such a service without the income of an operating in-patient hospital to assist in financing overhead costs. On February 17,

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Statement of Holy Cross Hospital - Page 2

1971, just a week after the earthquake , the emergency service reopened. Ancillary out-patient services were made available at a tremendous financial loss to the hospital. The board reaffirmed by resolution its dedication to health care and its determination to restore service to this area. This resolution was communicated promptly to all appropriate agencies, and the need for the hospital was re-affirmed by the Southern California Comprehensive Health Planning Agency.

The hospital is dedicated to the health care of the entire community without relationship to race, creed, color or economic status. Members of the medical staff and personnel of the hospital are selected on the basis of competence, and an affirmative action program is in force in the hospital.

Through funds borrowed through the Small Business Administration the hospital began the restoration of a part of the in-service operation. In the meantime efforts were being made to secure legislation to include private, nonprofit hospitals in the Federal Disaster Act, PL 91 606. These efforts were finally successful and SB 1237 passed both houses of Congress unanimously and was signed into law by President Richard Nixon in December of 1971, becoming PL 92 209. Application for complete rebuilding of the hospital has been filed under the provisions of this law.

Although the application for rebuilding is still being processed through the various governmental agencies, Holy Cross Hospital has continued to expand its emergency care to the community. In April of 1972 it was possible to re-open 50 beds and another 22 beds will be opened in April of 1973. Although the previous capacity of the hospital was 259 beds, and the current capacity is only 50 beds, the emergency service is operating at at least 75% of its operations prior to the earthquake. Each month at least 1100 to 1300 persons are cared for in the emergency service area.

Pending final determination of the funding application, the hospital is operating at a deficit, since the overhead and plant operations continue despite the shortage of in-patient beds to produce corresponding income.

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Statement of Holy Cross Hospital - Page 3

We believe that Holy Cross Hospital has rendered an unique service to its community in maintaining emergency services in a time of desperate need, and we believe that this group should take notice of this effort of the board, staff and administration of the hospital to meet its obligations to the community even though the federal government has long delayed the processing of funding for this operation.

Respectfully submitted,

Sister M. Bertrand, CSC, Administrator
for the
Board of Trustees
Medical Staff
Administration of Holy Cross Hospital, San Fernando, California

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Mr. Harold A. Manis
1316 Rockledge Lane
Walnut Creek, Ca. 94595

March 21, 1973

Honorable Alan Cranston
c/o Louise Ringwaldt
Senate Health Sub-Committee
Labor & Public Welfare Committee
New Senate Office Building
Room 4230
Washington, D.C. 20510

Dear Senator Cranston:

The "Citizens Committee for Better Emergency Ambulance Service" in Contra Costa County, California, is solidly behind the purposes delineated in your Bill S 504. Our committee is comprised of seven members, two each from Walnut Creek and Concord, and one each from Lafayette, Martinez, and Pleasant Hill, California, an area covering 200 square miles with a population of over 300,000.

The objective of our committee is to save lives of acute emergency and accident victims through quick response by life-saving equipped ambulances operated by trained paramedical personnel from County fire stations.

An 18-month study of emergency ambulance service concluded that the most efficient, quick response, low cost emergency medical service can be provided by the Contra Costa County Consolidated Fire District, utilizing eight life-saving equipped van type ambulances staffed by trained paramedical personnel. Three ambulances are necessary for stand-by, back-up duty.

The Lafayette Fire Commissioner recently stated, "Private ambulances in this area are 65 mile an hour taxi services at $65.00 a trip". His statement confirms the excellent documentation of poor ambulance services which you made in your Senate address of January 23, 1973.

Our committee, many doctors, hospitals, public safety agencies, public health agencies, and the general public in our area believe emergency medical services should rightfully be considered public safety health services, just as police departments are so categorized. It follows that emergency medical services should logically be under the direction of fire districts, fire agencies, or other related jurisdictions, for the following reasons:

1. Response time by fire department emergency ambulances in our Consolidated Fire District would be from 4 to 8 minutes. Private ambulance response time in this area is 12 to 25 minutes. Acute heart attack victims require medical attention in the first 5 to 8 minutes, a well established fact among heart specialists.

2. Reliable accurate communication facilities between fire stations in our Consolidated Fire District are already established for quick emergency response.

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3. Because of driver incompetence and lack of training, private ambulances have, in the past, become lost in responding to an emergency. On the contrary, fire department personnel are trained to know exactly where to go and by the shortest route.

4. Personnel turnover in our area by private ambulance employees is 75% yearly, due to the employment of transients, students, etc., at very low pay. On the other hand, fire department paramedics would be stable, well-paid employees with good working conditions and retirement advantages encouraging continuance of their careers.

5. Fire departments maintain on-going, continuous training and re-training programs by experts in the field.

6. In accident extrications, fire department paramedical personnel could save many lives through quick response with life-saving equipment at the scene of the accident.

7. Fire departments in our Consolidated Fire District, and doubtless in many others in the United States, are equipped to train pre-paramedical personnel in Phase #1. The E.M.T. 2, Advanced Emergency Medical Technician training, consisting of 480 hours, could be completed at our County Hospital. Hence, the training of paramedical personnel in cooperation with our Consolidated Fire District presents no problem, and could save tax dollars.

8. Any grants given private ambulance companies for equipment, would probably remain their property in perpetuity. On the other hand, grants to fire districts, fire agencies, or other related jurisdictions, would remain in control and possession of the taxpayers.

9. Presently, most ambulance transportation vehicles do not meet the standards established in your Bill S 504, as van type ambulances are required to house the necessary life-saving equipment. Therefore, grants would be required to private ambulance companies in order for them to comply with the standards established in S 504, as far as emergency medical service is concerned. Instead of funneling our tax dollars through grants to private ambulance companies for the purchase of the required equipment, would it not be more economical and in the public interest to allocate grants to public safety agencies such as fire districts and fire agencies for the purchase of the same emergency medical equipment? Depending on area conditions, naturally, private ambulance companies will be required to provide emergency medical service in accordance with S 504.

10. Fully staffed emergency medical service response, which is guaranteed on a 24-hour basis by fire districts and fire agencies, could increase the percentage of lives saved.

11. Fire station locations are sufficient in number and so distributed to assure quick response and also to assure that, in emergencies resulting in multiple injuries, the necessary manpower and equipment are promptly available to handle simultaneous emergencies.

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12. Because ambulance companies are assigned a monopoly in certain identified zones, and because there is no dependable back-up service, the threat of revocation of ambulance permits because of non-compliance with County regulations is an unenforceable threat.

13. The fire service, as a public agency, is under strict regulation by the community and, therefore, is mandated to provide a high level of emergency service.

14. The fire department already has a standard reporting system, including forms to be completed on each response, in order to effect controls and collect statistics on emergency medical needs of the community.

15. What about the economics affecting private enterprise? As only 15% of all responses are for emergencies (survey by the State of California), ambulance companies could actually increase their profits by operating on one 8-hour shift instead of three such shifts in 24 hours. Profits by private ambulance companies were increased in Los Angeles when fire departments assumed emergency medical service, as these companies reduced their labor costs by 66% accompanied by commensurate savings in other areas.

16. Documentation is well established that emergency medical services performed by fire districts or fire agencies have been extremely successful in saving lives in the cities of Los Angeles, Houston, Seattle, Chicago, Miami, Jacksonville, Baltimore, and others. Chief L. O. Martin of Houston's Fire Department has received numerous calls from other cities across the nation concerning the operation and implementation of Houston's successful emergency medical service program. Seattle's Medic 1 emergency medical service, operated by twelve fire department ambulances with paramedical attendants, is a classic example of success. In 18 months, these units have saved 66 persons who probably would have been DOA at medical centers.

In view of the facts contained herein, it is the recommendation of our committee and many others involved that:

S 504 be amended to specifically state that State, County and City fire districts and departments be included as an integral part in the allocation of Federal grants for the improvement and implementation of emergency medical services, where they qualify for such grants, and where the feasibility of their use is determined.

It is respectfully requested that the contents of this letter be read and circulated at your sub-committee hearings in Washington and that it be incorporated into the record of the hearings.

Our committee respectfully requests also that the results of action taken by your sub-committee relative to the proposed amendment contained herein be transmitted to our chairman at your convenience.

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Honorable Alan Cranston
c/o Louise Ringwaldt
March 21, 1973
Page Four

Very sincerely,

Harold A. Manis

Harold A. Manis, Chairman
"Citizens Committee for Better
Ambulance Service"

HAM:pg

cc: Senate Health Sub-Committee Members
Mr. Kennedy, Mr. Schweiker, Mr. Williams, Mr. Javits,
Mr. Beall, Mr. Dominick, Mr. Eagleton, Mr. Hughes,
Mr. Mondale, Mr. Pell, Mr. Randolph, Mr. Stevenson

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CONTRA COSTA COUNTY CONSOLIDATED FIRE DISTRICT

FIRE CHIEF
A. V. Streuli
2010 Geary Road
Pleasant Hill, California 94523
TELEPHONE (415) 939-3400

BOARD OF FIRE COMMISSIONERS
Robert I. Schroder, Chairman
Richard F. Holmes, Vice Chairman
Leo F. Smarsh
Harold E. Wildes
Ralph L. Aldrich

March 20, 1973

Mr. Harold A. Manis, Chairman
"Citizens Committee for Better
Ambulance Service"
1316 Rockledge Lane
Walnut Creek, Ca. 94595

Dear Mr. Manis:

Per your request, the following comments are provided on the advantages of the Fire District providing the citizens with emergency medical ambulance service:

1. The fire service, as a public agency, is under strict regulation by the community and, therefore, is mandated to provide a high level of emergency service.

2. The fire service consists of career oriented personnel that are highly trained initially and provided with re-training to maintain a high level of efficiency.

3. The fire department works in close coordination with police and medical agencies and is capable of maintaining a total emergency medical system.

4. The fire department is and has traditionally been a rescue service as well as a fire fighting agency.

5. Fire station locations are sufficient in number and so distributed as to assure quick response and also to assure that, in emergencies resulting in multiple injuries, the necessary manpower and equipment are promptly available to handle simultaneous emergencies.

6. The fire department has a standard reporting system including forms to be completed on each response in order to effect controls and collect statistics on emergency medical needs of the community.

7. The coordination of training, communications, performance of standards, and equipment is actively evaluated in order to provide uniform emergency medical service through the fire department.

8. The objective of the fire department is to provide a service to the community, not to establish a profit column for providing emergency life saving services.

9. Emergency medical services fall into the category of public safety, as does police and fire protection, and in order to achieve a level of service equivalent to other areas of public safety, the emergency ambulance service must be

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operated by local government and funded by public funds.

Some of the problems concerning private ambulance service are as follows:

1. Inadequacy of the quality of training of emergency field personnel.

   a. Lack of training facilities and instructors.
   b. Lack of funds to pay people to receive training while on duty.

2. Problems of regulation and control of the commercial ambulance business. With private ambulance service, regulation is next to impossible. What can be done except take away the private company's permit to operate, thereby withdrawing all emergency transportation, however bad it may be.

3. Lack of coordination between all emergency agencies in the handling of medical emergencies, i.e. police, fire, medical.

4. Inefficient and unacceptable response time from private enterprise ambulance service in medical emergencies.

5. Lack of multi-agency training and organized training exercises.

6. Inadequate emergency medical communication system.

7. Inadequate equipment.

8. Lack of communications between ambulances, local area hospitals, emergency rooms, police and fire departments.

The basic problem with private emergency ambulance service is the low level of training and professional competence that can be maintained among ambulance crews. Characteristically, ambulance attendants are relatively young adults who envision their job responsibilities as temporary in nature until such time as a more lucrative and rewarding career can be developed. Most ambulance companies have reported a relatively high turnover in their attendants and indicate that staffing and re-training is a constant problem.

The problem of a non-career oriented occupation coupled with the ambulance owner's desire to provide routine transportation as well as emergency transportation provides the ambulance owner with the struggle of determining how to provide service to the routine transportation, which is ~85% of the business, and also handle the emergency transportation, which is approximately 15% of the business. The operation of the ambulance service on a 7 day week, 24 hours a day, to maintain 15% of the business is a very costly overhead.

It would be more advantageous to private ambulance service if they provided routine transportation calls on a five day, 40 hour week, which would eliminate the overhead of providing emergency service on a seven day, 24 hour day basis.

The primary goals and objectives of private enterprise ambulance service is to make a profit and any public funds provided to subsidize these companies would result in

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the largest portion possible being directed into the profit column and not the service column.

The "Good Samaritan" approach of today's emergency service with only rapid transportation and the fundamental concept of doing no harm to the victim is not sufficient. Instead, the ambulance attendants of the future must be trained to a level similar to that of a coronary care nurse or an emergency room technician. The effect of any activity on a patient's outcome depends upon the coordinated function of the entire emergency medical response system with adequate equipment, training, public education, communications, and an organizational structure that assures appropriate service is available to those who need ambulances when they need them.

Very truly yours,

William F. Maxfield

William F. Maxfield
Assistant Chief

WFM:pg

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STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH
535 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62706

FRANKLIN D. YODER, M.D., M.P.H.
DIRECTOR

CHIEF,
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& COMMUNITY HEALTH
(217) 525-6587

1825 W. Harrison St.
3- West
Chicago Ill. 60612

February 22, 1973

The Honorable Alan Cranston
United States Senate
Washington, D.C. 20510

Dear Senator:

At the request of the Regional Medical Program Director in Illinois, I am sending to you some materials which describe the development of the Trauma & Emergency Medical System in Illinois. This system has developed over the past two years, and now it is starting to pay off in lives saved, better utilization of facilities, medical personnel and resources. This effort has also initiated health planning with the development of Emergency Medical Services Councils and with a degree of productive planning that has resolved significant problems at the local level.

The whole cost of this program has not been excessive. The Trauma Program was developed initially from a Highway Safety Work Project with less than a one million dollar outlay in the first year, and has subsequently been awarded one of the Department of Health Education & Welfare Special Demonstration Contracts for the development of a Total Statewide Emergency Medical Services System. The problems of planning, implementations, and the integration of the various interests (private medicine, state health authorities, planning agencies, and the Regional Medical Program) has been one of cooperation. Starting at the State level and overall strategy was formulated and provide the local community a game plan as to what part each institution, agency, and professional association would play in the overall effort at each community.

An Emergency Medical Service Project is too large for any one interest group to manage. We have found in Illinois that the Health Department supported by the addition of experts in the field, both professional and para-professionals, can work effectively with local communities and that local communities, if given the opportunity, can and will make excellent decisions relavant to their own needs, capabilities and resources.

THE NEW ILLINOIS
We accommodate

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Page Two

The initial Trauma Program was personally supported by Govenor Richard B. Ogilvie. Our new Governor, Dan Walker, has also recognized this program as a major health initiative for the State and has given his support to this ongoing effort.

In summary, The Illinois Trauma-EMS System is the result of leadership at the highest level, priority setting by professionals knowledgeable in the field with guidance to local communitites which have stylized the program to meet local goals and objectives. Enclosed are some program materials which describe in detail the Illinois System.

Sincerely,

David W. Boyd, M.D., C.M., Chief
Division of Emergency Medical
Services & Highway Safety

DRB/ek
Enclosure

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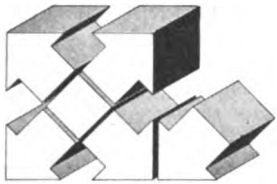

trauma center

By David R. Boyd, M.D.C.M.

Reprinted from Illinois Medical Journal, November, 1972

A Preview:

A Total Emergency Medical Service System For Illinois

In the March, 1971 issue of the *Illinois Medical Journal*, a plan for the development of a statewide system of trauma care was introduced.[1] Later, in the Special Health Message to the State, Gov. Richard B. Ogilvie pledged his support for this program,[2] and has subsequently assisted in its development by providing whatever state resources were necessary for the success of the program. A special Division of Emergency Medical Services and Highway Safety (EMS-HS) was developed within the Illinois Public Health Department and was charged with the responsibility of coordinating state and local resources in this effort. The staff of this division includes a new health professional for Illinois, the Trauma Coordinator.[3] The trauma program has evolved through local initiatives, including hospital and professional cooperation, to develop a much improved emergency medical care, communications, and transportation system for the critically injured accident victim.

Because of the success of the Illinois Trauma Program and the momentum that has been developed to totally upgrade the quality of Emergency Medical Services (EMS) across the state, a special demonstration contract has been awarded to the Division of EMS-HS. With the change in the Areawide EMS Planning Law (PA 76-1858), all hospitals must self-designate their emergency medical capability in an areawide cooperative plan. The first such comprehensive plan was outlined in the September, 1972 issue of this journal.[4] Monies and expertise are now available in Illinois to assist local health planning in order to develop the best emergency medical care in the nation. Outlined below is a condensation of the Total EMS contract which will assist communities in their areawide planning operation and in further upgrading emergency medical services across Illinois.

An environment now exists in the State of Illinois for the development of a Total Statewide Emergency Medical Service System. The lack of provision for emergency illnesses, accidental death, and disability can no longer be classified as an insoluble health problem; medical expertise and technology are available in Illinois which can easily be applied to this previously neglected situation.

In Illinois, with the development of the Statewide Trauma Care Program, it has been shown that expert care, which was formerly available only at the university centers, can now be effectively and efficiently delivered throughout the state and especially in rural communities. The program goals of the Total EMS project and some of the new aspects to be developed are as stated below. Further details will be made available through the "Trauma Center" Section of *IMJ* and the Trauma Center Newsletter.

Program Goals:

The following is a list of program goals which will be implemented in the State of Illinois' total emergency medical service system.

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Goal I. To provide accessibility and emergency medical service to all citizens of Illinois in order that they receive benefits of emergency and critical care medicine.

Goal II. To develop a comprehensive emergency and critical care system which will fully utilize existing resources while stimulating the development of new care capabilities where these are insufficient or lacking.

Goal III. To develop practical solutions to the emergency medical service problem, using accepted forms of health care application.

Goal IV. To develop all phases of the program utilizing community and areawide planning.

Goal V. To continuously evaluate and monitor programs in order to determine all critical factors and to provide for ongoing modifications and analysis.

Goal VI. To develop a total system that will be financially and administratively self-supporting without continued subsidization from external forces or reliance on a state bureaucracy.

Program Modeling:

The effectiveness of a controlled systems approach to the problems of emergency medical services has been proven in the success of the Illinois Trauma Program. This program has not only established itself as a model that many other states are now following, but has also provided the necessary groundwork for Illinois to expand its trauma care system into a Total Emergency Medical Care System. The additional financial support of the recently awarded demonstration contract can now be used to complement present planning and implementation efforts.

Communications:

Consolidating all emergency communications capability for controlled dispatching and better utilization of communications and medical personnel, is the next phase of the Illinois EMS program. The demonstration contract has provided for the purchase of approximately 900 mobile ambulance radios. The Illinois Division of Telecommunications will assist in the purchase and engineering aspects of this component of the Illinois Emergency Medical Communications Network. This ambulance-radio capability will complement the basic hospital radio system being developed by the Division of EMS-HS and the Illinois Hospital Association.[1]

Emergency Medical Transportation System:

In the development of the Illinois Statewide Trauma Program, many of the critical problems of patient transportation have been evaluated and necessary experience gained. The Illinois Emergency Medical Service System plan will rely on ground ambulance transportation for the vast majority of emergency calls. Only on rare occasions in the foreseeable future will the helicopter be utilized for this purpose. Trauma Coordinators are presently working with local governments and other responsible agencies to upgrade and expand the present ambulance service capability.

In certain cases where definitive care is beyond the scope of a primary institution to which a critically ill or injured patient is delivered, secondary transfer must be arranged. Such a transfer is sometimes extremely difficult and its success is limited by the available transportation equipment and personnel. These transfers are many times further inhibited by local jurisdictional boundaries and weather conditions. For these and other reasons, an independent, regionally-based secondary ground ambulance system is being developed.

Overland Critical Care Vans (OCCV). Overland critical care vans will be based at the Regional and Areawide Centers and will provide the ultimate in specialized intensive (life-support) care for patients while they are being transported to advanced facilities where specialized definitive care is available. OCCV's will provide an extension of the Intensive Care Unit (ICU) critical area capability of Regional and Areawide hospitals to other institutions. In the OCCV, patients will receive continued and many times enhanced critical care during transfer. The threat of loss of continuity of patient care during necessary transfers will not occur. Uniform resuscitation equipment, fluids, drugs, ventulators, and critical laboratory aids will be installed in these vans.

Outlying Critical Care Units (OCCU). Outlying critical care units will extend the coronary and other critical care capability of major hospitals to remote rural community hospitals. Satellite coronary and critical care units (OCCU's) will be "on-line" to the advanced centers for consultation and support through dedicated telephone lines for patient monitoring and dataphone electrocardiographic (EKG) transmission.

The Outreach Community Care Bus (OCCB). The outreach community care bus will be a

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multipurpose mobile teaching and disaster control unit which will be used to support emergency and non-emergency health problems in special areas of Illinois.

The OCCB will be equipped to function as a mobile disaster control center. It will have radios on the EMS-HS, fire, police, and Civil Defense frequencies. The OCCB will have the capability to react to a natural disaster by rapidly moving into the area within its region and immediately becoming the Radio Command Post and Triage Center.

Training and Education:

The continued quality of health care delivery of the Illinois EMS system will be dependent on the success of the training and educational programs. These programs are being aimed at training at all levels, including allied health personnel, emergency medical technicians (EMT-A), nurses, physicians, and the public.

Emergency Room Physicians. The American College of Emergency Physicians (ACEP) is now developing a curriculum for residency training programs for emergency room physicians. Two sites, Evanston Hospital and St. Francis Hospital (Peoria), are preparing to offer such residency programs.

Trauma and Emergency Medical Services Fellows. Surgical and Critical Care Fellows at the advanced centers will receive additional post-doctoral training in trauma, burn, intensive care management, as well as bio-instrumentation, systems development, and program evaluation techniques. These Fellows will form the core of a sound, continuing community service and academic excellence for the statewide program.

Conclusion:

The Illinois Statewide Trauma Program has made great progress toward the solution of the problems of emergency medicine by bringing together many resources available within the state and tying them together into a functional regionalized network. The goal of the Total Emergency Medical Program is to capitalize on this developing system and to expand it into a full-blown system of emergency care for all citizens in Illinois. ◀

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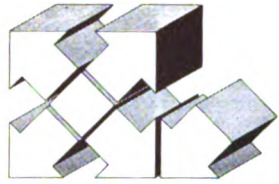

trauma center

DAVID R. BOYD, M.D.C.M., *Editor*

A Plan for the Organization of Emergency Services on Chicago's North Side

BY DAVID S. FORKOSH, M.D./CHICAGO

In September, 1970, Public Act 76-1858 became effective. This act allowed the establishment of areawide emergency service committees to plan categorization of joint emergency service programs. In early 1971, the Chicago North Side Commission on Health Planning, a health planning agency composed of representatives from the 14 member hospitals located on the North Side of Chicago and consumers and consumer representatives, appointed a planning committee to evaluate the possibility of organizing emergency services as provided for in the act.

The Committee was charged with: 1) preparing a comprehensive plan for emergency services which included categorization of the various hospitals' emergency capability; 2) coordinating with the Illinois State Trauma System;[1] 3) establishing a plan consistent with Public Act 76-1858; and 4) providing for close coordination with physicians in practice in the community.

The Committee was composed of physicians and administrators representing hospitals and medical staffs of various sizes throughout the target area. The Committee began its work with the feeling that while it was a planning committee, its work would soon be implemented into an improved system of emergency service in the target area (See Fig. 1, map). At monthly intervals and with constant feedback from medical staffs, community representatives and boards of trustees, the Committee finished the basic plan by August of 1971.

The plan as submitted to the Illinois Department of Public Health is PL 7-76-1858 (Illinois Senate Bill #568 of 1970).

The plan categorizes the various hospitals in the community into Types (A), (B), and (C), as provided by law. The (A) facilities are geographically spread across the community to provide easy access to ambulances and other vehicular traffic. The (B) facilities are also geographically dispersed. The (C) facilities tended

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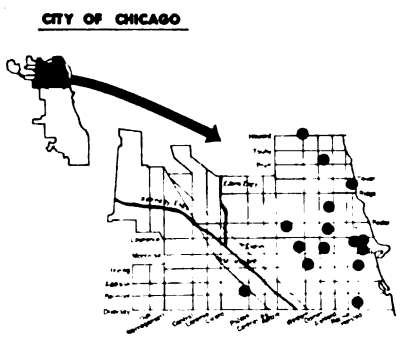

TYPE (A)
7. SWEDISH COVENANT HOSPITAL
10. LOUIS A. WEISS MEMORIAL HOSPITAL
13. RAVENSWOOD HOSPITAL MEDICAL CENTER
18. ILLINOIS MASONIC MEDICAL CENTER

TYPE (A) (PSYCHIATRIC)
9. FOX RIVER HOSPITAL

TYPE (B)
4. EDGEWATER HOSPITAL
5. NORTHEAST COMMUNITY HOSPITAL (on Sheridan Road)
12. MARTHA WASHINGTON HOSPITAL

TYPE (C)
1. BETHESDA HOSPITAL
5A. NORTHEAST COMMUNITY HOSPITAL
8. BETHANY METHODIST HOSPITAL
11. SYDNEY R. FORKOSH MEMORIAL HOSPITAL
14. AMERICAN HOSPITAL OF CHICAGO
17. BELMONT COMMUNITY HOSPITAL
20A. FRANK GUNEO MEMORIAL HOSPITAL

Figure 1. Map for Emergency Services on Chicago's North Side.

to be smaller community type institutions usually located close to an (A) or (B) facility. See Fig. 1.

Method of Self Categorization

The method of self categorization was achieved as follows: An initial questionnaire was sent to each member institution early in the course of planning. This questionnaire included the requirements for the various types of facilities, the availability of staff and equipment presently to be found in the individual institution and the institution's concept of its role in an areawide plan. This information was reviewed by the planning committee and in the vast majority of cases, the various institution's self categorization fitted into a cohesive plan for the entire community.

Agreement on Basic Principles

Once self categorization was completed, the problems of inter-hospital transfer and the continuity of medical care as well as the possibility of disruption of an ongoing doctor-patient relationship had to be reviewed. The plan provides for the delivery of seriously injured patients by public ambulance service to the receiving hospitals but does not prevent private ambulances from taking patients directly to the hospital of their private physician. If, however, a private patient is taken to a receiving hospital, the plan provides for the personal physician to have access to the patient and the records at the receiving hospital and also requires the receiving hospital to transfer the patient to the hospital of the patient's choice as soon as medically possible.

The plan also provides for referral back to the private practitioner of all patients seen but not hospitalized within the emergency system. In order to prevent the overloading of the receiving hospital by patients from the emergency system, the plan provides for the transfer to the hospital of his choice or the hospital closest to the patient's home as soon as it is medically feasible. Only if the patient has no personal physician will the patient be assigned a physician by the medical staff.

Once the planning committee was able to establish agreement on the basic principles above, the plan was committed to writing and submitted to the various hospitals' medical staffs, administrations and boards. Review and comments were sought from the required planning and governmental agency at the same time. By January, 1972, signatures of all member institutions were obtained.

Problems of Implementation

After the completion of the signing by the member institutions of the emergency room plan, the President of the Chicago North Side Commission on Health Planning appointed the chairman of the Areawide Committee, and each hospital designated a member of the Areawide Committee in accordance with the law. As this Committee proceeded to view the problems of implementing the plan, it became apparent that

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there would be at least two areas which would require special attention. The first area of special attention was nursing coordination and education. The nurse members of the Areawide Committee felt that a subcommittee on nursing education and planning should be established. This committee was established and was composed of a representative from each member hospital and was further subdivided into subcommittees for the three types of emergency facilities. The subcommittees were able to sit down and work out parallel nursing procedures, inter-hospital transfer forms, as well as the all important development of inter-hospital communication on a nurse-to-nurse level.

The latter level of communication was felt to be extremely important, because it is the emergency room nurse who actually handles the majority of the administrative and procedural matters relating to emergency room patients. The state law requires doctor-to-doctor contact prior to an inter-hospital transfer, but it was felt by the nurses that nurse-to-nurse contact would also be necessary in order to facilitate emergency room care.

There were two main problems in education of emergency room nursing personnel. The first was familiarizing our present personnel with the plan and its implication on the individual hospital. The second was improving the education of nurses in the various categories so that they would be competent to handle whatever type of emergency room patient presented himself at their door. The state trauma network educational facilities will be utilized to upgrade the education of registered nurses, and also the areawide nursing committee will develop their own education programs for continual inservice education.

