HEALTH SERVICES Reports

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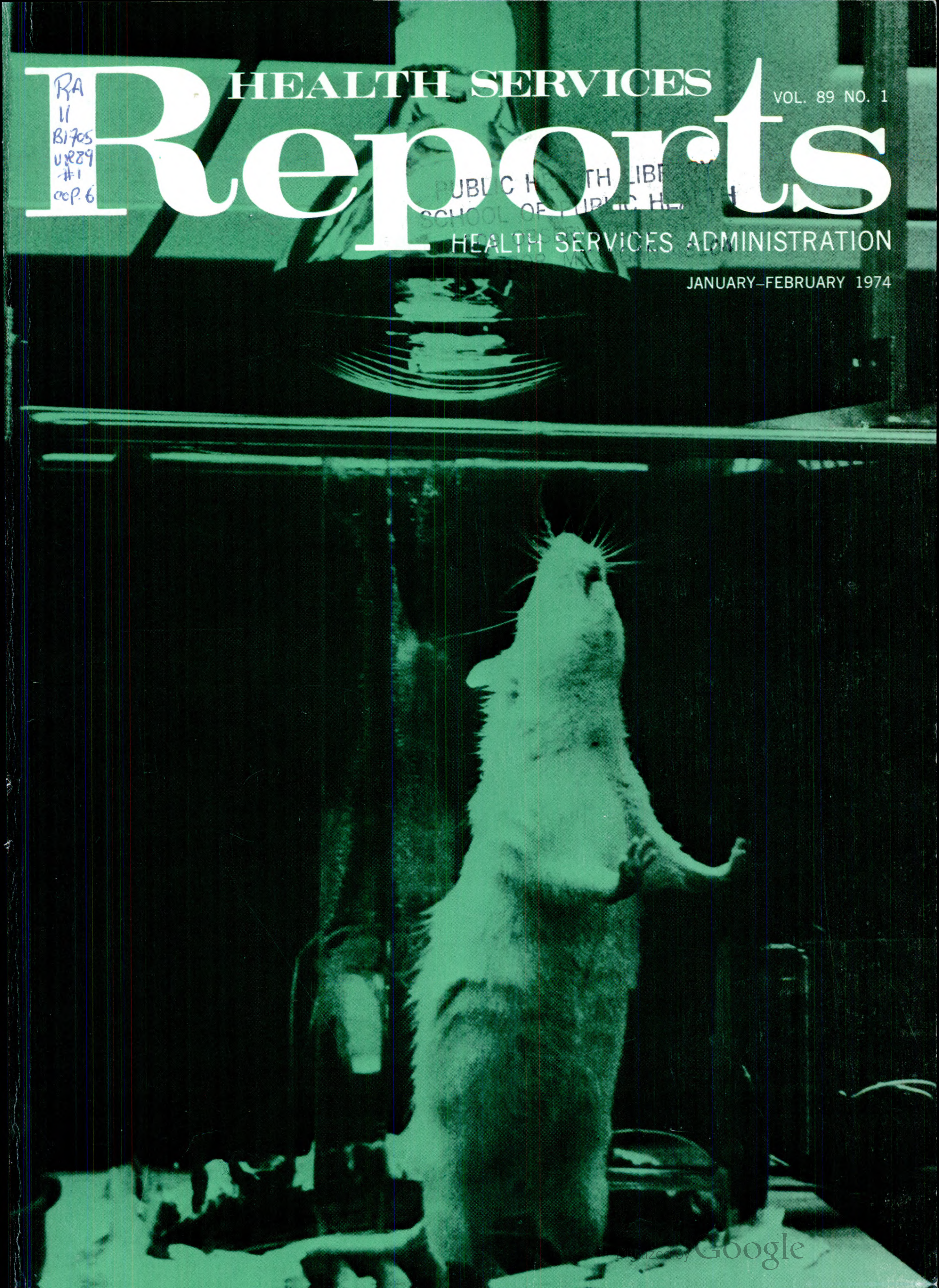
JANUARY–FEBRUARY 1974



HEALTH MAINTENANCE ORGANIZATION ASSISTANCE ACT OF 1973

The President has signed a bill passed by Congress which authorizes the expenditure of $375 million over a 5-year period for grants and loans to support planning, development, and initial operation of Health Maintenance Organizations (HMOs), which provide comprehensive health services on a prepaid, capitation basis.

The benefit package defined in the legislation includes the following basic services, which must be provided to each HMO member: physician services, inpatient and outpatient hospital services, emergency health services, mental health services (short-term outpatient evaluative services and crisis intervention services), alcohol and drug abuse treatment and referral services, diagnostic laboratory and diagnostic and therapeutic radiologic services, home health services, and preventive health services (including voluntary family planning services, infertility services, preventive dental care for children, and children's eye examinations). Supplemental services, for which health manpower is available in the area and for which the HMO member has contracted, include intermediate and long-term care facility services; vision, dental, and mental health services not included as a basic health service; long-term physical medicine and rehabilitative services; and prescription drugs.

Areas of activity that can be supported under the legislation are **feasibility surveys** (grants and contracts to public or nonprofit private entities); **planning** (grants and contracts to public or nonprofit private entities and guarantee of payment to non-Federal lenders to private, for-profit entities for development or expansion of an HMO to serve a medically underserved population); **initial development** (grants, contracts, and loan guarantees available on the same basis as assistance for planning); and **initial operations** (loans to public or nonprofit HMOs and loan guarantees for private HMOs serving medically underserved populations, to cover operating deficits during the first 36 months of operation, including significant expansion as well as new starts). In any fiscal year not less than 20 percent of the sums for grants, contracts, and loans shall be for projects in rural areas.

Each employer operating under section 6 of the Fair Labor Standards Act of 1938 who employs not less than 25 persons and provides a health benefits plan must offer employees the option of membership in a qualified HMO in the area where they reside. If there is more than one HMO in the area, the option must include both a group practice HMO and an individual practice HMO. No employer shall be required to pay more for this option than would be required under existing agreements.

Four specific provisions in State laws restrictive of HMOs are preempted by this legislation, and States may not establish or enforce laws preventing HMOs from soliciting members through advertising services, charges, or other nonprofessional aspects of their operation.

The legislation provides for research and programs concerning the effectiveness, administration, and enforcement of quality assurance programs, and it calls for extensive study of all facets of quality of health care.

HMO services are authorized for American Indians and for domestic agricultural migratory and seasonal workers.

President Nixon has described the new law as a response to the challenge of finding new and better ways to improve health care. "The signing of this act," the President noted, "marks another milestone in this Administration's national health strategy."

Cover—In experiments on body temperature regulation, supported by the National Institute of Neurological Diseases and Stroke, Dr. James M. Lipton uses a heat lamp on white rats restrained in glass cylinders. Another photograph, on page 93, shows the rat shutting off the lamp. How the rat does this and the relationship of these experiments to thermoregulation problems in human beings are explained in a report on pages 92, 93.

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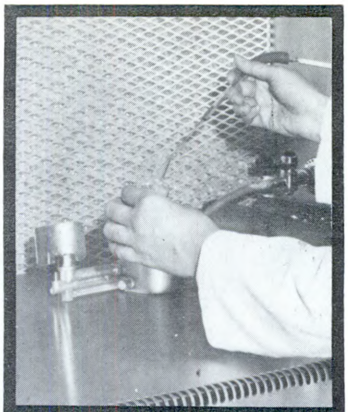

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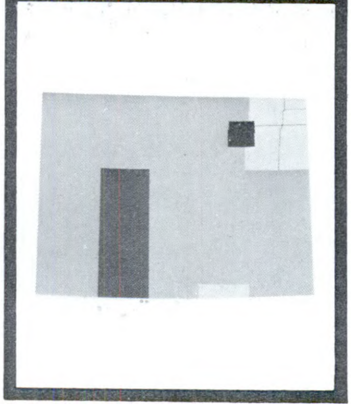

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PROGRAMS, PRACTICES, PEOPLE

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

The Potential of Health Education in Health Services Delivery

EDYTH H. SCHOENRICH, MD, MPH

THE WORDS "health education" are variously used to refer to a broad spectrum of activities ranging from the simple provision of public information to elaborate programs for the training of highly specialized health manpower. In this paper I will use the definition adopted by the President's Committee on Health Education: "Health education is a process that bridges the gap between health information and health practices" (*1*).

Within the broad spectrum of health education my specific concern is with patient education. This process begins with the imparting of factual information to patients, but it also includes interpretation and integration of the information in such a manner as to bring about attitudinal or behavioral changes which benefit the person's health status. Thus, patient education not only involves the world of medical scientific facts, but in its process it is also closely interwoven with psychology, sociology, behavioral science, and cultural anthropology.

An organized program for patient education requires a systematic effort by one or more health professionals in a health service delivery setting. It consists of a number of orderly steps which include assessing the patient's knowledge about his health, determining the patient's health educational needs, the provision of information in a manner most understandable and acceptable by the patient, assuring as much as possible that this information is integrated into the patient's attitudes and, finally, followup to assure that the new information has indeed produced behavioral changes with beneficial effect upon the person.

This process frequently must be directed not only to the patient himself but also to other per-

Dr. Schoenrich is director of the Administration for Services to the Chronically Ill and Aging, Maryland State Department of Health and Mental Hygiene. This paper is based on her keynote address at the Maryland Workshop on Patient Education, held April 30–May 3, 1973, in Marriottsville, Md. The workshop was sponsored by the State health department, in cooperation with the Maryland Regional Medical Program, Maryland Hospital Association, and the Health Care Facilities Service, Health Services and Mental Health Administration (now under the Health Resources Administration).

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sons of key significance in the patient's life pattern. Not only scientific facts, but also an understanding of human motivation and behavior, as well as information concerning the cultural setting and background of the patient, must all be incorporated in the process for successful communication. Furthermore, it is often true that those who deliver health services need to participate in health education themselves before they can design and implement a successful organized program for patient education.

Importance of Patient Education

Increased emphasis upon prevention. A major thrust in the evolution of our contemporary health service delivery system appears to be an increased emphasis upon the prevention of disease processes, illnesses, and impairments. Prevention includes primary prevention, the prevention of the occurrence of disease; secondary prevention, early recognition and intervention in disease processes, even when they may be unrecognized by the patient; and tertiary prevention, which requires highly specialized medical and surgical care including rehabilitation services. Our nation is becoming increasingly sensitized to the enormous human and resource costs of chronic and catastrophic illness, with increasing attention on "what might have been, if only" these problems could have been prevented.

In the first half of this century in the United States we have achieved increasingly effective control of the infectious and communicable diseases. Control was attained through primary prevention of these diseases by the mechanisms of immunization and environmental control. The development of antibiotics in the 1930s and 1940s contributed to this control.

Attention is now increasingly centered on the prevention of chronic diseases and catastrophic illness. Although scientific information is lacking for primary prevention of many of these problems, think for a moment how much it means, not only to a patient and his family but also to society as a whole, to be able to prevent the human and resource costs of these diseases. Think of what it means to prevent a stroke through the sometimes simple approach of controlling hypertension. Think of what it means to prevent the personal catastrophe of paraplegia resulting from a spinal cord injured in an accident caused by a drunk driver. Think what it means to prevent the painful death of a man in his prime from cancer of the lungs through control of smoking. Think what it means to prevent the amputation of a gangrenous leg of an elderly diabetic through good personal hygiene and health care. Think what it means to prevent overcrowding and malnutrition through thoughtful and compassionate family planning.

Success in all of these endeavors must include well-organized patient education programs.

Increasing incidence and prevalence of problems of chronic illness and the aged. As the incidence and prevalence of communicable diseases have been brought largely under control, the problems of birth defects, accidents, chronic illnesses, and of the aged have come to the fore. With the exception of traumatic accidents, these health problems have slow insidious onset, tend to be of long duration, tend to disable many months or years before they kill, tend to require continuing care, sometimes for life, because of their long-term nature and, finally, tend to have enormous psychosocial and financial impact upon the patient, his family, and society as a whole, because of the long-term need for complex services.

Another feature of chronic illness of special importance to those who are interested in patient education is that the low-grade, long-term features of chronic illness mean that the major portion of the management of a chronic illness rests in the hands of the patient himself or his family, rather than in the hands of health professionals. Of course, the intervention of health professionals and health facilities, such as hospitals, is essential to make proper diagnoses and to elaborate plans for management. However, most of the day-to-day management of such problems is in the patient's own hands.

Think of the diabetic who must daily manage his own food intake and medication. Think of the patient with healing tuberculosis who now spends an average of only 90 days in the hospital and must then carry through another 21 months of daily therapy himself—with only intermittent contact with health professionals—to assure that reactivation does not occur. Think of the cardiac or the hypertensive patient who must manage his own medications and pace himself, perhaps with major changes in life pattern, in order to maintain his health. Think of the person with an amputation or a spinal cord injury due to a traumatic event, who then must live with, adjust to, and manage his impairment every day of his life. Think of the family that cares daily for a child with cerebral palsy. The staggering increase in the importance of the patient and his family in the management of individual health problems demands effective patient education services.

Increasing costs of health services. Another social force which is prompting an increased emphasis upon patient education is the escalation of costs for health services. In 1972 more than $75 billion were spent on health care, approximately 7.5 percent of the gross national product (*2*). The public is generally aware that hospitalization, which only a few years ago averaged $50 to $75 per day in large cities, may now average $100 to $150 a day. The health industry employs more than 4.5 million persons including both professionals and support personnel and, in terms of manpower, is the third largest industry in the United States.

This phenomenon in our society is forcing both consumers and providers of health services to be increasingly thoughtful about maintenance of health and the efficient utilization of the health service system. Many health problems which are cared for on an inpatient basis could be, at least in part, managed through ambulatory services. In many instances, more effective compliance with a health regimen would prevent costly readmissions to hospitals.

Problems of health manpower. Another major problem in the delivery of health services consists of the deficits and maldistribution of health manpower. Our society is earnestly attempting to meet this problem through a variety of channels, including the training of new categories of health personnel and reallocation of responsibility for health tasks. However, an important factor not to be overlooked is that, because of the responsibility of the individual citizen in the maintenance of his own health and the increasing role of the patient in the management of his own long-term illness, the citizens of our country can be said to be our greatest source of untapped health manpower. Patient education can make it possible to tap this enormous pool of health manpower effectively.

Implementing Patient Education Programs

Within the context of the concept that patient education must move beyond the acquiring of factual information to the changing of actual behavior, the implementation of patient education programs can be discussed from the viewpoint of target populations, objectives, and process.

Target populations. Nationwide, several special populations can be identified as having unique health needs requiring special emphasis on patient education. These target populations include those to whom preventive services or long-term management are of special significance. These are women of childbearing age, pregnant women, middle-aged persons at high risk for chronic diseases, low-income groups, and those already chronically ill or suffering from the problems of aging.

Objectives. Patient and public education are increasingly critical to the efficient and effective operation of the health service system in at least four broad areas.

1. There is increasing public awareness and concern about the pollution of air and water, about the presence of hazardous agents such as radiation, pesticides, and toxic inhalants, and about the relationship between exposure and the causation of disease and disability. Society is making serious strides forward in this area.

2. In the field of personal health maintenance, we intrude into personal and cultural behavior patterns of nutrition, exercise, and the use of intoxicants including alcohol, drugs, and tobacco, and we must change a relaxed and unrealistic attitude toward the hazards of accidents.

3. Knowledge of the consumer public about its rights and the benefit packages of various health care systems is essential if consumers are to use health services efficiently and effectively rather than wastefully.

4. The compliance of patients in carrying through with health service advice is often critical for favorable outcomes. The literature on patient compliance with health professionals' instructions is enormous, and many studies in many types of settings have examined the accuracy with which patients understand the directions given them by health personnel and the conscientiousness with which they carry out the advice. Some studies are shocking in their demonstration of the insensitivity of health personnel to the personal and intellectual needs of patients for understanding. Some studies are frightening because of their reports of the frequency with which critical medications are omitted or taken incorrectly.

Process of patient education. The process of patient education must, at a minimum, be concerned with the site, the responsible personnel, and the interrelationships between consumers and health personnel.

Patient education can go on in any health delivery setting. Because of the usual frequency of hospital visits for health care, the hospital is a natural setting. In the United States there are more than 7,000 hospitals, and yet only about 50 have what could be called organized patient education services. The President's Committee on Health Education has urged that patient education services be available not only in inpatient settings, but also in ambulatory care settings, including the physician's office. The sensitive, thoughtful physician automatically carries out good patient education, but in the future it may be necessary for both individual physicians and those practicing in an organized setting to develop more varied and systematic methods of patient education. For example, a group of internists might set up a series of group sessions for patients concerning hypertension and its management. The President's Committee has also recommended that both industry and labor become concerned with health education as a way of maintaining the health of the working population.

Traditionally, patient education has been assumed to be the responsibility of the physician. However, with the changing roles and responsibilities of various health personnel, it has become increasingly clear that patient education is the responsibility of all who have direct patient contacts. This is especially true, for example, in chronic illnesses, such as stroke. In this situation the physician plays a less important role once the diagnosis and treatment plan are established—much less important than do the nurses and nurses' aides who spend many hours each day with the patient. In this situation, it is the nursing and rehabilitation personnel who bear the major responsibility for patient and family education.

In 1959 Szasz and Hollander described three categories of physician-patient relationships (*3*). Magraw has elaborated the concept, which is relevant to the field of patient education (*4*). These three types of physician-patient relationships follow:

1. *Activity-passivity.* In this situation the patient is partially or completely helpless and is unable to make a major contribution to his own care or to decisions concerning it. The physician does something to or for the patient with little participation by the patient. Examples of such problems are coma, delirium, severe traumatic accidents, and shock. In these instances, the physician's relationship to the patient resembles somewhat that of a parent to a helpless young infant.

2. *Guidance-cooperation.* In this model of the physician-patient relationship the illness may be acute, but it is not as overwhelming or as desperate as in the first model. The patient may be keenly aware of what is going on, able to exercise some judgment, and capable of following some directions. However, the situation is usually still serious enough so that the physician's advice is paramount, and the patient is expected to accept this advice and follow through on it appropriately. In this model, the prototype is the relationship of a parent to a child, youth, or adolescent.

3. *Mutual participation.* This model of the physician-patient relationship is most characteristic of the management of chronic illnesses and the problems of aging. In this situation the major portion of the management of the condition is carried out by the patient himself, with only occasional consultation or direct contact with a physician. The prototype of this type of relationship is that of consenting adult to adult. One has specialized knowledge to give, but the other uses it voluntarily with understanding, agreement, and acceptance.

Constraints

Simonds, a member of the President's Committee on Health Education, has pointed out that any new major development in the health field takes an average of 25–30 years before fruition. Health education has a few more years to reach this time limit for general acceptance, but he feels that it is well along the way (*5*).

An important inhibiting factor has been the lack of a central Federal agency with authority for development of health education. The President's Committee has therefore recommended that a national center for health education be established at the Federal level for this purpose.

Another constraint in the development of patient education programs has been the lack of manpower trained in health education. It is my understanding that at present in the United States there are only about 25,000 professionally trained health educators. More are needed. Furthermore, ways must be found to increase the participation of all health personnel in the health education and patient education processes.

Still another deterrent has been the lack of funding for health education programs. Many third-party payors do not include health education or patient education costs in their reimbursement formulas.

Conclusions

In the context of the many social forces contributing to the present rapid evolution of the system for the development of health services in the United States, professional, systematic patient education must play an increasingly larger role. This assumption of responsibility will help to assure more efficient and effective utilization of health services, more efficient use of health manpower, increased cost control, and closer cooperation between consumers and the deliverers of health services. In President Nixon's health message to the 92d Congress in February 1971, he said (*6*):

> In the final analysis, each individual bears the major responsibility for his own health. Unfortunately, too many of us fail to meet that responsibility. Too many Americans eat too much, drink too much, work too hard, and exercise too little. Too many are careless drivers.
>
> These are personal questions, to be sure, but they are also public questions. For the whole society has a stake in the health of the individual. Ultimately, everyone shares in the cost of his illnesses or accidents. Through tax payments and through insurance premiums, the careful subsidize the careless, the nonsmokers subsidize those who smoke, the physically fit subsidize the rundown and the overweight, the knowledgeable subsidize the ignorant and vulnerable.

Greater understanding of patient education as a process and broader implementation of its principles by all health service personnel will increase the thrust toward considering each patient as an individual human being, with a unique psychosocial, family, and cultural background, who deserves the right to information concerning his health and to guidance in using that information to his greatest advantage.

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Multidisciplinary Teams Develop Programing for Patient Education

JOAN M. WOLLE, MPH

PATIENT EDUCATION is receiving considerable attention in many medical and health settings, especially hospitals and health maintenance organizations. The reasons are varied: the escalating costs of medical and health services, the rise in the incidence of chronic diseases and disabilities, the shortages or maldistributions, or both, of health manpower and facilities, and the increased emphasis being given to primary, secondary, and tertiary prevention. Furthermore, "A Patient's Bill of Rights," adopted by the American Hospital Association in 1972, includes "the right to obtain from his physician complete current information concerning his diagnosis, treatment, and prognosis in terms the patient can be reasonably expected to understand . . ." and "the right to refuse treatment to the extent permitted by law and to be informed of the medical consequences of his action. . . ." (*1*).

However, although patient education has become accepted as an integral part of total health care and as an essential component of high quality health services, programing for the education

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Miss Wolle is chief, educational services, Maryland State Department of Health and Mental Hygiene, and she served as coordinator of the Maryland Workshop on Patient Education. The workshop, sponsored by the State health department in cooperation with the Maryland Regional Medical Program, Maryland Hospital Association, and the Health Care Facilities Service, Health Services and Mental Health Administration, was held April 30–May 3, 1973, in Marriottsville, Md. A 6-months' followup session was held October 31, 1973. Tearsheet requests to Joan M. Wolle, Chief, Educational Services, Maryland State Department of Health and Mental Hygiene, 301 West Preston St., Baltimore, Md. 21201.

of patients remains more of a concept than a routine function in most health care systems. Yet, the solution to many of today's health problems requires the active participation of patients throughout the continuum of health care—preventive services through the range of diagnosis, treatment, and rehabilitation.

Because of the advantages to both providers and consumers, official health agencies can and should assume leadership in the development of patient education programs in health care settings within their jurisdictions. The health department, with its role as a catalyst in solving health problems as well as its knowledge of prevention, community resources, and education, is uniquely able to give impetus to hospitals, nursing homes, health maintenance organizations, clinics, and other health and medical centers—inpatient and outpatient—in implementing appropriate, acceptable, efficient programs.

The Maryland State Department of Health and Mental Hygiene recently decided to promote more effective patient education programing in the health care facilities in the State. As a first step, it was decided that a workshop would serve as a focal point for bringing together representatives from a variety of health facilities who were already interested in patient education but who needed help in further development of plans. The idea was conceived, and the workshop was planned, primarily by the staff of the health education office of the department, with assistance from other units of the department and from the Health Care Facilities Service, Health Services and Mental Health Administration (now under the Health Resources Administration), Department of Health, Education, and Welfare.

Purpose of the Workshop

The goal of the workshop was not principally to give information but to provide consultation in developing and refining specific patient education plans that could be carried out in the participants' facilities. By involving those already concerned with patient education, it was believed that the participants in the workshop could subsequently serve as a nucleus of resource persons who could promote patient education programs in health care facilities throughout the State. The purpose of the workshop was to assist interdisciplinary teams from hospitals and other health organizations to develop patient education programs. The faculty of the workshop was available to help the teams to specify a target group, determine measurable educational program objectives and evaluative criteria, write a program plan for a target group, identify available resources, and utilize appropriate educational methods and materials.

Staff members of various types of institutions were encouraged to attend, but participation was limited to those who already had an interest in patient education, had support from their administrators to carry out a program they would plan, would come as a member of a multidisciplinary team, and would be able to devote 3 days to the workshop. Special groups and some persons were contacted individually, and a news release and brochure describing the workshop were distributed to hospitals, health departments, and nursing homes in the State.

Financial Arrangements

It was decided that a "live-in" workshop arrangement would be best since the workshop was structured around intensive group work sessions and that considerable benefits accruing from the informal contacts and discussions among the participants could occur only if the group maintained almost continuous contact.

The site chosen for the workshop was a religious retreat center which also serves as a conference center, located in a secluded, serene, rural atmosphere. It has ample space for large and small group meetings. The health department paid only $125 for the use of the facility for the entire session, which began Monday afternoon and concluded Thursday afternoon. The cost for room and board was $51 for each participant.

Because the health department lacked sufficient funds to pay for participants to attend, a minigrant was obtained from the Maryland Regional Medical Program. The $1,850 grant enabled 36 participants whose organizations could not pay for their rooms and meals at the center to receive "stipends" to cover these expenses. The Health Care Facilities Service sent several of its health educators and a public information officer, who served as faculty members, paid the expenses of several speakers and group leaders, and published the workshop program and proceedings (*2*). In addition, some group leaders and speakers not only offered their services without charge but their employers also paid their expenses at the center. In short, the workshop was conducted on a shoestring budget.

Preworkshop Questionnaire

In a preworkshop survey, participants were asked to respond to questions about their learning objectives, the patient education problem on which their team would work, and the objectives of their institution's patient education programs. The questionnaire had three purposes: (*a*) to encourage preworkshop planning by the participants from each facility, (*b*) to help the planners decide upon the workshop format and plenary sessions, and (*c*) to provide group leaders, some of whom were from out of State, with information about the people with whom they would be working.

Workshop Participants

Attendance was limited because of the conference center's housing capacity. A total of 72 participants, grouped into 23 teams, attended the workshop. They represented 21 health care facilities (two facilities sent two teams):

4 county health departments;
2 State mental hospitals;
6 general hospitals;
1 State tuberculosis hospital;
1 State chronic disease hospital;
2 community mental health centers;
1 State mental retardation institution;
1 nursing home corporation;
1 family health center;
1 State juvenile training school; and
1 interdisciplinary health education corps

The disciplines of the participants included medicine (psychiatry and orthopedic surgery); hospital and public health nursing; psychology; nutrition and dietetics; social work; rehabilitation, occupational, physical, and speech therapy; volunteer and juvenile service work; counseling; training; health education; and health advocacy. Participants had been encouraged to consider consumers among their team members, so it was gratifying that several teams had members who were involved in advocacy or were representatives of consumer groups.

Special Workshop Materials

Reprints of journal articles and booklets about patient education were given to participants for use at the workshop as well as for subsequent reference. A special workbook was prepared to encourage participants to specify behavioral objectives; to determine the various opportunities for patient education in inpatient and outpatient facilities; to be aware of available resources, both in and outside their facility; and to complete a form outlining their patient education plans. Special reprints were added to the workbook to aid in completing some of the forms. Teams were encouraged to use the entire workbook or only a part of it, according to the group's decision. The workbook proved to be a useful and practical tool.

To evaluate the workshop and to plan more effectively for the future, pre- and postworkshop questionnaires as well as a 6-months' followup survey were administered to the participants. Although it is difficult to measure change after a 3-day workshop, the information has been beneficial to those concerned with followup and will provide baseline data for future planning by the health department.

Workshop Design

Plenary sessions were interspersed with group work sessions during the workshop. The topics at the general sessions included the concept of patient education, program planning, communication for effective treatment, methods and materials, and cost effectiveness. Physicians, nurses, health educators, a pharmacist, a nutritionist, program administrators, and fiscal experts served as speakers.

For the work sessions, several teams were assigned to one group leader who provided general guidance to the group and special assistance to the individual teams as they developed their programs. Educators were chosen as group leaders because of their knowledge of group dynamics and the educational process. During the group work sessions the participants worked on the development of comprehensive patient education plans for their target populations. Information supplied during the plenary sessions helped to facilitate the program planning process.

Patient Education Plans

At the final session, each team presented the patient education programs that the members had designed during the workshop. Faculty and other participants critiqued the plans. Thus the workshop accomplished its major objectives: each interdisciplinary team had indeed prepared a specific patient education plan for one of its target populations.

The following are examples of the objectives as delineated in some of the team plans:

Tuberculosis hospital. "To discharge patients who have adequate knowledge of their health problems and confidence in their own ability to maintain health and prevent readmission." The pilot program would be directed to 15 males with tuberculosis. Specific objectives would include the patients' being able to identify the medications being taken and the reactions, a knowledge of the basis for the medical procedures used to treat tuberculosis, a knowledge of community resources, and favorable family attitude and support.

General hospital. "To maintain a healthy pregnancy both for teenage mothers and their babies." The evaluation of the success of this program would be related to a shortened hospital stay. Educational methods would include not only one-to-one counseling but also group discussions, undoubtedly a new approach for this unit of the hospital.

Local health department. "To reduce the incidence of nutritional anemia in children aged 1–6 attending child health clinic sessions." This clinic serves a number of foreign-born parents with limited communication skills in the English language.

Juvenile training center. "To bring about a better adjustment of the boys when they return to community and family life." This program, directed to boys 14½–16 years old as part of the center's prerelease services, emphasized creating an awareness among the youth concerning community agencies which could provide assistance to them.

Community health center. "To promote better utilization of the health and medical services offered."

Nursing home. "To acquaint each non-senile, mobile new patient and his family with the purpose of his admission, the daily routine, the individual patient's nursing care program, the diet, the availability of service such as social services and physical therapy, and the physical plant."

General hospital. "To increase the patient's responsibility for his own care after orthopedic surgery." This plan, which would be evaluated by a reduction of length of stay of such patients and the alleviation of complications, included the development of printed discharge instructions in addition to individual counseling, group discussion, and audiovisual aids.

Institution for the mentally retarded. "To educate a group of retarded males to become more self-sufficient in the area of personal hygiene as an initial step to earlier return to their home environment." During the meeting the team began to develop some specific teaching aids for the mentally retarded in their facility.

Hospital home care department. "To enable paraplegic and quadriplegic patients to be as independent as possible in their home environment."

Mental hospital. "To help adolescents participate in their own treatment plans as part of the larger goal of helping adolescent patients accept responsibility for their own behavior."

Community mental health center. "To increase the number of self and/or family referrals from a defined portion of the catchment area."

All teams were requested to submit, at the conclusion of the workshop, a written copy of their plans specifying the following items: the name of the facility, team members and their titles, the program goal and objectives, resources to be used, educational methods, an outline of the program's design, and a time table.

The plans revealed that the team members recognized the value of the multidisciplinary approach, that a variety of educational methods and materials would be helpful, that there were staff training needs, and that family members could play an important role in patient education.

For many participants, the workshop provided the first opportunity for persons in different disciplines to work together toward a specific educational program for a target population. The teams often worked from early morning until late at night to complete their tasks.

Followup Plans

From its conception the workshop was visualized as a beginning, not an end. The program plans, as excellent as they were, are of little value unless they are implemented. Therefore, several actions have been taken to maintain the interest that was engendered.

1. The patient education plans developed by the teams are part of the workshop proceedings which have been distributed to all participants for study and for review of the ideas presented by the speakers.

2. A 6-months' followup, 1-day conference has been held for the participants. Approximately 60 workshop participants discussed the progress of their patient education plans and shared ideas about ways to solve problems that have arisen during implementation.

3. Health education staff members of the health department are offering consultation to some teams as they need it during the implementation process.

4. Reports about specific patient plans will be made to appropriate administrators within the health department to encourage support for programs in State institutions in particular.

5. An effort is being made to create an additional position for a health educator who can provide consultation in patient education programing in various health facilities throughout the State.

6. Consideration is being given to sponsoring similar workshops on a regional basis throughout the State to enable more health teams to attend and to planning a short conference for administrators of medical care facilities.

Conclusions

The workshop can be regarded as the beginning of a significant thrust by the Maryland State Department of Health and Mental Hygiene in assuming leadership in the State in the development of effective patient education programs.

Other State and local health departments may also find a multidisciplinary workshop an effective springboard to a comprehensive approach to patient education programing in their areas. Patient education is an essential component of care. Excellence in patient education programing can result in humanitarian and financial benefits for both consumers and providers of health services.

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The Cooperative Health Statistics System

EDWARD B. PERRIN, PhD

THE NATIONAL CENTER for Health Statistics has launched a new program—the Cooperative Health Statistics System—which has great importance for everyone concerned with health planning, management, and evaluation. This System will provide an economical and effective method of establishing and maintaining a data base to guide decision making regarding health care in the United States.

In recent years, there has been a growing concern regarding the issues of the availability and accessibility of health care, the quality of services, and their spiraling costs. For solutions to be broached, there first must be an adequate definition of the current situation. What are the health problems of people, and what are their health service needs? What are the resources available to meet these needs, and how are they used? Who is receiving what kinds of health care, under what circumstances, and at what cost? Although considerable time and effort are being expended nationwide in the area of health statistics, the efforts are fragmented, uncoordinated, and duplicative, and they often produce unreliable results. These separate activities do not lend themselves to incorporation into a unified national system. Except for vital statistics, the current national program depends largely on small probability samples, which yield useful data for the nation as a whole but have little direct value for States and communities.

The Cooperative System, therefore, is designed to establish a coalition among the various levels of government—Federal, State, and local. Basically, it will provide for the collection of any particular data element by the level of government that is best equipped to collect it. The information then will be shared with the other levels. As now envisioned, when the Cooperative System is in full operation it will include the following seven components in health and vital statistics.

Components

Manpower statistics (inventories and surveys), to provide data on the numbers, characteristics, and distribution of health personnel. This information is necessary to assess current health manpower capabilities vis-a-vis health service needs and to project future demands. The inventories will be based on 100 percent coverage and will furnish up-to-date continuing basic data. They also will provide the means for obtaining valid samples of the universe of manpower for a variety of surveys; for example, the attitudes of medical practitioners toward proposed new health programs.

Health facilities statistics (inventories and surveys), to include information on the numbers, types, and location of health facilities, as well as the types of services rendered and characteristics of the recipient population. The efficient use of existing facilities and the rational planning for future facilities demand an adequate data base. Again, the inventories provide not only ongoing basic data on facilities, but comprise a sample frame for surveys in any particular area in which more detailed study is necessary.

Hospital care statistics, to provide data about patients and services in short-stay (under 30 days) hospitals. Information collected through this component is necessary for appropriate planning to improve the accessibility, quality, and cost effectiveness of hospital services.

Household interview statistics, to obtain, from interviews of a sample population, information about a wide variety of health-related questions including data on perceived health problems, acute and chronic diseases, disability due to accidents and illness, utilization of health services, and expenditures for care. From such information measures can be constructed of the health status of the population, the need for health services, and some expression of the accessibility and availability of services.

Ambulatory care statistics, to provide information on care given to noninstitutionalized patients in physicians' offices, group practice settings, public health clinics, hospital emergency rooms and outpatient clinics, and through home visits or telephone consultation. Such data will permit

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more rational planning to improve the delivery and quality of ambulatory care.

Long-term care statistics, to provide information on patients and services in nursing and convalescent homes, mental institutions, and other extended care facilities, as well as alternative forms of care such as home health programs. Such data are valuable for patient care, management, evaluation, and policy development.

Vital statistics, to include data on births, deaths, fetal deaths, marriages, and divorces, as well as followback surveys based on samples of vital records to evaluate the data collected and to obtain additional information not available through the basic vital records. Vital statistics are important indicators of health problems and service needs and provide current data on the size, character, and growth of the base population. Cooperation among local, State, and Federal agencies has been traditional in this area, and the Cooperative System will enhance this existing relationship.

Uniform Data Standards

The preceding components do not cover the entire gamut of possibilities for the Cooperative System, but they do constitute the areas in which initial emphasis is placed. For each component of the Cooperative System there will be developed standardized definitions, comparable methodologies, and a core set of data—the minimum information required at the national level. This establishment of a uniform set of data standards will be a joint undertaking of both the producers and consumers of data at the national, State, and local levels to insure that the information generated is that which actually is needed. States and localities will need more information and greater detail than that specified in the national core set of data. These needs can be met by using the same collection mechanism with additional data items built onto the core and by conducting periodic and ad hoc surveys. Eventually a network of State statistical operations will be created from either previously existing or newly established agencies, each coordinating its efforts with local areas to meet community requirements, obtaining the basic data it needs about health status and problems within its own jurisdiction, and providing the Federal Government with a minimum set of uniform data in machine-readable form.

Growth and Implementation

The growth of the Cooperative System has been planned in two overlapping stages—a research and development phase and an operational phase. The research and development phase was instituted in late 1971 under the auspices of the National Center for Health Services Research and Development, in close collaboration with the National Center for Health Statistics (NCHS). The purpose of this phase is to examine alternatives for the content, structure, and methods of the Cooperative System in order to identify those most amenable to the design of an effective system for obtaining and using health statistics. Since 1971, 13 grants have been awarded for projects, expected to extend over 2 or 3 years, to investigate a wide variety of situations and activities.

Each of the seven components is being addressed through these projects, and all of the activities are pursuing research issues which must be resolved. However, some important questions relating to methodology, analysis, and utilization of the component data are not yet being examined adequately. As a result, a more directed research program is being planned, which will use the contract rather than the grant mechanism. Also, the responsibility for research and development has been transferred to the National Center for Health Statistics, combining the authority for research and development and implementation in one organization and facilitating integration of the two phases.

Initially, the operational phase will be concentrated in vital statistics, manpower, and facilities and in assisting States to develop the capacity to implement these and other components. Vital statistics is an area in which there has been a great deal of research and development over the years; there are well-accepted national standards on data content, definitions, and methodology, and longstanding cooperation among the three levels of government.

The Cooperative System will add to the existing situation the elements of standardization, one-time-only processing, and increased Federal support. States which are now or soon may be ready to meet the standards are being invited to indicate to NCHS their interest in entering into implementation contracts. In mid-1973, the first operational contracts for the vital statistics component were negotiated with four States. Since five States already were providing vital event data under experimental contracts, there now are nine States processing their vital statistics and providing them to the Federal Government in machine-readable form and according to national standards relating to timeliness, item content, definitions, and quality.

Similar data procurement contracts will be negotiated with States in the areas of health manpower and health facilities, since past experience and current research and development efforts have paved the way for early establishment of minimum basic data sets for these components. It is hoped that vital statistics and manpower and facilities components can be implemented in most States within 3 to 5 years. When operational, they can provide the frames from which to draw appropriate samples for use in surveys.

So far this discussion has been concerned with the roles of the Federal and State participants. Where do the local areas fit in? It is expected that often the local health jurisdictions will be collecting basic data for many components of the Cooperative System. In areas where the size of the population permits, data can be collected in detail at the local level and individual data items furnished the other partners of the Cooperative System. It is not anticipated that extensive contracting will be undertaken directly with local agencies for implementation. However, joint State-local cooperation is encouraged in data acquisition and application as one method of eliminating duplication in the collection and processing of information. As less well-defined components emerge in prototype from the research and development efforts, emphasis may be placed on the involvement of local areas as data-gathering agents for the State. In addition, input concerning the utility of data must emerge from the local levels to insure that the Cooperative System is responsive to needs at that level for program management, planning, and evaluation of health care delivery programs.

Successful implementation of the Cooperative Health Statistics System demands priority attention at the Federal level. As indicated by the following items, the National Center for Health Statistics will provide guidance to State and local agencies in the development of the system, will establish a technical assistance and training program, and will pay an appropriate share of the costs.

- Planning and development contracts will be negotiated with a number of States to aid them in organizing for increased health statistics capabilities and in developing the operations necessary for statistical component implementation contracts.
- For a State to be effective in the operational phase of the Cooperative System, it will be necessary to identify trained people who have a clear concept of the System and who are aware of the State and Federal capacities and needs. The contract protocol for each of the components recognizes the necessity for the State to have available trained staff to perform the statistical procedures required to provide data in a form to meet the needs of all the partners in the System. During implementation, a minimal level of staff for this purpose may be supported. It is expected that this support will be on a continuing basis and will serve as an effective way of bringing more components into the State program.
- Support also will be given for specialized training of current staff for functions related to the new Cooperative System. In addition, a training program will be developed to assist in training or retraining health statisticians and other data handlers to improve data analysis capabilities of States. This program probably will be multifaceted, including on-the-job training, university-based educational programs, and shorter courses offered through the NCHS Applied Statistics Training Institute.
- The program of technical assistance in health statistics now provided by NCHS to State and local agencies will be expanded to give necessary support to the Cooperative System activities throughout the country. Technical assistance, though, must be viewed as a two-way street, since NCHS will derive considerable information from the actual developments and experiences in the State and local operations.
- A program of continuing communication will be instituted to provide information sharing among all participants.
- A data use and analysis laboratory will be established within the National Center for Health Statistics. Among its functions will be (*a*) developing, testing, and demonstrating the application of special tabulations and analyses of data generated by the Cooperative System's several components for community use and (*b*) performing special research and development in the problem-oriented analysis of a variety of data useful for local planning purposes.
- Finally, the Federal Government will pay its share of the costs to States and localities for developing and producing statistics.

Methodology of Capitation Payment to Group Dental Practice and Effects of Such Payment on Care

MAX H. SCHOEN, DDS, DrPH

THE CONCEPT OF HMOs (Health Maintenance Organizations) is widely espoused today. Several bills on these organizations have been introduced in the U.S. Congress, and the Department of Health, Education, and Welfare has given support to the idea. [See front inside cover—Ed.] Some States, such as California, have been encouraging prepaid health plans as provider mechanisms for Medicaid programs. In California, the staff of the Department of Health Care Services has insisted that prepaid health plans include dental care.

Although the idea of the health maintenance organization is broader than just group practice, that is its major thrust—group practice based on regular periodic payments by each eligible person. Such types of practice, however, are relatively uncommon in dentistry, and a considerable mystique and misinformation surrounds the concept and its methodology. This paper provides a relatively detailed approach to the application of capitation payment to dental group practice.

If fee-for-service considerations with all of their complexities and inequities are ignored, the specific procedure that a dentist performs matters little in terms of economics and resources as long as he and his staff are available to provide service. Most dentistry can be, and is, performed by general dental practitioners. The single major exception is orthodontics. Other specialty services can be referred out, if necessary, without affecting cost-benefit and organizational approaches significantly. A dentist, then, can be considered as just that—a dentist. Since in most States the only other person permitted to perform dental services directly on a patient is a hygienist, this field will also be considered.

Chair Time and Its Cost

The first factor in designing a capitation program is the amount of the dentists' and hygienists' time required to treat the presenting needs of

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each eligible person per year. The term "presenting" is used to designate those needs that can be met. Obviously, if an eligible person refuses to accept care, no time is required to provide service regardless of the existence of a need.

Included also in the determination of this time factor is the level of care that will be provided. A program that includes endodontics, periodontics, and crown and bridge work will require more time than one that limits such services and instead provides extractions and removable prosthetic replacements, as is the case in some Medicaid programs.

The second factor to consider is the cost of the dentists' and hygenists' time, which in turn also indirectly influences the amount of time needed. A dentist's hour is not static. The amount of care that can be provided in an hour is governed by the efficiency of the individual dentist, the type and quantity of the auxiliaries who help him, and the facilities that he uses. The number and type of personnel, as well as other resources, affect the cost of the hour. Included in this cost is the dentist's income, since he is a producer and not a coupon clipper. Only one major item of cost is not distributed relatively evenly, and that is laboratory expenses. Whether the laboratory the dentist uses is part of the practice or a separate entity, its cost is associated with specific items of service. Therefore, in this paper, it is considered separately.

In simplified form, the equation for an annual capitation rate for dental care exclusive of laboratory cost is:

$$R = T_D \times C_D + T_H \times C_H,$$

where:

R = Annual cost per patient
T_D = Annual chair time of dentist
C_D = Cost per dentist hour
T_H = Annual time of hygienist
C_H = Cost per hygienist hour.

Other Cost Factors

Initial versus maintenance care. This formula is inadequate for developing a capitation rate since other factors influence cost and must be included. The difference between initial care and maintenance care is significant. Since most populations have a large backlog of unmet needs, initial care takes more time than maintenance care. Therefore, the time for each has to be considered separately.

Stability of population. The stability of the population also affects time requirements. As an extreme example, if the eligibles in a program change every year, as is the case with Head Start, there never is an annual maintenance care rate for subsequent years. On the other hand, a program for certain industries would have few changes in eligibility, and most persons could be on "maintenance" after the first year.

Utilization. Utilization affects both time and cost. Since under the capitation system, payment is on the basis of eligibility, the percentage of the population receiving service is a critical factor. If use is high and the group is stable, initial costs will be high, but maintenance care, which costs less, will predominate in subsequent years. If use is low, the costs for the initial year will be low, but a maintenance care level is never reached, and in subsequent years costs may not decrease.

Family size. Since capitation payments are usually made on a per family rather than per person basis, family size must be included in the formula. Experience has shown that family size may vary considerably. In programs with which I have dealt, the average family size has ranged from around two to six persons.

Age of eligible persons. The age of the eligible persons is a known factor. Empirically, I have noted a sharp distinction between adults and children in dental need, although not much difference between the various age groups within the adult and child categories. Therefore, while age subdivisions can be included in the formula, in this paper only the adult-child difference is considered.

Fluoridation and socioeconomics variables. Other factors that may affect time and cost are fluoridation and general socioeconomic variables. Once more, these are not included in this paper. In practice, I have discovered that socioeconomic status does not affect dental time much. The specific treatment needs may be radically different, but not the treatment time. For example, a group of laborers may have had very limited dental restoration and therefore have many missing teeth and badly neglected mouths. They may require many extractions and removable prosthetic appliances. A group of professionals of the same age distribution would have had much more dental experience, and consequently, more teeth at risk. Those teeth at risk, however, would be more likely to be salvageable. The professionals would require more restorative dentistry and fixed replacements. Since the time required for both groups may be identical, costs would be the same, inasmuch as laboratory cost has been eliminated as a factor in my estimates. The different populations might have different rates of turnover and utilization, but these factors are included as separate variables.

For a profession accustomed to thinking in terms of fee for service, the concept of time as used in this paper is usually hard to grasp. Members of the profession believe that a different spectrum of services for different population groups (for example, laborers versus professionals) should be economically significant. Nevertheless, although the difference may be significant from the standpoint of the level of oral health that can be achieved (for example, artificial dentition for laborers versus natural dentition for professionals), the difference is not necessarily of significance in program costs.

Basis for Capitation Rate

A more complex and more realistic formula can now be postulated:

$$\begin{aligned} R_1 &= U\,[(T_{AD} \times C_D + T_H \times C_H) + \\ &\quad S(T_{AD} \times C_D + T_H \times C_H) + \\ &\quad D(T_{DD} \times C_D + T_H \times C_H)] \\ R_2 &= F \times U \times M\,(T_M \times C_D + T_H \times C_H) + \\ &\quad I\,(R_1) \\ R_n &= \text{Same as } R_2 \end{aligned}$$

where:

R_1 = Rate (cost) per family for initial year
R_2 = Rate per family for a second year
R_n = Rate per family for any subsequent year
T_{AD} = Number of dentists' hours required per adult for initial year
C_D = Cost per dentist hour
T_H = Number of hygienists' hours per person per year
C_H = Cost per hygienist hour
S = Average rate for spouse per employee or subscriber
D = Average number of dependent children per employee or subscriber
T_{DD} = Number of dentists' hours per child for initial year
T_M = Number of dentists' hours per person for subsequent year
M = Percent of all persons covered for subsequent year
I = Percent of all persons covered for first time in year
U = Average annual utilization rate
F = Average family size.

The formula is based on the following assumptions:

1. Dentists and hygienists are the only team members who use general chair time.
2. The hygienists' time is the same for adults and children in both the initial year and in maintenance years.
3. The dentists' time is the same for adults and children in maintenance years.
4. All population groups require the same number of chair hours except for the effect of family composition.
5. Laboratory expenses are excluded as a factor in program cost. Since they must be paid, it is assumed that the patient pays the cost individually.

If the general concept is accepted, the variables and the assumptions can be changed, eliminated, or added as needed. At best they are oversimplified and would have to be changed with experience. For example, if auxiliary duties are expanded, time and cost factors for other chairside operators may be included as separate variables. If socioeconomic status affects time requirements, this factor can be added. If laboratory cost is included as part of capitation, it too can be added as another term.

Plan 1—All Initially Eligible

The use of the formula can be illustrated by a theoretical example. For simplicity, the following quantities are assumed (not necessarily true to life, although designed to be reasonably accurate):

$T_{AD} = 3$
$C_D = \$50$
$T_H = 1$
$C_H = \$15$
$S = 0.8$
$D = 1.2$

$T_{DD} = 2$
$T_M = 1$
$M = 80$ percent
$I = 20$ percent
$U = 70$ percent
$F = 3.$

Based on these assumptions,

$$\begin{aligned} R_1 &= 0.7\,[(3 \times 50 + 1 \times 15) + \\ &\quad 0.8\,(3 \times 50 + 1 \times 15) + \\ &\quad 1.2\,(2 \times 50 + 1 \times 15)] = \$304.50 \\ R_2 &= 3 \times 0.7 \times 0.8\,(1 \times 50 + 1 \times 15) + \end{aligned}$$

0.2 (304.50) = 170.10

R_3 = 170.10

3-year total = $644.70

1-year average = 214.90

1-month average = 17.91

The formula may be clearer if expressed in tabular form. A group of 100 families is assumed. Using the same values as before, we would have 100 subscribers, 80 spouses, and 120 children. Table 1 shows the number of dentists' and hygienists' hours required in each of the first 3 program years. For example, at 70 percent use, 70 subscribers would require 210 dentists' hours and 70 hygienists' hours.

The cost of the dentists' time, at $50 per hour, would be as follows for the total families for the 3 years:

Year	*Hours*	*Cost*
First	546	$27,300
Second	277	13,850
Third	277	13,850
Total	1,100	$55,000

The cost of the 210 hygienists' hours required annually would be $3,150, or $9,450 for 630 hours during the 3-year period. The combined costs of the dentists' and hygienists' time would thus be $64,450 for the 3 years—$644.50 per family, or $17.90 per family per month. (The monthly cost differs slightly from that obtained with direct use of the formula because of the rounding of numbers.)

Surcharges and Phasing In

A monthly rate of almost $18, however, may be beyond the reach of the particular population. If the standards of dental care are maintained at the same level, two approaches to this problem can be used: (*a*) surcharges or co-payments to be paid by the patients can be introduced for services in addition to laboratory charges; (*b*) each family can be phased into treatment over a period of time.

Payments by patients have a double effect. First, any out-of-pocket amounts they pay reduce the monthly capitation rate by changing the source of funds. In addition, personal payment by patients reduces utilization of services. I am assuming that the reduction in use is not constant as the surcharges rise. For example, a $1 surcharge per filling for a blue-collar population may have little effect on use, but a $5 charge might. In addition, the same surcharge may affect different socioeconomic groups differently. Surcharges need not be related to a percentage of the average fee.

Table 1. Number of users of dental service in eligible categories and hours required to provide it in initial membership year and subsequent years, plan 1

Membership year and eligibility categories[1]	Users	Dentists' hours	Hygienists' hours
1st Year			
Total eligible (300)	**210**	**546**	**210**
Subscribers (100)	70	210	70
Spouses (80)	56	168	56
Children (120)	84	168	84
Subsequent years			
Total patients (300)	**210**	**277**	**210**
Subscribers (100)	70	98	70
Spouses (80)	56	78	56
Children (120)	84	101	84
New patients only (60)	**42**	**109**	**42**
Subscribers (20)	14	42	14
Spouses (16)	11	33	11
Children (24)	17	34	17
Maintenance patients only (240)	**168**	**168**	**168**
Subscribers (80)	56	56	56
Spouses (64)	45	45	45
Children (96)	67	67	67

[1] The numbers in parentheses are persons eligible in each category.

No surcharge might be imposed for examinations and preventive services, while fairly steep charges could be imposed on extractions.

To return to the example, a 25 percent across-the-board surcharge (based on an average fee schedule) may result in about a 50 percent monthly capitation saving, so that the rate would be reduced to about $9.

Plan 2—Phasing In

For some populations a plan can be designed based on variable eligibility. As an example, only the subscriber is eligible for treatment the first year, the spouse the second, and the children the third. This phasing-in procedure, a variation of incremental care, reduces the average monthly cost by spreading the higher rate for the initial year over a longer period and by decreasing the number of separate persons who are eligible during the first 2 years of a family membership. A further reduction in numbers is achieved because the turnover of families results in fewer persons meeting the eligibility requirements. To avoid overcomplicating the following example, it is assumed that all families achieving spouse eligibility also achieve eligibility for dependent children.

Subscriber

$$R_1 = 0.7\ (3 \times 50 + 1 \times 15) \qquad = \$115.50$$

Subscriber

$$R_2 = 0.7 \times 0.8\ (1 \times 50 + 1 \times 15) + 0.2\ (115.50) +$$

Spouse

$$0.7 \times 0.8 \times 0.8\ (3 \times 50 + 1 \times 15) \qquad = 133.42$$

Subscriber

$$R_3 = 59.50 +$$

Spouse

$$0.7 \times 0.8 \times 0.8 \times 0.8\ (1 \times 50 + 1 \times 15) + 0.2\ (73.92) +$$

Children

$$0.7 \times 0.8 \times 1.2\ (2 \times 50 + 1 \times 15) \qquad = 174.86$$

3-year total = $423.78
1-year average = 141.26
1-month average = 11.77

In this case the phasing-in process reduces the original capitation cost to slightly under $12. If $9 is all that is available, a surcharge of about 15 percent might accomplish the almost 25 percent further reduction required.

The hours required to implement such a phasing-in procedure over a 3-year period are shown

Table 2. Number of users of dental service in eligible categories and hours required to provide it, by membership year, plan 2

Membership year and eligibility categories[1]	Users	Dentists' hours	Hygienists' hours
1st year			
Subscribers only (100)	70	210	70
2d year			
New patients (84)	**59**	**177**	**59**
Subscribers (20)	14	42	14
Spouses (64)	45	135	45
Maintenance patients—subscribers only (80)	**56**	**56**	**56**
Total (164)	115	233	115
Subscribers (100)	70	98	70
Spouses (64)	45	135	45
3d year			
New patients (129)	**90**	**203**	**90**
Subscribers (20)	14	42	14
Spouses (13)	9	27	9
Children (96)	67	134	67
Maintenance patients (131)	**92**	**92**	**92**
Subscribers (80)	56	56	56
Spouses (51)	36	36	36
Total (260)	182	295	182
Subscribers (100)	70	98	70
Spouses (64)	45	63	45
Children (96)	67	134	67

[1] The numbers in parentheses are persons eligible in each category.

in table 2, plan 2. As in the use of the tabular format for plan 1, we assume 100 families are eligible. Because of phasing in, no spouse can be a maintenance patient in the second membership year, and in the third year no child can be a maintenance patient. The cost of the dentists' time would be as follows during the first 3 years of membership under plan 2.

Year	*Hours*	*Cost*
First	210	$10,500
Second	233	11,650
Third	295	14,750
Total	738	$36,900

The cost of the hygienists' time would be as follows:

Year	*Hours*	*Cost*
First	70	$1,050
Second	115	1,725
Third	182	2,730
Total	367	$5,505

The total cost of time of dentists and hygienists for the 3-year period would be $42,405, or $424.05 per family and $11.78 per family per month.

Establishment of Treatment Priorities

The potential for success of the capitation group practice approach, both as to oral health and financial solvency, lies in the ability to control the treatment rendered to a given population. While most people may not particularly relish going to the dentist and may be fatalistic about losing their teeth and ending up with dentures, a high percentage of any given population can be stimulated to use dental services if appropriate means are used.

These means may include removal of financial barriers, educational efforts, group pressures, provision of transportation and baby-sitting, convenient dental facilities, and a host of other organizational techniques designed to make going to the dentist easier than not going. These possibilities are not idle speculations. Years ago the Public Health Service was able to reach about 85 percent of the school children in Richmond, Ind., and Woonsocket, R.I., by locating their dental treatment facilities in the schools (*1,2*). More recently Pelton treated more than 70 percent of the eligible students at the University of Alabama who chose a group practice as their source of care (*3*). I have previously reported on several dental programs for different populations, including one for a poverty group, in which annual utilization ranged from about 70 to 90 percent (*4, 5*).

These few examples illustrate that a system based on some form of group practice and which has a clearly identified population can treat most of that population. Since resources are almost always not adequate to perform all needed services in a short time, a rational system of priorities can be applied to treatment. An example of such a system, which Jay W. Friedman (currently clinical professor at the University of Southern California School of Dentistry and dental consultant to several prepaid dental plans) and I formulated, is presented (see box); it would have to be modified for different purposes and as concepts of "urgency" of treatment changed.

Under such a system, patients' conditions are classified on the basis of data obtained from thorough clinical examinations, including X-rays and other diagnostic procedures. Neither health education nor control procedures are included in any of the four classes of priorities because all can be carried out independently of active treatment. Under the system patients can be treated on the basis of urgency of need; some needs can be left untreated until future dates. Completion may be at various levels. A person's work may be completed through priority 2 while priority 3 work is postponed for several years. Some treatment may never be performed. The nature of dental disease and its sequellae are such that management of care in this manner need not result in harm since with few exceptions dental conditions are chronic and change slowly over time. A treatment program can take advantage of this fact if it is sufficiently well organized to control the behavior of the provider. Such control can be easily instituted in capitation group practice.

In a typical open-panel fee-for-service program every dentist performs a service as fast as he can on each patient who presents himself. He does not know the total eligible population, only those who arrange to see him. He follows each patient's work through to completion, from urgent treatment to nonurgent. Once the dentist's appointment book is full, care of new patients is postponed or they are refused service, even though their needs may be more urgent than those of people treated in the office at the time. The result is the lopsided treatment schedule shown in the fee-for-service portion of the chart, which illustrates in oversimplified form the effects of two approaches to dental care.

In a system of capitation group practice, however, in which treatment standards and even costs are the same, resources can be apportioned by priority so that treatment for almost all persons proceeds from the urgent to less urgent. In the chart the amount of care is the same, but its distribution is different. More eligible persons are seen, and secondary prevention is enhanced by reducing untreated urgent needs to a minimum.

This high-utilization priority approach, when combined with flexibility in the spacing of appointments, enables the group practice to work within time and cost projections unless a major error in their estimation has been made. Moreover, it permits the large commitment of chair time for the first year of a patient's treatment to be spread into subsequent years so that the allocation of resources, while not level, does not have the sharp initial peak.

Another aspect of the high-utilization priority approach is that an entire family (if eligible) can be examined at once. With proper control of appointments, long waits can be avoided. The dentist can examine everyone in a family and establish a preliminary treatment plan. This examination is not a screening, since X-rays, charts, and histories are used. Patients with more complex cases are given second appointments that include time for treatment as well as for continued evaluation.

Once everyone in a family has been examined, the program for the entire family is presented to the parents in one discussion. I have found that not only is total examination time thereby reduced but the family invariably accepts the priority concept since some family member is always under treatment and obvious conditions are not neglected. A sensible approach makes sense to dental care recipients if it is presented properly.

Of course, as previously stated, this system can work only if no major error of underestimation has been made. If time and cost estimates are much too low, members of a group practice who wish to avoid losses will have to proceed so slowly with treatment that nonurgent needs will become urgent. This occurrence would defeat the purposes of the entire concept.

Classification of dental needs by degree of urgency

Class 1: Very urgent—functional and social disability conditions requiring rapid attention

pain and acute infections
suspected neoplasms
dental caries into or near the pulp
teeth obviously requiring extraction
disfiguring conditions, such as missing or badly decayed anterior teeth

Class 2: Moderately urgent—conditions requiring care within 6 months

chronic or subacute periodontal conditions and heavy calcareous deposits
extensive penetration of caries into dentin
sufficient missing posterior teeth to require replacement (less than eight opposing posterior teeth)
space maintenance for children
replacement of ill-fitting removable appliances

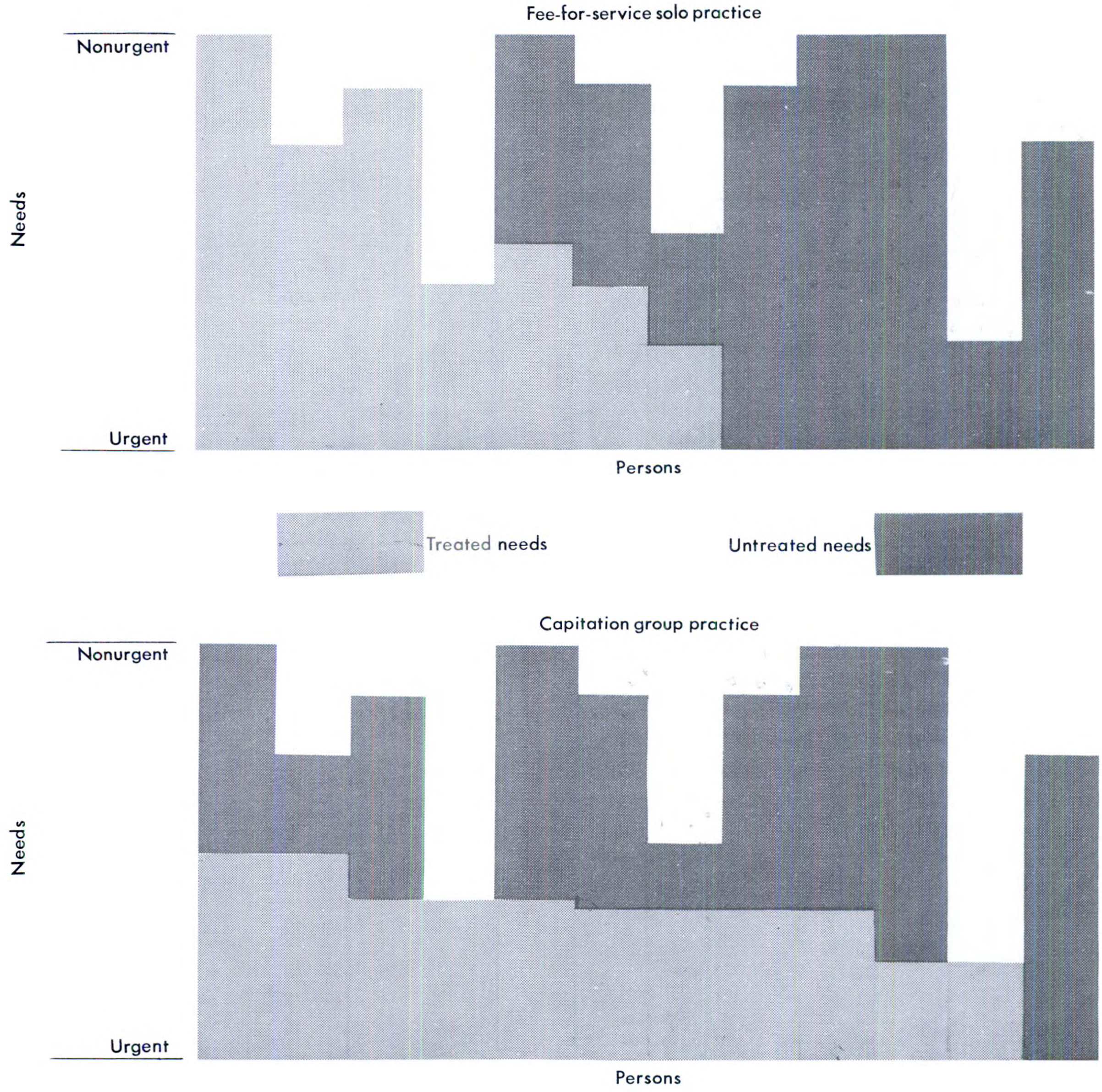
Class 3: Nonurgent—conditions requiring care that is postponable for a time

peridontal surgery
incipient caries
elective third-molar extraction
replacement of missing teeth when fewer than the requirements of class 1 and class 2 conditions
certain inlays or crowns on teeth previously restored with large amalgams, silicates, or stainless steel crowns

Class 4: Maintenance—no presenting requirements except routine care

no apparent pathological condition
patients scheduled for routine prophylaxis

Treatment of urgent and nonurgent needs of a given population in fee-for-service solo practice and in capitation group practice



Orthodontics and the Time Concept

The same concept of time that has been applied to other dental needs can be applied to an orthodontic benefit. Surprisingly, the monthly costs are minimal since this service generally has to be provided only once in a lifetime to a portion of the population. The expensive single case is distributed over both time and persons.

For simplicity let us assume that the child population in our example is evenly distributed over all age groups from birth to the 19th birthday and that there is no turnover of the eligible persons. A general formula for annual orthodontic cost would be:

$$R_{OR} = \frac{D}{19} \times N \times U \times T_{OR} \times C_{OR},$$

where:

R_{OR} = Annual cost per family for orthodontic treatment

D = Number of dependent children per family

N = Percent of children needing orthodontic treatment

U = Utilization rate

T_{OR} = Orthodontists' chair time required to complete an average case

C_{OR} = Cost per orthodontist chair-hour.

Further assumptions are that all orthodontic cases will be completed in 1 year. The end results would be the same if 2 years were used, since the hours per year would decrease, but the number of cases would increase. For example, if an orthodontist can start 100 cases per year and takes 2 years to complete them, he has 200 persons under treatment at all times after the first year.

An example of the use of this formula follows.

Assume:

$D = 1.2$

$N = 50$ percent

$U = 50$ percent

$T_{OR} = 15$ hours

$C_{OR} = \$70$;

then:

$$R_{OR} = \frac{1.2}{19} \times 0.5 \times 0.50 \times 15 \times 70 = \$16.58$$

(or $1.38 per month).

If a surcharge or co-payment were included, the capitation cost would drop accordingly. As with general dentistry, a system of priorities and the pacing of appointments would assure a relatively even flow of patients, and these procedures would help conserve resources and assure treatment of major conditions first. (The term "major" includes those for which postponement of service would result in more extreme need.) For other than major conditions, postponement has little effect on treatment need. Since somewhat less than 15 minutes of dentists' time would be needed per family per year, 6,000 families would provide enough patients for one orthodontist working 1,500 chair hours per year.

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Since dentistry deals primarily with chronic disease, the dental treatment of a target population covered by a third-party payment program can be paced so as to maximize the use of resources and minimize the deleterious effects of oral ill health. Capitation group practice lends itself to such control.

First, however, a capitation rate for the population has to be established, based on its need for dental resources and the cost of supplying them. Factors requiring consideration are the amount of dentists' and hygienists' time required, which is affected by the need for initial care, as opposed to maintenance care, stability of the population, utilization of services, family size, age of eligible persons, fluoridation, and socioeconomic variables. Provider time and cost are also affected by the type, quantity, and use of facilities and of auxiliary personnel.

A method has been devised that takes account of these various cost factors and provides a realistic basis for arriving at a capitation rate per person or family for a given population. This method is appropriate for populations with differing dental requirements and financial capabilities since the pertinent formulas and priorities include numerous variations. For example, to lower the capitation rate, members of families may be phased into treatment. Also, surcharges or co-payments can be placed on patients for all services or only for specific ones. If this method is used to provide care under a rational system of priorities, capitation group practice of dentistry can achieve results not obtainable under the fee-for-service solo practice system. In prepaid group practice there are incentives for using expanded duty auxiliaries, containing costs, and improving the level of dental health of the eligible population through both treatment and prevention.

Disease Patterns and the Team Approach in the Practice of Family Medicine

JACOB CHEN-YA HUANG, MD, MPH, and EUGENE FANTA, MD

IN CLEAR CONTRAST to the episodic crisis care rendered by the generalist of bygone years stands the new concept of care and concern by the family physician whose services have been characterized as continuous and comprehensive. Both kinds of physicians use the multidisciplinary approach, but an all-important difference in attitudes has been clearly recognized and defined (*1, 2*). The authors are committed to the concept of the family physician, put great emphasis on this difference in attitudes, and make every effort in the training of young physicians to formalize the holistic approach to the care of their patients (*3*).

We stress the inevitable links among a person's health, emotional well-being, the physical

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and emotional health of his family, his social and economic status, his cultural background, and his place in the community—in other words, his health with his total life situation.

We endeavor to include as many members of a patient's family as possible in the family practice program at Lutheran Medical Center. We believe strongly in the importance of visits to the patient's home; these are invaluable in understanding his lifestyle.

Lutheran Medical Center has a residency program in family practice which has been approved by the Council on Medical Education of the American Medical Association. The hospital is located in Sunset Park, an area of low-income families in Brooklyn. The majority of the patients are of Spanish descent, but intermixed are some families with Negro, German, or Irish heritages. We operate within the walls of a neighborhood health center, three blocks from the base hospital. We consciously use the team approach in rendering total care to patients.

As an illustration of our approach, we will relate the medical and social history of one family for whom a resident at the center acted as primary physician during his training period. We will describe the specific illnesses, the pattern of diseases in the family, and the team's attempt to help solve their many problems.

Family Case Report

The five members of this black family are the father, 45 years; mother, 44 years; son, 12 years; daughter A, 16 years; and daughter B, 7 years. They came from Puerto Rico to New York City 5 months before the father's first visit to the medical center's department of family practice. Their income consisted of welfare assistance of $168 every 2 weeks. Their four-room apartment was clean but rather poorly furnished, and the rent was $100 per month. No one in the family had been educated beyond the elementary school level. Their knowledge of the English language was scanty.

Our first contact was an office visit of the father, who consulted us because of his frequent convulsive seizures. In his history he stated that his son suffered from similar attacks, and the son had never received medication. We recommended that all members of the family come for physical examinations.

To insure that they would come, our public health nurse visited the family and discussed the importance of a complete medical investigation; she also helped to arrange the appointments. Subsequently, Huang made a home visit in the company of a Spanish-speaking family health aide. We wanted to demonstrate the concern of the family physician, gain the family's confidence, and obtain some knowledge of their environment, housing, lifestyle, and socioeconomic situation—information which we consider essential for the total understanding and evaluation of our patients.

Abstracts of Case Histories

In addition to the following individual case histories, the results of laboratory studies, which were part of the examination of each member of the family, are given in the table.

Father. The father reported that he had had convulsive seizures for the past 16 years He had previously been hospitalized for status epilepticus and had subsequently received crisis care in the emergency room of our hospital for repeated attacks, up to 16 per day. He had a history of excessive alcohol intake intermittently, of frequent headaches, and of occasional severe cramps in his lower legs. He had had no other significant medical or surgical experiences, including head injuries or accidents. It was elicited from him that he took his previously prescribed medicine irregularly and that he continued to imbibe alcohol.

Findings from a physical examination, including a complete neurological survey, were within normal limits. Blood pressure was 128/80 mm Hg. A skull X-ray, an electrocardiogram, and an electroencephalogram showed no abnormalities. Results of the blood chemistry analyses, performed on an automated screening machine (SMA 12/60) were normal.

A regimen of sodium diphenylhydantoin and phenobarbital was prescribed for the father.

Mother. The mother complained chiefly of repeated headaches, attacks of dizziness, and frequent lumbago. She said she had never been hospitalized and had, in fact, never before received medical care. Her family's health history did not add any information of medical signifi-

Examination findings and the family's disease patterns

Conditions and tests	Father 45 years	Mother 44 years	Son 12 years	Daughter A 16 years	Daughter B 7 years
Epilepsy	Yes	No	Yes	No	No
Nutritional findings	Normal	Anemia	Normal	Normal	Anemia, underweight, poorly nourished
Pain	Head, legs	Head, back	Head	Abdomen, joints	Abdomen
Tests:					
Sickledex	Negative	Positive	Positive	Positive	Positive
Hemoglobin by electrophoresis	A	A, S	A, S	A, S	A, S
Stool, for parasites	Negative	*Trichuris trichiura*	*Trichuris trichiura*	*Trichuris trichiura, Enterobius vermicularis*	*Trichuris trichiura, Ascaris lumbricoides*
Urinalysis	Negative	Bacteriuria, 20–30 white blood cells per HPF[1]	3–5 white blood cells per HPF[1]	Bacteriuria, numerous pus cells	Negative
Hematocrit reading (percent)	40	36	39	39	34
Eosinophils (percent)	9	3	17	15	19
Other laboratory findings	None	Anisocytosis, poikilocytosis	None	None	Reticulocytes 3 percent
Blood pressure (mm. Hg.)	125/80	100/85	110/80	105/76	112/78
Diagnosis	Epilepsy	Anemia, conjunctivitis, urinary tract infection, sickle cell trait, parasitosis	Epilepsy, urinary tract infection, sickle cell trait, parasitosis	Urinary tract infection, sickle cell trait, parasitosis	Underweight, anemia, parasitosis, sickle cell trait

[1] High power field.

cance. She displayed great anxiety about her husband's attacks and about the family's financial situation.