From an areawide point of view, the care of psychiatric emergencies required vast changes. It was soon discovered that emergency room personnel in the area's hospitals did not fully understand their community resources; therefore, a mental health subcommittee was organized. The subcommittee surveyed each hospital to ascertain its needs for emergency psychiatric consultation, beds on an emergency basis, and then delineated the community facilities available. In a series of meetings, it became apparent that the community had sufficient resources to provide emergency psychiatric care to those needing it without utilizing the facilities of the state hospital system. Information was dispersed through the mental health subcommittee to all emergency rooms and administrators explaining resources available. Twenty-four hour a day psychiatric consultation via telephones will be made available to E.R. physicians throughout the area. A central psychiatric bed availability registry is being developed. Existing crisis centers will become further publicized and hopefully, the need for emergency psychiatric commitment to state mental hospitals will be drastically reduced.

Coordination with State Trauma Network

A rational system of emergency room care can be viewed as a pyramid. The base of the pyramid is the areawide emergency plans which have patient flow into specialized care units. The top sections of the pyramid are the regional trauma centers with their highly specialized equipment and the specialized trauma centers, such as the pediatric trauma unit at Children's Memorial Hospital in Chicago and the burn units at Cook County and Lovola Hospitals.[2] The Areawide Emergency Service Committee established a relationship with the trauma unit at Evanston Hospital, and an agreement was worked out to extend the boundaries of the Evanston trauma unit to include the entire area of the Chicago North Side Commission on Health Planning. The pediatric trauma unit at Children's Memorial Hospital will become a keystone for pediatric trauma in our area. And finally, the Lovola University burn unit, while geographically not adjacent to our area, agreed to accept stabilized burn patients from our trauma system.

Ambulance Service

The efficient operation of our plan will depend upon the correct entry of patients into the program. Therefore, the initial delivery of injured patients will have to be shifted to those facilities with emergency room staffs able to provide the quality of care necessary for the individual patient. In order to accomplish this change, the traditional "nearest hospital rule"[3] will have to be eliminated. Communications were established through the Emergency Medical Services Commission for Metropolitan Chicago with the police and fire departments, and plans are presently being drawn to facilitate this change. A recent legal opinion has shown that changing the nearest hospital rule will require an amendment to the Chicago Municipal Code; steps are now being taken to draft such

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an amendment.

Since the plan requires transfer of stabilized patients to their physicians or community hospital, a method providing appropriate ambulance service had to be developed. The Areawide Committee examined three possibilities: 1) such transportation to be provided by city services; 2) that one single ambulance company be selected to provide all inter-hospital transfer within the community; and 3) that each individual institution agree with an ambulance company of their choice to provide such ambulance service. After much discussion, of these alternatives, the first was eliminated because of budgetary problems. The second was also eliminated because it became apparent that no one single ambulance company could provide the necessary services for the population of our size in the event of a disaster; and finally, the third method was selected because it broadened the number of ambulances available and also fitted in closely with previously existing agreements between individual hospitals and ambulance companies for the provision of services.

Community Education

Probably the most important aspect of the implementation of an areawide emergency plan is community education. The Areawide Committee with the assistance of the Emergency Medical Services Commission for Metropolitan Chicago and Chicago Blue Cross-Blue Shield have developed various methods of community education.

When the plan is formally approved and announced, local governmental agencies will hold press conferences to provide mass media information about the plan. The Areawide Committee felt that brief splashes of news information will be insufficient to fully educate our community, and therefore, decided to develop other programs. The first is an information pamphlet explaining the plan and providing a map showing the location of various types of facilities. This pamphlet will be printed in languages consistent with our community and will be available in the admitting departments and emergency departments of all hospitals, and will also be distributed throughout the community through easily recognizable community organizations such as civic associations, churches, temples, schools, and boy scout and girl scout groups. A poster to be placed in a wide variety of locations such as store front windows, in parks, churches, temples and schools will also be developed to inform the population that a change has occurred in the pattern of emergency room service. Finally, a speakers bureau will be developed to provide speakers to various community groups wishing further information. It is hoped that a standardized slide presentation and standard speech will be developed so that the same information can be presented to all community groups. ◀

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DAVID S. FORKOSH, M.D., is chairman of the Areawide Emergency Service Committee of the Chicago North Side Commission on Health Planning. He is a clinical assistant professor of medicine, Loyola University Stritch School of Medicine.

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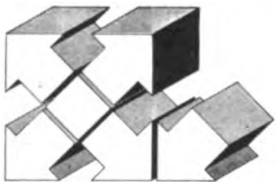

trauma center

A New Health Professional: The Trauma Coordinator

By Kenneth D. Mains, USN/FLT RES, David R. Boyd, M.D.C.M., and Bruce A. Flashner, M.D./Chicago

The success of the Illinois Statewide Trauma Program has been due to many factors. One of the most important has been the utilization of existing and available resources for the optimal care of the critically injured. A previously untapped resource has been made available to the State of Illinois because of the Executive Office's initiative to hire competent and trained military personnel for civilian jobs within state government. This initiative has provided the necessary qualified personnel to the Illinois Department of Public Health for the major task of renovating the Emergency Health System. These expert allied health professionals—the Trauma Coordinators—have many years of military training and experience in casualty care and transportation and have become an essential mainstay of the Illinois Statewide Trauma Program.

Within each trauma center in the statewide system, a team has been developed. Integral to this team are the hospital's attending physicians and medical staff. With them rests ultimate responsibility for primary treatment and transfer decisions. Supporting this staff is the Trauma Coordinator who is under the direction and supervision of the physician. The Trauma Coordinator handles a wide variety of emergency room problems in a sophisticated manner. He is involved in the training and supervision of ambulance personnel and is currently helping to integrate and coordinate the communication and transportation components of the emergency care delivery system.

The Trauma Coordinator's basic responsibilities include:

1. **Data Collection:** By utilizing the computerized Trauma Registry, he gathers, monitors, and transmits medical data.
2. **Education:** He assists the training of paramedical personnel, technicians and ambulance attendants in basic resuscitation and initial care techniques; coordinates more specialized physician educational programs in collaboration

KENNETH D. MAINS (left) is administrator of the Division of Emergency Medical Services and Highway Safety, Illinois Department of Public Health. Mr. Mains joined IDPH in June, 1971, after serving 24 years in the U.S. Navy where he gained experience in medical evacuation of the injured.

DAVID R. BOYD, M.D.C.M., (center) is chief of the Division of Emergency Medical Services and Highway Safety, Illinois Department of Public Health, and assistant professor of surgery at the Abraham Lincoln School of Medicine.

BRUCE A. FLASHNER, M.D., (right) is deputy director of the Illinois Department of Public Health and medical director of the Illinois Department of Public Aid. He is also an assistant professor of health care planning at Southern Illinois University School of Medicine.

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with local medical educational institutions; and cooperates with local health educators who desire to utilize the trauma center for clinical training of medical and paramedical students.

3. **Communications and Transportation:** He is presently integrating his center into the statewide trauma system by using computerized information systems, radio, ambulance and helicopter services.
4. **Biomedical Equipment Maintenance:** He is skilled in the use and maintenance of instruments such as monitors, defibrillators, etc.
5. **Community Relations:** He is encouraging and working with community groups to establish emergency Service Councils.

His activities relate to those of the total community. It is necessary for the hospital staff and Trauma Coordinator to understand this and to share their respective responsibilities. Out of such an understanding, the trauma team relates effectively and patient care is improved within the statewide system.

The Potential Loss to Illinois

Since commencement of the President's de-escalation in Vietnam, in the late 1960's, the Armed Forces have been separating approximately 30,000 to 35,000 highly trained and qualified hospital corpsmen annually, only a fraction of which have found their way into the civilian health care field. This is due primarily to the paucity of positions available to them. Many have had to accept low paying jobs as ambulance attendants and ward orderlies. Because of this, they have sought employment in other areas. Hundreds of senior men, Chief Petty Officers and Non-Commissioned Officers, have held positions as independent medical officers (assistant administrators, supply chiefs), accountable for hundreds of thousands of the taxpayer's dollars. They have performed as supervisors of departments of pharmacy and radiology, laboratories, emergency rooms and operating services, and are now finding it impossible to enter the civilian medical system at a comparable level.

In the Navy alone, hospital corpsmen, upon becoming qualified for independent duty aboard a naval combat ship or ancillary type vessel upon which the crew may count four to five hundred men, have completed approximately seventy weeks of schooling and have up to twelve years of clinical experience. This background includes the basic hospital corps, advance hospital corps, field medical, medical administrative, and numerous other schools. The entire expense of this training has amounted to $50,000 to $60,00 per man.

The Governor of Illinois has taken the first step to tap this excellent resource of trained personnel for the Statewide Trauma Program. Trauma Coordinators have been placed at each trauma center to assist the hospital in revising their organizational plans for receiving the critically injured patient. These coordinators are now working to develop the emergency communications and transportation system across the state. They are coordinating ground and air medical transportation and are responsible for the dispatching of aircraft for initial evacuation of casualties and for inter-hospital transfer of patients. They know the location, types, and capability of all aircraft and transportation devices within their region of responsibility. They also are coordinating the trauma center activities with the local, area, and mutual aid Civil defense directors for reaction in the event of disaster. The Trauma Coordinator is a strong new health initiative in Illinois.

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STATEMENT OF GERALD L. LOONEY, M.D., DEPARTMENT OF EMERGENCY MEDICINE

I have been surprised and encouraged in reviewing the introductory commentary and the specific provisions of Senate Bill 504. The preparation of this proposed legislation seems to mark a milestone in our efforts to come to grips with the incredible problems of emergency care, and provides better insight into these problems than was previously available from either medical or legislative viewpoints.

Without mentioning it specifically, S. 504 carefully identifies the problem of emergency medical services (EMS) and tacitly points out that our major EMS deficiencies are in qualified personnel: EMS is a "people problem". The lack of properly trained personnel, from the emergency medical technician on the highway to the emergency physician in the hospital to the manager of the overall system, is almost universal, and programs to train these personnel are few and far between. Needless to say, continuing education for these personnel is virtually nonexistent. Once these deficiencies are improved, we will then be much better prepared to explore new equipment and technology.

However, there are some people problems of special significance in this legislation, and I wish to describe them for your consideration. The inefficiency, lack of coordination, and duplication of effort on the local scene seem like paradise when compared to the confusion and disorder on the federal scene. Dozens of governmental agencies are pursuing and funding fragments of an emergency medical system with no attempt to coordinate efforts or pool results, even with other agencies in the same Department, and a determined effort must be made to bring order out of chaos. The Interagency Technical Committee on Emergency Medical Services (Sec. 637) is a potential mechanism to accomplish this, but its hopes for success are dim unless a much more specific and obligatory mandate with follow-up mechanisms are developed. I call your attention to the recommendations of the NAS/NRC committee on Emergency Medical Services booklet, "Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services" which reviews and discusses these interagency problems.

Another potentially useful mechanism which deserves review is the National Emergency Medical Services Advisory Council (Sec. 638). Having been a frustrated member on a HSMHA "advisory council", I am painfully aware that the road to Hell has been paved by reports from federal advisory councils. Whatever the federal motivations, these councils have been best described as powerless or "rubber stamp", and only the National Cancer Advisory Board seems to offer an exception to this rule. I urge review of the National Cancer Act of 1971 for guidelines and suggestions in setting up the EMS Advisory Council. Specifically, it would not suggest that half of the members of the Council "be members of the general public who are not related to the provision of emergency medical services".

While I am fully cognizant of the lonely voice of the "forgotten American" —the patient, the consumer of our medical services—I also feel that it is entirely inappropriate to suddenly thrust onto his surprised and unprepared lap the responsibilities for solving EMS problems which for years have eluded the grasp of highly trained and widely experienced health professionals. The potential contributions and opportunities of this EMS Advisory Council will never be realized if its first crucial months of existence are spent in acquainting half the Council members with the terminology and problems of emergency medical care. From the start, every single member should contribute his own unique expertise and opinion which are very much ". . .related to the provision of emergency medical services."

I am enclosing a variety of material describing the wide spectrum of "people problems" which must be faced in upgrading EMS, and I offer my compliments and appreciation for the efforts which have already gone into the preparation of S. 504.

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[From the Medical World News, Mar. 9, 1973]

WASHINGTON ROUNDS—TO THE ADMINISTRATION'S REQUEST FOR HIGH-LEVEL EMERGENCY SERVICES UNDER LOCAL CONTROL: A SLUGGISH RESPONSE

BY GERALD LOONEY, M.D.

"As far as I can determine, every state and territory in the U.S. requires up to 1,500 hours of training before licensing or registering persons as manicurists or barbers. And yet, none requires such training for persons who deliver the preliminary aid and transport to anyone injured in accidents. That is what perplexes and plagues us."

In those words, a Department of Transportation (DOT) official sums up the frustrations and growing concern of those faced with implementing President Nixon's desires to establish a nationwide high-level standard of emergency medical care.

The official, who prefers to remain unidentified, says that the federal effort to promote the development of emergency medical services under the aegis of state and local governments has, at best, been only marginally successful. More often than not this aspect of Mr. Nixon's "new federalism" has splintered against the implacable turn of local political windmills.

"I suppose we were naive four years ago when we started on this project," says the official. "We thought we were pushing something that could no more be opposed than motherhood. It has been amazing how the vested interests have come out of the woods to defeat us at so many places. But we have learned in the process, and we are going to keep trying. Nevertheless we are concerned—no question about it."

The "something" to which he refers is a model ordinance or statute regulating the standards of equipment and personnel training for both ground and air ambulance services.

In analyzing the mistakes to date, the official points out that most of the trouble has been encountered in attempts to establish laws covering standards applicable to rural areas. Most big cities, he reports, have reasonably well-trained ambulance personnel operating modern equipment. Some, like Pittsburgh, have highly advanced systems, but most of the rural areas do not have the resources to develop such proficiency. And it is in these areas that most of the fatal accidents take place.

It also is in these areas that attempts to implement model regulations have met the greatest resistance. "Ambulance services have traditionally been a local function," he explains. "We want regulations that would cover businesses that advertise themselves as well as the standards of professional equipment and those who operate it."

What he and other DOT experts have encountered is a well-entrenched system that views ambulance personnel as unskilled workers who are paid—or volunteer.

In addition, the contracts for such equipment items as linen and oxygen bottles have long since been allocated according to the local political situation. These vested interests have proved themselves politically agile and fast to respond to any attempts to change the status quo.

For example, federal regulations with the authority of law direct each state to establish a six-point set of minimum standards that "ensure that persons involved in highway accidents receive prompt emergency medical care under the range of emergency conditions encountered." These include training standards for ambulance personnel, minimum number and types of vehicles, coordination of rescue activities within designated areas, refresher courses for personnel and public, and communication standards.

Faced with the options of complying or facing possible loss of federal funds for highway safety programs and highway construction, all states have taken or attempted to take some legislative action. But in many cases—about 20—the attempts to legislate have been defeated. In others there has been a bare mini-

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mum of accommodation. "Alabama passed about as basic a law as it could and still meet the requirements," says the official. "But now their local chiefs of police association is lobbying for repeal of the law. They simply don't want to spend the time and money necessary to conform to the regulations."

Despite the pessimism, DOT experts think they will win in the long run—if the White House remains enthusiastic about the program. Some states, Arizona for one, have passed sophisticated laws and are moving toward highly competent emergency aid systems. And federal highway funds may actually be lost should state legislatures continue to help local elements resist the proposed changes. On Capitol Hill some federal legislation bearing directly on the problem is expected during the first session of the 93rd Congress.

But the thing the DOT official indicates is likely to turn the tide of reluctance is an effort by the department to make the regulation of emergency medical services an administrative function of state health departments. This will put the question squarely up to state and local medical socieities. Thus, the problem of providing quality emergency medical services will likely wind up where it belongs—in the hands of the physician.

[From National Association of Counties Research Foundation. *Community Action Program for Traffic Safety. Guide VI: Staffing.* Washington, D. C., September 1970.]

STAFFING PROGRAMS IN EMERGENCY MEDICAL SERVICE

Emergency medical service in the United States has been the responsibility of an innumerable variety of individuals and agencies, both public and private. who generally consider the function as a secondary venture requiring only sub-professional expertise. The *Highway Safety Act* urges that this situation be changed. In implementing the Act's recommendations local officials must strive to upgrade emergency medical service so that its quality of response equals or surpasses the seriousness of the need.

A significant percentage of persons who have been permanently disabled in highway crashes would not have been crippled if prompt detection, proper care and transportation after the crash had been available. The same observation may be made regarding crash fatalities. This situation requires drastic improvement in a number of activities which constitute the emergency medical service system. These activities include:

Operating a communication system capable of receiving and transmitting information throughout the emergency medical service process, beginning with the initial call for help.

Dispatching the ambulance.

Driving the ambulance to the scene of the crash.

Extricating the injured.

Administering emergency care at the crash scene and enroute to the hospital.

Placing the injured aboard the ambulance.

Transporting the patient or patients to the hospital.

Removing the injured from the ambulance and transferring them to the care of the emergency room staff.

Returning to the ambulance station.

While waiting for other runs, preparing records and accounts of past calls, maintaining equipment and supplies and carrying on instruction.

Throughout the system the competency of personnel who staff each function is crucial for its effectiveness. Among the roles necessary for an adequate emergency medical service are supervisors of administration, training and operations, dispatchers, emergency medical technicians, mechanics, and administrative personnel (e.g. accountants, clerks). In many ambulance services, an individual staff member may assume several of these roles.

THE NEED FOR CAREERS IN EMERGENCY MEDICAL SERVICES

Emergency medical work has been for too long a sub-professional field relegated to the status of "extra duty" among police and fire departments, a liability among morticians, and an unpaid extracurricular activity among volunteer rescue squads. Because of a critical need for the highest degree of medical care in post crash situations, the present status of emergency medical staffing is no longer tolerable. Ideally the ambulance staff should be fully engaged in emergency care within an established career pattern that provides compensa-

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tion, prestige and recognition comparable to their service. Only in this way will the professionalism and motivation required by this responsibility be attained. By establishing the emergency medical service field as an attractive career, properly trained and motivated people can be drawn to it.

The field of potential manpower is great, as indicated by the vast number of former military personnel with some medical training (30,000 are discharged annually).

Among the most highly trained of these are the Special Forces and Navy B Corpsmen, who have 1,400 hours of training, and Army corpsmen of 91C series, who may receive as much as 2,000 hours of formalized training.[2] Depending on their training background, medics may or may not be qualified to perform a variety of advanced emergency life-saving procedures. Many will require advanced training in a civilian setting to perform such highly skilled procedures as tracheal intubation and defibrillation.

The mechanism for channeling this potential into the emergency medical field already exists through Operation MEDIHC of the U.S. Department of Health, Education and Welfare and through Project Transition of the U.S. Department of Defense (These programs are discussed in Guide VIII: *Financial and Technical Support.*)

The method of establishing emergency medical service as a career field will differ according to community needs and circumstances. If the need for ambulance service is such that the staff would not be fully occupied, in a small community or rural area for example, ambulance personnel with sufficient training could be employed by local hospitals. This would permit them to assist in the emergency department, intensive care unit, operating room, or other area in which injured or acutely ill patients are treated, thereby allowing them to preserve their efficiency, interest and progress in emergency care.

If the emergency medical service operates from a police or fire department, consideration should be given to staffing the system with select personnel from the regular police or fire duty who have sought out the assignment rather than with individuals who perform the function simply because they have been commanded to do so. In Lexington, Massachusetts, and Baltimore, Maryland, the ambulance service operates from the fire department. Emergency medical care personnel are part of the regular professional crew of firemen, yet each has freely chosen the assignment to ambulance duty. As a consequence their morale and standard of performance are high. In the Baltimore fire department the ambulance staff is paid on a higher scale than are fire fighters. Applicants for ambulance duty must have at least one year service with the Baltimore fire department and pass a special examination.

No matter what administrative structure is utilized within a community for its emergency medical service, it is crucial that the structure permit the development of professional, motivated emergency care personnel.

EDUCATION AND TRAINING

Adequate emergency medical care depends upon individuals with the knowledge and skill necessary to recognize the seriousness of a patient's condition or the extent of his injuries, to alleviate or stabilize a patient's condition, and to transport a patient without further injury or aggrevation. Ambulance staffs should be capable of exercising technical skills with authority and good judgment under a wide range of conditions with varying degrees of difficulty and stress.

Training programs should include basic, intermediate, advanced and refresher courses and should make provision for the training of course coordinators and instructors. Individual ambulance personnel should receive training on a continual basis throughout their EMS career. Emergency medical care training should lead to certification, licensing and registration (see p. 23 for discussion of a national registry for EMT.) of emergency medical technicians. Instruction should be supervised by members of the medical profession with the cooperation of national organizations of ambulance personnel.

As a general principle emergency medical personnel should make optimum use of community resources in acquiring the expertise needed to function effectively. This may include in-service training and experience, hospital emergency room internship, counseling from community physicians, participation in areawide seminars and workshops, enrollment in courses offered by educational institutions, and similar opportunities.

The case studies which follow illustrate how effective use of training opportunities is being accomplished in a number of towns, cities and counties.

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A highly successful experimental training program for ambulance personnel has been instituted in Pittsburgh's Hill District and North Side. Sponsored by Freedom House Enterprise, Inc., a nonprofit organization that seeks meaningful employment for the disadvantaged, the program includes an intensive eight-month paramedic course. The course is given by physicians, nurses and paramedical instructors from local hospitals and includes first hand ambulance experience with proven systems of other cities.

The individuals that were trained posses a demonstrated ability in emergency care, particularly in providing airway care, oxygenation, artifical ventilation, external cardiac compression, control of inhalation, immobilization of fractures, extrication and venous infusion.

The Medical Society of Sedgwick County, Kansas conducts, on a bi-annual basis, a valuable training course for ambulance and rescue personnel. The course extends over a period of two and half days and is limited to a maximum enrollment of 85 participants. At a recent training seminar, lectures covered such subject areas as legal liability of ambulance attendants, mass casualty management, normal childbirth, and emergency vehicle safety. The program is augmented by live demonstrations and simulations which help instruct ambulance personnel in extrication procedures. The Kansas Medical Society and the Medical Society of Sedgwick County have produced a course guide for the instruction of paramedical personnel which is distributed as a reference aid for those attending the seminar.

An excellent pilot program, combining the need for inhalation therapists and ambulance attendants, has been established in Pocatello, Idaho to service the city's two hospitals. The program began in 1967 by training three men with minimum education, two men with a high school education and one with a year of college for a period of eighteen months in aspects of hospital and ambulance care. These men were at first employed as trainees in one of the hospital's newly formed respiratory therapy services. Today two of them function as inhalation therapists at the hospital and own their own private ambulance service.

The fire department ambulance staff of Lexington, Massachusetts, works closely with the town's medical clinic. Doctors who staff the clinic represent a variety of specialities and are always available to the ambulance service when medical counsel is needed. The doctors' instruction, facilities and equipment (used as excellent training aids), as well as the desire of the ambulance staff to make use of this opporunity, have provided the town with an effective emergency medical system that demonstrates competent medical care far beyond the minimum first aid techniques.

In Jacksonville, Florida, ambulance service is provided by the fire department. To participate in the rescue program, a fireman is selected from volunteer applicants who have two years on the department with excellent records, and who hold American Red Cross Advanced First Aid cards. He then must pass through five stages of training:

Review of advanced first aid procedures (twenty hours)
Advanced procedures taught by twenty-five doctors (thirty hours)
Extrication from autos, aircraft and trains (twenty-five hours)
Hospital training in emergency room intensive care units and in obstetrics (fifty hours)
Hospital training in emergency cardiac care (123 hours)

Ambulances are based at hospitals where training can be obtained on the job while the men are between calls. Vehicles, though located at hospitals, are under the control of the fire department operations center for dispatching purposes.

The emergency ambulance service provided by the Baltimore fire department exemplifies efficient usage of training resources available in a large urban area. Training of the fire department's ambulance staff is conducted by the fire school and at various hospitals, with instruction given by medical specialists. In addition, four days of in-hospital training are given each year to each ambulance attendant. This instruction includes participation in accident room and intensive-care room procedures.

Each year a conference for all area ambulance, rescue and emergency squads is presented by a Baltimore hospital and the city fire department. The conference includes lectures and visual aid demonstrations that present the latest techniques in dealing with fractures, heart attacks, child delivery and other circumstances common to ambulance activity.

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Hospital training is also an important part of the instruction offered to members of the Bethesda-Chevy Chase (Maryland) Rescue Squad, a volunteer organization serving a large residential area outside Washington, D.C. A nearby hospital has sponsored a series of courses in medical emergencies. The sessions; led by twelve medical specialists, cover a twelve-week period, one night each week. Lectures are supplemented by training films. After the classroom discussions, enrollees are permitted in the hospital's emergency room to take a training course consisting of seventy-five hours of on-the-job practical experience in handling cases. Under the guidance of staff doctors and nurses, the men learn the techniques of preparing patients for minor surgery, setting up sterile operating fields, and assisting in the casting of broken limbs. In addition, the squad staff attend in-house training sessions each week during their individual duty nights.

A recently established National Highway Safety Bureau program, entitled Basic Training Program for Emergency Medical Technician-Ambulance, is available from the United States Government Printing Office in a three volume set consisting of Concepts and Recommendations (Volume I), Course Guide and Course Coordinator Orientation Program, (Volume II), and Lesson Plans (Volume III). The latter is based on the textbook reference, Emergency Care and Transportation of the Sick and Injured, published by the Committee on Injuries, American Acamdemy of Orthopaedic Surgeons.

The Basic Training Program represents the first phase of instruction for a career as an emergency medical technician. Course objectives include:

Teaching students the overall role and responsibilities of the emergency medical technician in the performance of emergency care and operational functions

Developing student skill in diagnosis and all emergency treatment procedures short of those rendered by physicians or paramedics under supervision of a physician

Developing student skill in the use of and care for all equipment required to carry out emergency medical service functions

The program is considered to be an initial step in an extended program to augment the competence and professionalism of all ambulance personnel.

The course receives further discussion in the Emergency Medical Services section of Guide VIII: Financial and Technical Support. Various pilot training studies are now being conducted by the National Academy of Sciences National Research Council including a curriculum for middle level emergency medical technicians training in which course content would be as much as 500 hours.

Instruction available for emergency medical service personnel on a national scale are the first aid training courses (standard, advanced, and instructor levels) offered by the American Red Cross (advanced Red Cross training should be a basic requirement for emergency medical service personnel), as well as courses available through the Committee on Injuries of the American College of Orthopedic Surgeons, the Committee on Trauma of the American College of Surgeons and the National Ambulance Training Institute. For further information, see Guide VIII, Financial and Technical Support.

Other publications of value to Emergency Medical Training programs include:

The guidebook, Extrication Methods and Ambulance Operational Guidelines, prepared by Autonetics, North American Rockwell, for the National Highway Safety Bureau, U.S. Department of Transportation in April 1969.

The textbook reference, Emergency Care and Transportation of the Sick and Injured, published by the Committee on Injuries of the American Acamdemy of Orthopaedic Surgeons.

The booklet, Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport, available from the Division of Medical Sciences of the National Academy of Sciences National Research Council

The saving of life and the reduction of preventable disability at the scene of traffic crashes will not achieve its maximum potential until ambulance staffs are qualified and legally permitted to employ measures now approved for lay assistants in emergency departments and for medical corpsmen in combat areas. Attainment of these goals will require the cooperation of hospitals, junior colleges, universities, and health departments in establishing training programs accredited by a duly recognized professional body.

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POSITION LIST

Suggested occupational titles for an adequate ambulance service are:

Administrative supervisor.
Training supervisor
Operations supervisor
Shift supervisor
Emergency medical technician
Communications technician
Dispatcher (chief and assistant)
Bookkeeper
Accountant
Clerk-typist
Mechanic.

In many cases one person may discharge the responsibilities of two or more of these functional roles. One person, for example, many serve as administrative supervisor as well as operations supervisor. An emergency medical technician may also serve as a mechanic.

The Registry of Emergency Medical Technicians—Ambulance was established in 1970 as a national examining, accrediting and registering body for emergency medical technicians—ambulance. It represents a major step forward in developing a corps of professionals trained in emergency ambulance services. The registry, which has received staff assistance and support from the AMA's Commission on Emergency Medical Services, is composed of seven member organizations, all possessing a direct interest in emergency ambulance care. They are the Ambulance Association of America. International Association of Chiefs of Police, Inc., International Association of Fire Chiefs, International Rescue and First Aid Association, National Ambulance and Medical Services Association, National Funeral Directors Association, and the National Sheriffs' Association.

As set forth in the bylaws, the registry will promote the improved delivery of emergency medical services by:

Assisting in the development and evaluation of educational programs to train emergency medical technicians—ambulance

Establishing qualifications for eligibility to apply for registration

Preparing and conducting examinations designed to assure the competency of emergency medical technicians—ambulance

Establishing a system for annual registration

Establishing procedures for revocation of certificates of registration for cause

The registry's board of directors includes four physicians expert in the field of emergency medical services who were selected by representatives of member organizations. After 2,000 emergency medical technicians—ambulance have been registered and certified, the bylaws specify that three emergency technicians—ambulance shall be elected to represent proprietary, governmental and volunteer ambulance services.

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Clinical Survey

First Aid for Drivers

"It is a function of the medical profession to promote and inspire the teaching of first aid."

Harms Pacy, MB, BS, MD, FRACGP

It is a sad fact that victims of accidents continue to die even on roads where [illegible] people do not know what to do or how to cope with the various emergencies. What is of course the most important thing to do is to get help as quickly as possible. In Australia, it is calculated that at least one road death occurs every half-hour (two thirds in New South Wales) and often far from the nearest properly staffed and equipped hospital. Unless those concerned in the care of victims can depend on the right action being taken by a passer-by, he can be the most important weapon in his hand-time.

In the Time Available at the clinic is the first thing anyone arriving at an accident should do. In the excitement, time slips away quickly and it is very difficult later to [illegible] the time of the accident. Witnesses vary greatly in their recollection. Yet for the later arriving skilled rescuers, it is vital to know how long ago injured persons have stopped breathing or moving. This information affects the value of artificial respiration and other measures that may have to be given priority at the expense of other injured victims.

Proper Parking.—An accident scene can be protected from run up accidents by the way the most arriving cars are parked (Fig 1). Slow down gently and bring your car to a stop at a safe distance from the accident so that ambulances and doctors' cars can be driven right up to the casualties. Park far enough from the edge of the road to cover the scene and, at night, illuminate it with your headlights. Leave your battery switched on and let your [illegible] prevent an [illegible] with [illegible] ignited. The [illegible] face [illegible] road, [illegible] the [illegible] [illegible] the [illegible] the [illegible] protected [illegible] have stopped [illegible] urgent [illegible]

Assessment [illegible] is necessary for the efficient [illegible] of [illegible] priorities must [illegible] on [illegible] the [illegible] of [illegible] When [illegible] injured, he only should [illegible] to help on the scene. However, by law, should be equipped with emergency [illegible] in triplicate, so the assistance [illegible] immediately [illegible] what to do for (Fig 2). One person takes the original message to the nearest telephone, one copy is held by a person who [illegible] oncoming cars, asking whether a two-way radio, a doctor, a nurse, or a trained first aider is in the car, and the last copy is held at the scene of the accident and sent to the hospital with the ambulance. The importance of such a standardized primary message just cannot be over-stated.

Remove Danger.—Do not touch a car onto which high tension power lines have fallen unless you are sure the power has been switched off or some one, who knows exactly how to do this, has removed them.

If the engine of a crashed car is still running, switch it off.

Someone must make sure that no body smokes at the scene of the accident.

Flagmen must be posted at least 500 yards up and down the road, clearly visible in the dark (yellow raincoats, white shirts, newspaper tucked into collar, etc). These flagmen must not obscure the lights of any parked cars, should make use of any available fences and warning triangles and make sure they are not [illegible] for [illegible]

Removing Dangerous.—The removal of the [illegible] from vehicles is best left to skilled rescuers. Often the car is the only available shelter anyway. Persons [illegible] certain circumstances to inflammable [illegible] and smell of [illegible] cigarette [illegible] or dangerous position of the [illegible] they just have to be removed. There are a number of good methods for doing this. However, before moving a person from a car, make sure that the airway is clear. To be sure that it is, the head of the unconscious [illegible] victim, whose [illegible] be saved, must be held up with the chin [illegible] forward because the [illegible] of the paralysed larynx may cause [illegible]. After this, the seat must be [illegible] into its most backward position if possible. Figure 3 shows how the [illegible] can remove such a victim.

If only one person is available, the head can be supported by a collar fashioned from sheets of newspaper, folded about 5 inches wide and wrapped into a [illegible], other bandage or similar cloth. Rautek's grip can then be used to lift the weight of the victim with the victim's forearm, held from behind, with the rescuer's forearm on both sides of the chest (Fig 4). The rescuer must [illegible] the weight of the victim from the seat onto his thighs, which [illegible] as a slide, as the rescuer changes to a kneeling position and lets the victim gently slip onto a blanket on the ground.

When a person has to be dragged out of danger just a few yards, Rautek's carry can be used with the victim's clothing as a handle, but it is essential that the man in front supports the head securely and makes sure that the position of the head in re-

From the Gosford, Wyong and Wyoming Valley Hospitals, Central Coast Region, New South Wales, Australia.

Reprint requests to Flood Street, Sea Cardens, New South Wales 2251, Australia

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Fig 1.–Staggered parking (From Daly). Cars parked facing traffic must shine their headlights on crash, but safety of this is possible without blinding oncoming traffic.

• URGENT ACCIDENT REPORT •

Accident at about _____ o'clock

Time of message: _____

Exact location of accident: _____

_____

_____

_____

BODY MANY

Unconscious _____ Breathing

_____ Not breathing

_____ Pressing inwards to avoid resuscitation

Trapped _____ Bad serious _____

Lightly injured _____

NEEDED
(Encircle)

Ambulance, Doctor,
Police, Tow truck,
Rescue Van (Trapped)
Fire Department

Fig 2.–Every car should carry these message forms.

Fig 3. One rescuer takes up position at head, controls the airway and pulls victim's shoulder to rotate to lateral position, the second applies Heimlich's Grip, and third lifts legs out of car.

Fig 4. Rescuer's body acts as fracture board.

Fig 5.–Moving a few yards out of danger.

lation to the body does not change (Fig 5).

Save Life (Breathing, Bleeding).–Make sure all unconscious persons are on their sides and cannot inhale blood, vomit, and other material. Having rolled the victim on his side by taking his arm and the trousers at the hip, remove dentures and other obstructing material from his mouth and wipe it out with a handkerchief or the like. When entering the victim's mouth with the finger, use a clothespin or strong wooden spatula to prevent the possibility of being bitten. Figures 6 and 7 show two classic positions of victims on their sides and whichever you choose (this depends on what other injuries the person has), make sure that the victim's head is sufficiently cushioned to prevent a kink in the neck.

Mouth-to-mouth resuscitation must be given as soon as a person stops breathing and must be maintained until skilled rescuers arrive. If, however, it is certain that a person has not been breathing for 15 minutes or more, the value of this procedure must be weighed against the demands of other casualties.

The value of cardiac massage in victims of serious traffic injury is questionable unless simultaneous intravenous infusions are available. In victims without apparently serious chest injuries it can be tried.

If the source of bleeding is not obvious, cut away clothing if necessary to locate the bleeding point. Most bleeding can be stopped by a pad pressed onto the bleeding point. Such a pad (clean handkerchief, sterile dressing, and other clean material) can be held in position by a triangular bandage or similar cloth. A limb that is bleeding should be elevated. If this is not possible and bleeding contin-

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ses, tie a flat object (flat stone or block of wood) over the tied-on pad with a second triangular bandage. This almost always does the trick.

Having done all this, you can now not only be but also appear to be a good samaritan. Reassure the injured and relatives. Ask conscious victims to adopt a position of least pain and improvise cushions and supports. Do not cover up wounds, leave this to the now imminent arrival of skilled medical teams who will want to see all injuries before they use the infinite variety of technical aids now available to a modern ambulance service.

Every Car Should Carry

1. Standardized Message forms.
2. A strong tongue depressor or all wooden clothespins.
3. Newspaper.
4. Four triangular bandages with safety pins.
5. Large sterilized combine dressings and sticky tape.
6. A strong pair of knotched scissors.
7. Mouth-to-airway rescue tube.
8. Flashlight.
9. A small block of wood (about 1 inch high and 2 inches square) with rounded corners.

Comment

As a result of my experience in going to the aid of road casualties with a rescue team on Australia's National Route No. 1 for 17 years, 50 miles (80 km) from the nearest hospital that was staffed and equipped to receive casualties, the above recommendations of course have not been fabricated out of thin air. They are entirely based on personal observation of motorist behaviour at the scene of accidents often long before the arrival of ambulances.

The commonest mistakes made are

1. Placing unconscious persons supine so that inhalation of blood and vomit can kill the victim within minutes. The frequency of this error alone justifies the introduction of first aid measures into any driver training schedule.

2. Haphazard parking makes it impossible to get specially equipped vehicles close to the injured.

3. Traffic guards are posted too close to the scene and are poorly visible.

4. Casualties suffer further injury by being needlessly dragged out of cars.

5. Even slightly injured persons are left lying in the middle of the roadway.

6. Finding out at what time the accident took place can be an impossible problem.

7. No one bothers to support the heads of unconscious persons, trapped in cars, whose airways are paralyzed and obstructed due to their slumped-over position.

8. Panic-stricken, exaggerated, incomplete messages waste time and lead to the unnecessary dispatch of skilled staff to remote accidents.

9. There is a general reluctance to do mouth-to-mouth resuscitation as long as "ambulance and doctors are on their way."

10. The one thing everyone unfortunately seems to remember is to apply a tourniquet.

Fig 6.—Ahnefeldt's method,[2] both arms forward.

Fig 7.—The semiprone, coma-shock position, or modified Sims position as recommended by Gammit.[3]

I would be surprised if this state of affairs was limited to Australia or the 495 missions carried out by my team between 1964 and 1970.

Naturally, when instructing lay persons one has to be dogmatic. Many will quibble with the "15-minute-no-breathing" rule and not doing mouth-to-mouth resuscitation. Imperceptible respiration (to the lay observer) may have gone on. Academically, four minutes without breathing will render an injured person nonresuscitable. Cardiac massage in cases of multiple injuries and chest injury is another bone of contention. There are other methods of carrying victims apart from those described. But at least what I have reported is practical experience and tried-out procedure and has been developed in consultation with a senior police driving instructor who has instructed and examined drivers along these lines for some time.

Instruction designed for all drivers cannot be by necessity as comprehensive as a full basic first aid course.

It is a function of the medical profession to promote and inspire the teaching of first aid.

This paper describes what a driver might be taught. A medical practitioner confronted with a traffic accident will, of course, use a quite different and much more sophisticated approach, such as I have detailed in my glove-compartment manual.[4]

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OPEN FORUM:

What is the role of the federal government in emergency medical services? Participants in this *EMS* survey agree it is definitely *not* that of Great White Provider and Protector. The role envisioned is that of Stimulating Partner – one able to provide, because of its unique structure, physical, technical and financial help to local communities. Participants uniformly agree that in addition to such aid and assistance the federal government has an even greater responsibility – to serve as innovator, initiator and catalyst. There is a feeling that the next several years must be approached with a "Wait-And-See" attitude, as local and federal representatives strive to determine exactly what an emergency medical services system really is. With some twenty-two Washington agencies charged with responsibility for some little piece of the action, some small chunk of the package, it can be argued that the federal government is involved in EMS in a big way. Despite the many politicians involved in making themselves perfectly clear on a myriad number of issues, however, there is as yet no clear resolution of where the EMS buck actually stops on the federal level.

We wish to thank the following for their participation and cooperation:

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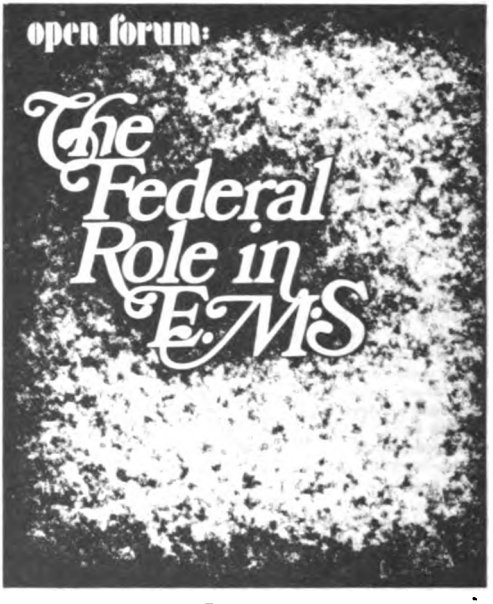
open forum:

The Federal Role in E.M.S



"The most crucial requirement by far is the need for adequate funding..."

Gerald Looney, M.D., Associate Director, Department of Emergency Medicine, LAC/USC Medical Center, Los Angeles:

"I believe the federal government, in health care in particular, has a responsibility to step in and fill a void where one exists. We needed a treatment for polio, it is appropriate that NIH funded a massive effort to develop a vaccine. The federal government did not, however, become a massive immunization service. There is a huge void in emergency medical care now and the federal government must acknowledge leadership and seize the initiative, provide some seed money, initial expertise, advice and assistance – and then once the ball is rolling pull back and let the non-governmental people pick it up and carry it.

"As I testified in June at the EMS hearings, I believe that many of the "local" efforts would probably never have developed had it not been for the support and involvement of the federal government through the Highway Safety Program Standard on Emergency Medical Services. There has been more improvement in emergency services in the last four years than the preceding three decades of purely local effort and community responsibility, and most of this has been due to the National Highway Safety Act of 1966. I think we can now say that for the first time in our history parts of the United States are getting modern emergency care comparable to the care given in the jungles of Viet Nam.

"The most crucial requirement by far now is the need for adequate funding, both for immediate services and for further research and development. I believe it is imperative that maximum latitude and flexibility to new approaches be assured – there is no need to base an emergency system on past experiences while a whole vista of fresh opportunities opens before us."

How do private ambulance operations, established for years, fit in with a new approach?

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"The dilemma here is that in most instances the private operator is a creature of recent vintage. Emergency care was really pretty good, as long as it was run by the hospitals, but suddenly after World War II hospitals stopped providing ambulance services. Private operators stepped in to fill the void – and of course if they hadn't, no one else would have. The hospitals sort of gave up their rights.

"My interest is in seeing a better balance, so that some hospitals start providing ambulance services. Obviously not all ambulance services can be hospital based, but if you really want to provide top notch care you can't let the local Mortician or local surgical supply representative be the one who provides the personnel. And that gets us into an interesting concept: that of separating out emergency care from emergency transportation. If emergency care is viewed as a public responsibility, along with fire and police protection, and if the transportation part of emergency care is viewed as a seperate component, then the private operator has a very definite role to play. The best solution may be to have private operators work as subcontractors to the hospitals. The hospitals can then add the charges to their bills, as they do for x-rays, lab tests and things of that nature."

What do you think of the way in which the federal government is presently involved in EMS?

"Theoretically EMS should obviously be a health function, but it was initially given to an agency with no health responsibility or resources, The Dept. of Transportation. Nationally, I think there is a lack of admiration for HEW's ability to implement things so far. I'm hopeful that over the long haul they will learn how to carry the ball. There must be some seed money used for a sort of R&D phase for the next year or two; when it becomes apparent what the best way is to design emergency services we can implement new systems in deficient areas all across the country.

"Los Angeles is a good example of government involvement when it was needed. There was a tremendous need for paramedics, and nobody was meeting the need, including the medical and educational institutions. The County of Los Angeles perceived this need, and filled the void by starting a Paramedic Program. Now, two years later, educational institutions are beginning to respond, and I think probably the County can soon begin to think about moving out of the educational business. But the County saw the initial need – and filled it exceedingly well. I think government has to try to serve as a catalyst to initiate activity if the private sector is not responding. Once activity picks up and non-government agencies begin responding, government should pull back and phase out.

"I'd like to point out that the current HEW position, as stated at the June EMS hearings, is that we don't need any new legislation in emergency medical services (and I'm not sure that position can be well defended). If it is true that a big void does exist in emergency medical care, and has grown steadily worse over the past thirty years, and that there has been sufficient existing legislation all along, then somebody, somewhere, needs to be called to task for not having done something sooner."

Steven Lawton, Counsel to the Subcommittee on Public Health and Environment, House of Representatives, talks about the Emergency Medical Services Act of 1972.

"The legislation passed the House, but the Senate Bill was tacked to a measure which included ten or twelve other authorities, and the House and Senate never got together to work out a compromise bill. Now, with a new Congress, we start again. There is plenty of legislative history on both the House and Senate sides on the need for an Emergency Medical Services Bill; I'd guess that as soon as Congress gets into full swing they will report out their bills and get together on them in a hurry. We estimate we can have something to the President within the first six months of the new Congress."

How would the Bill work?

"The Bill would authorize federal assistance for the establishment of emergency medical services systems across the country. EMS could almost be called the missing link in adequate health care services. We heard statistics that nearly 10% of the yearly pre-coronary hospital

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deaths could be prevented if proper care were administered at the scene or in route to a medical facility; that while more than 90% of hospitals maintain an emergency room only 10% are equipped to handle all medical and surgical emergencies; that only 5% of the nation's ambulance personnel have completed the minimum standard instruction course; that 5% have had no training at all.

"The Bill authorized $255 million to be spread out over a three year period for feasibility grants, initial operations grants, research and expansion and improvement of existing systems. The idea is to get an EMS system started in a community, or improve an existing system, with a view to the system becoming self-sufficient.

"To receive federal funding the EMS system must comply with a rather rigid set of requirements set up by the Subcommittee on Public Health and Environment, which include: 1) An adequate number of health professionals who meet rigid training requirements; 2) that the system be joined by a central communications system having, if possible, a universal emergency telephone number; 3) that vehicles and other transportation facilities be both adequate in number and also meet the standards prescribed by the Secretary of HEW; 4) that the system include adequate numbers of hospital emergency rooms; 5) that a standardized patient record-keeping system be maintained; 6) that all patients requiring such services have instant access to the system regardless of ability to pay; 7) that there be adequate provisions for transfer of emergency medical patients to facilities and 8) that programs for both follow-up care and vocational rehabilitation be provided. Finally, we provide for programs of public education to be conducted by the EMS system and for a system of peer review.

"The Committee found that there is a virtual absence of training of physicians in emergency techniques, so the Bill would authorize grants to medical, dental and osteopathic schools for research projects in the methods of emergency care and probably more important, for training programs in the techniques and methods of emergency care. We spoke with one physician who had gone to some forty different schools to complete his training as an emergency physician – rather a costly and cumbersome way to get an education."

Can private ambulance operators participate in the system?

"I think the private ambulance operators initially viewed this as being only an 'Ambulance' Bill, which authorized massive federal funding for ambulances in a community. Private ambulance operators are not precluded from contracting to provide transportation with the Emergency Medical Services System – the public, non-profit entity charged with, among other things, providing emergency transportation. Either a non-profit or a for-profit transportation system could enter into a contract or agreement."

What about long range funding?

"The grants authorized under the bill are not intended to continue ad infinitum. They are intended to establish and authorize initial operation for a two year period. The grants can be only one half the cost of operation for the first year and one quarter the cost of operation over the second year. The entity would then be required to be free standing, receiving its funding from the local community, fees, or other sources. This is not an attempt at continuing federal assistance – it is an effort to get things started."

"Our role is to stimulate development of all the pieces, and encourage the individual communities to put them all together"

Merlin K. DuVal, M.D., has been Assistant Secretary for Health, Department of Health, Education and Welfare, for the past year and a half. He likens the Federal approach to emergency medical systems to that of the approach to the Space Shot.

"We knew a great deal about projectiles, missile fuels, guidance systems, astronomy and so forth. But all the pieces had to be put together. They were, in a single package called the Space Program, and we put a man on the moon.

"In the same way we know a lot about the various pieces of an emergency medical services system. There are communities where the transportation system is extremely good; others where the quality of ambulance training is very high. Some where communications are first rate; others where emergency rooms are very good. The trick is to get them all together. Let's say there is a highway accident. All the pieces have to be working: Communications, capacity for a vehicle to arrive promptly; degree of training the ambulance attendants have received; equipment on the ambulance; capacity of the ambulance to get to a good emergency room within a reasonable period of time; capacity of the emergency room to be appropriately equipped and responsive to the particular type of emergency; backup in the hospital if necessary, and finally type of care, including rehabilitation and restoration.

"The final role of the Federal Government in emergency medical services is not really clear at this point. We feel our role now is to stimulate development of all the individual pieces in the community, and then to encourage the community to pull it all together. We started this year by singling out five total systems and some four to six subsystems for some federal support, no one of which would stand as a total system but on which we need more information. After six months or a year we will have developed quite a bit of information from these systems and we'll see then what might be the next step the government should take to serve as a catalyst to a community to get their emergency medical services pieces all together as a system."

"A total EMS system can work as well with a privately owned ambulance service as with one operated by a public agency"

Bill Burnett is on staff with the AMA Committee on Community Emergency Services and serves on the Commission on Emergency Medical Services. The Commission represents twelve medical specialty groups; its job is to look at the national picture and make recommendations on programming activities. The Committee is entirely an "in-house" group which works on AMA policies and procedures on emergency medical services. Burnett here discusses AMA proposed legislation, now dead, in which "The AMA laid out very clearly where they thought the Federal Government ought to be in emergency medical services.

"I'm firmly convinced the AMA will probably put in a very similar bill in the coming Congress. In essence, we say that all emergency medical services ought to be centered under one basic agency in the

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federal government – a new administration established department in the Department of Health, Education and Welfare. We say that grants of monies should be made to state agencies and they in turn allocated down to local agencies; that private enterprise interests should have as equal opportunities to get grants and contracts as do government agencies; and that the agency handling emergency medical services encompass everything – the Department of Agriculture, the Highway people – everyone who has a part in emergency medical services.

Could you clarify the AMA position on privately operated ambulance companies?

"You will find that many private ambulance operators have done a rotten job – but you will find an equal, if not a greater number, who are conscientious people and do a fine job. There is a great movement afoot to provide emergency medical service as the third public service, fire and police being the first two. There is good thinking behind this point of view, but an emergency medical services system in a community can work just as well with a private ambulance operator if he conforms to all the standards everyone else has to conform to. None of the projects funded recently by the government included private operators – in fact some other pieces of legislation that were in the hopper during the last session of Congress specifically excluded the private operator. All he could get was money to help with planning – not for furnishing equipment or supplies. The proposed AMA legislation will include private ambulance operators. There are some excellent systems around the country that use private ambulance service . . . one that comes to mind is in Charlotte, North Carolina. The private ambulance company operates on a contract with the city, and provides the same service for Charlotte that the Fire Rescue Department does for Houston."

"We must work out the mechanics of a total EMS system and get some legislation before we consider the various components"

Joseph A. Fortuna, M.D., is training to become an Emergency Health Systems Specialist – "One who plans, develops and perhaps operates total emergency systems." He is with the Emergency Medical Services Special Project, Health Services and Mental Health Administration, at the Graduate Hospital of Pennsylvania.

"The real problem in emergency medical services today is organizational – it has nothing to do with money or the level of technology. It boils down to how you go about getting a community together to plan and pay for emergency care.

"Of course you can extrapolate this problem to the larger health care system, but one of the beauties of emergency health care is that it is somewhat more readily definable – it is certainly more visible than the rest of the health care system. As a result, people are more willing to involve themselves in consideration of solutions to problems in the emergency care field where they wouldn't be, for example, in ambulatory care. You can get a broader spectrum of the community involved.

"As far as the role of the federal government in EMS, a lot of things are happening – at least on paper, and partly in reality. HEW has been given the responsibility for improving emergency med-

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OPEN FORUM Continued from page 13

ical services systems, and as a result we have the five Model Projects. Plans are underway to establish a National Information and Data Center on Emergency Services and a technical assistance capability.

"The concept of an emergency medical services system is not something that has been tested, and that's what we're doing now in these special projects. Once it has been tested it would seem to me there is a role for the federal government in terms of helping communities develop these systems. In some cases that might be funding in part or all the initial stages of development, in others it might just mean sending people in for some technical assistance."

How, specifically, would a community start?

"The first step is for a community to get itself together in whatever way it can, through a local political subdivision or a non-profit corporation or whatever (my preference is that it be at least on a CHP 8 Area basis, as the special projects are funded), and start planning. It can then put forth a comprehensive plan for an emergency medical services system and seek monies to fill in the elements of the plan. One of the problems today is that people seek monies for one specific area of it - like training for ambulance attendants - assuming this is the be-all and end-all of the system. So you may then have excellent care on the way to the emergency room, but when you get to the door you may find a poorly staffed and equipped emergency room unable to handle the problem.

"One of the basic problems now is that there is usually difficulty in getting local funding for something as nebulous as planning and, to some extent for the initial operational phases. But I'm not sure the federal government should provide this initial money - we first need to find out what the best way is to spend money. We must work out the mechanics of a total system and get some legislation - then we can work on the components of the system."

What kind of technical assistance is available from the federal government?

"The capability for assistance is currently available through the Division of Emergency Health Services, not perhaps to the extent we'd like, but the EMS Special Project is working on the situation now and trying to evolve a better capability. Currently there are people in thirty seven states and many of the State health departments who are available to assist communities upgrade their emergency programs. We have many options as to how the final system works - it may end up being all federal people, or teams of experts from the private sector assisted by federal people. In the absence of a great number of people in the private sector who have this expertise it certainly would be helpful to have some kind of assistance available, and I think it is appropriate that it come from the federal government. There is a parallel in the Health Services Research Field - five years ago when the National Center for Health Services began there were very few people around who were trained in health service research. Today we're getting many well trained, well qualified people.

"Emergency medical services must be looked at as a multi-disciplinary kind of problem. It is not something that lies specifically in the realm of physicians, nurses, social workers, ambulance operators, communications or p.r. people. This is a field that needs the team approach."

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GERALD L. LOONEY, M. D.

January-February, 1973

Feature Supplement

New Look in ER Care

THE HOUSE PHYSICIAN REPORTER

Emergency Medicine Shows Sharp Gains

Residency Programs Spiral in 'Fastest Growing Specialty'

Emergency medicine, traditionally relegated to moonlighters, rotating house staff, and "anesthesiatric drudgery, is emerging as "the fastest-growing specialty in the world." This American College of Emergency Physicians, formed in 1968, now numbers more than 5,800 and is adding new members at the rate of 100 a month, according to Dr. Robinson R. Hanson, Jr., president-elect of the ACEP and chairman of its Section on Education.

While most of the present members, both full- and part-time, have become specialists by virtue of on-the-job training, residency programs are cropping up at numerous sites around the country.

At present there are nine—Cincinnati General Hospital, Louisville General Hospital (University of Louisville), Medical College of Pennsylvania, University of Southern California Medical School, University of Chicago, Boston City Hospital, University of California at Los Angeles, Northwestern University's Evanston Hospital and Victoria General, Montreal. "Another eight or nine are on the drawing boards," said the ACEP leader, who is director of emergency services at Evanston. A year from now there will be 25 residency programs, and by the end of two years there will be close to 100, he predicted.

Board Certification Expected

Some schools are already developing departments of emergency medicine, according to Dr. Hanson, who believes that Board certification, "while probably two or three years off, is surely coming." The current number of residents—approximately 50—is expected to expand to 150 within the year.

Why the upsurge? "Emergency room medicine is cooking—it's where the action is," Dr. Hanson told THE HOUSE PHYSICIAN REPORTER. "Our type of practice sees a much higher percentage of sick or ill patients than any other practice. Furthermore, we have good hours and we don't have to take it home with us. We may work hard while we're on, but when we're off we can forget it."

In Dr. Hanson's view, "people are turning more and more to the hospital as the center of health care for the community." This is due in part to the increased mobility of the population, leaving fewer people with their own physicians; in part to large concentrations of people in metropolitan areas; and in part to difficulty in finding a physician—or reluctance to interconvenience one—at odd hours.

"Moreover, no one ever proved that most patients want a family physician," he continued. "There are a lot who don't—who want a freeway. Neither have they proved that by having a personal physician you have better medicine."

When there is a career emergency physician to handle the emergency facilities, Dr. Hanson added, not only does the quality and efficiency of care improve, but "other physicians are released to perform services for which they are better trained and in doing which they are more comfortable."

Breadth of the Specialty

The emergency physician, "the patient's point of entry into the health care system," is trained to evaluate patients' emergency health needs, providing such services as are immediately necessary, giving as much definitive care as possible, referring patients to other appropriate physicians for further definitive care when indicated and ensuring appropriate follow-up care.

In Dr. Hanson's view, emergency medicine is a "broad-scope specialty analogous to family practice, though at the opposite end of the spectrum. Whereas family practice is primarily health-oriented and preventive, emergency medicine is primarily disease- or injury-oriented and episodic. Family practitioners relate more closely to the general internists, while emergency physicians range closer to the general surgeons.

"The emergency physician, Dr. Hanson pointed out, handles a very wide range of problems: coronary, acute infections, cerebral children, premature delivery, vaginal bleeding problems, lung emergencies. "Some people think our specialty theory the public's so-called non-emergency use of emergency facilities," he noted. "Emergency physicians do not complain about this, because our experiences in the job have taught us that the patient, not the physician, decides when he considers an emergency. Often it is the patient's anxiety that helps him to—or restores a disease at any other, and one of the hardest to treat."

Trauma of any type, from minor laceration to coma,

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Dr. Butterworth (right), a trainee in the University of Cincinnati Medical Center's emergency medicine residency, listens as Dr. Blum, director of the program, discusses radiological findings in a patient.