The physical examination revealed that she was pale and poorly nourished. Her spleen was palpable one finger below the costal margin. She had no symptoms of scleral jaundice. Blood pressure was 100/85 mm Hg. The neurological examination proved the vertigo to be of nonvestibular origin; emotional rather than organic causes were presumed etiological factors.

Laboratory studies (see table) disclosed the following: a positive Sickledex test; hemoglobin A and S, by hemoglobin electrophoresis; bacteriuria; and infestation with *Trichuris trichiura.* An electrocardiogram, audiometry tests, a chest X-ray, blood chemistry analyses (SMA 12/60), and a thyroid survey showed no abnormalities.

The therapeutic regimen prescribed for the mother included Mintezole, Feosol, Gantanol, and Antivert.

Son. The boy had had numerous seizures in the past 3 years. He had occasional headaches but had no other complaints. He had had no surgery or medical treatment in the past. His birth had been normal as well as his development during childhood.

His immunizations were completed before his first visit to us. The physical examination elicited no abnormal findings. He was a normally developed alert, cooperative child, with a weight of 72 pounds and a height of 55 inches.

Of significance in the laboratory studies were a hematocrit reading of 39 percent, eosinophils 17 percent, a positive Sickledex test, hemoglobin electrophoresis showing hemoglobin A and S, and urine sediment of 3–5 white blood cells per high power field. The stool examination was positive for *T. trichiura*. The boy's electroencephalogram showed no abnormalities.

Because of his history of seizures, we requested our public health nurse to inquire into the child's activities in school. During her conferences with the teacher and other school personnel, she was informed of the boy's withdrawn and somewhat asocial behavior and of his learning difficulties.

Antihelminthic and anticonvulsive drugs were prescribed for the son.

Daughter A. This 16-year-old complained of loss of appetite, being easily fatigued, and having occasional joint and abdominal pains as well as dysmenorrhea. She had had measles and chickenpox in her childhood, and experienced menarche at 12 years. She thought herself to be in perfect health although she had noticed numerous pinworms in stools several months before we examined her. She was a rather thin adolescent with a weight of 91 pounds and a height of 59 inches. There were no other remarkable physical findings.

Laboratory studies (see table) disclosed hemoglobin A and S, bacteriuria, innumerable pus cells in urine sediment, and infestation with pinworms and *T. trichiura*. A chest X-ray and an electrocardiogram showed no abnormalities, and the results of blood chemistry analyses (SMA 12/60) were within normal limits.

Mintezole and Antepar were prescribed for daughter A.

Daughter B. This 7-year-old also had loss of appetite, was easily fatigued, and had occasional abdominal pains. She had not gained weight in 6 months, and she reported she had passed 10 roundworms in 1 month. Her immunization schedule had been completed in Puerto Rico. She was an alert, but thin, underdeveloped child with a weight of 34 pounds and a height of 40 inches. Pallor was noted in the physical examination. Her birth weight was 6 pounds, 7 ounces. Laboratory studies disclosed hemoglobin A and S and infestation with *T. trichiura* (see table).

A high-calorie, high-protein diet and iron and vitamin supplements were prescribed for daughter B as well as Mintezole and piperazine.

Family Disease Patterns

In the table, one can clearly discern certain patterns in the medical picture of the family. Father and son suffer from convulsive seizures. Mother and all children are carriers of the sickle cell trait, combining hemoglobins A and S. Mother and all children suffer from parasitic infestation. Mother and daughter B are undernourished and have anemia. Mother, daughter A, and the son have urinary tract infections. All members of the family complain of "pains."

We believe it is important to look for, identify, and define such patterns in families. We speak of family disease patterns when a parent and at least one child, or two or more children, in a family suffer from the same affliction. One or more disease patterns may occur in the same family.

Family disease patterns vary; their etiology may be hereditary, infectious, or socioeconomic, or have psychogenic components. It is our conviction that such patterns may have a decided influence on the lifestyle and emotional attitude of the group. Recognition of the patterns can help the family physician understand and evaluate the factors and problems which influence the home's emotional atmosphere and the attitudes of family members to each other, to the outside world, on the job, and in school. The physician can then more efficiently and effectively map a course of treatment in the attempt to eliminate interaction or reinfection.

The varied but persistent pain from which all members of this family suffer; the anemia, malnutrition, and sluggishness of some; the worm infestation of four members; and the dramatic epileptic seizures of father and son must have definite and adverse psychological effects on the group, leaving deep marks on the psyche of growing children and diminishing the self-confidence and self-respect of the adults. Add to these, poverty, unemployment, inadequate housing, scant knowledge of English, and the complete lack of a concerned person to help, and the picture of complete hopelessness and helplessness emerges.

When the father came to our office for his epilepsy he found, for the first time in his life, a physician who was willing to take total charge of his family's health needs. It took great patience and the art of medicine to persuade him of our sincere concern and desire to improve his health and his family's, and their lives together.

Team Approach

The treatment of family disease patterns may require more expertise than a single physician will at times be able to provide. We in the department of family practice at Lutheran Medical Center strongly emphasize the team approach in treating many patients. Frequently, the team approach is indispensable because a variety of consultants and disciplines is needed to deal with an array of problems.

The team whose skills our family physicians used to treat the family consisted of a public health nurse, a family health aide, a nutritionist, a homemaker, a medical and a psychiatric social worker, and a clinical psychologist. The family physician, as a team leader, consulted an internist, a pediatrician, a neurologist, and a gynecologist. In addition to diagnosing the illnesses and defining the problems of his patients, the family physician must also direct his team members to specific areas of health assistance.

The health education of his patients is a vital function of the family physician. We devoted considerable time to explaining their problems to these patients. We believe strongly that an understanding of his condition can be a prime factor in motivating a patient to follow his physician's prescription and persist in a course of treatment.

Our attitude was a first experience for the family; never before had they obtained the services of a family physician, concerned with and interested in all aspects of the health of all members, who was aided by the expertise of specialists in various fields in a continuous attempt to improve their lives.

Team Conference

We thought it best to coordinate efforts and eventually called a team conference to which the team leader, Huang, invited other family physicians in the residency program as well as an internist, a pediatrician, and our allied medical personnel. After reviewing the medical approach, we invited everybody to contribute thoughts and ideas about the best total management of the family. We have found such team conferences extremely helpful in our holistic and multidisciplinary approach. We remain, however, at all times acutely aware that it is the patient's primary physician to whom he relates and who interprets to him the course of treatment. Furthermore, we conduct and structure the team conferences so that the family physician is the coordinator of all available services.

The following questions were discussed at the conference.

1. Does the father's epilepsy interfere with his chances for employment?
2. Do his disease and unemployment affect his attitudes toward his family, his community?
3. What is the best way to control his alcohol habit?
4. To what degree does the son's epilepsy interfere with his school activities and with his social integration in school?
5. Are his teachers aware of his problems?
6. How can we help to make the teachers responsive to his needs?
7. Can his behavior pattern be improved?
8. To what degree are the various illnesses responsible for tension in the family?
9. Is there a feeling of frustration?
10. What can be done to improve housing and financial resources for this family?
11. How can employment be secured?
12. How can the family be motivated to learn English for better integration in society?
13. How can the family's personal and environmental hygiene be improved?
14. To what extent can social service and the pastoral department be of help to the family?

During several followup conferences we set priorities for care so as not to overwhelm the family with too many sudden changes. The feedback of information from the various team members enabled us to coordinate efforts and to set priorities.

Problem Solving

By identifying the disease patterns in this family and working through a team approach and conferences, we were finally able to provide total continuous health care to these five people. How we addressed each disease pattern and its solution follow.

Epilepsy. The father had to be made aware of the adverse effect of alcohol on his seizures and impressed with the necessity of taking medication regularly. He needed employment and was directed to an office for vocational rehabilitation. The stigma of "fits" that caused uncertainty and interruptions in his daily life and loss of self-confidence had to be removed from his mind. The whole family needed relief from the continuous tension, fear, and bewilderment which resulted from the frequent, unexplained, and not understood seizures.

The school nurse, and through her the son's teacher, had to be apprised of the reason for the son's asocial behavior, shyness, withdrawn attitude, and lack of ability to concentrate on his studies, which were to a considerable extent caused by his epilepsy and other conditions (*4*).

Worm infestation. The greatest problem that confronted us was the need for patient but persistent education of the family in personal hygiene measures in order to avoid reinfection or parasitic cross-infection. They had to understand our insistence on the simultaneous antihelminthic treatment of all infected family members and the importance of regular followup visits and stool examinations.

Anemia and malnutrition. To implement the medical regimen, the center's nutritionist spent a great deal of time with the mother. She explained the nutritional value of different foods and appropriate ways to prepare balanced meals with the available funds. A homemaker accompanied the mother on several trips to the supermarket to help her select food and subsequently to advise and aid her in ways to prepare nutritious meals.

Urinary tract infections. We impressed on the family the need for regular and prolonged medication to treat the urinary tract infections. We emphasized the need for followup care and the proper method of obtaining urine samples for examination. We explained the possibility of chronic complications due to incomplete therapy.

Sickle cell disease. We attempted in the simplest possible words to explain to the family the meaning of sickle cell anemia and the sickle cell trait and what preventive measures may possibly apply to them.

Results and Conclusions

Recognition of the disease patterns of the family and employment of the team approach resulted in the eradication of the parasitosis and urinary tract infections of the mother and children. But control of the father's and son's epilepsy has had the greatest impact. Educating and motivating them and directing the father to occupational training had important payoffs. We were gratified to observe changes in attitude, increasing self-confidence, and the relaxation of tension in the family. These changes occurred after a 6-month period.

Similarly beneficial, although not immediately apparent, was the help given the son. The conversations with the school nurse appear to have been helpful; his behavior in school became less self-effacing and more integrated with that of the other children. No improvements in his scholastic achievements have been noticed yet.

Efforts to improve the anemia and undernourishment of the mother and daughter B continue.

We found a family in health crises and unable to locate the services that would lead them to physical and emotional recovery. We believe that the traditional methods of treating individual illnesses would have failed to restore the family's total health.

As family physicians, we offered them comprehensive, integrated care. We attempted to discern patterns of illness in this family and enlisted the help of medical specialists and allied medical personnel. Our concept of total health encompasses not only physical well-being and the absence of actual illness but also emotional health, proper nutrition, adequate housing, ability to earn a livelihood, a sense of self-respect and dignity, and integration into society.

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Need for Statutory Legitimation of the Roles of Physician's Assistants

ROGER M. BARKIN, MD, MPH

A significant constraint on new categories of health manpower is the absence of statutory legitimation of their roles. Licensure has been evolved as an effort to assure high-quality health care, but recently it has been a barrier to effective and innovative use of manpower. Medical and Nurse Practice Acts generally define the practices of medicine and nursing, but they do not define clearly the scope of these practices. Thus, these acts subject physicians to undue risks in delegating responsibilities and Type A assistants (nurses or non-nurses with special training) to undue risks in accepting those functions. Furthermore, only vague guidelines are provided to protect the public and to assure adequate quality control. To date, 35 States have enacted legislation to provide statutory legitimation of Type A assisants and to permit physicians to delegate appropriate responsibilities to new types of health manpower. It is hoped that this legislation will diminish barriers to effective use of health manpower.

MORE THAN HALF A DECADE has passed since physician's assistants were accepted as members of the health care team. Why then has there not been more widespread use of these assistants? Why have programs been slow in starting and in making the transition from an experimental to an operational status? Many factors are implicated—the length of training before employment, the "watch and see" attitude of many physicians and consumers, the evolution of health care delivery systems, and the legislative and judicial constraints.

It is obviously necessary to increase the productivity of health manpower in order to overcome the shortage of health services. Any diminution of the gap between supply and demand is highly dependent upon obtaining the appropriate mix of manpower in the right numbers. Innovative manpower utilization is necessary.

Legal constraints have been a prominent barrier to innovation, and two major areas need delineation to evaluate impact—legislative statutes and judicial opinions. These legal constraints are primarily statutory. They affect the new health professional who is capable of collecting historical and physical data as well as integrating and interpreting these findings and exercising a degree of independent judgment, whether that person is a nurse or a non-nurse with special training—the Type A assistant, as defined by the National Academy of Sciences (*1*). The less highly trained Type B and Type C assistants are primarily technicians who do not perform functions or make judgments that might result in legal limitations to their effective use.

The three types of physician's assistants have been defined as follows (*1*):

> The Type A assistant is capable of . . . collecting historical and physical data, organizing these, and presenting them in such a way that the physician can visualize the problem and determine appropriate diagnostic or therapeutic steps. . . . He is distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.
>
> The Type B assistant . . . possesses exceptional skill in one clinical specialty or, more commonly, in certain procedures within such a specialty. . . . Because his knowledge and skill are limited to a particular specialty, he is less qualified for independent action.
>
> The Type C assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician although he does not possess the level of medical knowledge necessary to integrate and interpret findings. . . He cannot exercise the degree of

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independent synthesis and judgment of which the Type A assistant is capable.

In this paper, the current statutory constraints on Type A assistants are delineated, and the impact of judicial decisions on them is evaluated.

Medical and Nurse Practice Acts of Texas

In defining the constraints licensure places upon Type A assistants, it is necessary to understand the specific laws. The Medical and Nurse Practice Acts of Texas provide many insights, and these statutes will be used as the basis for the discussion. The relative uniformity of medical practice acts in many States with respect to the definition of the practice of medicine and the exceptions cited make these statutes and their judicial interpretations equally germane to the issues in States other than Texas.

Medical Practice Act. The Medical Practice Act of Texas, in Article 4510, provides the statutory definition of the practice of medicine:

> Any person shall be regarded as practicing medicine within the meaning of this law:
>
> 1. who shall publicly profess to be a physician or surgeon and shall diagnose, treat, or offer to treat, any disease or disorder, mental or physical, or any physical deformity or injury by any system or method or to effect cures thereof;
>
> 2. or who shall diagnose, treat, or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury by any system or method and to effect cures thereof and charge therefor, directly or indirectly, money or other compensation; provided, however, that the provisions of this article shall be construed with and in view of Article 4504 [Exceptions].

In defining the practice of medicine the act identifies three elements: (*a*) diagnosing, treating, or offering to treat any disease or disorder; (*b*) professing to be a physician or surgeon; and (*c*) charging for these services, either directly or indirectly. A person is considered to be practicing medicine under the Medical Practice Act if he is pursuing the first element and either the second or third. Not only may a person face criminal charges for practicing medicine as defined without proper licensure, but the Texas Penal Code permits prosecution for professing to be a physician or surgeon without the appropriate credentials. Hence, it is illegal for a person to diagnose, treat, or offer to treat any disease or disorder in combination with either the second or third element —(*b*) or (*c*), or merely to profess to be a physician or surgeon without the appropriate license. Violation of the Medical Practice Act is a misdemeanor under Article 742 of the Texas Penal Code.

Having established this definition and the basis for criminal action, the Texas act proceeds to make certain exemptions. Article 4504 of the Revised Civil Statutes states:

> . . . The provisions of this chapter do not apply to dentists, duly qualified and registered under the laws of this State, who confine their practice strictly to dentistry; nor to duly licensed optometrists, who confine their practice strictly to optometry as defined by Statute; nor to duly licensed chiropractors who confine their practice strictly to chiropractic as defined by Statute; nor to nurses who practice nursing only; nor to duly licensed chiropodists who confine their practice strictly to chiropody as defined by Statute; nor to masseurs in their particular sphere of labor; nor to commissioned or contract surgeons of the United States Army, Navy, or Public Health and Marine Hospital Service in the performance of their duties, and not engaged in private practice; nor to legally qualified physicians of other states called in consultation, but who have no office in Texas, and appoint no place in this state for seeing, examining or treating patients. . . .

This law is an attempt to define, by elimination, the scope of practice of each profession named and gives support to the current licensure system. The practice of medicine is all encompassing, and the exception clause permits different health professions to function within their more limited competencies as defined by statute. However, the boundaries placed upon health professionals by the statutes are largely artificial, and in their vagueness and lack of definition they have encouraged an overlap in function in the day-to-day activities of the different occupations.

The Medical Practice Act further delineates those situations in which the Board of Medical Examiners may refuse to admit persons to the practice of medicine. Regarding the employment of Type A assistants, the board may deny a license to a person who acted unprofessionally or displayed dishonorable conduct, violated any provision of the Medical Practice Act, impersonated a licensed practitioner, or permitted another to use his license to practice medicine: The board may suspend or revoke the license of a person who has been "guilty of any fraudulent or dishonorable conduct or of any malpractice."

The net result of these inadequate guidelines has been a reluctance by many physicians to delegate new responsibilities to other health workers that traditionally have been in the realm of the physician's function.

Nurse Practice Act. Because "nurses who practice nursing only" are exempted from the limitations of the Medical Practice Act under Article 4504, it is crucial to define the functions legitimized by the legislature within the scope of nursing. Article 4518 of the Revised Civil Statutes defines "professional nursing" as follows:

> *Section 5.* "Professional Nursing" shall be defined for the purposes of this Act as the performance for compensation of any nursing act (a) in the observation, care and counsel of the ill, injured or infirm; (b) in the maintenance of health or prevention of illness of others; (c) in the administration of medications or treatments as prescribed by a licensed physician or dentist; (d) in the supervision or teaching of nursing, insofar as any of the above acts require substantial specialized judgment and skill and insofar as the proper performance of any of the above acts is based upon knowledge and application of the principles of biological, physical and social science as acquired by a completed course in an approved school of professional nursing. The foregoing shall not be deemed to include acts of medical diagnosis or prescription of therapeutic or corrective measures.

This Texas law, patterned after the American Nursing Association model, is similar to the Medical Practice Act in that it is a mandatory one, requiring all those who practice nursing or profess to be nurses to be licensed. The "nursing act" is poorly defined but may encompass the acts of "observation," "care," "counseling," and "maintenance of health" in addition to the "administration of medications or treatments" and provides the nurse with wide latitude in functions related to patient care. Only "acts of medical diagnosis or prescription of therapeutic or corrective measures" are prohibited, and this circumvents many of the limitations imposed by the Medical Practice Act upon non-nurse Type A assistants.

Judicial and Related Opinions

It is now essential to look at judicial interpretations of aspects of Medical Practice Acts as they apply to the legitimacy of a licensed physician employing a Type A assistant and delegating functions traditionally reserved for the licensed physician. The statutes are vague in their definitions, and the courts are called on to interpret legislative intent. In so doing, the courts have created problems relating to the practice of medicine and nursing and to malpractice.

The practice of medicine. It has been firmly established that a person who is illegally practicing medicine or using a restricted designation may be prosecuted. The physician delegating functions may face suspension or revocation of his license for aiding and abetting in that act. This is particularly relevant for the Type A assistant who will be assuming some of the physician's responsibilities while remaining under his control. To analyze this matter further, I will summarize judicial decisions concerning the definition of the practice of medicine as they pertain to the Type A assistant.

The first element in the practice of medicine is to "diagnose, treat or offer to treat, any disease or disorder, mental or physical, or any system or method or to effect cures thereof." The term "treatment" is an all encompassing term as defined by the courts, for example, as stated in *Kirschner* v. *Equitable Life Assurance Society of the United States,* 284 N.Y.S. 506, 510 (New York, 1935):

> Treatment is a broad term covering all the steps taken to effect a cure of the injury or disease. The word includes examination and diagnosis as well as application of remedies.

Diagnosis is considered to be the discovery ot the source of a patient's illness or the determination of the nature of his disease from a study of its symptoms. It is said to be "little more than a guess, enlightened by experience" (*Griswold* v. *New York Central and Hudson Railroad Company,* 21 N.E. 726 (New York, 1889)). The definition was expanded in a New York State decision in 1938 (*People* v *Zinke,* 7 N.Y.S. 2d 941, 947) when a chiropractor held that he had not practiced medicine because he had not "diagnosed." The court, however, declared:

> Defendant diagnosed. His history taking, examination . . . and his statements as to the causes of conditions of the patient show that he had made a determination which he deemed sufficient for the purposes of treatment. . . . It is, in medical terminology, a "sizing up" or a comprehending of the physical or mental status of a patient. It is the conclusion itself rather than the procedures upon which the conclusion is based which constitutes a diagnosis per se. No particular language need be used and no disease need be mentioned, for the diagnostician may make or draw his conclusion in his own way.

Both treatment and diagnosis received very broad interpretations by the courts in these judicial decisions.

The conditions being diagnosed or treated must also be evaluated to determine if it is a "disease or disorder, mental or physical, or any physical deformity or injury," as required by the Texas Medical Practice Act. In 1956, a Texas court ruled that a midwife was not prohibited from assisting in the delivery of children because "childbirth is a normal function of womanhood" and therefore not a disease or disorder within the meaning of the act. The fact that she received compensation was held immaterial (*Banti* v. *State,* 289 S.W. 2d 244 (Texas, 1956)). In an earlier decision, a New Jersey court had made a similar distinction with regard to blood pressure (*State Board of Medical Examiners* v. *Plager,* 193 A. 698, 699 (New Jersey, 1937)).

> Abnormal blood pressure, generally speaking, is not a disease in itself; that the taking of blood pressure is, at most, but another modern method of ascertaining a fact in aid of making a proper diagnosis . . . The announcement by defendant of the result of the systolic blood pressure . . . was the mere statement of fact; and it was not a diagnosis of a disease or of a physical condition.

These cases reemphasize that to practice medicine a person must not only diagnose and treat, but that such actions must be directed toward a "disease or disorder."

"Publicly profess[ing] to be a physician or surgeon" constitutes the second element in the practice of medicine. The Medical Practice Act is mandatory and thus prohibits unlicensed persons from holding themselves out "to the public as being engaged in the business of diagnosing, treating, etc. patients" (*Louisiana State Board of Medical Examiners* v. *Craft,* 93 So. 2d 298, 306 (Louisiana, 1957)). Receiving compensation for services is the third element, and this may be either a direct or an indirect payment. The court very succinctly summarized the grounds for the charge of "practicing medicine illegally" in *Singh* v. *State,* 146 S.W. 891, 895 (Texas, 1912):

> Anyone who holds himself out as a physician or surgeon is liable under the law, whether he receives compensation or not, while one who does not so hold himself out must be shown to have received compensation either directly or indirectly.

In exonerating a husband from criminal prosecution for delivering his own child, the Attorney General of Texas clearly delineated the three elements of the practice of medicine (Opinion of the Attorney General of Texas, No. WW 1278, 1962.):

> . . . who receives no compensation . . . and who does not profess to be a physician or surgeon, and does not diagnose, treat, or offer to treat any disease, disorder or injury is not violating the medical practice act of this State.

The Type A assistant may, in fact, be performing many of the functions encompassed in "diagnose, treat, or offer to treat" and may indirectly receive compensation for these services. Does the fact that the assistant will be functioning under the control of a licensed physician alter the legal restrictions? In the past this relationship has not protected the assistant from criminal prosecution.

In *State* v. *Paul* (76 N.W. 861 (Nebraska, 1898)), the court said that a person who was not within the exceptions and practiced medicine was liable to the penalties of the statute, even though the operation was performed and the medicines were administered and given under the direction of a registered physician. It was not essential to represent, claim, or advertise oneself to be a legal practitioner of medicine to be subject to the sanctions of the law.

Type A assistants are thus not absolved of liability by being under the control of a licensed physician. They have, however, functioned under the "direction and supervision" of a licensed physician in almost all employment settings, and this term must be analyzed to determine its implications for effective use of manpower.

"Direction and supervision" has historically been held not to require physical presence but merely overseeing and advising in the performance of specific functions. However, a 1961 court decision adopted a stricter interpretation by defining "acting under proper supervision of legally qualified personnel" as requiring "the actual personal supervision of the professional person. That does not mean by telephone or written communication but direct personal supervision." (State ex rel. *Reed* v. *Kuzirian,* 365 P. 2d 1046 (Oregon, 1961)).

Two important court decisions place much of the discussion in perspective and demonstrate the possible ramifications of the foregoing definitions of the practice of medicine on future Type A assistants. In *Magit* v. *Board of Medical Examiners* (366 P. 2d 816 (California, 1961)), a foreign-trained, unlicensed anesthetist administered anesthetics without a license. The anesthetist was found guilty of practicing medicine without a license, and the supervising physician was found guilty of unprofessional conduct. This decision related not to competence or negligence, but to the violation of a statute.

A second decision raised the question of whether being unlicensed is equivalent to being negligent. A practical nurse was convicted in *Barber* v. *Reinking* (411 P. 2d 861 (Washington, 1966)) of having performed functions reserved for physicians and professional nurses. A 2-year-old child was given an injection by a licensed practical nurse. The needle broke when the child moved, and the child suffered an injury. Washington laws specifically prohibited persons other than physicians and professional nurses from administering medications, "whether or not the severing or penetration of tissues is involved."

The court made a momentous decision in this case:

> In accordance with the public policy . . . we read this instruction [the Nurse Practice Act] to require that one who undertakes to perform the services of a trained or graduate nurse must have the knowledge and skill possessed by a licensed registered nurse. The failure of Nurse Reinking to be so licensed raises an inference that she did not possess the required knowledge and skill to administer the inoculation in question.

The court expressed the view that the legislature, by requiring the licensure of personnel and delineating the scope of practice, determined the limits of permissibility. Custom and usage could not be used as a justification for expanding the defined functions. The court permitted the inference of negligence from the evidence that the defendant had violated the statute by performing functions not specifically delineated to be within her scope of practice.

In contrast, most courts have held that the mere absence of a license to practice medicine or surgery does not permit the inference of negligence (*Andrews* v. *Lofton*, 57 S.E. 2d 338 (Georgia, 1950)). The clearest statement of this viewpoint was made in (*Hardy* v. *Dahl,* 187 S.E. 788, 791 (North Carolina, 1936)):

> If the defendant had been engaged in treating diseases in violation of the statute he is liable to indictment, and upon conviction, to suffer the prescribed penalty; but in civil action, bottomed upon the law of negligence, the failure to possess a state certificate is immaterial on the question of due care.

Other jurists, however, have held that the "burden of proof of negligence is substantially reduced if the defendant violated a State statute and the violation of the statute has caused injury" (*2*). *Barber* v. *Reinking* (411 P. 2d 861 (Washington, 1966)) established a more extreme interpretation, permitting the inference of negligence from the violation of a statute. Although most courts have upheld the view that the failure to be licensed is immaterial on the issue of negligence, the *Barber* v. *Reinking* decision stands as an awesome reminder of the risks inherent in employing personnel who are not officially sanctioned by the legislative process.

The practice of nursing. Because of the legitimation of the functions of the professional nurse by the legislature, the nurse Type A assistant is at a greatly reduced risk of being accused of "practicing medicine illegally." The Texas Nurse Practice Act vaguely defines professional nursing as the observation, care, and counseling of the ill, the maintenance of health and prevention of illness, and the administration of medications or treatments. Only "medical diagnosis or prescription of therapeutic or corrective measures" are prohibited from the practice of nursing and reserved for the practice of medicine. Certainly, the nurse in observing and interpreting facts makes decisions on the basis of these facts, and although she may not practice medicine, she may, and in cases of emergencies must, act upon her observations. Anderson states (*3*):

> These statutes [the Nurse Practice Act] contain nebulous definitions, expressing essentially that the practice of nursing is the carrying out of the physicians' orders, the application of nursing skills and the supervision of others with lesser degrees of training. The fact that a particular procedure is within the scope of medical practice does not mean that it is exclusively the practice of medicine. The particular functions a nurse may legally perform are not delineated.
>
> In addition, there is a marked overlap in the technical areas common to medical and nursing practice. The same act may be clearly the practice of medicine when performed by a physician and the practice of nursing performed by a nurse.

The new skills acquired by the nurse may be viewed as increasing the number of sources from which the nurse gathers data for making nursing judgments. The identification of abnormalities may be classified as an observation or screening function. Routine and periodic examinations, immunizations, chronic care followup, and information and counseling services related to growth and development, child-parent relationships, and behavioral problems are encompassed in the maintenance and prevention of illness. Medications are given in response to standing orders of a physician. Adequate training and demonstrated competence to perform the particular activities permit the nurse to function as a Type A assistant.

The courts generally have upheld the evolution of expanded nursing roles. In contrast to a case mentioned earlier (*Magit* v. *Board of Medical Examiners,* 366 P. 2d 816 (California, 1961)), where a foreign-trained, unlicensed physician was prohibited from being an anesthetist, in *Chalmers-Francis* v. *Nelson,* 57 P. 2d 1312, 1313 (California, 1936) it was held that a licensed nurse could administer anesthetics:

> Nurses in the surgery, during the preparation for and progress of an operation, are not diagnosing or prescribing. [Within] the meaning of the Medical Practice Act, it is the legally established rule that they are but carrying out the orders of the physicians to whose authority they

are subject. The surgeon has the power, and therefore the duty, to direct the nurse and her actions during the operation.

In functions which do not involve "disease or disorder," no restrictions have been placed upon nursing activities, as was seen in *Banti* v. *State* (289 S.W. 2d 244 (Texas, 1956)), which involved midwifery.

Thus, the nurse is not prohibited from functioning in most spheres of medicine provided no "medical diagnosis or prescription or therapeutic or corrective measures" are made. This lack of restraint has served as the basis for the expansion of nursing roles without legal constraints.

Discussion

The major statutory constraints that affect the use of health manpower were initially not meant to be constraints but were evolved as guarantees of quality—to separate the qualified from the incompetent, the trained from the quack. But the rigid definitions have been subject to speedy obsolescence, and the question of whether it is medically appropriate to delegate a particular function to the new health professionals has been transformed into the question of whether it is legal for them to perform that function.

The Medical Practice Acts of most States define the practice of medicine and the grounds for criminal prosecution, but in their lack of clear definition of the scope of the practice of medicine, they subject the physician to undue risks in delegating responsibilities and the Type A assistant to undue risks in accepting these functions. Furthermore, only vague guidelines are provided to protect the public and assure adequate quality control.

The non-nurse Type A assistants face the most significant legal constraints, and the physician, facing potential criminal charges for delegating functions to an unlicensed person and the possibility of civil liability, may be reluctant to employ them. Nurse Type A assistants are largely protected because of the legitimation of their functions under Nurse Practice Acts. Similarly, Types B and C assistants, while performing appropriate functions, are not at risk of practicing medicine illegally because of the limited scope of their responsibilities.

What is the next step? Where must attention be directed? The answer must be an attempt to fuse the credentialing of health manpower with the public interest. Thirty-five States have now enacted legislation to legitimize the role of the physician's assistant and to permit the physician to delegate responsibilities to new types of health manpower (*4*). This legislation is largely a reflection of the growing necessity to expand health services and of the realization that there are constraints on the effective use of Type A assistants.

The mechanisms that have been delineated for the legitimation of Type A assistants differ. Several State legislatures merely provide for exceptions to Medical Practice Acts, permitting physician's assistants to function under appropriate supervision. Others subject the Type A assistants to both personal and program approval and periodic reapproval. Some legislatures have incorporated into the Medical Practice Acts procedures for review of qualifications and job functions for Type A assistants and physicians. This latter approach provides a means of legitimation for Type A assistants and some assurance of quality control for the public and the physician, as well as guidelines for the functions that are considered appropriate for delegation. In addition, flexibility, which has been eliminated by previous licensing procedures, is provided.

A new era in manpower utilization has begun, and statutory constraints can play a major role in inhibiting the acceptance of Type A assistants. Legislative initiative has been encouraging in this area, but more action is needed. As stated by Kowalewski (*5*):

> Yes, there are legal problems. And the State legislators and Federal legislators are going to have to shape up to this because what we might have, gentlemen, which would be a terrible thing, we might educate and prepare a lot of people and find them completely illegal and no place to go. We have got to set the stage.

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Effect of Suicide Prevention Centers on Suicide Rates in the United States

DAVID LESTER, PhD

THE ESTABLISHMENT of the Los Angeles Suicide Prevention Center in the 1950s provided a model for the establishment of suicide prevention centers in other communities. In 1966, the National Institute of Mental Health created a Center for Studies in Suicide Prevention, and the stimulus from this center as well as the experience and encouragement of the staff of the Los Angeles center led to the formation of more than 200 suicide prevention centers in communities across the nation.

The critical question stemming from the proliferation of suicide prevention centers is: Have they prevented suicides? Bagley (*1*), in a study to assess the effect of suicide prevention centers on the suicide rates in England, found that cities with such centers experienced a decline in suicide rates whereas cities without prevention centers experienced a rise in suicide rates. In the United States only one report of a study similar to Bagley's has been published, to my knowledge. In this report, Weiner (*2*) compared cities in California—two with and two without suicide prevention centers. He reported no discernible effect of the centers on the suicide rates in these four cities.

The preceding two studies are inadequate from our viewpoint. Bagley's study may have no valid-

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ity for the United States because England's health care delivery system and public attitudes toward health care differ from ours. And Weiner's sample of four U.S. cities is inadequate for reliable conclusions.

The first systematic study of the effect of suicide prevention centers on suicide rates in the United States was conducted in 1973. A preliminary analysis was made of the most recent available published data, and the suicide rates in 1960 and 1968 in the major U.S. metropolitan areas were compared. Government publications (*3, 4*) listed 27 cities as having no suicide prevention centers in 1967 or 1969, and the suicide rates for 1968 were computed for 25 of these cities, according to the number of suicides for each city (*5*) and estimates of the cities' 1968 populations derived from the 1960 and 1970 census figures. The suicide rates in 1960 were obtained from Massey (*6*).

The suicide rates for the 25 cities without suicide prevention centers did not change significantly from 1960 to 1968—the mean rates were 9.2 for 1960 and 9.5 for 1968 ($t=0.61$, $df=24$). For 17 cities listed as having prevention centers in 1967, the suicide rates also did not change significantly—the mean rates were 12.5 in 1960 and 12.1 in 1968 ($t=0.58$, $df=16$).

Of the cities without prevention centers from 1960 to 1968, 14 showed a decrease in suicide rates and 11 showed an increase. Of the cities with prevention centers, 8 showed a decrease and 9 an increase in suicide rates. Unfortunately, the two samples of cities are not comparable. The cities with suicide prevention centers were much larger than the cities without such centers, and their suicide rates also were higher. Therefore, a more controlled study was conducted in which data on suicide rates in 1969 were used.

Method

Unpublished data on suicide rates in 50 cities were obtained for 1969 from the National Center for Health Statistics, and data were obtained for 1960 from Massey (*6*). Three samples of cities were obtained—those with suicide prevention centers established by 1967, those with centers established by 1969, and those without centers—and changes in suicide rates from 1960 to 1969 were determined for these three samples.

To control for population size, eight cities were selected from each sample. In 1969, four cities in each sample had populations of 748,000 to 1,035,000, and four in each sample had populations of 1,333,000 to 2,402,000. The changes in suicide rates from 1960 to 1969 were examined by a three-way analysis of variance for repeated measures (*7*).

Results

The suicide rates per 100,000 population of the cities without suicide prevention centers in 1969 rose significantly—from 9.4 in 1960 to 10.5 in 1969 ($t=2.51$, $df=18$, two-tailed $P<0.05$). For cities with suicide prevention centers by 1969 (but not by 1967), suicide rates increased significantly—from 10.5 in 1960 to 11.3 in 1969 ($t=2.13$, $df=12$, two-tailed $P<0.06$). The suicide rates of cities with prevention centers by 1967 rose, but not significantly—from 12.1 in 1960 to 13.0 in 1969 ($t=1.51$, $df=15$, two-tailed $P<0.20$).

The results of the analysis when population size was controlled for are shown in tables 1 and 2. The only significant difference was that the suicide rates were higher in 1969 than in 1960. The suicide rates for the smaller cities also tended to be high, but the difference was not statistically significant.

Discussion

When population size of cities is controlled for, the suicide prevention centers do not appear to have a statistically significant effect on the suicide rates of cities. This finding is in contrast to that reported for England by Bagley (*1*). There may be two reasons for this discrepancy. First, perhaps it is too soon to expect an ameliorative effect on sucide rates from suicide prevention centers. Thus, a study like the present one should be repeated when data from later years become available. Replication is especially important because in 1969 many U.S. regions adopted the new international standards for reporting deaths. Thus, there may be differences between the suicide rates in 1960 and 1969 attributable to this change in reporting. (The fact that not all regions had adopted the new standards in 1969 may also contribute to the variance in the data reported in this study.)

Second, the suicide prevention centers in England do differ from those in the United States. In England, all the centers are maintained by the

Table 1. Suicide rates per 100,000 population in cities with and without suicide prevention centers in 1960 and 1969, by population size in 1969

Cities[1]	1960	1969
Without centers		
Small cities:		
Bridgeport, Conn.	9.6	9.7
Louisville, Ky.	10.1	11.0
Rochester, N.Y.	10.2	11.9
New Orleans, La.	7.4	6.6
Large cities:		
San Diego, Calif.	13.3	16.9
Newark, N.J.	6.9	8.7
Houston, Tex.	9.5	13.1
Pittsburgh, Pa.	8.3	8.0
With centers by 1967		
Small cities:		
Fort Worth, Tex.	10.3	11.2
Phoenix, Ariz.	13.1	14.2
Tampa, Fla.	17.3	15.7
Portland, Oreg.	12.9	15.5
Large cities:		
Buffalo, N.Y.	7.6	6.9
Atlanta, Ga.	10.1	11.0
Milwaukee, Wis.	10.1	15.3
St. Louis, Mo.	9.0	8.5
With centers by 1969		
Small cities:		
Sacramento, Calif.	16.5	17.4
Dayton, Ohio	9.1	10.2
San Antonio, Tex.	9.5	9.3
San Jose, Calif.	14.0	13.7
Large cities:		
Dallas, Tex.	7.9	11.7
Minneapolis-St. Paul, Minn.	8.6	8.6
Baltimore, Md.	9.4	10.4
Cleveland, Ohio	10.8	11.7

[1] For this analysis, small cities had populations of 748,000–1,035,000 and large cities had populations of 1,333,000–2,402,000 in 1969.

Table 2. Results of the analysis of variance on the data in table 1

Variable	F ratio	df
A, presence of suicide prevention center	0.91	2,18
B, size of cities	3.02	[1]1,18
$A \times B$	1.98	2,18
C, year	8.98	[2]1,18
$A \times C$	0.13	2,18
$B \times C$	2.62	1,18
$A \times B \times C$	0.38	2,18

[1] $P<0.10$. [2] $P<0.01$.

Samaritans (*8*) and share similar procedures. The centers in the United States are quite heterogeneous and range considerably in their services and procedures (*9*). Furthermore, in England family physicians are used by more of the general population than in the United States, and with the recent growth in numbers of available psychopharmacological agents, these physicians may have been better able to detect and treat suicidal persons and to use the local suicide prevention centers as adjuncts in treatment.

It is important to note that suicide prevention centers are often established in the United States in response to high suicide rates in cities. Thus, although the suicide rates may have risen in the cities, it is possible that these rates would have risen more precipitously had the centers not been opened.

Finally, suicide is a rare phenomenon, and there are often relatively large fluctuations in the suicide rates from year to year. Also, suicide rates can be easily affected by minor influences. Thus, a truly adequate study would sample suicide rates from several consecutive years. As more recent data become available, such studies will become possible.

Whatever the reasons for the results of the recent study, we must view with some concern the relative immunity of suicide rates in the United States, despite the efforts of suicide prevention centers to decrease these rates. It may well be that suicide prevention centers do not prevent suicide (*10*).

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Medical Complications From Induced Abortion by the Super Coil Method

BECAUSE THEY WERE UNABLE to get abortions in their home States, 15 women in the second trimester of pregnancy underwent induced abortions in Philadelphia on May 13 and 14, 1972. The method used was the "super coil," which was purportedly safe and suited for second trimester pregnancies (*1*). Following the procedures, one woman was hospitalized in Philadelphia while the rest returned to their home States. In order to evaluate this new abortion method, the Center for Disease Control performed a followup investigation in cooperation with public health officials and clinicians in Philadelphia and in the areas to which the women had returned. This investigation was undertaken with the realization that the sample was small, but because of the unavailability of followup information on the super coil method, it was felt that even this small number of women would provide useful information.

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Background

The super coil is a plastic strip 40 cm long and 4.6 mm wide, wound into a spiral 2 cm in diameter. The person performing an abortion straightens the coil and puts it in an inserter, through which it is introduced via the cervical os into the uterus in a fashion similar to an intrauterine contraceptive device. The method calls for insertion of several coils. In addition, balsa tents may be placed in the cervical canal. The coils are removed 12–24 hours after insertion, at which time total evacuation of the uterus is said to usually occur. If the uterine contents are not expelled spontaneously, they must be removed with ovum forceps. After delivery of the products of conception, the uterus may be checked for completeness of the procedure with a suction curette (*1*).

The super coil abortions were performed in a private clinic in which induced abortions are performed primarily by suction curettage during the first trimester. The clinic was staffed by a physician with 2 years of training in obstetrics and

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gynecology, who had previously worked in an outpatient abortion clinic in New York City, and a physician from Los Angeles. In addition to the two clinic physicians, the psychologist who originated the super coil method was present for the coil insertions. Neither of the two physicians had had previous experience with this abortion method.

Investigation

Of the 15 women who underwent super coil abortions, 13 received followup medical evaluation within 1 week of the coil insertions. Since the other two women did not avail themselves of the opportunity for followup evaluation, we assumed that they had no complications. Postabortal evaluation consisted of a medical history and physical examination, including pelvic examination, hematocrit, Rh type, Papanicolaou smear, culture for presence of gonorrhea, and upper abdominal film to rule out the presence of a foreign body or evidence of uterine perforation. Morbidity was defined as temperature of 100.4°F or higher, estimated blood loss of 500 cc or more, or other conditions which required subsequent medical attention. In addition, a category of major complications was defined to include patients with unintended major surgery, blood loss estimated at 1,000 cc or more, one or more blood transfusions, 3 or more days of fever, and several other categories associated with roughly comparable degrees of illness.

Of the 13 women for whom complete followup data were available, 9 (60 percent) had complications; 3 (20 percent) of the 9 sustained major complications, and 2 of these required major surgery. The complications experienced by the 9 women were as follows.

Complications	*Number of women*
Uterine perforation	1
Peritonitis	1
Anemia, postabortal	4
Fever (>100.4° F)	7
Retained products of conception	2
Drug reaction	1
Pain (requiring postoperative visit to physician)	1

One woman had profuse vaginal bleeding at the time of coil removal. She was hospitalized in Philadelphia, given 8 units of blood, and underwent a laparotomy. This operation revealed hematomas inferior to the bladder and in the broad ligament ascending to the bifurcation of the iliac vessels. A total abdominal hysterectomy was then performed. Examination for pathological conditions showed a laceration 6 mm long extending from the external os on the right side of the cervix into the lower uterine segment and a 1 cm perforation on the upper left lateral side of the cervix near the internal os. The patient improved and was discharged on the 10th postoperative day.

The second patient, hospitalized the day following her return home from Philadelphia, was treated for 10 days for suspected acute pelvic inflammatory disease. One week after discharge, she was readmitted with severe abdominal pain, and a laparotomy was performed because of a preoperative diagnosis of acute appendicitis. At surgery, pelvic adhesions were noted, as was a normal-appearing appendix. The postoperative diagnosis was endometritis with intrapelvic adhesions. Following a second 10-day course of antibiotic therapy in the hospital, the patient was discharged 1 month after her induced abortion.

The third patient had heavy vaginal bleeding following coil insertions. After leaving Philadelphia she complained of syncope and fatigue. A physical examination 3 days after the abortion revealed that she was anemic; her preoperative hematocrit of 36 ml per 100 ml had dropped to 24.5. She was treated with parenteral and oral iron, and when next seen by her local physician 4 months later, her hematocrit was 41.5.

The criteria for complications in this investigation were those defined in the Joint Program for the Study of Abortion (JPSA). The JPSA study, which provided the most comprehensive evaluation available of early medical complications of legal abortion, was initiated in July 1970 (*2*). The following are the complication rates for the Philadelphia patients who underwent abortion by the super coil method and for the JPSA patients who had saline-amniotic fluid exchange abortions (both rates are for complications after more than 1 week following the abortion procedure).

		Complication rate per 100	
Method	*Number*	*Major*	*Total*
Super coil	15	20.0	60.0
Saline-amniotic fluid exchange	5,973	2.6	27.9

The complication rates, both major and total, were significantly greater for the patients who underwent super coil abortions. (As determined by the Poisson distribution, the difference between the observed number of patients with complications associated with super coil abortions and those expected on the basis of the JPSA complication rates, both major and total, was significant at a level of *P* .05.)

Discussion and Conclusion

At the time of our investigation, the only written reports on the super coil method were a paragraph summary in Contraception of a verbal description of the method presented at a workshop on abortion methods in 1971 (*3*); an article in Medical World News (*4*); an article in an underground newspaper, the Los Angeles Free Press (*5*); and an unpublished report of 32 abortions performed by the super coil method, "Second Trimester Terminations Utilizing a Specially Designed Intrauterine Device: A Promising Alternative to Amniocentesis," by L. D. Newman of the San Vicente Hospital, Los Angeles. Subsequent to our investigation, Karman (*1*) described the outcome of 56 super coil abortions performed by paramedical personnel. The reports of both Newman and Karman stated that there were no significant complications associated with the super coil method and that the method can be performed by paramedical personnel.

The results of the present investigation conflict with the previous reports. Although the small number of women in this series does not permit a definitive judgment of the risks associated with the super coil method, the results do indicate that the method is not without significant risk. Any further testing of this abortion technique should only be done according to a detailed research protocol under careful scientific and medical supervision, in a hospital with adequate personnel and facilities to diagnose and treat complications, and with consent of the patient who is informed that at present this is an experimental procedure.

ADDENDUM

Subsequent to this investigation, a more detailed report was published: "Termination of Pregnancy by "Super Coils": Morbidity Associated With a New Method of Second-Trimester Abortion," by G. S. Berger and associates, in the American Journal of Obstetrics and Gynecology, vol. 116, June 1, 1973, pp. 297–304.

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Nebraska's New Program to Prevent Birth Defects

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WITH THE ENACTMENT of Legislative Bill 1203, the State of Nebraska created the birth defects prevention program. This legislative measure, which became effective July 6, 1972, was originated to aid in reducing the occurrence of malformations or inherited diseases. It recognizes that a congenital anomaly is not only a tragedy for the child and the family, but also a matter of vital concern to public health. The Nebraska Department of Health has the responsibility for the development and implementation of scientific investigations and educational programs on the causes, methods of prevention, treatment, and cure of birth defects.

An important aspect of the prevention program is the establishment of a birth defects registry, which was initiated in May of 1973. Using data supplied by Nebraska's physicians and hospitals, this registry will keep close surveillance on the occurrence and frequencies of various birth defects in Nebraska. The data are currently being submitted to the Center for Disease Control, Public Health Service, in Atlanta, Ga., for computer interpretation and analysis. The results are published bimonthly by the Center. The coded data will be available to any qualified investigator who wishes to use them for survey or research purposes. When sufficient baseline information has been obtained, it is anticipated that the registry will be useful for signaling the occurrence of previously undetectable epidemics or clusters of birth defects.

A major portion of the program is carried out by the Human Genetics Laboratory at the University of Nebraska Medical Center in Omaha. The medical center's responsibilities include statewide professional education, training, service, and research in various aspects of birth defects prevention. The full resources of the medical center, as well as those of Omaha's Creighton Medical School and health professionals throughout the State, are available to assist in carrying out the program.

Educational services in progress in-

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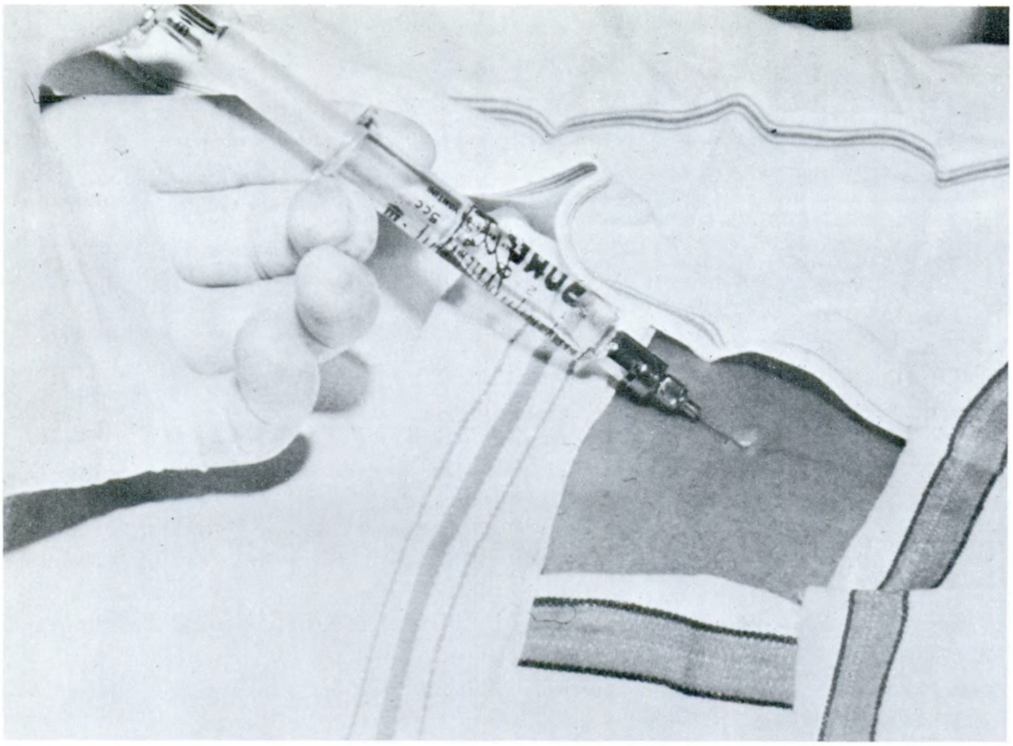

Figure 1. Obstetrician prepares woman in fourth month of pregnancy for amniocentesis

clude workshops, conferences, displays, and talks to health professionals. One avenue being used to educate health professionals is telephone conference calls. A network of conference telephones reaches 37 hospitals throughout the State and serves physicians and nurses who further their education by listening to experts in medicine and science discuss various means to prevent birth defects. Topics covered in the conference calls have included "Rubella vaccine and RhoGam," "Genetic counseling," "In utero detection of genetic defects," and "Amniocentesis." A workshop in human cytogenetics has been designed to acquaint physicians and registered medical technologists throughout Nebraska with recent advances in "chromosomology," tissue culture techniques, and prenatal detection of birth defects. Displays and scientific talks to health professionals on the goals and scope of the birth defects prevention program are incorporated into medical societies' meetings and conventions whenever possible. The Nebraska Department of Health is carrying out a concurrent program of health education to emphasize and explain the various aspects of the prevention program to the general public.

The birth defects prevention program is adopting many new technological advances in providing the services to attain its goals. Incorporated in these goals is provision for a prenatal diagnostic service to all physician-referred pregnant women who have previously given birth to a genetically abnormal child or who have a family history of a genetic disorder. This service is also provided to rule out Down's syndrome in the fetus of expectant mothers over the age of 35, in recognition that the chance of having such a child increases significantly with the age of the mother. This probability is well illustrated in a recent study reported by Boardman and Jennett revealing that the rate of mongoloid children born to mothers age 35 or older is more than 40 times the rate for mothers under age 35 (*1*).

Prenatal diagnosis involves amniocentesis; that is, the withdrawing of 10 to 20 cc of amniotic fluid from the uterus of the expectant mother, at about 12–16 weeks of pregnancy (fig. 1). This pro-

Figure 2. Laboratory technologist changes growth media for fetal cells obtained through amniocentesis

Figure 3. Laboratory technologist checks growth of fetal cells obtained by amniocentesis

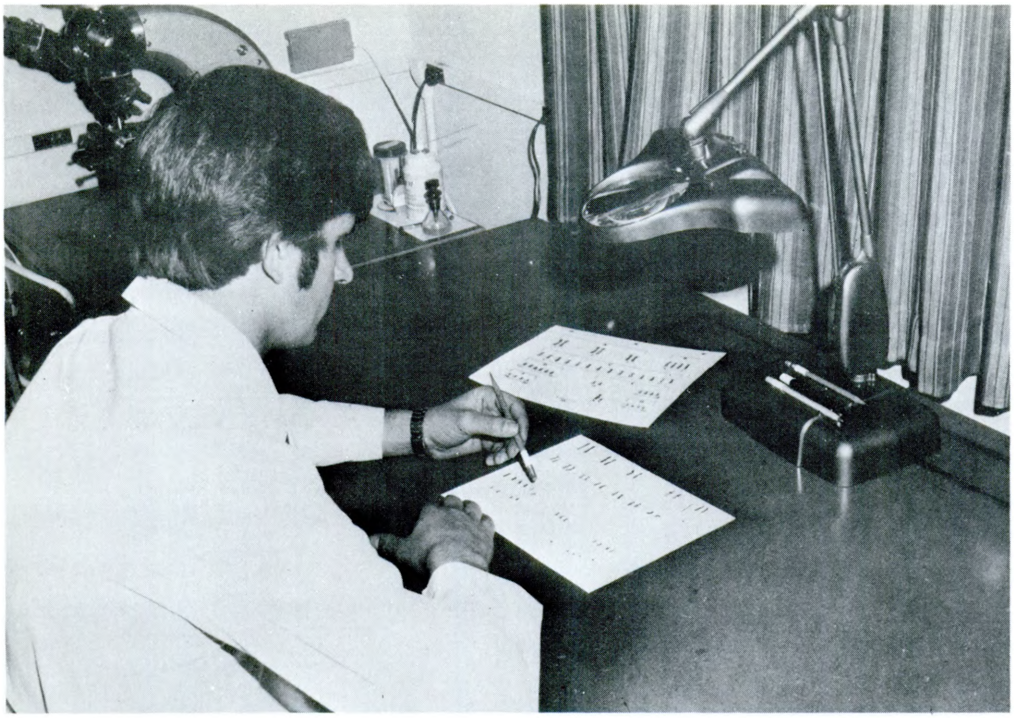

Figure 4. Research technologist works with chromosomes for prenatal detection of Down's syndrome

cedure, while relatively safe at this stage, must be done by physicians who are highly trained in the technique. Fetal cells are isolated from the fluid and, after sufficient growth and multiplication (figs. 2 and 3), are analyzed to detect a suspected abnormality.

Approximately 55 different genetic abnormalities can be diagnosed in the fetus by this procedure (*2*). Some of these conditions, when detected, may be treatable; others are still the subject of research. An example of one of the latter conditions is Down's syndrome, or mongolism. The most common single genetic type of mental retardation, mongolism occurs in approximately 1 out of every 600 live births, which in Nebraska would indicate 40 new cases each year. This condition is now detectable in the fetus. Figure 4 illustrates a phase of chromosome analysis being done to rule out mongolism in fetal cells obtained by amniocentesis. No treatment is as yet available for the condition.

Genetic counseling for birth defects and allied diseases is also available under the birth defects prevention program. Counselors in this service attempt to answer many questions parents or relatives of an affected child may have, such as, "What are the chances of it happening again?" To state the probability of reoccurrence in a subsequent child may require diagnostic studies, review of the medical records of affected relatives, chromosome analysis, and study of the family history and statistics on the occurrence of a specific defect in large populations.

With the advent of the birth defects prevention program, it is hoped that the incidence of birth defects will be reduced and that new discoveries will be made in this field with even greater ability to alleviate suffering and to improve public health.

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Venereal Disease Campaign in Colorado —A Model for Community Action—

JODY TAYLOR, BA
ROBERT W. GONRING, MPH

NO HEALTH EDUCATION PROGRAM can be truly effective if the community is not involved in it. Community planning and organization, using local talents, interest, and expertise, are an essential part of the venereal disease educational programing of the Colorado Department of Health.

Early in 1971, however, a great deal was lacking in both organized community resources and basic awareness of the venereal disease problem in the five-county Denver metropolitan area. But, with stimulus from a group of graduate students at the University of Denver's School of Mass Communications, a 6-week information campaign was jointly undertaken by the university and the Colorado Department of Health. The campaign was conducted on a broad scale, and if the State health department had had to bear all program costs, reasonable estimates indicate that the expenditure would have been several hundred thousand dollars.

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Background

Colorado's population is a little more than 2 million. In 1970 the Colorado Department of Health received reports of 6,073 cases of venereal disease; 5,782 of these were gonorrhea, 272 were syphilis, and 19 were other venereal diseases. These figures represent an increase in venereal disease cases of 32 percent over 1969 and 80 percent over the 5-year period 1966-70.

Since only about 1 in 10 cases of venereal disease is reported to public health officials (*1,2*), it is quite likely that 60,000 or more people in Colorado were infected with some type of venereal disease in 1970.

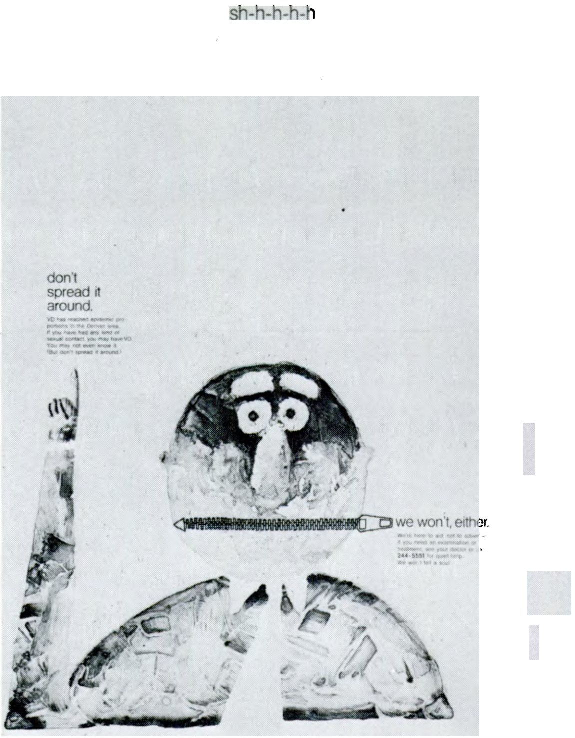
To create public awareness of the enormity of the problem, the chief of the health education section of the Colorado Department of Health committed half of Mrs. Taylor's time to VD information and education.

During a 9-month period before the campaign, meetings, consultations, training, and orientation sessions were held with more than 4,500 people. Included were "susceptibles" (our major target group—those aged 15–25 years), education associations, teachers, school administrators, parents, and service organizations.

Early in the spring of 1971 Mrs. Taylor was invited to speak to members of a graduate course in "Mass Media and the Social Environment" at the University of Denver. The class members were investigating major social problems around which to develop a community campaign, and they decided on the venereal diseases.

The class members did extensive groundwork before developing their plan of action, including interviews with students, public health professionals, physicians, and teachers. They asked the students how they felt and what they knew about venereal disease. They also asked the students whether they would prefer to hear their peers or knowledgeable adults making radio or television announcements about venereal disease. The students preferred the adults with the necessary credibility.

Armed with the information obtained by the class members, Maj. Lawrence Means, an Air Force Academy information officer on academic leave, and Denver University co-ed J. Anne Edwards, also a graduate student, asked the Colorado Department of Health for official endorsement and technical assistance for their campaign. Their request was granted by Dr. Roy L. Cleere, executive director of the department. Thus, our agency became the coordinator of the campaign, prepared and kept detailed records of pertinent information, and handled requests for speakers and materials.

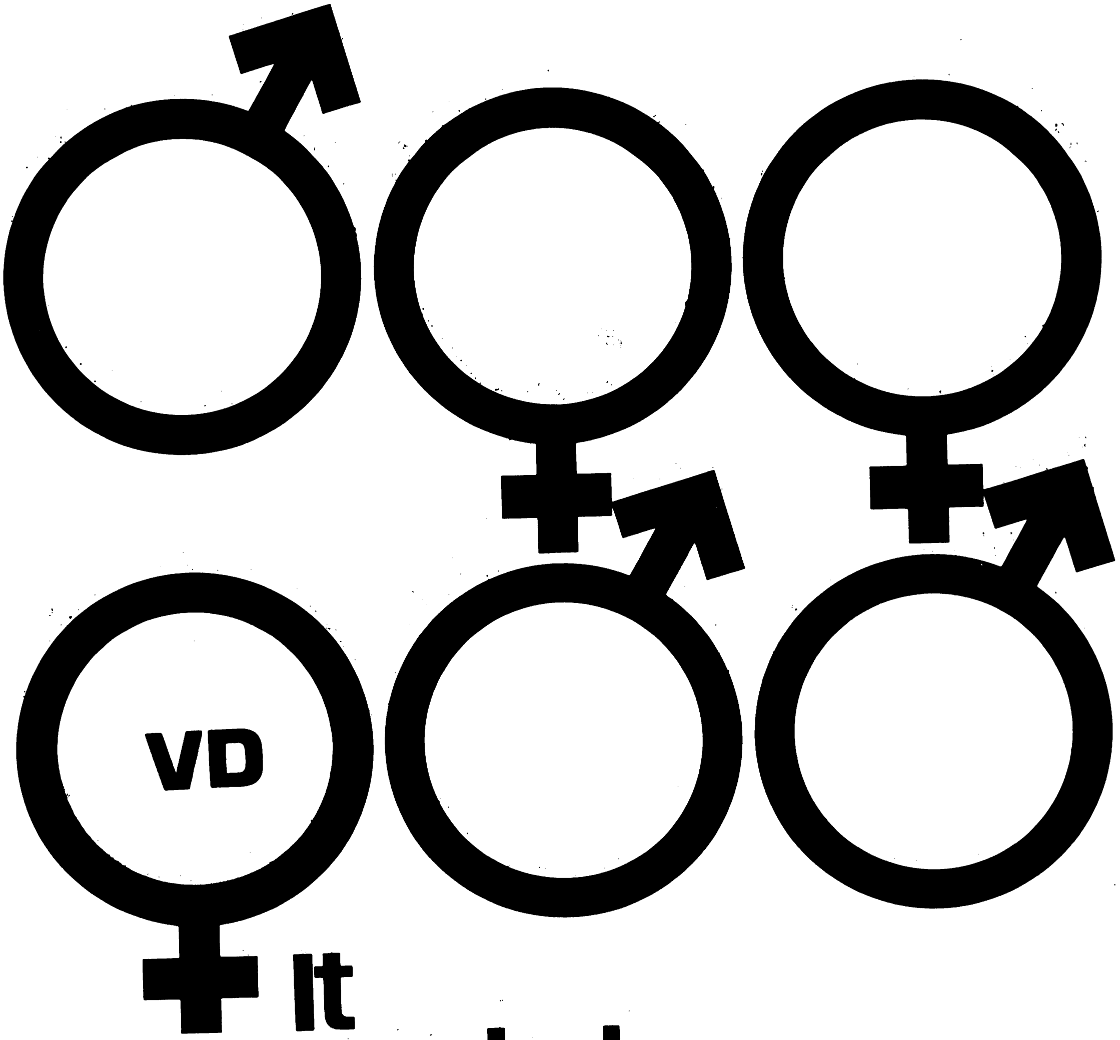


Two of the 12 posters created by volunteers for the venereal disease campaign in Colorado

Development of the Campaign

Information for use by the mass media was geared specifically to the age group 15–25 years. Radio and television announcements and news releases were written by the graduate class and checked by Frye-Sills Advertising, Inc., the commercial agency which coordinated all media aspects of the campaign. The advertising agency also contacted printers and artists, who volunteered talent and services to create 12 posters for the campaign. Local and out-of-State printers printed 13,000 posters without charge. Professional radio and television production, time, talent, studios, recording and sound equipment, music, and video tapes also were donated. The radio and television stations agreed to run a minimum of about 12 spot announcements daily. Some ran more.

Personnel of the State and local health depart-



It travels in the best circles

If you're 15 to 25, chances are strong that you have VD.
If you're a girl*, you might have it and not know it!

If you've had sexual contact, play safe; see your doctor
(he'll be discreet)

You'll feel better if you *know* you *don't* have it.
If you *do* have VD treatment is fast, effective and painless.

call **244-5551** *in Denver*

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*In 90% of girls and women, symptoms of some forms of VD do not appear. Examination is the *only* way to find out.

Design: Jon Peterson, Designers West, Inc / Typography: George Ferguson, Inc / Printing A B Hirschfeld Press / Project coordinated by Frye-Sills, Inc

ments informed school superintendents by telephone and letter of the upcoming campaign and asked them to contact their local principals for permission to place posters in junior and senior high schools. The State health department provided written background on venereal disease for the schools. Members of the Denver Chamber of Commerce and the Denver Health Department handled distribution of posters to schools, and Davis Brothers Drug Wholesalers handled the distribution of posters to drugstores in the five-county metropolitan area.

After everything was ready for the media and the campaign was set to roll in less than 3 weeks, we realized we had not planned for several vital components of an effective program: treatment facilities, the participation and cooperation of official medical societies and private physicians, and a central information telephone number.

These oversights were corrected as follows:

1. We held several meetings at the State health department with representatives of the Colorado and Denver Medical Societies and outlined the problems and program. We requested assistance in the form of (*a*) medical society endorsement of the campaign and (*b*) notification of private physicians by a special letter from the medical society informing them of the campaign and asking them to set aside a number of office hours weekly to see possibly infected patients; 26 physicians and a private clinic (the Denver Clinic) agreed to do so.

2. Dr. Cleere, Major Means, and Dr. John Cobb of the University of Colorado Medical School visited Gov. John A. Love to request emergency funding for a new clinic at Colorado General Hospital. At that time, only one official public health VD clinic existed, that at Denver General Hospital. In addition, there were two voluntary clinics, one in Denver and one in the university city of Boulder (People's Clinic). The Governor immediately provided funds for a new facility at Colorado General Hospital, and the clinic opened under the direction of Dr. Peter E. Dans.

3. The United Way Department of Community Services volunteered office space and its telephone number. This number was inserted on all posters and mentioned in all radio and television announcements and news stories, and it became a "household word" in the metropolitan area.

4. Response to a request for volunteers to man telephones came from people representing the following organizations: Denver County Court, National Secretaries Association, local colleges, Colorado Office of Comprehensive Health Planning, and the Colorado Department of Health. Volunteers were trained jointly by the staffs of the State health department and the United Way. They were given fact sheets, record forms, lists of clinics, and names and addresses of private physicians. Telephones were manned daily from 9 am to 7 pm.

5. Local health departments referred patients to the VD clinics, publicized the campaign, and answered requests for information. They also supported our program planning.

Immediate Results

From May 3 to June 16, 1971, 1,632 patients were seen at the clinics, and 436 were found to be infected. Of 693 patients seen at the Denver General Hospital, 199 were known to have come as a direct result of the campaign. The number of patients seen at the various facilities and their disposition were as follows:

Clinics	*Number*
Denver General Hospital:	
Number patients seen	693
Number patients treated	118
Gonorrhea	115
Syphilis	3
Average visits per clinic	27
Colorado General Hospital, Denver:	
Number patients seen	394
Number patients treated	190
Gonorrhea	66
Syphilis, positive tests	5
Syphilis, positive by VDRL test or latent	7
Nonspecific urethritis	52
Trichomoniasis, moniliasis, or other	60
Number patients referred elsewhere	15
Average visits per clinic	31–35
Millett Clinic:	
Number patients seen	195
Number patients treated	195
Gonorrhea	170
Other diseases	25
Average visits per clinic	10–11
People's Clinic:	
Number patients seen	350
Number patients treated, gonorrhea	70
Average visits per clinic	12.6
All clinics:	
Total patients seen	1,632
Total patients treated	436
Gonorrhea	421
Syphilis	15
Percent patients seen with venereal disease	26.1

All patients seen at the Colorado General Hospital were, of course, "new" patients because the clinic was new. Other services were also available to these patients at the hospital, such as emergency room, dermatology, family planning, and other clinic services.

Denver General Hospital documented 28 percent more patients in 1971 than for the same 6 weeks in 1970, and noted that more than one-third of the patients came as a direct result of the campaign. Also documented and traceable to the campaign was a noticeable increase in the number of middle-aged men who came for examination.

A 50 percent return on 400 questionnaires subsequently sent by the Colorado Department of Health to 400 private physicians showed that 200 respondents saw a total of 113 "new" patients and treated a total of 244—234 for gonorrhea and 10 for syphilis. Further, the United Way received 2,733 telephone calls during the 6 weeks, and 225 (73 percent) of the pharmacies in the five-county metropolitan area displayed posters.

Long-Term Results

- The Governor's office and the State legislature provided money for VD control activities, thus giving top priority to the problem. Additional monies were also authorized for funding of the new clinic at Colorado General Hospital and have been continued to date.
- The State's public health VD clinics extended their pre-campaign 18 hours weekly to 66 hours per week. In all, there are now five public-health-supported clinics and three voluntary ones. The public health clinic at Colorado General Hospital and two voluntary clinics also have night hours.
- The University of Colorado's Denver Center, in conjunction with the Colorado Department of Health, began a graduate credit course in VD education. Co-sponsors were the University of Colorado Medical Center and the Colorado Education Association. The purpose of the course is to re-educate teachers, school nurses, counselors, and others so that VD education may be incorporated into ongoing high school and college courses. Since this initial course, three other universities have joined in the effort. The four universities are cross-crediting a graduate course in VD education. To date, nearly 1,000 teachers have been trained. The course has been approved by the Colorado Department of Education and the Colorado Commission on Higher Education.
- In addition to the graduate course, the Colorado Department of Health's health education section is maintaining its ongoing program of inservice VD education to teachers and community groups.
- Ten regional laboratories are now culturing specimens for presence of gonorrhea in females, and local medical societies are now contracting with the Colorado Department of Health for supplies of culture media and for training in its use.
- A Venereal Disease Task Force, organized by the State health department, formed two subcommittees, one for professional medical education and one for parent-teacher information and education. The task force is an action group, rather than merely a planning group, and it is comprised of people outside the State health department who represent professional and community groups.
- Several radio and television stations continue to run updated announcements and others have recorded half-hour interview programs on VD problems.
- More than 100 telephone calls a week still come to the United Way line.
- Local county health departments within the metropolitan area are planning cooperative programs in VD control.
- In April 1973, a comprehensive VD education program was initiated and carried out in Pueblo, a city about 100 miles south of Denver with a population of approximately 100,000. This second major effort involved more than 30 community agencies and more than 200 local volunteers.
- Campaign posters have been requested by every State in the Union, as well as by the Center for Disease Control.
- Mrs. Taylor was invited to be a consultant on in-depth VD education and information by the Department of Health and Social Development in Manitoba, Canada.
- Federal funds were made available early in 1973, which enabled the Colorado Department of Health to hire two additional health educators for VD control activities.

Comment

From our experience with this campaign, we learned a number of important things.

We confirmed once again that "official agencies" cannot work in a vacuum. In order to provide services to the public, it is imperative to involve the community. The community-at-large is ready, willing, and able to respond to community health problems when it becomes aware of these problems; it needs only to be asked for help. Estimates are that without the support of the community the campaign could have cost the Colorado Department of Health many thousands of dollars—for air time, professional radio and television personnel, copywriters, distribution of posters, telephones, office space, secretarial help, forms, and people to man telephones.

The concern and involvement of interested people in the community can improve existing programs in public health and can help to effectively create new ones.

Thoughtfully planned creative awareness programs often help large segments of the general public to perceive certain health problems, such as venereal disease, as important to them, and they will respond selectively by telephoning for information and by using available facilities.