How Nation's First Emergency Training Program Works

The utilization of emergency rooms has shown a steady increase—jumping 10 percent each year for the past decade—and as a result there has been an urgent demand for properly trained, action-oriented ER physicians.

Various plans to cope with different aspects of this situation are evolving, including the residency program in emergency medicine at the University of Cincinnati Medical Center, the first in the nation. It began July 1, 1970.

Objectives of the Residency

The goals of the program have been established by Dr. James W. Agee, assistant dean for ambulatory care and community medicine at the university medical college and chairman of the emergency medicine residency, and Dr. H. Thomas Blum, director of the new residency training program. The goals are:

- To train the physician to become expert in managing the broad spectrum of problems encountered in an emergency unit.
- To develop administrative skills necessary for the physician to provide leadership in this field.
- To stress the physician's role as a teacher in all aspects of emergency medical care.
- To encourage both clinical research directly related to the improvement of care for patients with specific emergency medical problems and research in the team concept of emergency care and its relationship to continuity of care.

The program was the brainchild of three staff physicians at the Cincinnati medical center: Dr. Herbert Flume, an internist; Dr. Joseph Lindner, Jr., associate dean; and Dr. H. Paul Lewis, a neurosurgeon.

To get it started, Rodger E. Mendenhall, administrator of Cincinnati General Hospital—the major teaching hospital of the University of Cincinnati Medical Center—offered support for as many positions as the AMA would approve.

Targets of Training Program

Currently, 12 positions are authorized by the AMA, six first-year and six second-year positions. The program also has had active support from the American College of Emergency Physicians and the University Association for Emergency Medical Services.

Specific objectives of the two-year program include training the management of patient problems in the areas of anesthesia, emergency surgery, general medicine, neurosurgery, obstetrics-gynecology, orthopedics, and pediatrics.

The residents also gain experience in the Emergency Unit, including minor wound care, primary care, treatment of medical and surgical emergencies, and supervisory experience not only in true emergency situations but also in the day-by-day operations of the unit.

"The difference in training from that of other residencies becomes apparent when the emergency medicine resident rotates on a specialty service," Dr. Blum declared.

"In orthopedics, for example, our residents learn to set fractures just as the orthopedic resident does, but ours spend their time diagnosing and treating acute fractures in the emergency room and following the patients in the clinics. The orthopedic resident, in contrast, spends much of his time doing complicated operative procedures which would not be performed in the emergency room."

Electives Give Wide Experience

Each emergency resident at Cincinnati receives a month's vacation each year and is given a month for elective studies.

There are both clinical and nonclinical electives, which allow the resident a variety of experiences. For example, Dr. Bruce Jasnik, the first resident to enter the program, was particularly interested in administration.

He therefore chose to study patient transfer procedures in the Cincinnati General Hospital emergency unit. He organized a city-wide meeting, with the help of the Greater Cincinnati Hospital Council, to explore ways of improving transfer procedures.

Preparation on Procedures

In another elective period, Dr. Jasnik compared 1,000 random emergency cases from Cincinnati General, which serves the entire county, with 1,000 cases in another large community hospital. The purpose of his study was to determine any differences occurring in the kinds of emergency problems presenting at the two hospitals.

Another trainee, Dr. Philip M. Butterworth, spent a month making runs with the Cincinnati Fire Department's Life Squad. The second-year resident observed: "I became familiar with how different things are out there.

"Certain procedures no longer seem appropriate. You can appreciate more the emotional fervor at the scene of an accident. You can execute certain things not being done, just because of problems with the crowd and the patient's family.

"For example, if you are giving resuscitation while you are transporting a patient downstairs, you have to perform resuscitation at the top of the stairs and immediately upon arriving at the bottom. But it's virtually impossible to accomplish this maneuver while descending the stairs.

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Emergency Medicine: 'Fastest Growing Specialty'

(Continued from page 5)

accounts for 80 percent or less of the ER load. Another 20 percent of the problems are medically oriented, while the remaining 40 percent are pediatric or drug-related cases. We do provide primary care—and not all of it is ambulatory. Some is horizontal," Dr. Hannas stated.

Like all physicians, the emergency specialist provides some urgent, acute initial care, and some definitive care. "Many of the cases we send immediately up to the coronary care unit—or out to an office. In other cases, we may find it necessary to stabilize the patient before sending him on to the trauma unit or the intensive care unit. And sometimes we do the definitive care: respiratory infections, asthma attacks, lacerations, diabetic crises, pulmonary edema. But we do not follow-up care."

To determine exactly what areas the emergency specialist must be competent in, Dr. Hannas and his colleagues have analyzed the records of given emergency rooms for periods of several years. They have defined no fewer than 60 areas of competence, have grouped them according to specialty, and are now in the process of fashioning them into a curriculum.

"Nothing is peculiar to our body of knowledge," Dr. Hannas declared. "Everybody in medicine uses the same knowledge and the same skills. Because we cut, clamp, and tie we're not surgeons, any more than we are internists because we diagnose, reason and project. There is really no training that offers what the emergency physician needs. We take part of every specialty. With the eye, for example, we see foreign bodies, injury, hemorrhage, rare acute glaucoma, acute infections, but we don't do any refracting or any real eye surgery."

Undergraduate Education

On the undergraduate level, the ACEP would like to train the medical student in basic emergency procedures: establishing and maintaining airways, resuscitating and treating cardiac arrhythmias, controlling shock, stopping bleeding, starting intravenous fluids, splinting fractures, examining and diagnosing comatose patients, managing obstetrics emergencies, transporting the injured. Students would also serve a clerkship in the emergency department—one to four weeks, during the busy hours.

The residency program proposed by the ACEP specifies two years of residency, following a one-year internship or, where states do not require internship, a three-year coordinated program. It also calls for in-course examinations, continuing evaluation, elective time, and an opportunity for meaningful research.

The emergency medicine resident, Dr. Hannas stated, will not rotate. "We don't want him to lose his identity in rotating from one service to another. We're going to keep him based in the ER, we still see more emergencies here than in any other part of the hospital. Sure, it's possible for a coronary to get tied up in the ER—but chances are he has come in through here anyway. We want the resident to get varied experiences—and maybe more than a single hospital can provide."

Here at Evanston Hospital we don't see a lot of pediatrics, so maybe our resident will go to Children's Memorial Hospital. And maybe they will spend some time at Northwest Community Hospital, where they can see how a good community ER operates."

Role Model for Trainees

As for residents in other specialties, they will continue to gain ER experience by rotating through, working under the ER physician, and coming down on call for special cases when their attending physicians want them to.

An important requisite for the residency program, Dr. Hannas stressed, is a successful emergency physician to run it. "You need a good role model, someone who works in the pit and knows what is going on."

ACEP plans to establish residency programs for a while ran into an obstacle in the AMA's Council on Medical Education. Twice the ACEP submitted a set of proposed Essentials of a Residency Training Program in Emergency Medicine, and twice they were turned down. Cincinnati's program has been recognized as a general practice residency. The rest are unapproved.

Times have changed, however, and now the Council has plans to help design guidelines and set up approval mechanisms for programs that train emergency physicians.

In the meantime there should be no difficulty in running residency programs that are comparable unsupervised. It is quite likely that the residents will be accepted by any American Board of Emergency Medicine, since the ACEP will be the group primarily responsible for establishing the Board and setting standards.

Urgency in Creating Programs Seen

"At a time when the most exciting development in the delivery of health care is this new specialty, and when this addresses meeting public, hospital, and medical staff needs has been an ailment of medicine itself, most governments it is even essential that all levels of medical education recognize the urgency of helping establish training programs which will produce well-trained, caring emergency physicians."

Specialty status is needed, Dr. Hannas emphasized, in order to attract young persons into the field. "Of the three elements of a complete reward system—status, satisfaction and pay—we have a great deal of personal satisfaction, and the pay is quite adequate. Our status is high with our patients, but we need it within the profession. We get it by training it and establishing Boards."

Once residencies are established, the next step in the specialty's evolution will be to develop departments. One already exists at Southern California, and others are being planned.

The specialty also has other spin-off organizations. In addition to the ACEP, there is the University Association for Emergency Medical Services, and eventually there will be a scientific section of the AMA. Some state medical societies already have sections of emergency medicine.

To make sure standards are met, a self-assessment test is being developed under the direction of Dr. James Dunn, at Massachusetts General Hospital. After field testing and review, the ACEP plans to make it available to its members, and eventually to expand it to its present 90 questions to about 1,500. The spin-off from such an exam will be extensive, Dr. Hannas said. Not only will it help an individual plan his own continuing education, it will aid the group in planning its scientific assembly, in ascertaining where most members need help, from the basis for re-residency exams, and eventually become the basis for a Board exam.

The ACEP has also adopted continuing education requirements. To retain membership, each member must complete 150 hours of approved postgraduate course work every three years.

One final step in the development of any specialty is the establishment of research programs. Dr. Hannas declared.

Our research, as I like to say, will not involve flying strange things to small animals in test tubes. Rather, it will involve the delivery of health care. How can we most effectively treat specific problems? How can we most effectively utilize paramedical personnel? Is it necessary for a physician to see 30 patients a day, while a nurse practitioner working 20? How do we relate to the rest of medicine? How can we better match our resources with the community?"

Because of the freedom that exists during semi-isolated hours, the interested ER physician is more likely to find time for research and publication, Dr. Hannas said.

How It All Started

Emergency medicine started as a specialty a few years ago, the group's president, Alfred Sheffield, M.D., F.A.C.E.P., told us in Virginia. Dr. James Adams and others in the area met. After a series of meetings, a constitution was drawn up, bylaws were set, and elected officers were chosen. Dr. Sheffield, a general practitioner and surgeon, started practicing emergency medicine over 20 years ago, when he was in private practice and ran a ward with the hospital's consent. He averages a total of 24 hours a day.

The contract was an offshoot of that time, when "poor" and free for services' practice and added a salary as well as the care of the indigent.

Around the same time a second group of doctors near Phoenix, Mich., responded to a similar need. One of the emergency room physicians, recalling the need, made a study of the full-time emergency room physicians in the area. Individual physicians were anywhere from one to three years at a time in the ER, but continued their private practices as well.

The Alexandria Plan and the "Private Plan" have been continued on page 7

Northwestern University's Dr. Hannas (left), vice president of the ACEP, shown here with Dr. Don Cohen, a resident, predicts that emergency medicine will win specialty status within the next two or three years.

Great Demand Seen for ER Doctors

(Continued from page 6)

come the prototypes for full-time and part-time ER practice. Both plans work well, and they are not in competition, Dr. Hannas stressed.

In such arrangements, the group of physicians is often incorporated. The hospital sometimes acts as a collection agent, handles correspondence, deals with insurance companies, and provides around-the-clock cashiers and registration clerks. For these services, the hospital charges a percentage of fees collected.

Faced with increasingly sophisticated and expensive equipment to buy, physicians in private practice spend 45 percent to 55 percent of their gross supporting their offices, Dr. Hannas asserted. "Why should I do that when my overhead here at the hospital costs me about 10 percent? The hospital provides the monitors, the defibrillators, the spectrophotometers."

'Biggest Headaches' Overcome

"My six biggest headaches in practice—space, ancillary personnel, equipment, supplies, billing and collecting—are all taken care of for me here," he explained. "In order to earn the same income in practice as I make here I had to work twice as long."

Physicians entering emergency practice can expect to earn about $40,000 a year—whether from salary or from fees, Dr Hannas stated. Physicians working on a fee basis have the option, of course, of seeing more patients to earn more.

The demand for ER physicians is great. "We could place 20,000 emergency specialists today, persons doing career emergency medicine," Dr. Hannas declared. "Every journal you pick up carries advertisements for ER physicians."

As for the type of physician best suited to practice emergency medicine, Dr. Hannas has described him as one who can keep his cool under duress.

The Good Emergency Doctor

"The good emergency physician has to be able to get up at 2 a.m. to treat a patient for a sore throat that he's had for three days—and not chew him out," he explained. "There's always a reason why that patient is there. Maybe the system has let him down, and he couldn't get into a doctor's office. Maybe he gets off the late night shift. Maybe he's depressed and this is the gimmick that brings him in to talk to you. Maybe you're saving a suicide. The ER physician has to realize that when he's berating the patient, he is treating himself, not the patient.

"Then there is the business of stress. It's easy to see patients when you're seeing three or four an hour. But it's a different story when you've got a houseful of emergent or non-emergent patients with problems. Most of the people we see in the ER are themselves under stress. They react differently. The emergency physician or the emergency nurse may really represent a threat to them. He's stressed, and we're stressed," Dr. Hannas said. "Then the physician who can keep his cool, take care of these patients in an orderly manner, the sickest ones first, and get it all done, this is the person you want for an emergency physician."

How Cincinnati Program Works

(Continued from page 5)

Knowing little points like that will help in training others for this work."

Other nonclinical electives include emergency health care research and working with the Greater Cincinnati Hospital Council and the Cincinnati Academy of Medicine in improving emergency medical services. Clinical electives may involve work in the coronary care unit or in another emergency unit doing clinical procedures or spending additional time in any of the required rotations.

The residents also help train fourth-year medical students from the University of Cincinnati College of Medicine. In an effort to upgrade emergency medicine studies in the school's curriculum, the college offers an elective for work with physicians in Cincinnati General's emergency unit.

Enthusiastic Reception by Students

Dr. Blum reported that the elective and emergency medicine lecture series open to the students is received enthusiastically by them. "The students find them refreshingly relevant to community health care problems," he said.

Dr. Agna noted that monthly visits to the Cincinnati General emergency unit have reached a high of 10,000 and are still increasing. About 70 percent of these are for relatively minor problems. Nevertheless the philosophy of the Emergency Unit is—if it's an emergency to the patient, then it's an emergency.

Most of the patients seen there have no personal physician, he continued. And even those who do frequently seek help at the Emergency Unit after "doctor's hours" and on weekends. Furthermore, much of southwestern Ohio sends its severely injured patients to Cincinnati General, where complete teams of physicians are on duty day and night.

Because of this, Dr. Agna has proposed a new name for the emergency unit—"It should be called the Department of Unpredictable or Unscheduled Medicine."

All the residents for the unpredictable department have come to Cincinnati unsolicited, added Dr. Agna. Their previous training was unpredictable too. Some have begun their training in emergency medicine immediately after internship, while others have served internship, military duty, and a year or more of residency in another specialty before entering the training program.

Defining an Emergency

By the time they are through, he went on, they should be able to handle suburban or metropolitan emergency facilities or to play other roles, such as training other emergency medicine physicians and working in disaster planning, community ambulance services, preventive medicine, poison control centers, police, fire and rescue squad training, and research.

After completing his residency last June, Dr. Janiak found he had enjoyed the challenge. He likes people, he said, and particularly appreciated the type of situation where "you try to get a patient to trust you in a few minutes."

Among the lessons he learned during his training was this important one: "An emergency is defined from the patient's and not the doctor's point of view."

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Therapeutic Dilemmas Buffet the Clinician

(Continued from page 1)

of the contemporary clinician in this confused context. The conscientious, informed practitioner lives with sporadic doubt and indecision.

In cardiology. How about the patient with difficult-to-manage coronary artery disease, who follows all the rules of diet and programmed exercise and complies by taking full doses of medication but still must have nitrogels administered frequently for relief of exertional angina? Should I subject him to "offer him" the risk and expense of angiography and possibly bypass graft surgery?

I know it is unscientific to be influenced by one's own limited experience and I have preached this doctrine to students. But during the past six months I lost two bypass patients who did not make it through the postoperative period after successful surgery by "good" people at "good" hospitals.

Surges of Enthusiasm

Both men were in their early forties with passable levels of severe ischemic pain. One had sustained a subendocardial infarction. But they were both functioning normally on appropriate medications and at relatively low risk from myocardial infarction—but they were working and supporting their families.

I realize these are anecdotal, uncontrolled data, and in the same period I have known about a dozen others who have had successful coronary bypass surgery. I have no idea what the three- and five-year success rates will be. But I must confess at this point in time, I really do not know the dimensions of my obligation to such patients.

I am old enough to remember the urges of enthusiasm for everything to prescribe sodium pentothal as a variety of internal tranquilizer, diversion gymnastics, aortic coronary sinus fistula, coronary endarterectomy.

The literature is littered with the bleached bones of abandoned surgical procedures for coronary artery disease.

Insidious Erosion . . .

My clinical instinct tells me to "stick to my last"; try to improve myocardial function through medical means, resort to surgery only in the extremity of desperation. But is that fair? I am undecided. I will assess each case as it comes. I hope that time and the experience of others will be my ally.

In hematology. How about my children and young adults with acute leukemia? I answer that after my year of fellowship, when I returned as children who died under my care. I would never accept another patient with acute leukemia. Yet I do.

In my situation it is almost impossible to follow the investigator who wishes to test or employ multiple drug programs. Should I participate in one of the experimental medications? How should I treat all of my acute leukemia patients in a medical center that is part of a national cooperative chemotherapy program?

Am I doing best by therapy by treating them with what means I have available and supplementing this with as much care and kindness and time at home—out of hospital—as possible?

And how about my lymphoma patients? Am I obliged to do lymphangiography, laparotomy and splenectomy in an effort to stage each of them properly? Should I send them to a center where they can receive such help in diagnosis and therapy? If I do less, can I rest with my conscience?

And why do I feel so guilty about my lack of enthusiasm for chemotherapy of solid tumors? Other than the handful of tumors where it has proven efficacy. I use these drugs but I have little faith that they prolong life or significantly ameliorate symptoms. Is my own pessimism being translated to inadequate care for my patients?

How about renal disease? How do I prevent the unsympathetic azotemic patient from progressing to uremia? The modified low protein diet at an outpatient nightmare—a practical impossibility.

And when patients approach end-stage renal disease and the creatine clearance begins to sink, I feel obliged to route them to a dialysis-possible transplant program. Then I watch the insidious erosion of family life and effects upon the patient and he or she and him. This is not invariable, but when it occurs I wonder if I have done the right thing.

What is my obligation to the patient, have I done the family a service? I have never had to face the problem of asking a sibling or a parent to donate a kidney. I am not sure what I would do when actually put to the test.

A Bit of Heresy

How about chronic pulmonary disease? I am concerned about the push to do frequent blood gas analyses in following the course of someone with significant acute cardiac or pulmonary disease (except for frank respiratory failure).

When I am already making every effort to improve the competence of the airway, administer my oxygen judiciously and traumatically, monitor the sputum carefully and select the appropriate antibiotics, and insure fluids and bronchodilators through fully, I am far from convinced that placing arterial cannulas or frequent arterial punctures, which are mandatory for blood gas determinations, are truly justified—contrary to much that appears in literature.

In my experience, rarely do they add enough information to cause a major modification of my therapeutic program. I realize this is heresy, but I feel this way. At times I wonder if the principal indication for performing a laboratory procedure is that it is available.

Profound Ambivalence

There are dozens of other areas where I have similar doubts about my diagnostic and therapeutic endeavors. I wonder if the future will see all the very ill or chronically ill patients funneled to large medical centers—where there can be no discrimination in care on the basis of geography, individual physician ability or facilities.

But I feel that would be far from ideal. There is more involved in patient care. I would not enjoy functioning as a "well patient" doctor, obliged to channel my more challenging cases to large centers.

Clinicians in peripheral areas must be permitted to retain the prerogative of selecting which patients to keep and which to refer. In large measure our sense of insecurity is related to a tendency to ruminate upon our failures and take our successes for granted. Yet my ambivalence is profound. At times I wonder if we are not becoming anachronisms in the modern context of medicine, and whether we are actually doing a disservice to our patients by approaching them in the old traditional ways.

Cornucopia of Data

And what of the advances being made in the cantons of academic enlightenment? It is so difficult to sort out and wade through the cornucopia of data that pours forth.

Certainly those of us in clinical practice find it difficult to make objective appraisals of our own diagnostic and therapeutic competence. It is so easy to fall into the trap of "impressionism." Quite often, it is almost impossible to determine if your patient is taking his medicine (when? how much?), much less make subtle determinations about the effectiveness of one drug or one program as compared to another.

We must rely on the experience and integrity of the investigators. They are obliged to help us and provide guidance—in order that we will be able to offer the best of medical care to our patients.

Finally—in the day-to-day practice of medicine we see myriads of patients with minor problems. Things that most of us would cast aside, perhaps take an aspirin and carry on. What service do we offer these patients, as we cater to their minor symptoms and ply them with medications (carefully selected because they are harmless and might make the patient "feel" better), until nature heals the tiny illness? After you see 10 such patients in a row, you wonder who is fooling whom. And really what am I doing here?

Well, maybe tomorrow I'll feel better.

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APPENDIX

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March 9, 1973

Testimony of F. William Blaisdell, M.D.

To: The Honorable Alan Cranston, United States Senator

I would like to testify as Chairman of the Trauma Committee for Northern California, as Chief of Surgery and Director of the Trauma Unit at San Francisco General Hospital and as Vice President and Member of the Board of Directors of Sequoia Associates (a voluntary organization devoted to improving the quality of emergency care). I would like to raise some problems which exist and require solution.

1. The problem of lack of Emergency Room standards:

There are two simultaneous and, in some respects, opposed problems in delivery of emergency services. These are the lack of adequate emergency facilities in rural areas and, simultaneously, the plethora of inadequate emergency facilities in metropolitan centers. The problem of economics makes the cost of optimal geographic dispersion of emergency units impractical, and without federal or state funds, many rural areas will be inadequately served by emergency facilities.

The problem of hospital economics, the plethora of beds in metropolitan hospitals as a result of overbuilding has led hospital administrators to open emergency rooms in an attempt to solicit patients. It must be obvious that if we have situations such as exist in Oakland, where three hospitals immediately adjacent to one another have all opened emergency rooms, the quality of any one emergency room must be far less adequate than if all the resources were put in one central emergency unit. This situation has resulted in hospitals developing emergency rooms with no blood bank, x-ray, no operating facilities, lack of personnel well-versed in emergency room care, and with no capability for major resuscitation.

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The American College of Surgeons has recognized the problem of emergency rooms and has strongly supported a national system of classification such as that developed by the American Medical Association. Under these circumstances, there would be four recognized categories of emergency services.

1. Comprehensive Emergency Service: This includes all the things necessary for immediate major resuscitation of any type of emergency. It would represent a regional resource for referral of patients and provide consultation for other emergency units.

2. Major Emergency Service: A center able to provide all but highly specialized treatment on an immediate basis in all major surgical specialties.

3. General Emergency Service: This would have routine emergency capabilities with the minimum of a physician on call in the house 24 hours a day who is trained in emergency life saving procedures. The availability of specialty services by prior arrangement would be obtained by transfer to other hospitals.

4. Basic Emergency Service: This capability provides first aid and resuscitation by a physician on call outside the hospital and at least a practical nurse on call in the hospital 24 hours a day.

If such standards were adopted and posted for each emergency room, the level of service available to the potential patient would be easily identified. Comprehensive health planning groups could chart locations of emergency rooms and determine the needs for development in critical areas.

2. Communication and transportation:

With the advent of an emergency hospital system, communication and transportation become of paramount importance. Communications networks for emergency services are nonexistant except in a few areas. Availability of transportation varies greatly and even in metropolitan areas may be inadequate. No personnel standards exist at a national level and training of people involved in emergency

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transportation is marginal at best, even in most major cities. Notable exceptions include Jacksonville, Florida and San Francisco, California, both of which have developed a very effective municipal ambulance system with highly skilled paramedical personnel.

3. Training:

Basic to the development of sophisticated transportation systems and emergency hospitals is the development of training programs for professional and paramedical personnel. Such training programs are few and for all practical purposes nonexistant at this time. The American College of Surgeons is working to encourage the development of this type of training throughout the United States.

One of the major problems that confront the well-trained paramedical personnel such as ambulance attendants, is the potential medical liability for any of their actions. There is no national standard that covers this although a few states, such as Florida, have legislated protection for actions of paramedics who have adequate training and experience. At the present time, the only coverage that exists for most areas is the Good Samaritan policy.

4. Research:

While the development of effective communications, transportation and emergency care systems would vastly improve the incidence of death and disability after injury, many problems would still remain. Badly needed is research in head injury, shock, blood transfusion, wound healing, infection, organ failure (in particular lung failure) and fracture healing. These problems still account for death and prolonged disability in our Trauma Center at San Francisco General Hospital which has taken advantage of effective communications, transportation and immediate emergent care for the citizens of San Francisco. As our ability to resuscitate patients with what were previously fatal injuries, new problems that require solution are being identified. The National Institutes of Health have recognized this problem. Trauma research programs have been developed in eight centers throughout the United States. Money invested in this type of research is a pittance relative to efforts in cancer and heart disease (three million vs. several billions of dollars), yet traumatic injury is the principal killer of children and adults in their most productive years. The potential gain of investment of relatively small amounts in our

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Trauma Center at San Francisco General Hospital has produced dramatic results. In the few years since the formation of our Trauma Service, the principal killer in our injured patients (and those casualties in Viet Nam) -- lung failure, has markedly changed. A few years ago this carried a 64% morbidity rate when it developed in our patients --at the present time this has been lowered to 18%.

Finally, we would like to commend your efforts in emergency care and your decision to hold these hearings. I hope the information that you acquire will be useful. If I can be of any help in any way, please let me know.

Respectfully submitted:

F. William Blaisdell, M.D.

F. William Blaisdell, M.D.
Chief of Surgery, San Francisco General Hospital
Professor of Surgery, University of California
School of Medicine
Chairman, Northern California Committee on Trauma of the
American College of Surgeons

FWB:ld

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MAR 6 1973

March 5, 1973

Senator Alan Cranston
450 Golden Gate Avenue
San Francisco, California

Dear Senator Cranston:

We are looking forward to your hearings on Emergency Care later in the week. Enclosed is a copy of California Health which might interest you. It describes what is going on here at San Francisco General Hospital in Trauma care and organization of services.

Sincerely,

F. William Blaisdell, M.D.
Chief of Surgery

FWB:ld

cc: Francis Curry, M.D.
Director of Public Health

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TRAUMA

The patient was so mangled that they gave him less than a one in 100 chance to survive. S.F. General's trauma team turned those odds around.

STEWART COULTER

Photos/DON LONGANECKER

Wayne Lindblom, a construction foreman for Pacific Gas & Electric Co., was working in one of San Francisco's gas main ditches on December 18, 1971, when catastrophe struck. A heavy piece of earth moving equipment caught his body and rammed it into the ditch wall. As he was dragged along the wall, his body was pounded to a bloody pulp.

Coulter

He was rushed to San Francisco General Hospital where it was determined that his chest and abdomen were crushed, his left kidney ripped from the artery which feeds it, his large intestine torn, pancreas and spleen ruptured, several ribs fractured, and two vertebrae in the lower spine were also fractured. Lindblom was unconscious, with no detectable blood pressure, and in severe shock. He was given less than a one in 100 chance of living. But the nationally-famous trauma team at SF General slowly, skillfully, turned those odds around, creating the miracle that sustained life over Lindblom's certain death in the process.

Major challenge

Trauma is medically defined as "accidental injury," and its victims often suffer massive complications. How to treat these and the generally accompanying shock is a major medical challenge. Many questions are still unanswered but trauma centers (there are 10 in the nation) like SF General's are making great strides. For a hospital to become a federally approved trauma center it must first be officially recognized by the National Institute of Health (NIH). This recognition is accompanied by an NIH grant (SF General received a three-year renewable grant of $513,000 awarded last December, which provides for training, research, and treatment).

In the emergency room Lindblom was revived and treated for shock, then quickly whisked into the operating room where the team removed his torn kidney, part of his colon, more than half of his pancreas and his entire spleen. His aorta which was torn and bleeding in three places was stitched up, as were abdomen and chest wall wounds.

He received a transfusion large enough to replace his body's natural supply five times over (great amounts of blood are used in cases where massive blood loss, severe injury, and shock have occurred). His remaining kidney failed, and he was confined to an artificial kidney in the hospital's dialysis unit for a month.

His breathing failed and it took three months in the Intensive Care Unit to correct this condition. Liver failure and a severe abscess in the back of his stomach, which had to be drained through his back, were other complications. A "stress ulcer" required more surgery and special feeding techniques through a tube which ran from his abdomen into his small intestine. For six months he was fed in this manner exclusively, with a special high carbohydrate liquid diet, a formula that originally was fed to astronauts. The diet, used in conjunction with intravenous hyperalimentation (a very protein-rich formula) proved efficient and Lindblom left the hospital weighing his normal weight, although he had lost 30 pounds during his illness.

In a large metropolitan area the need for highly efficient emergency care services is essential. Statistics attest to the fact that SF General's emergency section (also called the Mission Emergency Section) is one of the busiest in the country. They treat 6,000 patients a month, which averages out to a patient every eight minutes during a 30 day month. During the 12 month period from January to December 1971, 243 auto accident victims were treated, as were 153 assault victims, 134 drug overdose patients, 44 stab wound patients, and 32 gunshot wound sufferers. At present, an average of ten auto accident and three stabbing and shooting victims are seen daily.