Organized education is willing to begin incorporating venereal disease education into the curriculum when made aware of this need. The medical community will also provide extra services when necessary and will cooperate with the health, academic, and business communities. And the State legislature can respond rapidly to crisis when the nature of the crisis is clearly and rationally presented.

Conclusion

The problems of venereal disease and its control are now highly visible throughout Colorado. The interest, concern, and involvement of laymen in the education and casefinding campaign stimulated the interest of health and medical professionals. As a result of this interest, laboratory support for culturing gonorrheal specimens from females is now being provided in local and regional laboratories. Individual physicians are learning the new culture techniques and are using them in their offices. The campaign also helped to identify program deficiencies.

Certainly the 6-week campaign did not solve all the problems of venereal disease control in the Denver area. However, it reaffirmed that the involvement of resources outside of officialdom can provide the impetus for action needed by official agencies.

We are satisfied that further efforts toward education and control of venereal diseases and other programs in public health might well be modeled after the program described here.

Summary

With impetus from a graduate class in mass communications at the University of Denver, the Colorado Department of Health sponsored a mass media venereal disease education campaign in the five-county Denver metropolitan area. The campaign ran for 6 weeks, beginning May 3, 1971, with radio and television stations airing a minimum of 12 spot announcements daily.

The United Way Department of Community Services provided its telephone number to be used in all spot announcements and on 13 different posters specifically developed for the Denver campaign.

Major results of the campaign were as follows. A venereal disease clinic was opened at Colorado General Hospital, which is connected with the University of Colorado Medical School. From May 3 to June 16, 1971, a total of 1,632 patients were seen at local clinics, and 436 were found to be infected. The United Way received 2,733 telephone calls, and 255 pharmacies (73 percent) in the five-county area displayed posters, as did many junior and senior high schools. The State's public health clinics extended their pre-campaign 18 hours weekly to the present 66 hours per week. To date 10 regional laboratories have been officially approved by the Colorado Department of Health for gonorrhea screening activities.

Additionally, four universities in the State are cross-crediting a graduate course in venereal disease education for teachers, counselors, school nurses, and others desiring graduate credit. To date, nearly 1,000 teachers have been trained. The course has been approved by the Colorado Department of Education and the Colorado Commission of Higher Education.

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Obtaining Optimal Attendance at Mass Immunization Programs

RALPH HINGSON, ScD

NEARLY 1 MILLION CASES of diphtheria, typhoid, measles, poliomyelitis, smallpox, pertussis, tetanus, tuberculosis, and typhus combined are reported each year in the Western Hemisphere (*1*). Since only a fraction of the actual number of cases is ever reported to health authorities, the unnecessary deaths, permanent disabilities, and concomitant economic, social, and psychological costs to the victims and their nations cannot be overstated.

Failure of Immunization Campaigns

All too often, even when vaccines, personnel, and immunization equipment are available and immunizations are free to populations, substantial proportions of the people still fail to receive them. These failures occur not only in developing societies but in the technologically advanced as well. For example, in a recent rural immunization campaign in Honduras, community turnouts for the campaign varied from as great as 80 percent of the target population in one community to as little as 15 percent in another (*2*). Surprisingly, according to the project coordinator of a continuing rubella program in a large eastern U.S.

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city, the project reached only 3 percent of the still susceptible population of 40,000 people during a campaign in April 1971.

Coordinating communication strategies with immunization program planning is crucial to the conduct of mass immunization campaigns. With the high-speed capacity of modern mass-immunization equipment, the most effective method of administering injections is by attracting people to immunization centers.

To date there has been a considerable amount of research describing and examining the reasons people fail to obtain immunizations. The literature on this research, however, presents the potential program planner with a bewildering set of contradictions and debates. For example, in a literature review of preventive behavior, Douglass asserts, "It appears from the literature that demographic and socioeconomic characteristics are better correlates of health behavior than health beliefs, social influences, or cultural background" (*3*). In direct contrast, Kasl and Cobb, in their literature review, conclude that the health belief model studied by Hochbaum, Rosenstock, and Kegeles is the best explanation offered for health behavior on the part of a person who has no symptoms (*4*). Lin and co-workers, on the other hand, place great stress on communication behavior and the social influence of individual persons during mass immunization campaigns as a predictor of immunization receptivity (*5*). This centrifugal tendency of research results leaves the program planner without knowledge of what will be most effective for the success of his program.

Thus, there is a need to translate descriptions of and debates about research results into concrete prescriptions on how to persuade people to respond to mass immunization programs. Translating research results into practical prescriptions is difficult and is usually avoided by academicians. These difficulties arise for three reasons:

1. It is difficult to know the extent to which results from a variety of research settings and methods can be generalized to other communities, countries, and continents.

2. Statistical results do not permit firm statements about cause-effect relationships.

3. Applying research results can be dangerous if other factors, either known or unknown to researchers and practitioners, are overlooked.

Nevertheless, the consequences of failure to attempt such a translation are so severe that the usual trepidations are outweighed. I shall attempt to provide a series of guidelines for persuading target populations to attend mass immunization programs. I will outline specific administrative suggestions and will seek to explain the theoretical and empirical rationale for them by drawing on the growing amount of literature that examines why people attend or fail to attend immunization programs.

Know the Target Population

The most important single recommendation that can be made to an administrator planning a mass immunization campaign is to know the target population. It is the key to all of the following recommendations.

The demographic characteristics, the communication exposure and behavior, and the psychological predispositions of a population must be known before one can intelligently plan an immunization program. Without such information it is difficult, if not impossible, to generalize to a target population the results and implications of research.

In an immunization campaign one should identify the unimmunized and the hardest to reach in the population. Numerous studies have been conducted in the United States and other countries to isolate the characteristics that seem to be related to immunization program attendance. The most striking result of these studies is that the receiving of immunizations is related to various measures of socioeconomic status.

In a review analyzing education, occupation, income, and immunization receptivity, Green reported that relations between social status and immunization status were so strong that even when one controls statistically for such commonly accepted explanatory variables as health knowledge, fear of diseases, and the availability of services, the positive association still persists (*6*). Before Green's observation, numerous surveys and reviews gave positive relations between education, income, and immunization receptivity (*7–22*). Only Merrill and co-workers reported an inverse relationship between education and receptivity (*13*). Moreover, research since that time has not contradicted these findings (*5a, 14*).

Race has also been studied in relation to immunization receptivity. Most researchers found nonwhites to be the least willing to accept immunization (*15–18*). The only major exception to these results was reported by Belcher. In Greene and Hancock Counties of Georgia, where special, sometimes coercive, efforts were made by teachers of nonwhite students to persuade them to receive poliomyelitis inoculations, the trends for social class and race were reversed (*19*).

Other researchers have examined the impact of a person's social integration into a community on his response to mass immunization programs. Based on measurements of social integration, participation in community organizations (*14a*), feelings of alienation (*14b, 15a*), and naming or being named by others in friendship choices (*20*), these researchers report that when a community is being offered immunizations, the more integrated into the community a person is, the more likely he will be to receive an immunization.

Another set of results suggests that, regardless of race, education, and income, the people who would be most likely to participate in a mass immunization campaign are those who feel they are susceptible to the target disease; that the disease, if contracted, would have serious consequences; and that immunization is an effective, convenient, and safe way of preventing the disease or diseases in question (*21–25*). These authors maintain that for persons who can be categorized this way based on their feelings, certain environmental cues are needed to trigger action. Such cues might include messages about health programs. Hochbaum even conjectures about the relationship between the psychological variables and the cues to action. He proposes that to produce action, a low intensity of psychological factors can be compensated for by a greater intensity of cues, and vice versa (*21a*).

For the program planner the crucial questions are how many people in the target population fall into these categories, why are some groups more resistant to immunizations, and how can these difficulties be overcome. Results about relationships between demographic characteristics, social integration, or health beliefs and immunization receptivity, when combined with knowledge about the proportions of the population who exhibit such characteristics, can be used to improve strategies to increase immunization receptivity.

Several hypothetical illustrations can be offered. Research has indicated that persons of lower socioeconomic status with lower levels of income and education, in general, have less exposure to mass media communications. Consequently, during a mass immunization program such persons are less likely to learn about the program, or they learn about it later than persons of higher socioeconomic status (*5a, 26, 27*). Similarly, persons with low levels of social integration tend to have fewer communication contacts and also are less likely to learn of immunization programs. If an administrator identifies such groups in his target population, he should employ more than mass media or community organizations to inform the population about the program.

Although, admittedly, more personnel would be required, special additional information dissemination could focus on neighborhoods inhabited by persons of lower socioeconomic status and weaker social integration. Such efforts might include door to door canvassing, leaflet distribution, and posting information in supermarkets, laundromats, department stores, transit vehicles, and public buildings.

Also if one knows the beliefs of a population, strategies can be devised that are appropriate to those beliefs. If large portions of a population already feel susceptible to a disease or feel it would have severe consequences if contracted, little may be gained by disseminating messages designed to further heighten anxieties about susceptibility and severity. In such a population, more might be gained by disseminating messages that provide information about how to obtain immunizations most easily. If messages about susceptibility and the severity of a disease are to be used at all, perhaps they should be reserved only for those segments of the population that do not feel susceptible to the disease or feel it has little consequence if contracted.

To evaluate these suggestions and the others that follow, program planners should know the characteristics of their target populations. Without such knowledge they will be unable to judge the applicability of different strategies to target populations.

Begin Information Dissemination Early

A common belief among public health administrators who plan mass immunization programs seems to be that if a population is informed too early, interest will wane and many people will forget about the program. While such logic is well intentioned, it ignores a more overriding issue. Unless information dissemination about a program begins early, it will not reach the entire target population.

Research on the diffusion of information and on the acceptance of innovation has shown that both proceed on an S-shaped curve cumulatively over time (*28*). In a campaign in Central America, Lin and Hingson found similar curves over time for the diffusion of information about the immunization program and for the decision making about whether to accept immunizations (*2a*).

If information about an immunization campaign is not allowed sufficient time to diffuse, for example, if diffusion time is cut in half, large segments of the population will never learn about the program and a small proportion will be unable to decide whether to attend (see chart).

Of course, the impact of lengthening the time between the initiation of information dissemination and the immunization program may vary for different populations. The actual length of time required for information to disseminate to an entire population may vary according to the exposure of a target population to different communications media and according to the degree to which those media coincide with the media employed to disseminate information about an immunization program.

Lin and co-workers suggest that planners in developing nations allow at least 4 weeks for information dissemination before the date of an immunization program (*5b*). In more technologically advanced societies slightly less time may be required. Certainly, any planner who does not allow at least 3 weeks of intensive information dissemination could seriously imperil his program.

Use More Than One Communication Medium

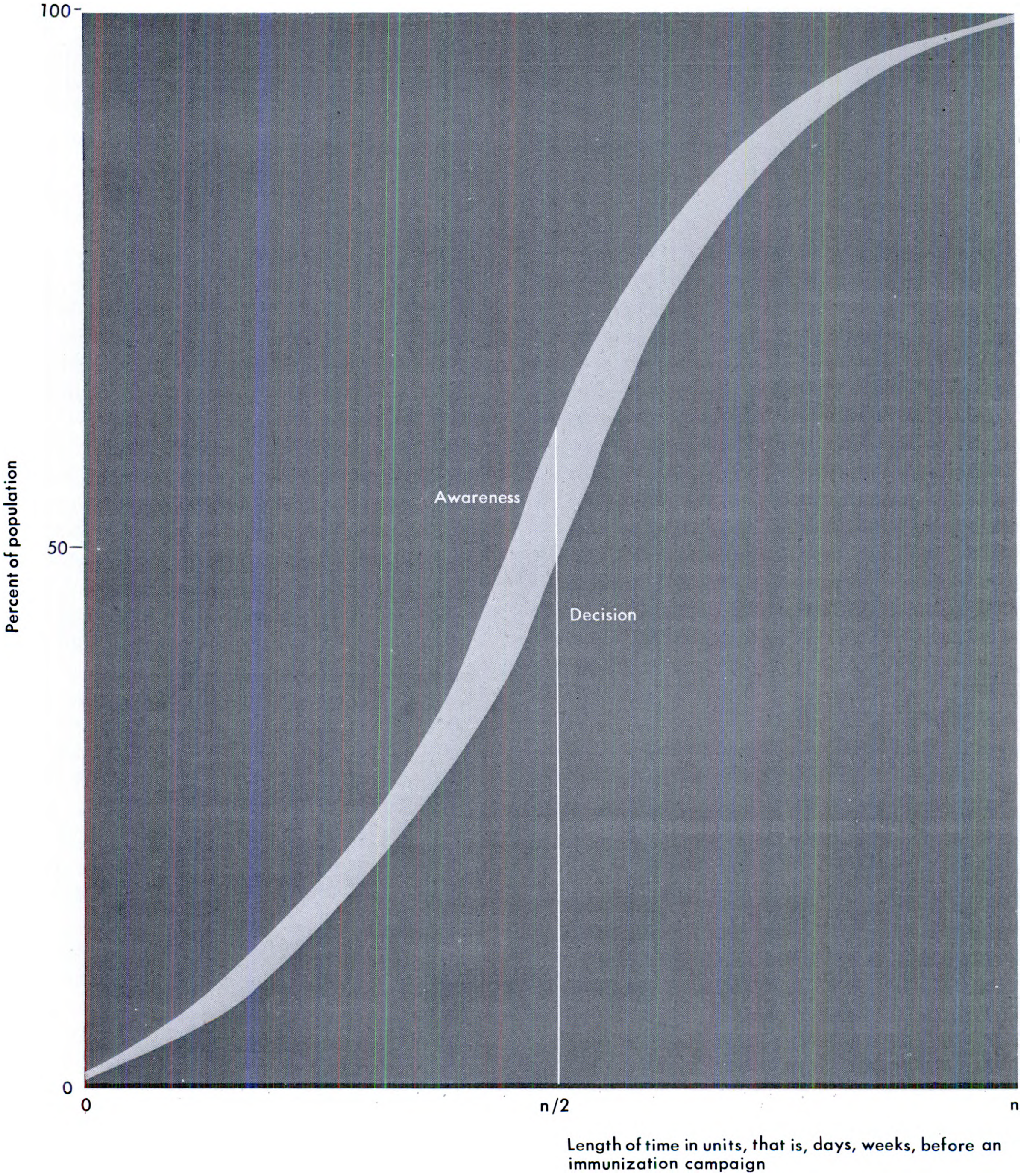
Some program planners may fall into the trap of relying too heavily on only one communication medium or on too few media in efforts to both inform and persuade a population to be immunized. The tendency to rely heavily on mass media may be especially great. Three objections can be raised to such a strategy. As already mentioned, not everyone may be exposed to the mass media. In the United States most persons learn health news from newspapers (*29*), yet not all households receive a daily newspaper (*30, 30a*). Moreover, the proportion of the population that has sufficient exposure to any or all of the mass media to insure a rapid awareness of an immunization program may not be all that much greater than the proportion exposed to a daily newspaper. In developing nations the exposure to a variety of media is much less than in the United States.

Mass media may prove helpful only in disseminating information about a campaign, not in persuading persons to attend. The idea that mass media alone cause direct, immediate, and substantial changes in human attitudes and behavior is, under many circumstances, a misconception. Each person brings to a potential communications situation a background of different social environments, cultural values, and relations to family and peer groups, a background which may determine his exposure to mass media communications, his retention of those communications, and his response to them.

Empirical studies of immunization programs support this contention. In a study of a campaign in four Honduran villages, Lin and Hingson (*2b*) reported that interpersonal communications were more important than mass media messages in persuading people to attend. A communication channel effectiveness score was calculated by determining a ratio of the number of persons relying on the same communication source for information about the immunization program in relation to the influence leading them to attend the program. Personal sources were most effective (83:93 percent), compared with 47:86 percent for local interpersonal disseminators and 20:47 percent for radio, which was the mass medium most widely used by the study population. The numerator reflects the percentage of respondents who were informed by a communication source who reported that that source was the most influential in prompting them to attend. The denominator reflects the percentage of the population who learned something about the program from a particular communication medium.

These results suggest that more people learned about the program from interpersonal sources than from mass media sources, and that a higher proportion of those who learned from interpersonal sources were influenced by those sources to attend than by such mass media sources as the radio (*2b*). D'Onofrio, in a review of the literature, suggests that in the United States, newspapers have greater influence than other mass media in persuading people to become immunized. But, like other mass media, they are not as likely to bring about opinion change as merely to provide information (*8a*).

Hypothetical diffusion in a target population of information about an immunization program and decisions to receive an immunization



NOTES: O = date of initial information dissemination
n = day of program if information dissemination began early enough to allow full information diffusion
n/2 = day of program if ony half the information dissemination time is allowed.

Katz and Lazarsfeld (*31*), Rogers (*28*), DeFleur (*30*), and many other communications experts agree that interpersonal communications may exert more impact than mass media in initiating or inhibiting social change. Compared with mass media communications, interpersonal communicators have these advantages: (*a*) they can spot and explain a misunderstanding to an audience more easily because of immediate audience-communicator feedback, (*b*) they can be more persistent in the face of resistance or apathy because they are not as easy to turn off as a radio or television, (*c*) they may be more difficult to avoid, (*d*) they can be better known to an audience and hence easier to trust, and (*e*) they can offer an immediate reward for agreement.

In fact, Klapper (*32*) leads a large body of opinion which maintains that mass media communication can have a persuasive impact only where (*a*) the issues at hand are not important to the audience, (*b*) mass media communications reinforce initial predispositions and proclivities of the audience, and (*c*) mediating factors such as predispositions, social ties, and personal influence opposing the mass communication are inoperative.

These results, however, do not suggest that mass media have no persuasive effect. Mass media dissemination in Lin's study appeared to be the most effective in informing those persons who learned about the program the earliest (*2c*). Many of these persons in turn informed and persuaded others to attend campaigns.

One can further argue that using more than mass media dissemination will increase the understanding and credibility of the messages (*8c*). If a person hears the same information and advice from more than one source, he will be more likely to believe and understand what he has heard. Studies of information diffusion have shown that those who obtain information often seek to check its veracity, regardless of the initial source of their awareness. A survey by Hingson and Lin (*33*) of female household heads during an immunization campaign in four Salvadorean communities revealed that almost one-third of the respondents sought information and advice about an immunization program from more than one source. Those who sought additional information and advice were significantly more likely to attend the immunization campaign than those who did not. Consequently, as many different communication channels or media as possible should be employed to inform and persuade people to attend an immunization campaign. This applies not only for hard-to-reach segments of the population but for other segments as well.

Offer Intelligible, Believable Messages

To state that messages about an immunization program which are disseminated to the public should be intelligible, believable, and geared to the audience may at first appear to be simple-minded and pedantic. Unfortunately, this simple-minded, pedantic reservation is all too frequently overlooked. For example, a recent rubella campaign in a large eastern U.S. city centered its messages around the slogan "Rub Ella Out." Taxicabs and buses with posters bearing the slogan circulated throughout the streets for 3 weeks before the immunization date, and radio, newspaper, and television announcements focused on the same theme beginning 1 week before the program. Yet, on the initial date of the immunization program, only 3 percent of the target population appeared for immunization. The low turnout can be attributed, in part, to the unintelligible character of the slogan, "Rub Ella Out."

A spot survey of indigent mothers reporting to one of the city's pediatric clinics the day after the program supports this hypothesis. Of the 44 mothers interviewed, only 27 percent understood the "Rub Ella Out" slogan. Slightly more than 41 percent were aware of the immunization campaign before it took place. One mother, when questioned about the meaning of the slogan, conjectured that it had some connection with Ella Fitzgerald, the famous singer and entertainer. Another mother ventured that "Rub Ella Out" referred to a disease. When questioned as to which disease, she responded, "Ella." When asked about the severity of the disease if contracted, she replied, "It can kill you."

In setting up a mass immunization campaign one cannot expect all portions of the population to understand even relatively simple medical terms. Suchman, in a unique exploratory study in New York, found a lower level of knowledge and a higher level of skepticism toward professional medical care among persons with lower levels of education, persons who belonged to community groups that were highly exclusive ethnically, and persons who had friendship and family groups with strong, cohesive ties (*34*). This result, in part, may be explained as arising from a breakdown in communication between such persons and the health care system. The inability of a target population to understand technical terms used in an immunization campaign is an example of such a breakdown.

Statements about an immunization campaign should be believable, also. Receiving immunizations should not be portrayed as an easier, more pleasant, less riskful act than it is. Moreover, the consequences of not receiving immunizations should not be dramatized to the point where the communication loses its credibility.

Failure to apprise a target population fully and accurately of the potential side effects and inherent costs of an immunization could prove detrimental to overall receptivity. If unexpected side effects do occur, rumors discrediting the program, as well as other public health programs, may arise. Although no specific examples of this phenomenon during immunization programs have been studied, the family planning literature is rich in discussions about the discontinuance of contraception for this reason (*35*). Because some immunizations produce annoying reactions such as fever, sore arms, and scars, announcements should be made that followup personnel will be accessible to care for those experiencing difficult complications. All those receiving immunizations should be cautioned about potential side effects.

Conversely, excessive use of fear-arousal techniques to increase attendance at immunization campaigns may also prove unproductive. Although some research tends to support the effectiveness of fear arousal in fostering health behavior (*36, 37*), other studies have reported little benefit from it, and some even suggest that fear-arousal techniques have a detrimental effect.

Radelfinger conducted a study in which he used fear-arousal techniques to persuade students at two California universities to receive tetanus injections. He reported that students in a group exposed to fear-arousing communications were not significantly more likely to obtain injections than those not exposed to such exhortations. Although the fear-arousal groups were likely to express greater verbal receptivity to immunization, this receptivity was not borne out by their subsequent actions (*38*). Unfortunately, so few students from either group received immunizations that the results are at best suggestive.

Levanthal and co-workers also investigated the use of fear-arousal to persuade college students to receive tetanus injections. They used a series of combinations of fear-arousing and informative messages. The authors concluded that even when accompanied by specific fear-allaying instructions, it is doubtful that there is any increase in acceptance once fear is raised above some adequate threshold (*39*).

In other studies not dealing with immunization, but with other preventive health behaviors, the authors have concluded that fear-arousal techniques may even lower the acceptance of preventive health action. Janis and Feshback examined the impact of various levels of fear-arousal concerning dental hygiene on a group of high school students (*40*). A control group was compared with a group receiving minimal fear-arousal messages in which the outcome of poor dental hygiene was verbally described and with a group in which high fear-arousal techniques were employed. The high fear-arousal techniques included showing vivid pictures depicting the outcome of poor dental hygiene. When students were questioned 1 week later, the minimum fear-arousal message had produced the most student-reported behavior conformity to the prescribed dental regimen. The authors concluded that the minimum fear appeal was more effective than the maximum fear-arousal techniques, at least in eliciting verbal compliance.

Hovland suggests several reasons that fear-arousal techniques may prove ineffectual. First, those exposed to the communication may minimize the threat. The threat may be perceived by the listener as improbable, inapplicable to himself, unimportant even if it occurs, or so temporally remote that he feels no need to bother about it until later. Moreover, Hovland suggests that even when a fear appeal succeeds in arousing emotional tension, it may fail to produce intended opinion changes because the communicator's reassurances may not be reinforced. The communicator's reassurances may be regarded as irrelevant to the threat, impossible to carry out, or only partially successful in averting the threat. As a result, the audience may fail to pay attention to what is being said, may become aggressive toward the communicator, or may try to avoid subsequent exposures to such anxiety-arousing messages (*41*).

Audience characteristics also affect the impact of a communication for other reasons. The educational level of an audience, its predispositions about the topic discussed in the communications, and its prior exposure to communications about a given topic have implications for (*a*) the use of one-sided versus two-sided communications, (*b*) for the effects of stating a conclusion in messages, (*c*) for the effects of the order in which information or advice is given within a communication. Unfortunately, studies on these aspects of message construction have not dealt with the topic of immunization and have been confined to laboratory experiments rather than to actual community programs. Nevertheless, some tentative suggestions for the immunization program planner can be drawn from this research.

In most of these studies, two-sided communications (that is, those that explain arguments favoring and arguments opposing a given issue) have been reported to be most effective in persuading people to adopt a given position over time. From a study of messages that were given to a group of soldiers about the probable length of World War II, Hovland and co-workers (*41a*) concluded that one-sided arguments were effective only for less educated men with undeveloped skills in critical thinking; two-sided communications were more effective for more educated, more critical men. One week after messages were given to soldiers, some of them were exposed to arguments running counter to the messages. The results of a post-communication survey were also summarized. Hovland and co-workers indicated two circumstances in which a two-sided presentation is more effective in the long run than a one-sided communication: (*a*) when regardless of initial opinion an audience is exposed to subsequent counter arguments and (*b*) when, regardless of subsequent exposure to counter arguments, the audience initially disagrees with the communicator's message. The one-sided presentation is more effective only when the audience agrees initially with the communicator's position and is not later exposed to counter arguments (*41b*). In planning an immunization program one should therefore seek to ascertain the existing predispositions of an audience. Controversial topics should be presented in two-sided messages.

The effectiveness of allowing an audience to draw its own conclusions from messages has been compared with the effectiveness of explicitly stating a conclusion about the implications of the arguments within messages. Hovland and co-workers also suggest that variations may arise depending on the communicator's credibility, the kind of audience, and the kind of issue presented. Nevertheless, these researchers hypothesize that in persuasive communications about a complicated series of arguments on impersonal topics, it is generally more effective to state the conclusion explicitly than to allow the audience to draw its own conclusion (*41c*). In a more recent review of the research in this area, however, Cohen reports that later research has not confirmed the earlier observations. He suggests that many problems need to be investigated before one can fully understand the conditions under which explicit rather than implicit presentations are more effective in producing attitude changes (*42*).

The effects of the order of presentation of arguments for and against a position were presented: the effects of presenting arguments favoring the position first were compared with the effects of presenting arguments opposing the position first. In an extensive review of the research on this topic, Cohen concluded that the literature seems to exclude any universal rule that giving favorable arguments first is the most effective way to construct messages. He maintains that coming first makes a statement no more likely to be remembered, but does make it more likely to be believed. Moreover, some conditions may alter these effects. These conditions include time of measurement, similarity of issues, contiguity of presentation, number of separate issues, experience with the communicator, warnings against premature commitment, encouragement toward commitment, and ambiguity inherent in the sequence of communication (*42a*).

In sum, the recommendations about message construction that can be offered to administrators planning immunization programs are at best tentative. The literature in this area is replete with contradictions, and most of the studies have been laboratory experiments dealing with messages not related to immunization programs. Nonetheless, one can concretely conclude that messages must be intelligible to the target population and that they must be believable. Messages should avoid technical terminology. Communications that describe immunization as an easier, more enjoyable experience than it actually is probably offer little additional persuasiveness and may be detrimental to the credibility of the communicator. Similarly, messages which use fear-arousal techniques may prove counter-productive if the consequences of failure to receive immunizations are dramatized in an excessively emotion-arousing manner. Also, one can suggest that communications to the target population should include discussion of the pros and cons of issues that might be the subject of controversy in a target population.

Encourage Discussion of the Program

If members of the target population discuss the program with each other, diffusion of information about the program may be more rapid and complete. In addition, such discussions appear to make persons more committed to becoming immunized. Hingson and Lin, in their study of a mass immunization program in El Salvador (*33*), reported that those who sought or relayed information or advice about an immunization program to others were significantly more likely to have attended the program than those who did not. This participation in communication can serve several purposes. The person may learn more about the program; be able to correct misinformation received previously; be able to gain assistance with transportation to the immunization center or with care for his home or children while the immunization is being received; and be better able to assess the likelihood that others will attend the program. While some of these functions may be positive, others could conceivably be negative. Negative rumors and misinformation could be communicated. Future research should attempt to uncover the degree to which such behavior occurs.

In addition, the research should seek to determine the effect of the person's discussing the program with others at different stages in his acceptance of the program. Presumably, the impact of discussion would be different for someone who is just learning about the program than someone who has decided to attend. In any event, preliminary evidence does suggest that discussion with others seems to provide positive reinforcement to attend immunization programs.

Evaluation

The communication campaign should be evaluated before and during the immunization program. Because my recommendations are tentative and target populations vary widely during immunization campaigns, attempts should always be made to determine the effectiveness of communication efforts during the communication phase of a program. Such an effort should ascertain how effective the initial communication strategy has been, uncover any problems with the information campaign, and devise measures to overcome impediments to the success of the program. Special attention should be devoted to determining (*a*) whether the members and subgroups within a population have become aware of the immunization campaign; (*b*) if they have learned its purpose, how to attend, and any other relevant information about the program; (*c*) if they have been persuaded to attend; and (*d*) if any rumors or arguments opposing the program have arisen.

Evaluation of communication efforts should be done before the actual immunization program; emphasis should be put on quick analysis of results. Frequently, administrators rely upon initial turnouts at immunization centers as the basis for assessing communication efforts. By waiting until this stage they usually do not allow time for alterations in program strategies to have an impact. To obtain data that can be rapidly assessed and acted upon, small spot surveys should be undertaken focusing on segments of the target population known or suspected of being the most difficult to inform and persuade. Because the purpose of the surveys is to obtain quick feedback for the program administrator, the efforts should not be so extensive or intensive that they could hamper the quick return of information.

Make Attendance Easy

To make attendance as easy as possible, the program planner should choose convenient hours for the target population. For this reason, in the United States, Sundays have been most frequently selected for conducting immunization programs. If immunizations must be given during the week, immunization centers should be open during both daytime and evening hours to insure that those who cannot leave their jobs will have an opportunity to attend. In a survey of an immunization program conducted during weekdays in El Salvador, Lin and co-workers (*5c*) reported that 30 percent of those who did not attend failed to do so because they were ill or had conflicting obligations on the day of the program. To accommodate this difficulty, administrators should allow more than 1 day in each locale for followup of those not immunized.

Immunization centers should also be located so as to facilitate program attendance. They should be centrally located, close to public transportation, and in buildings known to all members of the population. Places where people normally congregate—public buildings, markets, and schools—are ideal. In a spot survey during a recent immunization program in a large eastern city, it was found that 74 percent of the respondents did not know the exact locations of immunization centers. The name and address of all immunization centers should be published in advance of the program. Any changes in time or location should be publicized as soon as possible, and a responsible official should be at the original site at the time originally specified to refer persons who might not have learned of the change (*5c*).

Receptivity as Behavioral Process

The relevance of these suggestions will perhaps be better understood if one regards the seeking of immunizations as a behavioral process. The process of participating in an immunization program can be divided into three stages—initial awareness of the program, decision making, and decision actualization. The initial awareness stage, when a person first learns of an immunization program, begins with the initial official efforts to disseminate information about the program and ends when the person first learns about the program. The decision-making stage, when a person decides if he ought to be immunized, begins when he initially learns about the program and ends when he has firmly decided he ought to attend. The decision actualization stage, when a person actually takes steps to attend, begins when he has decided he ought to be immunized and ends when he finally receives an immunization.

This conceptualization follows the work of Cartwright, who in the 1940s suggested that to influence any behavior a chain of processes must be initiated. One must create a particular cognitive structure, a particular motivational structure, and particular behavioral structures (*43*).

Although these three stages usually occur in the sequence outlined, the stages may vary with each person as to the duration of the stage and the behavior exhibited. Moreover, some persons never pass through all three stages.

It is necessary to regard immunization receptivity as a process of behavior if one is to obtain a full appreciation of the reasons why some persons failed to be immunized. Otherwise, one does not know whether the failure to receive an immunization results from failure to become aware of a program, failure to come to a decision that immunizations are desirable, or failure to act once the person has come to such a decision.

Future research examining the receptivity to mass immunization programs needs to explore how the variables associated with such receptivity affects behavior during each stage of the process. At this point we know that mass media are generally the most effective channels of communication in making people aware of immunization programs and that interpersonal sources are the most effective in persuading people to decide they ought to be immunized. It is also known that persons of higher socioeconomic status, especcially those of higher education, are most likely to be those in a community who learn earliest of an immunization program, but these same persons, in general, take longer to decide that immunizations are desirable (*26a*). Moreover, a great deal is known about constructing messages to persuade people that immunizations are desirable. Finally, based on the evidence to date, one can predict that variables that affect ease of attendance—hours of the program, accessibility of the center, a person's knowledge about attending—have their greatest effect on behavior during the stage of decision actualization.

But our knowledge about the process of receptivity is far from complete. For instance, one can ask whether other demographic characteristics are more likely to affect a person's awareness of a program, his decision to attend, or his attempts to act on that decision. Do a person's health beliefs have a greater influence upon awareness, decision making, or actual attempts to carry out decisions? Is it possible that a person's health beliefs change as he passes through the process of immunization receptivity. If so, how does that affect his behavior? Do health beliefs, demographic variables, and social influences have the same impact relative to each other at each stage in the process, or are some factors more important during some stages and less during others? These questions and many others can be raised if one regards immunization receptivity as a process of behavior. One realizes then also how limited our knowledge is of the reasons why people attend immunization programs.

Nevertheless, regarding immunization receptivity as a behavioral process does illustrate that obtaining attendance at a mass immunization program rarely can be accomplished merely by informing people about the program alone, using persuasive communications alone, or making attendance easy and convenient alone.

To achieve adequate attendance by the target population, the administrator must help each person pass through the three stages of inital awareness, decision making, and decision actualization. Measures to foster a person's passage through a single stage may not insure adequate program attendance. The administrator has to focus on all three stages—informing the population, persuading them to attend, and making attendance easy. Moreover, he has to make efforts to see how well these objectives are being accomplished before the actual immunization begins. Failure to administer all of these tasks can seriously jeopardize the success of an immunization campaign.

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The failure of many persons to be immunized against communicable diseases often can be attributed to problems in the communication strategies that attempt to persuade people to attend immunization campaigns. Although there has been considerable research examining why people fail to obtain immunizations, the literature presents the program planner with a bewildering set of contradictions and debates. In translating reported research results into practical guidelines for persuading target populations to attend mass immunization programs, it is suggested that program planners (*a*) know and study the target population before an immunization campaign; (*b*) begin communication announcements about the campaign early, preferably 3 to 4 weeks before the actual program date; (*c*) use a variety of communication media to disseminate messages about the program; (*d*) disseminate messages that are intelligible, believable, and geared to the predispositions and knowledge of the target population by avoiding excessive use of technical terminology and fear appeals; (*e*) encourage members of the target population to discuss the program with each other; (*f*) make efforts before and during the immunization compaign to evaluate the communication strategies used; and (*g*) attempt to make attendance as convenient and easy as possible for the target population.

It is also suggested that researchers and administrators regard the receptivity to immunizations as a behavioral process that entails for each person: (*a*) learning about a program, (*b*) deciding he ought to attend, and (*c*) carrying out that decision. Researchers need to explore what predicts behavior during each stage of a mass immunization program, and administrators need to strive to inform the population, persuade the population that immunizations are desirable, and facilitate attendance.

Use of Emergency Room Services by the Population of a Neighborhood Health Center

MARSHA R. GOLD and ROBERT G. ROSENBERG, MD

IN RECENT YEARS, neighborhood health centers have been advocated as a vehicle for delivering high quality medical care to low income people. It was hoped that the establishment of neighborhood health centers would overcome the impersonal, fragmented, inaccessible, and episodic care that is characteristic of hospital outpatient departments and emergency rooms, which have been a primary source of medical care for the low income population (*1*). Most of the arguments for establishing neighborhood health centers imply that when people are given a choice between care in hospital facilities or neighborhood health centers, they will opt for the centers. Thus, the following question arises: Now that many neighborhood health centers have been in operation for a few years, to what extent do people continue to use traditional hospital-based services and why?

Previous studies have indicated that—at least in isolated areas—when a neighborhood health center is established, it is used by a large proportion of its target population. These studies also indicate that use of other sources of care continues, but to a lesser extent. Bellin and Geiger (*2*) found that 2 years after the establishment of a neighborhood health center in an isolated housing project, 71 percent of the target population (and 97 percent of the children in the target population) used the center as their regular source of care. The center's registrants were drawn equally from those who had no previous regular source of care, those who had private physicians, and those who had previously used hospital facilities. The authors assert that most people using the center received their total care from it except for those persons referred elsewhere for specialty care; however, no supporting evidence is given.

Solon (*3*) reported on the use of a health center in a newly constructed isolated housing project in Pittsburgh. Three years after its opening, he found that 31 percent of the people used it as their central source of care (the source in which people feel most confidence); 42 percent used it as their volume source (the source they use the most); 59 percent used it to some degree; 41 percent never used it. Like Bellin and Geiger (*2*), Solon found that shifts to the health center occurred equally among people previously using the services of private practitioners and people previously using hospital-based facilities.

Hochheiser and associates (*4*) studied the pattern of visits to the four most widely used emergency rooms in Rochester, N.Y., 15 months before and approximately 3 years after a neighborhood health center opened. They found a 38 percent reduction in emergency room visits by children at three hospitals in the center's area. During the same period, the number of visits made to these three emergency rooms by city children outside the center's catchment area did not change, and visits by suburban children increased 29 percent.

Ms. Gold, now a health systems analyst at Abt Associates, Inc., Cambridge, Mass., at the time of the study was a graduate student in urban studies and planning at the Massachusetts Institute of Technology, receiving support for the study as a research assistant at the Harvard-M.I.T. Center for Health Services and Technology. Dr. Rosenberg, now senior associate at the Harvard Center for Community Health and Medical Care and assistant professor of pediatrics at Harvard Medical School, at the time of this study was medical director of the Martha Eliot Health Center, Jamaica Plain, Mass.

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A number of variables were studied in an attempt to reveal patterns of use. The authors found that one-fifth of the visits to the emergency rooms by children in the center's area were made by children registered at the center, while half were made by children not registered at the center but eligible for its services. Other variables studied, such as child's census tract, age, race, time of visit, payment status, and the reason for the visit did not indicate any meaningful patterns of use.

Despite these studies it is unclear to what extent other sources of care are still used by people eligible for health center services, how such other sources of care are used, and what factors result in different patterns of use. Our study was addressed to part of this question. We examined the use of health center and emergency room services by children served by a mature neighborhood health center.

This mature center, the Martha Eliot Health Center, was established in April 1967 in the Bromley-Heath Housing Project, a low income housing project operated by the Boston Housing Authority. It serves about 17,000 persons within the northern section of the Jamaica Plain area of Boston. The health center has been described by Salber and associates (*5*). Recently there has been an influx of Spanish-speaking families.

The health center is funded in large part through the Maternal and Child Health Services of the Department of Health, Education, and Welfare. It is affiliated with and operates under the licenses of the Children's Hospital Medical Center, the Boston Hospital for Women, and the Peter Bent Brigham Hospital. Services consist of pediatrics, maternal health, adult health, and children's dental services. A full range of health education, rehabilitation, mental health, and preventive services are given within the center and by other sources in the community.

The registration process of the center consists of assigning clinic record numbers to family members wishing to receive care there and collecting basic health and demographic data. No formal or informal contractual arrangements are made between the center and the registering family. Each child in a family is assigned to the same team. Social services and public health nursing services are provided for the entire family, and a family's records are kept in one folder. During the time of our study, pediatric services were provided from 9 am to 5 pm on weekdays and from 10 am to 12 pm on Saturdays for emergencies. Visits are by appointment, although patients without appointments are almost always seen.

Salber and associates (*5*) found that in the center's first year of operation between 40 and 60 percent of the families in the area had registered for its services and that registration rates were higher among black and Spanish-speaking families, families with young children, families on AFDC, and those who lived in the housing project. Families that had been attending hospital clinics before the center opened were more likely to register at the center than families seeing private practitioners (*6*).

In a later study Salber and associates (*7*) found that 87 percent of the registered children had received at least one service during the year studied (1968), and 70 percent had been seen by a pediatrician. Use of the center by children was high during that year; 7.2 mean visits per child for all services were made by children living in the housing project and 6.8 visits by children living outside the housing project but in the target area. Once families were registered, socioeconomic variables had little effect upon use. It was found that the predominant pattern of utilization in 1968 for registered patients was that of using the health center in combination with another source of care, mainly hospital clinics (*6*).

Beyond the services provided by the health center, the children in the target area could use the services of hospitals and the few private physicians nearby. The nearest, most accessible, and most widely used of these sources of care was the Children's Hospital Medical Center. The health center refers children to this hospital for X-rays, specialty care, and consultations. While the hospital's outpatient department delivers mainly specialized pediatric care on a referral basis, its emergency room provides care for acute illness on a 24-hour basis to virtually all children who come there.

In our study we examined use of the Children's Hospital emergency room and the Martha Eliot Health Center by the children residing in the center's target area in an attempt to determine: (*a*) to what extent each was used by these children, (*b*) what variables determined differences in such use, and (*c*) to what extent both were used by the same children and which different patterns of use could be isolated.

Methodology

All visits by children living in the Martha Eliot Health Center's target area to the center's pediatric clinic and to the Children's Hospital emergency room were identified for the 4-week period from January 12, 1971, through February 8, 1971. From billing forms, encounter forms, records, and other sources at the center, information was gathered on each child's age, diagnosis, address, and time and day of visit. In addition, for every child seen at the emergency room and for every fourth child seen at the health center, other information was gathered concerning the child's socioeconomic status and previous history of use of each facility from June 1, 1970, through the end of the study period. The data were then coded, keypunched, and analyzed by computer to provide summaries and cross-tabulations of the different variables studied.

Although it would have been useful to interview patients' parents to determine their attitudes toward both facilities and what other sources of care they might use, we could not do so because of limited time, money, and community resistance to answering yet another questionnaire.

Results

During the 4 weeks studied, almost four times as many children (801) visited the health center as the hospital emergency room (223).

Why did some children use the emergency room and others use the health center during this period? What variables seemed to influence use of the emergency room? Certainly the most important of these seems to be that of time. Almost two-thirds of all visits to the emergency room occurred during hours when the health center was closed. Approximately half of the emergency room visits occurred on Saturdays and Sundays and half during weekdays after the health center was closed, as is shown in the following table, which gives the percentage of visits made by 209 children to the emergency room according to the operating status of the health center.

Operating status of health center	*Percentage of visits to emergency room*[1]
Open	34
Closed:	
Week night	34
Weekend	33

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[1] Based on visits of 209 children. Records for 14 children were missing.

This tendency to use the emergency room during evenings and weekends was seen for children not registered at the health center as well as for those registered. Of the children who visited the Children's Hospital emergency room, 70 percent were registered at the health center. There was no significant difference in the pattern of visits to the emergency room by the registered and unregistered children according to whether or not the health center was open or closed.

The medical problem for which treatment was sought did not affect, in most cases, the choice of facility. Aside from well-child care, which was not provided at the emergency room, few major differences in the pattern of medical complaints at the two locations were found, as the following table giving the percentages of visits by reason for visit shows.

Reason for visit	*Emergency room (146 children)*	*Health center (121 children)*[1]
Well, preventive, or routine care	1	17
Acute medical	77	65
Surgical	19	9
Psychological	..	3
Chronic, or recurrent medical, and other condition	3	6

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[1] Figures represent a 25 percent sample of all cases.

Note: Records for 16 children at the emergency room and 6 children at the health center were missing. Chi-square is not significant at the .05 level between facilities or between groups within a facility.

Most children at both the health center and the emergency room had acute medical problems. Most of these problems were either upper respiratory tract or ear infections. Aside from well-child care at the center, the only difference between these two groups of children was that the emergency room patients had a larger proportion of surgical problems; for example, only one fracture patient was seen at the health center whereas six were seen at the emergency room.

Neither did the age of the child seem to influence which facility was used. More than 40 percent of the children visiting the center and the emergency room were under 4.5 years, and about 75 percent were under 10.5 years. Mean ages of children visiting both facilities were similar—at the emergency room the mean age was 6.4 years and at the health center, 6.7 years. The health center did see proportionately more children under 6 months than did the emergency room, a result which possibly reflects on the well-child and maternal care provided by the health center.

The race and ethnic group of the child seemed to influence the choice of health facility somewhat. While the figures lack significance at the .05 level, they suggest that white children are more likely than black children to be taken to the emergency room rather than the health center, as the following table giving the percentages of visits made by these children to the two facilities shows.

Race-ethnicity	Emergency room (209 children)	Health center (195 children)[1]
White	32	22
Black	45	54
Spanish-American	23	25

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[1] Figures represent a 25 percent sample of all cases.

Note: Records of 14 children at the emergency room and 5 children at the health center were missing.

Location of the child's residence also influenced which facility the child visited. Children living outside the housing project were more likely to visit the emergency room than were children in the housing project, as the following table giving the percentages of visits by residence shows:

Residence	Emergency room (223 children)	Health center (799 children)
Housing project	41	58
Nonhousing project	58	42

Note: Records of 2 children at the health center were missing. Chi-square is significant at the .0001 level.

Race and residence location were not completely independent. Since most of the black children lived in the housing project and most of the white and Spanish-American children lived outside the housing project, it is difficult to discover the importance of each of the factors—race, ethnicity, and residence—in determining which facility was used.

The other variables studied revealed no meaningful patterns differentiating the two groups. Surprisingly, despite the fact that a visit to the emergency room costs $14 while a visit to the health center is free, the types of coverage of costs were similar for both groups, as the percentages of visits by source of payment in the following table show.

Cost coverage	Emergency room (223 children)	Health center (189 children)[1]
Welfare, Medicaid	70	69
Blue-Cross, Blue-Shield, or Master Medical	11	8
Other	1	5
None	18	18

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[1] Figures for the health center represent a 25 percent sample of all cases.

Note: Records of 11 children at the health center were missing. Chi-square is not significant at the .05 level.

Perhaps the fact that most children visiting either facility were covered by Medicaid might help explain this result.

To summarize, then, the results of our study indicate that the health center was used by almost four times as many children from the center's catchment area as used the emergency room and that the only factors which seemed to influence choice of facility were time, possibly race, and residence.

How then are the health center and the emergency room used? Over time, which patterns of use can be identified? To approach an answer, we identified the extent to which both of these facilities were used by these children during the more than 8-month period before the end of the study period. In so doing, we isolated four major categories of use: health center users who also used the hospital, health center users only, emergency room users also registered at the health center, and emergency room users only. Each of these categories of users presents a different profile and suggests a different pattern of use of health facilities.

Group 1—health center users also using the hospital (46 percent). Children in this group attended the health center during the study period. They also had used the hospital at some time in the past. This group can be categorized as using the health center for most of their needs while using the hospital as a subordinate source of health care. Of this group, 92 percent were registered at the health center before June 1, 1970, and 81 percent had used the hospital before this date. From June 1, 1970, until the conclusion of the study, these children (of those registered before June 1, 1970) averaged 5.1 visits to the health center, 0.7 visits to the emergency room, and 0.4 visits to the outpatient department of the Children's Hospital Medical Center.

Group 2—health center users only (29 percent). Children in this group attended the health center during the study period and never visited the hospital. These children showed two distinct patterns of use. Forty-seven percent had been registered at the health center after June 1, 1970; as such, they can be categorized as "center users —new." It is probable that in time they will assume the same pattern of use as the children in group 1 or as the remaining 53 percent of the children in group 2.

The remaining 53 percent of the children who had registered before June 1, 1970, visited the health center an average of four times from June 1, 1970, until the end of the study period. It is probable that the center represented the major source of their primary care. Whether these children used another hospital for some health care or whether they used only the health center cannot be determined from the data gathered in this study. This group, as does group 1, represents a stable group of patients in the health center.

Children in group 2 had the highest proportion of the youngest children, a larger proportion of Spanish-American children, and a smaller percentage of white children than any of the other groups. Most of them also lived outside the housing project. The new users described represent the large number of Spanish-American families who, as survey figures for 1971 show, are now moving into the area.

Group 3—emergency room users also registered at the health center (15 percent). Children in group 3 visited the hospital emergency room during the study period and were also registered at the health center. Most were not new users of either facility. Only 24 percent had first visited the hospital after June 1, 1970, and only 5 percent had been registered at the health center after that date. This group can best be categorized as "shoppers." Children in this group made an equal number of visits to the health center and to the hospital. From June 1, 1970, until the conclusion of the study period, those children in group 3 registered before June 1, 1970, averaged 3.3 visits to the health center, 2.7 visits to the emergency room, and 0.6 visits to the outpatient department.

There is little in the socioeconomic data to distinguish this group. Children of all races and ethnicities and children living inside and outside the housing project comprise this group to an almost equal extent.

Group 4—emergency room users only (7 percent). Children in group 4 attended the emergency room during the study period, but were not registered at the health center. Fifty-two percent had made their first visit to the hospital after June 1, 1970. The children in this group can be characterized as "low users." Of those who visited the hospital before June 1, 1970, an average of only 2.7 visits per child were made to the emergency room from this date until the end of the study period, and only 0.6 visits per child were made to the outpatient department. This group contains the largest proportion of white children and nonhousing project residents of any of the four groups.

Despite the numerous problems we had with the typology just presented, it is clear that the majority of the children in the health center's catchment area used the center as their primary source of medical care (groups 1 and 2), using the emergency room only as a subordinate source of care. Less than 25 percent of the children used the emergency room to as great or greater an extent than they used the health center, and only 7 percent used it as a possible primary source of care exclusive of the health center.

Discussion and Conclusions

As noted, no effort was made to determine the attitudes of the children's parents toward each source of care. Data based on this type of information would probably have resulted in a more comprehensive discussion of why children went to one facility rather than another and of how each facility was conceived in the total pattern of care.

In the 1968 study by Salber and associates (*6*) of the attitudes of women residing within the Martha Eliot Health Center target area, almost 90 percent of the registered mothers said they were very satisfied with their children's care. Of those mothers not registered, 66 percent had heard of the center, and only three mothers made negative remarks about it. Our results seem to support Salber's conclusions that the health center has a favorable image in the community. These results do not, however, explain why some children continued to use other sources of care approximately 3½ years after the center had opened.

Certain limitations of our study should be noted. Possibly other facilities besides the Martha Eliot Health Center and Children's Hospital emergency room were used by the children studied. Certain evidence, however, does argue against this possibility. An unpublished study, conducted in October 1970 by Dr. Fredrick Berrien, a pediatric resident at Boston City Hospital, on the use of the emergency rooms at Boston City Hospital and Children's Hospital, revealed that almost all children from this area used the emergency room at Children's Hospital rather than the Boston City Hospital. In addition, the large number of visits made to the health center and emergency room since June 1, 1970, by the children in our study indicates that it is unlikely that any other major source of care was used.

Another problem is that nothing is known about the use of medical services by children who did not visit either the health center or the hospital during the study period. Undoubtedly, many of these children used these two facilities as much as did the children in our study. The sample of children using the facilities during the 4-week period possibly contained a disproportionate number of "high users." The average number of visits made since June 1970 and even the characteristics of the children visiting each facility might not be representative of the population at each center.

It is not possible to judge what percentage of the eligible population never used either source of care and what, if anything, they used instead. The earlier studies cited indicate that this group is a minority, but its size at this time cannot be determined through this study.

Certain conclusions, however, are possible from the results presented. First, a health center can be accepted and used by the community. While evidence is not presented as to a decreasing use of traditional hospital-based services, our results do indicate that use of the existing health center dwarfs the use of the traditional hospital-based facilities. Thus, this health center, established partly to overcome the criticisms of traditional hospital-based service, has served to successfully attract persons to this new type of care.

The results also indicate areas in which certain measures taken by the health center might decrease the use of the emergency room and increase the use of the health center.

If the health center could be kept open for longer hours, some of the children using the emergency room might be able to come to the center. If the center were to remain open in the evening and all weekend, almost two-thirds of the emergency room patients could be seen at the Martha Eliot Health Center. But this would mean an average of only five additional patients an evening, a number which would hardly justify the additional expense of keeping the center open.

The health center staff might also reduce use of the emergency room by directing outreach efforts first to those children using the health center and the emergency room equally and second to those children using only the emergency room. For the first group, a vigorous health education program could be designed. For the second group, an active outreach program among nonhousing project residents might encourage greater use of the center.

Examination of the records of the health center registrants at the hospital and conversations with physicians there have shown that often it was not known that a patient in the emergency room was registered at the health center. Even when this fact was known, a report of the visit was not always sent to the health center, nor was the patient always referred to the center for followup care. It appears that a coordination mechanism should be worked out between the different centers whose patients use the emergency room and the emergency room itself if continuity of care is to be accomplished. In addition, awareness on the part of the medical staff of such situations might informally improve the situation.

Although this study provided evidence that emergency room use could be reduced in several areas, the results support the assertion that among the children served by the Martha Eliot Health Center, use of traditional hospital-based facilities is minimal. This is a worthy achievement, given the criticisms raised about use of the emergency room as a primary care facility.

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A Regional Health Manpower Survey Conducted by a Community Consortium

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THE SAN FERNANDO VALLEY Health Consortium, Inc., a nonprofit community-based corporation, has as its primary goal a coordinated, integrated approach to training health manpower. The consortium has been operating since 1969 in southern California and has recently been funded as a health services/educational activity through the California Committee on Regional Medical Programs.

The activities of the consortium are governed by a community-based board of directors whose members represent consumers, health care institutions, health professionals, and educational institutions. Fifty-one percent of the board members represent consumers (*1*).

The consortium develops and coordinates health career programs, using existing resources, and promotes articulation among the various educational and training activities. The emphasis is on appropriately training persons for the jobs which are available, building in to all training programs horizontal, vertical, and geographic mobility for participants. It is thus hoped that individuals will not become dead-ended in positions which no longer offer them a challenge or opportunity for advancement. The programs coordinated by the consortium will eventually encompass projects such as the inter-institutional core curriculum in the health field, career ladders, and the use of proficiency and equivalency examinations.

The health care delivery system in the United States is presently in a period of transition. There is a change in emphasis from inpatient to outpatient services. All indications are that in the next few years Congress will pass enabling legislation for some form of national health insurance. With changes in the health care delivery system, the demands for numbers and types of health manpower will also change. Most health manpower data are available only on a nationwide or Statewide basis, making it difficult to plan for the needs of a given area. This study was undertaken to identify the problems specific to the area of southern California served by the consortium.

The consortium has a number of actively functioning committees. One of these, the Health Manpower Committee, participated in the design of this study and analysis of the results. The com-

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Ms. Dachs is project coordinator of the San Fernando Valley Health Consortium, Inc. Dr. Holland is executive director of the consortium, and Dr. Klotz was formerly college director of the consortium and is presently executive director of health services, University of Southern California.

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mittee's intention was to define the current needs and problems of health care providers, as well as to identify some of their anticipated problems with health manpower. The survey was aimed at developing current comprehensive local baseline data on which to build a knowledge and understanding of the changing health manpower needs of the area.

The 2,000-square-mile area covered by the survey includes the San Fernando Valley, Antelope Valley, Ventura County, Santa Monica, Venice, and west Los Angeles, where live nearly 2 million people. More than 350 health care institutions in the area were included in the survey.

Health manpower needs, for the purpose of this article, are defined in terms of the requirements of health care providers. There was no attempt to define optimum health care in terms of unmet medical problems found in the community. This approach, while limited, is pragmatic, reflecting more closely what is actually occurring in the job market, rather than projecting what ought to occur.

Methods and Participation

The health manpower survey was conducted in two phases; the first phase dealt with hard data, that is, the number of persons employed in various occupations as well as vacancies in those occupations. The second phase dealt with subjective information and consisted of interviews of health care administrators. All data collected are for the first quarter of 1972.

In the first phase, questionnaires were mailed to health care facilities in the area. These questionnaires listed some 90 health occupations, with space opposite each occupation for the number of full-time equivalent positions, number of persons employed, and number of vacancies in that occupation.

The survey form was mailed to hospitals, skilled nursing care facilities, long-term mental health institutions, voluntary and official health agencies, independent laboratories, independent physical therapists and inhalation therapists, and group medical practices in the area. The lists for the hospitals, skilled nursing facilities, and long-term mental health institutions included in the survey were constructed from the State of California facility licensing list. All facilities licensed in the area were included.

The lists for the other organizations were somewhat more difficult to construct. Agencies included were both official and voluntary. We sent the questionnaire to all mental and physical health agencies listed by the Los Angeles County or Ventura County Welfare Information Service as serving the consortium service area and providing direct patient services.

Independent laboratories, physical therapists, and inhalation therapists were put in a separate category because many hospitals reported that they contracted for these services with independent operators. The list of these groups was constructed partly from information provided by the hospitals and partly from telephone listings.

Group medical practices were included in the survey in an attempt to gain information about the use of health manpower in more complex office settings. Forms were sent to those whose telephone listing indicated a group practice, either single or multispecialty. There was no attempt to survey other private practitioners—physicians, dentists, psychologists, chiropractors, pharmacists, or others.

After three mailings and at least one telephone contact, the response rate to the mailed questionnaire was considered more than adequate for the purpose of the study. Hospitals showed the best response rate at 89 percent. Group medical practices had to be eliminated from further analyses because their response rate was 31 percent and judged not to be sufficiently representative. The response rates for the various institutional categories were as follows:

Institution	*Total*	*Respondents*	
		Number	*Percent*
Hospitals	53	47	89
Skilled nursing care facilities	104	66	63
Long-term mental health facilities	8	6	75
Agencies	71	54	76
Independent laboratories, physical therapists, inhalation therapists	61	28	46
Group medical practices	61	19	31

The purpose of the second phase of the study, the interview, was to discuss specific problems faced by health care administrators in staffing and operating their facilities. In this portion of the survey we attempted to identify occupations for which trained persons are in short supply as well as positions filled by persons not appropriately trained for tasks they are performing. There were

14 questions asked in the interview. Examples of these questions follow:

1. Are there any health occupations for which you have difficulty employing or recruiting trained persons? (describe)
2. Are there persons from any health occupation employed by you who are consistently inadequately trained? (describe)
3. Are there health occupations which you currently employ which you did not 2 years ago? (describe)

Administrators from all participating hospitals and a sample of 20 administrators of skilled nursing care facilities were interviewed. There were no interviews of other administrators. Only two interviewers were used, one completing all interviews of hospital administrators, and the other, administrators of skilled nursing care facilities. The interviewers used the nondirective inquiry technique.

We plan to update the study, using a sampling technique, in the first quarter of 1974 in order to identify changing manpower trends.

Discussion and Interpretation

There are some 3.9 million workers in the health care industry in the United States. In the facilities responding in the survey there were 23,137.3 full-time equivalent positions (table 1). Adjusting this number for facilities that did not respond in the survey yields an estimated total of 28,865.3 full-time equivalent positions (table 2). Many health workers, such as physicians, dentists, and their employees, were not included in the survey. If one includes these, one can conclude that locally, as well as nationally, health care is the third or fourth largest industry.

Unlike other major industries, health care employees do not work in large plants but in hospitals, nursing homes, clinics, and agencies—some with few employees—and in the offices of physicians and dentists. The health care industry is indeed fragmented geographically as well as organizationally.

The most striking data in table 1 are the vacancy rates. Administrators were asked to enumerate the vacancies for which they were currently recruiting. The overall vacancy rate was 1.6 percent, a rate well below that anticipated at the outset of the survey. Most other industries find a position vacancy rate of 4 or 5 percent acceptable (*2*). It should also be pointed out that positions do not tend to remain vacant for very long.

Although vacancy rates are low in health care facilities on a given day, employee turnover remains high. The Hospital Council of Southern California collects turnover data voluntarily supplied by the hospitals. Not all hospitals participate, nor do all participating hospitals report every quarter (*3*).

The rates of employee turnover for hospitals in southern California for the first quarter of 1972 were as follows:

Types of worker	*Rate*
Registered nurses	8.26
Licensed vocational nurses	8.48
Nursing assistants	9.95
X-ray technicians	7.33
Medical technologists	8.05
Clerical workers	10.41
Dietitians, food preparation workers	10.41
Housekeeping	11.79
Maintenance	5.84
Total	8.56

On the average, the rates for hospitals in the survey area were close to those reported to the hospital council. The general turnover rate in hospitals in southern California was 8.56, which can be projected to 34.24 for the entire year. Some hospitals have reported as high as 25 percent turnover in one quarter of 1972. These statistics may represent the lowest possible estimate of turnover, as nonreporting hospitals are likely to be those with higher turnover rates.

It is important to realize that this high turnover would be unacceptable in most industries. Experts report that for most large industries, a yearly turnover of 10 to 15 percent would be acceptable to maintain stability as well as a dynamic operation (*2*).

Perhaps the most important interpretation of the high turnover in the presence of low vacancy rates is that jobs are similar in the various health facilities. The high turnover also indicates that employees are not identifying with a given institution and making a career investment in that institution, but instead are floating from one job to the next.

Several contributing factors prevent health workers from making a career commitment to one facility. Career ladders in the health field are few. Opportunities for persons to build on their professional skills are limited. In addition, generally there have not been comprehensive fringe benefits in the health field which might encourage employees to stay with a given facility. Only now are retirement plans and maternity leave being offered. These contribute to a stable work force, and most of them have been lacking in the health care industry.

Information on selected occupations is given in table 3. While we do not propose to discuss each occupation, we think it important to discuss how the data might be used.

The data will be most useful to those planning programs in the various community colleges, California State University, Northridge, and in occupational centers in this part of southern California. As a starting point, a college planning to add or expand training courses for a particular occupation could study the data and project to account for institutions not participating in the survey. Then, with the assistance of health care facilities, other educational institutions, and health planning agencies, they will need to account for population growth, facility expansion, possible changes in the delivery system, and the number of persons currently being trained.

Nursing

Nursing is the only group of occupations that we discuss specifically in this article. Nursing is of obvious importance to the health care delivery system, and nurses are the largest single discipline. In the institutions surveyed, 4,124 registered nurses were identified as employed in participating health facilities; 3,777 of these work in hospitals.

In that portion of the health manpower survey which dealt with the number of persons employed in various occupations, we requested that the number of nurses who had baccalaureate degrees be enumerated separately from registered nurses who were graduates of 2- and 3-year programs.

Skilled nursing facilities and many hospitals were not able to provide information on the educational background of nurses. Of the 2,231 RNs identified in the 25 hospitals reporting educational level of nurses, only 261, or 11.7 percent, currently hold a baccalaureate degree. Of these

Table 1. Employees and vacancies in facilities participating in the health manpower survey, by type of facility

Type of facility	Number of—			Vacancies reported	
	Facilities	Beds	Employees[1]	Number[1]	Percent
Hospitals	47	10,802	17,570.0	205.6	1.2
Skilled nursing care facilities	66	6,284	3,138.3	112.5	3.6
Long-term mental health facilities	6	405	198.3	1.5	.8
Agencies	54	.....	1,153.3	26.7	2.3
Independent laboratories, physical therapists, and inhalation therapists	28	.....	1,077.4	28.5	2.6
Total			23,137.3	374.8	1.6

[1] In full-time equivalents.

Table 2. Projected total of employees, in full-time equivalents, in the heath manpower survey area, by type of facility

Type of facility	Number of employees		
	Participating facilities	Projected for nonparticipating facilities	Projected total for 1972
Hospitals	17,570.0	2,061.2	19,631.2
Skilled nursing care facilities	3,138.3	1,709.0	4,847.3
Long-term mental health facilities	198.3	128.2	326.5
Agencies	1,153.3	226.8	1,380.1
Independent laboratories, physical therapists, and inhalation therapists	1,077.4	1,602.8	2,680.2
Total	23,137.3	5,728.0	28,865.3

Table 3. Positions, employees, and vacancies in all facilities, by occupation, reported in the health manpower survey

Occupation	Number of— Positions[1]	Number of— Employees	Vacancies[1]	Percent of positions vacant[1]
Registered nurse (2–4 years training)	3,616.5	4,142	66.6	1.8
Licensed vocational nurse	1,088.1	1,229	39.5	3.6
Nursing assistant	4,492.3	5,009	139.0	3.1
Licensed clinical laboratory technologist	586.5	651	16.0	2.7
Non-licensed laboratory technician	202.8	204	6.0	3.0
Radiologic technologist	241.9	273	5.0	2.1
Electrocardiographic technician	71.3	81	0	0
Electroencephalograph technician	42.5	46	0	0
Inhalation therapist	225.3	242	2.0	.9
Physical therapist	160.4	188	5.0	3.2
Physical therapy assistant	92.6	103	0	0
Registered occupational therapist	63.4	70	2.5	3.9
Occupational therapy assistant	24.2	32	1.0	4.1
Recreation therapist	35.9	38	1.0	2.8
Speech therapist	15.6	23	0	0
Social worker (MSW degree)	277.6	308	2.0	.7
Social worker assistant	53.9	61	0	0
Psychologist	115.3	137	0	0
Pharmacist	123.3	150	0	0
Medical records librarian	41.9	50	2.0	4.8
Medical records technician	32.5	36	0	0
Dietitian	91.6	118	0	0
Food service supervisor	114.0	117	0	0
Central supply technician	203.8	222	3.0	1.5

[1] In full-time equivalents.

261 RNs, 135 are employed in one hospital, which until recently had a policy of hiring only graduates of degree programs. If these 135 are subtracted from the total, the percentage of nurses with baccalaureates drops to 6.1.

In the State of California, 24 percent of all RNs are trained in baccalaureate programs; nationally this percentage drops to 19 (*4*). The area of the consortium is obviously well below both the State and national levels.

Results of Interviews

Administrators from all 47 hospitals participating in the survey were interviewed in the second phase of the survey. A number indicated that their hospitals are expanding outpatient services. This expansion is in response to the possibility of legislation establishing a national health insurance system and encouraging health maintenance organizations.

More than half the administrators reported having difficulty employing sufficient RNs, although many qualified their remarks, saying that they have problems only on night and evening shifts and in filling positions for specialists, such as critical care nurses. When asked if there are health occupations for which training is inadequate, most administrators mentioned the RN graduate of associate of arts degree programs. Several suggested the possible need for a 6-month to 1-year internship period for those with AA degrees.

The interviewer also attempted to solicit information on new occupations which had been added to the staff in the last 2 years or which may be added in the next 2 years. Most of the responses cited occupations which evolved because of new technologies, such as cardiac catheter technician and nuclear medicine technician, or are related to social services such as patient care coordinator.

The problem most frequently expressed by the administrators of skilled nursing care facilities is the difficulty of hiring well-trained nursing assistants. These agencies depend heavily on nursing assistants to provide care. In this study, 76 percent of all nurses in extended care facilities were nursing assistants. The administrators have expressed a need for assistance in offering inservice training to upgrade the quality of nursing care.

Future Planning

The first consideration in planning for adequate health manpower is anticipated population growth. The consortium's health manpower survey used data from the 1970 population census. These statistics show an anticipated growth rate for the San Fernando Valley of about 10 percent between 1970 and 1975, and 35 percent between 1970 and 1990. Dramatic growth rates are anticipated for the Antelope Valley (Lancaster-Palmdale) and the Santa Clarita Valley (Saugus-Newhall). The 20-year projection for the Antelope Valley is 5 times the 1970 population of 76,100, and for the Santa Clarita Valley, it is 4.5 times the 1970 population of 54,400. These projections assume the development of a major airport in Palmdale and industrial development in both areas.

The Santa Clarita Valley, and particularly the Antelope Valley, are geographically separate from the other areas of the consortium. Because of the large anticipated growth rate of these two valleys, special planning to meet their needs will be necessary.

In 1970, the Health Manpower Council of California completed a report entitled "The Impact of National Health Insurance on the Demand for Health Manpower" (*5*). In that report the council estimates that, after an initial 3-year period of greatly increased demand, there will be a yearly increased demand of approximately 15 percent for hospital workers and a 9 percent yearly increase for physicians. These estimates are based on past experience with Medicare. They assume no change in the health care delivery system. If the delivery system should become more efficient, those figures must be revised downward.

Additional consideration must be given to expansion of facilities in the area surveyed. As reported in the interview phase of this survey, more than 1,200 new hospital beds will be added in the San Fernando Valley in the next 2 years. No new facilities with bed capacity are currently under construction in the other areas of the survey. These 1,200 new beds might mean increased demands for health manpower.

According to information available through the Comprehensive Health Planning Association of Los Angeles County, hospital occupancy rates run as low as 50 percent in many hospitals in the San Fernando Valley. Anticipating the health manpower needs of the new and expanded facilities must therefore be approached cautiously. For economic reasons, some beds may not be put into use immediately. The low occupancy rates may reflect the change in emphasis to outpatient services as well as the current economic depression of the area.

A great deal has been written about the health manpower shortage, but this study has been unable to document that shortage. There may be an oversupply or maldistribution, or both, in some occupations. Health planners will have to study those possibilities in the future.

The Health Manpower Committee of the consortium, in light of the results of this survey, has recommended that, for the next 2 or 3 years, resources should not be used to expand existing programs or develop new training programs. Rather, the resources ought to be used at this time to restructure curriculums providing for the interdisciplinary core curriculum. Also, articulation and transferability of credits among educational institutions ought to be expanded. Health care facilities themselves must be asked to look at the possibility of developing internal career ladders which may discourage high turnover. If resources are thus directed in the next 2 or 3 years, the schools will be prepared to expand their programs easily a few years from now when demand for health manpower increases.

It may be that the results of this survey are unique. However, there is also the possibility that the health manpower shortage has been exaggerated. Because it is important not to train people for jobs which do not exist, educators and planners must carefully examine training programs to insure that valuable resources are not wasted.

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Pharyngeal Culture Program in Colorado

HAM JACKSON, MD

RHEUMATIC HEART DISEASE deserves our most vigorous efforts, because it starts in children and hits peak disability among those in the prime of life. Unlike other forms of heart disease which are receiving so much attention these days, the complete eradication of rheumatic heart disease is a realistic goal with the knowledge and ability we have available right now, because we can control the precursor, streptococcal infection (*1*).

The usefulness and the necessity of pharyngeal cultures for adequate treatment of streptococcal infection has been well covered (*2,3*). For processing these very essential cultures, there are several options open to the physician. Processing cultures in the physician's office has been adequately discussed by Markowitz (*4*). The cultures can be sent to hospital or private laboratories for processing, but this is usually excessively expensive (*5*). In some situations, such as those described by Phibbs and Zimmerman (*6*), the brunt of control is borne by volunteers working through the schools. All of these methods have proved to be effective when adequately applied.

My discussion is limited to the principal method used in Colorado and in several other States—the mass processing of cultures in central laboratories. Ideally, all physicians should have the proper training, equipment, and motivation to process pharyngeal cultures in their offices, but this situation does not always hold. Thus, in 1959 the Colorado Heart Association and the State

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health department cooperatively established and promoted a mail-in culture service oriented to fit into the usual clinical practice (7).

Mechanics of Mail-in-System

When a patient has a respiratory infection, the physician makes his regular examination. During the examination of the pharynx he swabs with a dacron-tipped applicator, giving particular attention to the posterior pillar and to any inflamed or exudative areas noted. This is done to induce a gag reflex, which frequently brings unsuspected inflammatory areas into view. The swab is then rolled on a small filter paper strip provided by the health department. Before it is folded into its protective cover, the strip must be allowed to dry completely because there is selective action: streptococci dried in this manner will survive for weeks while many other confusing pharyngeal bacteria do not tolerate drying.

Each day the properly labeled specimens are mailed to the appropriate health department, where they are processed, including definitive identification by fluorescent antibody staining (*8*). Unless indicated by purulent complications, antibiotics are withheld pending the culture results. Positive specimens are reported by telephone to the physician, often within 48 hours, but usually 72 hours; only rarely is the time interval more than 96 hours. When a positive report is received, the patient or his parent is contacted and requested to pick up an appropriate antibiotic prescription or to come in for a benzathine penicillin injection. Everyone living in the household is asked to come in for family contact cultures. Finally, all persons with positive specimens are asked to return 3 or 4 days after therapy for a followup culture.

Advantages

The mail-in system has several advantages. No equipment or space is required in the physician's office, and very little additional training is needed

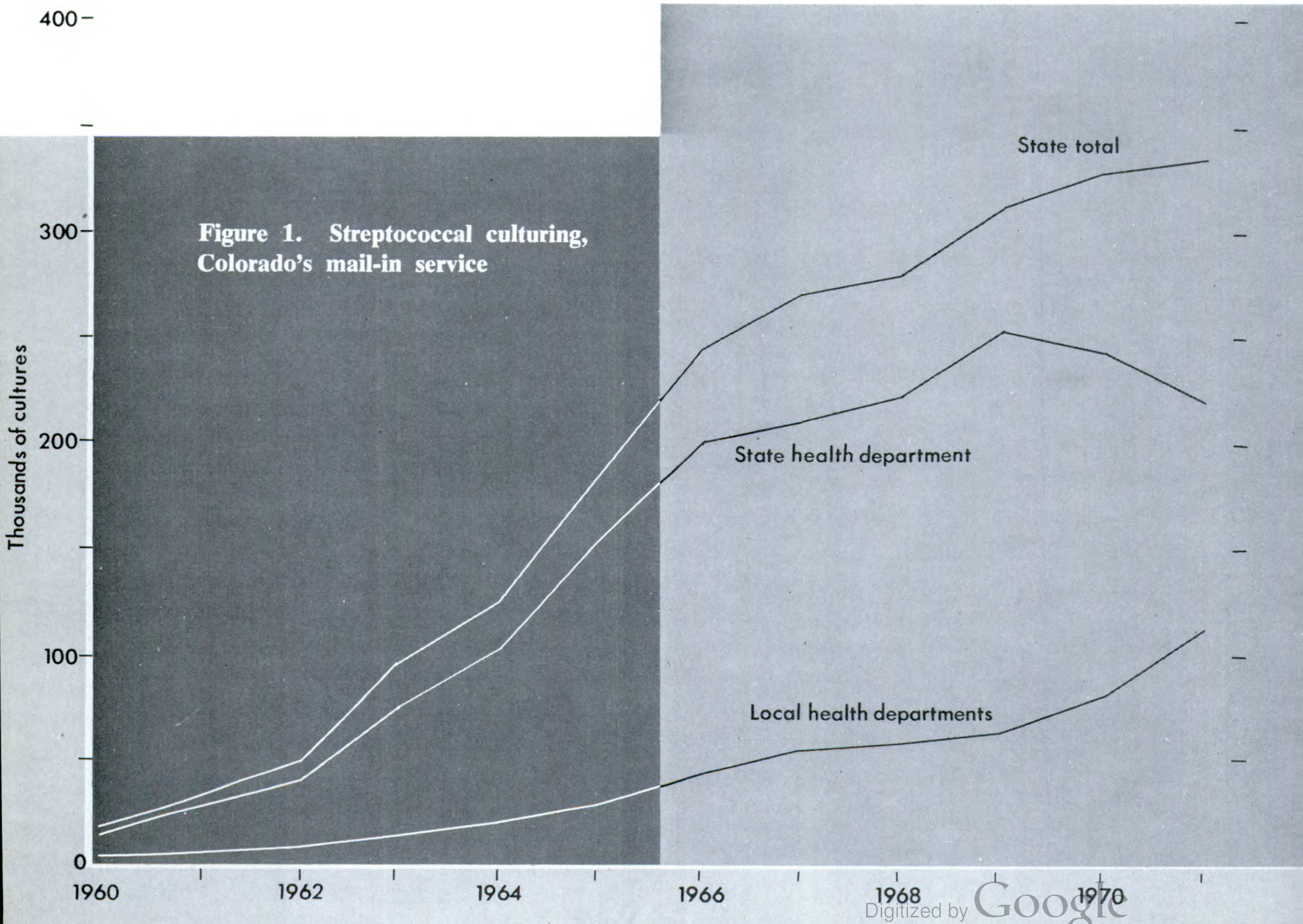
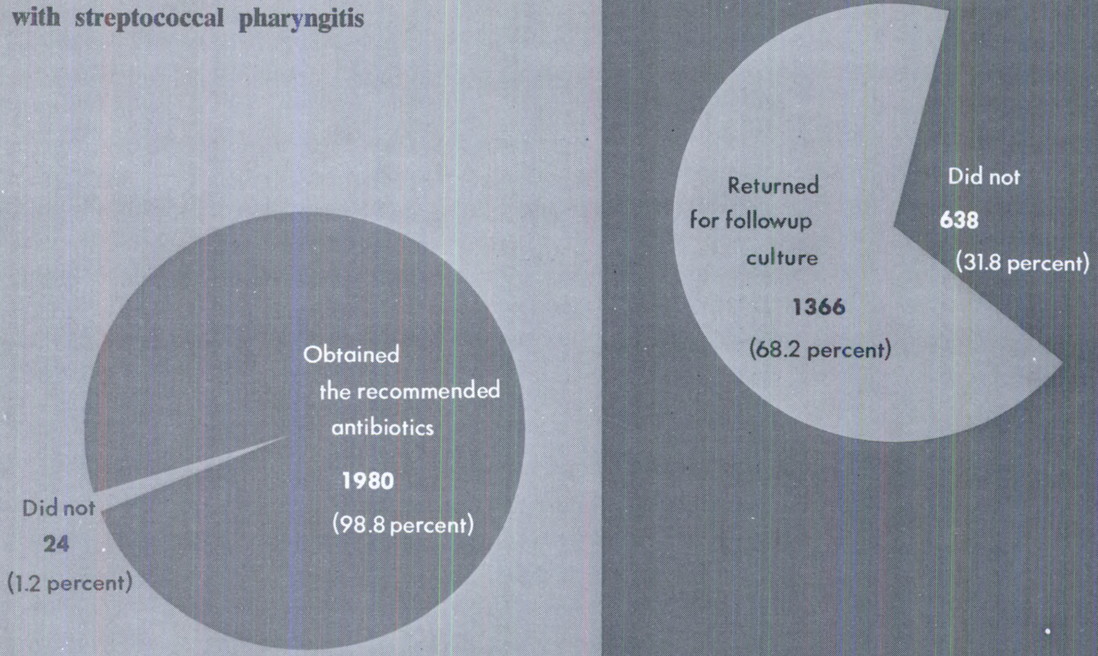


Figure 1. Streptococcal culturing, Colorado's mail-in service

Figure 2. Acceptance of recommended treatment by 2,004 patients with streptococcal pharyngitis



for the physician or his office personnel. The method is readily adaptable to clinics, hospital outpatient departments, the visiting nurse service, and other health workers. It is also adaptable to screening programs, which are an effective tool in controlling streptococcal epidemics. With proper drying of the filter strips and good health department laboratory techniques, this method has the highest degree of accuracy of any of the culture processes available. In fact, it is more reliable than direct streaking. The cost is relatively low, 60 cents to $1.29 per culture, depending on the volume being processed.

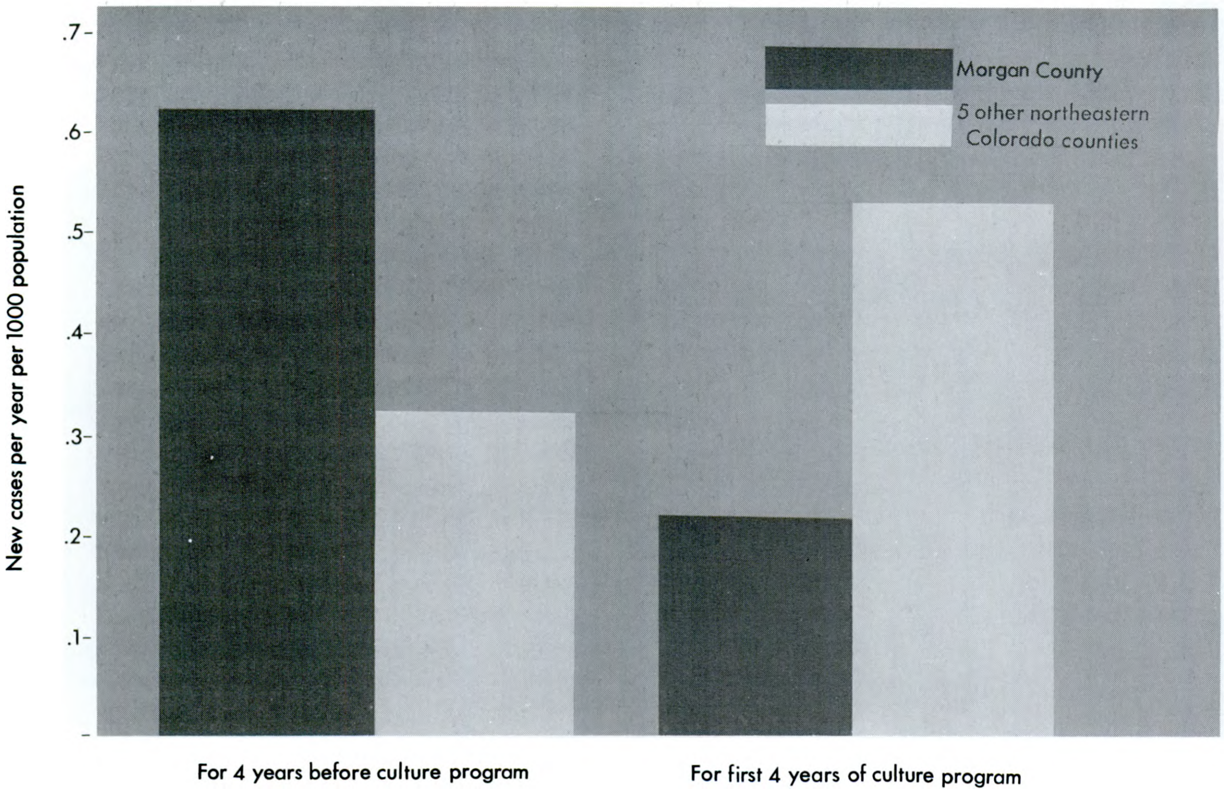
One final and important advantage of the mail-in system is that it allows monitoring the community prevalence of streptococcal infection. In the central laboratory, a chart can be maintained indicating the number of cultures from the various localities and the percentage of positive cultures; thus, it is often possible to identify hotbeds of infection before the onset of a full-blown and potentially serious epidemic.

Results

The phenomenal growth of this program in Colorado is shown in figure 1. A survey was conducted in 1971 to obtain an estimate, by State, of the number of cultures being done, including the major laboratories and physicians' offices. (Tabulation of responses from all 50 States and the District of Columbia is available from the author.) The estimates indicate that Colorado was doing 136 cultures per 1,000 population each year. Only Wyoming indicated a greater rate, and only four States estimated more than 50 cultures per 1,000 population.

General acceptance by physicians was demonstrated in a detailed study by the Heart Association in 1967 (*5*). The acceptance by patients who are properly motivated is well illustrated in figure 2, which shows that not only do most patients return and obtain the medication recommended,

Figure 3. Use of pharyngeal cultures—comparisons of six counties of northeastern Colorado, 1961–63



but they also return for a followup culture upon the completion of medication. Most family members in their households are willing to come in for the recommended contact cultures (*9*).

The preliminary indications are that a vigorous culturing program is effective, as measured by the incidence of acute rheumatic fever (ARF) and the ARF death rate. A detailed study in northeast Colorado (*9*) showed that in Morgan County, where the culture program was implemented early and extensively, there was a marked reduction in the incidence of ARF as compared with five neighboring counties which were slower in adopting extensive culturing (figs. 3,4). In larger population groups, figures regarding the incidence of ARF are notoriously unreliable, but the actual numbers of deaths from ARF are less subject to error. In Colorado the average ARF death rate for the years 1965–67 was 1.54 per million, which is only 6.9 percent of the rate 15 years previously (22.5), as shown in the following table. (These figures are derived from the annual statistical reports of the Department of Health, Education, and Welfare. Detailed tabulation is available from the author.)

Area	*Average ARF death rates*	
	1950–52	*1965–67*
National	11.3	[1] 2.09
Colorado	22.5	[2] 1.54

[1] 18.2 percent of 1950–52 rate.

[2] 6.9 percent of 1950–52 rate.

In ranking the States for ARF death rates from low to high, Colorado moved from 48th to 10th place during the same period. Data for all 50 States, as indicated in the following table, show that there may be a correlation between the level of culturing and improvement in ARF death rates. (Detailed tabulation is available from the author.)

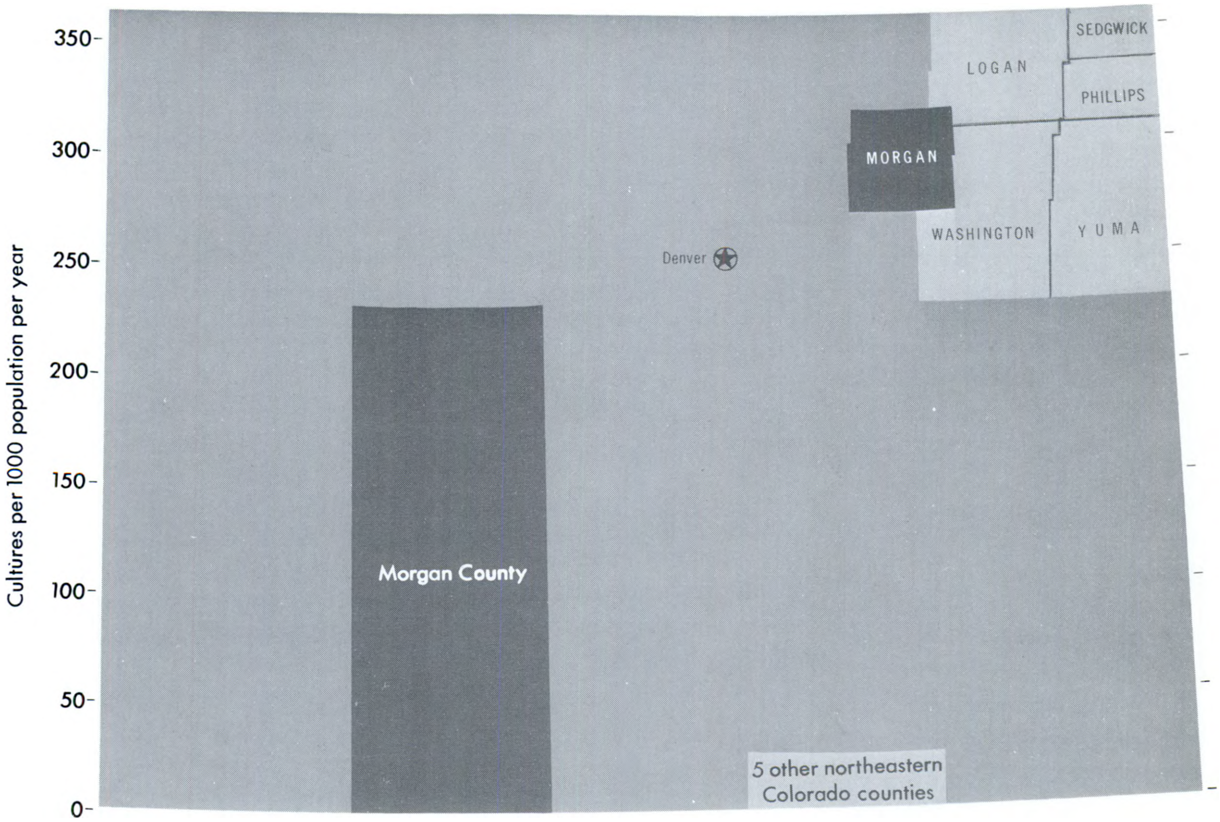
Culture rate	*Average ARF death rates*	
	1950–52	*1965–68* [1]
High—6 States (more than 30 per 1,000)	13.5	1.31
Medium—11 States (15–30 per 1,000)	12.7	2.08
Low—14 States (5–15 per 1,000)	11.8	2.28
Minimal—19 States (below 5 per 1,000)	12.3	2.48

[1] These data were available for a 3-year period.

Strategy for ARF Program

Although all the details of why and how the ARF death rates were cut in Colorado cannot be detailed here, some salient factors can be pointed out. Physician education received early attention with the aid of a rheumatic fever diagnostic clinic established at the University of Colorado Medical School and financed by the heart association. The support of Dr. David McGuire, an enthusiastic

Figure 4. Rheumatic fever incidence in northeastern Colorado before and after Colorado Heart Association pharyngeal culture program



and knowledgable State laboratory director, was of inestimable value.

Vigorous promotion by the heart association was a major factor in the success of Colorado's program. Informational materials were mailed to all practicing physicians. Physicians received both initial and subsequent editions of some pamphlets. Physicians also received several reprints concerning the control of rheumatic fever and on several occasions, small reminder leaflets.

The 1967 physician survey was a significant promotional effort. During streptococcal epidemics, physician education at the county medical society level has proved to be very effective, and extensive and continued use of the mail-in culture program usually occurs subsequently. Of great importance is lay education which not only teaches people to have due regard for sore throats, but also encourages them to apply pressure on practicing physicians to take specimens for culture. The public educational efforts have been extensive—many news articles year after year; heart fairs which have been well received and apparently effective; multiple programs at heart association assemblies; many public programs for PTA groups, women's civic clubs, and so on; wide distribution of leaflets; and finally, effective use of the news media during streptococcal epidemics.

The establishment of regional laboratories generates local interest, provides quicker service, and allows closer monitoring of streptococcal prevalence. These laboratories are the result of a cooperative effort by the heart association and the public health departments. In addition to publicity and promotional and educational activities, the heart association has often provided the initial startup money and support until the need for the laboratory could be adequately demonstrated to local health boards. Health departments initially provided personnel and space, but they soon assumed full responsibility for the operation of the laboratories.

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Rheumatic heart disease can be eradicated by adequate control of its precursor, streptococcal infection, by pharyngeal culturing. One method of adequate culturing is the mass mail-in system used in Colorado. Cultures are taken in the physician's office and mailed to central laboratories, where they are processed. Reports of positive cultures are telephoned to the physician, who then institutes adequate therapy and does family contact cultures when indicated. This system requires no equipment or space in the physician's office, and it is readily adaptable to a visiting nurse service, screening programs, and clinics. It is low cost and offers the advantages of monitoring community prevalence of streptococcal disease. This system has been widely accepted in Colorado by physicians and the public. Data indicate that rheumatic fever has been reduced in areas where culturing is extensive. An essential factor in the rapid growth and acceptance of Colorado's culture program has been the vigorous promotion by the Colorado Heart Association directed toward both physicians and the lay public.

Survey Instrument to Study Institutional Care Services for Convalescent and Long-Term Patients

HARVEY E. ARCHER, MHA, and ABRAM L. VAN HORN, MD

WITH THE ADVENT OF MEDICARE, hospitals and other health care institutions are faced with a growing number of patients who occupy beds in acute care hospitals and related health facilities for prolonged periods. Many of these patients are inappropriately placed in relation to the level of care they require. This misuse of resources is of concern to the hospital administrator, the medical staff, the hospital utilization review committee, and the third-party payer.

Prudent use of our community health facilities and resources dictates the need to evaluate the utilization of existing facilities and services and to determine the steps which should be taken to bring about more efficient utilization. The goal of these steps is to insure a satisfactory quality of care for each patient commensurate with his needs at the lowest possible cost.

Among the research projects developed under the aegis of the Health Services Research Center of the University of North Carolina (UNC) are several concerned with the development of instruments for evaluating the delivery of health services. With the center's support, one such instrument was constructed as part of a 1970 study of hospital-based, long-term care units in North Carolina by the Department of Hospital Administration, UNC School of Medicine. This study was supported by the Health Services Research Center through research grant 5P16 HS00239-03 from the National Center for Health Services Research and Development, Department of Health, Education, and Welfare. The complete report of this study with the findings is available on request to Archer (*1*).

Instrument Development

The purpose of our report is to describe the instrument, its development, the method of administering it, its advantages and limitations, and the purposes for which it can be used.

The principal objectives of the project for which the instrument was developed and designed follow:

1. To describe the administrative characteristics and organizational patterns in the relationship between hospitals and their long-term care units
2. To explore the demographic and health characteristics of the patient population in the hospital-based long-term care units
3. To determine the effect of the long-term care units upon the utilization of beds for acute care in the parent hospital
4. To identify transfer barriers which prevent the movement of patients to appropriate facilities for care.

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In developing the instrument for the project, a detailed review was undertaken of the objectives sought, the type of data required to enable the investigation to satisfy the objectives, the method to be used in collecting such data to insure its validity and, finally, the method of data analysis to be employed.

Early in the review period, literature was searched for reports of similar studies, with special attention given to the type of data acquired and the methodology employed in conducting such studies (*2–5*). It soon became apparent that the nature and scope of the study of hospital-based, long-term care units in North Carolina required a new approach and more detailed data.

For example, it was evident, in exploring the effect of these units upon the utilization of beds for acute care in the parent hospital, that not only should the health characteristics of patients staying for long periods in beds for acute care be identified, but also the appropriateness of their assignment and the barriers which prevented their movement to more appropriate facilities. During this initial review several consultants explored the development and design of an instrument that would assure the acquisition of valid data to fulfill the requirements of the objectives.

Several drafts of the survey instrument were prepared and analyzed, with each item weighed and subjected to critical review. These reviews resulted in a working survey instrument which was then tested in two hospitals and one nursing home facility. Our purpose was to observe the attitudes and ability of the nurses to understand the concept and provide the essential data. As a result of these field tests, a few minor changes were made before the final printing of the form, which is reproduced on the next four pages. Copies of the instructions for interviewers who use the long-term patient care survey form are available from Archer.

The instrument was designed to be filled out by an experienced interviewer familiar with medical terminology as well as with the characteristics of institutional patient care services. In the North Carolina study, the interviewers from the university's School of Medicine and the Health Services Research Center included two faculty members from the department of hospital administration, two physicians, one registered nurse, and one senior medical student.

It is our opinion that completion of the form by a few qualified and well-briefed interviewers enhances the validity of the data collected. This method of data acquisition avoids the accumulation of questionable data based on wide variations in interpretations by persons without intimate knowledge of diagnoses and of the characteristics of patient care. It also permits the trained interviewer, through appropriate inquiries, to clarify for recording, at the time of the survey, information which otherwise might result in a faulty record.

The sources of information recorded on the survey form were the patient's institutional medical records, yielding specific demographic data and medical information, and the charge nurse.

Zimmer and Groomes, in their study (*6*), have shown a high degree of agreement between judgments of the charge nurse and the attending physician regarding the physical status of convalescent and long-term patients, their needs for various levels of care, and the appropriateness of their placement. Many observers believe that the judgments of the charge nurse, who has the opportunity and, in fact, the responsibility for observing the day-to-day condition of each patient under her care, are perhaps more valid than those of the attending physician, who may see the patient at irregular and infrequent intervals.

The interviewer should be assured that the charge nurse is prepared to give a reasonable block of time for the interview, preferably without interruption, if a considerable number of patient records are to be reviewed with her. In the UNC study it was found that, after the first few forms were completed, the survey instrument could be completed for each patient in less than 10 minutes.

Categories of Data Collected

The categories of information in the instrument can be summarized as follows:

1. Demographic data
2. Principal type of care being rendered
3. Diagnosis
4. Physical impairments with scaled measurements
5. Sensory deprivations with scaled measurements
6. Mental status and behavioral patterns
7. Nursing assistance required in activities of daily living
8. Bed status and degree of ambulation
9. Nursing care provided
10. Restorative nursing care
11. Hospital services utilized
12. Medications (type and number)
13. Diet

LONG-TERM CARE PATIENT SURVEY

Sequence ____________ (1-5)

SURVEY DATE ____________ Mo. (6-7) ____________ Day (8-9), 19____ (10-11)

INSTITUTIONAL CODE: ____________ (12-14)

(15) **TYPE OF FACILITY:**
1—Hosp.
2—Hosp. ECF
3—Hosp. NH
4—Hosp. ECF-NH
5—ECF-NH
6—ECF
7—NH

PERSONAL DATA:

Name: ____________ (Last) ____________ (First) ____________ (Initial)

Soc. Sec. No. ______ (16-18) - ______ (19-20) - ______ (21-24)

Patient No. ____________

Date of Adm. ______ Mo. (25-26) ______ Day (27-28), 19______ (29-30)

(31) **L.P.S. to Date:**
1—Less than 15 days
2—15 to 30 days
3—31 to 60 days
4—61 days to 6 mos.
5—6 mos. to 9 mos.
6—9 mos to 12 mos.
7—1 yr. to 2 yrs.
8—2 yrs. to 5 yrs.
9—Over 5 yrs.

(32) **Sex:** 1—Male 2—Female

(33) **Race:** 1—White 2—Nonwhite

(34) **Marital Status:** 1—Mar. 2—Sing. 3—Wid. 4—Div. 5—Sep. 6—Ukn.

(35) **Age Group:**
1—Under 18
2—18-34 yrs.
3—35-44 yrs.
4—45-54 yrs.
5—55-64 yrs.
6—65-74 yrs.
7—75-84 yrs.
8—85 and over
9—Unknown

Place of Residence:

(36) **State:**
1—N.C.
2—S.C.
3—Va.
4—Tenn.
5—Ga.
6—Other St.
7—Unknown

(37) **County:**
1—Same County as Facility
2—Adjacent County
3—Beyond Adjacent County
4—Unknown

(38) **Source of Referral:**
1—Home, hotel or rooming house
2—General hospital
3—Special hospital (TB, psy., chronic disease)
4—ECF
5—Nursing Home
6—Rest home or home for the aged
7—Other
8—Unknown

(39) **Principal Type of Care Being Rendered:**
1—Diagnosis and/or treatment
2—Short-term convalescent or restorative care (under 30 days)
3—Long-term rehabilitation care
4—Long-term custodial or terminal care
5—Protective living (no nursing care needed)
6—Other (Specify: ____________________________________)

CODE NUMBERS FOR DIAGNOSES

Code #	Diagnosis	Code #	Diagnosis
01	Heart diseases	11	Psychoses
02	Hemiplegia (mainly from stroke)	12	Psychoneuroses & other behavior disorders
03	Other circulatory diseases	13	Diabetes
04	Senility	14	Neoplasms
05	Hip Fracture	15	Genitourinary diseases
06	Other Fracture	16	Gastrointestinal diseases
07	Arthritis and rheumatism	17	Total blindness
08	Paralysis agitans	18	Respiratory
09	Multiple sclerosis	19	All other diagnoses
10	Other paralyses	20	Unknown

CURRENT MEDICAL DIAGNOSES:

______ (40-41) ______ (42-43) ______ (44-45) ______ (46-47) ______ (48-49) ______ (50-51)

____

____

DISABLING CONDITIONS:

	None	Slight Impairment	Moderate Impairment	Severe Impairment
(52) **Tremor**	1	2	3	4
(53) **Paralysis**	1	2	3	4

	None	Foot or Hand	Arm or Leg	Two Extremities	Three Extremities	Four Extremities
(54) **Amputation(s)**	1	2	3	4	5	6

SENSORY DEPRIVATION:

	Unable to Rate	No Impairment	Slight Impairment	Moderate Impairment	Severe Impairment	Complete Loss
(55) **Speech**	1	2	3	4	5	6
Hearing:						
(56) Without prosthesis	1	2	3	4	5	6
(57) With prosthesis	1	2	3	4	5	6
Vision:						
(58) Without glasses	1	2	3	4	5	6
(59) With glasses	1	2	3	4	5	6

(60) **MENTAL STATUS:**

1—Unable to rate
2—Oriented all the time
3—Confused some of the time
4—Confused most of the time

PRINCIPAL BEHAVIOR PATTERNS:

	Unable to Rate	Rarely	Some of the Time	Most of the Time
(61) **Combative**	1	2	3	4
(62) **Wanders**	1	2	3	4
(63) **Withdrawn**	1	2	3	4
(64) **Belligerent**	1	2	3	4
(65) **Noisy**	1	2	3	4
(66) **Cooperative**	1	2	3	4

NURSING ASSISTANCE WITH A.D.L.:

A.D.L.	INDEPENDENT	DEPENDENT
(67) **Bathing** (sponge, shower or tub)	1—assistance only in bathing a single part (as back or disabled extremity) or bathes self completely	2—assistance in bathing more than one part of body; assistance in getting in or out of tub or does not bathe self
(68) **Dressing**	1—gets clothes from closets and drawers, puts on clothes, outer garments, braces; manages fasteners; act of tying shoes is excluded.	2—does not dress self or remains partly undressed
(69) **Toileting**	1—gets to toilet; gets on & off toilet; arranges clothes; cleans organs of excretion; (may manage own bedpan used at night only and may or may not be using mechanical supports.)	2—uses bedpan or commode or receives assistance in getting to and using toilet
(70) **Transfer**	1—moves in and out of bed independently & moves in and out of chair independently (may or may not be using mechanical supports)	2—assistance in moving in or out of bed and/or chair; does not perform one or more transfers
(71) **Continence**	1—urination and defecation entirely self controlled	2—partial or total incontinence in urination or defecation; partial or total control by enemas, catheters, or regulated use of urinals and/or bedpans
(72) **Feeding**	1—gets food from plate or its equivalent into mouth (precutting of meat and preparation of food, as buttering bread, are excluded from evaluation)	2—assistance in act of feeding; does not eat at all or parenteral feeding

(73) **BED STATUS:**

Ambulatory:
1—Out of bed 6-12 hours per day
2—Out of bed 2-6 hours per day
3—Out of bed 1-2 hours per day

Chairbound:
4—Out of bed 6-12 hours per day
5—Out of bed 2-6 hours per day
6—Out of bed 1-2 hours per day
7—Bedfast

(74) **AMBULATION:**

1—Climbs stairs with no human assistance
2—Climbs stairs only with human assistance
3—Walks with no human assistance
4—Walks only with human assistance
5—Walks with walker or cane
6—Walks with crutches
7—Patient uses wheelchair with no human assistance
8—Patient uses wheelchair only with human assistance
9—Not applicable since patient is bedfast

PATIENT'S GENERAL CONDITION SINCE ADMISSION:

	Unable to Rate	Improved	Unchanged	Deteriorating
(75) **Physically**	1	2	3	4
(76) **Psychologically**	1	2	3	4

(77-79)—Blank

(80)-A (card sequence)

Sequence ____________________
(1-5)

NURSING CARE PROVIDED:

		None	PRN	Monthly	Weekly	Several Times Weekly	Daily	Several Times Daily
(6)	**Vital Signs**	1	2	3	4	5	6	7
(7)	**Blood Pressure**	1	2	3	4	5	6	7
(8)	**Urinalysis**	1	2	3	4	5	6	7
(9)	**Weight**	1	2	3	4	5	6	7
(10)	**Enemas**	1	2	3	4	5	6	7
	Irrigations:							
(11)	**Bladder**	1	2	3	4	5	6	7
(12)	**Colostomy**	1	2	3	4	5	6	7
(13)	**ENT**	1	2	3	4	5	6	7
(14)	**Vaginal**	1	2	3	4	5	6	7
(15)	**Catheterization**	1	2	3	4	5	6	7
(16)	**Dressings**	1	2	3	4	5	6	7
	Exercises:							
(17)	**R.O.M.**	1	2	3	4	5	6	7
(18)	**Muscle Strengthening**	1	2	3	4	5	6	7
(19)	**Special Feeding Tube**	1	2	3	4	5	6	7
(20)	**Oxygen Therapy or Suctioning**	1	2	3	4	5	6	7
	Incontinence:							
(21)	**Bladder**	1	2	3	4	5	6	7
(22)	**Bowel**	1	2	3	4	5	6	7
(23)	**Decubiti Care**	1	2	3	4	5	6	7

TEACHING RESTORATIVE NURSING CARE:

		Not Req.	Needed But Not Given	Weekly	Several Times Weekly	Daily	Several Times Daily
(24)	**Gait training, transfer**	1	2	3	4	5	6
(25)	**Use of assistive appliances**	1	2	3	4	5	6
(26)	**Self-admin. of medications**	1	2	3	4	5	6
(27)	**Bowel or bladder training**	1	2	3	4	5	6
(28)	**Diet instructions**	1	2	3	4	5	6
(29)	**A.D.L.; bathing, feeding, etc.**	1	2	3	4	5	6

SERVICES UTILIZED:

The patient is receiving each of the following services:

		None	Annually	Every 3 to 6 Months	PRN	Monthly	Weekly	Twice a Week	Daily
(30)	**Radiology**	1	2	3	4	5	6	7	8
(31)	**Laboratory**	1	2	3	4	5	6	7	8
(32)	**Phys. Therapy**	1	2	3	4	5	6	7	8
(33)	**Occup. Therapy**	1	2	3	4	5	6	7	8
(34)	**Rec. Therapy**	1	2	3	4	5	6	7	8
(35)	**Social Service**	1	2	3	4	5	6	7	8
(36)	**Dental**	1	2	3	4	5	6	7	8
(37)	**Optical**	1	2	3	4	5	6	7	8
(38)	**Podiatry**	1	2	3	4	5	6	7	8
(39)	**Inhalation Therapy**	1	2	3	4	5	6	7	8
(40)	**Speech Therapy**	1	2	3	4	5	6	7	8

MEDICATIONS:

		Number Receiving									
	Type	None	One	Two	Three	Four	Five	Six	Seven	Eight	Nine+
(41)	**Oral**	0	1	2	3	4	5	6	7	8	9
(42)	**S.C., Rectal or Topical**	0	1	2	3	4	5	6	7	8	9
(43)	**IM**	0	1	2	3	4	5	6	7	8	9
(44)	**IV**	0	1	2	3	4	5	6	7	8	9

(45) Can patient or persons living with patient be taught to administer all of the medications? (except IV's)

1—Yes
2—No, due to the nature of the medication
3—No, due to physical incompetence of the patient or person(s) living with the patient
4—No, due to mental incompetence of the patient or person(s) living with patient
5—Don't know

(46) **DIET:**

Patient is on a prescribed special diet:

1—Which does not require professional supervision and control.
2—Which requires professional supervision and control.
3—Which cannot be provided in the patient's own home due to the nature of the diet.
4—Which cannot be provided in the patient's own home due to the physical incompetence of the patient or person(s) living with the patient.
5—Which cannot be provided in the patient's own home due to the mental incompetence of the patient or person(s) living with the patient.
6—But don't know whether it can be provided in the patient's own home.
7—Patient is not on a prescribed special diet.

(47) **LAST VISIT BY A PHYSICIAN:**

0—Unknown
1—Within the last 48 hours
2—Within the last 72 hours
3—Within the last week
4—Within the last 2 weeks
5—Within the last month
6—Within the last 2 months
7—Within the last 6 months
8—Within the last year
9—Within the last 2 years

(48) **REASON FOR M.D. VISIT:**

1—Diagnosis and/or treatment upon an admission and/or transfer
2—Routine supervision
3—Change in condition requiring additional diagnosis and/or treatment
4—Discharge or transfer visit
5—Not known

(49) **PLACE WHERE LAST SEEN BY M.D.:**

1—Hospital as inpatient
2—Emergency room
3—Hospital outpatient dept.
4—Extended care facility
5—Public health clinic
6—Nursing home
7—M.D.'s office or private clinic
8—Patient's home
9—Unknown

(50) **ROUTINE PATTERN OF PHYSICIAN VISITS TO PATIENT SINCE HIS ADMISSION TO THIS FACILITY:**

1—Unknown
2—No visits
3—Annually
4—Semi-annually
5—Quarterly
6—Monthly
7—Twice a month
8—Weekly
9—Twice a week or more

LIVING ARRANGEMENTS:

(51) **Prior to being an inpatient, the patient:**
1—Lived alone
2—Lived with household help
3—Lived with spouse
4—Lived with relatives
5—Lived with non-relative
6—Other (specify) ____________________
7—Unknown

(52) **Are the same living arrangements still available?**

1—Yes
2—No, the person checked in question 51 is no longer living at patient's home
3—No, family or non-relative refuses to permit patient to return home
5—Other (specify) ______________________________
4—No. patient's former residence no longer exists
6—Don't know

(53) **HOME ENVIRONMENT:**

1—Unknown
2—Suitable
3—Unsuitable due to physical facility
4—Unsuitable due to lack of necessary equipment
5—Unsuitable because remotely located to needed health facilities

(54) **Considering the medical condition of the patient today, which of the following facilities or programs is appropriate for the care of the patient?**

0—Unknown
1—An acute general hospital
2—A long-term hospital (psy., chronic dis., TB)
3—An extended care facility
4—A skilled nursing home
5—A resident care institution
6—Patient's residence under a coordinated home care program
7—Patient's residence with limited home care services
8—Domiciliary institution (no care required)
9—Patient's residence (no care required)

TRANSFER BARRIERS:

(55-56) **If the patient is not in the type of facility circled above, indicate the primary reason.**

00—Unknown
01—Patient is in appropriate facility
02—Type of facility or program needed not available in the area
03—No bed available in the needed facility
04—Patient does not qualify for treatment or care under the policies of the facility or program
05—Physician advises against transfer because of quality of services in other facility or program
06—Uncertainty that patient will qualify for Medicare or Medicaid certification in another facility or program
07—Family refuses transfer
08—Patient refuses transfer
09—Economic reasons
10—Patient awaiting transfer to another facility
11—Patient awaiting transfer to his place of residence

12—Other (specify) ____

(57-79)—Blank

(80)—B (card sequence)

Department of Hospital Administration
School of Medicine, U. N. C.
Form No. 142-70

14. Frequency of visits by attending physicians
15. Adequacy of patient's living arrangements
16. Level of care required and modality
17. Transfer barriers, if any

The instrument does not include certain socioeconomic data which may be of special interest to some investigators but were not considered essential in the study undertaken in North Carolina. Excluded were patients' religious preference, number of living children, educational level, usual occupation, employment status, family income, and source of payment for care.

It should also be pointed out that in the UNC study no effort was made to evaluate the actual medical or nursing needs of the patient through a medical audit or examination. The nature and extent of the care being provided was considered sufficient evidence of the level of care required by the patient. Accordingly the structured instrument makes no provision for such an assessment or medical audit.

Although it was recognized that nursing services and care constitute the principal type of care for patients in the study, no effort was made to record the number of hours of such care given each patient. Investigators concerned with the influence of such data in developing patient classification systems could easily add these or similiar items to the form.

Instrument Use

We found that the instrument effectively provided individual patient profiles as well as institutional profiles. The instrument also permits standardization of data acquired and emphasizes the collection of factual information rather than subjective judgments. It can be used by groups concerned with utilization review in the initial screening of patients to permit concentration of effort on those requiring detailed review. It is also an effective mechanism for recording changes in patients' physical, psychological, and medical conditions.

It should be recognized that the long-term care patient survey form is not a decision-making tool but provides a method for recording data which should be considered in reaching decisions regarding classification of patients and the appropriateness of their assignment. Such data must be weighed in relation to the sociological, physical, medical, and environmental factors which affect the patient's total welfare.

Data from the survey instrument can be easily transferred to punchcards and other data processing systems for appropriate analysis and detailed study.

Comment

There is a need for continued effort to extend and improve our knowledge in evaluation technology in all areas of health and medical services, particularly in direct patient care and in the delivery of health services. Perhaps no area has been in greater need of evaluation than patient classification and determination of the level of care required by the individual patient. The advent of Medicare has accentuated the need for an evaluative tool to assist in the classification of patients according to the level of care they require.

The investigators have designed an instrument which has been found to be effective in providing profiles of individual patients and in determining the appropriateness of their assignment. It can also assist in the identification of transfer barriers which tend to prevent the movement of patients to appropriate facilities and to services designed for meeting their special needs.

In our opinion a further refinement of this instrument, by reducing the number of variables without compromising the statistical reliability of the data, would be desirable. We are currently pursuing further studies in this direction.

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Programs, Practices, People

New Worker to Serve As "Therapeutic Friend"

In association with community colleges, seven Veterans Administration (VA) hospitals are training a new kind of mental health worker. Known as a mental health associate, this new worker is a middle-level, nonprofessional member of the treatment team who serves as a 'therapeutic friend" to the psychiatric patient and a link between him and his family and community. The National Institute of Mental Health is funding the academic part of the training at most of the participating colleges, and the Veterans Administration is working closely with the Institute in developing this new category of personnel.

The courses are given by the community colleges; the VA hospitals provide the clinical training, and VA staff members participate in curriculum development and teaching.

Six women and five men have completed the first year of the 2-year training program for mental health associates that was developed by the Los Angeles, Calif., VA Hospital and Los Angeles City College. The other programs are at VA hospitals at Northampton, Mass., Salem, Va., St. Cloud, Minn., and at Temple, Waco, and Marlin, Tex. All of the courses provide for participation of the various mental health staff members so that the mental health associate will be able to function effectively as a member of the treatment team.

The VA hospital programs are based on recommendations of a multidiciplinary committee of the agency's Department of Medicine and Surgery.

Selection of Students For Nursing Schools

A 2-year study of the ways in which students are selected for nursing educational programs has been undertaken by the Division of Research of the National League for Nursing, New York City. The study is being funded by a $161,758 contract from the Division of Nursing, Health Resources Administration, Department of Health, Education, and Welfare.

The selection of students in nursing schools throughout the United States will be studied. The project will focus on determining specific factors that may act as barriers to admission or to the successful completion of a nursing program.

As a first step, a questionnaire will be mailed to all schools that are preparing students for beginning registered nurse practice in order to gather data on the administrative control of the school, criteria and procedures used to select students for admission, conditions under which one or more requirements might be waived, and the number of applicants by ethnic group, sex, and enrollment status, as well as other specialized information.

New Drug Program Funded In Arizona

A new drug program serving an area of 6,000 square miles in northern Arizona has been funded with a $222,000 grant from the National Institute of Mental Health to the Northern Arizona Comprehensive Guidance Center.

The center will funnel grant monies to drug treatment and rehabilitation centers in the five counties that comprise the northern half of the State. The rehabilitation centers will serve a population of nearly 200,000, including 60,000 Indians living on the Navajo, Whitemountain, Apache, and Hopi reservations.

Drug abuse in northern Arizona is much affected by outside influences—travelers who bring in drugs from nearby Mexico; a heavy influx of tourists who come to visit the Grand Canyon, the Colorado River, and other scenic attractions; and a drifting population heading to and from California via Interstate 40 between Los Angeles, Calif., and St. Louis, Mo. Transients account for nearly half the juvenile drug-related arrests. Among permanent residents, drug abuse is varied: some narcotics use has been reported in Flagstaff; stimulants, sedatives, and hallucinogens have been used by adults, university students, and some high school students; children have sniffed glue, gasoline, or paint.

Until now efforts to stop drug abuse and to treat drug users in the area have been fragmented and severely limited by lack of funds. Using the new grant as an "umbrella" to strengthen and coordinate their resources, Anglos and Indians now propose to offer drug prevention and treatment services to all members of their communities. County hospitals will provide emergency services and detoxification. Residential care will be available for narcotic addicts through affiliation with facilities in sourthern Arizona. Community mental health centers will offer aftercare, including individual counseling, group and conjoint therapy, recreational and vocational rehabilitation, and 24-hour "hot lines." On remote Indian reservations, where telephone service is almost nil, emergency service will be handled by a 24-hour drop-in center manned by trained community aides and volunteers.

Primary emphasis of the drug program is on serving Indians in centers operating on the reservations when this is permitted (as it is by the Apache Tribal Council) or in facilities immediately adjacent to the reservations.

Environmental Engineers Certification Examination

The next qualifying examination for certification by the American Academy of Environmental Engineers will be held June 25, 1974. Areas of specialty recognized by the academy are sanitary engineering, air pollution control engineering, industrial hygiene engineering, radiation protection engineering, and solid waste management.

The academy was organized to improve the practice, elevate the standards, and advance the cause of environmental engineering so as to better serve the public. It is sponsored by the Air Pollution Control Association, the American Institute of Chemical Engineers, the American Public Health Association, the American Public Works Association, the American Society for Engineering Education, the American Society of Civil Engineers, the American Water Works Association, and the Water Pollution Control Federation.

Each applicant who is certified becomes a diplomate of the academy. Requirements for certification include good moral and professional character, graduation with a degree in engineering from a qualified institution, registration as a professional engineer in one of the States of the United States or one of the Provinces of Canada, 8 years of professional environmental engineering work—4 of which must be in responsible charge, and satisfactory completion of written and oral examination.

Application forms for the examination may be obtained from the Executive Director, American Academy of Environmental Engineers, P.O. Box 1278, Rockvile, Md. 20850. For consideration for admission to the examination, applications must be received by March 15, 1974.

Organizations for Review Of Professional Standards

The president of the American Association of Foundations for Medical Care, John Wood, MD, has announced the formation of a new national organization, the American Association of Professional Standards Review Organizations (AAPSRO). Its specific and primary purposes will be to promote, develop, and encourage the professional review of the delivery of health care services by its members. Active institutional membership in AAPSRO requires membership in AAFMC. Active individual membership requires membership in the local Foundation for Medical Care.

Dr. Wood acknowledges that a tremendous amount of involvement at all levels will be required by any successful PSRO operation. Communications will become a key, not only for those charged with policy decision but for those developing and maintaining the management skills necessary for the effective operation of PSROs.

The new organization is currently surveying the AAFMC membership in order to prepare a list of applicants for a PSRO area designation. Area designations were announced in December by the Secretary of Health, Education, and Welfare. AAPSRO will hold a 4-day workshop in a central location in the United States for those members whose territories have been designated.

In addition, AAPSRO is compling a list of consulting organizations and persons whose services are, or can be, made available to those charged with the development and operation of PSROs. Dr. Wood noted that AAPSRO is also putting together an "ideal" model application for PSRO designation.

Professional Associations Of Public Health Service To Meet April 1974

The ninth joint meeting of the Professional Associations of the Public Health Service will be held in Washington, D.C., April 8–11, 1974. A diversified audience of about 1,000 health professionals is expected, including physicians, dentists, nurses, engineers, pharmacists, veterinarians, dietitians, scientists, sanitarians, therapists, and other health specialists.

Last year's meeting in Phoenix, Ariz., attracted some 800 members and guests, and a record number of approximately 320 scientific papers were presented.

For further information, write or phone Ms. Jackie Kramer, Commissioned Officers Association of the U.S. Public Health Service, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006 (phone 202: 298-8680).

Spanish-Language Edition Of Medicaid-Medicare

A Spanish-language edition of **Medicaid-Medicare,** a pocket-size, easy-to-read pamphlet explaining the nation's two major health care financing programs, has been issued by the Medical Services Administration of the HEW Social and Rehabilitation Service. More than 40 million Americans are eligible for help from one or both of these programs.

Both Medicaid and Medicare help pay medical bills, but the programs are not the same. **Medicaid-Medicare** is published to explain the differences between the two programs. "Cual es Cual?" (Which is Which?), the question on the cover, is answered in Spanish in 29 pages of large type. The Spanish translation takes into consideration the differences in idiom of the Spanish spoken by Americans of Cuban, Mexican, and Puerto Rico origin and aims to be understandable to all.

Single copies of **Medicaid-Medicare**—Cual es Cual? (HEW Publication No. (SRS) 73–24911) are available as long as the supply lasts from the Social and Rehabiitation Service, 330 C Street, S.W., Washington, D.C. 20201. Copies are also on sale for 50 cents each from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Poison Prevention Week March 17–23, 1974

The education committee of the American Association of Poison Control Centers has prepared several visual aids in observance of the annual Poison Prevention Week. Following are the materials available:

Slide talk, "Little Children and Big Poisons"—44 slides, 35 mm., color, with annotated script. Covers incidence, hazards, preventive measures, and first aid suggestions ($14).

Filmstrip, "Little Children and Big Poisons"—38-frame, color, with script. Designed for presentation to pupils in grades 3-5. Discusses chemical hazards in their homes and how they can prevent accidental poisoning ($6.50).

First aid for poisoning card —5- by 8-inch card of instructions for the handling of poisoning emergencies (200 or less, free: reproduction proof for local printing, free).

Flyer, "Poison Isn't Kid Stuff"—3½- by 7-inch, 4-page illustrated flyer suggests dangerous household products be kept away from children and that when a poisoning is suspected, medical advice should be obtained. (Reproduction proof for local printing, free.)

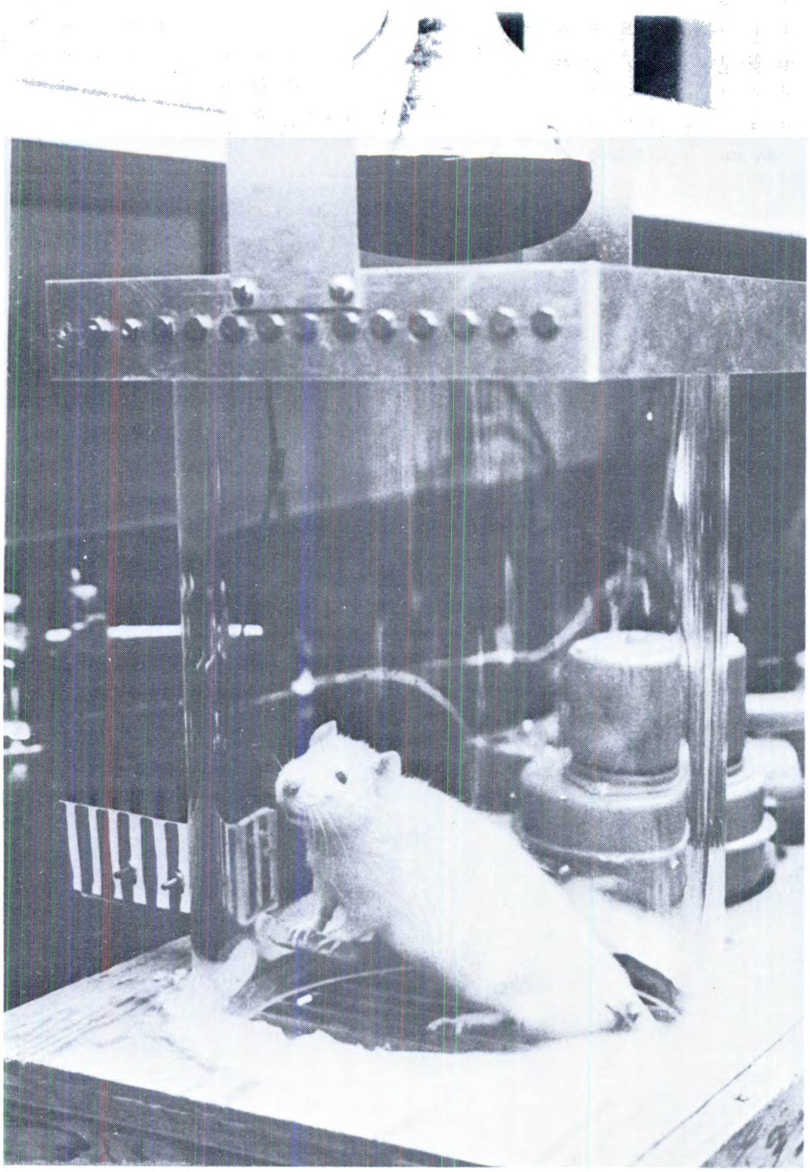
Poster, "Little People Don't Read Labels"—11- by 15-inch, color, illustrated, bearing message "Little People Don't Read Labels." (1 copy free; $5 per 100.)

Poster, "Syrup of Ipecac"—8½- by 11-inch, color, contains a picture of a bottle of syrup of ipecac and the legend "Get me —Just in Case!" (1 copy free, suitable for local printing.)

All requests should be made to the American Association of Poison Control Centers, Education Committee, c/o Academy of Medicine of Cleveland, 10525 Carnegie Ave., Cleveland, Ohio 44106.

Body Temperature in Rats And Heat Stroke

James M. Lipton, PhD, associate professor of psychology and physiology, University of Texas Southwestern Medical School at Dallas, is investigating the effects of various drugs on the body temperature of rats. He uses a heat lamp on white rats restrained in glass cylinders (see cover). The rat can turn the lamp off by press-



ing a lever when the heat becomes uncomfortable (see photo above).

Once Lipton determines the rat's discomfort level, he injects the animal with drugs, such as aspirin, which act on temperature control centers in the brain. Aspirin causes the rats to push the lever more often, a result that shows they are less tolerant of heat after taking this common drug.

This experiment is one of a number of research efforts supported by the National Institute of Neurological Diseases and Stroke that seek to provide insights into how the central nervous system controls body temperature. When we get hot, what makes us sweat? When we have a fever, what keeps it within bounds? When we experience heat stroke, what has gone wrong? What actually happens to the brain when our body temperature rises to life-threatening levels?

Former Assistant Director Of NCHS Dies

Dr. Oswald K. Sagen, a former Public Health Service administrator and health statistician, died of cancer December 28, 1973.

Sagen joined the staff of the Public Health Service in 1957, after serving 16 years as chief statistician for the Illinois Department of Public Health. He was named assistant director of the National Center for Health Statistics in 1961 and served in that position until his retirement in June 1973.

Throughout his career in public health, Sagen was associated with the development of programs designed to provide statistical information on the health of Americans.

Sagen was also active in establishing research projects with foreign countries such as Poland and Yugoslavia, including research into the effects of industrialization on health. In 1973 he was decorated by the government of Yugoslavia for his contributions to US-Yugoslav health research.

A native of LaCrosse, Wis., Sagen received his bachelor's degree from Luther College in Decorah, Iowa, his doctorate in mathematics from the University of Chicago. His post-doctoral studies were done at the Institute for Advanced Study at Princeton.

He was a fellow of the American Statistical Association, the American Public Health Association, the American Association for the Advancement of Science, and the Population Association.

Education Notes

Announcements for publication should be forwarded to Health Services Reports 6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.

Association for the Care of Children in Hospitals. The Association for the Care of Children in Hospitals will hold its 9th annual conference in Chicago, Ill., May 29–June 1, 1974. Children's Memorial Hospital of Chicago is the sponsoring institution.

The association is an interdisciplinary group focusing on the psychological and social aspects of the care of hospitalized children and their families.

"Who puts the pieces together?" will be the general theme of the conference. Panels of U.S. and Canadian health care experts will present papers and discuss topics related to major areas of pediatric health care. A preconference seminar on play therapy will take place May 29, 1974.

For registration and additional information, contact Mrs. Myrtha Sice, Recreational Therapy Department, Children's Memorial Hospital, 2300 Children's Plaza, Chicago, Ill. 60614 (phone 312: 649-4482).

Graduate studies in personal health care services. The Department of Medical Care and Hospitals at Johns Hopkins University School of Hygiene and Public Health is offering individualized programs of graduate education in fields related to organization, administration, policy analysis, and research in the personal health care services. Openings commencing in the 1974–75 academic year will accommodate a limited number of selected scholars interested in curriculums arranged at the master's degree, doctoral degree, or postdoctoral levels.

Applicants for admission should present strong academic backgrounds in one or more of the behavioral, biological, clinical, mathematical, physical, political, or social sciences. Practical experience in the administration, analysis, evaluation, or provision of personal health care services is advantageous.

For more information and application forms, write Philip D. Bonnet, M.D., Chairman, Department of Medical Care and Hospitals, School of Hygiene and Public Health, The Johns Hopkins University, 615 North Wolfe St., Baltimore, Md. 21205.

International Teaching Seminars on Cardiovascular Epidemiology. The Council on Epidemiology and Prevention of the International Society of Cardiology will hold its seventh 10-day International Teaching Seminar on Cardiovascular Epidemiology in Hungary, August 4-16, 1974. Approximately 30 fellows can be accepted.

Nominees should be at the postdoctoral level, with some residency training or its equivalent and be interested in cardiovascular epidemiology. Limited funds may be available to pay for room and board and to partially assist with travel costs.

Three documents are required for application—a letter of nomination submitted by chief of department or institution, a personal letter of application from the nominee, and the applicant's curriculum vitae. These should be received before the deadline for applications, May 1, 1974, and should be sent to: Jeremiah Stamler, M.D., Secretary, Council on Epidemiology and Prevention, I.S.C., c/o Northwestern University Medical School, Ward Building, Room 9-105, 303 East Chicago Ave., Chicago, Ill. 60611.

Short Course on Laser Safety. The sixth semi-annual short course on laser safety at the University of Cincinnati, Ohio, will be held March 18-22, 1974, with R. James Rockwell, Jr., as course director. Tuition is $325.

For further information, write Laser Safety Course, CONMED, 114 Medical College, Cincinnati, Ohio 45229 or telephone 513:559-4405.

Graduate Program in Alcohol Research. The Department of Epidemiology of the School of Public Health at the University of North Carolina is conducting a program leading to a master of public health degree or a master of science in public health degree with specialization in the field of alcoholism. The training is supported by a grant from the National Institute on Alcohol Abuse and Alcoholism.

The program is intended to prepare students to carry out research in alcoholism and alcohol abuse. It is designed to be completed in 18 months, with the summer devoted to fieldwork in one or more alcohol research centers in the Chapel Hill area. Courses will be provided in epidemiology, biostatistics, and other related fields.

Students with a bachelor's degree or an advanced degree in the social or biological sciences are invited to apply. Stipends, an allowance for each dependent, and full tuition are available.

For further information and application forms write to Dr. Joan C. Cornoni, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, N.C. 27514.

Master's level training in data management in health sciences. The Department of Biostatistics at the University of North Carolina in Chapel Hill offers 1-year programs of study leading to either a Master of Public Health (MPH) or a Master of Science in Public Health (MSPH) degree in biostatistics, with special emphasis on management of computer-based health data systems. Graduates will be prepared for analyst positions in intermediate level statistical and computer systems in local, State,, Federal, or private health programs for the delivery and evaluation of health services. Admission to both programs requires a bachelor's degree. A calculus background is desirable for the MPH and is required for MSPH admission.

For details, contact Dr. E. C. Coulter, Department of Biostatistics, School of Public Health, University of North Carolina, Chapel Hill, N.C. 27514.

Health Executives Development Program. Cornell University is offering its 17th annual Health Executives Development Program on the

LONG-TERM CARE PATIENT SURVEY

Sequence ____________ (1-5)

SURVEY DATE ____________ Mo. (6-7) ____________ Day (8-9), 19____ (10-11)

INSTITUTIONAL CODE: ____________ (12-14)

(15) **TYPE OF FACILITY:**
1—Hosp.
2—Hosp. ECF
3—Hosp. NH
4—Hosp. ECF-NH
5—ECF-NH
6—ECF
7—NH

PERSONAL DATA:

Name: ____________ (Last) ____________ (First) ____________ (Initial)

Soc. Sec. No. ______ (16-18) - ______ (19-20) - ______ (21-24)

Patient No. ____________

Date of Adm. ____________ Mo. (25-26) ____________ Day (27-28), 19____ (29-30)

(31) **L.P.S. to Date:**
1—Less than 15 days
2—15 to 30 days
3—31 to 60 days
4—61 days to 6 mos.
5—6 mos. to 9 mos.
6—9 mos to 12 mos.
7—1 yr. to 2 yrs.
8—2 yrs. to 5 yrs.
9—Over 5 yrs.

(32) **Sex:** 1—Male 2—Female

(33) **Race:** 1—White 2—Nonwhite

(34) **Marital Status:** 1—Mar. 2—Sing. 3—Wid. 4—Div. 5—Sep. 6—Ukn.

(35) **Age Group:**
1—Under 18
2—18-34 yrs.
3—35-44 yrs.
4—45-54 yrs.
5—55-64 yrs.
6—65-74 yrs.
7—75-84 yrs.
8—85 and over
9—Unknown

Place of Residence:

(36) **State:**
1—N.C.
2—S.C.
3—Va.
4—Tenn.
5—Ga.
6—Other St.
7—Unknown

(37) **County:**
1—Same County as Facility
2—Adjacent County
3—Beyond Adjacent County
4—Unknown

(38) **Source of Referral:**
1—Home, hotel or rooming house
2—General hospital
3—Special hospital (TB, psy., chronic disease)
4—ECF
5—Nursing Home
6—Rest home or home for the aged
7—Other
8—Unknown

(39) **Principal Type of Care Being Rendered:**
1—Diagnosis and/or treatment
2—Short-term convalescent or restorative care (under 30 days)
3—Long-term rehabilitation care
4—Long-term custodial or terminal care
5—Protective living (no nursing care needed)
6—Other (Specify: ____________)

CODE NUMBERS FOR DIAGNOSES

Code #	Diagnosis	Code #	Diagnosis
01	Heart diseases	11	Psychoses
02	Hemiplegia (mainly from stroke)	12	Psychoneuroses & other behavior disorders
03	Other circulatory diseases	13	Diabetes
04	Senility	14	Neoplasms
05	Hip Fracture	15	Genitourinary diseases
06	Other Fracture	16	Gastrointestinal diseases
07	Arthritis and rheumatism	17	Total blindness
08	Paralysis agitans	18	Respiratory
09	Multiple sclerosis	19	All other diagnoses
10	Other paralyses	20	Unknown

CURRENT MEDICAL DIAGNOSES:

______ (40-41) ______ (42-43) ______ (44-45) ______ (46-47) ______ (48-49) ______ (50-51)

DISABLING CONDITIONS:

		None	Slight Impairment	Moderate Impairment	Severe Impairment
(52)	**Tremor**	1	2	3	4
(53)	**Paralysis**	1	2	3	4

		None	Foot or Hand	Arm or Leg	Two Extremities	Three Extremities	Four Extremities
(54)	**Amputation(s)**	1	2	3	4	5	6

SENSORY DEPRIVATION:

		Unable to Rate	No Impairment	Slight Impairment	Moderate Impairment	Severe Impairment	Complete Loss
(55)	**Speech**	1	2	3	4	5	6
	Hearing:						
(56)	Without prosthesis	1	2	3	4	5	6
(57)	With prosthesis	1	2	3	4	5	6
	Vision:						
(58)	Without glasses	1	2	3	4	5	6
(59)	With glasses	1	2	3	4	5	6

(60) **MENTAL STATUS:**

1—Unable to rate
2—Oriented all the time
3—Confused some of the time
4—Confused most of the time

PRINCIPAL BEHAVIOR PATTERNS:

		Unable to Rate	Rarely	Some of the Time	Most of the Time
(61)	**Combative**	1	2	3	4
(62)	**Wanders**	1	2	3	4
(63)	**Withdrawn**	1	2	3	4
(64)	**Belligerent**	1	2	3	4
(65)	**Noisy**	1	2	3	4
(66)	**Cooperative**	1	2	3	4

NURSING ASSISTANCE WITH A.D.L.:

	A.D.L.	INDEPENDENT	DEPENDENT
(67)	**Bathing** (sponge, shower or tub)	1—assistance only in bathing a single part (as back or disabled extremity) or bathes self completely	2—assistance in bathing more than one part of body; assistance in getting in or out of tub or does not bathe self
(68)	**Dressing**	1—gets clothes from closets and drawers, puts on clothes, outer garments, braces; manages fasteners; act of tying shoes is excluded.	2—does not dress self or remains partly undressed
(69)	**Toileting**	1—gets to toilet; gets on & off toilet; arranges clothes; cleans organs of excretion; (may manage own bedpan used at night only and may or may not be using mechanical supports.)	2—uses bedpan or commode or receives assistance in getting to and using toilet
(70)	**Transfer**	1—moves in and out of bed independently & moves in and out of chair independently (may or may not be using mechanical supports)	2—assistance in moving in or out of bed and/or chair; does not perform one or more transfers
(71)	**Continence**	1—urination and defecation entirely self controlled	2—partial or total incontinence in urination or defecation; partial or total control by enemas, catheters, or regulated use of urinals and/or bedpans
(72)	**Feeding**	1—gets food from plate or its equivalent into mouth (precutting of meat and preparation of food, as buttering bread, are excluded from evaluation)	2—assistance in act of feeding; does not eat at all or parenteral feeding

(73) **BED STATUS:**

Ambulatory:
1—Out of bed 6-12 hours per day
2—Out of bed 2-6 hours per day
3—Out of bed 1-2 hours per day

Chairbound:
4—Out of bed 6-12 hours per day
5—Out of bed 2-6 hours per day
6—Out of bed 1-2 hours per day
7—Bedfast

(74) **AMBULATION:**

1—Climbs stairs with no human assistance
2—Climbs stairs only with human assistance
3—Walks with no human assistance
4—Walks only with human assistance
5—Walks with walker or cane
6—Walks with crutches
7—Patient uses wheelchair with no human assistance
8—Patient uses wheelchair only with human assistance
9—Not applicable since patient is bedfast

PATIENT'S GENERAL CONDITION SINCE ADMISSION:

		Unable to Rate	Improved	Unchanged	Deteriorating
(75)	**Physically**	1	2	3	4
(76)	**Psychologically**	1	2	3	4

(77-79)—Blank

(80)-A (card sequence)

Ithaca campus from June 16 to 28, 1974. The program will emphasize health policy and planning, international health care trends, and the development of selected managerial skills. It will be open to hospital administrators, health planners, and executives of governmental health agencies and other health care organizations.

Further information and application forms are available from Health Executives Development Program, Sloan Institute of Hospital Administration, Graduate School of Business and Public Administration, Malott Hall, Cornell University, Ithaca, N.Y. 14850.

National Medical Audiovisual Center training. The National Medical Audiovisual Center, Department of Health, Education, and Welfare, is conducting various seminars, symposiums, and workshops in 1974 that are directed at persons interested and involved in improving the educational process. Emphasis is on the application of new instructional technology to the teaching-learning process.

The training is free, as is the material distributed during it, but participants are responsible for their travel, food, and lodging. For application blanks and further information, write the National Medical Audiovisual Center, Attention: Training Coordinator, 1600 Clifton Road, N.E., Atlanta, Ga. 30333. All courses are held at the Clifton Road location except the Seminar/Workshop on Learning Spaces, which is to meet at the National Medical Audiovisual Center Annex Training Facility, 2111 Plaster Bridge Road, N.E., Atlanta, Ga. 30324.

Seminar on Evaluation of Instructional Materials in Medical Education, February 25-27 and June 3-5

Limited to faculty members in schools of medical education (24 participants)

Workshop on Graphics in Medical Education, March 20-22

For teaching faculty in schools of medicine and dentistry who desire to improve their skills in communicating their ideas visually (24 participants)

Workshop on Graphics in Health Science Education, March 26-28

For teaching faculty in schools of nursing and allied health who are responsible for planning visual components of multimedia instructional materials (24 participants)

Seminar/Workshop on Learning Spaces, April 15-17

For persons from health science institutions involved in facilities design projects or planning committees

Symposium on Instructional Technology, May 6

Limited to directors and faculty in schools of nursing.

Publications

FEDERAL

Vital Statistics of the United States, 1969. Vol. II. Mortality. Part B., Sect. 7. *DHEW Publication No. (HSM) 73–1102; 1973; 621 pages; $8.40.*

Health of the American Indian. Report of a regional task force. *DHEW Publication No. (HSM) 73–5118; 1973; 30 pages; 65 cents.*

The Medical Director in Prepaid Group Practice Health Maintenance Organizations. Proceedings of a conference, Denver, Colorado, April 1973. *Edited by Michael A. Newman, MD. 1973; 140 pages. Health Maintenance Organization Service, Health Services and Mental Health Administration.*

Soviet Medicine: A bibliography of bibliographies. *DHEW Publication No. (NIH) 74–575; 1973; 43 pages; 80 cents.*

Solid Waste Management. Report SW–58.19, *Environmental Protection Agency. July 1973; 55 pages; 60 cents.*

Dimethyl Sulfoxide as a Therapeutic Agent. October 1973; $4.50 paperbound, $1.40 microfiche. No. PB22457*AS. National Technical Information Service, 5285 Port Royal Rd., Springfield, Va. 22151.

The Relationship of Nutrition to Brain Development and Behavior. *September 1973. Free from the Food and Nutrition Board, National Academy of Sciences, National Research Council, 2101 Constitution Ave., NW., Washington, D.C. 20418.*

Determinants of Expenditures for Physicians' Services in the United States, 1948–1968. *By Victor R. Fuchs and Marcia J. Kramer. DHEW Publication No. (HSM) 73–3013; July 31, 1973; 63 pages; $3, hardcover, $1, paperback.*

A Bibliography of Chinese Sources on Medicine and Public Health in the People's Republic of China: 1960–1970. A publication of geographic health studies by the John E. Fogarty International Center for Advanced Study in the Health Sciences. *DHEW Publication No. (NIH) 73–439; 1973; 486 pages; $5.*

Summary of Training Programs: Physician support personnel, September 1972. *DHEW Publication No. (NIH) 73–318; 1973; 34 pages.*

Selected References on Hospital Equipment. *HEW Publication No. (HSM) 73–4039; 1973; 48 pages; 55 cents.*

National Center for Health Statistics

Health Statistics Today and Tomorrow. A report of the Committee to Evaluate the National Center for Health Statistics. DHEW Publication No. (HRA) 74–1452, Series 4, No. 15; September 1973; 24 pages; 65 cents.

Intellectual Development of Youths, as Measured by a Short Form of the Wechsler Intelligence Scale, United States. *DHEW Publication No. (HRA) 74–1610, Series 11, No. 128; September 1973; 42 pages; 80 cents.*

Charges for Care and Sources of Payment for Residents in Nursing Homes, United States, June–August 1969. DHEW Publication No. (HRA) 74–1706, Series 12, No. 21; *July 1973; 69 pages; 95 cents.*

Utilization of Short-Stay Hospitals. Summary of nonmedical statistics, United States, 1970. *DHEW Publication No. (HRA) 74–1765, Series 13, No. 14; August 1973; 58 pages; 85 cents.*

A Study of Infant Mortality From Linked Records by Age of Mother, Total-Birth Order, and Other Variables, United States. DHEW Publication No. (HRA) 74–1851, *Series 20, No. 14; September 1973; 52 pages; 85 cents.*

Teenagers: Marriages, Divorces, Parenthood, and Mortality. *DHEW Publication No. (HRA) 74–1901, Series 21, No. 23; August 1973; 42 pages; 75 cents.*

Approximate Tests of Independence in Contingency Tables From Complex Stratified Cluster Samples. *DHEW Publication No. (HSM) 73–1327, Series 2, No. 53; March 1973; 14 pages; 30 cents.*

The Prediction Approach to Finite Population Sampling Theory: Application to the hospital discharge survey. *DHEW Publication No. (HSM) 73–1329, Series 2, No. 55; April 1973; 31 pages; 45 cents.*

Completeness and Quality of Response in the North Carolina Marriage Follow-Back Survey. *DHEW Publication No. (HSM) 73–1330, Series 2, No. 56; July 1973; 42 pages; 50 cents.*

Net Differences in Interview Data on Chronic Conditions and Information Derived From Medical Records. *DHEW Publication No. (HSM) 73–1331, Series 2, No. 57; June 1973; 58 pages; 60 cents.*

Volume of X-ray Visits, United States, April–September 1970. *DHEW Publication No. (HSM) 73–1507, Series 10, No. 81; April 1973; 54 pages; 60 cents.*

Acute Conditions, Incidence and Associated Disability, United States, July 1970–June 1971. *DHEW Publication No. (HSM) 73–1508, Series 10, No. 82; April 1973; 67 pages; 65 cents.*

Prenatal-Postnatal Health Needs and Medical Care of Children, United States. *DHEW Publication No. (HSM) 73–1607, Series 11, No. 125; April 1973; 43 pages; 50 cents.*

Administrators of Nursing and Personal Care Homes: Work experience, United States, June–August 1969. *DHEW Publication No. (HSM) 73–1705, Series 12, No. 20; March 1973; 45 pages; 50 cents.*

Inpatient Utilization of Short-Stay Hospitals, by Diagnosis, United States, 1968. *DHEW Publication No. (HSM) 73–1763, Series 13, No. 12; March 1973; 76 pages; 70 cents.*

Optometrists Employed in Health Services, United States, 1968. *DHEW Publication No. (HSM) 73–1803, Series 14, No. 8; March 1973; 48 pages; 50 cents.*

Ophthalmology Manpower: Utilization of supplementary personnel, United States, 1968. *DHEW Publication No. (HSM) 73–1804, Series 14, No. 9; May 1973; 48 pages; 50 cents.*

Podiatry Manpower: A general profile, United States, 1970. *DHEW Publication No. (HRA) 74–1805, Series 14, No. 10; August 1973; 52 pages; 80 cents.*

Divorces: Analysis of changes, United States, 1969. *DHEW Publication No. (HSM) 73–1900, Series 21, No. 22; April 1973; 58 pages; 60 cents.*

Infant Mortality Rates: Relationships with mother's reproductive history, United States. *DHEW Publication No. (HSM) 73–1976, Series 22, No. 15; April 1973; 56 pages; 60 cents.*

Federal publications may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication.