More, not less

"With the expansion of freeway systems, more cars on the road, a rise in crimes of violence, and the high incidence of drug abuse, the number of trauma victims promises to increase, not decrease," says the chief of SF General's Trauma Center, George Sheldon, MD.

Accidents kill 140,000 Americans a year, making them our third leading cause of death. Trauma is the major cause of death among people 45 and under, and a great many of this staggering number of accidental deaths from drownings and drug overdoses are preventable. One-third of all surgery performed at SF General is trauma surgery.

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Between 1967 and 1968 the number of trauma cases treated at SF General doubled. San Francisco had proven herself to be a city with a need. This helped influence the 1968 decision to benefit all San Franciscans by specializing in trauma management. SF General serves rich and poor alike, and strives to deliver highly personalized care, so that some poor people won't be driven away by pride, or that others won't seek treatment at the hospital for economic reasons alone.

The hospital's trauma service is organized under the department of general surgery, with the cooperation of the departments of orthopedics, neurosurgery, pathology, and anesthesiology. Trauma teams containing a full complement of doctors are now available 24 hours a day, seven days a week. A team of doctors, each from a separate specialty, is needed because a freeway accident victim, for example, will often suffer a variety of injuries. He may need pressure in his brain relieved, his breathing restored, internal bleeding stopped, a blood transfusion, and a broken bone set, with each complication a priority in its own right if complete recovery is to be achieved. These specialists don't always have to wait for outward symptoms to occur to begin treatment. They know that the time for them to do an emergency medical procedure is when they think the patient is going to need it desperately half an hour later, not to wait until he obviously needs it because by then he may be dead before they can get it done.

They can determine whether internal bleeding has occurred or not; if so they can open the patient up and make the needed repairs. Similarly the extent of brain damage can be determined, and often without the rapid treatment administered the patient would die. Each specialist performs his specific function several times a week, and this familiarity is the ingredient that makes each team member a true specialist. With a team available, more than one doctor can work on a patient at a time. "Such concentration of resources has saved many lives," claims Dr. Sheldon.

The technicians who run the complicated heart and kidney machines are also important members of the team. All of the team members must stay close to the emergency room, so they can be quickly summoned on the pocket radios they carry.

Many trauma team members have received specialized training. Dr. Sheldon was recruited from Boston for his blood function expertise. Donald Trunkey, MD, received special training in shock treatment and resuscitation techniques from Parkland Hospital in Dallas, Texas where President Kennedy was treated. Julian Hoff, MD, chief of neurosurgery, has developed new methods of relieving brain pressure. The NIH presented him with their "Teacher Investigator of 1972" Award. Funds from the award have allowed him to tour centers world-wide and see first-hand the advances others have made. New developments in all areas are of course passed on to all team members.

The team applies their training, as they use a variety of modern day medical techniques to help them save patients from death and permanent disability. For example, a patient who has nearly drowned is liable to receive a variety of sophisticated treatment. External heart massage or electrical cardiac stimulation might be administered, as might injections of epinephrine, a hormone that can be synthetically produced, which increases blood pressure and heart rate. Or a nasogastric tube is inserted into the stomach to pump out excess fluids ranging from water to blood.

Catheterizing

The extent of heart damage in a patient can be determined using a catheter, a flexible tube which a cardiologist can work through an arm vein, or through the femoral artery in the leg until it reaches the heart. Once the tube is in place, pressures in the heart, and the heart's blood pumping ability can be measured. If a narrowed valve is present that also can be determined. If the cardiologist wishes to view the heart's pumping action, he can inject a harmless fluid into the heart through the catheter tube. This fluid shows up under an X-ray, and the picture of the heart pumping the fluid out into the body can be viewed on a TV screen. This procedure is called an angiography.

The artificial kidney is another lifesaver for persons suffering renal failure. SF General houses one of Northern California's few renal dialysis units. Much has been learned about lung failure from WW II and Vietnam. Artificial breathing machines, "ventilators," are kept handy for patients with breathing problems. So is a heart machine, which can temporarily take the place of an injured heart by pumping and oxygenating blood throughout the body. A patient can be attached to this machine for only about five hours, so repairs must be enacted quickly. One of the on-going research projects at SF General is aimed toward the perfection of a heart machine which will support a patient for several days and allow more time for an injured heart to be repaired and rested. Spinal cord injuries which often result in paralysis are being researched and treated, with priority given to modifying the extent of paralysis. A spinal cord injury center which will be federally funded is now being set up at the hospital.

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Chest tubes are used to expand collapsed lungs as well as to drain excess blood from internal chest injuries.

Since the advent of antibiotics, methods of treating wounds so that infection won't set in have been perfected. Investigators have found that for a wound to heal properly, vitamin A corrects certain deficiencies, while zinc and magnesium correct others, and that adequate blood function in delivering sufficient oxygen to healing tissues is essential in all cases. Methods of balancing body fluids have also undergone vast improvements. An acute burn unit which will allow the wound-healing experts to use their special techniques is another addition also being set up.

Mortality down

The research going on at SF General is paying off. More is understood about clotting (often present in lung failure victims), about red blood cells (the oxygen carriers), and about managing major blood vessel injuries. These findings are being applied to accident victims. For example, the mortality rate from respiratory failure has dropped from 64 percent in 1966 to 20 percent in 1972. In fact, mortality rates from all types of injuries have dropped significantly.

The fact that it has become possible to resuscitate almost any patient who shows signs of life upon arrival in the emergency room can be partly attributed to San Francisco's highly efficient ambulance service. No matter how efficient the trauma team doctors are, they must have a live patient to work with. The ambulances contain a driver and a steward. Many of the latter have had experience as medical corpsmen in the military, while others are registered or licensed vocational nurses.

San Francisco's ambulance service which is city-owned and operated, requires that anyone on the crew who doesn't have an extensive medical background must obtain the advanced Red Cross first aid card. He is further trained by riding three eight-hour shifts with an experienced crew. On the first run he makes as a crew member, his fellow rider is experienced, and observes how the new man reacts under an emergency situation. This insures that no untried team is faced with decisions that might very well affect someone's life.

When they arrive on the scene of an accident the crew administers the immediately needed first aid. The victim's needs may range from resuscitation and stoppage of bleeding, to dressing (bandaging) the wound, and splintering a fractured bone before the trip to the hospital. San Francisco is a rather compact city so this trip is usually a quick one. During the ride the driver can radio ahead to ready the trauma team while the steward continues to administer first aid. Before long they will take patients to a brand new San Francisco General Hospital. The new buildings are being built right next to the present hospital.

Shock

People who have been seriously injured and have suffered massive blood loss invariably go into a state of shock, and many complications can set in unless quick action is taken. Through a unique setup which SF General's Trauma Center hopes will serve as a model for other cities throughout the nation, transfusions of fresh warm whole blood, rather than stored refrigerated blood are being administered to patients who have lost great amounts of blood. The patient's heart and brain, as well as other critical organs have been found to function more effectively with fresh blood, because of its ability to better carry life-giving oxygen to them. The warm blood also clots better thus helping to control bleeding and prevent secondary hemorrhage.

The blood is being supplied by more than 900 San Francisco policemen who have had their blood typed and carefully cross-matched. This information is labelled on the back of the officers' stars, as well as in files at police headquarters. When the trauma cen-

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ter puts in a call for blood, they tell the quantity and the type they need. The officer(s) with matching blood type are radioed; with the sirens and fast cars they can conveniently arrive to donate within a few minutes, any time of the day or night. This service is provided for civilians as well as fellow police officers.

The early days

The history of the Mission Emergency Section of SF General Hospital's delivery of care is one of steady advances and improvement. The emergency section was founded in 1915 and if you were badly injured in those days you needed good fortune to live to tell about it. One problem was that most of our life-saving, modern day "miracle drugs" hadn't yet been discovered. Various injuries ranging from spleen injuries which carried a 90 percent fatality rate, to liver and pancreas injuries which usually resulted in death were other problems. Heart and lung injuries also left the victim little chance of survival. Intestine injuries carried a high risk of serious infection. Blood banking wasn't begun until the mid-40's, so an open wound that had bled extensively was another grave problem. In fact, any bad injury was a grave problem.

The real improvements began around the time blood banking was begun, as chiefs of surgical services, Carlton Mathewson, MD, and Leon Goldman, MD, began to apply techniques picked up during their extensive wartime experiences. The armed forces can afford to concentrate their medical resources in a war zone, because of the high incidence of injury. Of course a great deal learned from military medical teams has been applied to modern civilian trauma teams.

The 50's and 60's saw the discovery of antibiotics and intravenous fluids which permitted better support of the injured. Mortality rates from all types of injuries began dropping steadily, until now when medical miracles can be performed.

65 doctors

Dr. Sheldon estimates that at one time or another during Wayne Lindblom's seven month stay at SF General, 65 doctors from 10 medical and surgical specialties, as well as several nurses and technicians, not to mention seven operations, were all part of his trauma care. "The fact that everything was available when and where needed was the most valuable of all," Sheldon said. Amazingly, Lindblom will again be able to enjoy his family and return to an active life.

Ongoing research is taking place at each of the 10 federally recognized trauma centers. Dr. Sheldon attends meetings regularly, where he and officials from each of the trauma centers update one another and present facts relating to any new techniques being used or discoveries made. Also written releases are regularly distributed among each of the centers containing similar information.

Even though San Francisco's trauma center can already perform in a remarkably efficient manner as a case like Lindblom's demonstrates, the push is toward even greater advances. Each center has put into effect its own innovations that are proving effective and usable by all of the centers. Dr. Sheldon would like, for example, to see a statewide trauma system developed in California that would be similar to the present setups in Maryland and Illinois. Of Illinois' 305 hospitals, 37 have been recognized as trauma centers. If a resident of a rural area in Illinois is badly injured, he receives the immediately needed care at the nearest first-aid facility available. If the patient's needs go beyond the treating facilities resources, he can then be flown by helicopter or plane to the nearest trauma center, where the special teams and equipment await.

The Maryland setup has some fancy patient monitoring equipment in the recovery unit of its main Trauma Center in Baltimore. A raised nursing station overlooks this intensive care unit, which has the equipment to monitor 12 patients' vital life signs at a time. There is breath-by-breath monitoring of respiratory gases and pulmonary action, as well as constant checks of the patient's cardiac output. Urine production is recorded each half-hour; blood chemistry every six hours, and fluid intake is also checked. Each of these systems has its own alarm setup, which goes off if a patient's in trouble.

In the Baltimore setup, lab results are relayed very quickly to the trauma team—in fact even as they work on a patient, for this is when they need the information most. A lab technician gives readings on the patient's hematocrit (the blood's oxygen carrying component), and blood gas and electrolyte (the body's liquid balance) levels over a loudspeaker connected to the emergency room.

If a statewide trauma system were enacted in California, a badly injured person wouldn't need to live in San Francisco to receive the best in trauma care. Incidentally, other hospitals in California and the United States offer very fine emergency care, but few if any are backed by the resources of an NIH recognized trauma center.

High cost

Two immediate problems stand in the way of a statewide trauma system. The first is cost. Helicopters equipped for emergencies, landing pads, trained pilots and stewards, and special trauma equipment and teams for hospitals are all very expensive, and California, being a large state, would demand many resources. Illinois' trauma system has cut one of these bills. They share the helicopter cost with the National Guard, who owns the choppers, but loans them to the trauma system on a priority basis during emergencies.

The second problem is one of choosing in which areas the need for a trauma center is most urgent, and which hospitals are best suited to handling trauma cases.

The American Medical Association has set up a classification system for emergency rooms. This system has been accepted by the American College of Surgeons and they are encouraging the application of this classification system in Northern California. A hospital receiving an "I" rating must meet certain requirements, such as possessing heart and lung machines, a kidney dialysis unit, a full time neurosurgeon, etc. "I" rated hospitals could possibly be recognized as trauma centers, with ambulance drivers assigned to take critically ill persons to one of these. This is the general idea and some of the basic problems facing a statewide system.

It will take time to enact the further improvements needed, but while they are taking place, credit must go to pioneers like SF General Hospital, which have set the stage. Now, with the application of modern technology, the spread of top-notch emergency care to all can be anticipated in the near future.

Dr. Sheldon agrees that well chosen hospitals should be given funds to organize and purchase the necessary trauma resources. If that happens, more than one trauma center will have a Wayne Lindblom story or two of its own to tell. □

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STATEMENT OF

ROBERT C. LIM, JR., M.D.

ASSOCIATE PROFESSOR OF SURGERY

UNIVERSITY OF CALIFORNIA SCHOOL OF MEDICINE

COORDINATOR - IN - CHARGE

EMERGENCY SERVICE

SAN FRANCISCO GENERAL HOSPITAL

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Honorable Senator Cranston:

My name is Doctor Robert C. Lim, Jr., Associate Professor of Surgery at the University of California, Coordinator-in-Charge of the Emergency Service, San Francisco General Hospital, Member of the Emergency Medical Care Committee, City and County of San Francisco, Regional Chairman of the University Association for Emergency Medical Services, Fellow of the American College of Surgeons, Member of the American Medical Association, California Medical Association, Pacific Coast Surgical Association, Western Surgical Association, Association for Academic Surgery and the International Cardiovascular Society.

My statement is relative to the testimony by Dr. John S. Zapp, Deputy Assistant Secretary for Legislation (Health), Department of Health, Education and Welfare before your Subcommittee on Friday March 9, 1973 at the San Francisco General Hospital. I am in agreement that there are many deficiencies in emergency medical services and we should direct our efforts, energies and support to improve them. On Page 8 of his printed statement he describes how the Administration has responded to the President's initiative in establishing a Special Project Office for emergency medical services. The distribution of funds was directed to five demonstration sites as described on Pages 13 and 14. On Page 13, Dr. Zapp describes " an EMS Administrators Advisory Committee has been established which is composed of professional and technical experts in the field of EMS. This Committee will

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advise the Administrator with regard to policy matters in the conduct of the special project". Last year (1972) I was appointed to this Advisory Committee by the Administrator of HSMHA. I sat on meetings going over the many problems related to the five demonstration sites. The Committee worked hard making a number of constructive recommendations to the Administrator. Many times the Committee was frustrated. We had little feed-back from the Special Projects Office or the Administrator, whether our recommendations were accepted or rejected. Enclosed I have submitted a copy of the letter which I received from the Administrator, notifying me of the dissolution of our Advisory Committee on Emergency Medical Services. The reasons were not spelled out specifically in writing. I do not know the present activities of the Special Projects Office on EMS, but I think it might be worthwhile for your Committee to review its past, present and future goals in view of Dr. Zapp's statement.

I am happy to cooperate with you in any way I can.

Sincerely yours,

Robert C. Lim, M.D.

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
ROCKVILLE, MARYLAND 20852

OFFICE OF THE ADMINISTRATOR

DEC 26 1972

Robert C. Lim, M.D.
Associate Professor of
Surgery
San Francisco General Hospital
San Francisco, California 94110

Dear Dr. Lim:

During the past few weeks it has been necessary to re-examine the purpose and function of the Administrator's Advisory Committee on Emergency Medical Services. It has been decided to reconstitute the Committee in order to provide representation of a broader spectrum of professional specialties, organizations and expertise. Accordingly, the consultant group which has served until now has been discontinued and nominations for new committee members have been submitted to the Assistant Secretary for Health for approval.

As you probably know, I have decided to leave the Health Services and Mental Health Administration to return to the University of Missouri. Upon leaving I would like to take this opportunity to thank you personally for the considerable interest and effort that you have expended during recent months, and for the many useful recommendations you made with reference to the EMS demonstration projects.

Very truly yours,

Vernon E. Wilson, M.D.
Administrator

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STATEMENT BY

ALEX C. BONNER
FIRST VICE PRESIDENT, AIR LINE PILOTS ASSOCIATION

Before the

Subcommittee on Health
Committee on Labor and Welfare
United States Senate
January 31, 1973

Mr. Chairman:

I am Captain Alex C. Bonner, first vice president of the Air Line Pilots Association. In this capacity I represent the professional interests of 31,000 pilots and 15,000 flight attendants of the nation's commercial airlines.

Our Association appreciates the opportunity to comment on your proposed bill, concerning the Emergency Medical Services Systems Development Act of 1973.

You are to be complimented in taking a forward looking position on this important subject. Life in the United States has become so complex, the demand for instant medical service in routine and emergency situations so vital to the welfare of our burgeoning population that the system approach to resolution of the problem is our only hope. An effective well-planned system that serves all of the people is a must. The only alternative is more of what we have today, a highly splintered, haphazard arrangement that makes emergency medical service completely out of reach to the majority of the citizens of our country.

Our Association endorses this larger effort and appreciates this opportunity to submit a comment having to do with the rapid airlift of the ill, injured and abandoned by means of a network of helicopters which would cover a state or an area covering both rural and urban populations of the nation.

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S.504 stipulates that development programs shall include the study of the use of helicopters as a practical means of transporting patients to care centers. We believe the Committee will find that this is a most practical approach--proven in Vietnam--that will provide broad operational capability and instant response action in case of disasters where surface roads and waterways are not available.

A case in point is the recent crash of an Eastern Airlines aircraft in the Everglades National Park, directly west of Miami International Airport. Although the disaster site was almost on the doorstep of the airport, accessibility by ground transportation was tragically restricted. Helicopters were the only vehicles available to lend immediate evacuation for the injured and the dying.

As we study our great metropolitan cities and sprawling suburbs from the air, we are appalled at the terrible risk we run in the case of earthquakes, fires and other disasters. New York City is a case in point: If the tubes, bridges and tunnels of this great city between Manhattan, Long Island, Connecticut and Staten Island were rendered useless by some catastrophe--earthquake--the airplane and the airport would comprise the only major lifeline to six million stranded persons on Long Island. Other cities are equally vulnerable to disaster in different ways. Lengthy disruption to our surface supply lines alone may create threats to human life and a degree suffering we have never known before.

Several of our large urban areas are already conducting emergency medical service exercises to ready the medical and police groups for potential disasters with the intent of saving precious lives by being prepared. Specifically, Los Angeles and San Francisco are two of the cities that have in case of earthquakes, fires or other disasters, shown the role of the airport as the core of such operations--the lifeline to surrounding communities.

The Association suggests that the proposed bill (S.504) stipulate that the total system concept be designed to give fair and full evaluation of the role of the National Airport System to the total concept and that a corresponding network of helicopter rescue units around key population centers be explored.

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Naturally, such a network of emergency medical services envisioned as a result of development studies incorporated in this bill, will obviously add new dimensions to our present ability to respond to air disasters--a matter of great concern to our members who are responsible for the safety of their passengers and aircraft.

This is a complex and humanitarian undertaking. We commend your committee and wish speedy and successful passage of S.504.

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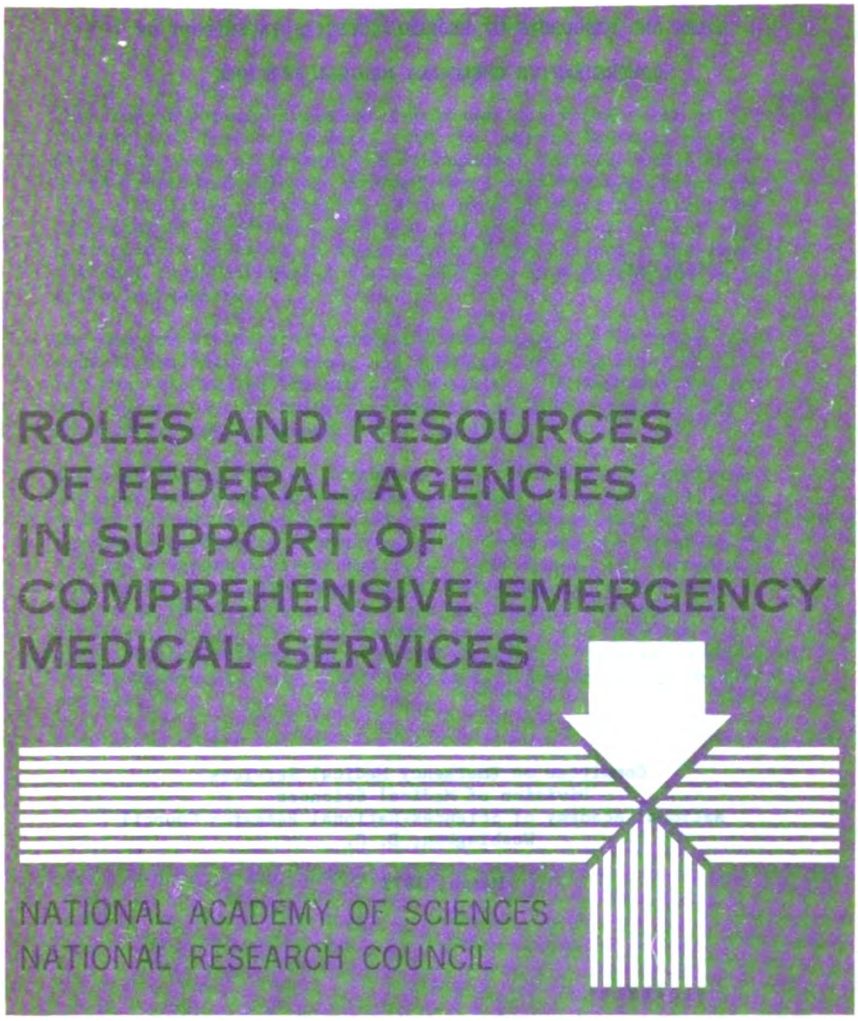

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ROLES AND RESOURCES OF FEDERAL AGENCIES IN SUPPORT OF COMPREHENSIVE EMERGENCY MEDICAL SERVICES

Committee on Emergency Medical Services
Division of Medical Sciences
National Academy of Sciences-National Research Council
Washington, D. C.

March, 1972

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NOTICE

The study reported herein was undertaken under the aegis of the National Research Council with the express approval of the Governing Board of the NRC. Such approval indicated that the Board considered that the problem is of national significance, that elucidation or solution of the problem required scientific or technical competence, and that the resources of the NRC were particularly suitable to the conduct of the project. The institutional responsibilities of the NRC were then discharged in the following manner:

The members of the study committee were selected for their individual scholarly competence and judgment with due consideration for the balance and breadth of disciplines. Responsibility for all aspects of this report rests with the study committee, to whom we express our sincere appreciation.

Although the reports of our study committees are not submitted for approval to the Academy membership nor to the Council, each report is reviewed by a second group of appropriately qualified persons according to procedures established and monitored by the Academy's Report Review Committee. Such reviews are intended to determine, inter alia, whether the major questions and relevant points of view have been addressed and whether the reported findings, conclusions, and recommendations arose from the available data and information. Distribution of the report is approved, by the President, only after satisfactory completion of this review process.

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PREFACE

This study was supported by the Division of Emergency Health Services and the National Center for Health Services Research and Development of the Public Health Service,* in response to a proposal by the Committee on Emergency Medical Services of the Division of Medical Sciences, NAS-NRC, that studies be carried out as follows: An analysis of current legislative assignment of responsibility to the numerous federal agencies in support of physical facilities, equipment, and training and employment of personnel, as may be applied to emergency care areas, and recommendations on ways in which coordination of these resources might increase effectiveness of delivery of emergency care.

Federal agencies whose resources, legislative authority or program responsibility are considered to relate, either directly or indirectly, to some aspects of emergency medical services were identified by reference to the U. S. Government Organizational Manual, the Catalog of Federal Assistance Programs of the Office of Economic Opportunity; the Listing of Operating Federal Agency Programs, compiled in the Roth Study; also through conferences with representatives of 13 federal agencies that could be concerned with ambulance services and 9 that could be concerned with emergency medical communication systems, as well as numerous meetings with representatives of other agencies.

In the period before September 1971, the only federal agencies with specific legislative support for emergency medical services were the Division of Emergency Health Services of the Public Health Service and the Division of Emergency Medical Programs of the National Highway Traffic Safety Administration. The Committee on Emergency Medical Services of the NAS-NRC found little evidence of concern for implementation of recommendations for upgrading of emergency medical services by any agency within the Department of Health, Education, and Welfare above the level of the Division of Emergency Health Services, although the Division of Medical Sciences of the NAS-NRC in its report, "Accidental Death and Disability: The Neglected Disease of Modern Society," of 1966, and the American College of Surgeons and the American Academy of Orthopaedic Surgeons, in the Airlie Conference report of 1969, recommended initiative in this field by the Executive Office of the President, and the report of the Department of Health, Education, and Welfare Advisory Committee on Traffic Safety of 1968, under the chairmanship of Dr. Daniel P. Moynihan, recommended that the Department of HEW should assume primary responsibility to establish emergency medical services and consolidate the roles of agencies within the Department for this purpose.

In the fall of 1971, the Office of Science and Technology and the Office of Emergency Preparedness of the Executive Office of the President requested information from the NAS-NRC Division of Medical Sciences on programs and priorities for upgrading emergency medical services. These

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* Contracts HSM 110-69-69 and HSM 110-70-386

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offices, the Assistant Secretary for Health and Scientific Affairs, and the Office of the Director of the Health Services and Mental Health Administration of the Department of HEW, were provided informally with drafts of that portion of this report which deals with initiative at the executive level and coordination of emergency medical programs by the Department of HEW.

In his State of the Union Message to Congress on 20 January 1972, the President declared concern over emergency health services and the need for a new program of technological research and development that could save thousands of lives annually. This statement serves as an incentive for federal agencies to identify their roles in support of emergency health services programs and to coordinate their efforts to upgrade emergency medical services throughout the nation. Already there have been allocated limited funds to the Health Services and Mental Health Administration for this purpose, and a number of bills have been introduced in Congress in support of components of an emergency medical services program.

It is the hope of the NAS-NRC Committee on Emergency Medical Services that this report will add momentum to the further development of administrative policies and interdepartmental coordination by the Executive Office of the President, the development of program priorities and consolidation and direction of programs within the Department of Health, Education, and Welfare, the allocation of appropriate resources by the Office of Management and Budget, and the appropriation of adequate funds by the Congress toward the development and implementation of optimal emergency medical services for every citizen of the country.

Committee on Emergency Medical Services
Division of Medical Sciences
National Academy of Sciences-
National Research Council

March, 1972

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SECTION I. INTRODUCTION AND RECOMMENDATIONS ON INITIATIVE BY THE EXECUTIVE OFFICE OF THE PRESIDENT AND THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

INTRODUCTION

Magnitude of the Problem of Delivery of Emergency Medical Services

Accidental injury and acute illness generate a staggering demand on ambulance and rescue services, allied health personnel, physicians, and hospitals for the delivery of emergency medical services. Accidental injury is the leading cause of death among all persons aged 1 to 38. Each year more than 52 million U. S. citizens are injured, of whom more than 110,000 die, 11 million require bed care for a day or more, and 400,000 suffer lasting disability at a cost of nearly $3 billion in medical fees and hospital expenses and over $7 billion in lost wages.[1] Those requiring hospitalization occupy an average of 65,000 beds for 22 million bed-days under the care of 88,000 hospital personnel.[2] This hospital load is equivalent to 130 500-bed hospitals. Of the more than 700,000 deaths from heart disease each year, the majority are due to acute myocardial infarction and more than half of these deaths occur before reaching a hospital. Approximately 40 million persons seek care each year in hospital emergency departments as a result of accidents, heart disease, stroke, poisoning, diabetic coma, convulsive disorders, and many other illnesses.

Deficiencies in Delivery of Emergency Care

Emergency medical service is one of the weakest links in the delivery of health care in the nation. Thousands of lives are lost through lack of systematic application of established principles of emergency care. Few at the site of accidental injury or sudden illness are trained in the fundamentals of restoration of breathing, control of hemorrhage, or splinting of fractures. The majority of ambulances in the United States are of the hearse, limousine, or station wagon type which are inadequate in space and equipment and are manned by individuals with inadequate training to provide essential life support. Pilot studies with better ambulance services indicate that thousands of lives can be saved and disability reduced.

Many ambulances lack radio communication even with their own dispatchers. Communication rarely exists between ambulances and hospitals, so that most patients arrive at emergency departments without prior notification. Most emergency departments of the nation are not only lacking in facilities and personnel, but are overtaxed by millions of non-emergency cases for whom ancillary outpatient facilities should be provided, especially during evening hours and on weekends. In comparison with facilities for definitive care of illness, few centers of excellence for the care of the critically ill or injured exist.

Mobilization of Professional Efforts to Correct Deficiencies of Emergency Care

Nationwide attention was focussed on the magnitude of the problem of death and disability from accidental injury and life-threatening illness by a publication in 1966 of the National Academy of Sciences-National

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Research Council entitled "Accidental Death and Disability: The Neglected Disease of Modern Society."[2] At that time, efforts toward upgrading of ambulance services and emergency department care were limited to a very small number of dedicated individuals and organizations. The principal effort of a national scope was that of the Committee on Trauma of the American College of Surgeons and the collaboration with this committee of the American Association for the Surgery of Trauma and the National Safety Council through a Joint Action Program.

Since 1966, through forums of the NAS-NRC, medical leaders, hospital administrators, pioneers in ambulance services, automotive design experts, communication specialists and others have contributed to publication of guidelines and recommendations on the training of ambulance personnel,[3,4] medical requirements for ambulance design and equipment,[5] ambulance design criteria,[6] cardiopulmonary resuscitation,[7,8] and categorization of hospital emergency departments.[2] These recommendations, together with principles evolved in current studies on emergency medical communications, response to cardiac emergencies, and trauma registries, have been widely accepted as an adequate and compelling basis for direct application. What needs to be done and how to implement a nationwide comprehensive emergency medical services system have been delineated.

In the past five years there has been an unprecedented surge of activity among professional and lay organizations toward upgrading of emergency medical care. Organizations established before 1966 that have intensified their efforts include the Committee on Trauma of the American College of Surgeons, the Committee on Cardiopulmonary Resuscitation of the American Heart Association, the Committee on Acute Medicine of the American Society of Anesthesiologists, and the Committee on Injuries of the American Academy of Orthopaedic Surgeons. Of special significance is the establishment, since 1966, of many new organizations, including the Commission on Emergency Medical Services of the American Medical Association, the Committee on Community Emergency Health Services of the American Hospital Association, the American Trauma Society, the University Association for Emergency Medical Services, the Emergency Department Nurses Association, the Society of Critical Care Medicine, the American College of Emergency Physicians, and the national Registry of Emergency Medical Technicians. The Joint Commission on Accreditation of Hospitals has recently incorporated new emergency department standards for accreditation purposes.[9] Scores of communities have established community councils on emergency medical services and a few community governments have accepted responsibility for emergency medical services on a scale comparable to police and fire services.

Limitation of Federal Recognition of the Problem

Federal agencies have not kept pace with the efforts of professional and allied health organizations to upgrade emergency medical services. As in 1966, the Division of Emergency Health Services, formerly the Division of Health Mobilization, is the only office within the Department of Health, Education, and Welfare that is identified as responsible for the upgrading and improvement of delivery and quality of emergency health

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services. The first evidence of congressional concern over emergency medical services, other than in disaster or a national emergency, was the mandate of the Highway Safety Act of 1966 to set uniform standards for states, including standards for "emergency services." Despite the recommendations in the report, in 1968, of the DHEW Advisory Committee on Traffic Safety under the chairmanship of Dr. Daniel P. Moynihan, that the DHEW should have primary responsibility to establish emergency medical transportation and care as an ongoing public service available to all persons everywhere and maintained at advanced levels of quality,[10] and despite the recommendations in June 1970 in the report of the Surgeon General's Steering Committee on Emergency Health Care and Injury Control that DHEW consolidate splintered efforts to support emergency medical services,[11] there is meager evidence that responsibility to carry out these recommendations has been incorporated in goals or priorities at any level within DHEW higher than the Division of Emergency Health Services of the PHS. While there has been limited support of trauma research centers by the National Institute of General Medical Sciences, and of head injury research centers by the National Institute of Neurological Diseases and Stroke and of emergency care of the victims of myocardial infarction by the Regional Medical Programs Service, the resources of other agencies within the DHEW have been minimal in support of training, emergency medical communications, and upgrading of hospital emergency departments. Meantime, the Department of Transportation, through enabling legislation and promulgation of standards and development of a program in emergency medical services, has exerted leadership in production of training programs for ambulance emergency medical technicians, delineation of ambulance design criteria, and planning of statewide emergency medical systems. It has provided matching funds for upgrading of ambulance services through purchase of ambulances and equipment, installation of communication systems, and initiation of training programs.

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COORDINATION OF FEDERAL RESOURCES IN SUPPORT OF COMPREHENSIVE EMERGENCY MEDICAL SERVICES

Federal agencies whose resources are related to elements of an emergency medical services system are identified later in this report. In its analysis of the ways in which the resources of these agencies might be utilized, the NAS-NRC Committee on Emergency Medical Services finds that while most of the agencies have resources that could and should be used in development of a system of emergency medical services, the most efficient role that each agency may play in an overall program is reduced severely because there are no federal focal points of responsibility for delineation of the essential requirements for communication, transportation, or command and control, which are common to all emergencies, nor is there a federal focal point for overall planning, or for coordination of emergency medical services. For these reasons the Committee recommends the following:

Leadership at the Executive Level

Executive leadership has proven to be effective in identifying the magnitude of health problems of national concern and in mobilization of efforts to alleviate these problems through declaration of administrative policies in messages before the Congress, program planning, establishment of coordinating and advisory bodies, conduct of conferences at the Executive level, and assignment of responsibility for implementation of programs to departments of the Executive Branch. Such support of nationwide attacks on problems of heart disease, cancer, stroke, traffic safety, mental retardation, care of the aged and deprived, drug abuse, alcoholism, consumer protection, environmental control, smoking and rehabilitation have stimulated public awareness and demand for action, congressional support, interdepartmental coordination at the Executive level and departmental implementation of comprehensive programs to solve these problems. Emphasis at the Executive level on the need for a nationwide attack on the problem of delivery of emergency medical services would result in salvage of many thousands of lives and in a decrease in disability and suffering. Recommendations that such action be taken by the Office of the President were made in the report of 1966,"Accidental Death and Disability: The Neglected Disease of Modern Society,"[2] the National Academy of Sciences-National Research Council, and in the proceedings of 1969 of the Airlie Conference on Emergency Medical Services,[17] sponsored by the American College of Surgeons and the American Academy of Orthopaedic Surgeons.

Recommendation

It is recommended that the Office of the President express as a policy of the Administration, concern for the magnitude of the problem of death and disability from accidents and sudden illnesses,* and recommend action to be taken by the Legislative

* Expression of such concern was made for the first time by the Office of the President in President Nixon's Message to Congress on January 20, 1972.

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and Executive Branches of the government to ensure optimum emergency care for every citizen who needs it.

Designate the Department of Health, Education, and Welfare as the agency primarily responsible for delineation of administrative goals for a comprehensive emergency medical services system and for coordination of programs of all federal agencies designed to meet these goals.

Assure, in close cooperation with the Office of Management and Budget, that appropriate resources of all Executive Departments and agencies with roles and responsibilities related to emergency medical services plan their programs in this field in accordance with the programs and goals established by the Department of Health, Education, and Welfare, and in a manner that avoids gaps, imbalances, and duplications.

Interdepartmental Coordination at the Executive Level

Since delivery of emergency medical care is a component of programs of numerous federal departments and agencies under direction of the Executive Office of the President, responsibility for planning and coordination of their resources should be fixed at that level. The resources of agencies that can be applied directly to one or more components of an emergency medical services system must be identified. These include: provision of adequate outpatient and hospital facilities in the Model Cities Program by the Department of Housing and Urban Development, for Neighborhood Health Centers by the Office of Economic Opportunity, and for adequate outpatient care and initial emergency management facilities by the Health Maintenance Organization; analysis of accidental injuries due to the products of industry by the Office of Consumer Affairs of the Office of the President and the Food and Drug Administration, and of the incidence of acute illness and accidents due to environmental hazards by the Environmental Protection Agency, the Bureau of Community Environmental Management, and the Poison Control Program of the Food and Drug Administration; recruitment, training, and placement of allied health and professional personnel by the Department of Labor, the Office of Economic Opportunity, the Veterans Administration, the Department of Defense, the Office of Education, and the Bureau of Health Manpower Education; integration of communication facilities by the Office of Telecommunications Policy and the Office of Emergency Preparedness of the Executive Office of the President; allocation of radio and telemetry channels by the Federal Communications Commission; specifications for modern ambulances funded by the Department of Transportation, the General Services Administration, and the Small Business Administration; requirements for hospital emergency care facilities under the Hill-Burton Program; definition of the role of helicopters by the Department of Defense, the Department of Transportation, and the Department of Health, Education, and Welfare; and delineation of standards of delivery and quality of emergency care reimbursable by the Social Security Administration.

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Many agencies are responsible for health care programs that are dependent upon a fully functioning comprehensive system of emergency care. The extent to which their resources complement the system and the particular ways in which delivery of emergency care apply to their programs must be identified and coordinated in an overall program. These agency programs include the care of persons injured in the highway, airway, railway, and maritime systems under jurisdiction of the Department of Transportation; the Appalachian Regional Commission; and the Appalachian Demonstration Program, the Community Health Service Program, the Comprehensive Health Planning Service, the Migrant Health Program, the Indian Health Service, and the Regional Medical Programs Service of the Department of Health, Education, and Welfare.

Of special significance is the need for an ongoing comprehensive emergency medical services system that functions every hour of every day in every region of the country, and can respond without delay to effectively meet the needs of the Office of Emergency Preparedness in predisaster mobilization of resources and systematic delivery of emergency care in time of natural disaster or a national emergency. On a smaller scale, such a system is essential to community and state response to the unexpected needs imposed by civil disorders.

Establishment of an interdepartmental coordinating mechanism at the level of the Executive Office of the President would provide a means by which all concerned federal agencies would be informed of the ways in which their resources would be coordinated with the overall responsibility of the DHEW in implementing emergency care programs. By bringing together representatives of participating federal agencies, spokesmen of leading professional and allied health organizations, and concerned citizens, the Executive Office would provide a National Emergency Medical Services Council.

Recommendation

Because of the multiplicity of federal agencies whose missions include components of emergency medical care, it is recommended that an effective interdepartmental coordinating mechanism be established in the Executive Office of the President for identification of the resources of federal departments and agencies that are related to components of a comprehensive program for the delivery of emergency medical services, and for integration of these resources with the overall health care program of the Department of Health, Education, and Welfare.

Administration and Coordination of Emergency Medical Programs by the Department of Health, Education, and Welfare

Primary responsibility for the health of the nation is vested in the DHEW. Emergency medical care is an integral element of every component of the health care system. Currently the priorities of the DHEW are expressed

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in a statement of 18 goals. Although 11 of these goals are related to health services, none of them incorporates provision for delivery of emergency medical services. A goal expressly designed to intensify efforts to establish a comprehensive system of emergency medical services would identify the roles of the executive branch and legislative needs, coordinate the roles of other federal departments, and consolidate the roles of agencies within the DHEW.

Recommendation

It is recommended that the DHEW assign responsibility at a level within the Department that would develop administrative goals and priorities in support of a comprehensive emergency medical services system that would reflect policies of the Office of the President, serve as a justification for budgetary support, coordinate the roles and resources of other federal departments and agencies, and consolidate and direct programs within the DHEW.

Federal-State Relationships in Providing Support for Emergency Medical Care Programs

Implementation of comprehensive emergency medical services should be a function of agencies and organizations of regional areas, the size and number of which are determined by population densities, industrial and environmental factors which influence the incidence of injuries or acute illnesses, and the time element involved in the response of emergency ambulance and rescue services, coordination through integrated communication facilities, and delivery of the disabled to hospitals equipped and staffed to render life-saving care in accordance with the gravity of their conditions. This calls for designation of a number of small geographic areas in metropolitan centers and larger ones that encompass numbers of communities or widespread rural areas.

It is essential that a focal point be identified at state levels for planning for emergency medical services and for identification of the state, regional, and local public and private agencies that implement emergency medical services programs. Provision for emergency medical services should be incorporated in the programs of the Comprehensive Health Planning Service through formula grants (314a) for statewide planning and project grants (314b) to assist public or nonprofit private agencies in developing regional, metropolitan, or local area health plans. The utilization of federal and state funds should be in accordance with the program of the Comprehensive Health Planning Service. To assist in determination of needs and ways of implementing programs, Emergency Medical Services Councils should be established at state, regional, and community levels.[12] Application of the resources of all federal agencies that support components of emergency medical services should be coordinated by the DHEW and funnelled to state, regional, and community levels through public and nonprofit private agencies identified in the Comprehensive Health Planning Service programs.

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Currently the utilization of federal and state funds in upgrading of emergency medical services is optional at state levels and is influenced by limitations of funding, political commitments, and pressures of the constituency. Earmarking of appropriated funds for upgrading of emergency medical services under provisions similar to those that resulted in rapid implementation of mental health, regional medical, drug abuse, and law-enforcement programs would assure availability of support to public and private agencies responsible for delivery of emergency medical care to all citizens.

Recommendation

It is recommended that those resources of federal agencies that are related to the delivery of emergency medical services be utilized at state and regional levels in accordance with requirements delineated by the Comprehensive Health Planning Service at state and regional levels, that application of these resources be coordinated through the DHEW, and that funds appropriated by the Legislative Branch be designated specifically for support of public and private agencies and workers responsible for implementation of components of an emergency medical services system.

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SECTION II. IMPLEMENTATION OF EMERGENCY MEDICAL SERVICES PROGRAMS

Few federal agencies are informed of the extent to which their resources might be applied in support of components of a comprehensive emergency medical services system. The purpose of this section of the report is to bring together and to reaffirm recommendations of the Committee on Emergency Medical Services and of numerous other organizations on needs to implement them and to identify the agencies that are most advanced in delineation of standards, and the several other agencies whose resources are being or could be applied to elements of the system.

DELINEATION OF EMERGENCY MEDICAL SERVICES AREAS

Emergency Medical Services areas should be delineated on a nationwide scale to ensure optimal availability and efficient utilization of emergency facilities and services for every citizen. The size and number of areas should be determined by population density, geographic features, industrial and environmental factors that influence the incidence of injuries or acute illnesses, quality and location of medical and other resources, and the time element involved in the response of emergency land and air ambulance and rescue services and in the delivery of patients to hospitals equipped and staffed to render life-saving care in accordance with the gravity of their illnesses or injuries.

The time element in transport of trained personnel and equipment to the scene and of victims to hospitals is one of the most important criteria in determining the locations and numbers of ambulance units and hospitals of various capabilities within an area and in determining the extent to which helicopter and fixed-wing aircraft are required.

Full collaboration in utilization of the facilities and personnel and compatibility of the communication systems of multiple political jurisdictions within an emergency medical services area are essential to effective day-to-day emergency care within that area. Integration of multiple areas is essential to optimal response to widespread natural disasters or a national emergency.

Federal resources that should be coordinated in support of overall planning and assurance of availability of facilities and services in emergency medical services areas include all emergency medical facilities under the Model Cities Program of the Department of Housing and Urban Development; the clinics of the Neighborhood Health Centers Program of the Office of Economic Opportunity; facilities under the Health Maintenance Organization of DHEW; utilization of helicopters under the Military Assistance to Safety and Traffic (MAST) Program of the Department of Defense, the Department of Transportation, and the Department of Health, Education, and Welfare; and integration of

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communication and transportation facilities in consonance with the needs of the Office of Emergency Preparedness and the Office of Telecommunications Policy of the Executive Office of the President in coping with natural disasters or a national emergency. Utilization of the resources of all other federal agencies identified under specific programs below should be in accordance with state and areawide comprehensive health planning programs.

EMERGENCY MEDICAL COMMUNICATIONS

Response to the medical needs in the case of accidents, epidemics, public disorders, and natural disasters involves not only local first-aid workers, ambulance and rescue units, hospitals, and professional and allied health personnel, but also agencies concerned with traffic control, fire fighting, law enforcement, utilities, public health, civil defense, and others. With rare exception, communication facilities of each of these emergency response agencies are restricted to their separate needs.

Allocation of federal, state, and local funds to promote improvement of separate communication systems fosters fragmented, duplicative, and incompatible communication complexes within political jurisdictions. A centralized communication system that provides compatibility of intercommunication between all emergency response agencies is necessary for the day-to-day needs of each political jurisdiction within emergency medical services areas and for command, control, and management of emergency service resources of multiple emergency medical services areas in case of natural disaster or national emergency.

Elements of a comprehensive emergency medical communications service that should be integrated with the communication system of all other emergency response agencies include:

Reporting of Emergency Medical Situations

Emergency medical situations are generally reported directly by private or road-side telephone or indirectly through a telephone relay of radio reports from mobile law-enforcement, fire-fighting, or highway patrol vehicles; area surveillance helicopters; commercial trucks or private automobiles with citizen-band radios; or ham operators. The recipients of such reports include local telephone operators; police, fire, or highway patrol stations; ambulance dispatchers; local physicians; and emergency departments, each with limitations of flexibility and of cross-communication with other emergency response agencies.

To ensure efficient entry of the emergency victim into the emergency response system, the "911" emergency telephone reporting system should be adopted on a nationwide basis, the radiofrequencies employed by all emergency reporting agencies should be compatible for cross-communication, and the reception of telephone calls and monitoring of radiofrequencies should be a function of centralized urban or regional emergency communication centers.

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Emergency Communication Centers

In urban areas that have adopted the "911" emergency telephone reporting system, emergency calls involving law-enforcement, fire-fighting, or ambulance services are usually directed to a facility in a police or fire department. In the medical area, the responsibilities of this facility are usually limited to relaying of ambulance calls to the dispatchers of one or more ambulance organizations within the area. In some urban areas, Emergency Operating Centers have been established for the reception of all emergency calls and inter-communication for mobilization and direction of agencies required to cope with the emergency situation. These centers are usually activated only in case of a major public disorder or a local natural disaster. More than 3600 local Emergency Operating Centers have been established throughout the nation under the Civil Defense Program for coordinated response to cope with problems of logistical support, restoration of utilities, law enforcement, financial and welfare assistance, and other responsibilities automatically delegated to more than 20 federal agencies for local support in disaster areas under direction of Federal Disaster Centers of the Office of Emergency Preparedness of the Executive Office of the President. The compatibility of communication facilities of these Centers locally, regionally, and nationally provides a model for the integration of all emergency response systems. They should be activated and utilized on a 24-hour-a-day basis on a national scale to serve emergency medical service needs and thus be immediately effective in case of natural disaster or national emergency.

In order to ensure adequate response to the needs of all citizens requiring emergency care, centralized urban or regional emergency communication centers should be established throughout the nation. The emergency component of each Center should be provided with radio-frequencies and telephone facilities necessary to coordinate dispatching and traffic routing of ambulance and rescue vehicles; to maintain up-to-date inventories of hospital bed capacities for emergency admissions, of emergency department loads and capabilities, and of blood supplies, on which to base systematic distribution of casualties to appropriate hospitals in keeping with their levels of capability to render care to patients in accordance with the gravity of their injuries or illnesses; to coordinate the response of traffic-control, fire-fighting, and law-enforcement agencies, utilities, and other agencies necessary to rescue and accessibility to initial emergency medical care of residents of the region; and to coordinate support from or provide support to other regional or national Emergency Communication Centers in case of natural disaster or national emergency. .

Ambulance Communications

In surveys conducted in the period 1965 to March 1971,[16] 56 percent of ambulances were equipped for radio communication between ambulances and dispatchers, and less than 7 percent were equipped for communication

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between ambulances and hospitals. Although ambulances complying with the design criteria of the National Highway Traffic Safety Administration are equipped with radios, many thousands of the hearse, limousine, and station-wagon type are not. Two-way radio communication between ambulances and dispatchers is essential not only for dispatching and routing, but also for notification of the time of arrival of the ambulance at the scene, for a situation report of the number of casualties and the nature of their injuries or illnesses, and for calls for ancillary help, rescue equipment, fire fighting, traffic control, law enforcement, management of distrupted utilities, and identification of hospitals to which victims are to be delivered. Portable radios are necessary for communication between technicians of single ambulances or rescue units and between multiple units at the scene of an emergency. In addition, radio facilities must provide duplex capability for transmission from the scene and during transport of electrocardiograms and other indications of vital signs to hospitals or diagnostic centers for interpretation by physicians and for two-way communication between the ambulance technicians and the physician for direct consultation, guidance, and direction in the care of life-threatening conditions, including defibrillation and the administration of drugs.

Hospital Communications

Intrahospital radio and telephone communication systems are necessary to mobilize specialty teams, equipment, and supplies for emergencies arising in the emergency department, in intensive-care units, or at the patient's bedside, and to monitor vital signs during transfer from the emergency department and in intensive-care units and wards. Two-way radio communication must be provided between the hospital and ambulance dispatchers and ambulances for consultation and direction of emergency care and triage; with police for control of traffic and people; with other hospitals for transfer of patients, assistance, and continuing inventory of patient capacity and supplies; and with the emergency communication center for triage and distribution of patients, ancillary equipment, supplies, and assistance and coordination to meet disaster requirements. Both radio and telephone communications are required to meet hospital needs. Reliance should not be placed solely on telephone communications.

Support of Communication Systems

Federal agencies whose programs provide support of planning, standards, facilities, equipment, training, and assistance at state and local levels related to communication systems that should be coordinated to ensure nationwide compatibility of emergency medical communication systems include: the Community Health Service, the Appalachian Demonstration Health Program of the Comprehensive Health Planning Service, the Division of Emergency Health Services of the Federal Health Programs Service, the Regional Medical Programs Service, and the Health Care Facilities Service (Hill-Burton), all of the Health Services and Mental Health Administration of the Department of Health, Education, and Welfare; the Poison Control Information Centers and the National Electronic Surveillance System of

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the Food and Drug Administration of the Department of Health, Education, and Welfare; the Military Assistance to Safety and Traffic (MAST) helicopter program of the Department of Defense, Department of Transportation, and Department of Health, Education, and Welfare; the natural disaster and national emergency programs, the emergency operating centers, and the national warning system of the Office of Civil Defense of the Department of Defense; the Division of Emergency Medical Programs of the National Highway Traffic Safety Administration and the health care and safety programs of the Federal Highway Administration, the Federal Railroad Administration, the Federal Aviation Administration, and the U. S. Coast Guard of the Department of Transportation; the Law Enforcement Assistance Administration of the Department of Justice; the fire control programs for state and national forests and the Rural Electrification Administration of the Department of Agriculture; the Model Cities Program of the Department of Housing and Urban Development; the National Weather Service of the Department of Commerce; regulation of telephone, radio, and television, including allocation of radio and television frequencies, by the Federal Communications Commission; and the voice communication vital physiologic data transmission programs of the National Aeronautics and Space Administration.

Recommendation

In view of the importance of a centralized communication system for direction of all emergency response agencies to meet the hourly needs of every community, the requirement that this system be compatible at regional and state levels in case of natural disasters and at a national level in case of a national emergency, and the need to integrate the requirements of emergency medical communication with those of all other emergency response agencies at all levels, it is recommended that an effective interagency coordinating group on emergency communications be established in the Executive Office of the President under the leadership of the Office of Emergency Preparedness and the Office of Telecommunications Policy for coordination of application of the resources of all federal agencies whose support of communication systems is related to the roles of emergency response agencies at local, regional, state, and national levels.

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AMBULANCES AND AMBULANCE EQUIPMENT

More than 20,000 of the 25,000 ambulances of the nation are of the hearse, limousine, or station-wagon type that are inadequate in space and equipment.[16] Standards for ambulance design and equipment recommended by committees of the National Academy of Sciences-National Research Council[5,6] and of the American College of Surgeons[13] have been adopted by the National Highway Traffic Safety Administration as the basis for matching fund support toward purchase of ambulances and their equipment[14,15] and by this agency and the Division of Emergency Health Services, PHS, as a basis for comprehensive health planning and for assistance to state health departments and public and private organizations in procurement at state and local levels. These standards have been widely endorsed by national medical organizations and providers of ambulance services and have stimulated unprecedented competition among ambulance-body manufacturers to provide vehicles and equipment suitable to the needs of trained ambulance emergency medical technicians. These standards do not apply to military field ambulances.

Funding criteria of the National Highway Traffic Safety Administration in terms of data requirements, training levels of ambulance technicians, and adherence to safety requirements have provided a strong incentive to improve reporting systems on ambulance services, to establish training programs for ambulance technicians, and to invoke safety regulations in the operation and maintenance of ambulances.

Other agencies that support purchase of ambulances and equipment include; the General Services Administration, which prescribes specifications for purchase of all ambulances and equipment for the use of federal agencies; the Health Care Facilities Service, HSMHA, for the purchase of hospital-based ambulances and equipment under the Hill-Burton program; the Small Business Administration, which grants low-interest loans to purchase ambulances and equipment; the Appalachian Regional Commission and the Appalachian Demonstration Program of the Comprehensive Health Planning Service, HSMHA, for purchase of ambulances and equipment for the Appalachian area; and the Social Security Administration, which prescribes conditions for payment for emergency ambulance services. Funding for surveillance of the efficacy and safety of medical equipment is also of concern to the Food and Drug Administration, DHEW, and to the Office of Consumer Protection of the Executive Office of the President.

Recommendation

In view of the leadership of the Department of Transportation in application of federal motor vehicle safety standards to the design and functional requirements of ambulances, and in view of the extent to which this agency has caused these standards to be adopted on a national scale and has supported procurement of ambulances and equipment, it is recommended that this program be accelerated and expanded, that standards

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prescribed under the Emergency Medical Services Program of the National Highway Traffic Safety Administration for design and safety of ambulances and ambulance equipment be adopted nationwide, and that application of resources of all other federal agencies that support the purchase of ambulances and equipment should be contingent on compliance with the Department of Transportation standards.

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EDUCATION AND TRAINING OF EMERGENCY MEDICAL SERVICES PERSONNEL

Ambulance Emergency Medical Technicians

On the basis of current surveys,[16] it is estimated that only 65 percent of the more than 200,000 ambulance attendants of the nation are trained to the level of the advanced first aid course of the American National Red Cross or higher levels, 25 percent are trained at a level less than the Red Cross course, and 10 percent have no training in the fundamentals of first aid.

Guidelines and recommendations of the National Academy of Sciences-National Research Council Committee on Emergency Medical Services on training of ambulance personnel,[3] published in 1968, and subsequent recommendations by the Committee on minimal requirements at the basic level, refresher training, and advanced training[4] for ambulance attendants have been widely adopted by professional organizations, ambulance operators, and a limited number of federal and state agencies as standards for the training of ambulance emergency medical technicians. A federal job description for ambulance emergency medical technicians, developed through collaboration with the Division of Emergency Medical Programs, Department of Transportation, and the Division of Emergency Health Services, Public Health Service, has been submitted by the Department of Transportation to the Department of Labor for incorporation in the Dictionary of Occupational Titles of the U. S. Employment Service.

The ultimate goal expressed in the NAS-NRC guidelines and recommendations on the training of ambulance personnel is to create a nationwide corps of career ambulance emergency medical technicians who are qualified to carry out measures now applied by allied health personnel in emergency departments and by medical corpsmen in combat areas. It is estimated that fewer than 35 percent of all ambulance personnel are now qualified at the recommended minimal basic level.

Basic-level Training. A curriculum developed by the American College of Surgeons[18] and a detailed course developed by the Department of Transportation,[19,20,21] which were published in 1969, serve as the basis for an 80-hour basic-level training program, which has been implemented on a national scale by medical centers, colleges, professional organizations, and local physicians to the extent that more than 25,000 students have undergone this training in the last 2 years and more than that number are in the process of training. This program qualifies for matching fund support by the Department of Transportation for establishment of training centers, procurement of training aids, and conduct of courses, and it is the basis on which the Division of Emergency Medical Programs, Department of Transportation, and the Division of Emergency Health Services, Public Health Service, provide guidance and assistance in organizing and carrying out the program at state and local levels.

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Refresher Training. Formal refresher training programs for ambulance emergency medical technicians are conducted in many sections of the nation by the American Academy of Orthopaedic Surgeons, the American College of Surgeons, and others. Guidance for planning and conducting such programs is provided in the form of a Course Guide[22] and Instructor's Lesson Plans[23] published by the Department of Transportation in 1971. Satisfactory completion of a refresher course should be required of every ambulance emergency medical technician at least every 3, and preferably every 2, years as a basis for certification and licensure by local and state regulatory agencies. To ensure a continuing correction of deficiencies in initial care and transportation, all emergency departments should conduct critiques with ambulance emergency medical technicians to emphasize the benefits of giving proper care and to demonstrate the penalties of giving improper care.

Advanced Training. A number of medical centers have independently established training programs for ambulance emergency medical technicians of greater length than that of programs intended to meet minimal basic-level requirements. Some of these pilot programs include specialized training in the care of the victims of myocardial infarction, several of which have been supported by the Regional Medical Programs Service. Graduates telemeter electrocardiographs and are authorized by physicians, through voice communication, to carry out defibrillation in selected cases. These and other advances have been incorporated in a report on guidelines and recommendations for a 480-hour advanced training program for ambulance emergency medical technicians that was published by the National Academy of Sciences-National Research Council Committee on Emergency Medical Services in 1970.[4] A program of this caliber must be supported, implemented, and progressively expanded, so as to provide ambulance emergency medical technicians qualified to render optimal prehospital care to the seriously injured or ill.