WORLD HEALTH ORGANIZATION

World Directory of Veterinary Schools, 1971. *1973; 260 pages; $10.80; Geneva.*

Methods for the Analysis of Human Chromosome Aberrations. *Edited by K. E. Buckton and H. J. Evans. 1973; 44 pages; $3.60; Geneva.*

WHO Expert Committee on Drug Dependence. Nineteenth report. *WHO Technical Report Series No. 526; 1973; 38 pages; $1.20; Geneva.*

WHO publications may be obtained from the American Public Health Association, Inc., 1015 Eighteenth St., NW., Washington, D.C. 20036.

NONFEDERAL

Selected Studies in Medical Care and Medical Economics. Annual report 1973. *June 1973; 205 pages. Division of Research and Development, Blue Cross Association, National Association of Blue Shield Plans, 211 East Chicago Ave. Chicago, Ill. 60611.*

The Population Council, Annual report 1972. *143 pages. The Population Council, 245 Park Ave., New York, N.Y. 10017.*

A Guidebook for Family Planning Education. *June 1973; 93 pages. Westinghouse Population Center, Health Systems Division, Columbia, Md. 21044.*

Utilization Review. Some directions. Publication No. 21–1483. 1973; 25 pages; $2 (20 percent discount on orders of 10 or more copies). National League for Nursing, 10 Columbus Circle, New York, N.Y. 10019.

Nutrition, Development, and Population Growth. *Population Bulletin, Vol. 29, No. 1, 37 pages; 50 cents. Population Reference Bureau, Inc., 1755 Massachusetts Ave. NW., Washington, D.C. 20036.*

The Campaign for Cleaner Air. *Public Affairs Pamphlet No. 494. By Marvin Zeldin. June 1973; 27 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Prescription Drug Industry Factbook. *1973; 101 pages. Pharmaceutical Manufacturers Association, 1155 Fifteenth St., NW., Washington, D.C. 20005.*

Problem Pregnancy and Abortion Counseling. *Edited by Robert R. Wilson. 1973; 120 pages; $3.45 plus 15 cents postage. Family Life Publication, Inc., 219 Henderson St., P.O. Box 427, Saluda, N.C. 28773.*

Training of the Nurse Practitioner: A clinical and statistical analysis. *Connecticut Health Services Research Series Monograph No. 4. By Doris M. Storms, MPH. 1973; 121 pages; $5. Connecticut Health Services Research Series, P.O. Box 504, New Haven, Conn. 06473.*

Order nonfederal publications from publisher or sponsoring organization.

Information for Contributors to Health Services Reports

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HEALTH SERVICES REPORTS publishes a synopsis, in lieu of a summary, of most technical reports. Authors are requested to submit with appropriate papers a synopsis of approximately 250 words. The staff will supply on request information on the preparation of synopses.

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HEALTH SERVICES Reports

VOL. 89 NO. 2

HEALTH SERVICES ADMINISTRATION

MARCH–APRIL 1974

Emergency Medical Services

Despite the obvious fact that a major portion of critically ill or injured patients enter the health care system through the hospital emergency department door, probably no facet of medicine has been so widely ignored as Emergency Medical Services (EMS). For years EMS fell under the old canard, "Everybody talks about it but few do anything." And even when they did, most approaches were both too little and poorly coordinated.

In Korea, and more recently in Vietnam, the military developed emergency identification, location, communication, and evacuation systems that, by previous standards, were little short of miraculous. Yet, little has been done in the United States to duplicate the military processes for the auto accident victim on the highway or the heart attack patient in the home.

Several years ago in his State of the Union Message, President Nixon identified EMS as a priority item in the nation's health care effort, cogently pointing out that good emergency medical services could save each year an estimated 100,000 from death by heart attacks and another 50,000 from death by accidents. EMS received further Administration backing by being included in the "Health Strategy for the 70's." This initiative culminated in the mid-November signing of the Emergency Medical Services System Act of 1973 (Public Law 93-154), designed to coordinate areawide emergency services systems. Even before the passage of the legislation, however, the Department of Health, Education, and Welfare had moved to strengthen emergency systems with first a task force and then an emergency medical services program within the Health Services and Mental Health Administration. Proposals were requested for the EMS demonstration system, and five full prototype EMS systems and two communication subsystems were funded.

The goal of the new legislation is to stimulate the development of self-sustaining systems which will provide access to emergency services regardless of ability to pay, geographic location, time of day, or type of emergency.

How will this be done? The legislation focuses on assistance to communities in identifying EMS needs, resources, and priorities. Under a matching formula, funds would be provided for the establishment and initial operation of EMS programs with special emphasis on rural areas. Present systems could be expanded and improved under matching grants or contracts. Research and training would be fostered and technical assistance provided to those areas in need of it. In addition, the act provides for establishment of an Interagency Committee on EMS and for a study aimed at the removal of national legal barriers to sound EMS development.

In all, the legislation crystallizes the efforts of many in the EMS field who have sought in recent years to reduce the staggering toll of unnecessary death and crippling in those first critical moments following injury or life-threatening illness.—ROBERT E. STREICHER, MD, *Assistant Surgeon General and Director, Federal Health Programs Service, Health Services Administration.*

Cover—Neighborhood members salvage lumber from a demolished house during a cleanup campaign. Dilapidated houses were torn down as a result of a demonstration program in Lubbock, Tex., which gave priority action to the community health problems of low socioeconomic neighborhoods. The program is described in the article beginning on page 134.

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PROGRAMS, PRACTICES, PEOPLE

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

Guidelines for Research and Evaluation of Emergency Medical Services

GEOFFREY GIBSON, PhD

THE EMERGENCY MEDICAL SERVICES Systems Act of 1973 will make available $185 million over a 3-year period to States, counties, cities, and other nonprofit associations to develop or expand comprehensive area emergency medical services. Although most States and many regions have been involved in EMS projects in the past under funding from the Department of Transportation, the Regional Medical Programs Service, and the Comprehensive Health Planning Service, it is apparent that, in awarding grants and contracts under this new program, the Federal Government will place much more emphasis on research and evaluation than it ever has previously. Thus section 1202 of the act (Public Law 93–154) states, "An application for a grant or contract . . . shall demonstrate to the satisfaction of the Secretary the need of the area for which the study and planning will be done for an emergency medical services system." Section 1206, in outlining the minimum set of components for a fundable emergency medical services (EMS) project, states that an EMS system must "provide for periodic, comprehensive and independent review and evaluation of the extent and quality of the emergency health care services provided in the system's service area; and submission to the Secretary of the reports of each such review and evaluation."

It is quite clear, therefore, that research and evaluation of emergency medical services is no longer just a desirable byproduct of Federal funding, but instead is a major precondition for initial awards and subsequent renewal. It is equally clear that EMS evaluation and research can, and under the new program will, move beyond the merely descriptive inventorying of resources and "ambulance counting." Research methodologies have been sufficiently developed over the past decade so that it is now possible and essential for programs to justify their need for EMS funds and evaluate the effectiveness of their use through the process and outcome of EMS care, in addition to the traditional resource counting. This paper outlines some of the new methodologies and commends their use by program applicants under the 1973 EMS act.

The research and evaluation component of an EMS project typically involves two phases: (*a*) baseline evaluation before implementing training and communication systems and (*b*) ongoing evaluation of the effect of implementation. The first purpose of collecting baseline data is to form an empirical basis for recommendations as to the precise change to be made. The second purpose is to secure a clear picture of the EMS system before intervention so that changes in performance attributable to intervention may be measured and evaluated. The general model for baseline evaluation follows.

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Format 1. Hospitals with emergency medical service resources

Hospital type	City hospitals		Suburban hospitals		Total	
	Number	Percent	Number	Percent	Number	Percent
Number of beds						
0–199						
200–399						
400 or more						
Teaching involvement						
No teaching program						
Residency or intern program						
Medical school affiliation						

Although most existing EMS research is concerned only with resources, in this model data must also be collected on patient needs, utilization (or process variables), and outcomes for an adequate evaluation of both pre- and post-intervention performance of the EMS.

Resources Data

Information on existing EMS resources is collected from hospital, ambulance, and communication facilities by means of an onsite evaluation. Mail questionnaire surveys are unsatisfactory because they do not allow the project to be explained in person to leaders of the facility being surveyed and because this method is not likely to produce valid data. Survey forms to evaluate hospital and ambulance facilities are available from the Division of Emergency Health Services (D.E.H.S.), Box 911, Rockville, Md. 20852.

Alternatively, survey forms can be developed from guidelines published by the American Hospital Association (AHA), American Medical Association (AMA), Committee on Trauma of the American College of Surgeons (ACS), Joint Commission on Accreditation of Hospitals (JCAH), and others (*1–5*). For hospital surveys, certain resource data are available from the Guide issue, published as a supplement to the August issue of Hospitals, the Journal of the American Hospital Association, up to August 1971 and as a separate publication each August thereafter.

This publication gives data on the availability of residencies and internships; number of beds, admissions, and intensive care and critical care units; and availability of facilities for X-rays, laboratory tests, premature infants, poison control, and other EMS-related facilities as well as a self-rating of the emergency room category for each hospital in the United States.

The onsite survey of a hospital is concerned with the availability of equipment, supportive services, staffing patterns in the emergency room (ER), backup specialist services, administrative arrangements, clinical procedures, and volume of visits. The D.E.H.S. survey forms can be completed in 2 or 3 hours by having a research assistant (preferably a registered nurse or senior medical student) interview the nurse in charge of the emergency room or the ER physician director, or both, and the hospital administrator. All facilities in the project area must be surveyed, including Veterans Administration and State mental hospitals and private psychiatric facilities. It is also desirable to survey industrial clinic facilities.

Although each facility may not be willing to become or be an appropriate part of the day-today EMS system, its resources need to be inventoried for disaster planning or for specialized services, such as detoxification, psychiatric holding, and other services that a facility may be willing to provide.

From these data, measures for evaluating present adequacy and for future planning can be developed to describe hospital emergency medical services in the project area. Five measures are listed.

HOSPITAL RESOURCES MEASURES

1. Percent of hospitals with a physician in the ER at all times
2. Percent of hospitals with laboratory and X-ray facilities staffed at all times

3. Percent of hospitals with necessary equipment in the ER
4. Percent of hospitals with needed specialists on call within the hospital at all times
5. Percent of hospitals in compliance with ACS, AHA, and JCAH guidelines for administrative arrangements (ER committee and others), clinical guidance (manual, medical, audit, and so forth), and procedures (for observation beds, for patients with diagnoses of suicide, rape, drug overdose, and alcoholism, and psychiatrically disturbed patients).

To relate this resource information to subareas of the region and to characteristics of the hospitals, it can be displayed using format 1.

These measures of resources allow existing hospital emergency services in the project area to be compared with those reported in the literature for hospitals in other areas and to be categorized, by AHA and AMA definitions, into levels of resources available. These data, with appropriate recommendations from the staff of the research component, should be reviewed by a project committee representative of the community's health structure to determine whether certain resources overlap and would be better coordinated with categorization and whether certain resources are absent and should be secured, either through individual applications for Hill-Burton funding or through the EMS project itself.

Information on ambulance resources is to be similarly collected through onsite completion of survey forms. The D.E.H.S. form can be completed in about 2½ hours and provides information on personnel training, procedures, and costs and on equipment and vehicles. Again, it is essential that all ambulance facilities be surveyed, including commercial, hospital-based ambulances, police and fire department transportation and first aid activity, and the facilities of volunteer fire companies. If private ambulances are licensed and subject to minimum standards, secondary survey data may be available from the licensing authority—the State, county, or city agency. Four evaluative measures are listed.

AMBULANCE RESOURCES MEASURES

1. Percent of ambulances in compliance with minimum equipment of the ACS list
2. Percent of ambulance staff with emergency medical technician training beyond Red Cross Advanced First Aid certification
3. Percent of ambulances with radios to communicate directly with receiving hospital
4. Number of trained attendants per ambulance.

These data should be reported in a way that allows resource comparisons between subareas and ambulance agencies or by following format 2.

In addition to collecting and reporting information on existing resources, it is essential that measures be derived that indicate the quantity of aggregate community resources available to the population base. Ten measures of EMS resources in relation to population are listed in format 3. These resource-to-population ratios allow comparisons of resource availability between the project region and other areas as well as within the subareas of the region.

The availability of human resources is a function of staffing patterns which vary by shift. Data on four of the resource units in format 3 (1.

Format 2. Ambulances with emergency medical services resources

Ambulance agency	City ambulance		Suburban ambulance		Total	
	Number	Percent	Number	Percent	Number	Percent
Commercial						
Hospital-based						
Police department						
Fire department						
Volunteer fire company						
Independent volunteer						
Total						

Format 3. Ratios of emergency medical services resources per 1,000 population, by location

Resource unit per 1,000 population	City					Suburbs				
	North	East	South	West	Total	North	East	South	West	Total
1. Physicians in ER at all times (day, evening, night)										
2. Laboratory and X-ray facilities staffed at all times										
3. Specialists on call within a hospital										
4. Items of equipment in ER										
5. Beds in intensive care and critical care units.										
6. ER treatment cubicles										
7. Observation beds										
8. Complying ambulances										
9. Medical-emergency-technician-trained ambulance personnel										
10. Radio-equipped ambulances to hospital										

Format 4. Emergency services resource availability by shift

Time and location	Resource unit per 1,000 population [1]			
	Item 1	Item 2	Item 3	Item 9
City weekdays:				
8 a.m.–4 p.m				
4–12 p.m				
12 p.m.–8 a.m				
City weekends:				
8 a.m.–4 p.m				
4–12 p.m				
12 p.m.–8 a.m				
Suburbs weekdays:				
8 a.m.–4 p.m				
4–12 p.m				
12 p.m.–8 a.m				
Suburbs weekends:				
8 a.m.–4 p.m				
4–12 p.m				
12 p.m.–8 a.m				

[1] See format 3 for definition of items.

physicians in ER at all times, 2. laboratory and X-ray facilities staffed at all times, 3. specialists on call within a hospital, and 9. medical-emergency-technician-trained ambulance personnel) should be recorded as in format 4.

Patient Need Data

Returning to the initial model for baseline evaluation, we see clearly that both baseline and ongoing evaluation depends not only on resource inventories, but also on data to describe existing demand or needs, or both, for these resources. Available guidelines and minimum standards are excellent in evaluating resources in isolation, but they are dangerously inaccurate for evaluating whether resources are adequate to meet actual need and demand in a given community. Unless existing resources are evaluated and future resources allocated on the basis of an empirical estimate of clinical patient needs in a given locale (rather than uncritical compliance with national guidelines), a community and its funding resources run a grave risk of providing either excess or deficient resources to meet actual need. Whether a neurosurgeon should be on call, or X-ray and laboratory facilities staffed around the clock, and so forth should depend not so much on JCAH or ACS national guidelines as on patient needs in a region.

These data can be secured from several sources. First, data should be abstracted from the emergency department medical records for all patients seen at each hospital ER facility in the area. Since it is impossible and unnecessary to abstract all records, certain periods ought to be sampled. Thus in Erie County, N.Y., we selected four 1-week periods during the year preceding the project and used a computer-readable optical-scan abstract form. We collected clinical and demographic data on all 25,000 visits to 23 of 24 hospital ERs in the county during these four periods. The forms cost $7 per 1,000 from IBM, and our research assistants at $3 per hour completed about 80 forms during an 8-hour shift. Each abstract, therefore, takes 6 minutes and 30 cents (in labor costs) and .07 cent for each form. Since the form is computer readable, there are no added costs for inaccuracies in coding, punching, and verifying the cards.

The second source of data for patient needs is ambulance records. Taking the same four 1-week periods, we abstracted clinical need data from the dispatch and ambulance assistance records in Erie County. Since only 10 percent of all patients require an ambulance, we abstracted 2,500 ambulance case records. In States requiring private and hospital-based ambulances to submit a report on each run to the licensing authority, secondary data may be available. Although patient needs are often equated with patient demand, they differ; patient demand refers to actual use (whether or not the use was clinically justified), while patient need refers to the clinical need for emergency medical services (whether or not they were used).

This distinction indicates the necessity for EMS researchers to estimate need independently of actual use. Specifically, they should examine whether certain categories of events and persons in great need of services actually received them. The three major sources for this information are death certificates with mentions of accidents, homicides, drownings, suicides, cardiovascular accident, myocardial infarct, and drug overdose; automobile accident injury data from police and motor vehicle registration agencies; and calls for medical assistance to 911 or other dispatch systems.

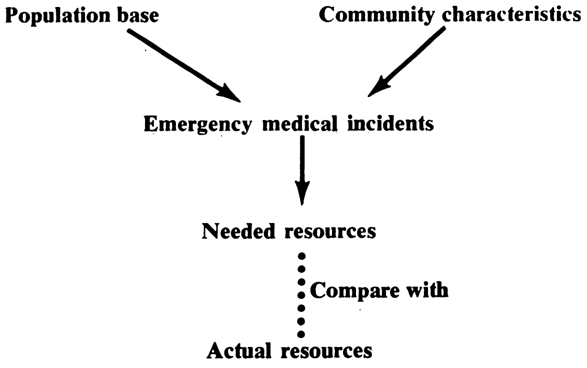
From these sources, information and clinical judgments can be collected to evaluate patient need. Patient needs for emergency medical services may be described and their geographic and temporal distribution reported by using format 5.

From data described with greater clinical detail than the list in format 5, judgments as to resources needed by location and time can be made to provide evaluative comparisons with actual resources. For example, with knowledge of the incidence and distribution of myocardial infarctions, reasonable estimates may be formed of needed resources in terms of ambulances equipped with telemetry, ambulance equipment, and stabilizing procedures and of cardiologists, defibrillators, critical care units, and so forth in the emergency room. These data may also be related to the population base so that reasonably accurate predictions may be made as to the future volume of patient needs as well as the likely impact of population changes, the opening of a freeway, or the categorization of

Format 5. Mean number of medical incidents per 8-hour shift

Incident	City			Suburbs			Total		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
1. Myocardial infarction..................									
2. Poisoning............................									
3. Drug overdose........................									
4. Cardiovascular arrest..................									
5. Fracture............................									
6. Head trauma.........................									
7. Severe lacerations.....................									
8. Threatened abortion....................									
9. Psychotic episode......................									
10. General illness........................									

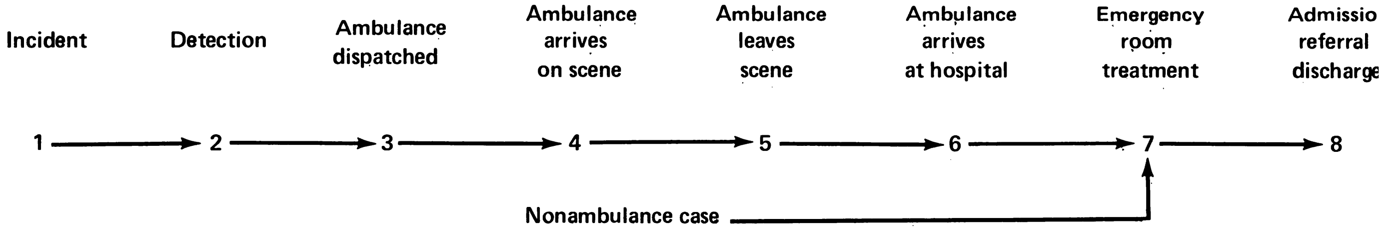
hospital facilities. The causal model may be diagramed as follows:



Resource Utilization

The initial model indicated EMS resources and patient needs as inputs to the EMS system with various outcome states as output. The intermediate stage may be referred to as process or throughput or utilization; that is, the several interactions that take place between resource and need. One interaction sequence is shown in the diagram. By using records of ambulance runs, participant observations, and clinical judgments, the following data can be collected.

Interaction sequence between resources and need



AMBULANCE UTILIZATION MEASURES

1. Runs per vehicle per year by type of injury
2. Percent of runs with at least one medical emergency trained technician
3. Runs per 1,000 population per year for each ambulance agency
4. Percent of runs when ambulance informed hospital of impending arrival
5. First aid procedures performed at scene and en route
6. Mean interval between occurrence of incident, arrival of ambulance at scene, departure from scene, and arrival at hospital
7. Percent of dry runs
8. Minutes per day ambulance is in use
9. Runs to each hospital
10. Costs, charges, and income per run.

Similarly, data on hospital ER utilization can be collected by abstracting medical records and from interviews and observations of patients at each hospital during a 24-hour period. The following data are needed;

HOSPITAL UTILIZATION MEASURES

1. Visits for each hospital per year
2. Visits (aggregate) per 1,000 population
3. Visits by injury type and severity rating
4. Percent of visits for nonurgent and scheduled procedures
5. Mean interval between arrival of patient and first encounter with physician, intern, or resident and admission or discharge
6. Average length of stay for emergency room admissions
7. Distribution of visits by hour, shift, day of the week, and season
8. Treatment procedures by clinical condition
9. Disposition of patients: admission, referred to outpatient department, referred to private physician, transferred to another hospital, told to return, discharged
10. Distribution of X-ray, laboratory, and other procedures by injury type and time of day
11. Minutes per day each resource unit (defibrillator, registered nurse, cast room, cubicle, observation bed, M.D., and so forth) in ER is in use
12. Cost, charges, and income per visit
13. Patient characteristics: age, sex, race, health insurance coverage, private physician, residence, occupation, education.

Most of these measures of hospital and ambulance utilization are descriptive rather than evaluative and do not allow qualitative judgments beyond interfacility comparisons as to waiting time, costs, and other items and comparisons between the project area and other regions on gross utilization parameters. Additional evaluative criteria are necessary to make such comparisons.

Evaluative Criteria for Utilization

A physician-registered nurse team can make several clinical judgments from the survey data mentioned previously (ambulance trip data, ER medical records, dispatch records, death certificates) that allow, through record linkage, a clear history of an EMS incident from occurrence through detection and ambulance use to hospital treatment and death or recovery. From these judgments, the following percentages can be computed.

1. Runs with inappropriate first aid procedures performed
2. Runs with appropriate first aid procedures not performed
3. Runs when first aid procedures required by the patient's clinical condition necessitated greater training than that of the ambulance crew
4. Deaths at the scene, deaths en route, and deaths after hospital arrival attributable to first aid procedures withheld or delay in reaching hospital
5. Patients receiving ambulance service who needed it for clinical reasons
6. Hospital's ER patients clinically needing ambulance service who actually received it.

Criterion 3 would produce vital information on the disparity between actual and needed training of the ambulance crew—information more appropriate than the present largely undocumented and expensive assumption that all ambulance personnel should receive the highest possible training. Data on criteria 1–3 might be displayed as in format 6.

Criteria 5 (ambulance sensitivity index) and criteria 6 (ambulance specificity index) depend on abstracted data from the ER records and the clinical interpretation of it. In format 7, data from the city of Chicago for June 3–9, 1969, are used as an example.

Ideally, both indices ought to closely approach 100 percent and if they do not, the availability of ambulances, the decision-making processes (whether to dispatch an ambulance in response to a request) of the ambulance dispatch system, and the public visibility of the ambulance call procedures ought to be examined. Criterion 6 should also be applied to calls for ambulance assistance whether or not the person subsequently entered the EMS system alive. Since criterion 6 is, of course, a measure of unmet ambulance need, false-negative calls (appropriate patient calls for an ambulance that incorrectly did not receive service) should be followed up in detail.

Similar evaluation criteria may be developed for utilization of hospital ERs from abstracting

Format 6. Comparison of actual and needed training of ambulance crews, in number of runs

Actual training level	Patient's condition required training to level of—			
	Red Cross Standard	Red Cross Advanced	Medical emergency training	Beyond medical emergency training
Red Cross Standard	a	b	c	d
Red Cross Advanced	e	f	g	h
MET	i	j	k	l
Beyond MET	m	n	o	p

NOTE: A satisfactory level of training would be a+f+k+p÷all runs=100 percent. The degree o undertraining may be measured as b+c+d+g+h+l÷all runs=? percent, and the degree o overtraining as e+i+j+m+n+o÷all runs=? percent.

Format 7. Comparison of clinically determined need for, and actual receipt of, ambulance service by a hospital's emergency room patients

Received ambulance service	Clinically determined need for ambulance service		
	Yes	No	Total
Yes	A= 345	B= 63	408
No	C=1,491	D= 943	2,434
Total	1,836	1,006	2,842

NOTE: Ambulance sensitivity index is A÷A+B or 84 percent. Ambulance specificity index is A÷A+C or 19 percent.

records, interviews with patients, autopsy reports, death certificates, and the resulting clinical judgments. These criteria include:

7. Proportion of ER patients treated at hospitals with EMS resources greater than those required by the clinical condition

8. Proportion of ER patients treated at hospitals with EMS resources less than those required by the clinical condition.

Both these criteria require a categorization of each hospital's EMS resources and of the resources necessitated by the patient's clinical state. The data should be displayed in two major formats. First, in format 8 aggregate data for the entire project area are displayed.

Format 8. Comparison of actual use and clinical need for emergency medical services of hospitals, by emergency room (ER) category

ER category used	Number of patients by ER clinically needed category		
	Comprehensive	Major	Basic
Comprehensive	a	b	c
Major	d	e	f
Basic	g	h	i

NOTE: Adequate response is a+e+i÷all cases=100 percent. Over-response is b+c+f÷all cases=? percent. Under-response is d+g+h÷all cases=? percent.

These data on ER use ought to be analyzed separately for ambulance and nonambulance cases, since needed manipulative strategies differ in terms of whether the over- or under-response of the system is attributable to (and therefore changeable by) ambulance dispatch patterns (which hospitals the ambulances take which patients to) or patient flow patterns (which hospitals the patients seek out for care) or the geographic location of EMS facilities relative to patient need.

Thus, alternative change strategies to be based on data would include compelling or encouraging ambulances to take patients only to designated receiving hospitals, attempts at public education of potential patients as to where they should go, or categorization of hospital ER facilities. As a basis for determining the appropriate strategy, these data can also be reported from geographic subareas and from individual hospitals by using format 9. The additional category of "ER not needed" in format 9 is crucial in analyzing system over-response to the vast majority of ER visits, which are for primary walk-in care. It is the basis for these two important criteria.

9. Proportion of visits (by hospital, demographic, and geographic groupings) that did not require the resources of a hospital ER

10. Proportion of non-necessary ER visits that required only resources of an outpatient department clinic, 24-hour hospital "convenience" clinic, private physician's office, nonhospital public health facility (well-baby clinic, neighborhood health center) or no health resources at all.

With data for criterion 10, the availability of alternate ambulatory care resources and the potential demand for an ER substitute should be examined for each subarea of the region characterized by high utilization of the ER for primary care (format 10). From this compilation, determinations may be made as to whether alternate facilities exist and, if not, the potential demand for them, as well as determinations as to appropriate strategies to encourage their use. It is clear that these determinations require not only data on available resources and the clinical care needed, but also data from interviews of patients on their attitudes, perceptions, and behavior toward the ER and toward alternate points for health services delivery. The final criterion for utilization evaluation follows.

Format 9. Comparison of actual use and clinical need for emergency medical services of hospitals, by emergency room (ER) category, in percent of ER visits

ER category used	Clinically needed visits			ER not needed	Total
	Comprehensive	Major	Basic		
Comprehensive:					
Hospital 1					100
Hospital 2					100
Major:					
Hospital 3					100
Hospital 4					100
Basic:					
Hospital 5					100
Hospital 6					100
Subarea:					
City					100
Inner city					100
Suburbs					100
Total					

Format 10. Potential demand for alternative ambulatory care resources among inappropriate users of emergency room (ER), in number of visits per year

Alternate resource	Potential visits from present ER use	Is alternate resource available?	How many additional visits can alternate resource handle?
Private physicians			
Well-baby clinics			
Hospital outpatient department			
24-hour hospital convenience clinic			
Neighborhood health center			

11. Percent of ER visits in each diagnostic category with appropriate treatment (over-treatment vs. undertreatment).

This criterion will be more detailed than normal medical audit or peer review in the hospital ER (format 11).

Outcome Measures

Ironically, the most important aspect of emergency medical services—outcome of the patient's condition—has been studied least. Research and

Format 11. Appropriateness of medical care

Phase	Procedure—			
	Given and indicated	Not given but indicated	Given but not indicated	Indicated, beyond hospital's ER resources
Diagnosis:				
Laboratory				
X-ray				
Physical examination				
Consultation (service)				
Treatment:				
Disposition:				

evaluation has overwhelmingly concentrated on measures of resources and patient needs (input) and utilization (throughput) to judge the need for EMS activities and their subsequent effect. Typically evaluation is built around such statements as "the project trained X ambulance attendants," "installed X radio links between hospitals and ambulances," "reduced ambulance trip time by 2 percent," or "rerouted most trauma cases from category 3 to category 1 hospital ERs." Outcome measures are ignored as is the need to quantify the independent effect of separate EMS activities such as training, communications, central dispatch, and categorization. The nearest approach to EMS outcome measures currently are mainly clinical impressions from autopsy and other records that a given number of deaths were "salvageable"—with no detailed or realistic specification as to the conditions (availability of resources and utilization) that would have averted the deaths.

There are several difficulties in developing outcomes measures. First, what measures are appropriate for conditions in which death is not a likely outcome? Second, since outcome is a function of resources, clinical condition, and utilization, which criteria will measure the separate effect on outcome of different levels of resources and their use independently from the effect of the patient's clinical condition?

Ironically, there is little in the research literature to disprove the possible notion that the emergency system is dealing with a finite set of patients who are going to die or survive solely as a function of their condition and that the only effect of EMS expenditures is in influencing when and where death takes place. Indeed, a reasonable interpretation of the scattered available data is that the independent effect of communication activities is to reduce the patient's delay in reaching the hospital and to increase deaths after arrival by decreasing deaths at the scene or en route. (The same number of deaths occur and at the same intervals after onset, but a greater number of this finite set of deaths takes place in the hospital than previously).

Similarly, a reasonable interpretation of the scattered data on the independent effect of ambulance crew training is that training increases the delay in the patient's reaching the hospital, whether or not his condition requires treatment at the site such as splinting or stabilization, and increases "deaths on arrival" at the hospital by reducing deaths after arrival at the hospital. The same number of deaths occur, but more of them take place at the scene or en route to the hospital.

The third difficulty in devising EMS outcome measures is that aggregate death rates (even age-, sex-, and diagnostic-specific) are notoriously insensitive to EMS intervention and too gross an indicator to measure change. Death rates for stroke, myocardial infarction, drowning, drug overdose, and homicide, for example, do not distinguish between localities generally regarded as having excellent EMS and those with poor services. Thus death rates are a poor evaluation measure of EMS, either because they are insensitive to change or because EMS has little effect on them.

The final difficulty is that since an outcome for one subsystem of EMS is an input for another system, it is conceptually problematic as to whether there is one set of outcomes for the entire system or a sequential set of input-process-output-input from a series of subsystems—from detection to dispatch to ambulance to hospital ER to hospital critical or intensive care unit.

Despite this dilemma, outcome measures must be developed if only to invite criticism and improvement. The following measures are suggested.

OUTCOME MEASURES

1. Percent of patients who survive
2. Disability days per patient, defined as days from onset of precipitating condition to complete resumption of patient's normal role and comprising (*a*) days confined to bed, (*b*) days confined to home although not to bed, and (*c*) days patient could not fully engage in normal activities because of clinical condition
3. Percent of cases in which patients are residually impaired in activities of daily living
4. Age- and sex-specific death rates from EMS-related causes of death
5. Percent of EMS-related deaths of persons entering system before death
6. Percent of patients satisfied with EMS
7. Patient score on the Cornell Medical Index (symptom score) 6 months and 12 months after EMS incident
8. Percent of cases in which patient died at scene on arrival of ambulance, at scene after arrival of ambulance, en route to hospital, and after hospital arrival
9. Mean number of minutes from onset to death.

If these outcome measures are to be used to judge the effect of the emergency system from the effect of the clinical condition and to quantify independently the outcome effect of separate elements of the EMS system, they must be standardized for clinical condition and presented as in format 12.

* * *

To secure valid measures, a sufficiently large series for each clinical condition and each EMS element will be necessary so that the effect of clinical severity can be factored out and, by partial regression equations, the independent effect of each EMS element on outcome may be evaluated. For example, what is the outcome of hospital X on cardiovascular arrests when clinical severity, patient characteristics, and ambulance treatment are controlled, or what is the outcome effect of ambulance Y on myocardial infarctions when patient characteristics, clinical severity, and receiving hospital are controlled?

Ongoing Program Evaluation

The first part of these guidelines described research techniques for baseline evaluation of EMS before and as a basis for intervention; this final section deals with techniques for the ongoing evaluation of the effects of intervention. Intervention activities typically include some or all of the following features: training of ambulance attendants, installation of radio links between ambulances and receiving hospitals, the introduction of a central dispatch system, the upgrading of ambulance and hospital resources, categorization strategies to reroute certain patients, public information campaigns to persuade walk-in patients to go to a different hospital emergency room or not to go to a hospital emergency room.

Format 12. Effect of emergency medical services elements on outcome, by measures of clinical condition

Outcome measure	Hospital element				Ambulance element			
	1	2	3	4	1	2	3	4
Myocardial infarction:								
Percent survival								
Disability days per patient								
Percent residual impairment								
Compound fracture, femur:								
Disability days								
Percent patients satisfied								
Cardiovascular arrest:								
Percent survival								
Minutes to death								
Pelvic inflammatory disease: Percent asymptomatic after 6 months								

Format 13. Resources, utilization, and outcome measurse before and after intervention in project and control areas

Measures of—[1]	Project area		Control area	
	Pre-intervention a	Post-intervention b	Pre-intervention c	Post-intervention d
Hospital resources (items 1–5)				
Ambulance resources (items 1–4)				
Resources to population ratios (items 1–10 in format 3)				
Ambulance utilization (items 1–10)				
Hospital utilization (items 1–13)				
Utilization evaluation (items 1–11)				
Outcome (items 1–9)				

[1] See text and format 3 for items.

NOTE: For each measure, the effect of intervention may be defined as (column **b**—column **a**) —(column **d**—column **c**).

Format 14. Effect of training ambulance crews and setting up ambulance-hospital radio links on mortality

Item	Ambulance t+ r+ a	Ambulance t+ r− b	Ambulance t− r+ c	Ambulance t− r− d
Mean time:				
Dispatch				
Scene arrival				
At scene				
Scene to hospital				
Mortality:				
Percent dead at scene				
Percent dead on arrival				
Percent dead after arrival				

NOTE: t+ =received training, t− =no training, r+ =radio link to hospital, t− =no radio link to hospital.

The assumptions of intervention to be tested are that the activities just mentioned improve resources, which improves utilization, which improves outcomes. Since this assumption involves the same model as that for baseline evaluation, most of the resource, utilization, and outcome measures previously mentioned may be used for ongoing evaluation. The ongoing evaluation involves two sets of comparisons: first—before, during, and after intervention and second—between changes in the project area and changes in a comparable control area. Format 13 is suggested for charting these comparisons.

It is clear, however, that format 13 only allows the effect of intervention to be measured at a gross level and only for the entire project area. It is also necessary to evaluate the effects of particular interventions within the area. Since treatment or change cannot immediately be applied to all EMS elements in the area simultaneously, more detailed research designs are possible during the duration of the project. Thus, certain ambulance companies will receive training and others will not. These circumstances allow for the cross-sectional research design shown in format 14.

Thus, there are two independent estimates of the effect of training: column **a** in format 14 minus column **c** and column **b** minus column **d.** The two estimates of the effect of radio links with hospitals are column **c** minus column **b** and column **a** minus column **d**. Similar research designs may be generated to estimate the effect of other intervention activities on other elements of EMS.

The final set of evaluative criteria has to do with the increasingly important task of measuring the extent to which an EMS project has achieved certain exogenous goals set by the funding agency. It is apparent that several agencies at the Federal level, including the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), Comprehensive Health Planning Service (CHPS), Regional Medical Programs Service (RMPS), Health Services Administration (HSA), and Health Resources Administration (HRA), as well as the Departments of Transportation and Defense, are funding EMS projects, in part to achieve general mission goals of these agencies. Thus, while some agencies have earmarked funds for EMS, others make EMS grants out of a general budget allocation. Clearly, the agencies at the Washington, regional, and local levels must concern themselves, in making the initial funding and subsequent refunding decisions, with the question not so much of whether a given application is a "good" EMS project or not, but rather with whether a particular project is the best means of achieving the overall mission of the agency. Since EMS projects are, in this setting, competing with non-EMS projects, evaluation must be concerned at the proposal, refunding, and project conclusion stages with the following questions.

1. Does the EMS project have a regionalizing effect on health services? (RMPS)
2. Is it maximizing the influence of consumers over providers? (CHPS)
3. Does it deal with psychiatric emergencies, drug overdoses, crisis intervention, and so forth? (ADAMHA)
4. Will the EMS project be taken over financially and administratively by a community-wide health agency at the conclusion of the project period? (HSA)
5. Does it lead to innovative manpower use of the physician substitute? (HRA)
6. Does it lead to better law enforcement and public protection? (Law Enforcement Assistance Agency)
7. Will it result in secondary prevention of disability? (Social and Rehabilitation Service, Social Security Administration)

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The Emergency Medical Services Systems Act of 1973, in making available $185 million for the development or expansion of emergency medical services, places great emphasis on research and evaluation. The act requires, and recent improvements in research technique make it possible, that funding applications justify the need for funds and evaluate the impact of funded activities in process and outcome evaluation terms much more sophisticated than the traditional "ambulance counting."

This paper outlines several methodologies and formats for securing and presenting (*a*) baseline evaluation data on the pre-intervention state of emergency medical services in a service area and (*b*) impact evaluation data to measure the nature of change brought about by intervention. Methodologies and data formats are presented to analyze resources, patient needs, utilization, and outcomes of emergency medical services.

Special Trauma Training for Nurses in Hospital Emergency Departments

**WARD L. OLIVER, MD, MPH, ROBERT J. AMBROSINO, PhD,
and SARAH K. RORABAUGH, RN, BS**

AMONG THE GOALS of the Albany (N.Y.) Regional Medical Program is improving the delivery of emergency health services. The program serves 24 New York State counties (see map) with a combined service population of approximately 2 million people. All 67 general hospitals in the Albany region maintain emergency departments. Forty-five of these employ physicians part time to provide emergency department coverage. Community physicians, however, are not always readily available to provide this coverage. Even for those institutions that employ emergency department physicians full time, some difficulty is experienced in meeting the demand for their services.

This apparent crisis in meeting the demands upon emergency departments can be attributed to a number of factors, all of which are straining the current system of emergency department care. As a consequence of changes in the structure of medical practice, hospital emergency departments have become an extension of the physician's office, as well as continuing to provide traditional services. In many settings, both urban and rural, hospital emergency departments are serving as community centers for outpatient medical care. Formerly neglected population groups are increasingly aware of the need and demand for adequate medical services. Further strain is placed on community hospital emergency departments by the large volume of traumatic injuries occurring each year in the United States and by the growing number of patients with nonurgent conditions who come for treatment.

Three alternative methods of reducing the magnitude of this growing problem seem readily apparent: educating the public in the more efficient use of the health care delivery system, increasing the numbers of ambulatory care and outpatient medical clinics to handle the patient overflow, and increasing the numbers of emergency department personnel who could perform many of the tasks now being performed by physicians.

The pilot program reported in this paper is addressed to the third alternative. This report describes a study which tested, in a limited setting, the feasibility of providing special trauma training for emergency department nurses, who upon completion of training, would be qualified to provide selected medical and surgical care under the supervision of a physician. In terms of previous training, ready availability, and acceptance by the consumer, it was reasoned that the registered nurse was well suited to fill this expanded role.

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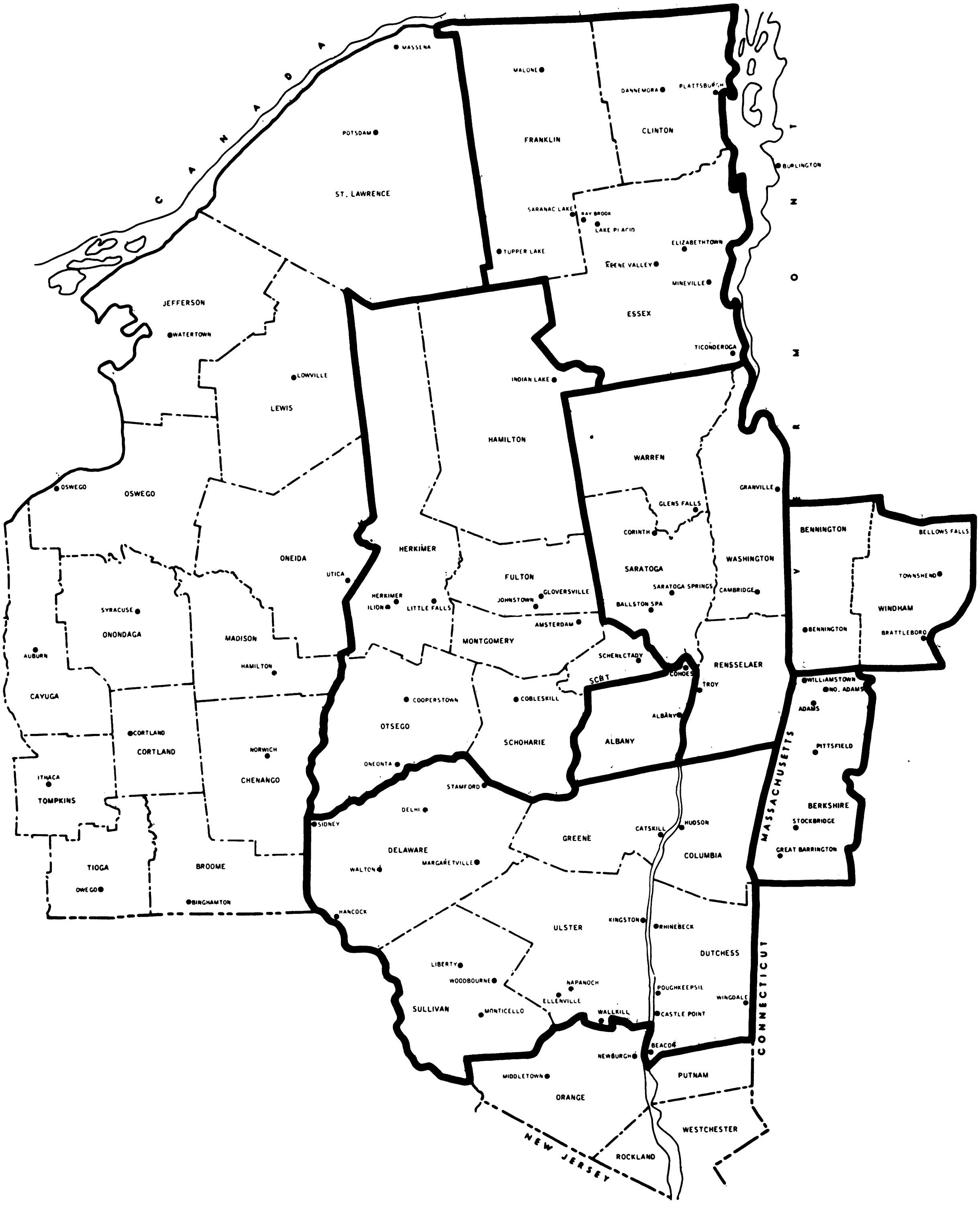
Albany Regional Medical Program including subregions



Nurse practitioner performs a physical examination on an active octogenarian

The development and implementation of the prototype training program was accomplished in two phases.

Phase 1

Phase 1 included the initial planning, promoting, and design of the training program. A regionwide survey was conducted to determine the degree of acceptance of the proposed training by hospital administrators, members of medical and nursing staffs, and emergency department personnel. Results of the survey indicated a wide acceptance of the program as outlined and a willingness on the part of hospital administrators to sponsor nurses to participate in the program.

The records of 400 consecutive prospective and 1,600 consecutive retrospective admissions to the emergency departments of 4 selected hospitals in the Albany region were analyzed for content and divided into clinical categories. These hospitals were selected with reference to number of beds, geographic location, and type of service population. It was judged that this selection represented a reasonably accurate cross-section of the general hospitals in the region. The purpose of this analysis was to assist in the design of a curriculum for the training program. The content of the curriculum was based on the 26 clinical conditions which were reported most frequently in the survey of emergency room admissions.

A nine-member, ad hoc committee, composed of emergency department administrators, such as physician heads and nursing supervisors, served in an advisory capacity to the project. The committee played an important role in the design and development of the training, by assisting in the setting of course objectives, construction of the curriculum, establishing performance criteria, and the like.

A curriculum was designed which stressed the further development of existing skills and the acquisition of additional knowledge in the following topic areas:

A. Gathering of relevant health data:
   1. History taking
   2. Physical examination
   3. Ordering and interpreting of selected laboratory tests
   4. Ordering and interpreting of selected X-rays

B. Recognition and management of minor conditions:
   1. Upper respiratory tract infections
   2. Abrasions
   3. Minor lacerations and suturing

    4. First-degree burns and small, localized second-degree burns
    5. Removal of splinters
    6. Removal of superficial foreign bodies from the eye
    7. Treatment of selected allergies
    8. Simple fractures of the fingers and toes
- C. Recognition and management of more serious medical and surgical conditions:
    1. Lavage
    2. Cardiopulmonary resuscitation
    3. Intravenous therapy
- D. Application of instrumentation:
    1. Defibrillation
    2. Recording and interpreting of electrocardiograms
    3. Cardiac monitoring
    4. Intubation
- E. Patient health education:
    1. Diabetes
    2. Cardiac conditions
    3. Gastrointestinal conditions
    4. Acute and chronic respiratory conditions

Nurse practitioner prepares a patient for intravenous therapy

There are, of course, many more details to this curriculum, and these have been omitted here, but copies of the curriculum are available upon request from the authors. A comprehensive course bibliography was also compiled, and audiovisual materials and related teaching aids were selected and prepared.

A teaching faculty was identified; it consisted of a total of 51 physicians and other health professionals. The faculty was drawn mainly from the Albany Medical College and the Albany Medical Center Hospital.

As a final step to this first phase, brochures describing the program were distributed to all hospital administrators, directors of nursing, medical directors of emergency departments, and emergency nurses in the Albany region. To obtain as wide a geographic representation as possible for this pilot course, it was suggested that only one application be sent from each hospital. Also, because of the project's exploratory nature, the class was limited to 15 nurses.

Phase 2

Phase 2 represented the operational phase of this pilot project. During this phase, selection criteria developed in phase 1 were applied in the screening of applicants. Approval of the hospital administrator and of the directors of the medical and nursing staffs were basic prerequisites for each admission to the program. In addition, the background, experience, and education of each applicant were carefully examined in the screening process.

Fifteen registered nurses were admitted to the first training program from a pool of 20 applicants. They were sponsored by 10 community hospitals in the region. The initial training course was conducted over a 4-month period ending in January 1973. For the first 6 weeks of training two-thirds of the time (121 hours) was devoted to classroom teaching and one-third (70 hours) to practice and observation in the emergency department. All classes were held at the Albany Medical College. The clinical portion of the first 6

Nurse practitioner comforts a child who has just received an injection to treat an allergic reaction

weeks' training involved the emergency departments and selected medical clinics of the Albany Medical Center and nearby community hospitals.

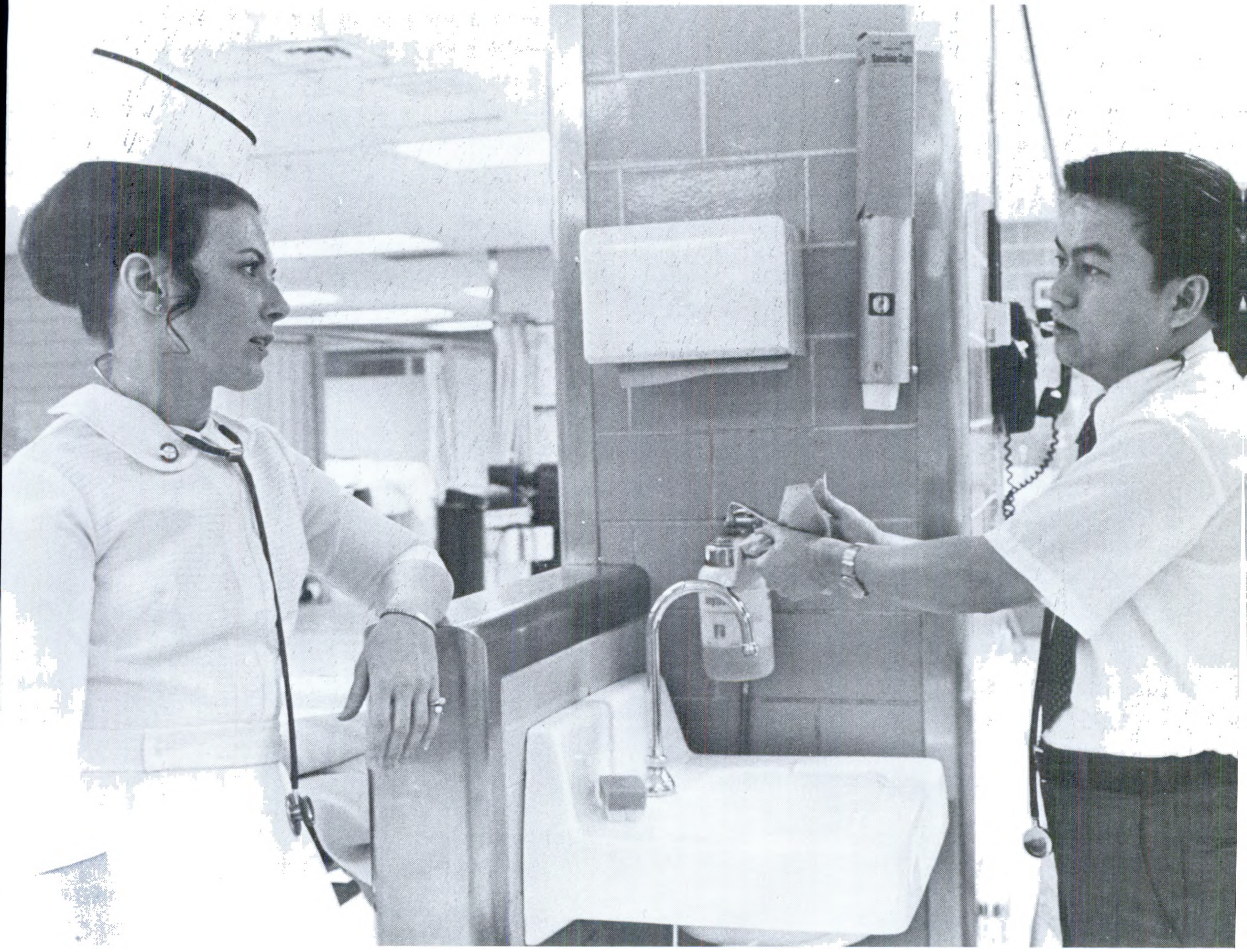
A comprehensive examination was administered before the start of classes and at the end of the first 6 weeks' training. All of the nurses performed satisfactorily on the post test, and moderate gains were observed between the two testings. Item statistics derived on the examination were used to make modifications for future tests.

Following the first 6 weeks of classroom teaching and emergency department practice and observation, the nurses returned to full-time duty and participated in a 10-week, on-the-job training experience at the hospital sponsoring them. During this period, the nurse performed those duties which were part of her expanded role under the direction and supervision of a physician preceptor, who was a member of the attending staff of the sponsoring hospital.

Duties performed by the nurse during this preceptorship included tasks such as physical examination, electrocardiography, cardiopulmonary resuscitation, intubation, defibrillation, intravenous therapy, minor suturing, and evaluating X-rays of fractures. The nurse's performance was evaluated by her preceptor each week, and in summary form at the end of the 10 weeks. Results of these evaluations are discussed subsequently.

Each nurse participant also answered a questionnaire at the end of the first 6 weeks of training. Its purposes were to assess the adequacy and appropriateness of the curriculum, to obtain student views of program administration, and to collect measures of acceptance of the nurse in this expanded role. Answers to this questionnaire indicated that the nurses felt they were generally accepted by the various members of the health team. It is expected that this acceptance will improve as the nurse's role is more clearly defined and understood. Other results were helpful in making administrative adjustments and minor modifications in the curriculum.

Impromptu conference between physician and nurse practitioner



At the completion of the 10-week preceptorship phase, identical evaluation forms were administered to each nurse participant and to each physician preceptor. Questions were asked regarding the level and degree of nurse involvement during this period. That is, an analysis was made of those emergency department duties that the nurse performed alone with the support of a physician. The aim of using identical forms for both the nurses and preceptors was to secure an informal measure of the reliability of reported findings. On the whole, the nurses and preceptors agreed with respect to their views of the level and degree of nurse involvement during the preceptorship period.

Nurse performance ratings in various clinical categories were also solicited from the preceptors. Finally, the degree of nurse acceptance while performing in the field was assessed. That is, both the nurses and preceptors were questioned with respect to how well they thought the nurse was being accepted in this expanded role.

As was the case during the first 6 weeks of training, the nurses enjoyed a general degree of acceptance by the various members of the health team as well as by the consumer. Consumer satisfaction was inferred from nurse-patient interactions. Across all 25 performance categories listed on the evaluation form, the nurses were rated as doing above-average work during the preceptorship period and were judged to be adequately prepared to assume an expanded role in the emergency department.

Thirteen nurse participants completed the pilot training program and were awarded certificates of completion. Unofficially, the title of "emergency department nurse practitioner" was assigned to the graduates. The remaining two nurses dropped out of the program because of family complications.

Followup Evaluation

A followup evaluation was conducted in the fall of 1973 to determine whether the nurses were still performing duties in an expanded role and to assess the degree of nurse acceptance, as expressed by the nurse and the various members of the health team.

The New York State Medical Practice Act and the New York State Hospital Code do not define the exact nature of a nurse's responsibility, except for the requirement of supervision by a physician. Thus, in each sponsoring hospital, the extent of responsibility to be assumed by the specially trained emergency department nurse was determined by the physician in charge and the hospital administrator, with the approval of the governing body. In this pilot project, the extent of responsibility granted to the nurses varied from hospital to hospital, depending on factors such as staffing pattern and intensity of demand for emergency health services. The New York State Education Department has under consideration approval of the pilot project as a specialized program of study.

All 13 nurse graduates continued to serve as emergency department nurses at the followup evaluation. Interviews were conducted with hospital administrators, nursing directors, and emergency department supervisors to obtain their views of nurse performance and acceptance. The consensus of opinion indicated that the nurses were performing adequately in an expanded emergency department role and that they were viewed positively in this role by the various members of the health team.

Summary and Conclusion

In summary, a pilot study was conducted to design, develop, and test in a limited setting a special training program for emergency department nurses. The goal was to provide more effective and efficient health care in the emergency department. Thirteen registered nurses, representing 10 community hospitals, completed an initial training program of 4 months' duration. Six weeks were spent in classroom teaching and emergency department practice and observation and 10 weeks in supervised, on-the-job experience at the hospital sponsoring the nurses' participation in the program.

It was concluded from an analysis of evaluative data that the pilot training program was a success and that progress had been made in fulfilling the goal of providing more effective and efficient health care in the emergency department. Experience gained in the conduct of this pilot study will be helpful in planning future programs of this kind.

Pathways to Care for Cancer Patients

DONALD M. HAYES, MD

THE HEALTH PROFESSIONS pride themselves on technological advances in care of cancer patients. Yet, in today's environment in which the public is continuously being urged to watch for the "seven danger signals of cancer" and to consult a physician for frequent "cancer checkups," the health professional may easily lose sight of the difficulties the cancer patient encounters in getting to the proper person or facility for definitive care.

Few scientific publications are available regarding the socioeconomic impact of cancer. Grosse (*1*) examined the cost-benefit ratios of several cancer control programs and found a cost to society of $2,217–$46,181 for each cancer death averted. Grosse's study, however, was not concerned with the structure of the system for care of cancer patients, only with the cost wtihin the present system.

Other studies have dealt with social factors in

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the genesis of cancer (*2*) and their effect on outcome of treatment (*3*). Suchman (*4*) studied the relationship between stage of illness and the seeking of medical care. Kutner and associates (*5*) reviewed many studies on delay in diagnosis and treatment of cancer; their concern was with patient and physician factors leading to delay. No detailed studies are available concerning pathways a patient might follow to obtain definitive care in a particular community and obstacles to progress along those pathways.

With the preceding considerations in mind, I conducted a study to trace the pathways by which cancer patients reach definitive care in North Carolina. For the purpose of this study, I assumed that any hospital having more than 150 beds was a definitive care facility and that the ideal pathway to care for cancer patients consisted of three steps: (*a*) primary care physician, (*b*) secondary care consultant, and (*c*) hospital.

Study Methods

An interview guide was designed for collection of certain demographic and clinical information, including degree of satisfaction with care received. The guide consisted of the following questions:

1. How did you react to therapy?
2. What did you get from your therapy in the way of sickness, improvement, pain, shortness of breath, or other reaction?
3. Trace the pathways of care for the illness: Who noticed the first symptom? Places of subsequent treatment or consultations: (*a*) ......, (*b*) ......, (*c*) ....
4. Where did you receive most of your treatment? (in-State medical center, local hospital, other)
5. Were you satisfied with this arrangement? Would you have preferred the majority of your care elsewhere? If so, where?

After the guide was developed, a corps of experienced interviewers was recruited. Each was instructed concerning the purposes of the interviews, methods of eliciting responses to the standard format, and alternative interpretations of questions to be used if respondents failed to understand the original ones.

A request to the North Carolina Cancer Registry (*6*) for the names of 1970–71 registrants and their physicians yielded a list of 2,730 names. From this list, 426 patients with bronchogenic and epidermal carcinomas were eliminated. Skin cancer is rarely life threatening and thus does not elicit the same emotional response from patients as does cancer of other sites. Since the survival rate among lung cancer patients is so low, its treatment can hardly be called "definitive" (*7*). Thus, this large group of 426 patients was thought to be unsuited to a search for pathways to definitive care.

The physicians caring for the remaining registrants were then contacted for permission to inter-

Table 1. Distribution of 660 patients by race, sex, age, and diagnosis

Race, sex, and age group	Type of malignant disease						Total
	Ovarian	Hematologic	Lymphomas	Colon	Breast	Other	
Total patients	25	16	82	154	355	28	660
Race							
White	12	11	64	122	322	19	550
Nonwhite	6	4	6	17	33	4	70
Not specified	7	1	12	15	0	5	40
Sex							
Male	0	4	29	56	0	15	104
Female	25	12	45	98	355	11	546
Not specified	0	0	8	0	0	2	10
Age group (years)							
Under 20	0	1	1	0	0	0	2
20–29	0	0	10	2	1	3	16
30–39	5	0	20	2	34	1	62
40–49	6	4	18	18	56	4	106
50–59	4	4	6	28	58	3	103
60–69	2	4	5	45	57	7	120
70–79	1	1	3	21	32	5	63
80 and over	1	0	0	6	6	0	13
Not specified	6	2	19	32	111	5	175

Table 2. Expressed satisfaction with care of 660 patients with malignant disease treated in North Carolina

Diagnosis	Number	Satisfied		Preference if not satisfied	
		Yes	No	In-State medical center	Other
Carcinoma of ovary	25	20	5	1	4
Carcinoma of breast	355	343	12	5	7
Carcinoma of colon	154	147	7	2	5
Malignant lymphoma	82	74	8	4	4
Hematologic malignancies	16	14	2	....	2
Other [1]	28	22	6	2	4
Totals	660	620	40	14	26

[1] Excludes skin and bronchogenic cancers.

view their patients. Patients of physicians who refused or failed to respond were also eliminated, leaving a final total of 646 patients and families of 41 deceased patients available for interview. The interviewers then completed 660 interviews from July 1, 1971, through June 30, 1972. A few respondents were interviewed at physicians' offices, but the majority were interviewed at home. Each interview averaged 45 minutes.

Data collected from the 660 interviews were punched into specially coded McBee® cards. Demographic and clinical variables were then tabulated by manual card sorting.

Results

The distribution of interviewed patients, as recorded by tumor registry diagnosis, is shown in table 1; skin and bronchogenic cancers are not represented, as explained earlier.

The respondents' answers to the questions about satisfaction with care revealed that a surprisingly small proportion were dissatisfied (table 2). Among the 40 respondents (6 percent) who expressed dissatisfaction, no single locus was favored overwhelmingly. Fourteen (35 percent of the dissatisfied) would have preferred treatment at one of the university medical centers in North Carolina.

The remaining 26 (65 percent) would have preferred treatment in a different local facility or in one outside the State, such as the National Cancer Institute, M. D. Anderson Hospital, or Memorial Sloan-Kettering Cancer Center. The reasons most often given for failure to reach the desired site for care at a medical center were financial limitations or lack of transportation. The major stated reasons for failure to go to the local facility of choice were absence of suitable facilities in small communities and closed-staff hospitals in the larger ones.

Of the 355 breast cancer patients, 306 or 86 percent discovered the first evidence of their disease, a percentage somewhat lower than in other studies (*8*). The first observers of evidence of disease in all 355 patients were as follows:

Observer	*Number*	*Percent of total*
Patient	306	86.20
Internist	9	2.53
Family physician	24	6.76
Gynecologist	9	2.53
Surgeon	2	.56
Orthopedist	1	.28
Husband	3	.84
Medical center physician	1	.28
Total	355	99.98

Examination of the sequence in which the breast cancer patients obtained subsequent care revealed some interesting features (fig. 1). Not surprisingly, the family physician or a surgeon was most frequently consulted as the first step. It was of interest that the gynecologist was the next most important source of initial care, being consulted more frequently than the internist.

Additional observations concerning the pathways followed by breast cancer patients are shown in figure 1. Particularly noteworthy is that 38 patients (11 percent) of the original cohort of 355 required four steps before reaching definitive care. More than half the patients, however, had reached a community or medical center hospital by the third step in the care pathway.

More than 90 percent of the 154 colon cancer patients noticed the first evidence of their disease. Here the family practitioner and the internist were the most frequent sources of initial care, although the surgeon was consulted in a significant number of instances, as shown in the following table:

Source of care	*Number*	*Percent of total*
Family physician	63	40.91
Internist	57	37.01
Surgeon	20	13.00
Local hospital	7	4.55
Gastroenterologist	2	1.30
Chiropractor	2	1.30
Hospital emergency room	1	.65
Minister	1	.65
Osteopathic physician	1	.65
Total	154	100.00

Figure 1. Steps on the care pathway for 355 patients with breast cancer, North Carolina

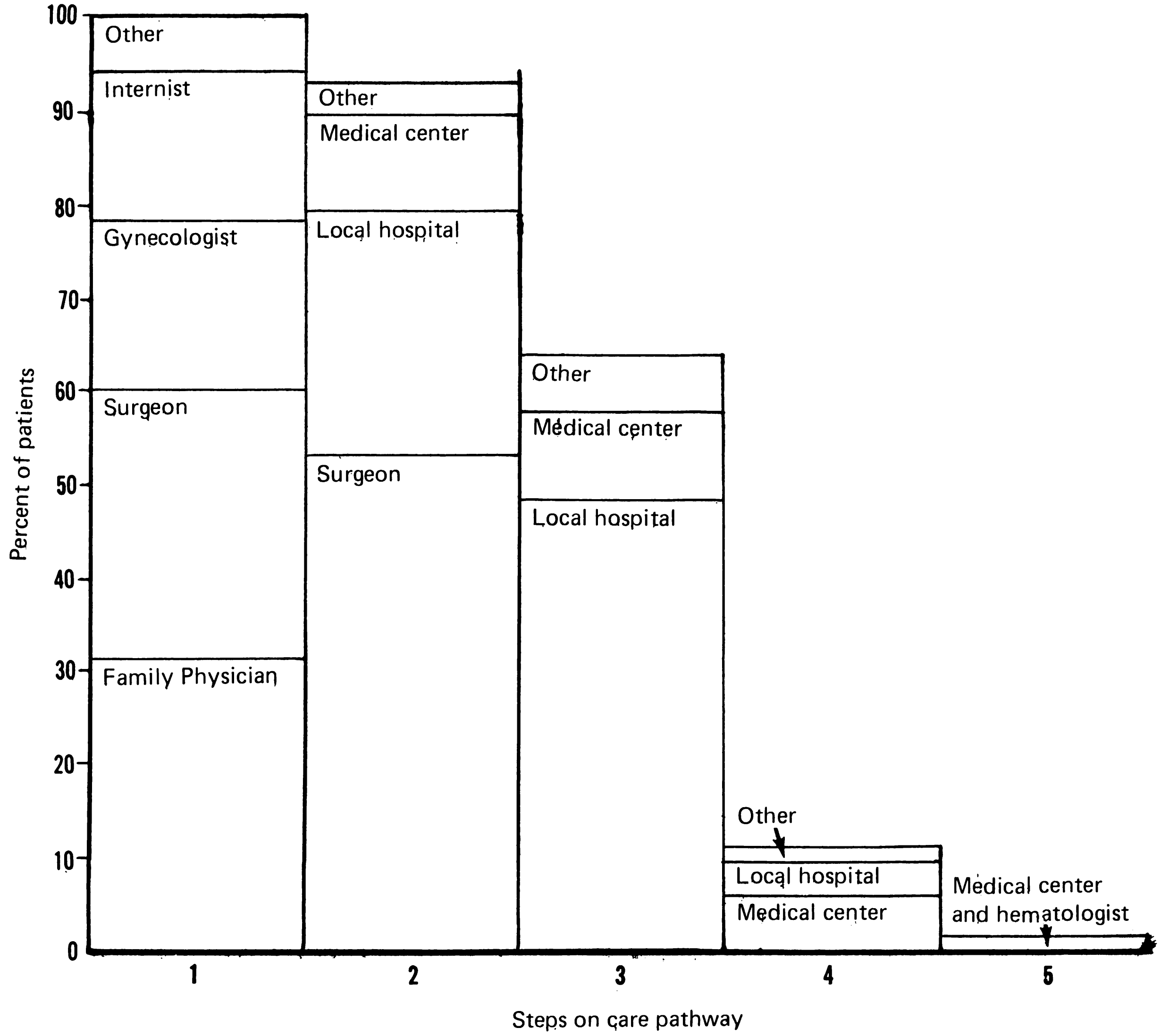
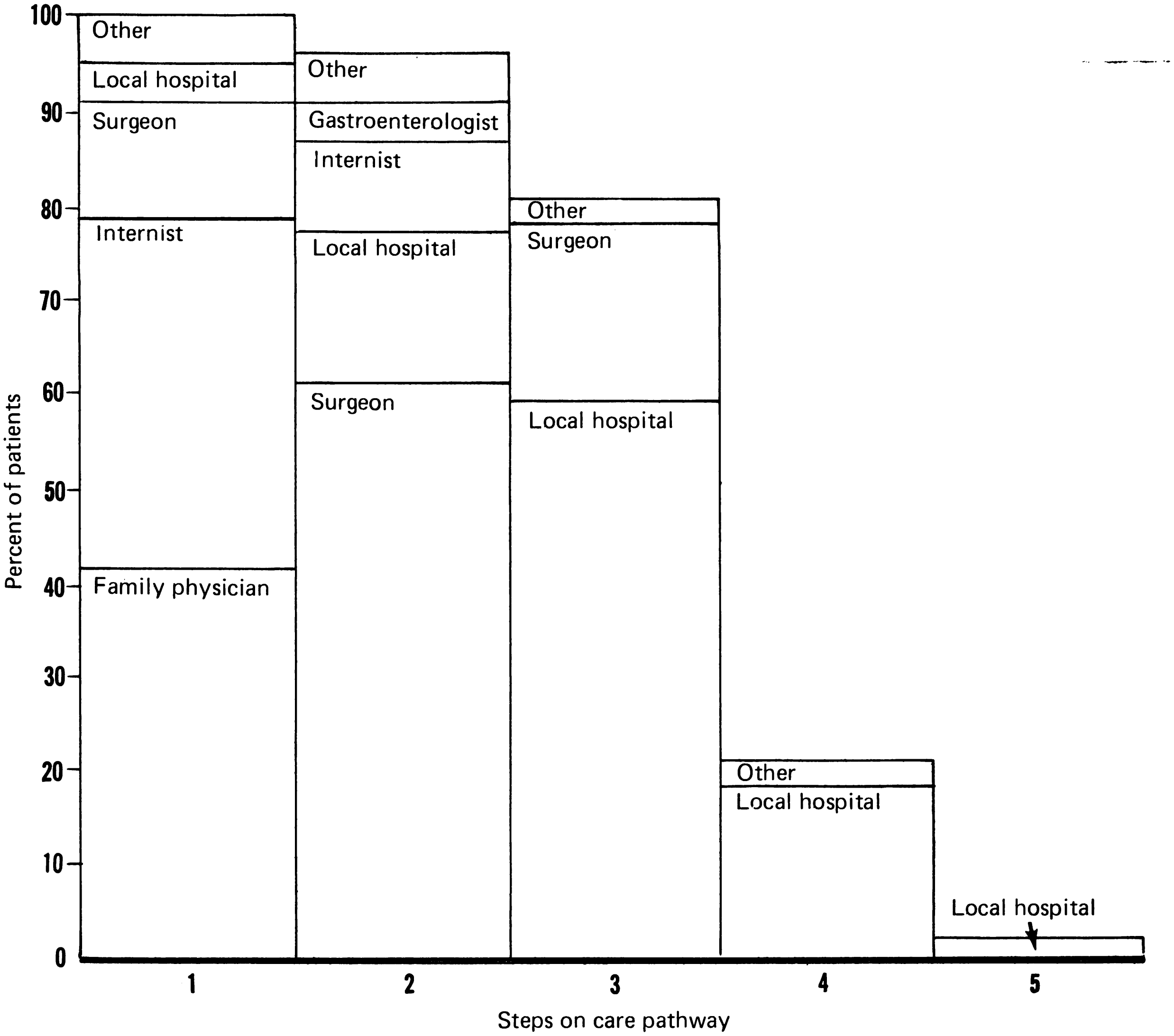


Figure 2 shows that the care pathway for colon cancer patients in North Carolina was apparently somewhat more difficult to traverse than that for breast cancer patients. Although the final step in the two pathways was the same, and the majority of patients reached definitive care in four steps, 20 percent of the original cohort of 154 colon cancer patients apparently did not reach definitive care until the fourth step. In contrast, only 11 percent of the breast cancer cohort required the fourth step to reach definitive care.

The first observers of evidence of malignant lymphoma in 82 patients were as follows:

Observer	*Number*	*Percent of total*
Patient	76	93.66
Internist	3	2.66
Surgeon	1	1.22
Family physician	1	1.22
Other	1	1.22
Total	82	99.88

Figure 2. Steps on the care pathway for 154 patients with colon cancer, North Carolina



For this group, as for the colon cancer group, the family practitioner or internist was the most frequent source of initial care. As shown in figure 3, of the original cohort of 82 patients 34 percent did not reach definitive care until the fourth step on the care pathway. Not surprisingly, the hematologist played a larger role in the treatment of patients with malignant lymphomas than in the treatment of patients with colon or breast cancer.

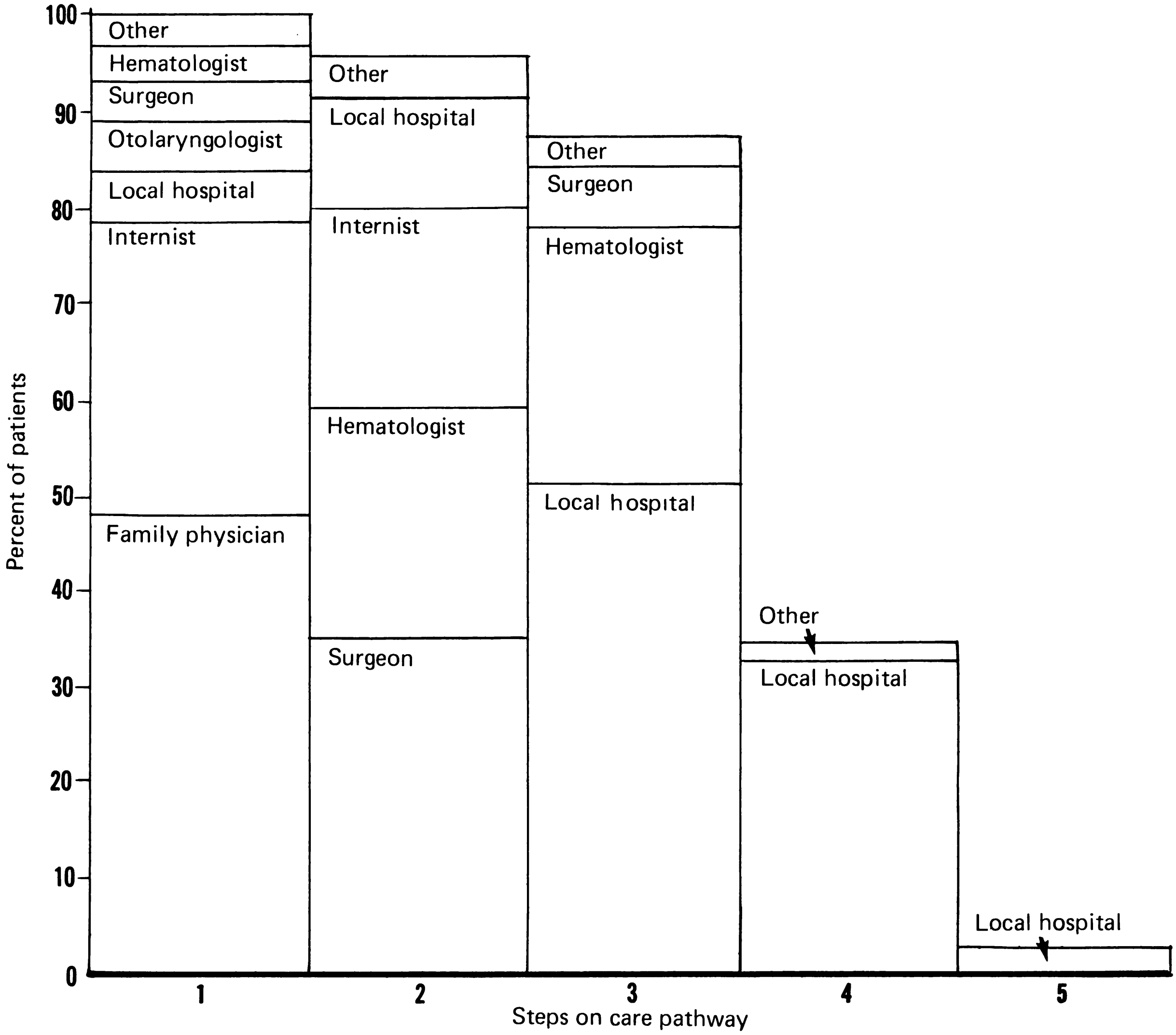
The ovarian cancer group consisted of only 25 patients. Although the number of patients was small, it is worth noting that 12 of the 25 apparently did not reach definitive care until the fourth step on their care pathway.

There were 16 patients with hematologic malignancies such as leukemia and multiple myeloma. Again, this group was too small for detailed analysis. An additional miscellaneous group of 28 patients consisted of 21 with stomach cancer, 4 with malignant melanoma, and 1 each with kidney cancer, prostate cancer, and spindle cell sarcoma. No significant data concerning pathways of care were generated from these groups because of their heterogeneity and small size.

Discussion

There are at least five uncontrolled variables which could determine whether a given patient

Figure 3. Steps on the care pathway for 82 patients with malignant lymphomas, North Carolina



appeared in this study or not. These are:

1. Whether he or she got into the medical care system before death from malignant disease,
2. Whether he or she was entered into the North Carolina Cancer Registry,
3. Whether his or her physician agreed to allow his patients to be interviewed,
4. Whether he or she could be located for interview, and
5. Whether he or she agreed to be interviewed.

Recognizing that there are at least as many more uncontrolled variables which have not been identified, I do not claim that the study sample is truly representative of the population of cancer patients in North Carolina.

The data from this study yield three areas for discussion: (*a*) patient satisfaction, (*b*) finder of initial evidence of disease, and (*c*) pathways to definitive cancer care in North Carolina.

Among patients queried about the quality of their medical care, usually about 10 percent are highly critical (*9*). In all categories of the present study, the dissatisfaction rate was considerably lower than 10 percent. From this observation, it may be inferred that relationships between cancer patients and their physicians in North Carolina appear to be good. It should be mentioned in this connection that the mechanisms for delivery of medical care to patients in this study were strictly traditional, that is, fee-for-service care in physicians' offices or in hospital outpatient departments.

Initial evidence of disease. Only 86 percent of the breast cancer patients first observed evidence of the disease themselves. Since other reports show that up to 95 percent of breast cancer patients detect their own disease (*10*), there may be a difference between the patients reported here and those elsewhere. Assuming that the patients in the present study are reasonably representative of North Carolina patients in general, this difference is subject to two alternative explanations: (*a*) breast cancer awareness is lower among women in North Carolina than elsewhere and they do not examine their breasts as frequently, thus their disease is detected by someone other than themselves, presumably later in its natural history, or (*b*) cancer awareness is higher among women in North Carolina than elsewhere, and the availability and accessibility of medical care is so high that they consult physicians frequently enough for breast cancer to be detected by physicians before it is detected by the patients. Breast cancer mortality statistics, availability of health manpower, and patients' attitudes about cancer in North Carolina (*10*) suggest that the first explanation is more likely to be correct.

If one accepts the first explanation, this points to a need for intensified educational programs about cancer care among North Carolina women. Other studies have shown that women who conscientiously examine their breasts do so as a result of demonstrations of the procedure by their physicians rather than as a result of being exposed to educational programs of other sorts (*11*). This finding and those in the present study add emphasis to the need for further patient education by physicians and also suggest a specific task for physician's assistants or nurse practitioners in the cancer care portion of the system for delivery of medical care.

Regarding the first observer of disease in the colon cancer and lymphoma groups of patients, it was not surprising that the patients with lymphomas most often (94 percent) noted the first evidence of their disease. In patients with colon cancer, contrary to externally manifested disorders such as breast cancer and lymphomas, the first observation of evidence of disease by the patient may be less than optimal. Since colon cancer may exist in occult form for long periods of time, early detection by the physician could predate considerably the onset of symptoms noticeable by the patient. The inclusion of screening for occult blood in the stool as a portion of "routine" examinations could improve the early detection rate for colon cancer (*12*).

Pathways to definitive cancer care. As pointed out by Whitted (*13*), formidable obstacles block the use of cancer care services. Among these are the educational level of the people to be cared for, the structure of our society, and the fear of detection of a disease known to be associated with hopelessness and suffering in many instances. To these, based on the present study, a further obstacle should be added: the difficulty experienced by the uninitiated consumer in traversing the proper pathways through the cancer care system itself.

A comparison of the pathways to definitive care for the three large groups of patients is shown in figure 4. Since there are no data available concerning pathways a patient might follow in an optimal system, there are no standards against which one might compare pathways. Although there are differences in the diseases represented, and certainly there are dimensions of care other than the number of steps involved in achieving it, the differences in these pathways should be explored. Why, for example, have 98.5 percent of the breast cancer patients reached definitive care in three steps while only 70 to 80 percent of the colon cancer and lymphoma patients have done so? Why are lymphomas and breast cancer, both externally manifested diseases, not more nearly alike in the pathways to care followed by affected patients? These are merely a few questions raised by these statistics.

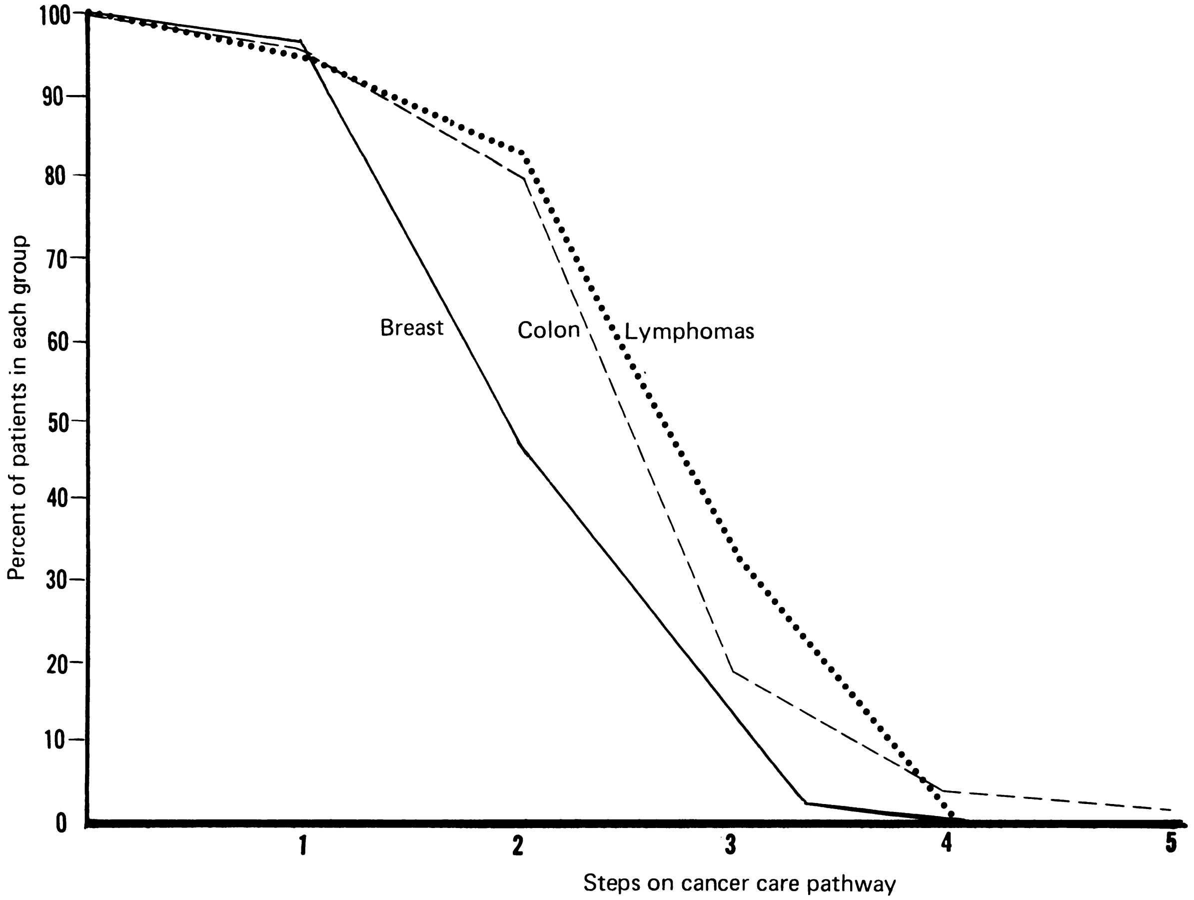
Ideally, it would seem that the pathway to definitive care for each of these diseases should consist of no more than three steps: (*a*) primary care physician (family practitioner, internist), (*b*) secondary care consultant (surgeon), and (*c*) hospital. That many patients required more than these three steps may be due to the complexity of the cancer care system.

The first steps on the care pathways may represent particularly fertile ground for improving efficiency. Of 355 breast cancer patients, 124 who found a breast mass went first to either an internist or gynecologist. While consideration, therefore, should be given to intensified training in evaluation and management of breast masses in residency programs for medicine and gynecology, a less obvious implication may relate to patient education. Perhaps patients should be encouraged to go directly to a surgeon on finding a breast mass. This would eliminate a step on the care pathway for many patients, shorten the timespan of diagnosis and therapy, and perhaps improve the outcome of the disease. At the same time it would place a greater burden on surgeons for careful nonoperative evaluation of such patients. An alternative which might shorten time spent would be a continuous community screening program for high-risk women, so that a breast mass could be evaluated quickly by physician's assistants or nurse practitioners and the patient referred quickly. Analogous programs for other types of malignant disease could be created without great difficulty (*14*).

With the exception of the small number who required a fifth step to arrive at definitive care, most of the colon cancer patients seemed to get to definitive care with reasonable dispatch. It is disturbing to note, however, that 2 of the 154 patients, both of whom had rectal bleeding, elected to consult a chiropractor for their symptoms. A third such patient first consulted an osteopathic physician (in many areas this might be appropriate, but North Carolina law limits osteopathic physicians to the use of nonoperative and nonprescriptive methods). The first steps taken by these three patients suggests a need for better public education about the symptoms of colon cancer and the practitioners best equipped to deal with them.

One extremely important variable not considered in this study is that of time. The data are simply not available to answer certain pertinent questions such as: What is the total time elapsed from initial observation of signs or symptoms to completion of definitive care? What is the time

Figure 4. Cumulative percentages of patients arriving at definitive care, by steps on the care pathway, North Carolina



required for each step on a particular pathway? With this kind of information in hand, it should be possible to design or modify programs which will allow cancer patients to reach effective care in the most efficient manner.

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A study was conducted to trace the pathways by which cancer patients in North Carolina reach definitive care. It was assumed that any hospital having 150 or more beds was a definitive care facility and that the ideal pathway to cancer care consisted of three steps: (*a*) primary care physician, (*b*) secondary care consultant, and (*c*) hospital.

From the names of 1970–71 registrants in the North Carolina Cancer Registry, a list was compiled of 687 patients or families available for interview. Trained interviewers using a standardized format conducted 660 personal interviews of cancer patients or families of deceased cancer patients. Data tabulated from these interviews showed that 25 patients had carcinoma of the ovary, 16 had malignant hematologic disorders, 82 had malignant lymphomas. 154 had carcinoma of the colon, 355 had carcinoma of the breast, and 28 had miscellaneous malignant disorders. All patients had received their cancer care in North Carolina. Only 40 patients (6 percent) expressed dissatisfaction with their care. First evidence of disease was noted by 86 percent of the breast cancer patients, 91 percent of the colon cancer patients, and 94 percent of the lymphoma patients.

Tracing the care pathways followed by patients in the three largest groups showed that 4.21 percent of the breast cancer, 4.5 percent of the colon cancer, and 4.9 percent of the lymphoma patients reached definitive care in one step. The majority of patients in all three groups (69.5 to 98.5 percent) reached definitive care in two or three steps, although substantial numbers required four, and some colon cancer patients required five steps.

Compared with the hypothetical system of three steps, it was concluded that many patients do not arrive at definitive care for cancer in the most efficient possible manner. Further data are needed, with particular attention to the time variable, before the medical care system can be modified to provide the cancer patient with the most effective care in the most efficient manner.

The Nursing Home OMBUDSMAN

THE NURSING HOME OMBUDSMAN Demonstration Program (NHODP) is part of the Nursing Home Improvement Program of the Department of Health, Education, and Welfare. NHODP's mission is to demonstrate and test various approaches that may provide consumers of nursing home care—patients, as well as their relatives and friends—with an effective voice in determining care practices in nursing homes.

Background and Development

The ombudsman program has its roots in President Nixon's August 1971 address in Nashua, N.H., on Nursing Home Initiatives, in which he charged HEW with developing and sponsoring programs that would help to upgrade the quality of care and of life in the nation's nursing homes. One area targeted for improvement was the subjection of some patients to physical and mental abuse, poor or inadequate treatment, and the loss of personal or property rights; such patients have little, if any, easily available and effective recourse for the redress of these grievances. One mandate to HEW was "to assist the States in establishing investigative units which will respond in a responsible and constructive way to complaints

Demonstration Program

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made by or on behalf of individual patients (in nursing homes)."

The responsibility for planning the implementation of this charge went to an interagency Task Force on Investigative-Ombudsman Units that included representatives of HEW agencies, the Veterans Administration, and the Office of Economic Opportunity. The task force found several reasons for the inadequate protection of patients' rights in nursing homes. Among these reasons were confusion and complexity in the enforcement of regulations at the State level and the failure of professional and volunatry groups to achieve an impact on the quality of care. The task force concluded that fundamental changes would be required to guarantee "humanization of facilities"—changes not only within the nursing home industry, but also in the enforcement of standards and in access to social and community services.

The basic concept underlying all the approaches being tested in the demonstration program is the classic legislatively based ombudsman, who is an independent, highly placed official in national, State, or local government appointed by and responsible to the legislature. The ombudsman's basic function is to investigate and resolve citizen grievances against government agencies or officials. The purpose of ombudsman activity is to oversee and to improve government administration.

The task force drew on the experiences of a number of countries which use the ombudsman mechanism, as well as a small number of U.S. States and local jurisdictions in which ombudsmen have recently begun to function. There are some obvious similarities between the nursing home ombudsmen and the classic (governmental) ombudsmen, for example (*a*) maintaining independence and objectivity of function, (*b*) helping people with grievances to use a complex system of care and services, and (*c*) attempting to insure that the system works.

Even more interesting than the similarities are some of the unusual aspects resulting from the application of the ombudsman approach to nursing home consumers. The following aspects are essential to an understanding of the duties of the nursing home ombudsmen and the commitment they give to those duties. First, the nursing home ombudsmen have no legislated jurisdictional authority. While classic ombudsmen operate under the authority of enabling statutes with subpena power and privileged communication, the nursing home ombudsmen use cooperative relationships and the authority of others to investigate and resolve complaints. Second, the nursing home ombudsmen deal primarily with private enterprise (proprietary nursing homes) and voluntary organizations, as well as with professional groups and government agencies. Third, the nursing home ombudsmen operate in an area in which resources and administration are inadequate, and thus there is a need for improvement and change in the system.

The nursing home ombudsmen, then, have two major operating tasks: (*a*) to establish effective and viable mechanisms for receipt and resolution of complaints and (*b*) to document significant problems in the system of long-term care and, in turn, to stimulate improvement of that system.

Because the application of the ombudsman principle in the nursing home field is a new experience, the task force recommended demonstration and evaluation to determine the effectiveness and appropriateness of various approaches to the demonstration program. The major distinction between approaches concerned the auspices under which the demonstrations would be conducted, that is, State government or a voluntary organization of senior citizens.

The task force also recommended testing a legislatively based ombudsman model, but a site could not be found for this alternative. Guidelines for proposals to implement each of the models were prepared, and all State Governors and many national voluntary organizations were requested to indicate their interest in submitting proposals. The proposals submitted were evaluated by members of the task force. The major technical criteria used were the adequacy of the plan to implement the project and the ability of the project to operate objectively and independently.

In demonstrating and testing various approaches, we are attempting to examine a range of variables, such as auspices (government versus voluntary), organizational locations, employed staff (background, training), use of volunteers, and techniques of problem definition and resolution. It is necessary to learn which combination of these variables and other factors work well together in relation to the characteristics of the settings in which they are located.

State Projects

On June 30, 1972, five contracts were awarded for the establishment of Nursing Home Ombudsman Demonstration Projects. Four of the contracts were with State governments to establish a State-level office linked to a local-level unit. The States were Idaho, Pennsylvania, South Carolina, and Wisconsin. To permit independence and objectivity, the projects were placed in agencies not responsible for the regulation of, or services to, nursing homes.

The local-level units receive complaints made by or on behalf of nursing home patients, investigate these complaints, and then attempt to resolve them. The State-level units supervise the operation of the local units, assist them in resolving complaints by involving appropriate State agencies, and respond to complaints that originate outside the local demonstration areas. The State units are also responsible for followup to assure that corrective action is taken and that all complainants are notified of the outcome.

The State units are staffed by professionals with legal, social work, health, administrative, or other appropriate backgrounds. The local units have professional direction but use volunteers as well as paid staff. In Pennsylvania, the Philadelphia local unit is operated by a voluntary organization that is funded by a State grant; this arrangement also holds in Massachusetts (project started in 1973).

Idaho's nursing home ombudsman is located in the State's department of special services and through this agency is responsible to the Governor. The ombudsman unit, based in Boise, has concentrated its first year's activities in the seven-county Treasure Valley area of southwestern Idaho. This area contains 15 of the State's 56 nursing homes. The unit is linked to an advisory committee composed of nursing home consumers, providers, and representatives of State agencies. Volunteers, recruited from local organizations and trained and supervised by the ombudsman staff, participate in the project as outreach visitors to nursing home patients. The project is currently planning an expansion of ombudsman services to another portion of the State.

Pennsylvania's State ombudsman is located in the Governor's Office [illegible] Human Resources and receives input from [illegible]ory committee representing consumers, [illegible]onal groups, and the nursing home industry. The local Philadelphia ombudsman unit is [illegible] by the Nursing Home Campaign Committee [illegible] and uses community volunteers to receive [illegible] resolve complaints. A local unit in Allegheny County (Pittsburgh) has a small, paid [illegible] directed by the State ombudsman.

The State ombudsman unit in South Carolina is placed in the Commission on Aging, an independent agency directly responsible to the Governor. A regional unit serves the Central Midlands Regional Planning District (Columbia), while the State unit responds to complaints from other areas. Volunteers will be trained to work at both State and regional levels in an outreach capacity.

The Office of the Lieutenant Governor in Wisconsin had been investigating nursing home care for a year and had handled 400 complaints before the project was developed. It now operates the State Nursing Home Ombudsman Program and has a local unit in Milwaukee. The State unit staff of four investigators responds to complaints from any area of the State except Milwaukee.

Contracts for the four initial State Nursing Home Ombudsman Demonstration Projects have been extended for a second year of operations. In addition, two new State projects were started in July 1973 in Massachusetts and Oregon to demonstrate the impact of other unique organizational locations.

In Massachusetts, the State nursing home ombudsman is located in the Office of the Secretary of Elder Affairs, who is a member of the Governor's cabinet and is charged by legislation to be the State's advocate for the aging. Such a legislative mandate makes the location of this demonstration unique. The unit is staffed by two professionals and is linked to a local unit of senior-citizen volunteers in the Holyoke-Chicopee area.

In Oregon, the nursing home ombudsman unit is in the office of the general State ombudsman. An assistant ombudsman for nursing home affairs will respond to complaints of patients or families by using the status, authority, and grievance expertise of an ombudsman office that has functioned for the past 3 years.

Voluntary Project

The one project conducted under the auspices of a national voluntary organization of senior citizens is now in its second year of operation. The National Council of Senior Citizens has organized a system consisting of a national-level nursing home ombudsman office linked to a State-level and two local-level units in Michigan. The national unit in Washington, D.C., works with Federal agencies and national organizations in articulating national-level problems regarding nursing homes and in advocating their resolutions. The State-level unit, in Lansing, Mich., works with State agencies and consumer groups toward initiation of nursing home reform. It is linked to local units in Detroit and to the rural Upper Peninsula of Michigan. These units rely heavily on senior-citizen volunteers, trained and supervised by local unit directors, to visit nursing homes regularly and to resolve patients' problems.

Concepts

Three major concepts are currently being demonstrated in the Nursing Home Ombudsman Demonstration Program. One concept is that investigative units operating at State and local levels can effectively receive, investigate, and resolve complaints made by or on behalf of individual nursing home patients. This concept requires that the ombudsman work directly with patients, providers, communities, and existing service and regulatory agencies so that they gain understanding, provide needed services and benefits, and modify administrative procedures. In short, the ombudsman must validate individual complaints and work within the system to bring about the changes needed to resolve the complaints.

An example of this activity occurred in Idaho when the ombudsman received multiple complaints from a nursing home patient about the quality of food in the home, the lack of recreational activities, and the general feeling that he had no control over his life. The ombudsman staff, in coordination with the State health department and the department of social services, investigated the complaints, and steps were taken by the home to provide more individualized attention to the patient's diet. In addition, the social worker of the department of social services involved the patient in a foster grandparent program. He is now visiting an institutionalized mentally retarded child.

The second major approach in the demonstration requires the ombudsman to document significant problems affecting a large amount of the nursing home population and to work toward resolving these problems. In South Carolina, the ombudsman, through a number of individual complaints received, found that the administration of the State's Medicaid program denied nursing home patients the right to make 1- or 2-day visits to friends and relatives in the community. Such visits would help some patients maintain important community ties and might lead to their eventual discharge from the nursing home. After the ombudsman and his advisory committee brought this problem to the attention of the head of the Medicaid agency, the policy was modified to permit such visits when medically appropriate.

The third major concept being tested in the demonstration program is the use of volunteers to increase community involvement in defining and resolving problems of nursing home patients. An excellent example of this is occurring in the Michigan project, conducted by the National Council of Senior Citizens.

The First Year of Operation

Much of the first year of each demonstration project has been devoted to mastering some developmental tasks. Although projects approached the tasks differently and developed at different rates, the following steps were taken by all.

Recruitment and training of staff. The professional backgrounds and expertise of the staff employed by the projects vary. Social workers, public health nurses, nursing home administrators, government administrators, and attorneys have been used. These professionals had to learn about standards and regulations governing nursing home operations, technical issues relating to care provided, and a host of social welfare services that comprise the long-term care system. Much of this training and orientation has been conducted "on the job," especially with the help of regulatory and service agency personnel and expert consultants.

The projects which use community volunteers have developed training programs geared to preparing citizens for outreach work in nursing homes.

Establishment of operating policies and procedures. Each project has developed approaches to receiving, investigating, and resolving complaints. Complaints may be received by telephone, mail, office visits, or direct outreach by ombudsman staff. Receipt of a complaint is acknowledged, and an investigation is undertaken to determine whether the complaint is valid. At this point, the ombudsman must determine if the complaint can be resolved and take steps toward that resolution. Often, complaints are resolved as a result of discussions with the parties involved. Sometimes complaints need to be referred to regulatory or service agencies. At other times, no resolution is readily available.

Development of linkages and working relationships with regulatory and service agencies and community groups. In the ombudsman's role of "overseer" of the system of long-term care, he must (*a*) define the elements of that system in terms of responsibilities and capabilities and (*b*) motivate people to respond to unmet needs. Although the elements of that system vary from one area to another, all of the projects have had to deal extensively with State and local departments of health and social services and with Federal regulatory agencies for the referral of code violations and service gaps. Other important linkages have been formed with provider groups, organizations of health professionals, information and referral services, citizen groups, and hospital discharge planners.

In addition to cooperative work on individual cases, many of the groups and agencies mentioned are represented on the advisory committees of each of the ombudsman projects. This has resulted in improved communication and coordination among elements of the long-term care system.

Publicizing the availability and purpose of the nursing home ombudsman service. The projects have been experimenting with various approaches to informing nursing home consumers of their existence. Media campaigns include the development and use of public service spot announcements on radio and television, newspaper ads, press releases, brochures, and posters. In addition, most of the ombudsmen have been called upon for speaking engagements at community and professional meetings.

Perhaps the most meaningful sources of publicity are in the outreach approach of ombudsman staff and volunteers to patients in nursing homes and in word-of-mouth reports of clients, providers, and agency staff who have had satisfactory contacts with the projects.

Investigation and resolution of complaints. The essence of the ombudsman's purpose is to respond to grievances or problems of individual patients in nursing homes. Not all of the projects reached full operating capability at the same time during the first year, but all have at least begun to work on complaints.

It is premature to analyze fully the number and types of complaints received and methods of resolution. However, some interesting patterns have begun to emerge:

—During the first year of partial operations, the five demonstration projects received a total of 1,196 individual complaints from 713 complainants. Most cases involved more than one complaint or problem.

—Most of the complaints were made by a friend or relative in behalf of a patient.

—In each of the projects, between 50 and 60 percent of the complaints were concerned with the quality of care provided in the home, with the rules and regulations or administrative policies of the home, and with payment for care. Contrary to popular expectations, a relatively small number of complaints were about food (7 percent).

—More than 80 percent of the complaints or problems were verified or justified; that is, in the judgment of the ombudsmen and their consultants, the reported incidents or problems reflected complaints that could or should be corrected.

—The projects averaged 55 to 60 percent success in resolving complaints. Because most complaints were concerned with conditions or practices in nursing homes, resolution frequently involved a consensus approach, that is, discussing the matter with the patient, relative, staff, and administrator to arrive at a satisfactory solution. The next most common approach was referral of the problem to a regulatory agency (if standards or codes were violated) or a service agency (if the concern was with a gap in services). A key factor here is that the ombudsman followed up to see that the referral was acted upon and to insure that the resolution was still in effect.

Documenting and stimulating resolution of significant problems in the long-term care system. Although the projects were not fully operational for the whole year, personnel quickly became aware of some of the broad problems existing in nursing homes.

Emerging Issues and the Second Year

Based upon patterns that have emerged from cases investigated by the ombudsmen and upon special studies conducted by the projects and their advisory groups, a number of significant and broad problem areas were pinpointed for action in the second year of the demonstrations. The following items are a sample of the issues to be addressed: overuse of tranquilizers, lack of community ties, inadequate physician care, inappropriate placement of patients, life-care contracts, lack of coordination of standards, excessive charges, lack of alternatives to institutional long-term care, and need for training of nursing home staff.

Evaluation of the demonstrations is an integral part of the program. Assessment of the impact of location and auspice of the projects, modes of operation, differential use of staff, and linkages with agencies and community groups will provide valuable information for other States or organizations planning to provide similar services.

The impact of the projects' individual grievance mechanisms and broader reform activities on services and resources available to patients, on the regulatory process, and on recognition and safeguarding of patients' rights will indicate whether a nursing home ombudsman program will enhance the quality of care and the quality of life in nursing homes.

Health Priorities in Lubbock, Texas, According to Socioeconomic Groups

REUEL H. WALDROP, MA, MARGARET GUY, RN, and DAVID M. COWGILL, MD

AT THE UNITED STATES-MEXICO Border Public Health Association meeting in 1966, the director of the Lubbock City Health Department heard a presentation by the director of the Cameron County Health Department concerning a health services action program geared to the needs of specific socioeconomic groups. Suspecting that many of the poor and a few others in Lubbock were not receiving basic primary health care, the director of the city health department requested advisory service from the Texas Department of Health and from Community Demonstrations of the Center for Disease Control.

Thus, in 1967 the Lubbock Health Department became 1 of 75 departments in the United States that have participated with Community Demonstrations in the past decade in developing and demonstrating a primary health services delivery system, called POPE, according to socioeconomic groups. The model consists of (*a*) problem specification, (*b*) objective setting, (*c*) plan development, and (*d*) effectuation according to geographic socioeconomic strata and neighborhoods.

Each of the 75 participating communities has added to previously developed procedures by cooperating with Community Demonstrations in testing and adjusting and altering research findings and local ideas (especially in behavioral science) into applied, practical, workable, effective, and economical operational procedures. The model is designed for local health departments and other providers of primary health care. The

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system provides for identification and motivation of groups and individuals who have failed to practice preventive care and have high prevalence rates of disease and illness.

Technical advisory services are continually available from Community Demonstrations to any health department or agency that wishes to provide health services according to the needs of groups and individuals. The advisory services are provided by persons with years of experience in working with local health departments.

State and Federal personnel who promote the POPE model have encountered much opposition from health department administrators who are not interested in making health services available to the "less advantaged" groups. Many health departments still provide services at a central administrative facility, which is usually inaccessible to the poor people of the community. Thus, administrators and staffs of such departments must undergo attitudinal and behavioral changes before the nonusers of needed health services can be motivated to change their behavior. How such changes came about in Lubbock is highlighted in this paper. Lubbock's program is described in four phases.

Phase 1: Problem Specification

Stratification. In phase 1, Lubbock was stratified into three geographic socioeconomic groups by the method developed by the Community Demonstrations staff. Data on exterior house deterioration and infant mortality were the two basic indicators of socioeconomic or behavioral status. The stratification boundaries were determined by absolute rather than relative socioeconomic conditions in each stratum, and although the low socioeconomic stratum was confined to as small an area as possible it included most underusers of health services. The absolute socioeconomic conditions are necessary for efficient provision of priority health services, particularly in the low socioeconomic stratum.

The low socioeconomic stratum (SES) comprised 40,209 persons or 28.6 percent of the total population. Only 22,071 persons or 15.7 percent of the total population were in the middle SES. The high SES, the largest group, had a population of 78,310 or 55.7 percent of the total population. The stratification of Lubbock and 1967 fertility rates by SES are shown in figure 1.

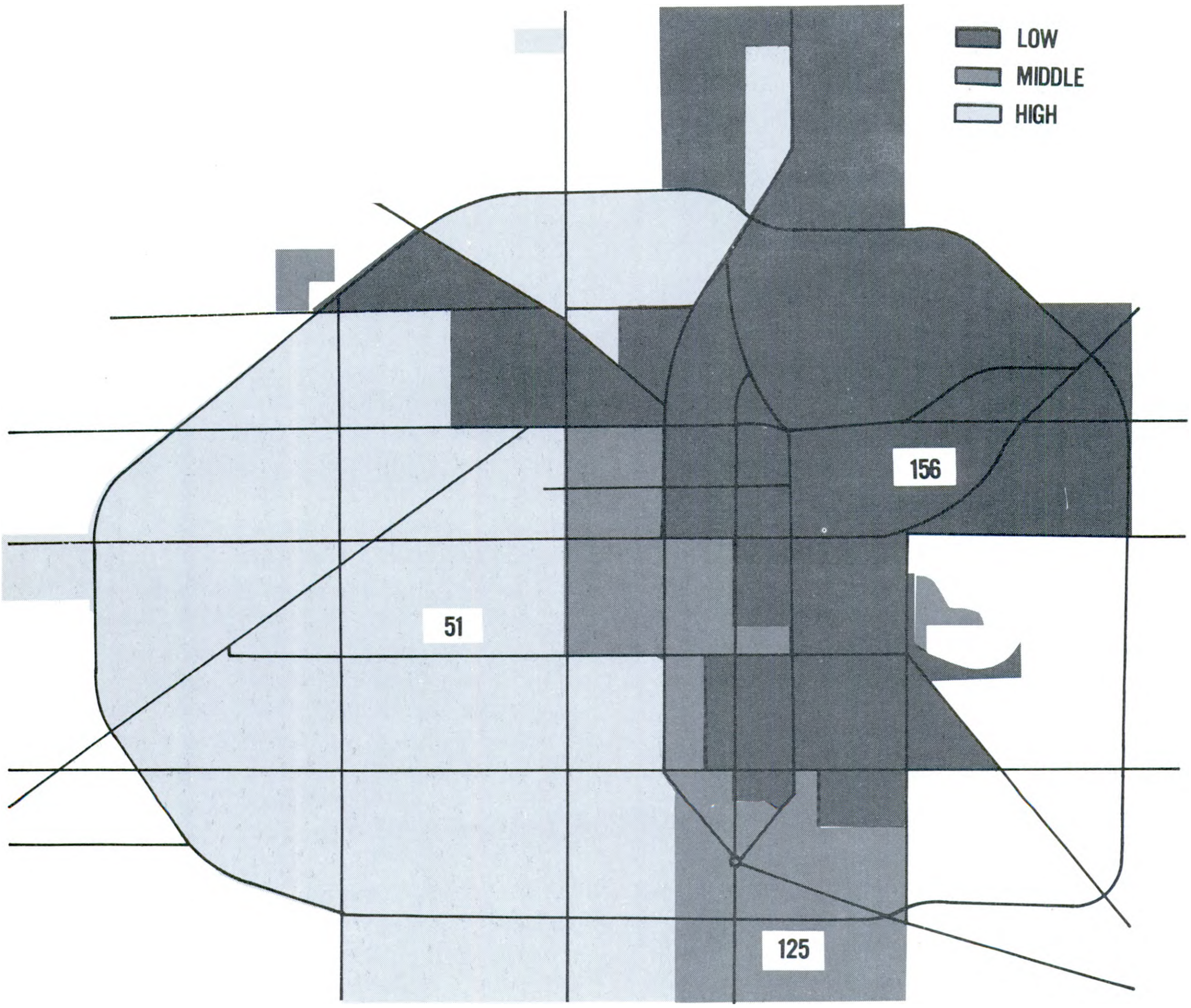
Problem specification. Data on health conditions were collected and assembled according to socioeconomic groups. These data consisted of demographic information taken from the Federal Census, live births with home addresses (*1*), neonatal and postneonatal infant mortality by home address (*1*), all morbidity and mortality of significant numbers, reported by address (*1*), immunization levels and other health information not readily available (*2*), residential sanitary conditions (*3*), and kinds of health services and the extent of their availability to each socioeconomic group.

The data were assembled, and the incidence rates were figured by SES and illustrated by tables, graphs, charts, maps, and colored cartograms. Pictures were taken of housing that was contributing to diseases and illness. The visuals were designed and used not only to inform the people and influence decision makers, but to aid in the necessary epidemiology.

Epidemiology. Sociological epidemiology started in Lubbock's Health Department auditorium in 1967 when more than 100 people, representing the city government, medical society, schools, churches, civic clubs, poor people, and others, met to discuss the health problems and find answers to such epidemiologic questions as What? Where? Who? Why? When? How? They were invited for a 2-hour presentation and discussion, but they stayed all day. They studied and planned. By the end of the day, this group resolved to support and assist the health department in providing more preventive and primary medical care for those in the low socioeconomic group who needed services. Most of the 1967 socioepidemiologic findings are shown in table 1.

Behavioral change of the health department staff. The Lubbock Health Department staff was confronted with problems other than determining the groups with high rates of mortality, morbidity, and poor health. We had to consider our own behavior and make decisions. Did we wish to give up our comfortable routine of working from 8 to 5 in "providing" preventive and public health services in our one health department building? Were we ready to make major changes attitudinally, financially, and technically? Were we ready to go to the low socioeconomic neighborhoods with services for people who needed them so desperately but had priorities other than health? Were we willing to go the "extra mile" to motivate

Figure 1. Socioeconomic groups and fertility rates, Lubbock, Tex., 1970



nonusers to seek and use needed health services? Were we willing to expand services to include primary medical care?

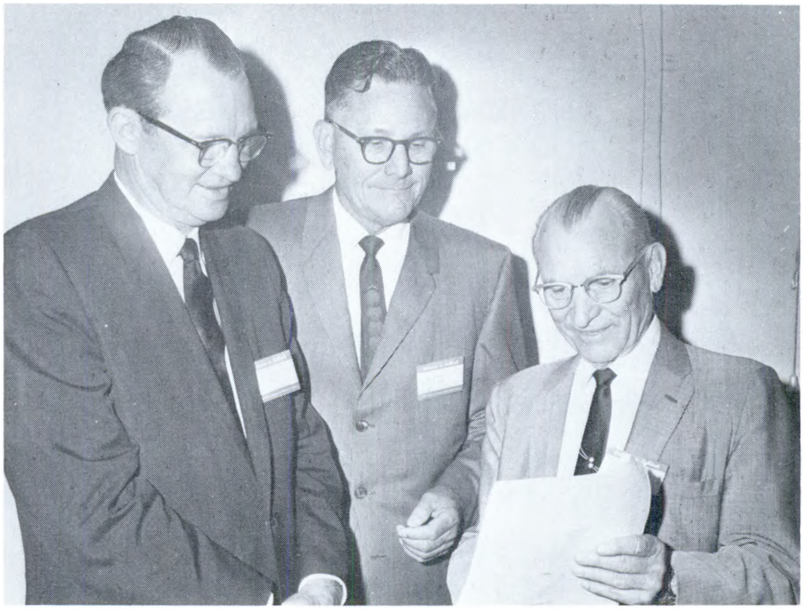
By early 1968 most of our staff, supported by citizens of the community, decided to execute a trial neighborhood action program in Posey, a grade school district in the low socioeconomic stratum of Lubbock. Posey was selected because the infant death and tuberculosis rates were very high and the immunization levels of preschool children very low. Posey had three ethnic groups —blacks, persons of Mexican descent, and Anglos. The neighborhood boundaries were readily identifiable.

Immunizations, tuberculosis control, infant and maternal health, and venereal disease control services were provided in the Posey school building and in a church. A three-step, communication-motivation program was developed with assistance from Community Demonstrations and the Texas State Department of Health.

Leaders of the Posey neighborhood were engaged in highly effective group communication activities, and people of all ethnic groups in the Posey neighborhood participated. As a result, neighborhood daytime clinics served their quota, and night clinics, established to accommodate working parents, overflowed. Young people participated in activities ranging from assisting physicians in clinics to tearing down dilapidated houses (by request of owners).

Table 1. Socioepidemiologic analysis, 1967 and 1970, Lubbock, Tex.

Factors	Socioeconomic groups, 1967				Socioeconomic groups, 1970			
	Low	Middle	High	Total	Low	Middle	High	Total
Population:								
Number	40,209	22,071	78,310	140,590	42,700	23,282	83,119	149,101
Percent	28.6	15.7	55.7	100.0	28.6	15.6	55.8	100.0
Births:								
Number	1,355	627	1,075	3,057	1,294	632	1,376	3,302
Rate per 1,000 population	33.7	28.4	13.7	21.7	30.3	27.1	16.6	22.1
Women, 15–45 years:								
Number	8,691	5,025	20,898	34,614	9,457	5,292	21,746	36,495
Fertility rate per 1,000 women	155.9	124.8	51.4	88.3	136.8	119.4	63.3	90.5
Infant deaths:								
Number	54	16	17	87	42	14	22	78
Rate per 1,000 live births	39.8	25.5	15.8	28.4	32.4	22.2	16.0	23.6
Postneonatal deaths:								
Number	21	4	3	28	13	4	5	22
Percent	38.9	25.0	17.6	32.2	31.0	28.6	22.7	28.2
Tuberculosis cases:								
Number	24	3	4	31	16	2	3	21
Rate per 100,000 population	59.7	13.6	5.1	22.0	37.5	8.6	3.6	14.1
Syphilis cases:								
Number	63	13	0	76	28	11	1	40
Rate per 100,000 population	156.7	58.9	0	54.0	65.6	47.2	1.2	26.8
Hepatitis cases:								
Number	22	12	19	53	18	9	12	39
Rate per 100,000 population	54.7	54.4	24.3	37.7	42.2	38.6	14.4	26.2
Heart disease deaths:								
Number	117	49	97	263	115	51	111	277
Rate per 100,000 population	291.0	222.0	123.9	187.1	269.3	219.1	133.5	185.8
Immunizations, children under 5:								
Number	....	....	....	....	5,334	1,871	6,433	13,638
Percent	....	....	....	....	39.1	13.7	47.2	100.0
DTP, percent	73.0	72.0	90.0	....	48.0	85.0	83.0	....
Poliomyelitis, percent	59.0	59.0	84.0	....	36.0	68.0	65.0	....
Measles, percent	40.0	25.0	68.0	....	70.0	87.0	88.0	....
Rubella (smallpox 1967), percent	48.0	43.0	67.0	....	51.0	59.0	69.0	....
Average percent immunized	55.0	50.0	77.0	....	51.0	75.0	76.0	....



Left to right: Dr. James E. Peary, Commissioner, Texas State Department of Health, Reuel H. Waldrop, and Dr. David M. Cowgill at the original citizens planning meeting

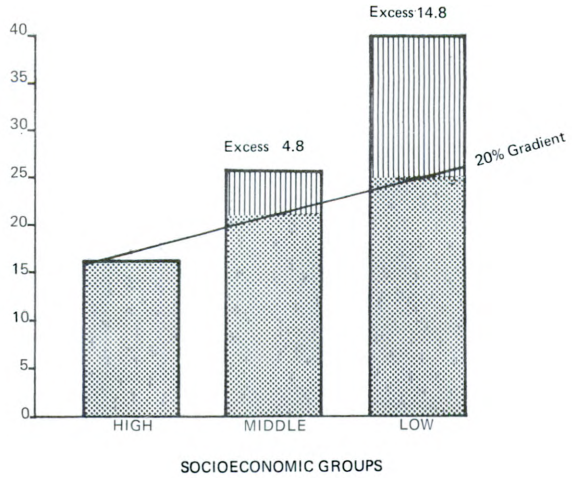
Although at this point the health department staff and Posey neighborhood workers "knew" that all the people in Posey had used needed available health services, an accurate enumeration revealed that approximately 25 percent had not. One-to-one communication had taken place with the majority of residents, but not with the 25 percent of nonusers. Because the nonusers had not been identified, they were never contacted individually. Nevertheless, the number of neighborhood persons using health services had increased from 25 to 75 percent. This increase stimulated us to do more.

During 1969 some of what was learned in Posey was applied to other neighborhoods having a high prevalence of health problems. For example, tuberculosis control activities were redirected at small neighborhood groups that had excessive numbers of active cases. The rapid reduction in prevalence rates was dramatic. But Lubbock needed more resources if it was to provide all of the most needed preventive and primary health care services to everyone in the low socioeconomic neighborhoods.

Updating community analysis. In 1970 community analysis was updated by respecifying health problems by socioeconomic groups. These findings, as well as 1967 data, are shown in table 1. The 1970 analysis was much more specific than the 1967 one with respect to both health problems and their prevalence.

During the past decade a consistently uniform gradient of 20 percent was found to exist between the social status indices of the socioeconomic areas in all communities analyzed by the POPE method. Thus, using the national rate in the middle, we determined a three-strata 20 percent rate gradient for each disease or other health-related condition. In 1970 we related an incidence rate for each condition in Lubbock to the 20 percent gradient and established the excess of each condition in each socioeconomic group, as illustrated in table 2 and figure 2; the equation used for the table is: the existing rate minus the 20 percent gradient rate equals the excess.

Figure 2. Determination of excessive prevalence of infant mortality, Lubbock, Tex., 1967



In 1970 a neighborhood analysis was performed after the socioepidemiologic analysis. We divided Lubbock's low SES into six identifiable neighborhoods, using a number of factors to establish their boundaries. For example, old grade school boundary lines were helpful in determining neighborhoods; sometimes identification of a number of residents who were neighborhood leaders provided recognizable boundaries, and nurses serving the area were aware of natural groupings of persons. After the six neighborhoods were established, we determined the numbers and rates of prevalent conditions by using the previously assembled data for the low SES.

Rates of morbidity, mortality, and ill health varied irregularly among the six neighborhoods; usually each neighborhood had one or two rates that were much higher than those for the total low SES. Thus the neighborhood analysis pro-

Table 2. Health condition rates excessive to the 20 percent gradient, Lubbock, Tex., 1967

Condition	Low	Middle	High
Fertility	156 −103 = 53	125 − 86 = 39	51 − 69 = 0
Infant mortality	39.8 − 25 = 15	25 − 21 = 4	16 − 17 = 0
Tuberculosis	60 − 22 = 38	14 − 18 = 0	5 − 15 = 0
Syphilis	157 − 11 = 146	59 − 9 = 50	0 − 7 = 0
Heart disease deaths	291 −437 = 0	222 −364 = 0	124 −291 = 0
Immunization levels, percent inadequate, ages 1–4	80 − 55 = 25	85 − 50 = 35	90 − 77 = 13

When houses were condemned by the City Housing Development young people would get permission, tear them down, and build garbage can racks. Extra racks were sold and the money was put into a social fund for the young people of the neighborhood.

vided a means of identifying small areas that had condition rates in excess of those of the total low SES. For example, 75 percent of the persons with tuberculosis were in two of the low SES neighborhoods. The neighborhood rates and their excess over the total rates of the low socioeconomic group are shown in table 3 and figure 3.

Phase 2: Priority Objectives

After the 1970 socioeconomic and neighborhood analysis, we established first, second, and third priorities. Our first priority was to eliminate the excessive prevalence of diseases and other health problems in neighborhoods that had rates in excess of those of the low socioeconomic group.

Figure 3. Neighborhood tuberculosis rates in excess of total low socioeconomic stratum of Lubbock, Tex., and of national rate, 1970

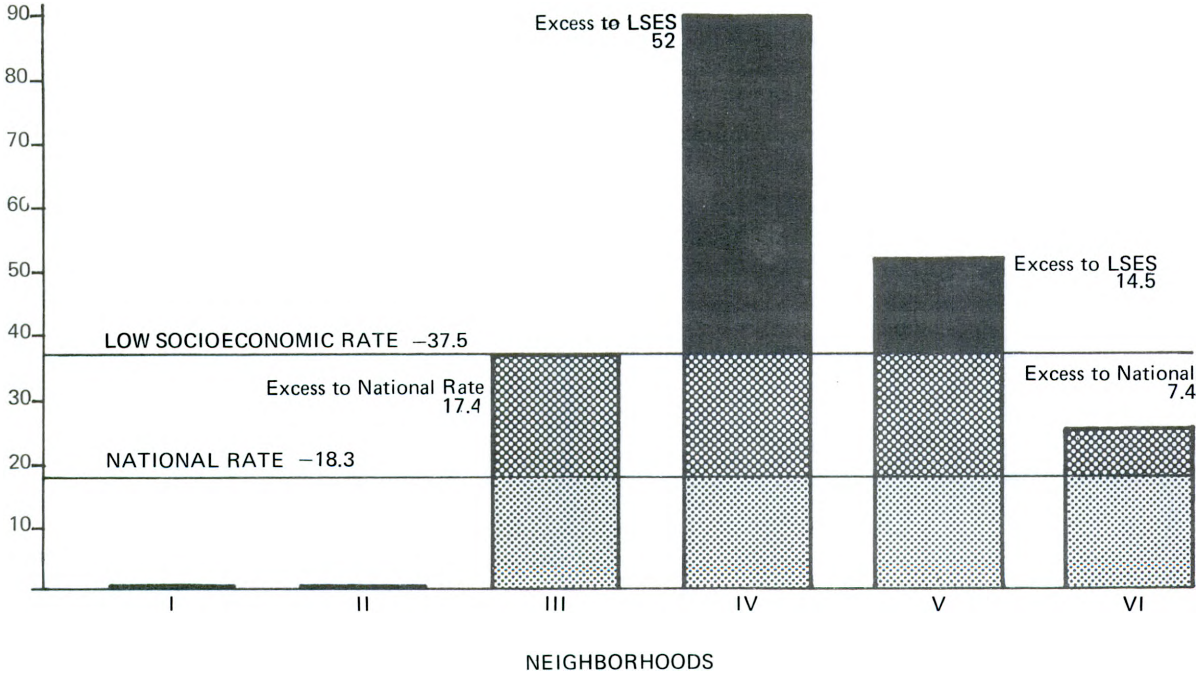


Table 3. Analysis of six low socioeconomic neighborhoods, Lubbock, Tex., 1970

Factors	Posey I	Clayton Carter II	Harwell III	Cherry Point IV	Arnett Benson V	Ella Isles VI	Total
Population:							
Number	6,620	2,822	5,598	4,470	15,397	7,793	42,700
Percent of low group	15.5	6.6	13.1	10.5	36.1	18.2	100.0
Women, 15–45 years:							
Number	1,333	586	1,133	1,062	3,693	1,650	9,457
Fertility rate	151.5 (14.7)	148.5 (11.7)	168.8 (30.0)	113.0	129.4	132.1	136.8
Births:							
Number	202	87	189	120	478	218	1,294
Rate	30.5 (0.2)	30.8 (0.5)	33.8 (3.5)	26.8	31.0 (0.7)	28.0	30.3
Infant deaths, 1969–70:							
Number	4	4	5	4	11	14	42
Rate	19.8	46.0 (13.6)	26.4	33.3 (0.9)	23.0	64.2 (31.8)	32.4
Tuberculosis cases:							
Number	0	0	2	4	8	2	16
Rate	0	0	35.7	89.5 (52.0)	52.0 (14.5)	25.7	37.5
Syphilis cases:							
Number	2	0	4	9	3	10	28
Rate	30.2	0	71.4 (5.8)	201.3 (135.7)	19.5	128.3 (62.7)	65.6

NOTE: Figures in parentheses are the excess of the rate for the total low socioeconomic group.

Dr. Cowgill providing medical services in one of the neighborhood clinics

The second priority was to eliminate prevalence of conditions in excess of the 20 percent gradient. Our third priority was to reduce condition prevalences in all socioeconomic groups according to remaining needs and remaining resources. Short-range objectives were expressed in meaningful behavioral and quantitative terms that were applicable to each neighborhood. The neighborhood short-range or 1-year objectives were designed to contribute to the long-range objectives. Long-range objectives were expressed in rate-reduction specifics, applicable to the excessively high neighborhood and total low socioeconomic group. Some of our short-term neighborhood behavioral objectives were to:

1. Increase by 10 percent the number of women practicing family planning;
2. Increase by 10 percent clinic attendance of pregnant women;
3. Maintain treatment of 100 percent of persons known to have active tuberculosis;
4. Increase by 25 percent the proportion of persons receiving adequate medical diagnosis and treatment of syphilis; and
5. Increase from 55 percent to 65 percent the infants and preschool children receiving DTP, poliomyelitis, measles, and rubella immunizations.

Some first-priority long-range neighborhood objectives were to eliminate:

1. The highest excessive fertility rates by reducing the rates of neighborhood 3 from 166.8 to 103 and neighborhood 1 from 151.5 to 103;
2. The highest excessive infant mortality rates by reducing the rates in neighborhood 6 from 64.2 to 25 and neighborhood 2 from 45.9 to 25;
3. The two highest tuberculosis rates by reducing the rates in neighborhood 4 from 89.5 to 20 and neighborhood 5 from 52.0 to 20;
4. The highest syphilis rates by reducing the rate in neighborhood 4 from 201.3 to 11 and neighborhood 6 from 128.3 to 11; and
5. The low immunization levels of children ages 1–4 living in the low SES by increasing the percentage of immunized from 55 to 80.

Some long-range (5-year) or second-priority objectives for the low socioeconomic group were to eliminate:

1. Births excessive to the 20 percent gradient by reducing the fertility rate from 156 to 103;
2. Infant deaths excessive to the 20 percent gradient by reducing the infant mortality rate from 40 to 25;
3. The prevalence of tuberculosis excessive to the 20 percent gradient by reducing the rate from 60 to 22;
4. The incidence of syphilis excessive to the 20 percent gradient by reducing the rate from 157 to 11; and
5. The number of inadequately immunized children ages 1–4 by increasing the immunization levels for poliomyelitis, DTP, measles, and rubella from 55 to 80 percent.

Phase 3: Plan Development

Health plans are usually developed and then initiated. This was not true in Lubbock. The planning was done by health department staff and citizens with advisory services from Community Demonstrations personnel. The staff adopted a "show me" attitude, and they had to experience a procedure that worked before they accepted it. Attitudes changed when activities were successful, and thus planning was in broken phases. The plan was written as phases of POPE developed; it included "what had been done" as well as "what was to be done." For example, objectives were written after the staff proved to themselves that they could reduce the prevalence of disease and illness among persons in the low socioeconomic group. The plan finally included alternate methods for accomplishing the objectives for organization, administration, manpower, financing, and cataloging potential resources. Effectuation was also included in the plan, and it is discussed under phase 4.

Posey Neighborhood Center and Clinic built by the City of Lubbock

Phase 4: Effectuation

Health services. Lubbock, like most communities, does not have adequate resources to provide total comprehensive health care for all its residents. The health department had to establish priorities and begin effectuation by providing as many as possible of the preventive and primary care services most needed. A Federal family planning grant, approved in 1970, provided enough additional money and personnel to include some preventive and primary health care in each of the six low socioeconomic neighborhoods with a high prevalence of disease. By redistributing and combining services, the department established clinics in each neighborhood and assigned to each of them one nurse, one health aide, and one sanitarian part time. One health educator divided his time among the six neighborhoods.

The clinic facilities were limited. Five neighborhood clinics were located in schools or churches. As a result of the people's enthusiastic response in Posey (neighborhood 1), officials of the city of Lubbock built a $50,000 health and social services center in Posey. Not only were services provided in each neighborhood, but each neighborhood team had its own portable record file. This was a departure from the central record system but an innovative step toward providing better services for persons not likely to use health services. As each person or family used a service, a "Household Record of Action" form was filled out and filed by street address. The coordinated neighborhood services and records enabled continuous maintenance of nurse-aide-patient contact. The use of the record system is discussed further in step 3 of Communication-Motivation.

The limited neighborhood services were supplemented by private medical or public clinic facilities, or both. For example, no neighborhood clinic has an X-ray facility. When a person needed an X-ray he was referred to the central health department for this service. Persons needing more sophisticated medical services were referred to the private medical sector.

Communication-motivation. As services were provided in each neighborhood, nonusers were identified and motivated to seek and become regular users of needed health services by a continuing three-step process.

Step 1—mass media. Mass media were used to inform and influence the people in the community to seek and use needed health services. In most communities, little attention is given to the problems of the low socioeconomic group in the community news media. The neighborhood health groups in Lubbock, however, undertook activities that attracted the attention of television, radio, and newspapers. For example, the Posey Neighborhood Youth Council made headlines when it appeared before the city council to give a tuberculin test to the Mayor and council members and when the Mayor presented it with awards for exceptional neighborhood work. Also, the neighborhood people were shown on television when they removed 24 tons of rubble from their yards during one weekend.

The 1967 evaluation in Lubbock indicated that more than 90 percent of the families and individuals living in the high SES obtained their most needed health services, about 80 percent of the middle SES did, and only about 50 percent of the low SES obtained these services. From observations by staff of Community Demonstrations and behavioral research, these percentages of participation can be expected in a conventional health services system that has fairly good mass media coverage for its health education program (unpublished paper by R. H. Waldrop, J. M. Lane, and W. W. Dyal: "Community Health by Socioeconomic Groups").

Step 2—neighborhood group media. Neighborhood group education is a necessary adjunct to communitywide education. Neighborhood groups in Lubbock were continually engaged in the communication process in each of Lubbock's six neighborhoods with a high prevalence of disease. Organized and unorganized formal and informal groups were involved, including groups in churches, schools, PTAs, day care centers, mothers' clubs, "gossip" groups, family groups, youth groups such as Boy Scouts, "bull sessions" and gang meetings, block leader meetings, and home meetings. The neighborhood educator, nurse, health aide, other health department personnel, and neighborhood leaders and other volunteers met with the groups to inform and motivate persons to obtain needed health services. Participation in obtaining services was closely aligned with all educational meetings; for example, a church group's first objective was to get all of its preschool children adequately immunized.

The portable neighborhood file was taken to all meetings. Household data and the use of a service were recorded on the "Household Record of Action" form and placed in the file.

Step 2 is a supplement to step 1. In addition to the 50 percent of the people reached by community media, an additional 25 percent were involved by neighborhood group education-motivation activities in most of Lubbock's low socioeconomic neighborhoods.

Step 3—person-to-person communication. In the original Posey neighborhood program, person-to-person communication took place with the neighborhood activities, but persons not likely to participate in these activities were missed. We knew that we had reached 75 percent of the persons in Posey, but who were the remaining 25 percent? They were not identified, were not purposely visited, and were not involved.

We solved this problem by supplementing the previously mentioned neighborhood record system with a neighborhood map to identify the users of health services. As each person in a neighborhood responded to steps 1 and 2 by using a service, a "Family Record of Action" form was completed as extensively as possible for the respondent and his family and placed in the file. A large neighborhood wall map, showing the location of all houses, accompanied each neighborhood file. When the family action form was completed and placed in the neighborhood file, the family's home location was checked on the map. Thus, a quick glance at the map revealed who had and who had not participated. The partial users of health services were determined from the family folders. After approximately 75 percent of the families were participating, or after mass and neighborhood group efforts were no longer productive, the unmarked homes were visited by professionals, health aides, volunteers, persons of influence, kinfolk, "gate keepers," or anyone interested enough in his neighbor's health to make a personal visit. When such home visits were made, family data were collected, filed, and used in later visits until the family was motivated to become a regular user of needed health services.

Motivation of the 25 percent nonuser families was and still is a difficult task. These persons have gone so long without services that they have acquired such deep-rooted mores and cultural behavior patterns of nonutilization of needed health services that they actually have a behavioral illness. Such a person, like one with tuberculosis, must be identified and his behavioral attitude and condition diagnosed (understood) and treated. Group approaches neither reach nor treat him. He must be identified and given personal treatment until he regularly seeks and uses his needed health services. The health worker must understand the patient's point of view. No one formula will motivate all. Each person is different. Basic behavioral principles, along with experience, intuition, positive thinking, concern, strong will, hard work, and continuing personal effort will result in informing and motivating many to seek and use needed services. When a worker fails to reach a person after a reasonable effort, he should look to others to communicate for him. A child, a grandparent, a friend, a neighbor, or maybe a complete stranger might be the one who can change the attitude of an unreached person. In Lubbock we have demonstrated that 10 to 15 percent of the 25 percent nonuser families have been reached.

The communication-motivation steps 1–3, like a waltz, must be performed in unison. Human behavioral patterns differ with neighborhoods just as health problems do. In one of Lubbock's low socioeconomic neighborhoods, participation reached 90 percent; in another, 80 percent. In one neighborhood the culture and behavior have been influenced for generations by extreme poverty, poor housing, crowding, filth, low morals, neglect, lack of services, and illness. It will take generations to accomplish some changes, and it will take a long time to motivate 90 percent of the people to use needed services. Nevertheless, the health department neighborhood health team has established health goals and is reaching at least an additional 5 percent each year in this neighborhood.

Mobility in the low SES has always been a problem for providers of health services, but in Lubbock we solved much of this problem by using the neighborhood map, mentioned previously, to identify the "movers." When a family moves, a note is made. After the mapping system has been in operation for a while, certain houses, usually those which have a high turnover of renters, are targeted. The "repeater" houses, actually few in number, are watched by neighborhood volunteers who have a telephone. They report moves to the neighborhood staff as soon as moves occur, and the new tenants are visited immediately, informed of available services, and encouraged to attend clinics if services are needed.

The four-phase program is now Lubbock's continuing system of providing primary health care, and plans are underway for more comprehensive health services. The West Texas Health Planning Council has received a Federal grant to design and implement an experimental health service delivery system. The council is considering a system similar to the much-discussed health maintenance organization.

Evaluation of Results

In 1970 the previously established long-range priorities for the low socioeconomic group were evaluated (1967 compared with 1970), and the following results were noted.

- The priority to reduce the fertility rate in the low socioeconomic group from 156 per 1,000 women aged 15–45 years to 100 by 1975 resulted in a rate of 137 by 1970—34 percent accomplished.
- The priority to reduce the infant death rate from 40 per 1,000 live births to 25 by 1975 resulted in a rate of 32 in 1970—53 percent accomplished.
- The tuberculosis rate in 1970 was 37 per 100,000 population compared with 60 in 1967. Thus the objective to reduce the rate to 20 by 1975 was 58 percent accomplished.
- The syphilis rate was reduced from 157 per 100,000 population to 66 in 1970. Thus the objective to reduce the rate to 11 by 1975 was 62 percent accomplished.
- The average immunization level of preschool children had decreased from 55 percent in 1967 to 51 percent in 1970 because of a lack of vaccine. (By 1971 it increased to 65 percent.)

Comment

The preliminary results of the Lubbock demonstration program indicate that if community health problems are specified for priority action according to socioeconomic groups, if groups with a high prevalence of disease and poor health are identified, and if priorities are established to reduce or eliminate excessive health problems in low socioeconomic groups in all communities, persons in all socioeconomic groups can experience more nearly equal and more positive health conditions.

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Expanding Roles for Health Assistants in a Model Cities Health Program

JOSÉ L. GONZALEZ, PE, MPH, and LOWELL H. WOODWARD, MPH

THE USE OF HEALTH ASSISTANTS has gained wide acceptance by public health and related agencies throughout the United States, as well as in many other countries, and many such programs report favorable results. Nevertheless, how health assistants are utilized varies greatly among the agencies (*1–3*).

The model cities health component of the Laredo-Webb County (Tex.) Health Department was planned basically as an outreach program using health assistants. The Community Health Assistance Project (the official title of the program) consists of two main components: (*a*) community health education and (*b*) an information and referral system that is supervised by a social worker. The two components are vitally interrelated and complement each other; the health assistants play major roles in each. Broad utilization of health assistants was called for in

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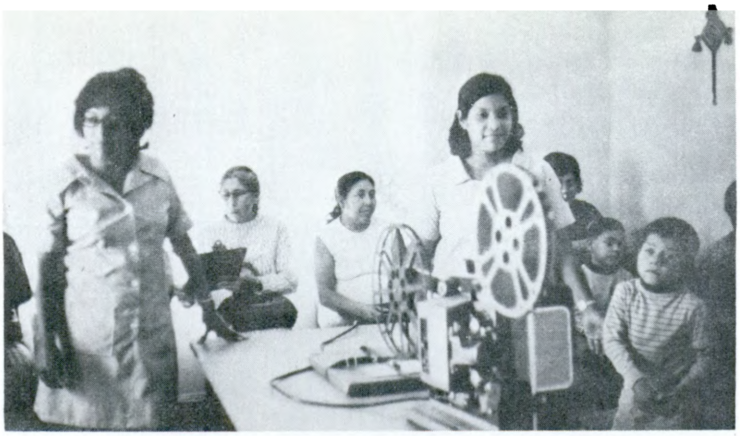

Health assistants show film in neighborhood center

the Community Health Assistance Project, and their multipurpose roles have been gradually expanding since the inception of the Laredo Model Cities Program in 1971. The administrator and supervisory staff of the Laredo-Webb County Health Department believe that the wide-ranging uses of the assistants are a most effective approach that might serve as a model for agencies with varied community health responsibilities.

Currently 8 health assistants work in the model cities health component and an additional 10 in other parts of the health department. All are women whose ages range from 18 to 50 years. Most of them have high school graduate equivalency degrees. Of special interest is that the program's first health assistants were trained by Project Hope in its first domestic project.

Health Education Component

The health assistants have taken part in a growing number of endeavors in community health education, their initial activity being participation in an intensive campaign to increase immunization levels among preschool children in the model cities area. A survey conducted by the health assistants in 1971 indicated that an intensified effort was needed to maintain the generally high immunization levels in Laredo (see table). These levels are especially important in light of Laredo's geographic location, both as an international port of entry and also its nearness to areas where outbreaks of diphtheria have occurred and where cases of poliomyelitis are still reported.

The health assistants began by keeping a special immunization file on all preschool children in their districts. The file allowed the health assistants to identify better the target population and to check responses to referrals to immunization clinics.

A variety of approaches were used to reach the parents of young children. The overwhelming majority of the 13,716 residents of the model neighborhood area are Spanish-speaking, and presentations or "charlas," as they are called in Spanish, were conducted by the health assistants at local neighborhood centers, churches, or virtually any convenient place. Special visual aids in Spanish were developed for the presentations.

In addition to the neighborhood presentations the health assistants went into homes, where they used special modifications of their educational resource materials. The home visits were necessary because of the difficulty of reaching everyone via the neighborhood meetings. For example, mothers are reluctant to take small children outdoors for long in Laredo's consistent 100° F. summer temperatures, and mothers with several

Percentages of immunized children aged 0–5 years in the Laredo Model Cities area before and after an intensive immunization campaign, spring and summer 1972

Immunization agent	Percent of children immunized		
	Model cities area, February 1972 [1]	Model cities area, August 1972 [2]	National average of poverty areas [3]
DPT	72.0	81.1	58.4
Poliomyelitis	65.5	70.3	54.3
Measles, ages 1–5	46.6	67.3	48.7
Rubella, ages 1–5	39.9	65.8	52.0

[1] Reference 4. [2] Reference 5. [3] Reference 6.

small children are unable to come to meetings.

The health assistants made direct referrals to the health department's immunization clinics. Responses to all referrals were checked, and call-back visits were assigned a maximum of three times in an effort to motivate the more hesitant parents to have their children immunized.

Six months after the special outreach program on immunizations began, a community health survey was conducted by the Laredo-Webb County Health Department in cooperation with the Texas State Health Department and the Public Health Service's Center for Disease Control. Immunization levels reported in this survey were compared with those from the health assistants' earlier survey (see table). The levels in Laredo's model cities area are now reported to be among the highest for any model cities area in the country.

The health assistants used similar approaches in teaching mothers infant care—formula making, prevention of diarrhea, and nutrition—at the health department well-child conferences (usually jointly with the nurse) and in the community. All of the teaching resource materials are in Spanish, and most of these were specially developed for the Laredo population. In all instances, the health assistants make referrals to the department's clinics when indicated.

A special checklist was developed to help the assistants identify health and social problems of community residents (see box). Essentially, the list reminds the health assistants to ask about immunization status of family members, obvious dental problems, whether pregnant women are receiving prenatal care, and if mothers are taking newborn infants to well-child conferences. The checklist also reminds them to observe or inquire,

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Community Health Assistance Program
Family Health and Social Services Check List

I. HEALTH

A. IMMUNIZATION STATUS — TOTAL FAMILY

( ) Polio ( ) DPT ( ) Measles
( ) Rubella

B. MCH FACTORS

MATERNAL
( ) Pregnancies in family?
( ) Mother receiving prenatal care?
( ) Where?
( ) Who will deliver baby?

INFANTS
( ) Newly born babies in family?
( ) By whom delivered?
( ) Problems for either mother or baby?
( ) P.K.U.?
( ) Baby attending well-child conference?
( ) Mother receiving postnatal care?

C. DENTAL HEALTH

( ) Observable dental problems?
( ) Eligible for our services?
( ) Family visit dentist?
( ) Family have and use toothbrushes?

D. MEDICAL CARE

( ) Where does family usually go to receive their medical care?
( ) Family or any member have Medicaid or Medicare?
( ) Migrant family? Know about use of migrant clinic?
( ) Any health problems?
    ( ) Diabetics?
    ( ) Vision?
    ( ) Handicapped?

E. ENVIRONMENTAL HEALTH

( ) Peeling paint?
( ) Uncovered garbage cans?
( ) Broken screens?
( ) Unvented space heaters?

II. SOCIAL NEEDS

Need for social or related services:
( ) Homemaker services?
( ) Day care?
( ) Surplus commodities?
( ) State welfare?
( ) Vocational rehabilitation?
( ) Employment services?

III. GENERAL AND MISCELLANEOUS

( ) Mental health problems?
( ) Drug or alcoholic abuse problems?
( ) TB (skin testing)

Health assistant (left) and social worker discuss case

or both, about pertinent social and economic matters. The list is modified when necessary to keep abreast of program developments in the health department.

As the health component of the model cities program progressed, the health assistants began to expand their activities. Carbon monoxide and lead paint poisoning detection programs were conducted by the health department following a project N.E.E.D.S. (Neighborhood Environmental Evaluation and Decision System) phase II survey, which was carried out in spring 1972 with the Bureau of Community Environmental Management, Public Health Service. The effectiveness of the health assistants in these new programs is illustrated by the quickness with which they obtained the cooperation and participation of area residents.

A major task of the health assistants in the lead poisoning detection program was to obtain parental permission to test the blood of 100 children. The program coordinator allocated 3 weeks for this assignment, assuming that the assistants would have some difficulty in signing up sufficient children for the following reasons: (*a*) reported fears of having blood tests performed on children, especially for an exploratory program; (*b*) lead paint poisoning had not been discussed before in Laredo, and the concept was new to people; and (*c*) the assumption that there might be general apathy about this health hazard. Parental permission to test 130 children was obtained by the health assistants in only 2 days.

The assistants signed up 130 children because our past experience has been that, on a given day, a number of children will be unable to attend for one reason or another. One hundred and three children were brought to the clinic on the day of testing, and all 14 of those children who needed to be retested returned.

Working with the department's sanitarians, the health assistants played an active role in the home followup to the lead detection program. They accompanied the sanitarians to the homes of children with blood lead levels higher than 40 mg per 100 ml of whole blood, helped the sanitarians find lead-based paint with special detectors, and worked with families in helping them take corrective actions.