A 2-year college-level associate-degree program is now being developed by the Commission on Emergency Medical Services of the American Medical Association to qualify emergency medical technicians at a level comparable with that of certified x-ray, laboratory, inhalation therapy, and other technicians. This program would be conducted at medical centers that have active emergency services with the collaboration of community or junior colleges or vocational schools for instruction in basic medical sciences, rescue procedures, communications, and emergency-vehicle driving. Graduates would serve in emergency care areas of hospitals and on hospital-based ambulances.

Ambulance Dispatchers

Ambulance dispatchers should be trained at the basic level required of ambulance emergency medical technicians. Operators who receive emergency telephone or radio calls at police departments, fire departments, emergency communication centers, or "911" telephone exchanges should be versed in medical terminology, at least to the level of the advanced first-aid course of the American National Red Cross, so that they can obtain neces-

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sary information from the caller and relay directions to ambulance dispatchers and information to hospital emergency departments and other emergency response agencies.

Nurses

It is now recognized that nurses who serve in emergency departments must be delegated greater responsibility in immediate care in life-threatening situations, and that they require training beyond that traditionally provided to those serving in operating rooms, postoperative-recovery units, intensive-care units, coronary-care units, and other emergency care areas of the hospital. The need for specialized training - such as that required for intubation, artificial ventilation, recognition and correction of cardiac arrhythmias, cardiopulmonary resuscitation, the utilization of specialized monitoring equipment, and initial management in case of drug overdose, coma, other unconscious states, obstetrical complications, and acute psychiatric disturbances - justifies development of comprehensive training programs and continuation courses for emergency department nurses, with appropriate recognition and definition of responsibilities of those qualified in this specialized area.

Emergency Department Physicians

Emergency departments must be staffed 24 hours a day by physicians especially qualified and experienced in the management of emergencies of all magnitudes. Large numbers of physicians are now devoting full time to this practice. Emergency physicians are being recognized as specialists, national organizations representing this field have been established, and specialty publications are being produced. Postgraduate and continuation courses must be developed to expand the capabilities of those whose former practice was limited to some specialized fields essential to comprehensive care. Residency programs in emergency medicine should be established on a nationwide basis, not only to fulfill requirements for direct patient care, but also to extend the role of the emergency physician beyond his responsibilities in the emergency department. He must be a preceptor for the training of ambulance emergency medical technicians, allied health personnel, nurses, and physicians in emergency care; a leader in his community in stimulating the organization and activities of emergency medical services councils; a coordinator in mobilization of emergency services in case of public disorder or natural disaster; and a spokesman for the role of emergency medical services in the total system of health care.

Medical School Programs in Emergency Care

Training in emergency medical care in graduate and postgraduate programs of medical schools and affiliated medical centers is generally limited to dealing with emergencies that arise in patients under active treatment in the hospital or continuation of care of those received on the ward from the emergency department. Students are rarely exposed to

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the problems of initial care or rescue at the scene of onset of an emergency or during transport, and few gain experience in the emergency department. Although the medical school graduate may be expert in carrying out emergency measures applicable to specialized fields, he is limited in his capacity to cope with problems involving multiple systems, especially in case of severe injury.

There is a need to develop a fully comprehensive program in medical schools that incorporates aspects of emergency care of all specialized fields and provides instruction and experience in initial care in life-threatening situations; emergency department management; triage; transport; communication; mobilization and utilization of personnel, equipment, and supplies for mass casualty care in case of public disorder or natural disaster; and orientation to satisfy both civilian and military requirements in case of armed conflict or national emergency. To a varying extent, many of these subjects were offered on an elective basis at all medical schools through the Medical Education for National Defense (MEND) program, which was abolished in 1969. The relevant concepts of that program could well serve as a basis for development of a fully comprehensive program in emergency medicine in medical schools.

Support of Training Programs

Delineation by the Department of Health, Education, and Welfare, of standards for training programs for emergency medical services personnel and of guidelines for the application of the resources in support of these programs would identify the collaborative roles of federal departments and agencies other than the DHEW that are concerned with recruitment, training, and placement of personnel and would serve as a basis for coordinating and directing the application of resources by agencies within the Department of Health, Education, and Welfare in terms of the extent to which each agency supports funding of medical schools, medical centers, and hospitals; planning, implementation, and evaluation of training programs; funding for construction or alteration of teaching facilities; provision of faculties, training aids, and materiel; and utilization of representatives to provide skilled technical assistance to state and local planning agencies, teaching centers, professional bodies, hospitals, and other public and nonprofit organizations that conduct training programs.

Departments and agencies, other than the Department of Health, Education, and Welfare, whose roles and resources in support of recruitment, training, and placement should be coordinated with DHEW training programs for emergency medical services personnel are identified in the appendix to this report. These include the Department of Transportation, the Department of Labor, the Department of Defense, the Department of Commerce, the Veterans Administration, the Office of Economic Opportunity, and the Appalachian Regional Commission.

Within the National Institutes of Health, the program of the Bureau of Health Education is applicable to the training of ambulance emergency medical technicians, ambulance dispatchers, and hospital emergency medical

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technicians by the Division of Allied Health Manpower; of nurses by the Division of Nursing; and of physicians by the Division of Physician and Health Professions Education. Support of personnel in specialized research areas essential to advancement of emergency medical care is provided under the fellowship and training programs in trauma research centers by the National Institute of General Medical Sciences, in head injury research centers by the National Institute of Neurological Diseases and Stroke, and to a varying extent in overall programs in specialized fields of other institutes of the National Institutes of Health.

Within the Health Services and Mental Health Administration, agencies whose resources are applicable to the training of emergency medical services personnel at all levels include grants to assist in planning, developing, and improving training programs by the Comprehensive Health Planning Service; grants to establish training programs by the Community Health Service; support of institutions and organizations to carry out research, training, demonstrations of patient care, etc., by the Regional Medical Programs Service; development of training standards, surveys, and assistance at state and local levels in implementation of training programs by the Division of Emergency Health Services of the Federal Health Programs Service; and support of demonstration training projects and evaluation and improvement of training programs by the National Center for Health Services Research and Development.

Emphasis on the need for training programs in emergency medicine is so new that nationally accepted standards and guidelines have been developed only for the basic-level, advanced-level, and refresher training programs for ambulance emergency medical technicians. Although a 2-year residency program for training physicians in emergency medicine is underway at the University of Cincinnati School of Medicine, standard curricula have not been developed for implementation of such courses on a nationwide scale. Comprehensive programs have not been developed in any medical school for the training of medical students in emergency medicine, and there are few refresher or continuing courses for emergency department physicians.

At this time, it is incumbent on professional bodies responsible for the conduct of training programs and on state and local planning agencies to identify their needs in support of training programs so that the roles of federal agencies can be delineated and the needs for appropriations by the legislative branch can be determined.

Recommendation

It is recommended that programs for the training of ambulance emergency medical technicians that are now being implemented on a nationwide scale through the joint efforts of the Division of Emergency Medical Programs of the Department of Transportation and the Division of Emergency Health Services of the Public Health Service be fully supported and accelerated; that standards

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and requirements for training programs in emergency medicine for other allied health personnel, nurses, and physicians be established at the level of the Office of the Secretary, DHEW; and that the Office of the Secretary, DHEW, provide guidelines for the collaboration of other federal departments and for coordination and direction of application of resources of agencies within the DHEW in support of professional bodies and state and local planning agencies responsible for the conduct of training programs for emergency medical services personnel at all levels.

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CATEGORIZATION OF HOSPITAL EMERGENCY CAPABILITIES

In the NAS-NRC report, "Accidental Death and Disability: The Neglected Disease of Modern Society,"[2] the following statements appear:

> "The current dictum that an ambulance should deliver a patient to the nearest emergency unit is no longer acceptable."
>
> "The patient must be transported to the emergency department best prepared for his particular problem. In the absence of a descriptive categorization of the level of care that might reasonably be expected at a facility, neither the patient nor the ambulance driver can judge which facility is adequate to the immediate need."
>
> "There is the obligation to the severely injured person as well as to the lone physician, to the small staffs of remote hospitals, and to institutions with minimal emergency department facilities that the public be thoroughly informed of the extent of care that can be administered at emergency departments of varying levels of competence."
>
> "Hospital emergency departments should be surveyed in a number of differing geographical areas to determine the numbers and types of emergency facilities necessary to provide optimal emergency treatment for the occupants of each region."
>
> "Once the required numbers and types of treatment facilities have been determined, it may be necessary to lessen the requirements in small institutions, increase them in others, and even redistribute resources to support space, equipment, and personnel in the major emergency facilities. Until patient, ambulance driver, and hospital staff are in accord as to what the patient might reasonably expect and what the staff of an emergency facility can reasonably be expected to administer, and until effective transportation and adequate communication are provided to deliver casualties to proper facilities, our present levels of knowledge cannot be applied to optimal care and little reduction in mortality or lasting disability can be expected."

This report contained general guidelines for categorization of hospital emergency capabilities that were incorporated in the Highway Safety Program Manual (Vol. 11 Emergency Medical Services) of the Department of Transportation, published in 1968[14] for the guidance of the state planning agencies in applying for matching funds for development of statewide systems of emergency medical care. These guidelines were the basis for a large number of state, regional, and metropolitan surveys of hospitals by state planning agencies, hospital associations, and others. Findings from these surveys have stimulated upgrading of some emergency

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departments, consolidation of hospital emergency services in some communities, and recommendation by the Joint Commission on Accreditation of Hospitals that the degree to which a hospital provides emergency care should be guided by a community-based plan.[9]

The NAS-NRC Subcommittee on Hospital Emergency Facilities of the Committee on Emergency Medical Services reviewed numerous surveys and developed detailed criteria on which to base categorization. Representatives of federal agencies, professional organizations, and hospital associations participated in a conference on categorization of hospital emergency capabilities, held by the Commission on Emergency Medical Services of the American Medical Association early in 1971. The recommendations of this conference were published as guidelines for the categorization of hospital emergency capabilities.[24] Detailed criteria are provided for four categories, summarized as follows:

The Category I (comprehensive emergency service) hospital shall be fully equipped, prepared, and staffed on a 24-hour basis to provide prompt, complete and advanced medical care for all emergencies, including those requiring the most complex and specialized services for adults, children and infants, including newborns.

The Category II (major emergency service) hospital varies in that, while it shall be equipped, prepared, and staffed on a 24-hour basis in all medical and surgical specialties to render resuscitative and life support for adults, children and infants, including newborns, and supply definitive care for all such patients, transfer to other hospitals may be necessary for the occasional patient who requires follow-through care in very specialized units not available at a Category II hospital.

The Category III (general emergency service) hospital varies in that, while it shall be equipped, prepared, and staffed in the medical and surgical specialties necessary to render resuscitative and life-support care of persons critically ill or injured of all ages, transfer when necessary shall be provided for.

The Category IV (basic emergency service) hospital varies in that, while it shall be equipped, prepared, and adequately staffed to render emergency resuscitative and life-support medical services for all persons of all ages, transfer when necessary shall be provided for.

The major differences in criteria for categorization are the number of specialty services staffed on a 24-hour basis, the readiness to provide laboratory, radiological, blood bank, operating room, postoperative-recovery, and intensive-care facilities, and an areawide agreement for transfer to other hospitals, as necessary, of those patients who, after resuscitative and life-support care, require definitive specialty care. Common denominators of hospitals of all categories are requirements for acceptance of patients; availability of hospital records; audit and review of services; continuing education programs; in-house, or access to, poison control information centers; mass casualty plans, rehearsals, and

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expansion capabilities; radio and telephone communication facilities; and accessibility of ground and air transport vehicles.

In general, the Category I hospital is in a large medical center with postgraduate training programs in all specialties; the Category II hospital is a large metropolitan facility with postgraduate training programs which may lack provision for some specialized care such as cardiac bypass, renal dialysis, a burn unit, etc.; the Category III hospital, with or without graduate programs, is located in medium or large communities with limited specialists, but with physician(s) in-house 24 hours a day; and the Category IV hospital is in the small or isolated community with few specialists and provision for registered nurse(s) coverage 24 hours a day and physicians on call.

The more remote the location of a facility, the greater is the requirement for initial life-support care, availability of physicians and trained allied health personnel, communication facilities, access to ground and air transport vehicles manned by properly trained and equipped personnel, and delivery of the patient to the hospital most suitable to his needs. Approximately three-fourths of fatalities from highway injuries occur in rural areas and in communities of fewer than 2,500 people. It is in these areas that every hospital should qualify at least as a Category IV facility.

Federal resources that should be coordinated in support of hospital emergency facilities include funding under the Hill-Burton program by the Health Care Facilities Service, HSMHA; state and areawide determination of the numbers and location of the facilities by the Comprehensive Health Planning Service and the Community Health Service, HSMHA; provision for facilities in the Model Cities Program of the Department of Housing and Urban Development; and categorization of hospitals of the Public Health Service, the Veterans Administration, and the Army, the Navy, and the Air Force hospitals of the Department of Defense for the care of populations served by these agencies and for supplemental service to citizens of the region served.

Agencies supporting some hospital emergency facilities include provision for intensive-care units by the Regional Medical Programs Service, HSMHA, communication facilities and hospital-based ambulance services by the National Highway Traffic Safety Administration of the Department of Transportation, and varying support identified in other sections of this report.

Recommendation

It is recommended that the utilization of resources of federal agencies in support of hospital emergency facilities be based on the requirement that professional bodies, hospital administrators, community governments and state and areawide planning agencies determine the number and location of hospitals that are necessary to provide optimal emergency services for

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populations of prescribed emergency medical services areas and that the scope of emergency services provided by each hospital be based on categorization in terms of its capability to render initial emergency and definitive care for injuries or illnesses of all magnitudes.

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FACILITIES FOR EMERGENCY CARE PENDING TRANSPORT AND HOSPITALIZATION

The frequency of onset of acute illness, especially heart attack, and the potential for accidental injury, even mass casualties, is such at industrial plants; large office buildings; airports; railroad stations; recreational, sports and other public assembly areas; and outpatient clinics, that facilities and trained personnel must be provided to carry out emergency resuscitative and life-support care pending transport of the ill or injured to a hospital. Of special concern is the excessive demand imposed on hospital emergency departments by millions of citizens who should be cared for in outpatient clinics during evening as well as daytime hours every day. Outpatient clinics of hospitals that maintain emergency departments should not be so located that nonemergency patients impede rapid triage and care of those with life-threatening injuries or illnesses. Some large industrial plants and clinics and a few airports are equipped and staffed to cope with major emergencies. Occupational health facilities of federal and some nonfederal buildings have limited capabilities for emergency care. In some areas first aid stations and ambulances or mobile coronary care units are provided at sports, recreational, and other public assembly events. All of these facilities should be fully equipped to carry out resuscitative and life-support care in case of external hemorrhage, respiratory obstruction, cardiac arrest, multiple injuries, diabetic coma, drug overdose, and other life-threatening conditions, and staffed by a registered nurse and allied health assistants under supervision of a physician on-duty or on-call that should be prepared to interpret electrocardiograms, perform intubation and defibrillation, administer drugs, and splint fractures.

Federal agencies whose resources are applicable to support of non-hospital emergency units include the first aid facilities of industrial plants under the Occupational Safety and Health Act by the Department of Labor, first aid facilities at airports and railway stations by the Department of Transportation, federal occupational health facilities in public buildings by the Civil Service Commission and the Public Health Service, the neighborhood clinics of the Office of Economic Opportunity of the Executive Office of the President and the clinical facilities of the Health Maintenance Organization of HSMHA.

Recommendation

It is recommended that the Department of Health, Education, and Welfare promulgate nationwide requirements for establishment of emergency medical care facilities at industrial plants, office buildings, airports, railway stations, public assembly areas, and outpatient clinics; that such facilities be equipped and staffed to provide optimal resuscitative and life-support emergency care for persons acutely ill or injured pending transport to a hospital; and that the application of resources of the DHEW and other federal agencies in support of these facilities be coordinated by comprehensive planning agencies and health departments at state and local levels.

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REQUIREMENTS FOR A NATIONAL CENTER FOR DISASTER EMERGENCY MEDICAL SERVICES

In a report on the feasibility of establishing a national research and informational center for emergency and disaster medical services, prepared by a task force of the NAS-NRC Committee on Trauma in 1965-1966,[25] with the support of the Division of Health Mobilization of the Public Health Service, the following statements appear:

> "There is a large void in the information that arises from a single significant disaster concerning the exact numbers injured, the extent of injuries, the efficiency of care rendered before admission to an emergency department, the quality of medical care administered, and the final outcome in terms of lasting disability."
>
> "The findings of the Task Force clearly indicate that voluminous plans and directives, the extensive stockpiling of equipment and supplies, the distribution of guidelines for medical management in case of a national disaster and the conduct of periodic mass casualty drills have had less than the desired effect in upgrading the day-to-day care of the victims of trauma."
>
> "It is evident that a disaster program will not work unless optimal emergency medical services are practiced every day in every case requiring first aid, transportation, and emergency medical care."
>
> "Of special interest is the unusual stress placed upon the emergency services of our American communities during natural disasters. It is the disaster which brings into a magnified focus many of the deficiencies in daily emergency care. The striking feature of any review of these emergency and disaster situations is the repetition of errors in the medical management of injuries by both professional and nonprofessional personnel. In particular, the deficiencies in supportive functions of authority, communication, transportation, and hospital warning have made chaos a common denominator of all disasters, rendering ineffective much of the medical operation."
>
> "The Task Force believes unanimously that it is not only feasible but necessary to establish a center for the documentation and analysis of medical management and of the incidence and causes of morbidity and mortality from injuries. The findings of such a center would serve as a continuing basis for adaptation of measures now available but not used systematically or universally, and for research toward optimal immediate care, definitive treatment, and maximal rehabilitation of disaster victims and those

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suffering accidental injury in normal times, riots, or national emergency."

In the NAS-NRC report,"Accidental Death and Disability: The Neglected Disease of Modern Society,"published in 1966,[2] the following statements appear:

"Because disasters occur repeatedly in this country and because progress has been slow in solving problems of caring for mass civilian casualties, medical problems encountered in disaster should be under continued study and analysis by multi-disciplinary groups. The need for integration of public resources in coping with material damage in disaster is apparent, but the community role in handling human casualties is less well prescribed. The Disaster Research Group of the Division of Anthropology of the National Academy of Sciences-National Research Council, in its extensive studies from 1951 to 1963 for the Office of Civil Defense, and the Ohio State University Disaster Research Center, established in 1963, have both concentrated on responses of local, state, and federal agencies to the stresses imposed by unexpected disaster with emphasis on behavioral and sociological problems. Efforts of the American College of Surgeons to encourage members to report on casualty care in disasters have added little substantive information on which to improve results. The Committee on Disaster Medical Care of the American Medical Association has attempted to identify potentials for improved care, but no national action program has been implemented."

"In no single large disaster do we have precise information on the causes of death, the numbers and types of injuries of survivors, or the rewards of efficiency and the penalties of inefficiency in rescue, first aid, transportation, and medical care. A pattern exists in the organization and functions of the Office of Emergency Planning of the Executive Office of the President for gaining this type of information and for implementing improvements in management and care that would result from its analysis. Trained disaster specialists based at eight federal centers throughout the nation move out at first warning to areas imperiled by disaster. On the basis of their assessments, the President can declare a major disaster; under the direction of the Office of Emergency Planning 24 agencies would be automatically authorized to provide assistance. These are concerned mainly with supplies, equipment, and personnel to clear debris; provide food, medicine, and shelter; restore utilities; enforce law and order; and render financial assistance and welfare services."

In the Disaster Relief Act of 1970 (PL 91-606, Sec. 203(h)), the following statement appears:

"The Director of the Office of Emergency Preparedness is authorized and directed to make in cooperation with the heads

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of other Federal and State agencies, a full and complete investigation and study for the purpose of determining what additional or improved plans, procedures, and facilities are necessary to provide immediate effective action to prevent or minimize losses of publicly or privately owned property and personnel injuries or deaths which could result from fires (forest and grass), earthquakes, tornadoes, freezes and frosts, tsunami, storm surges and tides, and floods, which are or threaten to become major disasters."

The findings and recommendations in the report of the NAS-NRC Task Force on the Feasibility of Establishing a National Research and Informational Center for Emergency and Disaster Medical Services are as valid today as they were in 1966. Revision of the report and updating of the references would serve only to reinforce the case for establishing a center. There is no evidence that the findings and recommendations of the report were recognized or acted on at any level of the Department of Health, Education, and Welfare higher than the Division of Health Mobilization (now the Division of Emergency Health Services).

Existing programs that should be expanded and coordinated with the functions of a National Center for Disaster Emergency Medical Services include those on accident prevention - formerly assigned to the Division of Health Mobilization, PHS, later incorporated in the Injury Control Program of the Environmental Control Administration, PHS, and now unidentified in the functions of the Bureau of Community Environmental Management, PHS - the Poison Control Information Center and the National Electronic Surveillance System of the Food and Drug Administration;[26] the National Center for Health Statistics, PHS; the Office of Emergency Preparedness, Executive Office of the President; and the Office of Civil Defense, Department of Defense. The organization and functions of the Ohio State Disaster Research Center, as related to the consequences of disaster in areas other than medical, and the computerized Trauma Registry of the Illinois Department of Health[27] for analysis of activities of 20 trauma centers in Illinois could serve as models for development of a program for identification of the causes of death and disability and analysis of efficiency and quality of delivery of emergency medical care in disasters.

Recommendation

It is recommended that the Department of Health, Education, and Welfare, in collaboration with the Office of Emergency Preparedness of the Executive Office of the President, the Office of Civil Defense of the Department of Defense, and other agencies responsible for day-to-day emergency medical services and relief in case of disaster, support establishment of a National Center for Disaster Emergency Medical Services. Functions of the Center would be documentation and analysis of delivery of emergency medical care in disasters, to include the numbers and types of casualties; the precise causes of death or disability; preventive measures necessary to reduce mortality and morbidity; evaluation of efficiency and quality of delivery of emergency medical services

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in public disorders, disasters, or a national emergency; dispatch of field teams to disaster sites for coordination of emergency medical services requirements with the command and control functions of federal disaster centers and of disaster relief agencies; service as a consulting body for the government, the health disciplines, industry, and other organizations affected by disasters, and maintenance of an information clearinghouse and educational programs to disseminate knowledge on the application of existing technology and the orderly expansion of day-to-day emergency medical care services to meet the needs imposed by disaster.

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RESEARCH IN TRAUMA

While hundreds of millions of dollars are allocated annually by the Congress for research in malignancy and cardiovascular diseases, it is estimated that less than $10 million are spent annually on fundamental and clinical research in trauma.

To determine accurately the physiological changes produced by trauma alone, studies must be initiated promptly on persons who are otherwise healthy at the moment the stresses of trauma are imposed. Only by this approach can the hemodynamic, metabolic, ultrastructural, and other changes of diseases be compared with or differentiated from the hypoxia, collapse, and other effects of trauma as the sole etiological factor.

Relatively little has been done in fundamental studies on acutely injured subjects on wound healing, wound infection, hemodynamic, metabolic, cardiac, and respiratory changes following trauma; ultrastructural alterations in injury and shock; the effects of head, spinal cord, and nerve injuries; paralytic ileus; posttraumatic renal insufficiency; fracture healing; resuscitation; and many other areas of basic importance.

In 1966 the National Institute of General Medical Sciences, recognizing the need for coordination and identification of research needs in trauma, developed a program that supported establishment of a limited number of trauma research centers.[28] Soon after, the National Institute of Neurological Diseases and Stroke supported establishment of a number of head injury research centers. These centers have not only contributed materially to better understanding of physiological changes produced by trauma, but serve as models for development of trauma centers that should be established in the majority of the Category I and Category II hospital services throughout the nation.

The greatest reduction of mortality and lasting disability from burns, owing to contributions of specialized burn centers, attests to the benefits that can be afforded millions of citizens by concentrating the talents of multidisciplinary teams of clinicians and basic scientists in centers devoted to fundamental research on the causes of death and disability from trauma and advances in resuscitative and definitive clinical management.

Federal agencies whose resources should be applied in support of fundamental research in trauma and the establishment of trauma research centers include the National Institute of General Medical Sciences and the National Institute of Neurological Diseases and Stroke of the NIH; the Medical Research and Development Commands of the Army, the Navy, and the Air Force of the Department of Defense; the Veterans Administration; and the National Center for Health Services Research and Development, the Health Care Facilities Service, and the Regional Medical Programs Service of the HSMHA.

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Recommendation

It is recommended that federal resources in support of fundamental research in trauma and in establishment of trauma research centers be expanded to a degree that will reflect appropriate concern that trauma is the leading cause of death in all persons aged 1 to 38 and funded in amounts that will be proportionate to the vast sums allocated to research in malignancy and cardiovascular diseases.

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APPENDIX: FEDERAL AGENCIES WHOSE RESOURCES ARE RELATED TO ELEMENTS OF AN EMERGENCY MEDICAL SERVICES SYSTEM

DIVISION OF EMERGENCY HEALTH SERVICES, FEDERAL HEALTH PROGRAMS SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

The Division of Emergency Health Services is the only unit identified within the Public Health Service whose title connotes a responsibility and function directly related to emergency health care for the entire population. I has a mechanism for establishing a comprehensive information clearinghouse, for providing guidance and assistance in emergency medical care program development among all federal agencies, and for coordinating programs through state health departments and other state and local agencies and organizations with resources that can be used in the development and implementation of an effective emergency medical care system.

The Division's stated mission is the improvement of the delivery and quality of emergency health services related to both acute illnesses and injuries as they occur day-to-day and in natural and man-made disasters, as follows:

"The Division's program takes into consideration a planned approach to linking the community ambulance services and hospitals into an integrated system. This system must include:

"The assumption of responsibility by public health officials, medical organizations and other interested agencies, including the establishment of a community emergency health services council.

"The establishment and maintenance of standards for personnel, vehicles, equipment, and facilities.

"A communication system that will permit early detection of the emergency, rapid dispatching of required services, and continuous contact with ambulances and hospitals.

"A training program that will prepare professional and allied health personnel to care for patients in accordance with their emergency needs.

"Public education, including first aid or medical self-help training, and emergency medical identification for those with medical conditions that might create or aggravate an emergency.

"Research to find better emergency health care techniques and ways of delivering services to patients where and when they are needed.

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"Assistance in organization and development of emergency health services systems at community levels."

The Division's emergency medical stockpile is designed to provide resources for medical care in the event of nuclear disaster; natural disasters, such as floods, hurricanes, and explosions; and other emergencies, such as civil disturbances. The medical stockpile consists of 200-bed packaged disaster hospitals, hospital reserve disaster inventories, and 50-bed packaged natural-disaster hospitals.

Authorizing legislation: P.L. 78-410 - Public Health Service Act 78 Stat. 682 Sec. 301 and 311. 50 U.S.C., App. 2281 (h), Civil Defense Act of 1950.

DIVISION OF EMERGENCY MEDICAL PROGRAMS, DEPARTMENT OF TRANSPORTATION

The Highway Safety Act of 1966 requires that states have a highway safety program in accordance with program standards promulgated by the Secretary of Transportation. Standard 4.4.11 of this program, entitled "Emergency Medical Services," broadly outlines the elements required in that part of a state's program. The purpose of this standard is to improve the life-saving capability of emergency medical services through personnel training, proper equipment, communication, operational coordination, and comprehensive planning at both state and local levels.

Section 402 of the Act provides for funding assistance to states for the conduct of their highway safety programs. Most of the activity in support of state highway safety programs under Sec. 402 of the Act, as related to Standard 4.4.11, can be broadly classified into the following categories: (1) survey of emergency medical services resources, (2) development of comprehensive emergency medical services plans at state and local levels, (3) emergency medical personnel training, (4) assistance in purchase of ambulances and equipment and in operation of ambulance services, (5) emergency communication, (6) helicopter use, and (7) collection and evaluation of data on emergency medical services. More than 300 state and local highway safety projects in emergency medical services had been approved under Sec. 402 of the Highway Safety Act of 1966 and funded in excess of $18 million as of 30 September 1969. It is estimated that approximately $35 million will have been obligated by the end of FY 1972.

Section 403 of the Act authorizes funding of emergency service plans and demonstration projects dealing with the effectiveness of emergency medical care systems. These funds are expended on an individual-project basis and may be used either independently or in cooperation with other federal departments or agencies for (1) grants to states or local agencies, institutions, and individuals for training or education of highway safety personnel, (2) research fellowships in highway safety, (3) development of improved accident investigation procedures, (4) emergency service plans, (5) demonstration projects, and (6) related activities that are deemed by the Secretary of Transportation to be necessary to carry out the purposes of this section.

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Authorizing legislation: Public Law 89-564, 89th Congress, S-3052, 9 September 1966.