Fortunately, Laredo does not have a large number of children affected by lead-based paints. Nevertheless, the assistants remain alert for signs of peeling paint, especially in houses with small children, and encourage parents to take whatever action necessary to prevent children from ingesting paint chips.

The health assistants were similarly successful in the carbon monoxide detection program. Although this was also a new program, the health assistants experienced no difficulty in getting residents of the model cities area to place special carbon monoxide detectors in their homes. The health assistants easily filled their quotas and received excellent cooperation from the residents.

In both new programs, the health assistants were able to broaden their outreach and be of service to the entire health department. Appropriate training and inservice education are obvious prerequisites to this broadened outreach. Staff of the Bureau of Community Environmental Management conducted the assistants' training for these two programs. They have also received inservice training in general environmental sanitation from the department's environmental health staff, and they can function in such tasks as promoting home sanitation and the screening of doors and windows and so forth.

The health assistants are currently being trained to participate in a pilot program in school dental health; they will encourage parents to support the program in the home. Before the Federal Food Stamp Program was implemented in Laredo in 1973, the assistants underwent training in consumer education.

Information and Referral Component

The information and referral component has two objectives: (*a*) to inform model neighborhood area residents about and to motivate them to use the services of the health department and (*b*) to inform residents about the services of all community agencies and to refer people in need to the agencies. A major reason for setting up the referral component was that many model cities residents said that they did not know about the services many community agencies offer. This lack of knowledge was serious, because a large percentage of the area's residents need various services that these agencies provide. Another reason for developing the information and referral component was to bring existing services and people closer together.

The information and referral system is an innovative attempt to use the skills and talents of a social worker. The major, but not exclusive, source of intake for the social worker is the referrals brought by the health assistants. They bring the social worker a large percentage of the problems for which residents need the services of community agencies or the social worker's counseling or assistance, or both.

Health assistants leave the health department for their districts in model cities health program van

The health assistants are delegated the responsibility of carrying to the model neighborhood residents letters of referral to the respective agencies from which they are seeking assistance. The assistants ascertain responses to referrals either from the agency or by a followup visit. Approximately 55 to 60 referrals per month are made to community agencies. The majority are to the Laredo-Webb County Welfare Agency and the Texas State Department of Public Welfare's regional office. The health component of the model cities program received the major part of its funds from the State welfare department, and its regional office in Laredo works closely with the program.

Many social problems uncovered by the health assistants are extremely complex, and a few have been emergencies—families facing eviction, older citizens neglected at home and in need of immediate hospitalization, families without food, and so forth. Referrals have been made to virtually every community agency and to some out-of-city agencies and facilities. For the year 1972, the average rate of responses to community referrals was 75 percent. The introduction of a social worker into a public health program is not unique, but it is obviously a necessary step because of the interrelation of health and poverty.

The other basic responsibility of the health assistants is to refer model cities residents to health department clinics—general medical, immunizations, maternity, dental, chest, gynecological, screening, and well-child—and to other services such as environmental sanitation. The assistants make direct referrals to all these services, and the responses to their referrals are carefully checked. Special referral slips are used, and followup visits are made when appointments are broken in an effort to remotivate residents to use available services. Many referrals to the clinics are a result of educational presentations conducted in the community.

In many instances, appointments must be made for persons referred for services because of the clinics' large caseloads. Both research and practical experience have shown that the longer the period between appointment date and referral date, the greater the chance that the appointment will be broken (*7*). For this reason, the health assistants check the appointment books of the various clinics each week and issue personal or telephone reminders 1 or 2 days before the appointment date. These reminders have proved effective in reducing broken appointments.

The percentage of broken appointments of model neighborhood area infants for well-child conferences is much lower than the percentage for infants from similar poverty neighborhoods in Laredo. The health assistants work closely with the district nurses on this matter. Evidence that the outreach of the health assistants is effective is the higher proportion of residents of the model cities area receiving health department services, compared with residents of similar poverty areas of the city.

The percentages of services of various clinics devoted to model neighborhood residents (*8*) follow:

Health department clinic	*Percent of services*
General medical	27
Well-child conferences	54
Maternity	49
Dental	30
Migrant	32
Immunizations	25
Tuberculosis	31

A 60 percent response rate to all referrals to health department services was achieved in 1972. This percentage compares favorably with reports from other outreach programs in operation throughout the country (*9*).

The health assistants have also worked in other general outreach activities. One has been to promote and increase participation in evening clinics for tuberculosis skin tests. The attendance at the three clinics held at centers in the model cities area in 1973 was much higher than at clinics held in other sections of town.

Promoting the health department's migrant clinic is another health assistants' effort. Each spring the assistants contact the migrant families in their districts and encourage them to visit the clinic for preventive services such as immunizations and diagnostic services before they journey north. Special emphasis is given to visiting families who have not been aware of the clinic.

Rationale for Health Assistants' Role

Using health assistants in a broad, multipurpose outreach of the entire health department is somewhat contrary to the philosophy that the health assistant should only assist professional staff with mundane duties. We contend that health assistants should have a broad, multipurpose role, particularly in those areas of the community where they have the capacity to serve perhaps better than anyone else. In many instances, the health assistants are best able to communicate with poverty groups, motivate them to use services, and to conduct certain types of educational programs.

In addition, the health assistants can help with all the interrelated problems and needs of a family, avoiding a fragmented approach. Of course, the health assistants alone cannot personally perform all the services that may be required; rather they may be able to perform some and refer those in need to public health nurses, sanitarians, or social workers who are better qualified to help. Obviously, it is necessary to have faith in the health assistants to hold this viewpoint. In the Laredo program, respect for the health assistants' capabilities was fostered by experience in various endeavors.

From a practical standpoint, having a group of health assistants trained to perform a variety of tasks gives the health department a flexible manpower tool. In the model cities health component, the health assistants are trained to assist in the department's migrant and general medical clinics and well-child conferences. When staff members are ill or vacationing, it is especially comforting to have a pool of broadly trained persons to call upon.

Utilization of health assistants in this manner is only possible, of course, if they are fully trained after they are selected, thoroughly oriented to the health department, and have a followup program of continuing education. Neither health assistants, nor anyone else, can be expected to function properly without preparation for the task at hand.

Constant inservice or continuing education has been necessary because of changes in the direction of programs as well as the changing health and community scene—for example, changes in welfare guidelines, new model cities programs, and so forth. A special inservice committee composed of the program coordinator, social worker, health assistants, health educator, physicians, and nurses is responsible for planning the health assistants' inservice training. This training is supplemented by the department's regular inservice education programs and various workshops and seminars that are frequently sponsored in the community. Inservice education, both formal and informal, is planned as needed, rather than being scheduled on a regular basis.

Although a great deal of time and attention is devoted to training and education, we do not believe that it is the single key element in our successful use of aides. Instead of singling out one vital factor necessary for success, experience has proved that selection, training, supervision, and utilization of assistants are equally important and that a letdown in one area will adversely affect another. For example, if a health assistant is selected without care, it is doubtful that any amount of training or supervision will be of much help. Some particularly helpful reports in the literature were those of Goldstein and Camp (*10*) on selection, Hildebrand (*11*) on guidelines for utilization, Callan (*12*) on supervision, and Hoff (*13*) on training.

Closely related to these areas is the maintenance of the health assistants' morale. This aspect of personnel management is especially important because of its effect on productivity and the quality of work. Morale is especially important for those health assistants who may not seek, or be able, to progress up the career ladder.

Morale in the Laredo program has been good, perhaps because the department's philosophy has meant that the assistants have a greatly varied workload. Variety has been achieved by occasional changes in emphasis (from immunization campaigns to lead paint poisoning to infant nutrition, for example) and by balancing outdoor work with regularly scheduled indoor clinic assignments. In this way, boredom is prevented and interest is maintained in the program.

Good morale is also fostered by involving the health assistants in program planning. Broad participation is one of the tenets of good planning; also, the health assistants are thus assured that they are both respected and important to the continuing development of the program. In addition, they are encouraged to plan a large portion of their fieldwork; they have the responsibility to plan carefully and constructively the use of their time.

Conclusion

The roles of the health assistants in the model cities health component have expanded with experience and training into broad, multipurpose community responsibilities that have achieved notable results. The assistants have widened their responsibilities to serve as an outreach of the entire health department as well as to function in an information and referral component that brings the services of the whole gamut of the community's agencies to residents of the model cities area. It is hoped that this project might serve as a model for subsequent development of community outreach programs.

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The Student Health Opportunities Program at the Mount Sinai School of Medicine

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PROGRAMS DESIGNED TO INTRODUCE health and the health occupations to high school students are not new, but the numerical impact of these efforts has been negligible. Throughout the 1960s various hospitals reported programs for high school students (*1–4*), but the minor importance of the health occupations in secondary school curriculums is apparent from the fact that in 1966 only 0.08 percent of the nation's high school students were enrolled in health vocational training programs (*5*).

More recently, health has been a vehicle for the teaching of science at the secondary level (*6*), and a few programs provide academic credit for small numbers of carefully selected students with outstanding academic records (*2*). Since 1971, some programs have emerged that are directed specifically to minority group students (*7*). Furthermore, at least eight medical schools are currently sponsoring high school programs of varying size and scope, most of which are also aimed at minority students (*8,9*).

Student Health Opportunities Program

The Student Health Opportunities Program (SHOP) at the Mount Sinai School of Medicine was funded in October 1969 by the Ernest and Mary Hayward Weir Foundation, and the first students were recruited in spring 1970. (Supplemental funds have been provided by the New York City Board of Education and the Neighborhood Youth Corps.) The initial 6-month period was devoted to hiring staff and to carrying out a series of informal research projects from which basic policies of the program were developed.

The high school selected for SHOP is the second largest in Manhattan. Its enrollment of 5,400 is twice its intended capacity. Ninety-six percent of its students are black or Puerto Rican. Teachers are in short supply, and this problem is eased only slightly by the expedient of operating on a double or even triple session basis.

The school graduates fewer than 300 students each year—a dropout rate of about 70 percent over a 4-year period, which is in line with data available for all New York City high schools, where only about 50 percent of the blacks and Puerto Ricans who complete the first half of their junior year ever graduate (*10*). The average daily class attendance is about 50 percent, and the rate of academic failure is extremely high.

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Photographs supplied by Gerald Jacobson, Visual Health Laboratory, Department of Community Medicine, Mount Sinai School of Medicine.

Policy decisions. The first decision was to work with a single high school having a predominantly minority student body. It was our hope that working with one school would permit a concentration of resources in a manner that would benefit the school, as well as educate personnel of the medical school in the problems of secondary education.

The second decision was to exclude academically outstanding students from the program. The true abilities of many students are poorly reflected in their grades, and we believe that such students can derive much benefit from educational assistance outside of the school.

Because grades were considered an inadequate criterion for acceptance into SHOP and because the school's overcrowded condition precluded a reliable recommendation from school officials, the third policy decision was to use self-selection as the basis for admission. The initial requirement is only an expression of interest in the program by the student. The student is then interviewed by a SHOP counselor who is familiar with the school and by the SHOP director. Since the number of applicants always exceeds the number of available places in SHOP, the interview is decisive. The interviews are subjective, and a history of past or current drug use or an outstanding academic record are the only objective criteria for exclusion.

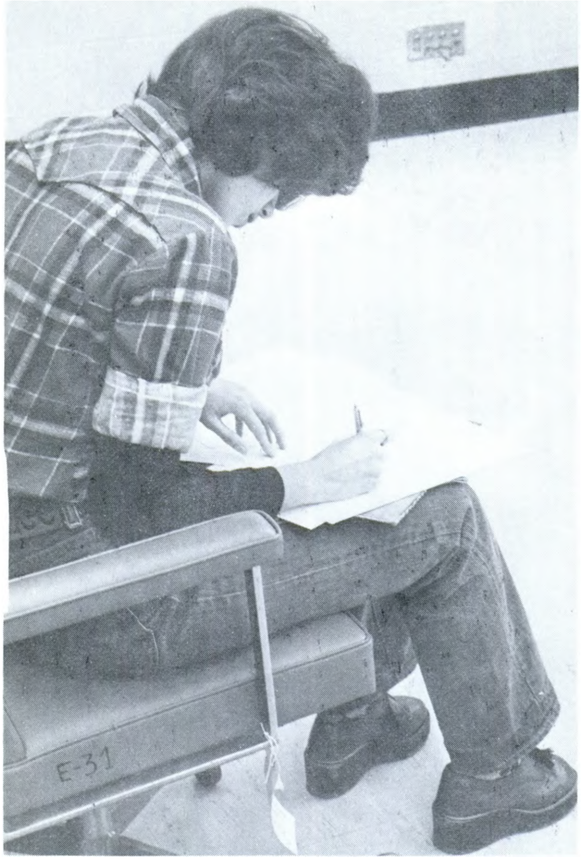
A fourth policy decision dictated that SHOP's obligation is to its students rather than to the "new careers" movement. The existing job market is the overriding consideration here. SHOP is not geared to provide health workers for the nation's ghettos.

The fifth decision was to always have 100 or more students in the program, in order to be influential in the large high school. A large student body necessitates a broad range of experience to appeal to differing interests. Thus SHOP has been persistently general rather than specific. It provides a "health smorgasbord" so that the individual student can consume whatever satisfies his interests and abilities.

Finally, it was decided that SHOP must be a year-round continuous program that provides academic credit for the student from the high school and that articulates with college. The need for a continuous program was apparent when the academic deficits of the students became known, and the desirability of academic credit is obvious. Fortunately, articulation is greatly simplified by the open admissions policy of the City University of New York, which guarantees admission to any graduate of a city high school regardless of grades or rank in class. This policy allows continuing academic enrichment or reinforcement, and thus it eases SHOP's task of interesting students in health careers and using this interest as a mechanism for getting students through high school.

Objectives of SHOP. The objectives of the program are implied in the preceding policies. They can be summed up as follows:

1. To develop the student's interest in health



and health careers and to use this interest as a motivational tool to help the student complete high school.

2. To provide whatever academic assistance and counseling the student may require to make his interest realistic, and to enable the student to realize his maximum level of achievement consistent with his interest and ability.

3. To develop a cooperative health-high school relationship through which the school can become an appropriate academic base for health careers and the school itself can be generally strengthened and improved.

Major Components of SHOP

The first component of the program is an academic counseling service. Its major objectives are to inform students of the requirements for graduation from high school, to assist students with plotting program strategy for graduation, and to develop a continual evaluation of academic achievement based on the student's day-to-day performance in his various classes. The counselor confers periodically with the teachers so that they can better understand the student and his problems.

A second component is a center for academic services, located in a remodeled abandoned tavern, to give the students a place to study and to meet. The center provides tutorial services, a study skills bank with programed learning materials, a student newsletter to improve communications skills, and a clearinghouse for information on health professions and college. It also houses a small reference library to assist students with the completion of term papers and other academic requirements.

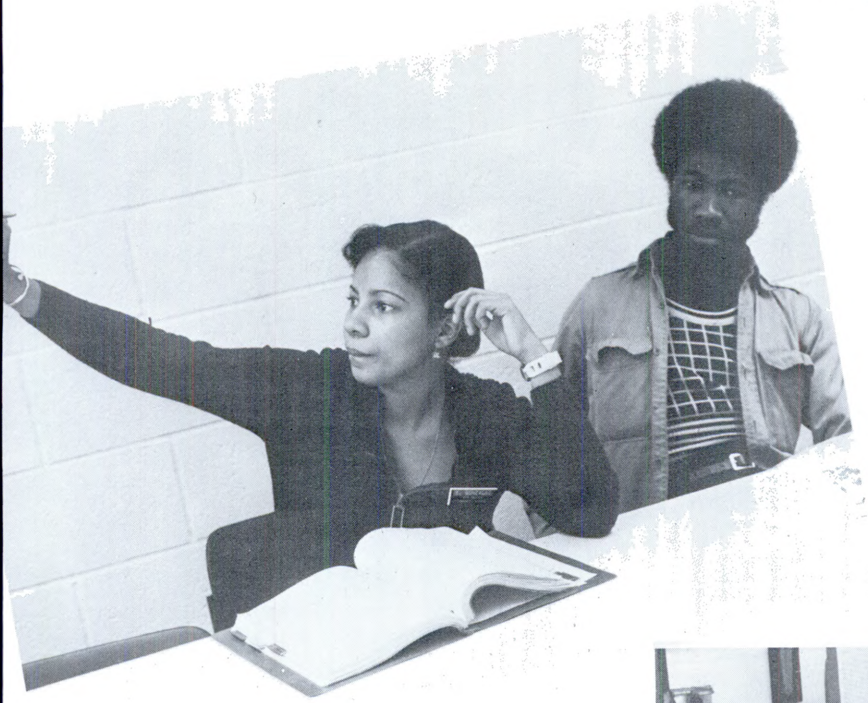
Recordkeeping is a third component of the program. Early in the program it became necessary for the staff to locate students' records, to correct these records to reflect the most recent work of the students, and to analyze the records in an effort to insure correct course programing. Additionally, the corrected record was essential for compilation of an accurate academic profile of each student. The work required for recordkeeping alone consumes an inordinate amount of staff time. Nevertheless, it is a necessary chore which permits the staff to become the student's advocate and to represent his interests when difficulties arise concerning the accuracy of a particular record.

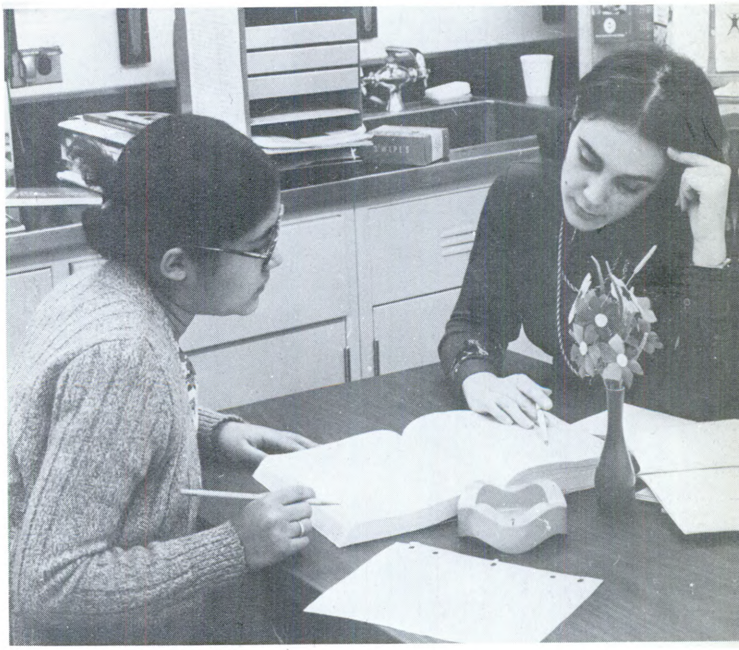
A prime role of SHOP is that of ombudsman for the student. This role is perhaps the most effective single aspect of the program, for the importance of an institutional backup for the student cannot be overemphasized. The concern for and intervention in student problems by an interested third party gives credence and security to members of the program and produces an esprit de corps that is noticed by other students in the school. As a result, despite the negligible amount of advertising concerning the program, applications far exceeding the program's capacity are regularly received from students in the target school as well as from other high schools in the city.

Placement of students in health-related experiences is a fourth major component of the program. A great deal of effort was expended by the staff to obtain interesting and educational placements in the Mount Sinai Hospital and the School of Medicine. Students are also placed in the community to work, for example, with a private medical group in Harlem or the East Harlem Health Center, a district office of the New York City Health Department. All students are evaluated periodically by their placement supervisors, and in turn the students evaluate their placements. The students' evaluations produce important information about the relevance of particular placements and feedback on the interest shown by supervisors and other personnel in sharing experiences and expertise.

The students are rotated through the placements. Placements are not jobs per se, nor are they intended for specific training. Rather, they are for exposure to the various aspects of the health field. The following are placements made from September 1970 to June 1972 (a total of 226 students were rotated through 179 placements at Mount Sinai).

Location	*Number placements*
Mount Sinai:	
Anatomy	2
Anesthesiology	7
Biochemistry	6
Biophysics Research Institute	2
Chemistry	4
Communications	9
Dental clinic	11
Dietary (food service)	9
Electrocardiography	3
Electroencephalography	1
Electron microscopy	1
Genetics	3
Inhalation therapy	8
Clinical microscopy	1
Nursing	41
Ophthalmology	5
Oral surgery	1
Orthopedics	9
Pathology	2
Pharmacy	2
Pharmacology	7
Radiology	25
Rehabilitation medicine	2
Sex education program	18
Other health facilities:	
Circle Medical Group	5
Lexington Family Center	12
New York City Health Department	29
New York Medical College	1
Special education projects:	
Health core curriculum	62
Communications workshop	9
English as a second language	5





College guidance and admission is a fifth component of the program. College catalogs and applications are available to the students, and assistance with completion of the college applications and applications for the scholastic aptitude test, with fee waiver, is offered at the skills center. A part-time college counselor is employed to help seniors and juniors in selecting the schools best suited to their interests and abilities. Information concerning scholarships is readily available, and in some instances students are taken to various college campuses or college admissions officers are invited to meet with SHOP students at the study skills center.

The sixth component consists of extensive and continuous testing of the students by the SHOP staff. Examinations, such as the Preliminary Scholastic Aptitude Test in reading and mathematics, are given to students entering their junior year. Students are also given the Metropolitan Achievement Tests, used by the New York City Board of Education, for reading levels and language art skills. The intent is to clearly define the strengths or weaknesses of each student in order to meet his academic needs effectively. As an adjunct to the program, a special summer program in reading and mathematics provides academic enrichment.

The seventh component of the program deals with personal counseling services for the students. Four counselors, one man full-time and three women part-time, are available for these services. Teachers, the placement coordinator, and the director also counsel students. The most common problems of the students deal with parent relationships, finances, peers, and sex. Often personal concerns lead to a new placement. For example, a special sex education program was developed for two junior high schools in the East Harlem area, and SHOP students were invited to participate in the program. The students chosen for this project worked with a physician from the Department of Obstetrics and Gynecology, five medical students from Mount Sinai, and two health education students from Hunter College. This group prepared a manual on sex education for teachers in junior high schools, which is scheduled for publication.

Sex education is not the only personal health concern of SHOP students. Indeed, each student is encouraged to be especially aware of his health. Periodic health examinations and followup are an integral part of the medical care provided for each student.

SHOP Staff

The shop staff and their duties are as follows:

The principal investigator has the primary responsibility for the program. In addition to general participation, he is the liaison between SHOP and the Mount Sinai Medical Center. He and the director are responsible for basic SHOP policy.

The director has overall responsibility for the operational aspects of SHOP. He is in charge of the development and educational aspects of the program and is directly responsible to the principal investigator. (The current director has 17 years of experience in teaching and educational administration.)

The placement coordinator is responsible for placing students in the hospital and other health-related areas. He supervises the rotation of students in placements and collects log reports of

student activities at placements. He also opens new areas of opportunities for work experience for students.

The career guidance counselor assists with counseling and interviewing students, maintains contact with teachers and parents of SHOP students, and assists with tutoring at the study skills center. He is also in charge of stipends from the Neighborhood Youth Corps, job time cards, and attendance records.

The nurse-health coordinator is responsible for college counseling and followup, assisting with the tutoring program at the study skills center, and coordinating curriculum development for SHOP. She also coordinates orientation at Mount Sinai and the medical technology course at the high school and assists with the development of the health curriculum.

The teachers are in charge of the tutorial program and educational services at the study skills center. They assist with the development of curriculum materials and services and have overall responsibility for records of SHOP students.

The tutor-counselors assist with the tutoring at the study skills center, assist with maintenance of records for the Neighborhood Youth Corps, and assist with the supervision of students at placements.

Health Core Curriculum

The major educational innovation of the program has been the development of the health core curriculum entitled "Health in Contemporary Society." This curriculum was developed through the cooperative efforts of faculty in the various departments of the Mount Sinai School of Medicine. It was field-tested during the summer of 1971 as part of a residential enrichment program for 65 SHOP students at Marist College in Poughkeepsie, N.Y.

The curriculum itself is a multidisciplined approach to the study of health and health care in contemporary communities. The aim of the curriculum as a whole is twofold: (*a*) to develop a health advocacy role for our students by exposing them to community health problems and how medical science is attempting to solve these problems (an introduction to the concepts of epidemiology and preventive medicine are regarded as necessary components of the study of health) and (*b*) to develop verbal reading and mathematics skills by using the broad subject of health as the vehicle for learning.

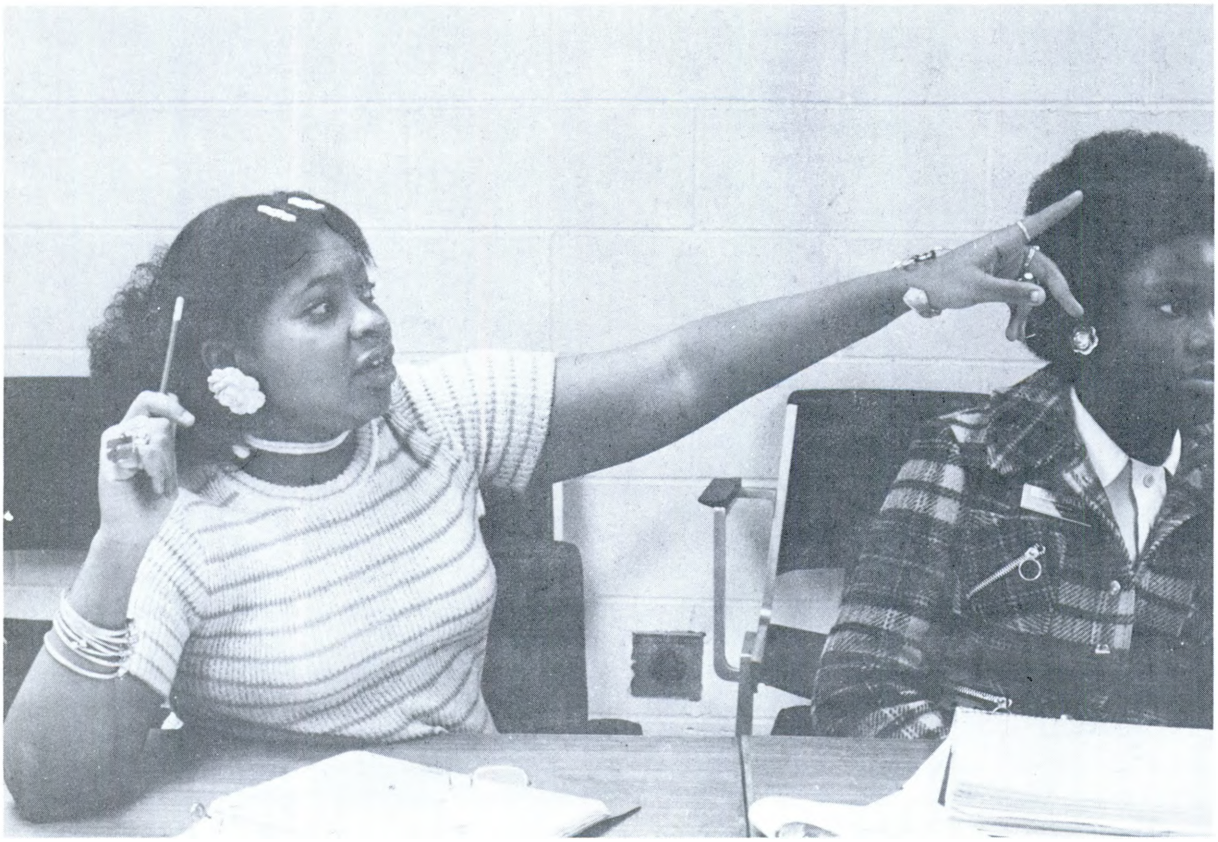
All students and staff participate in the core course. The course is organized around a team approach. The team consists of a medical specialist from the Mount Sinai School of Medicine, a nonphysician health resource person, and six secondary school teachers—trained in the various liberal arts—who coordinate academic-skill laboratory groups of 10 to 12 students each.

The first unit of the curriculum deals with the question, "What is health?" The students discuss the classification of diseases, giving examples of each and defining the differences between chronic and infectious diseases. Discussions on the crisis in health services include the matching of contemporary health needs with existing services, the critical shortages of medical personnel, and the rising costs of health care. Determinants of health such as genetics, nutrition, poverty, population pressure, and iatrogenic disease conclude the first unit.

Unit two covers maternal and infant care and includes pregnancy and prenatal care and problems such as erythroblastosis and rubella. Significant factors related to pregnancy, such as maternal age and socioeconomic status, are also studied. The second half of the unit deals with causes of infant mortality and the distinction between congenital and hereditary diseases.

Unit three investigates childhood and adolescent health care. Communicable diseases of children, such as mumps, measles, and chicken pox, are discussed in detail. Adolescent health care includes study of teenage problems—drugs, obesity, acne, and general physical and emotional development. Also included are mental health as it relates to adolescence and the responsibility of the community, school, and government in promoting and providing health care.

Unit four covers the medical problems of adults. Prevalent diseases, such as tuberculosis, cancer,



alcoholism, drug addiction, and heart disease, are explored.

In the fifth and final unit the preceding units are summarized, and the students are requested to propose what they think would be a comprehensive health care delivery system for east Harlem. Here the students use all their academic and artistic talents in proposing improvements and innovations in health practices in their community, based on their observations, their studies, and their experience in their placements.

The first group of students in the program suggested action covering many areas of health service, such as construction of a new hospital in south Bronx with certain design features that emphasize pediatric and emergency care. Much of their interest centered around pediatrics, adolescents, and emergency units, which are, of course, those areas of a hospital with which young people have the most contact. Constructive criticism of hospitals, health departments, school health programs, and various governmental agencies were covered in reports and position papers prepared by the students.

Discussion

Evaluation of the Student Health Opportunities Program will be the subject of later publications. After 2 years of operation, however, SHOP has been largely successful in meeting its principal objective of getting youngsters through high school. Dropouts from SHOP have averaged less than 5 percent during the 2 years, and none of the students have withdrawn from school. The percentage of academic courses failed by SHOP students has dropped steadily with continuing exposure to the program. All 20 SHOP seniors in the class of 1971 graduated from high school, and 18 went on to college with plans to pursue a health career.

The program is now entering its third year. The experiences gained in developing resources for health education have been tested and tried in an effort to prove the original objectives—to make health career goals realistic ones through educational and practice stimuli.

Our next step is to expand the idea in an effort to meet the needs and aspirations of even larger numbers of students. Formalized collaboration with the board of education and the Mount Sinai School of Medicine will, it is hoped, exert a significant impact on the educational system as well as on the health industry.

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Unsuccessful Medical School Applicants as a Potential Health Manpower Resource

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RECENT DECADES HAVE WITNESSED an enormous growth in the population's demand for medical services, with concomitant strain on the country's health manpower resources. It is now widely believed that available numbers of health personnel (both present and projected levels) are not sufficient to deliver an optimal level of health care (*1–4*). While studies often concentrate on physician supply and productivity (*5,6*), far greater shortages exist (and are anticipated) in other health occupations (*7,8*).

The wide range of health-related activities is illustrated by a Public Health Service publication (*9*) specifying about 125 health professions and occupations. Weiss (*10*) has described nine "job families," four directly concerned with patient care (mental health, nursing, medical, and dental care), and five outside direct care (technical and laboratory, administration and planning, data processing, environmental health, and health research).

The National Commission on Community Health Services' Task Force on Health Manpower

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(*8a*) has recommended that "Government at all levels, educational institutions, health agencies, and professional and occupational groups should undertake positive measures to recruit health personnel from special groups that have not been fully tapped." We believe that unsuccessful applicants to medical schools represent a highly relevant, but as yet relatively untapped, reservoir of potential health manpower.

The yearly acceptance rate of U.S. medical schools has remained fairly constant, at about 50 percent over the past 40 years (*11*). In 1966 (the year on which the present study is based), this rate meant that only 9,123 of the 18,250 persons who applied for admission were accepted (*12*). Subsequent acceptance rates fell to a low of 43 percent in 1969 and rose to only 46 percent in 1970. Thus, each year substantial numbers of persons cannot continue formal training toward their occupational goals, and most must then undergo another career decision process.

Additionally, medical school rejectees are unique in terms of important academic and psychosocial characteristics. While only 60 percent of the students who enter college graduate (*13*), almost all rejectees ultimately receive an undergraduate degree. Several large studies of college students planning careers in medicine also indicate that these persons are likely to rate high on various desirable indicators, such as academic performance (*14,15*) and "people-oriented" occupational values (*14*, *16*, *17*). Indeed, Goldhaber (*18*) argues that a combination of seven ideological, demographic, and social factors beyond the control of the rejectee (such as the baby boom, growth in numbers of paraprofessionals, or recruitment of more members of minority groups) accounts for what he feels is a rising rejection rate for increasingly more-qualified applicants.

Moreover, the rejectees had aspired to a highly specialized professional career in health care delivery and prepared for that future by making certain investments or "side-bets" (*19*), such as concentrating on the hard sciences and taking particular prerequisite college courses. For example, in 1966 approximately 47 percent of the applicants took an undergraduate major in the biological sciences, 18 percent in the physical sciences, chemistry, or mathematics, and 18 percent majored in premedical courses (*12*).

To date, there has been no cross-national, systematic study of the professional and personal experiences of unsuccessful medical school applicants. Such information should be helpful to a variety of groups in the following ways:

1. Health manpower planners and legislators would be able to estimate both the number of persons with particularly relevant undergraduate training who might be interested in a career in health care and the kinds of support and rewards necessary to motivate these persons to enter health-related areas.
2. Researchers in medical education could similarly estimate the amount and types of training that would have to be provided to prepare the rejectees for health work.
3. Premedical and other undergraduate advisers would learn the fates of those who had unsuccessfully applied to medical schools and might be able to offer them more useful career suggestions based on the applicants' reported interest in other health fields.
4. Unsuccessful applicants themselves might benefit from learning about alternative career paths taken by fellow rejectees.

Methods

Sample selection. To study career patterns and expectations, it was necessary to allow sufficient time to pass between medical school rejection and the present survey so that military service would have been completed or other occupational choices would have been made. However, the more distant the year of rejection, the lower the possibility of reaching the respondents. The investigators believed that sampling applicants to the entering class of 1966–67 represented the best compromise; it was assumed that most of these persons had taken the Medical College Admission Test (MCAT) in May or October of 1965.

Through the cooperation and assistance of the Association of American Medical Colleges (AAMC), the researchers obtained a list of persons who completed the MCAT in 1965, as well as a list of those who matriculated in the 1966–67 freshman medical school class. Removal of the names that were duplicated on both lists from the "matriculated" list resulted in a reasonably accurate sampling frame of unsuccessful applicants from which 164 men and 163 women were selected by stratified (on sex and geographic region) random procedures.

Data collection and sample description. In the spring of 1971, post cards were mailed to the 1965 addresses of the 327 prospective respondents informing them of the study and its purposes and requesting their assistance in completing the questionnaire that would follow. This technique was used to enhance the likelihood of respondent cooperation and, as a relatively inexpensive device, to obtain change-of-address information; it yielded 105 names of persons who no longer resided at the 1965 address, and for whom no forwarding address was available.

Questionnaires were mailed to the remaining 222 persons, and 152 replied—a response rate of 68.5 percent. Unfortunately, 27 respondents had never applied to medical school even though they had taken the MCAT, and another 27 respondents had been accepted by a U.S. medical school in 1966, representing possible computer error in the list-subtraction technique mentioned earlier. These 54 respondents were dropped from the study, leaving 98 questionnaires deemed usable for analysis. The final sample consisted of 57 men and 41 women.

Data from AAMC computer listings permitted comparisons between the 98 respondents studied and the 70 nonrespondents. These two groups did not differ significantly by age and sex distributions, by whether or not they had taken the MCAT before the sample year, or by MCAT performance. Similar comparisons of respondents' mean scores with those of all unaccepted applicants also indicated that the respondents were a fairly representative sample of all unaccepted applicants.

Results

College years. A majority of the male (58 percent) and of the female (78 percent) rejectees received bachelor's degrees in 1966. Most of these persons were either attending college or were recent graduates at the time of first application. The distribution of men and women in various college majors at the time of graduation was as follows:

College majors	*Men (N=57)*		*Women (N=41)*	
	Number	*Percent*	*Number*	*Percent*
Hard sciences	40	70.2	32	78.0
Health	2	3.5	1	2.4
Social sciences	6	10.5	3	7.3
Humanities	9	15.8	5	12.2

The hard sciences were the most frequently chosen fields. (Hard sciences include biology, chemistry, mathematics, physics, engineering, and premedical majors; health includes medical technology, pharmacy, and nursing; social sciences include sociology, psychology, and economics; and humanities include English, art, history, and philosophy.) About 43 percent of all the respondents gave "career plans" as the most important reason for selecting their majors, while another 44 percent of the women and 35 percent of the men stated "intellectual interest in that area."

The responses to a series of questions concerning college courses in the hard sciences were as follows:

Responses	*Men (N=57)*		*Women (N=41)*	
	Number	*Percent*	*Number*	*Percent*
Took many courses in	56	98.2	41	100.0
Would take further study now	24	42.1	16	39.0
Have knack for	26	45.6	22	53.7
Found area rough going academically	21	36.8	10	24.4
Teachers encouraged me to go on in	16	28.1	19	46.3
Liked them a lot	43	75.4	35	85.4

The data suggest that this group of respondents had channeled most of their energies into the hard sciences and that they perceived themselves as able to achieve some measure of success in these courses. In general, a greater proportion of women than of men indicated that they liked the hard sciences a lot, believed they had a knack for such courses, and did not find them difficult academically. Moreover, women were more often encouraged by instructors to go on in the hard sciences, although they are slightly less willing than men to pursue such study at present.

Some reasons for entering medicine. As shown in the following table, most of the unsuccessful applicants received some parental encouragement toward entering medical school, although such support was more often given to sons (67 percent) than to daughters (56 percent). When the rejectees were asked how important their getting a medical education was to their parents, men more often replied "fairly" or "very" important than did women. However, only 58 percent of the total sample chose these categories, suggesting little parental pressure and enthusiasm. More men than women stated that their parents would have offered financial assistance for attending medical school, and more men (40 percent) than women (25 percent) have relatives who are physicians. In addition, men were twice as likely as women (40 percent compared with 22 percent) to have relatives in other health occupations.

Influence categories	*Men*		*Women*	
	Number	*Percent*	*Number*	*Percent*
Both parents encouraged application to medical school	38	66.7	23	56.1
Parents felt that child's entering medical school was "fairly" or "very" important	35	61.5	21	52.5
Parents willing to financially support medical school education	47	82.5	24	58.6
Have relatives who are physicians	23	40.4	10	24.4
Have relatives in other health occupations	22	39.3	9	22.4
"Fairly" or "very" important reasons for wanting to enter medicine:				
Freedom from supervision	37	68.5	23	57.5
A high income	40	71.4	13	32.5
Parents' influence	18	32.2	9	22.5
Influence of relatives, friends	18	32.7	6	15.0
Prestige	42	76.4	17	44.7
Provide service	44	83.0	34	83.0
Opportunity to be helpful	50	90.9	36	90.0

From the reasons for wanting a career in medicine that were checked as "fairly" or "very" important, it is apparent that relatives and friends exerted a greater influence on male than on female rejectees. Men were more likely than women to be motivated by desires for freedom from supervision and for high income and prestige. The men and women were similar, however, in wanting a career that would enable them to provide service and to be helpful to people.

The rejection. Respondents were asked if they believed the rejection was fair or unfair; 29 percent of the men and 45 percent of the women said it was fair, while 28 percent of the women and 55 percent of the men believed it was unfair, as shown in the following table:

Perception of decision	*Men (N=55)*		*Women (N=40)*	
	Number	*Percent*	*Number*	*Percent*
Fair	16	29.1	18	45.0
Unfair	30	54.4	11	27.5
Do not know	9	16.4	11	27.5

Thus, women were significantly more likely to feel that their rejection was fair, and, based on these self-assessments, one might conclude that more women than men seemed to have anticipated being rejected.

New career choice. At the time of their medical school rejections, 34 percent of the respondents had definite plans for another occupation, and 48 percent had somewhat vague plans; only 18 percent had no plans for an alternative career. It is of interest that the making of definite plans for another career was found to be independent of attitudes concerning the rejection, such as being upset or perceiving the rejection as unfair. Thus, most persons in the sample had made some other plans for a career by the time of rejection, regardless of their expectations of being accepted.

Having made some alternate career plans was strongly related to having made concurrent applications to graduate schools and to medical schools. Approximately 85 percent of the sample applied to graduate school at some time; of these, about 98 percent were accepted and about 95 percent subsequently attended graduate school. There were no sizable differences in the percentages of men and women applying to or enrolling in graduate school. However, the following percentages of persons obtaining graduate degrees reveal that 74 percent of the men, but only 42 percent of the women, have (or expected to complete) a graduate degree. The data also indicate that 60 percent of all the rejectees went on to obtain advanced degrees.

Degree obtained	*Men (N=57)*		*Women (N=41)*	
	Number	*Percent*	*Number*	*Percent*
Bachelor's	15	26.3	24	58.5
Master's	11	19.3	10	24.4
Doctorate	31	54.4	7	17.1

Further analyses revealed that men who received graduate degrees differed from men who did not in that they had higher grades and higher scores on the MCATs. Although most family-related variables were not associated with attaining a graduate degree, mother's educational level and having a physician father were predictors of a post-baccalaureate degree, as shown in the following table. (Because the underlying distributions are not normal, and the measures are usually at the ordinal level, gamma—a nonparametric correlation coefficient—is used as the measure of association. All gammas reported are statistically significant at $P \leq .05$, unless noted as "ns"—"not significant.")

Characteristic	*Men (N=57)*	*Women (N=41)*
Had higher undergraduate grades	0.30	0.45
Had higher MCAT scores	.34	ns
Mother's education level	.44	.36
Father was a physician	.33	.38
Occupational values most important	.39	ns
People-oriented values	−.44	ns
Interest in science	−.58	ns
Had close friends who studied for doctorate degrees	.38	.41
Advice from parents following rejection	ns	.89
Marriage	ns	ns
Having children	ns	−.58

Men who completed graduate training were more likely to say that their occupational values, rather than their abilities, were important in their choice of a new career. Surprisingly, in terms of their reported reasons for choosing medicine, the men's people-oriented values were significantly lower than the women's, and they had little interest in science. Also, men who received advanced degrees tended to have friends who studied for doctorates.

For women, the relationship between high grades in college and later receiving a doctorate was significant, while the association between their average score on the MCAT and receiving a graduate degree was not. However, having a high score on the science portion of the MCAT was a strong predictor of a woman's studying for a graduate degree (G=.48).

As was the case for the men, most of the women's variables pertaining to family (including socioeconomic status) were not strongly associated with receiving a graduate degree. For women rejectees, however, obtaining advice from parents following the rejection was markedly associated with obtaining a graduate degree. Again, women as well as men were more likely to have obtained a graduate degree if they had friends who planned to receive graduate degrees. Marriage itself did not have an appreciable effect on attainment of advanced degrees, but having children was apparently a detriment to pursuing a higher degree.

The percentages of unsuccessful applicants who undertook training in various areas of graduate study were as follows:

Field of graduate study	*Men (N=57)*		*Women (N=41)*	
	Number	*Percent*	*Number*	*Percent*
Health	18	31.6	8	19.5
Hard sciences	21	36.8	15	36.6
Social sciences	1	1.7	3	7.3
Business or law	3	5.3	2	4.9
Humanities	5	8.8	2	4.9
Took no graduate studies	9	15.8	11	26.8

Most rejectees tended to continue study in the hard sciences (37 percent) or health (27 percent). Given their intellectual interest in the hard sciences in college and the amount of training received in this field, these rejectees may have considered graduate study in the sciences and health as building upon their educational investment. When asked for the most important reason for choosing their specific fields, 27 percent of the men and 20 percent of the women said their "college training" was the most significant factor. Similarly, 23 percent of the men and 15 percent of the women cited their abilities as being consistent wtih their choices.

Far fewer respondents felt that their values, chance, or advice from friends and parents or professors were determining factors in their choice (only 14 percent checked "college adviser" as most helpful). Although such advice was not given much weight, it is interesting that most men (75 percent) sought advice following rejection, while substantially fewer women (46 percent) did so.

Ultimate career paths. The career outcomes of this sample of rejectees are summarized in the following table. Forty-eight percent of the rejectees ultimately entered health-related occupations, and an additional 17 percent were working in the hard sciences. Twelve (12 percent) of the unsuccessful applicants successfully persisted in their desire to become physicians, either through U.S. or foreign medical schools, and an additional 7 (7 percent) entered dentistry—only 2 of these 19 were women.

Career path	*Men (N=57)*		*Women (N=41)*	
	Number	*Percent*	*Number*	*Percent*
Health	30	52.6	17	41.5
Physician	10	17.5	2	4.9
Dentist	7	12.3	0	0
Podiatrist	2	3.5	0	0
Optometrist	1	1.8	0	0
Pharmacist	5	8.8	0	0
Health educator	1	1.8	0	0
Sanitary engineer	1	1.8	0	0

Medical laboratory technician	1	1.8	14	34.1
Medical and science writer	0	0	1	2.4
Pharmacologist	2	3.5	0	0
Hard sciences	11	19.3	6	14.6
Biologist	8	14.0	3	7.3
Chemist	1	1.8	3	7.3
Engineer	2	3.5	0	0
Other	16	28.1	18	43.9
Teacher	1	1.8	12	29.3
Business or law	11	19.3	1	2.4
Social scientist	2	3.5	3	7.3
Artist	1	1.8	0	0
English professor	0	0	1	2.4
Miscellaneous	1	1.8	1	2.4

The greatest losses to the areas of health and the hard sciences were the large numbers of persons who had entered education, business, or law. A comparison of the preceding two tables reveals that most women who attended graduate school to study the hard sciences have left that area; many now appear in the "health" category, do not hold graduate degrees, and are working mostly as medical or other health technologists. Indeed, more than 80 percent of female rejectees who reported their career field as "health" (34 percent of the women in the sample) were laboratory technicians.

Of the men who began graduate school in the hard sciences, many also switched to careers in health. However, only 6 percent of the male rejectees who entered health careers hold no advanced degree.

The findings that most women rejectees did not continue with the hard sciences in graduate school and that many began careers as technicians and teachers, highlight the loss of women in areas where they, themselves, professed to have competence. Data presented earlier showed that women perceived themselves as doing well in the hard sciences, and they received encouragement to continue studies in that area.

Career decision making upon rejection. Several factors may combine to account for the decision by many rejectees to embark upon careers unrelated to health. Forty-eight percent of the study sample indicated that they had not even considered entering (or training for) another health occupation after learning of their rejection, and 63 percent reported that their undergraduate professors and advisers had not suggested any health-related career alternatives to them.

That the rejectees were not very knowledgeable about various careers in health is demonstrated in the following table. A majority of the rejectees indicated that they knew at least "a fair amount" about only 3 of 16 health-related occupations at the time of graduation from college. Women tended to be somewhat more knowledgeable than men concerning occupations which are frequently elected by women: medical technologist, dietitian, medical records librarian, medical social worker, and health educator.

Health-related occupation	*Percent who knew at least "a fair amount"*		
	Men (N=57)	*Women (N=41)*	*Total (N=98)*
Medical technologist	52.4	66.6	59.3
Pharmacist	53.5	53.8	53.7
Dietitian	19.0	30.8	24.6
Physical or occupational therapist	26.1	28.2	27.1
Audiologist	18.7	15.8	17.3
Optometrist	33.3	28.2	30.9
Medical records librarian	9.5	20.5	14.8
Clinical psychologist	33.3	31.6	32.5
Biomedical engineer	9.5	10.3	9.9
Hospital administrator	26.2	25.4	21.0
Medical social worker	10.0	15.4	12.7
Health educator	19.0	23.1	20.9
Medical statistician	9.5	10.3	9.8
Biochemist	52.4	56.4	54.4
Biophysicist	36.6	36.1	36.4
Medical social scientist	26.2	33.3	29.4

Possibilities for recruiting unsuccessful medical school applicants into other health-related occupations must depend partly on the degree to which characteristics of these occupations are similar to those considered by the rejectees to be important in choosing a new career. The following data indicate that these persons consider "opportunity for learning new things" as a most important job characteristic, followed by opportunity for "helping others" and for "exercising leadership." Also, men were more concerned than women with the occupation characteristics of "high income," "helping others," "high prestige," "becoming a success," and "doing practical work." Women tended more often to emphasize the characteristics "originality and creativity," "exercising leadership," "working with people," "contributing to science," and "learning new things."

Opportunity for—	*Percent choosing "fairly" or "very" important*		
	Men (N=57)	*Women (N=41)*	*Total (N=98)*
High income	70.5	61.5	63.3
Originality and creativity	74.1	84.6	74.3
Helping others	88.4	82.1	85.4
Exercising leadership	74.1	79.5	81.9
Working with people	68.8	71.8	70.3
High prestige	68.2	33.3	51.8
Contributing to science	65.9	71.8	68.6
Becoming a success	86.0	63.1	75.3
Doing practical work	72.1	63.1	67.9
Learning new things	90.9	97.4	94.0

Discussion

This study followed the academic and career paths of a cross-national sample of 98 students who were refused admission to the 1966–67 entering class in U.S. medical schools. Variables examined included the respondent's undergraduate major and reasons for its selection; influences of various sources in the decision to attempt a career in medicine; perceptions of the fairness of the rejection; and factors related to ultimate academic and career decisions and attainments. Important differences were found between male and female rejectees on most of these variables.

Fifty-two percent of this sample of unsuccessful applicants was lost to the health care field. All of them once wished to have a career in medicine, took substantial relevant training at the undergraduate level, and received bachelor's degrees. The finding that almost half of the rejectees did not even consider a different health career upon rejection, as well as their self-reported lack of knowledge about different health occupations and the lack of advice from professors and academic counselors concerning alternative health careers, suggests that the undergraduate guidance system is not fully aiding this ever-larger group of medical school rejectees. Information and advice on health-related occupations (for example, at the master's or doctoral level in various areas of public health) could be compiled and made relevant and available to premedical and other undergraduate advisers, with the hope of attracting more unsuccessful medical school applicants into manpower-short health fields.

One can only speculate upon the factors which may underlie the different career-choice behaviors of male and female rejectees. In general, women were more likely than men to report "having a knack for" and liking the hard sciences and were more often encouraged by their professors to enter hard science fields. Additional study data, not reported in this paper, reveal that women had significantly better undergraduate grade point averages, better grades in hard-science courses, and higher MCAT scores; however, they were far less likely than were men to take the MCAT again or to persist in reapplying to medical school.

Women were less likely than men to report parental encouragement or willingness to provide financial support and were far less interested in entering medicine in order to obtain a high income, freedom from supervision, and prestige. However, women were much more willing to view their medical school rejection as "fair," were more likely to leave graduate school without earning a graduate degree, and were more likely to ultimately enter careers with relatively lower educational requirements and prestige.

Perhaps many women left, or did not enter, graduate training in order to support husbands who, in turn, completed their own graduate education. Such a need would help to explain the high negative correlation for women between having children and receiving a graduate degree, as well as the tendency for women not to have graduate degrees and to accept employment at relatively low levels of the health care hierarchy.

Additional study data suggest, however, that sex differences in academic and career choices are probably more strongly influenced by differences in self-perceptions. For example, respondents were asked to rate themselves along each of seven bi-polar adjective dimensions. It is evident from the following table that while the women tended to perceive themselves as somewhat more humanistic and altruistic, they were far more likely than men to view themselves as relatively unscientific, unimportant, inferior, powerless, and anomic. These findings suggest that special efforts will have to be made to encourage female rejectees to undertake training toward needed occupational roles in the health and medical care system.

Adjective chosen	*Percent choosing adjective as self-descriptor*		
	Men (*N=57*)	*Women* (*N=41*)	*Total* (*N=98*)
Scientific (versus unscientific)	89.5	80.5	85.7
Important (versus unimportant)	84.2	73.1	81.7
Superior (versus inferior)	73.7	56.1	66.3
Powerful (versus powerless)	52.6	36.5	46.0
In-group (versus out-group)	48.2	39.0	43.3
Humanistic (versus materialistic)	57.9	68.3	62.2
Altruistic (versus egocentric)	43.9	53.7	48.0

A note of optimism comes from the rejectees' responses to a question concerning willingness to change their present career paths. While it is impossible to know how recruitable these persons might have been at the time of their rejection or college graduation, it is important to note that nearly 50 percent of the study respondents reported that if financial support were made available, they would be willing to leave their present careers to enter training toward a doctorate in a health-related field.

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BECKER, MARSHALL H. (Johns Hopkins University Schools of Medicine and Public Health), KATATSKY, MARILYNN E., and SEIDEL, HENRY M.: ***Unsuccessful medical school applicants as a potential health manpower resource. Health Services Reports, Vol. 89, March–April 1974, pp. 162–169.***

This study followed the academic and career paths of a cross-national, stratified sample of persons who were rejected by all the medical schools to which they applied. Ninety-eight rejectees completed a self-administered questionnaire which asked about the respondent's college major and abilities in the hard sciences; Medical College Admission Test (MCAT) and application patterns; influence of various sources on the decision to enter medicine; perceptions of the rejection; and factors related to subsequent academic and career decisions.

Most rejectees majored in premedicine or hard sciences. Women were more likely than men to believe that they "had a knack" for such courses, to achieve better grades, and to receive more encouragement from their instructors to work toward a career in the hard sciences. While women had relatively better undergraduate grades and MCAT scores, they tended to view their medical school rejections as "fair" and were less likely than their male counterparts to hold positive self-perceptions, to have received parental encouragement, and to have completed graduate training.

Fifty-two percent of the unsuccessful applicants ultimately entered occupations outside the health care field. Female rejectees tended to choose careers with lower educational requirements, and 82 percent of these women who entered the field of health became laboratory technicians. In general, respondents reported that they received little help in selecting alternative health careers from their college advisers at the time of rejection, and it is suggested that, with appropriate counseling, many qualified rejectees might be encouraged to undertake further training for health-related careers.

Knowledge and Attitudes of College Students About Venereal Disease and its Prevention

JOHN A. YACENDA, MPH

THE "VD SCENE" is changing dramatically. The large numbers of syphilis and gonorrhea cases are not the only concern. Gonococcal resistance to penicillin and other antibiotics is increasing; more men with asymptomatic gonorrhea are being identified; gonococcal pharyngitis is mounting; once relatively rare complications from untreated gonorrhea are being seen more frequently; and the incidence of congenital syphilis is on the upswing (*1*). Systemic gonorrhea is becoming more common; both symptomatic and asymptomatic rectal gonorrhea are appearing; and some strains of gonorrhea are showing increased resistance to antibiotics (*2*). "Reported epidemics of gonococcal ophthalmia neonatorum, case reports of gonococcal arthritis, and the increasing numbers of women with chronic pelvic inflammatory disease secondary to previous gonococcal infection" (*3*) also indicate the seriousness of the situation. And the focus of educational efforts directed at the venereal disease scene is also changing. More emphasis has been placed on prevention, although a 1972 report indicates that this aspect generally is still inadequately covered in educational materials (*4*).

The education given health professionals about venereal disease needs to be revamped so that they will find it easier to accommodate to the changing venereal disease scene. Still a new approach to this aspect of their education is not likely to prevent the occurrence of new cases of disease or lead to disease control. If, however, these professionals are prepared to participate in meaningful communication with students at the various educational levels and with other members of the community while sharing their newly

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acquired information, they may serve as catalysts in helping themselves and others to form the personal and societal attitudes that will be needed to make disease-free sexual activity a reality some day. A step in this direction would be the provision of practical information about condoms. People need to be informed about the use of these preventive devices and "the wise selection of partners" (*5*). Further, health professionals need to broaden their understanding of human sexuality and of the natural and wide variations in sexual lifestyles if educational communication is to remain meaningful.

The Survey

My study was designed to examine the knowledge and attitudes of college students about venereal disease and its prevention. I sought insights into ways to provide information about prevention that would be helpful for persons planning venereal disease educational programs. A questionnaire was therefore devised, pretested, evaluated, and reconstructed. It had five sections, designed to obtain information on the student's background, his or her knowledge of venereal disease and its prevention, the student's attitudes, and sexual activity. In the sections on background information and prevention information, the questions were multiple-choice, while in the attitudes section, the students were required to respond to statements that were measured by semantic differential scales. In the other two sections, the students filled in and checked appropriate boxes.

Study Sample

Under my direction, six psychology research students conducted the sampling at Ventura College, Ventura, Calif. Since a truly random sample of the college population could not be drawn because of administrative constraints, I decided to draw students from a wide variety of classes (in folk dance, in the agricultural, behavioral, and social sciences, in the hard sciences, in mathematics, in police science, in the political sciences, and in health and physical education courses). Arrangements were made with instructors of the classes to permit the six psychology research students to enter class sessions as they began and introduce the questionnaires without mentioning the subject of concern. The students in the classes were informed that completion of the questionnaires was voluntary, but that it would be appreciated if they would fill out the questionnaires as completely as possible. The questionnaires were then passed out; they were collected after completion (15-20 minutes later). Students who had already been given the questionnaire in another class were asked not to participate a second time.

Of the 322 questionnaires collected, 30 were rejected for grossly incomplete data; 292 questionnaires were available for general study (156 from men and 136 from women). On the basis of the information supplied by the students on the questionnaires, I grouped the students according to sex, educational level, sexual experience, and whether or not they had had a venereal disease; nonspecific vaginitis and nonspecific urethritis were included under the heading "venereal disease." The number in each of the groups varied depending on the completeness of the answers in the applicable sections of the questionnaire.

The background data supplied by the sample students indicated that they were fairly representative of the population under study. The majority were Anglos, with Mexican Americans, blacks, Asians, and American Indians also represented. Fairly similar proportions of the respondents anticipated completion of 2 years of college (27 percent), 4 years of college (39 percent), and graduate study (34 percent). They had a wide range of religious backgrounds. Seventy-one percent were 18 or 19 years old, 23 percent were 20-25, and the others were either over 26 or were 17.

Table 1. Respondents' knowledge of venereal disease, by sources of information and by sex

Sources of information	Men		Women	
	Knowledge [1]	Prevention [2]	Knowledge [1]	Prevention [2]
Schools plus group (high school and college classes).....	14.7	6.1	14.5	4.5
Diseased group (persons who have had venereal disease)....	14.5	5.4	14.3	4.2
Schools group (predominantly school classes)............	13.8	5.2	13.5	5.2
Self-learning group (TV, radio, reading materials)..........	13.5	5.3	13.0	4.3
Interpersonal group (predominantly friends and parents).	12.1	5.1	11.2	4.1

[1] Possible score of 21.0, based on mean number of questions correctly answered.

[2] Possible score of 9.0, based on mean number of questions correctly answered.

Results

Table 1 shows the respondents' knowledge of venereal disease, by sex and source of information, based on the mean numbers of correct answers on the questionnaire. The levels of knowledge of the general facts about venereal disease were consistently low. As I found in earlier studies (*6,7*), the better sources of information appeared to be schools and the communications media. This observation was especially true for respondents who reported their source of information as "schools plus" (that is, schools plus college). They scored the highest among all groupings. Nevertheless gaping holes in their knowledge about prevention of the venereal diseases were apparent for the respondents who gave schools and communications media as their sources of information. The same was true for students who gave other information sources.

Tables 2 and 3 were constructed to provide more details about the respondents' knowledge of specific aspects of venereal disease. They show the percentage of the respondents, by sex, choosing incorrect statements about venereal diseases as true and the percentage not choosing correct statements as true.

Of the five groups classified by source of information, the group that chose wrong answers most often was the one that obtained its information through interpersonal communication with friends and parents. There was no significant difference among the other four groups in the percentage of incorrect answers. The average number of incorrect answers chosen by men was 3.1 in respect to knowledge of venereal disease and 0.7 in respect to prevention; by women, 3.0 in respect to knowledge and 0.8 in respect to prevention.

Respondents were asked to rank five "helpful" methods of venereal disease prevention from a given list according to the way they felt about using the methods themselves (table 4). The men more often ranked selection of partners at the top of the list (51 percent), while the women more often put abstinence in first place (53 percent); both sexes put urination last (32 percent of the men and 61 percent of the women).

Table 5 shows male and female students' attitudes about venereal disease prevention in terms

Table 2. Incorrect statements about venereal disease with percentage of respondents choosing them as correct, by sex

Statements	Men	Women
1. The VD blood test is used to help identify syphilis and gonorrhea	45	32
2. The VD blood test will prove whether a person has VD or not	29	24
3. Persons who have recently acquired a venereal disease that has not been diagnosed or treated have persistent pains in their genital organs and pelvic region	31	21
4. Syphilis when untreated in its early stage may create a body rash and sores on several parts of the body 2 weeks after infection begins	54	21
5. Gonorrhea which remains untreated could seriously disable a person within a couple of years	42	23

of their agreement or disagreement with 11 statements about prevention, as depicted in the means from differential scales.

Analysis of the questionnaires also revealed the following attitudes:

1. Virgins, especially female ones, expressed an unwillingness to be vaccinated against venereal disease were a vaccine available (80 percent of the men, 84 percent of the women).

2. Persons who have had sexual intercourse (73 percent of the men, 60 percent of the women), as opposed to virgins (82 percent of the men, 82 percent of the women) think that they are more likely to get a venereal disease, are more accepting of it and of prevention, and would be much more willing to be vaccinated. The virgins think they are not likely to get venereal disease, are less accepting of it and of prevention, and are unwilling to be vaccinated.

3. Virgins, especially male ones, would not expect a condom to prevent disease, to be convenient to use, or to be sensitive tactually (89 percent of the men, 70 percent of the women).

4. As measures for prevention, virgins indicated a preference for abstinence rather consistently (62 percent of the men, 91 percent of the women), whereas sexually active respondents preferred to use selectivity in sexual partners and condoms (85 percent of the men, 74 percent of the women).

5. In responses to open-ended questions, a substantial number of respondents indicated that there was a need for periodic testing of the sexually active to prevent spread of venereal disease (44 percent of the men, 53 percent of the women).

Table 3. Correct statements about venereal disease with percentage of male and female respondents not choosing them as correct

Statements	Men	Women
1. The VD blood test is used to help identify only syphilis	83	48
2. The VD blood test cannot be relied on to be correct each time	83	58
3. Syphilis can be passed or caught during sexual, oral, or anal intercourse, close physical contact, and by kissing under certain circumstances	29	30
4. Gonorrhea is usually caught or passed during sexual and anal intercourse	38	22
5. Venereal diseases are treated usually with penicillin injected into the hips	63	40
6. Syphilis when untreated in its early stage may create an open sore at the place the organisms entered the body 10–90 days after infection begins	42	27
7. Once the first signs of syphilis or gonorrhea have gone away and the person has not been treated, the organisms causing these diseases may be "silently" damaging the body	33	21
8. Syphilis which remains untreated has generally different sets of symptoms that come and go at different times within the first 2 years of infection	69	43
9. Gonorrhea when untreated and in its very early stage is usually not noticed by women	44	15
10. Gonorrhea when untreated, and in its very early stage is usually noticed in males by a pus-like discharge from the end of the penis	38	24
11. Gonorrhea which remains untreated may cause no serious problems whatsoever	96	62
12. Venereal diseases can be prevented by using certain methods	37	29
13. Venereal diseases are sometimes prevented when males wear a rubber during intercourse	35	31
14. Helpful and safe methods to use for preventing venereal diseases: *for syphilis*—washing of the genitals (possibly the body) with warm water and soap immediately following intercourse or close physical contact (mainly for males); *for gonorrhea*—urinating immediately (as soon as possible) after intercourse (helpful for males, rarely for females)	70	51

Discussion

Just as a person's attitudes and behavioral patterns contribute to his or her misuse or rejection of contraception (*8*), the misuse and rejection of methods for prevention of venereal disease may arise from a person's denial of the possibility of infection, of the effectiveness of preventive methods, or of his or her personal responsibility for prevention.

Conflicts about love, sex, and venereal disease, doubts as to whether or not such disease is something even to worry about preventing, feelings of guilt about premeditated sexual activity or about any sexual activity, the use of sex or venereal disease to get attention, and all the myriad reasons for sexual expression affect the use or misuse of methods for venereal disease prevention. Whether or not people can be better oriented to prevention in the future depends on many factors; one seemingly important one is their sexual lifestyles. The openness and ease with which people experience their sexuality greatly influence their attitudes toward venereal disease prevention and, for example, the purchase of condoms. Even if people move in the direction of greater acceptance of their sexuality, the social context of the purchase of the condom requires urgent attention. One man pointed out his dilemma this way: "Admittedly, it is still embarrassing for me at age 31 to buy condoms at a drugstore where very often there is a mixed crowd waiting behind me, or where the cashier is a middle-aged women with a readily called-on dirty look" (*9*). And despite the good intentions of health professionals, some people have a fear of "being hassled" by pharmacists and others (*10*).

In venereal disease prevention, Porter has observed that "Knowledge alone is not sufficient . . ." (*11*). Goldsmith and his co-workers concluded that "An attitude accepting one's own sexuality is a more important correlate with contraceptive use [which is in many respects similar to venereal disease prevention] than such other factors as exposure to sex education, knowledge of sex and contraception or religious background" (*10*). There are, however, misconceptions that need to be countered and divergent attitudes to be acknowledged when education programs are being planned. As one respondent put it, and the point was echoed by others, "By using a rubber (or asking a guy to use one), you're implying there's something wrong with the other person, that maybe they're dirty." Perhaps these statements reflect the myth that only dirty people get venereal disease.

Table 4. Respondents' preference for venereal disease prevention methods as shown by their ranking of five helpful but not absolute methods

Prevention methods	Mean value of preferences (1-5) [1]	Percentage specifying this rank
Ranking by men [1]		
1. Selection of partners	1.7	51
2. Condom	2.6	36
3. Washing	3.0	29
4. Abstinence	3.4	36
5. Urination	3.8	32
Ranking by women [1]		
1. Abstinence	2.0	53
2. Selection	2.2	40
3. Condom	2.7	39
4. Washing	3.0	47
5. Urination	4.0	61

[1] The number 1 is the highest preference, 5 the lowest.

NOTE: Prevention methods were explained in survey questions.

A venereal disease prevention message may have to be changed to deal with varying attitudes. Fears related to buying condoms, expectations that condoms will not be tactually sensitive, and ambivalence about introducing a condom into a relationship can be approached in a frank and factual one-to-one relationship or in small group settings. These are vital areas of concern in presenting the message about condoms since these devices relate so directly to the sexual behavior and emotions of people who are contemplating actions to prevent the contraction or transmission of disease.

Although there is some opposition to using condoms, evidence indicates that young men will use them when they are free and easily accessible (*12*). Darrow, in reporting on their use, says that men prefer lubricated to nonlubricated brands (*13*). Sixty-three percent of the male respondents in my study favored the use of condoms if they were available at no cost, while only 39 percent of the female respondents expressed enthusiasm at this prospect. Both sexes, however, had favorable attitudes about the importance and usefulness of disease prevention methods.

The attitudes and preferences of the men and women in this study, as revealed by their ressponses to the questionnaire (see Results section and tables 4 and 5), reflect what has been called the sexism in our society. It is becoming trite to say that men and women are encouraged to form different sexual attitudes and behavioral patterns based entirely on their biological sex. The issue of sexism is complex. It is important, however, that health professionals, when devising educational programs, acknowledge their own sexist bias and that of their target populations. I believe that we should try to eradicate rather than encourage

Table 5. Attitudes of respondents toward venereal disease prevention as revealed in their reactions to statements about venereal disease

Statements	Means of attitudes [1]	
	Men	Women
1. It is very hard to tell when a rubber is being used during intercourse	3.9	4.7
2. Prevention methods are time consuming and bothersome	4.2	5.4
3. I expect to contract a venereal disease this year	5.4	5.9
4. I would be very worried if I contracted a venereal disease this year	2.5	2.3
5. VD prevention methods are not realistic	4.8	5.7
I don't think they'll work	4.9	5.3
6. Rubbers are too expensive to use or ask someone to buy	4.4	5.3
7. I would use, or have used, rubbers if they were available at no cost	2.1	3.9
8 Rubbers are not very sensitive and this is why I don't like them during intercourse	2.9	2.4
9. Rubbers can be purchased easily with little embarrassment at the drug store.	2.7	2.4
10. Rubbers should be carried in wallets and purses as a disease preventer	2.6	3.1
11. If there were a vaccine for all venereal diseases, I would get it immediately	2.2	2.1

[1] The attitude range was 1–6, with 1 indicating strong agreement and 6 strong disagreement.

or perpetuate the sexism that affects venereal disease education programs, because sexism seems to be a deterrent to effective preventive action.

Extensive examination of the gaps in knowledge about venereal disease and its eradication revealed in my study and in previous work (*5–7, 14, 15*) suggests that a key factor is the subject matter in question and the attitudes and value orientation of the "information givers." The personal and societal attitudes of the persons supplying the information about sexuality and venereal disease sometimes hinder free-flowing discussion. As a result, the amount of information that the target of the information internalizes and retains is often small. Although people usually engage in freer discussions with their peers and many of the respondents listed their friends as the sources of their venereal disease information, polarized attitudes often characterize peer group discussions of this subject. Many of the peers may well express the attitude that venereal disease is "no big deal;" others may not want to be identified with it (do not want to talk about the possibility of contracting it, let alone have to be tested for it or take measures to prevent it). Thus the information-givers need to provide opportunities for the information recipients to share and exchange their knowledge—even their misconceptions—with others in an atmosphere in which misconceptions can be knowledgeably and postively corrected. To foster such an atmosphere, the information-giver needs not only adequate information but the ability to communicate factually and openly without pronouncing judgment.

A single venereal disease education session or a series of sessions in junior high school, high school, or college or at a clinic or the reading of a pamphlet is not an adequate way for a person to become informed about venereal disease. As the scores of the respondents in this survey (based on their venereal disease knowledge) indicate, people seem to retain and comprehend better the facts about venereal disease when their education about it has come in "waves" over an extended period—with each wave at a more sophisticated level than the previous one. The secret of successful venereal disease education, I believe, lies in effective time structuring and in the prevention of "learned" misconceptions.

Results of my survey indicating that the persons who had had a venereal disease knew little, if any, more about venereal disease prevention than virgins suggest that education about prevention in public clinics is inadequate. Even though tight schedules limit the time that the clinic staff can spend with a patient, something in the line of prevention could be done for each person. That "something" might be only a customized "with it" pamphlet on prevention with an attached package of condoms or a discussion with a trained nonmedical person.

Conclusions

Schools, especially when providing followup information at various grade levels, along with books, pamphlets, radio, television, newspapers, magazines, and other agents for self-learning about venereal disease, appear to have been the best sources of venereal disease information for respondents in this study.

Respondents who had had a venereal disease understood what causes venereal disease, that infectiousness can last longer than apparent symptoms, that a disease can be caught over and over, and that venereal disease can cause serious damage. They were confused, however, about the specific late effects or complications.

Female respondents were more aware than male respondents of the existence of asymptomatic infections and the effects of venereal disease on pregnancy and birth. Respondents did not understand the broad symptomatology of syphilis and gonorrhea, their diagnosis and treatment, contraction and transmission, the dynamics of their progression, or prevention. In terms of sexual experience, current sexual activity, knowledge of venereal disease, sex group, and whether or not they had ever had had a venereal disease, nonspecific urethritis, or vaginitis, the respondents had divergent attitudes about prevention, and their choice of preventive methods also varied.

How generalizable the data from my survey are is not clear. The following implications of the survey would, however, seem to have widespread application.

1. Venereal disease education should incorporate the latest thinking on prevention (especially in respect to the use, cost, and tactual sensitivity afforded by various condoms). Diagnostic and treatment facilities need to be convenient for the target population to reach. Printed information should be readable and word games avoided (*16*).