COMPREHENSIVE HEALTH PLANNING SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

This program, authorized under Sec. 314 of the Public Health Service Act, as amended by Public Law 89-749 and amendments of 1967, includes:

Formula Grants to States for Comprehensive Health Planning (314-a)

Grants to assist the designated state agency in administering the planning process of a "plan for Comprehensive Health Planning" and its submission to the Surgeon General of the Public Health Service.

Project Grants for Comprehensive Areawide Health Planning (314-b)

Grants to assist public or nonprofit private agencies in developing comprehensive regional, metropolitan, or local area health plans.

Project Grants for Training, Studies and Demonstrations (314-c)

Grants to public or nonprofit private agencies, institutions, or organizations (including universities) to improve health planning (training).

COMMUNITY HEALTH SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

This program, authorized under Sec. 314 of the Public Health Service Act, as amended by Public Law 89-749 and amendments of 1967, includes:

Formula Grants to States for Public Health Services (314-d)

Grants to states to establish and maintain adequate public health services.

Project Grants for Health Services Development (314-e)

Grants to help meet health needs of limited geographic scope or of special regional or national significance, and to stimulate innovation in provision of health services.

APPALACHIAN DEMONSTRATION HEALTH PROGRAM, COMPREHENSIVE HEALTH PLANNING SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

To demonstrate the value of adequate health facilities and services to the economic development of the Appalachian region, Sec. 202 of the Appalachian Regional Development Act authorizes the Secretary of HEW to make grants for planning, constructing, equipping, and operating multicounty demonstration health projects, including hospitals, regional health diagnostic and treatment centers, and other facilities and services necessary to health.

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Grants are also authorized under this section for the operation of a demonstration health project (including initial operating funds comprising, among other things, the cost of employing, training, and retraining qualified personnel). Funding is up to 100% of the cost for the first 2-year period of the grant.

Authorizing legislation: Appalachian Regional Development Act of 1965, Sec. 202.

REGIONAL MEDICAL PROGRAMS SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

The Division of Regional Medical Programs (RMP) of this Service, through grants and contracts and technical and professional assistance, supports the planning, development, and operation of regional programs to reduce illness, disability, and premature deaths resulting from heart disease, cancer, stroke, and related diseases. These programs link medical schools, medical research centers, hospitals, and other health organizations and institutions through regional cooperative arrangements, in order to carry out research, training, demonstrations of patient care, and other activities to achieve more widespread and effective use of the latest advances in the diagnosis and treatment of these diseases.

A significant portion of the RMP effort is related to emergency medical care. This includes educational programs in emergency management of victims of heart attack or stroke, and provision of mobile coronary-care units, hospital coronary-care units, and intensive-care units.

A library containing general information on emergency health services, transportation, and communication has been developed. The Regional Medical Programs Service has also accumulated mathematical and simulation models of emergency medical service systems, emergency communication systems, emergency transportation systems, and training programs. Consultation and support have been provided to numerous RMP regions requesting assistance in the formation of emergency medical systems.

Authorizing legislation: Heart Disease, Cancer, and Stroke Amendments of 1965 (Public Law 89-239) and of 1970 (Public Law 91-515).

NATIONAL CENTER FOR HEALTH SERVICES RESEARCH AND DEVELOPMENT, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

This organization has the responsibility, by means of grants and contracts, for supporting, promoting, and stimulating a national program of health services research, development, and demonstrations, including: improving the availability of health services to all people; assisting the health professions in improving their capabilities for assessing the quality of their services; investigating the comparative cost of alternative methods of

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providing and financing health services; accelerating application of new or improved techniques for prevention, diagnosis, treatment, and control of diseases and disabilities; and designating and demonstrating experimental health service systems in urban and rural areas.

Demonstration projects, using new methods for the training of manpower, are the basic interest of this program. Once the effectiveness of such training programs has been demonstrated, other sources of funding are necessary.

Authorizing legislation: Sec. 301 (42 U.S.C. 241) and Sec. 304 (42 U.S.C. 242 B) of the Public Health Service Act as amended by Public Law 90-174, Partnership for Health Amendments 1967, 5 December 1967. Federal Register, Vol. 33, No. 212, 30 October 1968.

HEALTH CARE FACILITIES SERVICE, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

This program provides consultative and administrative services, under the Hill-Burton Program, to the states in carrying out their programs for the construction and modernization of public and private nonprofit community hospitals and other medical facilities as may be necessary in conjunction with extending facilities to furnish adequate hospital, clinical, or similar services. A further objective is to stimulate the development of new or improved types of physical facilities for medical diagnostic, preventive treatment or rehabilitative services and to advance the effective development and utilization of hospitals, clinics, and similar facilities and resources through development of guidance material.

Consultative services are available to any state health department or health facility requiring these services in the planning, construction, modernization, equipping, and utilization of health facilities. Regional staffs participate in the administration of related programs by providing administrative, architectural, and engineering services for the planning, construction, and modernization of community mental health centers, facilities for the mentally retarded, educational facilities, health facility projects assisted under the Appalachian Redevelopment Act, and sheltered workshops under the Vocational Rehabilitation Act.

A feature of the Hill-Burton Program since its inception has been the consultative service provided at the regional and federal levels. Architects, engineers, and equipment specialists serve on staffs that help communities plan hospitals before starting to build. In addition, guidelines are published on many phases of design, construction, equipment, and operation. These aspects of the program have grown to new dimensions as the hospital community has come to rely on the state Hill-Burton agencies for guidance and as Hill-Burton studies have opened the door to new techniques, new methods of operation, and new concepts of promoting better health.

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Authorizing legislation: Public Law 83-443, as amended by Title IV Public Law 90-574.

NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES, NATIONAL INSTITUTES OF HEALTH

Resources of the National Institute of General Medical Sciences that are related to emergency medical care include grants for research in trauma and shock, support of special trauma research centers, and fellowship and training programs. Current expenditures for support of research grants and seven trauma centers are in the amount of approximately $3 million annually, a major portion of which is committed to continuation of the centers.

Authorizing legislation: 42 U.S.C. 241, Public Health Service Act. Sec. 301 (h).

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND STROKE, NATIONAL INSTITUTES OF HEALTH

Resources of the National Institute of Neurological Diseases and Stroke that are related to emergency medical care include research on accidental injury to the central nervous system, grants for facilities and equipment for special head injury centers, and fellowships and training programs. Current expenditures for support of research grants and eight head injury centers are in the amount of approximately $2.6 million annually of which approximately $925,000 is committed to head injury centers.

Authorizing legislation: 42 U.S.C. 241 Public Health Service Act, Sec. 301 (c) and (h).

DIVISION OF ALLIED HEALTH MANPOWER, BUREAU OF HEALTH MANPOWER EDUCATION, NATIONAL INSTITUTES OF HEALTH

This Division supports training of allied health personnel by grants of various kinds:

Basic Improvement Grants to improve the quality of educational programs for allied health professions specified in regulations. Funds may be used to support some costs, such as for equipment, supplies, books and periodicals, salaries and associated fringe benefits of faculty and supportive staff, and alteration and renovation of teaching facilities. Grants are awarded on a formula basis allowing $5,000 for each eligible curriculum plus $500 multiplied by the number of students enrolled on 15 October of the federal fiscal year in which application is made.

Special Improvement Grants to contribute toward provision, maintenance, or improvement of specialized functions that a training center serves. Individual grants, awarded on a competitive basis, up to $100,000 would be available from funds not required for Basic Improvement Grant entitlements.

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Advanced Traineeships to provide support of students taking advanced training to prepare them to serve as teachers, administrators, supervisors, and specialists in the allied health professions. Awards are made to individuals through institutions eligible as training centers for allied health personnel. Trainees must have completed basic professional training necessary for certification, registration, licensure, or employment in one of the allied health professions specified in regulations.

Construction Grants to aid in construction of new facilities or replacement or renovation of existing facilities for training centers for allied health personnel. The federal share may be up to two-thirds of the cost for a new facility or major expansion of an existing facility; otherwise, up to 50%.

Developmental Grants to develop, demonstrate, or evaluate curricula and methods for the training of health technologists.

Authorizing legislation: Allied Health Professions Personnel Training Act of 1966, Public Law 89-751, as amended by Health Manpower Act of 1968, Public Law 90-490.

DIVISION OF PHYSICIAN AND HEALTH PROFESSIONS EDUCATION, BUREAU OF HEALTH MANPOWER EDUCATION, NATIONAL INSTITUTES OF HEALTH

The Physician Manpower Health Professions Training Program is concerned with the education and training of physicians and with undergraduate courses in continuing education. The primary thrust of the program is to increase the number of physicians. Current emphasis is to identify and promote the application of ways and means to improve the efficiency of physicians. Of particular interest is the current use of physicians' services in emergency departments and the specialized training in support of the professionals involved in emergency services within other areas of the hospital.

Authorizing legislation: Public Health Service Act, Sec. 301 (c), as amended in 42 U.S.C. 241 (c), and Sec. 301 (d), as amended in 42 U.S.C. 241 (d).

DIVISION OF NURSING, BUREAU OF HEALTH MANPOWER EDUCATION, NATIONAL INSTITUTES OF HEALTH

Special project grants for improvement in nurse training through planning, developing, or establishing new programs or modifications of existing programs of nursing education; improving curricula of schools of nursing; conducting research in various fields of nursing education; assisting schools of nursing that are in serious financial straits to meet their costs of operation or to maintain or meet accreditation requirements; and assisting agencies, organizations, or institutions to meet the costs of projects that will help to increase the supply of adequately trained nursing personnel. Grants are provided both to schools of nursing and to individual students.

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Authorizing legislation: Health Manpower Act of 1968, Title II.

OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Grants are provided to assist states in maintaining, extending, improving, or developing new programs in vocational and technical education at less than baccalaureate level in high schools, junior and community colleges, and technical institutes, and in 4-year colleges and universities under approved state plans. In addition to conduct of training programs, special services may include demonstration and experimental programs, development of instructional material, and technical and training supervision.

Eligible for training are persons attending high school; those who have completed or left high school, but can study full time; those in the labor market who need training or retraining; and those with academic or socioeconomic handicaps.

The purpose of the Vocational Education Research Program is to provide funds through the Office of Education to state departments of education for grants and contracts for research in vocational education; for training programs designed to familiarize vocational and education personnel with research funding and successful pilot and demonstration projects; for experimental development and pilot programs and projects designed to test the effectiveness of research findings; for dissemination of findings of projects; for development of new curricula; and for projects related to education for new careers and occupations.

The Division of Manpower Development and Training in the Office of Education, through delegation, administers the responsibilities of the Secretary of Health, Education, and Welfare under the Manpower Development and Training Act (MDTA). HEW's primary responsibility is to provide institutional training, including basic education, communication skills training, and prevocational, vocational, and technical training, on a part-time or full-time basis. When undertaken in cooperation with industries and business, this type of education is referred to as "cooperative training." Necessary supportive services - such as legal, social, and health guidance and counseling - may also be provided. It is the responsibility of the Secretary of Labor to place qualified trainees in employment when training is completed.

Authorizing legislation: Vocational Education Act of 1963.

NEW CAREERS - SPECIAL PROJECTS, DHEW

This program provides grants to state vocational rehabilitation agencies to enable them to develop new programs to recruit and train the handicapped to provide them with new career opportunities in rehabilitation, health, welfare, public safety, law enforcement, and other appropriate fields.

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Authorizing legislation: Public Law 88-452, Economic Opportunity Act of 1964, as amended.

OFFICE OF ECONOMIC OPPORTUNITY, EXECUTIVE OFFICE OF THE PRESIDENT

The Community Action Program of OEO provides grants for the establishment of health centers that offer comprehensive health care for low-income persons.

The health care may include treatment, screening and diagnostic services, home care, out-reach rehabilitation, dental care, family planning, mental health care, and other health-related services. In addition, the grants may help in obtaining equipment and supplies, training personnel, evaluating projects, and transporting patients.

This program, through comprehensive health care at neighborhood levels, provides a resource that renders outpatient care to those who would otherwise seek services at overcrowded hospital emergency departments.

Representatives of the Community Health Service, PHS, render professional medical advice on projects involving neighborhood health center activities.

Authorizing legislation: Economic Opportunity Act of 1964, as amended; Public Law 89-749; Public Law 90-222, 81 Stat. 672.

COOPERATIVE AREA MANPOWER PLANNING SYSTEM (CAMPS)

This program, formalized by Executive Order 11422, is headed by a National Manpower Coordinating Committee composed of one representative of each participating agency - namely the Department of Labor; the Department of Health, Education, and Welfare; the Department of Agriculture; the Department of the Interior; the Department of Housing and Urban Development; the Department of Commerce; the Civil Service Commission; and the Office of Economic Opportunity. The Committee chairman is the Department of Labor representative, currently the Assistant Secretary for Manpower.

The purpose of the program is to provide for the systematic planning of manpower and related programs at the national, regional, state, and area levels. The National Committee issues policy guidelines and budget estimates each year. State and area CAMPS committees develop comprehensive manpower plans in conformity with these guidelines. After approval of the plans by regional committees, individual projects are processed by the participating program agencies.

Reference:

1969 Listing of Operating Federal Assistance Programs Compiled During the Roth Study, p. 674.

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OFFICE OF CIVIL DEFENSE, DEPARTMENT OF DEFENSE

The basic programs of this office are disaster-oriented. However, several aspects of these programs have a direct relationship to day-to-day emergency medical services systems throughout the country.

On a matching fund basis, more than 3000 OCD Emergency Operating Centers are in existence throughout the United States. Although they are to be used primarily for civil-defense emergencies (nuclear and natural disasters), a mechanism exists to adapt these facilities to serve as community emergency communication centers on a day-to-day basis; this resource has rarely been utilized at local, state, or regional levels.

Through the surplus-property program, local civil-defense agencies can purchase surplus military equipment and supplies for use in their communities. Communication equipment is thus available for use in support of a community's emergency medical services system.

Authorizing legislation: Federal Civil Defense Act of 1950, as amended by Public Law 81-920.

MILITARY ASSISTANCE TO SAFETY AND TRAFFIC (MAST), DEPARTMENT OF DEFENSE, DEPARTMENT OF TRANSPORTATION, AND DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

The MAST project, announced jointly by the Secretaries of the Department of Defense and the Department of Transportation on 15 July 1970, is designed to determine the value of helicopters in providing medical assistance to traffic-accident victims and other persons needing emergency medical care. The Army is designated as the Department of Defense Executive Agent for the project.

The initial program was begun in mid-July in the San Antonio, Texas, area by Army air ambulance companies of Fort Sam Houston, Texas. Additional programs are conducted at Mountain Home Air Force Base, Idaho; Luke Air Force Base, Arizona; Fort Lewis, Washington; and Fort Carson, Colorado.

At the completion of the test period on 31 December 1970, the program was evaluated to determine the effectiveness of communication and coordinating systems, requirements for civilian and military participation, the feasibility of the use of other services and reserve army aviation units, and training requirements for program participants.

BUREAU OF COMMUNITY ENVIRONMENTAL MANAGEMENT, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

Under a recent organizational directive, the functions of the Injury Control Program of the Environmental Control Administration have been transferred to the Bureau of Community Environmental Management. The mission of the Injury Control Program had direct relationship to the delivery of emergency medical care.

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Data on the incidence and nature of accidental injuries and emergency illnesses were derived through identification of the ways in which the products of industry are involved in the etiology of these emergencies. This information influences the type of emergency care administered and the ultimate prognosis, while serving environmental control agencies in identifying etiologic factors, the correction of which may prevent or minimize injury or illness.

In addition to the functions performed by that agency in surveillance, testing, epidemiology, laboratory research, industry liaison, criteria and standards and public information and education, grants were made for data gathering, determination of improved methods of treatment, research training grants, and training programs for physicians, nurses, and allied health personnel. The extent to which these functions will be carried out by the Bureau of Community Environmental Management has not been clarified to date.

Authorizing legislation: 42 U.S.C. 241 and 246, Public Health Service Act, Sec. 301.

NATIONAL CENTER FOR HEALTH STATISTICS, HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION, PHS

The Center collects national data on mortality and morbidity on an annual basis. These data are compiled from death certificates, health interview surveys of households, and hospital discharge surveys. The data collected have formed one of the major sources of information with regard to mortality and morbidity related to illnesses, injuries, chronic conditions and other impairments, and other health topics.

The data of the Center relate directly to activities involved in the delivery of emergency medical care only to the extent that they delineate the numbers of persons requiring emergency care in terms of age distribution, mortality, disability, costs, and days of confinement in hospitals. This information, available annually and for geographic subdivisions of the country, is thus important in determining the regional, state, and local requirements for and distribution of ambulance services, communication systems, hospital emergency facilities, and health manpower personnel.

Currently the resources of the Center are not applied to data-gathering on causes or severity of accidental injury or emergency illness in specific etiologic categories. To acquire this information, special questionnaires, considerable lead time, and additional resources would be required.

Authorizing legislation: Public Health Service Act of 1 July 1944, as amended.

SOCIAL SECURITY ADMINISTRATION, DHEW

Medicare Title 18, regulation No. 5 (Federal Health Insurance for the Aged - 20 C.F.R. 405), subpart J, contains the condition that hospitals are required to meet if participating as providers of service in the Health Insurance for the Aged Program.

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Under Section 405.1033 - Conditions of Participation - a hospital must have at least a procedure for taking care of the occasional emergency case it might be called on to handle. In hospitals that have organized emergency services or departments, participation requires standards with regard to organization and direction (the department or service must be well organized, directed by qualified personnel, and integrated with other departments of the hospital), facilities (facilities must be provided to ensure prompt diagnosis and emergency treatment), medical and nursing personnel (adequate medical and nursing personnel must be available at all times), and medical records (adequate medical records on every patient must be kept).

Medicaid Title 19 provides for the payment of health services to include outpatient and emergency care and ambulance services, as determined by the state agency (usually the state welfare or health department) responsible for administering the program. Federal funds are made available to the state agency on a formula-grant population basis. Assistance to states currently ranges from 50% to 80% federal funds.

Authorizing legislation: Social Security Administration Regulations No. 5, Title 20, Chapter III, Part 405. Social Security Act, Title 18 and 19, Public Law 89-97, 79 Stat. 301-313, 79 Stat. 331, as amended by Public Law 90-248.

VETERANS ADMINISTRATION: VETERANS EDUCATIONAL ASSISTANCE, DEPARTMENT OF VETERANS BENEFITS

Within the Veterans Administration, particularly its medical and nursing school affiliated hospitals, are unique teaching staffs, facilities, and other resources currently engaged in patient care, training and research programs fully capable of augmenting community programs for emergency service personnel.

In accord with the national reassessment and implementation of optimum medical services, the Veterans Administration has reviewed its current program with the aid of a national advisory group. A series of demonstration systems for veterans is planned at a number of VA hospitals to provide emergency services to be integrated with community or regional programs.

The educational assistance program of the Veterans Administration was created to make service in the armed forces more attractive by extending benefits of a higher education to qualified young persons who might not otherwise be able to afford such an education, to provide vocational readjustment and restore lost educational opportunities to those whose education or careers were interrupted by active duty, and to help persons attain the vocational and educational status that they might normally have aspired to and obtained had they not served their country.

An educational assistance allowance is paid to help the veteran meet, in part, the expenses of his tuition, fees, supplies, books, equipment, and other educational costs, and subsistence. Monthly benefits not to exceed 36 months range from $30 to $175 plus up to $10 for each dependent in excess of two, if a veteran is attending an approved educational institution. If

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the veteran is following an approved program of apprenticeship or other on-the-job training, monthly benefits range from $20 to $100; benefits for other on-the-job training are limited to 2 years. Educational and vocational counseling are available to veterans eligible for educational assistance.

Eligibility requirements, assistance prerequisites, and application deadlines are prescribed by the Department of Veterans Benefits.

Authorizing legislation: 38 U.S.C. 34, Section 1651.

DEPARTMENT OF LABOR

Manpower resources of the Department of Labor are related to emergency medical services through grants provided to train unemployed and underemployed persons to return them to suitable employment or to upgrade their abilities. The Occupational Training Program provides for refresher courses for professional workers who would be unemployable unless their skills were upgraded. Payment is authorized for institutional (classroom) and on-the-job training to prepare workers for job opportunities that have been found through such programs as job market surveys and manpower research programs. Training in basic educational skills is provided when necessary. Institutional training is supported through payment of training allowances for up to 104 weeks, plus transportation and subsistence, cost of instruction, and instructors' salaries. In on-the-job training projects, trainees are paid by employers, but the federal government will subsidize instructor fees, instructional supplies, and rental of equipment or space.

Authorizing legislation: Manpower Development and Training Act, Title 2, Act of 1962, and Vocational Education Act of 1963.

DEVELOPMENT AREA TRAINING, ECONOMIC DEVELOPMENT ADMINISTRATION, DEPARTMENT OF COMMERCE

This program, funded by the Department of Commerce, is supplemental to the Manpower Development and Training Program of DHEW for the purpose of providing training for underemployed persons residing in redevelopment areas. There is no cost to trainees. Training is conducted both in schools and on the job in facilities of cooperating employers or organizations.

Authorizing legislation: Manpower Development and Training Act, Sec. 241.

SMALL BUSINESS ADMINISTRATION

The Small Business Administration's low-interest loans to purchase ambulances and equipment and to operate ambulance services on a "profit-making basis" are authorized by the Small Business Act of 1953, as amended; the Small Business Investment Act of 1968, as amended; and Title 4 of the Economic Opportunity Act, as amended. If credit is not otherwise available, the Small Business Administration can make loans in cooperation with banks or directly to the providers of service.

Authorizing legislation: Small Business Act as amended, Secs. 2 and 7, 15 U.S.C. 631 and 636.

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COUNTY OF ERIE
HEALTH DEPARTMENT
EDWARD A. RATH OFFICE BUILDING
95 FRANKLIN STREET
BUFFALO, NEW YORK 14202

WILLIAM E. MOSHER, M. D.
COMMISSIONER

DONALD B. THOMAS, M. D.
DEPUTY COMMISSIONER
MATERNAL AND CHILD HEALTH SERVICE

February 7, 1973

Honorable Jacob K. Javits
Room 326
United States Senate Office Building
Washington, D.C. 20515

Dear Senator Javits:

I wish to submit my testimony on Emergency Medical Services to Senator Kennedy's hearings on this subject. I am most anxious that my opinion as a Health Commissioner and Past President of the National Association of County Health Officers be entered into the records of this Committee and hopefully into the Congressional record.

Erie County, New York has developed an Emergency Medical Services System which we believe is planned to the community needs and involves the people. We have planned and we are visible in our response to these plans. Our constituency can already see results and is not subjected to the frustration of recurrent so-called planning without action.

This program in its initiation was staffed by the Regional Medical Program. Community components in the private sector were involved at all stages. The evaluation process required by Regional Medical Program and in the construction of which we in the Erie County Health Department were closely involved, renders a project measurable in progress and achievement. It is likewise well accessible to audit and therefore demonstrates its overt responsibility for public funds.

The documentation of the system was finalized in the offices of Regional Medical Program and submitted to their Regional Advisory Group for appraisal and funding. I stress the ease of management that funding through the Regional Medical Program provides. I would also like to emphasize that Lakes Area Regional Medical Program administrative costs have been consistently decreased from 20% in 1970 to a projected 8% in 1973. The highly responsive fund management capabilities of Regional Medical Program have eliminated disadvantages inherent with larger funding mechanisms.

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The concept of a total system in dealing with emergencies is essential, as most of our emergencies DO NOT occur on the roads. They occur in the homes and in industry. These situations require expeditious response by well-trained staff as much as those suffering highway trauma. I have, to support this statement, figures for the population of Erie County.

The total system with which the Emergency Medical Service/Regional Medical Program group is concerned is measured or evaluated from the point of incident or onset, through the stages of medical care and rehabilitation, to the return to full productive community function. This is the basis of our program.

I refute any implication that has been presented in your hearings, that Regional Medical Program has not been an asset to planning and coordination. The mechanism of the Regional Medical Program provides a total community resource which allows those of us in various agencies to coalesce our resources, unify and respond to constituency needs.

I would stress that this Emergency Medical Services Project is well ahead of the time-table set in the early phases and we have extended the planning and involvement to the entire Western New York and Northwest Pennsylvania area - the current province of the Lakes Area Regional Medical Program.

Please give this correspondence every possible consideration in your difficult Committee tasks. Thank you for your continued interest in progressive and functional health care delivery.

Sincerely,

William E. Mosher, M.D., Commissioner
Erie County Health Department

WEM/bad

CC: Jay A. Cutler, Minority Council Chairman ✓
Senate House Subcommittee
Community on Labor and Public Welfare

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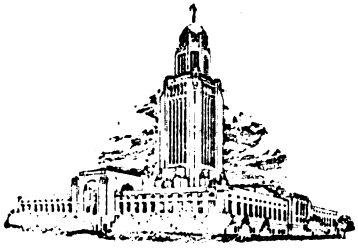

STATE *of* NEBRASKA
DEPARTMENT OF HEALTH
LINCOLN BUILDING, 1003 "O" STREET
LINCOLN, NEBRASKA 68508

February 23, 1973

The Honorable Carl T. Curtis
United States Senate
Senate Office Building
Washington, D.C. 20510

Dear Senator Curtis:

It has come to our attention that recent statements have been made before the Senate Health Subcommittee which imply that the Regional Medical Program had been uncooperative in efforts to establish better EMS systems throughout the country. We find in Nebraska that this statement is not true. The Nebraska Regional Medical Program has been very active in Emergency Medical Service Programs and has worked in close conjunction with the State Department of Health and other agencies in the establishment of improved emergency medical services.

In 1972 the Nebraska RMP funded a series of programs throughout the state which encouraged the formation and improvement of local EMS systems. The Nebraska RMP has given invaluable assistance in the preparation of a state emergency medical services plan and many of their key personnel have devoted many hours of thought and effort in the formation of our plan. The Nebraska Regional Medical Program has recently approved as their number one priority a project designed to teach life-support techniques to hospital personnel.

We are not intimately familiar with the activities of regional medical programs in other areas, but we can certainly testify to the fact that in our state RMP has been of considerable help and benefit in the establishment of better EMS systems.

Very truly yours,

Henry D. Smith, M.D., M.P.H.
Director of Health

HDS:lrb

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DIVISION OF COMMUNITY AND
POSTGRADUATE MEDICINE
DEPARTMENT OF FAMILY PRACTICE

SCHOOL OF MEDICINE
DAVIS, CALIFORNIA 95616

March 7, 1973

Public Hearings Health Committee
Subcommittee Senate Committee Labor and Public Welfare on Emergency Medical Services
Systems, Development Act of 1973
% Senator Cranston's Office
Room 552, Senate Office Building
Washington D. C. 20510

Committee:

The Emergency Care Crisis in America is a true one in the sense that we need entry points, a network of well trained individuals, and rapid transit systems with a network of treatment centers to handle the actue and life threatening surgical, traumatic, and medical problems. In rural America, these factors present a special set of problems. However, the Emergency "Crisis" that exists in America today is partially a false one in that it reflects the dramatic deficiency in actual doctor numbers, but even more importantly, in the organization and distribution of primary health care professionals. By primary health care professionals, I mean the family physician, the general practitioner, (those internists and pediatricians who are doing general practice in their fields), and the supporting team: nurse practitioners, physician's assistants, health aides, practical nurses, social workers, family health workers, etc. This is a team that can provide high quality health care for 90% of those problems for which patients seek help. Depending upon the criteria of measurement, somewhere between 75 and 95% of the people now frequenting the emergency rooms across this country are not the really true, first-class emergency situations. The emergency rooms have become the "doctor's office" of nights and weekends. This is true in rural as well as urban America.

The present general practitioner and family physician are the backbone of rural health care. They are overworked and vanishing. As mentioned the vast majority of people seen in "emergencies" do not have acute life threatening problems and do not need medical center type care. The question of primary health care manpower and distribution is of prime importance. Therefore the legislation must do more than just address itself to the entry point and transport system. Legislation should address itself to funding and supporting those programs which will put more primary physicians and other primary health care professionals and personnel on the rural scene. This means supporting programs to produce family health work aides, family practitioners, nurse practitioners, physician's assistants, social workers, and the whole spectrum of primary health care personnel needed in this service area deficit. This does not mean that we do not need to train drivers, policemen, firemen, school teachers, and many other citizens to assure immediate

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Arditti/Andrus
Page Two

care and transportation of the seriously injured or ill. But to address this problem only will not solve the "Emergency Care Crisis" which to the largest extent is a primary health care crisis.

Sincerely,

Len Hughes Andrus, M.D.
Professor and Chairman
Department of Family Practice

LHA:km
cc Aaron W. Barger
Steve Arditti

Senator CRANSTON. We stand in adjournment.
[Whereupon, at 1 p.m., the hearing adjourned.]

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