2. Venereal disease clinics need to provide information covering the specifics of prevention and assist clients in its practice, for example, by distribution of condoms.

3. More exploration of men's and women's responsibilities in sexual relationships seems needed. Examples of this approach might include discussions of each person's emotional commitment, each person's separateness or share in pregnancy and birth, and the responsibilities of each for the prevention of disease and pregnancy.

4. Prevention programs have a greater likelihood of success if they provide young people with opportunities for discussion focusing on the relationship between different sexual lifestyles and the feasibility of different prevention alternatives. Learning opportunities to facilitate people's acceptance and understanding of their own sexuality not only seem long overdue, but would complement such efforts.

5. The staffs of public health clinics and other facilities for young people should encourage the sexually active to get periodic checks for syphilis and gonorrhea. The staffs should not make clients feel that they have needlessly bothered them if such periodic checks reveal no infection.

6. Free distribution of condoms may be feasible. Information on their proper use, availability, variety, and cost should be distributed at the same time.

7. Pharmacists and others engaged in the sale of condoms will aid their customers if they exhibit supportive attitudes and provide them with meaningful information about venereal disease and local facilities for treatment.

To realistically understand today's venereal disease scene, we need to move in different directions than we have in the past and to engage in further behavioral study.

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Tuberculosis Casefinding Among Aliens Who Entered New York City in 1971

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WITH THE SUSTAINED DECLINE in new active cases of tuberculosis in the United States, it is probable that a greater percentage of persons with newly diagnosed cases may have been infected abroad where the active case rates are much higher than they are here. In an effort to control the influx of such persons, the Public Health Service's Foreign Quarantine Service requires applicants for visas to emigrate to the United States to undergo a medical evaluation that includes a chest roentgenogram (*1,2*).

Based on the results of their medical evaluations, aliens admitted to the United States with established or suspected tuberculosis are classified as either class A—having established or suspected active tuberculosis, or class B—having inactive tuberculosis. As of 1970, immigrants with a class A condition are required by the Federal Government to present themselves to the local health department for followup when they arrive at their intended residence, whereas those with a class B condition are requested to do so.

To determine the effect of these aliens on the tuberculosis incidence in New York City, data were reviewed on all who were federally referred for followup in 1971 (table 1). The majority, 61.9 percent, came from Asian countries (50 percent from Hong Kong), and 21 percent came from South America. The Federal program in New York City referred 738 immigrants; 199 or 27 percent were designated as class A and 539 or 73 percent as class B. Additionally, the Center for Disease Control in Atlanta, Ga., referred 61 immigrants after their roentgenograms were evaluated and designated as class A.

Followup was completed (satisfactory disposition obtained) for 77.1 percent of the 799 federally referred patients, and 22.9 percent were lost to followup. More class A patients received satisfactory followup (83.8 percent) than did class B patients (73.8 percent), a reflection of the priority placed on the outcome of class A patients. Of all the federally referred patients, 86 percent were followed up at facilities of the New York City Health Department, and 14 percent were seen by private physicians.

The diagnoses for 218 class A patients and 398 class B patients for whom followup was completed are shown in table 2. A total of 18 new active cases were found. Of the class A patients, 12 had active pulmonary tuberculosis and 1 had active nonpulmonary tuberculosis. Of the class B patients, 3 had active pulmonary tuberculosis and 2 had active nonpulmonary tuberculosis. In both classes of patients, all those whose tuberculosis activity was undetermined were subsequently found to have inactive tuberculosis. The 18 new active cases represented 0.8 percent of the 2,572 new active cases reported in New York City in 1971.

Thus, Federal referrals resulted in the detection of a few persons with active disease and in the introduction of some persons with inactive disease to the medical care system. There are indications, however, that other persons with tuberculosis are not being detected when they enter the United States.

During 1971, approximately 370,000 aliens legally entered the United States, and 71,347 of these stated that they intended to live in New York City, according to personal communications from the Immunization and Naturalization Service in Washington, D.C., and New York City. It has been suggested, however, that the number of illegal aliens greatly exceeds that of legal ones. Persons entering on a visitor's visa and then not leaving

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the country may account for more new foreign-born residents in New York City each year than the number of legal entrants. Additionally, many people are issued visitors' visas that are valid for varying lengths of time, and there are other temporary residents who are not required to have medical examinations. Thus, the small federally referred group with abnormal chest roentgenograms came from this entire pool of aliens. Other patients with newly diagnosed active cases of

Table 1. Number of aliens referred by Federal screening program for tuberculosis followup, by country of origin and disease classification, New York City, 1971

Country	Total number	Total class A	Followup, class A				Total class B	Followup, class B			
			Completed		Not completed			Completed		Not completed	
			Number	Percent	Number	Percent		Number	Percent	Number	Percent
Hong Kong	172	17	16	94.1	1	5.9	155	122	78.7	33	21.3
Philippines	69	3	3	100.0	0	0	66	46	69.7	20	30.3
Haiti	57	3	1	33.3	2	66.7	54	32	59.3	22	40.7
Italy	49	6	6	100.0	0	0	43	24	55.8	19	44.2
Korea	44	1	1	100.0	0	0	43	32	74.4	11	25.6
Taiwan	21	0	0	0	0	0	21	17	81.0	4	19.0
Santo Domingo	19	9	9	100.0	0	0	10	6	60.0	4	40.0
Jamaica	18	0	0	0	0	0	18	13	72.2	5	27.8
Ecuador	17	0	0	0	0	0	17	11	64.7	6	35.3
Japan	13	0	0	0	0	0	13	11	84.6	2	15.4
Greece	11	2	2	100.0	0	0	9	8	88.9	1	11.1
Canada	8	0	0	0	0	0	8	7	87.5	1	12.5
India	5	0	0	0	0	0	5	4	80.0	1	20.0
England	4	0	0	0	0	0	4	2	50.0	2	50.0
France	4	0	0	0	0	0	4	3	75.0	1	25.0
Spain	4	4	4	100.0	0	0	0	0	0	0	0
Austria	3	0	0	0	0	0	3	2	66.7	1	33.3
Lebanon	3	0	0	0	0	0	3	3	100.0	0	0
Bahamas	2	0	0	0	0	0	2	2	100.0	0	0
Malaysia	2	0	0	0	0	0	2	2	100.0	0	0
Mexico	2	0	0	0	0	0	2	2	100.0	0	0
Portugal	2	1	0	0	1	100.0	1	1	100.0	0	0
Thailand	2	0	0	0	0	0	2	2	100.0	0	0
Trinidad	2	0	0	0	0	0	2	1	50.0	1	50.0
Argentina	1	0	0	0	0	0	1	1	100.0	0	0
Germany	1	0	0	0	0	0	1	1	100.0	0	0
Indonesia	1	0	0	0	0	0	1	1	100.0	0	0
Israel	1	0	0	0	0	0	1	0	0	1	100.0
Netherlands	1	0	0	0	0	0	1	1	100.0	0	0
Poland	1	0	0	0	0	0	1	1	100.0	0	0
Unknown	260	214	176	82.2	38	17.8	46	40	87.0	6	13.0
Total	[1]799	[1]260	[2]218	83.8	[3]42	16.2	539	398	73.8	141	26.2

[1] Includes 61 referred from the Center for Disease Control. [2] Includes 30 referred from the Center. [3] Includes 31 referred from the Center.

NOTE: Class A, having established or suspected active tuberculosis; class B, having inactive tuberculosis.

Table 2. Diagnoses for class A and class B tuberculosis patients federally referred for followup and for whom followup was completed, New York City, 1971

Diagnosis	Class A		Class B	
	Number	Percent of total	Number	Percent of total
Active pulmonary tuberculosis	12	5.5	3	0.8
Inactive pulmonary tuberculosis	142	65.1	349	87.7
Pulmonary tuberculosis activity undetermined[1]	39	17.9	12	3.0
Active nonpulmonary tuberculosis	1	.5	2	.5
Nontuberculosis abnormality	9	4.1	10	2.5
No abnormality	13	6.0	22	5.5
No diagnosis given	2	.9	0	0
Total	218	100.0	398	100.0

[1] Final diagnosis was inactive pulmonary tuberculosis.

tuberculosis come to the attention of the New York City Health Department because they have symptoms and seek treatment or they are detected through local skin testing or other screening programs.

Study Method

To determine the number of persons with tuberculosis in New York City in addition to those federally referred, a retrospective study was made by using a 50 percent sample of the 2,572 patients with newly reported active cases of tuberculosis in 1971. The 2,572 patients were stratified by residence in the health districts in New York City. A systematic sample within each stratum was drawn by a proportional sampling mechanism to identify the 1,300 persons in the study. Information from their chest clinic records was studied and then broken down into place of birth and length of time in the United States.

Results

The United States was the birthplace of 663 or 51 percent of the 1,300 persons. The birthplace of 439 or 33.8 percent was unknown, and 198 or 15.2 percent were born outside the continental United States and Puerto Rico. Of the 198 persons, 51 had lived in the United States more than 20 years, 35 between 6 and 20 years, 59 between 1 and 5 years, and 38 less than 1 year before they came for treatment of their tuberculosis.

The preceding figures are obviously minimal, based only on information from patients with a place of birth noted on their records. Since 33.8 percent of the records showed birthplace unknown, some persons born abroad were necessarily not considered in the tally. It would seem, therefore, that some persons in this group would be among the federally referred if they were legal immigrants. However, among the 38 patients who lived in the United States less than 1 year, only 4 were federally referred for followup. It can be assumed that the other federally referred patients were among those unsampled, or the 33.8 percent whose birthplace was unknown. Some of this discrepancy may be accounted for by the sampling mechanism.

These results are interesting and disturbing. They show that in New York City, based on the 50 percent sample, we could expect that at least 76 persons with new active cases of tuberculosis had been in the United States less than 1 year. The Federal referrals were responsible for identifying only 18 (24 percent) of these 76 active cases. The remaining active cases must have been in illegal entrants, temporary visa holders, or visitors, as well as persons missed by the Federal screening program.

Discussion

Apparently a number of immigrants with tuberculosis enter the United States without being screened by the Federal program. Many temporary visa holders and illegal immigrants do not enter the program. As for legal immigrants, it is known that in the past some have purchased normal chest roentgenograms. It is also possible that some roentgenogram evaluations are erroneous or that small lesions are missed. However, in a recent personal communication, Dr. Vernon N. Houk, deputy chief of the Tuberculosis Branch of the Center for Disease Control, stated that the Center has been constantly reviewing the problem of purchased roentgenograms for the past several years and has found that its frequency is miniscule. He also reported that the Center monitors the quality of the X-rays done abroad and is satisfied that the quality is as good as in most parts of the United States.

Since the number of federally screened aliens is estimated to be only 24 percent of the immigrants with new active tuberculosis who have been in the United States less than 1 year, it might be productive to seek tuberculosis among those not being screened by the Federal program. It is almost impossible to ascertain whether some aliens are legal permanent residents, illegal entrants, or temporary visa holders because they are reluctant to volunteer this information. Therefore, we suggest that the health department might use ethnic community groups, community centers, and neighborhood health centers for a tuberculosis screening program for immigrants.

Mass screening programs for tuberculosis have fallen out of favor with the decline of the disease. However, screening of certain high-risk groups is recognized as an important method in tuberculosis control. New arrivals to the United States could benefit by such a directed approach.

REFERENCES

(*1*) Amendments to medical provisions of immigration laws. Circular No. 137, Dec. 21, 1965. Center for Disease Control, Atlanta, Ga.

(*2*) Amended list of dangerous contagious diseases: New procedures for administering class A or B aliens with tuberculosis or leprosy. Circular No. 163, Sept. 18, 1970. Center for Disease Control, Atlanta, Ga.

Census Enumeration of the Mentally Ill and the Mentally Retarded in the Nineteenth Century

KURT GORWITZ, ScD

Enumerations of the mentally ill and mentally retarded were included in the six U.S. censuses conducted between 1840 and 1890. Inclusion of these categories reflected the new concern for the mentally ill and mentally retarded that was emerging at that time as part of a new social consciousness. Dr. Gorwitz analyzes these census results, considers the limitations of the data, and discusses the factors that led to discontinuation of the enumerations of the two groups after the 1890 census.

CENSUS PROGRAMS to count the number of mentally ill and mentally retarded grew out of the provision of Section 2, Article 1, of the U.S. Constitution which states that "The actual [census] enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct." The underlying purpose of this enumeration was to provide the population figures necessary for the decennial apportionment of the U.S. House of Representatives. On the basis of this provision, a U.S. census has been conducted at least once during every 10-year-period.

Historical Background

Until 1850 the U.S. censuses were conducted under the direction of the Secretary of State. In that year they were transferred to the newly established Department of the Interior, where a permanent census bureau was created in 1880. Before that a temporary bureau had been established for each census, which would conduct the enumeration, make the necessary tabulations, submit a printed report, and then disband. In these early censuses the published data were summaries of tabulations submitted by local U.S. marshals, who served as enumerators. Printed instructions for the marshals' use were not provided until 1850. The Census Bureau has been part of the Department of Commerce (Commerce and Labor until 1913) since 1903.

From 1790 until 1820 the data collected were mainly designed to measure such basic population characteristics as age, race, sex, and place of residence. In 1830, for the first time, efforts were made to expand these data by measuring the fre-

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quency of some physical disabilities in the population, and the U.S. marshals were asked to count the number of persons blind and deaf. In 1840 a category called "insane and idiotic" was added, and these persons were divided into those under "public or private charge." No effort was made to separate the insane from the retarded, and no definitions of these terms (or of the terms "blind" and "deaf") were provided for the enumerators. Each U.S. marshal, in effect, was free to include or exclude as he saw fit. It is therefore not surprising that in 1843 the recently established American Statistical Association sent an official protest to the U.S. House of Representatives which stated that "The most glaring and remarkable errors are found in the statements respecting nosology, prevalence of insanity, blindness, deafness and dumbness, among the people of this nation. . . . In many towns, all the colored population are stated to be insane; in very many others, two-thirds, one-third, one-fourth or one-tenth of this ill-starred race are reported to be thus afflicted. . . . The errors of the census are as certain, in regard to insanity among the whites, as among the colored population" (*1*).

There is no evidence of remedial actions resulting from the protest, and Federal efforts to enumerate the insane and the retarded continued uninterrupted until the 1890 census. Beginning in 1850 separate tabulations were made in respect to insanity and retardation. Also the division into "private or public charge" was eliminated. Definitions were not supplied until 1870, when the printed schedule provided the enumerators stated: "Only undoubted insanity is intended in this inquiry. The fact of idiocy will be better determined by the common consent of the neighborhood than by attempting to supply any scientific measure to the weakness of the mind or will" (*2*).

An official, permanent census bureau was established preceding the 1880 census. At that time a determined effort was made to make the enumeration of the insane and retarded as complete as possible. For this purpose Frederick Howard Wines, a distinguished statistician who had devoted a lifetime to the social welfare field, was appointed a special agent of the Census Bureau to head the section dealing with the defective, dependent, and delinquent classes. In his native Illinois he served as secretary of the Board of State Commissioners of Public Charities from 1869 to 1899. In this capacity he was responsible for construction of the first cottage-type psychiatric hospital in the United States (the Eastern State Hospital for the Insane at Kankakee—1877). He also drafted the Illinois Lunacy Law, which served as a model for similar legislation by many other States.

As stated in the census report, the method of enumeration in 1880 was as follows (*3a*):

> . . . first, that the basis of the present investigation was a list of institutions throughout the United States, prepared with great care in advance of the actual taking of the census, so that it is demonstrable that few, if any, of the important charitable and correctional institutions of the country failed to be accurately reported. Second, a system of special schedules was devised, one for each separate class; and every enumerator was required not merely to enter upon the general population schedule the name of every defective person enumerated by him, but also to transfer the name of every such person to its appropriate special schedule and upon the schedule to answer certain definite questions, applicable to him as a member of the class to which he was supposed to belong. For this extra service the enumerator was offered additional compensation; and it was impressed upon him that he should exert himself to find these defective persons, and make a full report of each case. He was instructed to counsel with physicians upon this point, to make inquiries of neighbors, and to report all defectives, whether the information respecting them should be derived from the family to which they belonged or from other sources, if in his judgment it was worthy of confidence. By this method it was sought to obtain approximately as complete an enumeration of defectives outside of institutions as of the inmates of such institutions. Third, with respect to the idiots and the insane, the work of the enumerators was supplemented by correspondence with physicians, in all part of the United States, to the number of nearly 100,000, all of whom were furnished with blank forms to return, and were invited and urged to report to the Census Office all idiots and lunatics within the sphere of their personal knowledge. Four-fifths of them responded to this invitation; a result which, while it redounds to the credit of the medical profession, illustrates the remarkable interest felt by the public in this census, and it is in itself a tribute to the genius of popular institutions. . . .

The data for 17 percent of the insane who were enumerated in 1880 were based on information obtained solely from physicians. In addition to counting the number of deaf, blind, insane, and retarded, the 1880 census also sought to enumerate such groups as convicts, paupers, and prostitutes and such facilities as brothels and saloons. Apparently the primary motive for these efforts was to measure the extent of the States' responsibility for care of the "dependent, defective and delinquent" classes. In the words of Wines (*3b*):

> To my own mind the entire subject is one. The causes at work in modern society, with its high degree of organization and development, which tend to hasten the growth of either of the forms of misfortune included

Table 1. Proportion of total population reported as mentally ill in each State or territory and region, 1840–90 censuses

Region and State	Rate per 100,000 total population					
	1840	1850	1860	1870	1880	1890
Total	50.7	67.3	76.6	97.1	183.3	169.7
New England	98.4	141.7	147.6	166.8	277.9	255.9
Connecticut	108.6	126.8	71.9	143.6	276.7	275.5
Maine	62.0	96.2	112.1	126.3	237.6	196.5
Massachusetts	117.2	168.9	171.0	132.7	287.5	272.6
New Hampshire	92.1	118.9	155.2	172.2	304.3	255.0
Rhode Island	130.2	147.1	164.9	143.5	147.4	229.2
Vermont	91.8	178.3	219.9	218.1	305.5	247.6
North Atlantic	62.2	82.3	101.9	126.3	236.1	232.6
Delaware	43.6	74.3	53.5	52.0	135.1	116.9
District of Columbia	30.6	44.5	271.7	363.7	528.1	684.1
Maryland	65.5	93.6	81.5	93.9	198.6	157.9
New Jersey	56.2	77.4	87.6	101.3	212.6	218.9
New York	58.0	81.4	111.2	145.0	276.5	297.3
Pennsylvania	70.0	82.8	95.0	110.6	193.9	161.3
South Atlantic	38.9	52.2	59.5	66.3	131.1	108.3
Florida	9.5	12.6	17.8	15.4	93.9	89.7
Georgia	20.3	35.8	46.4	53.5	110.0	98.8
North Carolina	41.6	58.7	66.5	72.7	144.9	106.6
South Carolina	35.9	37.2	45.0	47.2	111.7	98.2
Virginia	52.1	68.2	73.9	91.8	159.4	155.3
South	25.2	33.2	35.5	54.4	120.9	89.7
Alabama	19.8	30.2	26.7	55.7	120.5	97.1
Arkansas	23.9	30.0	20.0	32.2	98.3	69.9
Louisiana	15.2	38.6	23.9	62.0	106.6	81.4
Mississippi	19.5	21.3	34.4	29.6	101.5	85.5
Tennessee	33.3	40.6	57.7	73.5	155.9	104.4
East Midwest	33.9	49.3	64.5	86.5	180.9	172,7
Illinois	24.3	28.0	39.9	64.0	166.8	173.5
Indiana	30.7	57.0	76.6	89.5	179.3	150.1
Michigan	12.6	33.4	33.4	68.7	170.8	177.8
Minnesota		16.5	14.5	68.7	146.6	169.3
Missouri	29.8	8.4	65.1	73.4	152.6	127.5
Ohio	40.0	66.5	98.0	128.1	227.8	206.9
West Virginia				84.6	158.8	141.5
Wisconsin	13.0	17.7	36.5	80.2	192.0	208.1
West Mid West	43.4	48.4	42.6	71.2	141.0	135.5
Kansas			9.3	35.9	100.4	125.6
Kentucky	45.9	53.6	53.9	94.2	168.9	146.8
Iowa	7.9	21.9	29.8	62.1	156.6	167.2
Nebraska			17.3	22.8	99.5	88.0
North Dakota				21.2	53.3	14.3
South Dakota						94.3
Southwest		18.6	22.8	33.2	98.1	82.1
Arizona				10.4	51.9	99.0
Nevada				4.7	49.8	382.4
New Mexico		17.9	29.9	54.4	128.0	43.0
Oklahoma						11.3
Texas		17.4	20.7	33.0	98.3	74.6
Utah		3.9	37.2	28.8	104.9	79.4
Northwest				17.7	62.0	92.5
Colorado				30.1	50.9	79.1
Idaho				6.7	49.1	97.2
Montana				9.7	150.7	141.5
Wyoming					19.2	62.6
Far West		6.2	108.5	191.2	270.6	244.6
California		2.2	120.0	204.6	289.5	297.5
Oregon		41.3	43.8	134.2	216.3	197.0
Washington			25.9	96.0	179.7	107.6

SOURCE: Office of Publications and Reports, U.S. Bureau of the Census.

Table 2. Proportion of total population reported as mentally retarded in each State or territory and region, 1840–90 census

Region and State	Rate per 100,000 total population					
	1840	1850	1860	1870	1880	1890
Total	51.5	68.1	60.3	63.6	153.3	152.6
New England	61.6	88.7	74.6	72.2	147.4	168.0
Connecticut	66.3	77.4	58.0	63.4	131.2	161.9
Maine	63.7	98.9	104.9	100.2	204.2	240.7
Massachusetts	55.1	79.5	57.8	53.4	113.9	130.8
New Hampshire	85.4	110.4	103.0	102.1	202.6	206.9
Rhode Island	68.4	77.3	57.8	56.6	84.6	141.2
Vermont	49.0	95.2	83.5	98.3	241.7	271.0
North Atlantic	46.1	61.1	59.0	57.4	130.4	139.7
Delaware	58.9	100.5	59.7	55.2	183.5	130.6
District of Columbia	17.4	25.2	36.0	38.0	60.2	113.3
Maryland	47.0	67.1	44.4	46.4	141.1	148.6
New Jersey	62.2	85.6	54.3	48.1	93.4	112.9
New York	38.3	53.8	59.6	56.7	119.7	122.3
Pennsylvania	53.7	63.5	63.4	63.9	150.6	166.5
South Atlantic	57.0	76.5	76.9	81.0	180.5	168.1
Florida	30.9	41.2	48.4	53.3	136.9	127.7
Georgia	41.6	73.3	68.5	73.6	157.8	119.2
North Carolina	64.7	91.4	98.7	91.1	224.5	222.3
South Carolina	50.4	52.1	57.3	65.9	159.5	156.8
Virginia	63.4	83.1	80.1	92.2	184.7	186.6
South	44.8	59.0	52.9	66.9	171.9	152.2
Alabama	40.5	61.7	55.7	72.3	176.1	141.5
Arkansa	43.7	54.8	40.4	59.7	171.2	148.1
Louisiana	13.2	33.6	34.9	39.3	110.0	104.9
Mississippi	33.2	36.6	35.3	58.6	139.5	136.2
Tennessee	69.3	84.4	79.4	86.7	458.1	203.1
East Midwest	43.5	63.4	53.5	63.6	167.8	171.4
Illinois	37.0	42.6	34.3	49.0	135.5	131.2
Indiana	51.2	94.9	67.2	80.9	238.8	254.0
Michigan	18.0	47.5	44.5	51.8	133.2	153.7
Minnesota		16.5	18.0	30.5	93.4	111.5
Missouri	40.6	52.3	44.2	45.3	155.5	144.9
Ohio	45.5	68.7	76.4	87.7	202.0	218.8
West Virginia				96.6	221.0	187.5
Wisconsin	22.5	30.8	33.1	53.1	135.7	142.4
West Midwest	76.4	85.2	69.4	60.0	151.2	152.9
Kansas			15.9	29.9	108.7	142.9
Kentucky	79.1	92.3	91.5	86.4	213.1	195.6
Iowa	17.6	48.9	42.8	44.6	142.4	170.6
Nebraska			10.4	20.3	78.7	90.6
North Dakota			20.7	21.2	59.2	73.9
South Dakota						86.7
Southwest		52.2	33.3	49.7	131.5	151.5
Arizona					23.2	21.8
Nevada				4.7	28.9	48.1
New Mexico		71.5	42.8	50.1	102.0	82.7
Oklahoma						55.0
Texas		48.9	33.3	55.1	143.0	123.6
Utah		8.8	12.4	26.5	102.8	88.0
Northwest				5.9	40.8	45.4
Colorado				7.5	39.6	46.6
Idaho				6.7	70.5	65.2
Montana				4.9	38.3	39.3
Wyoming					9.6	23.1
Far West		10.5	12.8	21.8	65.9	69.5
California		7.6	11.1	15.5	58.6	72.8
Oregon		33.1	28.6	60.5	103.6	90.2
Washington				20.9	62.6	72.8

SOURCE: Office of Publications and Reports, U.S. Bureau of the Census.

> in this inquiry, affect the growth of all of them. The physical and moral causes which are the occasion of insanity in one man excite another to crime. . . .

It is important," he continued, "for the information of legislatures" that the whole extent of the evil to be contended against "be known and accessible in a single report, in order that they may make adequate provisions for its care or alleviation. The subject demands a degree of interest and attention which it is difficult to secure for it" (*4*).

Other commentary by Wines in the 1880 census report showed a similar understanding and insight, which surely is equally required today. In evaluating forces in the community that tended to breed various forms of dependency and in describing conditions in institutions, he stated: "The causes which produce [these conditions] are very obscure in many instances, and not easily traced. There are few effects in nature which are not the result of a multiplicity of causes. . . . There is a distinction, too often overlooked, between the cause and occasion of misfortune, and the latter is often put for the former." He noted that "it is very likely that many persons are reported to be homicidal or suicidal who are neither; this tendency often exists only in the tender imagination of the reporter." On the subject of the use of restraint, Wines expressed the hope that with the adoption of improved methods of care "it may very materially diminish" (*3b*).

The census of 1890 represented a major retreat from the aims of the 1880 census. It was compiled by Dr. John S. Billings, a physician and librarian who was then Deputy Surgeon General of the U.S. Army. The query of physicians was omitted, and much of the evaluative comment that distinguished the earlier census was discontinued. It is therefore not surprising that, as I mention later, the reported rates of mental illness declined in 8 of the 9 regions, 32 of the 45 States, and in the country as a whole. Beginning with a special census (in 1903), this concept of national enumeration was discontinued, and data collection was limited to counting the inmates in psychiatric hospitals and institutions.

The special census of 1903 was directed by John Koren, a prominent statistician and publicist. It was based on census schedules for each institution, which were filled out by an employee of the facility, who was designated a special agent of the Census Bureau. The insane and retarded outside of psychiatric hospitals and institutions were omitted because of the expressed belief that "until their number can be determined it is not the function of a statistical bureau to inquire into the subtler aspects of insanity as a disease"(*4*). The report on the 1903 census also pointed out that even the 1880 census, despite its relative completeness, had reported some variations that could only be explained by underenumeration (*4*). The census of patients was repeated in 1910, 1920, and 1923. Annual collection of data from these institutions was begun in 1927 for the year 1926. This responsibility was transferred in 1946 to the newly established National Institute of Mental Health.

Efforts to enumerate other segments of the "defective, delinquent and dependent classes" continued for some time after 1927. Thus, for example, questions pertaining to blindness were included in every census from 1830 until 1930,

Table 3. Number of enumerated mentally ill and number of mentally ill in hospitals and asylums, 1840–90

Year	Census-enumerated population	Census-enumerated mentally ill	Mentally ill in hospitals and asylums	Proportion of total population in hospitals and asylums[1]	Percent of enumerated mentally ill in hospitals and asylums
1840	17,062,566	[2]8,651	2,561	15.1	29.6
1850	23,190,675	15,610	4,730	20.4	30.3
1860	31,402,187	24,042	8,500	27.1	35.4
1870	38,558,371	37,432	17,735	46.0	47.4
1880	50,155,783	91,959	38,047	75.9	41.4
1890	62,947,714	106,485	74,028	117.6	69.5

[1] Per 100,000.

[2] Separate figures on mentally ill and mentally retarded not available. Estimated by applying ratios reported by 1850 census.

SOURCE: U.S. Bureau of the Census and Reference 6a, p. 232.

probably because some types of disability could be more accurately identified than either insanity or retardation.

Analysis of Data

The reported number of mentally ill and mentally retarded in each State and region for each census from 1840 to 1890 is shown in tables 1 and 2. Table 3 shows for each census the number of enumerated mentally ill, the number of mentally ill in hospitals and asylums, the proportion of the total population in hospitals and asylums, and the percent of the enumerated mentally ill in hospitals and asylums.

The reported rate of mental illness increased in each census, reaching a level in 1880 of 183.3 per 100,000 population, roughly 3.6 times the rate reported in 1840 (50.7). It declined 7 percent (to 169.7) in 1890 because of reduced efforts at data collection among the noninstitutionalized. It is interesting that the highest rates were consistently reported by the New England States, while the lowest were equally consistently reported by the States of the South. In New England the rate of mental illness exceeded the rates of mental retardation, while the reverse was generally the case among residents of the South. Unusually high rates of mental illness for the District of Columbia from 1860 on undoubtedly were caused by the location there of the federally operated St. Elizabeth's Hospital. The rates of mental retardation reported for the District were, however, relatively low. I believe that one factor related to these low rates was that retarded patients hospitalized at St. Elizabeth's were counted as mentally ill. Another may have been that a sizable proportion of the District's population was comprised of adults who had migrated to the District to seek public employment.

The reported rates of mental retardation in the United States did not follow the same pattern as the rates of mental illness. They increased one-third between 1840 and 1850, declined one-tenth by 1860, and then rose 5 percent by 1870. They went up 2½ times by 1880 and remained at this level in 1890. Record high rates, however, were reported in the 1890 census for 7 of 9 U.S. regions and for 27 of the 45 States.

The rates of mental illness reported by the various States varied much more than the rates of mental retardation. This divergence probably reflected the greater consistency during this period in accepted definitions of mental retardation as compared with those of mental illness. In 1890, if we omit the recently admitted sparsely populated States of the West, we find more than a fourfold difference between the highest reported rate of mental illness (297.3 in New York) and the lowest (69.9 in Arkansas). In the mental retardation rates for 1890, there is less than a threefold difference between the highest (254.0 in Indiana) and the lowest (90.6 in Nebraska). If the States in the West are omitted, 22 of the remaining 35 States had a rate of mental retardation in 1890 within 25 percent of the national rate. Only 14 of these 35 States had a rate of mental illness within 25 percent of the national rate.

The proportion of the total population in hospitals and asylums increased nearly eightfold between 1840 and 1890, from a low of 15.1 per 100,000 total population to 117.6, partly because of the States' assumption of responsibility for care of the mentally ill and the resultant widespread construction or expansion of facilities. The percent of all enumerated mentally ill persons in hospitals and asylums gradually rose, from 29.6 in 1840 to 69.5 in 1890. The only decline occurred in 1880—the result of a greater effort to enumerate the mentally ill residing in the community. As noted before, the 1890 census represented a considerable retreat from the thoroughness achieved in 1880. In 1880 a total of 53,912 mentally ill persons (58.6 percent of those enumerated) reportedly were not in hospitals or asylums. In 1890 this number had decreased to 32,457 (30.5 percent of the enumerated mentally ill) while the number of the hospitalized mentally ill nearly doubled, from 38,047 in 1880 to 74,028 in 1890. That is, in 1880, 6 of every 10 of the mentally ill were reported to be in the community and 4 of 10 under institutional care. In 1890 these ratios had changed to 3 of 10 in the community and 7 of 10 in institutions.

Discussion

Census programs to enumerate the mentally ill and mentally retarded were one manifestation of a ferment in the mental health field in the decade 1840 to 1850 that led to the first practical efforts to provide systematic and responsible care for appreciable numbers of the mentally ill.

In 1841, for example, Dorothea Lynde Dix took her Sunday-school class to the House of Correction at East Cambridge, Mass. The sight there induced her to write her famous memorial to the Commonwealth of Massachusetts in behalf of the "insane persons confined within this commonwealth in cages, closets, cellars, stalls, pens; chained, naked, beaten with rods and lashed into obedience" (*5*). It also led to a lifelong effort on behalf of the mentally ill which, until her death in Trenton, N.J., on July 17, 1887, took her to every part of the United States and to many foreign countries. Her effort to obtain Federal funds for mental illness programs through the sale of 12 million acres of Government-owned land succeeded in Congress, but in 1854 President Pierce vetoed the bill to implement this measure.

In 1843 the first asylum for the insane operated by the State of New York was opened at Utica with Dr. Amariah Brigham as superintendent. Detailed reports on the patients admitted and released from this facility were published annually from its early days. The pattern developed in these reports emphasized movement of patients by county of residence, age on admission, nativity, and cause of insanity. In 1844 Brigham founded the American Journal of Insanity. It is interesting that one of the six articles in the first issue was entitled "Number of the Insane and Idiotic, With Brief Notices of the Lunatic Asylums in the United States." The article provided a summary for each State of the number of hospitalized resident patients, admissions, discharges, and deaths. The title of the journal was changed in 1922 to the American Journal of Psychiatry.

In 1844 the Association of Medical Superintendents of American Institutions for the Insane was founded in Philadelphia as the first national society of medical men in the United States. In its first year, and again in 1851, it adopted resolutions to the effect that the preferred maximum size for a mental hospital was 200 patients. Its name was changed to "American Medico-Psychological Association" in 1893 and to "American Psychiatric Association" in 1921. At the association's founding a committee on statistics was established. Its chairman was Dr. Samuel B. Woodward, superintendent of the Worcester (Mass.) State Hospital and the first president of the association (*6b*).

In 1849 Dr. Isaac Ray of Rhode Island presented a paper before the Association of Medical Superintendents of American Institutions for the Insane that dealt with problems of mental health statistics (*7*). In this paper Ray suggested that "to make our statistics profitable, they should embrace such facts only as are intrinsically important, and free from all admixture with mere opinion." Using as a basis statistics on patient recovery presented in hospital reports, he pointed out the difficulty of securing accurate comparative data which would represent the relative success of institutions in the treatment of mental cases. Ray concluded that the number of recoveries was a strong indication of the financial situation of friends and relatives of the patients and their perseverance in getting the patients discharged. Thus "any degree of merit which may accrue from the number of recoveries must be shared by the institution with the community itself."

Overseas, England's Lunacy Act was adopted in 1845. In 1841 William Farr of England's Registrar General's Office pioneered in the application of life table methods to data on asylum patients to determine the "probability of recovery and the probability of a fatal termination in any given time" (*8*).

This concern with the mentally ill resulted from an unusual series of circumstances. Its initial impetus was the widely publicized effort to treat King George III of England for periodic attacks of mental illness. It was another event, however, that produced a more immediate reaction. Captain Basil Hall, a retired officer of the British Royal Navy, who had made a tour through North America in the year 1827–28, subsequently wrote a book on his travels. Like a number of similar publications, it was most contemptuous of prevailing American manners, customs, and institutions (*9*). One of Hall's few positive observations related to the Hartford Retreat, a privately maintained hospital for the mentally ill in Connecticut. Hall noted from its report for 1827 that "during the last year, there have been admitted twenty-three recent cases, of which twenty-one recovered, a number equivalent to 91 3/10 percent." Captain Hall compared this result most favorably with the 34 to 54 percent cure rates for recent cases reported by leading institutions in Great Britain.

Hall's remarks on the Hartford Retreat were quoted repeatedly by U.S. newspapers and periodicals and rapidly led to a rivalry for increasingly high recovery rates by the various existing hospitals. Reported success rates of 80 percent and more were common. One direct result was a frequently expressed belief that "with appropriate medical and moral treatment insanity yields with more readiness than ordinary disease" (*10*). It surely is not surprising that this highly optimistic concept, more than anything else, led to an emotional and highly colored concern with the mentally ill.

The fallacy of these statistics was not fully recognized for some time, and the "cult of curability" was not fully exposed until almost 50 years later. Dr. Pliny Earle, one of the initial exponents of the cult, wrote a book in 1887 showing that the remarkable rates were primarily due to improper use of the word "recovered" (*11*). He noted that it was fairly common for the same person to be discharged repeatedly as recovered, often within the same year. There was usually no indication that several recovered cases might in fact relate to the same person. The record for number of recoveries was undoubtedly held by a woman who ultimately died in a mental hospital. She contributed to these statistics by being discharged from the same facility as recovered 46 times.

A remarkable study at the Worcester State Hospital in Massachusetts contradicted Earle's conclusion that insanity was, in general, incurable (*12*). It showed that recovery rates, while not as high as previously noted, were considerably above the deflated figures reported by Earle. The study, a followup in the period 1882–93 of 1,173 patients discharged from the hospital during the years 1833 to 1846, showed that nearly half (48 percent) never had a relapse after release while 30 percent were either still mentally ill or had died mentally ill. The study was not published or reported in the literature and therefore did not have the impact of Earle's book.

Earle's book thoroughly deflated the optimism that had previously prevailed and contributed to a reversal in attitude in the direction of stressing the need for long-term care. It undoubtedly was one factor in the construction of increasingly large facilities primarily for the provision of custodial services for the extended care of patients. The relative isolation of patients in massive facilities in turn contributed to the low release rates (usually less than 10 percent per year) that prevailed until the 1950s.

The resultant gradual increase in the number of hospitalized patients was monotonously noted in annual published reports. A high of 558,000 was reported for 1955. Factors responsible for the decrease since that year have been exhaustively discussed in the literature. Currently, mental hospitals operated by States and counties probably have a daily average of less than 300,000 patients, or slightly more than half the comparable 1955 figure. Although figures representing an unduplicated count of patients are not available, I estimate the annual number of persons under care in these facilities, on the basis of figures on admissions and resident patients, to be in excess of 600,000. The equivalent rate (about 290 per 100,000) is considerably higher than the census figures reported in the nineteenth century. Whether or not this current rate represents a true increase in the rate of mental illness can patently not be determined. Studies focusing on this issue have, I believe, come up with inconclusive findings (*13*). In part, the rise is due to the increase in the proportion of older residents. Primarily, however, it undoubtedly indicates that many persons are now hospitalized for disturbances that were not recognized or defined as mental illnesses 100 years ago.

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HEALTH-RELATED AUDIOVISUAL AIDS FOR SPANISH-SPEAKING AUDIENCES

Compiled by

ROBERT N. ISQUITH

Health educators and others working in Spanish-speaking areas who find themselves in need of educational audiovisual materials will be interested in a new health education resource book issued by the Public Health Service's Health Services Administration. Entitled "Guide to Audiovisual Aids for Spanish-Speaking Americans," the publication is a 37-page annotated list of health-related films, TV spots, filmstrips, and slides intended for Spanish-speaking audiences in both the United States and abroad. The majority of the materials are aimed at youth and general audiences, but special target populations such as diabetics, industrial workers, women, and migrant workers are also covered. The guide contains 207 principal entries arranged by subject as well as a directory of distributors. The annotated listing which follows contains many of the audiovisual aids listed in the guide.

Readers desiring a free copy of the guide should request "Guide to Audiovisual Aids for Spanish-Speaking Americans," DHEW Publication No. (HSA) 74-30, from Public Inquiries, Health Services Administration, 5600 Fishers Lane, Rockville, Md. 20852. Public Inquiries also has available a related publication compiled by Mr. Isquith, "Spanish-Language Health Communication Teaching Aids—A List of Printed Materials and their Sources," DHEW Publication No. (HSM) 73-19.

Mr. Isquith is a Spanish-speaking information specialist in the Office of Communications and Public Affairs, Health Services Administration.

accident prevention and occupational health

CAIDAS # 6   16 mm., sound, b/w, 6 min., 1946. Purchase $45
Shows how to guard against needless falls. Illustrates dangers presented by obstructions, unsafe ladders, and other trouble-inviting situations. Watchfulness is stressed. Suggested for industrial audiences.—Bray Studios, Inc., 630 Ninth Ave., New York, N.Y. 10036

COMO ACCIDENTARSE EN CASA   16 mm., sound, color, 8 min. License fee $115
A character named J. J. Fate uses Donald Duck as an example to prove that accidents happen because average people don't use intelligence. —Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

COMO EVITAR LA LESION MUSCULAR #8 16 mm., sound, color, 15 min., 1960. Purchase $175
Teaches correct lifting and work habits. Animated drawings illustrate the mechanics of muscular activity, especially in lifting heavy objects. Correct and incorrect methods of lifting shown, and effects of overstrain on cerebral column. Includes subject of hernia. Suggested for industrial audiences.—Bray Studios, Inc., 630 Ninth Ave., New York, N.Y. 10036

COMO SOBREVIVIR NADANDO #2S117 16 mm., sound, b/w, 14 min., 1970. Rental $9, purchase $110
Encourages swimmers of all ages to learn how to survive in emergency situations. After an introductory sequence in which typical survival situations are depicted, various skills are demonstrated in turn, such as ways of treading water, suitable survival strokes, and others.—International Film Bureau, Inc., 332 S. Michigan Ave., Chicago, Ill. 60604

DESCUIDOS FATALES #385-8015   16 mm., sound, b/w, 29 min., 21 sec., 1963. Rental $14, purchase $175
A film about the work of poison control centers at children's hospitals. Several incidents illustrate the variety and number of accidental poisonings affecting children and how poison control centers deal with them.—National Film Board of Canada, 16th Floor, 1251 Avenue of the Americas, New York, N.Y. 10020

POISON IN THE WELL   35 mm., color filmstrip with record in English and Spanish. Purchase $50
This filmstrip kit is designed to educate the public about the hazards of lead-paint poisoning to children eating chips of lead-based paint found in old, deteriorated houses.—Medicom, Inc., 8 Hammarskjold Pl., New York, N.Y. 10017

PROTECT YOUR HEARING (Spanish)   16 & super 8 mm., sound, b/w, 15 min., 1972. Rental (16 mm. only) $12.50, 1 day; $6.25 each additional day, purchase $150 (16 mm.) $120 (super 8 mm.)
Originally produced in the early 1960's, this film has been updated in recognition of the Federal Occupational Safety and Health Act of 1970. The film points out that responsibilities have now been placed on both employer and employee to assure compliance with the law's requirements and to protect against hearing loss. With a combination of live action, animation, and authentic sound recorded on location, the film depicts sound and noise and their characteristics; the hearing process, including functions of the outer, middle, and inner ear; the effects of exposure to typical industrial and environmental noises; and how sudden and gradual hearing losses occur. Suggested for industrial audiences.—Bray Studios, Inc., 630 9th Ave., New York, N.Y. 10036

aging

BUBBY   16 mm., sound, b/w, 5 min., 1966. Rental $7.50, purchase $50
The filmmaker documents old age in a study of his grandmother, contrasting her present life with her past memories. Sound but no dialog. —Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

community health

AN AIDE TO A BETTER WAY OF LIFE (Spanish)   16 mm., sound, color, 18 min. Purchase $74.25
Depicts the work of the indigenous health educator aide, community health aide, or other nonprofessional aide serving the inner city. Demonstrates techniques of person-to-person communications and followup and referral services as employed to achieve change. Administrative procedures are treated briefly. Shows vignettes typifying services related to childhood lead poisoning, prenatal care, urban rat control, and housing hygiene.—National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

A COMMUNITY PARK   16 mm., sound, color, 8 min., 1970. Rental $12, purchase $90
This documentary shows the evolution of a park from a garbage-strewn empty lot to an "adventure playground." The film emphasizes how people who work together can improve neighborhood conditions.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

dental health

APRENDAMOS A CEPILLARNOS LOS DIENTES 16 mm., sound, color, 10 min., 1962. Purchase $35
Designed to instruct first and second grades in proper toothbrushing methods, this film introduces a situation which leads to careful teaching of effective toothbrushing and other aspects of home dental care. Suggested for primary grades, K-3.—American Dental Association, 211 E. Chicago Ave., Chicago, Ill. 60611

EL DESAFIO DE LA DENTISTERIA 16 mm., sound, color, 28 min., 1962. Purchase $99
Designed as a career guidance film, it shows how young Jim Reynolds becomes aware of the importance of dentistry. The film answers basic questions about the dental profession, the training and qualifications necessary as well as the possible rewards. Suggested for high school students and adults.—American Dental Association, 211 E. Chicago Ave., Chicago, Ill. 60611

LOS DIENTES SON PARA CONSERVARLOS 16 mm., sound, color, 11 min., 1949. Rental $14, purchase $135
A gaily colored cartoon with a cheerful little story that drives home the importance of the four essentials of tooth care.—National Film Board of Canada, 16th Floor, 1251 Avenue of the Americas, New York, N.Y. 10020

PEDRO GETS A LETTER 35 mm. color filmstrip with Spanish & English record soundtrack and text, 40 frames, 1970. Purchase $15
Encourages preschool and elementary school children to make regular dental appointments a habit and helps prepare children for the experiences they may have in the recall appointment. Some of the dental procedures, instruments, and equipment which may be encountered are identified and explained. Price includes "Pedro Likes Good Food."—National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

PEDRO LEARNS TO BRUSH HIS TEETH 35 mm. color filmstrip with Spanish & English record soundtrack and text, 29 frames, 1970. Purchase $15
Teaches young children the proper method of toothbrushing. Purchase price includes "Pedro Visits the Dentist."—National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

PEDRO LIKES GOOD FOOD 35 mm. color filmstrip with Spanish & English record soundtrack and text, 36 frames, 1970. Purchase $15
Presents to preschool and early elementary school age children good eating habits that are desirable for dental health. Particular emphasis is placed on eating sweets only with meals and selecting and eating nonsweets for between-meal snacks. Price includes "Pedro Gets a Letter."—National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

PEDRO VISITS THE DENTIST 35 mm. color filmstrip with English & Spanish record soundtrack and text, 25 frames. Purchase $15
Prepares the preschool and primary school child for his first visit to the dentist by introducing him to the sights and sounds of the dental office. Purchase price includes "Pedro Learns to Brush his Teeth."—National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

QUE SABEMOS SOBRE LOS DIENTES? 16 mm., sound, color, 14½ min., 1961. Purchase $75
Uses actual pupils, teacher, and school nurse. This film was made to motivate children of the primary grades to learn more about their teeth and oral health. It provides some factual information that will lead them to search for more knowledge and to provide the classroom teacher with some ideas that she may find useful in teaching dental health. Suggested for primary and upper elementary grades, K-6.—American Dental Association, 211 East Chicago Ave., Chicago, Ill. 60611

YOUR MOUTH SPEAKING 35 mm., color filmstrip series. Each filmstrip comes with record or cassette. Silent version with captioned frames also available. License fee $79.47 with records, $89.44 with cassettes, $92.77 with records & cassettes, $46.22 silent version.

In this series seven fundamental principles of good dental health are presented in a manner specifically designed to catch and hold the attention of young children. Filmstrip titles are "Meet Your Teeth"; "Brushing Away Tooth Decay"; "Safety of the Mouth"; "Why Visit the Dentist?"; "The Case of the Crooked Tooth"; "The Magic Potion; The Tale of Two Teeth."—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

diseases and conditions

ENFERMEDADES INFECCIOSAS Y DEFENSAS CREADAS POR EL HOMBRE #3165 16 mm., sound, color & b/w., 11 min., 1960. Purchase $65 (b/w), $130 (color)

This film shows some of the causes of infectious diseases and explains at length how we use manmade defenses to protect ourselves. We see how antitoxins, vaccines, antibiotics, and synthetic drugs are produced and used to help develop active and passive immunity in the body. Suggested for junior-senior high to college level.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

HEALTH—COMMUNICABLE DISEASES (Spanish) #1301 16 mm., sound, color, 12 min., 1967. Rental $15, 1-3 days, purchase $140
Animated germs add interest as they demonstrate how they can cause colds, flu, and other common diseases. They also show how we can prevent them from spreading and what should be done to fight off illness. Suggested for primary grades.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

LOS GERMENES Y LO QUE HACEN #3184 16 mm., sound, color and b/w, 11 min., 1966. Purchase $70 (b/w), $140 (color)
Through photomicrography young pupils are given a simple introduction to germs. After showing some of the helpful micro-organisms of the world, the film shows how good health habits provide a means of keeping germs out of the body and helping the body to fight germs. Suggested for primary levels.—Coronet Instructional Films, 65 E. South Water St., Chicago, Ill. 60601

cancer

BREAST SELF-EXAMINATION (Spanish) 16 mm., super 8, and 8 mm., sound, color, 15¼ min. Free loan
Illustrates proper method of breast self-examination.—American Cancer Society, contact: local unit or division office.

colds

COMO EXPONERSE A UN CATARRO 16 mm., sound, color, 10 min. License fee $90
Man versus the common cold is one of the classic struggles of our time. Although medical science can claim no positive victories, it can and does tell us the manner in which man succumbs to the common cold and what he should and should not do about it.—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

diabetes

DIABETIC COUNSELING SERIES IN SPANISH
Set of 35 mm, color filmstrips with record or cassette, instructor's guide. Purchase $35 with record each program, $250 series; $40 with cassette each program, $290 series.—Trainex Corp., P.O. Box 116, Garden Grove, Calif. 92642

emphysema

WHAT IS EMPHYSEMA? #H1-216 Color filmstrip. Purchase $50 with record, $60 with cassette
A presentation for patients which describes the causes of emphysema, especially the effects of smoking on the lungs and bronchi. The need to alter lifestyle to control the disease is emphasized. This is one of four filmstrips in the Trainex Corporation's Health Information Series in Spanish. For information about the others in the series see "Diseases—diabetes" and "Prenatal and Infant Care."—Trainex Corp., P.O. Box 116, Garden Grove, Calif. 92642

heart disease, including rheumatic fever and high blood pressure

ARTERIOSCLEROSIS #EM 94-Spanish 16 mm., sound, b/w, 1954. Rental $6, 1 day; $9, 2 days; $12, 3 days. Purchase $50
Diagrams and photographs of blood vessels help explain arteriosclerosis (hardening of the arteries) to the layman. Suggested for general public, high school, and college physiology classes, clinic and hospital patients, nurses and other professional personnel.—American Heart Association Film Library, 267 West 25th St., New York, N.Y. 10001

BETTER ODDS FOR A LONGER LIFE #EM 402-Spanish 16 mm., sound, color, 19½ min., 1966. Rental $6, 1 day; $9, 2 days; $12, 3 days. Purchase $100
This cartoon animation film traces the history of cardiovascular medicine from ancient Egypt to the present; a message on reducing the risk of heart attack.—American Heart Association Film Library, 267 West 25th St., New York, N.Y. 10001

EL DINAMO Y PRIMERAS SEÑALES DE FALTA #EM 306K TV spot film, 35 mm., sound, color, 60 sec. & 30 sec., 1971. Purchase $12
Combines live action and animation. When an emergency strikes a power generator, flashing lights warn of danger. The heart, too, gives warnings—warnings of heart attack, warnings that can save a life. The symptoms of heart attack are enumerated. Available from your local Affiliated Heart Association

LA FIEBRE REUMATICA #EM 307D TV spot film, 35 mm., sound, color, 60 sec. Purchase $8

Discusses rheumatic fever. Available from your local Affiliated Heart Association.

UNA GUIA DEL ANDAR #EM 306M TV spot film, 35 mm., sound, color, 60 sec. & 30 sec., 1972. Purchase $12

To old-fashioned music and the familiar voice of narrator Sterling Holloway, these spots show how to walk your way to a slimmer, trimmer you. Humor is combined with sensible heart advice. Available from your local Affiliated Heart Association

HIGH BLOOD PRESSURE #EM 172-Spanish 16 mm., sound, color, 7 min., 1957. Rental $6, 1 day; $9, 2 days; $12, 5 days. Purchase $40

Live photography, diagrams, and animated drawings explain briefly the facts about high blood pressure. The narrator makes it clear that only a physician can tell if high blood pressure is a serious condition and what treatment, if any, is required. Suggested for the general public, student nurses, and practical nurse trainees. Available for purchase in French also.—American Heart Association Film Library, 267 West 25th St., New York, N.Y. 10001

LA JUGADA TRIPLE #EM 306H TV spot film, 35 mm., sound, color, 60 sec., 1972. Purchase $8

Animated spot narrated by Jack Whitaker makes the analogy between a triple play on the ball field and in the heart of a child. The triple play—"strep" throat to rheumatic fever to rheumatic heart disease—can bring long-term disabling illness, but it can be prevented. Available from your local Affiliated Heart Association

LES HABLA RICARDO MONTALBAN #EM 306S TV spot film, 35 mm., sound, color; one 60 sec. spot and three 30 sec. spots, 1972. Purchase $20 set of four spots

Ricardo Montalban, the actor, discusses, high blood pressure, rheumatic fever, and the warning signs of heart attack. Available from your local Affiliated Heart Association

mental retardation

RETARDO MENTAL EVITABLE #2S80 16 mm., sound, color, 15 min., 1962. Rental $12.50, purchase $195

Shows how mental retardation caused by phenylketonuria (PKU) can be easily prevented when diagnosed soon after birth. A series of actual case histories emphasizes the need for checking all infants for PKU.—International Film Bureau, Inc., 332 S. Michigan Ave., Chicago, Ill. 60604

multiple sclerosis

ANUNCIOS EDUCACIONALES DE ESCLEROSIS MULTIPLE—EL DOCTOR CONTESTA PREGUNTAS SOBRE ESCLEROSIS MULTIPLE 33⅓ rpm record, 1968.

National Multiple Sclerosis Society, 257 Park Ave., South, New York, N.Y. 10010

tuberculosis

AIRBORNE TRANSMISSION OF TUBERCLE BACILLI (Spanish) 16 mm., sound, color, 7 min., 1966. Purchase $31

This Public Health Service film was recently translated into Spanish by the Regional Technical Aids Center of the Agency for International Development and is shown in Mexico in campaigns against tuberculosis. The film, which traces the epidemiology and control of airborne tuberculosis, is aimed at lay audiences.—Servicios Especiales Cinematográficos, Playa Caleta 261 "A," Mexico 13, D.F., Estados Unidos Mejicanos

THE ELUSIVE ENEMY (Spanish) #6241 16 mm., sound, color, 22 min., 1967. Free loan

Documentary, using young people who had TB or were positive reactors. Recalls history of TB, shows how it attacks and is treated today. Designed for school use but excellent for all. Available from your local Lung Association

venereal disease

A HALF MILLION TEENAGERS (Spanish) 16, 8, and super 8 mm., sound, color, 16 min. Purchase $195

Explains how the organisms of gonorrhea and syphilis enter and affect the body and how the disease may be recognized. Need for treatment is stressed. Extensive animation. Suggested for junior and senior high school levels.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

PLAN DE ATAQUE CONTRA LAS ENFERMEDADES VENEREAS 16 mm., sound, color, 16 and 14 min. lengths. License fees, $224, 16 min., $215, 14 min.

New animated film tells the facts that today's young people need to know. Answers questions young people are asking such as What is VD really? How do I know if I have it? Where can I go for help? How do you cure VD? How do I keep from getting it? Short version does not include last 2 minutes dealing with prevention of VD through prophylaxis methods. Also available in English, German,

Plan de ataque contra las enfermedades venereas © 1972 Walt Disney Productions. World rights reserved.

Swedish, Italian, and French.—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

VD: A NEW FOCUS (Spanish) 16 mm., sound, color, 14 min., 1972. Rental $25, purchase $225

Host-narrated by James Brolin of the "Marcus Welby MD" television series. This film informs the viewer of the simple facts about gonorrhea and syphilis. It emphasizes the ease of cure in the early stages, makes clear that those who suspect they may have VD must seek immediate medical treatment from the many places where it is available. The film emphasizes that the spread of VD can be halted if all those who become infected recognize the symptoms and seek treatment.—American Educational Films, 132 Lasky Dr., Beverly Hills, Calif. 90212

emergency health care

MASAJES CARDIACOS #2S127 16 mm., sound, color, 11 min., 1970. Rental $12.50, purchase $145

This film on emergency cardiac resuscitation demonstrates exhaled air resuscitation and closed-chest cardiac massage in cases where respiratory failure is accompanied by cardiac arrest. Suggested for medical and first-aid personnel.—International Film Bureau Inc., 332 South Michigan Ave., Chicago, Ill. 60604

RESPIRANDO POR OTROS #2S126 16 mm., sound, color, 14 min., 1970. Rental $12.50, purchase $185

This film shows situations of asphyxia, drowning, gassing, electric shock, and suffocation, where exhaled air resuscitation may save life. Demonstrations of mouth-to-mouth resuscitation techniques depicted.—International Film Bureau Inc., 332 South Michigan Ave., Chicago, Ill. 60604

STANDARD FIRST AID (Spanish) #32617 16 mm., sound, color, set of four reels, 1972. Free loan, purchase $235 set

These films are used along with students' workbooks and instructor materials in a multimedia method for teaching Standard First Aid. —American National Red Cross, General Supply Office, Washington, D.C. 20006

family planning

EMBARAZO NO DESEADO 16, 8, and super 8 mm., sound, color, 9 min., 1970. Purchase $125 (16 mm.), $90 (8 mm.), $90 (super 8 mm.)
This film reviews each of the alternatives facing women with unwanted pregnancies—continue the pregnancy and keep the baby, give the child up for adoption after birth, or obtain a safe and legal abortion. The film points out that the final decision can now be made by the woman herself in accordance with her situation and beliefs.—Allend'or Productions, 4321 Woodman Ave., Sherman Oaks, Calif. 91403

FAMILIAS PLANEADAS 16 and 8 mm., sound, color, 20 min., 1965. Purchase $200 (16 mm.), $150 (8 mm.)
The purpose of this film is to teach the clinical patient the "how" of all the approved modern methods used in family planning. Some animation used.—Allend'or Productions, 4321 Woodman Ave., Sherman Oaks, Calif. 91403

FAMILY PLANNING SERIES IN SPANISH
Set of 35 mm. color filmstrips with record or cassette, instructor's guide. Purchase with record, $35 each program, $275 series; with cassette, $40 each program, $315 series.—Trainex Corp., P.O. Box 116, Garden Grove, Calif. 92642

FREEDOM FROM PREGNANCY (Spanish) 16, 8, and super 8 mm., sound, color, 11 min., 1970. Purchase $125 (16 mm.), $90 (8 mm.), $90 (super 8 mm.)
This film is designed to give the clinic patient up-to-date information about tubal ligation and vasectomy—permanent contraceptive methods. Presented with visual simplicity and utilizes animation. This film continues the story of "Familias Planeadas."—Allend'or Productions, 4321 Woodman Ave., Sherman Oaks, Calif. 91403

INTRODUCTION TO BIRTH CONTROL Color filmstrip with Spanish-language record, 15 min., revised 1968. Rental $4, 1 day, sliding scale applied to longer bookings, purchase $15
A simple straightforward presentation of birth control methods and an introduction to reproduction physiology. Suggested for clinic use. Rental—Planned Parenthood-World Population Film Library, 267 W. 25th St., New York, N.Y. 10001; purchase—Planned Parenthood-World Population, 810 7th Ave., New York, N.Y. 10019

TO PLAN YOUR FAMILY (Spanish) 16, 8, and super 8 mm., sound, color, 15 min. Purchase $180
A description of woman's reproductive system and the most common contraceptive methods, stressing the pill and IUD. Side effects discussed. Animation and interviews. Suggested for young adults, for clinics, schools, and paramedical personnel.—Churchill Films, 662 North Robertson Blvd., Los Angeles, Calif. 90069

LA SORTIJA DE COMPROMISO 16 mm., sound, color, 25 min., 1967. English subtitle version available also. Rental $12.50, 1 day; sliding scale applied to longer bookings, purchase $200
The romantic dreams of a young engaged couple come up against some of the harsh realities of modern urban life. Pedro longs for a large family. Isabel is painfully aware that too many children may place love, education, and a decent home out of reach. The Planned Parenthood story is skillfully woven into this moving story set in New York's Puerto Rican neighborhood. Suggested for all age levels. Rental—Planned Parenthood-World Population Film Library, 267 W. 25th St., New York, N.Y. 10001; purchase—Planned Parenthood-World Population, 810 7th Ave., New York, N.Y. 10019

USTED BIEN PUEDE SER LA UNICA 35 mm., color filmstrip and record. Purchase $25
Filmstrip designed for staff training of family planning clinic personnel. Designed to portray the importance of the role that each family planning nurse, social worker, or receptionist plays in everyday communications with patients. Suggested for training new family planning clinic personnel or retraining present staff.—Glenn Educational Medical Services, Inc., P.O. Box 381, Monsey, N.Y. 10952

the human body and its development

APRENDAMOS SOBRE NUESTROS CUERPOS #3303 16 mm., sound, color & b/w, 11 min., 1954. Purchase $65 (b/w), $130 (color)
Animation and cinefluororgraphy help answer the question, "What's inside me?" Familiarizing children with the basic structure of the human body and the positions and functions of the major organs, this film teaches that the body must be kept in good condition to work properly. Suggested for intermediate level.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

PASOS HACIA LA MADUREZ Y LA SALUD 16 mm., sound, color, 10 min. License fee $90
As the body matures, responsibility for caring for it passes first from nature to parents and finally to the individual himself. Now the individual must recognize that his own health is

like an equilateral triangle with his social, his mental, and his physical health each representing one side.—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

mental health

UN ASUNTO DE FAMILIA #3S86 16 mm., sound, b/w, 31 min., 1966. Rental $12.50, purchase $185
A trained family caseworker helps one family to understand its behavior problems. An adolescent son's defiance of his parents brings to the surface a husband's long-smoldering resentment against his wife's domination of family affairs. Typical interviews show how this family found a happier way. Suggested for social workers and adult education groups. —International Film Bureau Inc., 332 South Michigan Ave., Chicago, Ill. 60604

CHICANO #10984 16 mm., sound, color, 23¾ min., 1971. Rental $25 for 3 days, purchase $315
This film explores the various manifestations of bias, oppression, and discrimination which affect the Mexican-American. It also presents the goals of the Chicano movement and the various organizations which represent the Mexican-American community. Suggested for elementary, junior, senior high school, and college levels. English language sound track. —BFA Educational Media, 2211 Michigan Ave., Santa Monica, Calif. 90404

COMO ACTUAR CON MADUREZ #3235 16 mm., sound, color and b/w, 11 min., 1969. Purchase $70 (b/w), $140 (color)
Dating, family life, friendship, and school present young people with situations that may result in immature behavior. Their reactions show that how you feel is as important as how you act, and that decisions require thinking before acting, considering the feelings of others, and facing up to difficult situations. Suggested for junior-senior high school to college levels.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

COMPRENDIENDO MIEDOS Y TEMORES 16 mm., sound, color, 10 min. License fee $90
A discussion of one side of the health triangle —this time the mental side—with emphasis on the pressures and worries of everyday life which can damage man's health.—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

THE DREAM 16 mm., sound, b/w, 5 min., 1967. Rental $13.50, purchase $90
A young man's real fear of being trapped and persecuted. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

Henry . . . a boy of the barrio

DREAM OF VENGEANCE 16 mm., sound, b/w, 10 min., 1969. Rental $15, purchase $100
A magic leather jacket and machismo fantasies. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

THE FLOP 16 mm., sound, b/w, 12 min., 1969. Rental $18, purchase $120
A young man hooks up with the wrong people in search of his own identity. No dialog.— Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

HENRY . . . A BOY OF THE BARRIO 16 mm., sound, b/w, 30 min., 1968. Purchase $200
The film is a 2-year documentary study of a Mexican-American boy's search for identity as he grows up in conflict with his Indian mother, his Mexican heritage, and the Anglo society surrounding him. Suggested for secondary schools, adults, and social and police workers. English language soundtrack.—Atlantis Productions, Inc., 850 Thousand Oaks Blvd., Thousand Oaks, Calif. 91360

JOHNNY LINGO (Spanish) 16 mm., sound, color, 24 min., 1969. Purchase $294, rental 6 percent of purchase price first day, 1 percent each additional day
This film, made in an Hawaiian setting, shows how profoundly a person is affected by his feelings of self-worth and how others can influence these feelings. Designed to be used for all age groups. Also available in English, German, Dutch, Norwegian, Swedish, Danish, French, Finnish, Japanese, Korean, Tongan, Samoan.—Brigham Young University, Department of Motion Picture Production, Provo, Utah 84602

LET IT BE—1984 16 mm., sound, b/w, 10 min., 1972. Rental $18, purchase $120
Amid the rubble of a bombed-out society, two survivors keep their hatred alive until they find a way they can unite—a victim they can both attack. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

LOS QUE DAN CARIÑO #2S48 16 mm., sound, b/w, 23 min., 1963. Rental $9, purchase $150
Depicts a typical family at home as parents share work and play with the children. It also shows them at a family picnic where everyone has a chance to help, to be needed, to do something new, to be a part of an exciting outing. It shows how the day-to-day problems of a family are handled in a relaxed and sensible way.—International Film Bureau, Inc., 332 South Michigan Ave., Chicago, Ill. 60604

LUCY 16 mm., sound, color, 13 min. Rental $25, 1-3 days, purchase $200
This is the story of Lucy, an unwed, pregnant teenager. The brief narrative presents her romantic relationship with her boyfriend, the tensions the pregnancy causes in the family, and the alternatives Lucy faces as an expectant mother. Lucy has the sights and sounds of youth in the 1970's; it has an urban setting, and the central character is a Puerto Rican girl. English language soundtrack.—Pictura Films Distribution Corporation, 43 West 16th St., New York, N.Y. 10011

MALE AND FEMALE 16 mm., sound, b/w, 8 min., 1968. Rental $12, purchase $80
An afternoon in the life of a Lower East Side Don Juan is traced by the camera. In a farcical manner, the filmmaker describes this particular lifestyle. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

MAMMY 16 mm., b/w, 4 min., 1967. Rental $6, purchase $40
Death and the inability to accept it are examined by a Puerto Rican youth. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

A MEXICAN-AMERICAN FAMILY 16 mm., sound, color, 17 min., 1970. Purchase $200
The film provides an insight into the life of a Mexican-American family, warmth between members of the family, the traditions they cherish, adjustment to a new language and society, and efforts and sacrifices to maintain the unity of the family. Suggested for junior high school to adult levels. English language soundtrack.—Atlantis Productions, Inc., 850 Thousand Oaks Blvd., Thousand Oaks, Calif. 91360

Los que dan cariño

MEXICAN OR AMERICAN? 16 mm., sound, color, 17 min., 1970. Purchase $200

The film squarely faces the fundamental problem of cultural conflict in the United States. Is it possible to enjoy the freedoms and opportunities of this land without giving up completely the heritage of one's parents? Suggested for junior high school to adult levels. English language soundtrack.—Atlantis Productions, Inc., 850 Thousand Oaks Blvd., Thousand Oaks, Calif. 91360

MINORITY YOUTH—ANGIE #10968 16 mm., sound, color, 10½ min., 1971. Rental $8 for 3 days, purchase $145

Angie relates her personal feelings about being a Mexican-American. She takes pride in the fact that her family, like other Mexican-American families, "surrounds their kids with love instead of material things." But she questions the prejudice that she see exhibited against the Mexican-American in education and employment opportunities particularly. Suggested for elementary, junior, and senior high school levels. English language soundtrack.—BFA Educational Media, 2211 Michigan Ave., Santa Monica, Calif. 90404

NEW BOY IN TOWN 16 mm., sound, b/w, 10 min., 1969. Rental $15, purchase $100

A new arrival must tangle with "the boys" in order to insure honor, acceptance, and survival. No dialog.—Youth Film Distribution Center, 43 West 16th St., New York, N.Y. 10011

NIÑOS DE DOS Y TRES AÑOS #385-1028 16 mm., sound, color, 21 min. 40 sec., 1962. Rental $15, purchase $255

A study of child behavior at 2 and 3 years, showing what to expect and how parents deal constructively with the problems they present. The film shows a group of active children in playground, nursery school, and home, first at age 2 and then at age 3. Destructiveness, tantrums, rivalry with younger children, and unreasonable fears are discussed.—Contemporary/McGraw Hill Films, 1221 Avenue of the Americas, New York, N.Y. 10020

EL RESENTIDO #3S82 16 mm., sound, b/w, 33 min., 1965. Rental $12.50, purchase $195

Tells the story of emotional disturbances engendered by family tensions. After a 10-year-old boy is caught stealing, a psychiatric team traces the boy's disturbance to its source.—International Film Bureau Inc., 332 South Michigan Ave., Chicago, Ill., 60604

TEEN SQUAD 16 mm., sound, color, 8 min., 1971. Rental $12, purchase $80

Puerto Rican youth looks at law and order, police enforcement, from a special point of view. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

THOUGHT IN FIVE 16 mm., sound, b/w, 5 min., 1971. Rental $7.50, purchase $50

Stronger ethnic ties, plus a budding identification with "American" culture haunt Miss Rios' vision of the world. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

TO BE SOMEBODY 16 mm., sound, color, 35 min. Purchase $300

An unrehearsed and unstaged documentary depicting the progress of a young woman as she faces the prospects of searching for a job in the unfamiliar world of the Anglo. You witness the development of two fine personalities, of one seeking guidance and the other giving counsel . . . two persons becoming somebody because each share in a warm relationship of mutual respect. Suggested for senior high school to adult levels. English language soundtrack.—Atlantis Productions, Inc., 850 Thousand Oaks Blvd., Thousand Oaks, Calif. 91360

YOUNG BRAVES 16 mm., sound, b/w, 9 min., 1970. Rental $13.50, purchase $90

With antisocial exuberance, a group of young Puerto Rican boys explore the city. Filmed in cinema verité style, this is a compelling study of youth on New York City's Lower East Side. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

alcoholism and alcohol abuse

ALCOHOL: A NEW FOCUS (Spanish) 16 mm., sound, color, 15 min., 1972. Rental $25, purchase $235

Host-narrated by James Brolin of the "Marcus Welby, MD" television series. This film functions as a sounding board. It acknowledges the fact that everyone, at some time in his life, has to decide whether or not to drink, how much to drink, and under what circumstances. Therefore, this film does not say "drink" or "don't drink." It does say alcohol has known effects. Be aware of them. Act accordingly.—American Educational Films, 132 Lasky Dr., Beverly Hills, Calif. 90212

EL ALCOHOL Y EL CUERPO HUMANO #414 16 mm., sound, b/w, 14 min., 1963. Purchase $86, rental charges upon request

This film explains the specific effects of ethyl alcohol on the human body. It traces the course of alcohol through the body until it either oxidizes or escapes, and it shows the effects of alcohol on the brain.—Encyclopedia Britannica Educational Corporation, 425 North

Michigan Ave., Chicago, Ill. 60611 *For a complete listing of EBEC's Spanish-soundtrack 16 mm. films, ask for their Spanish Film List which contains more than 300 titles.*

ALCOHOLISMO #548 16 mm., sound, b/w, 22 min., 1969. Purchase $135, rental charges upon request
Presents some causes of excessive drinking, traces the development of the disorder in one case history. Shows how the roots of alcoholism are embedded in personality difficulties, and describes various forms of treatment.—Encyclopedia Britannica Educational Corporation, 425 North Michigan Ave., Chicago, Ill. 60611

A CRUTCH FOR ALL SEASONS (Spanish) 16 mm., sound, color, 22 min. Rental $12, 1 day; $36, 1 week; purchase $225
Reveals how people depend upon false dependencies to help them face the problems of everyday life, then leads them to see the beauty of vibrant, healthy living without crutches such as alcohol and narcotics. Portrays three true-life stories. Also available in English, Portuguese, and French.—Narcotics Education, Inc., 6830 Laurel St., NW., Box 4390, Washington, D.C. 20012

THE SOCIAL DRINKER and the ANTI-SOCIAL DRIVER (Spanish) #1238 16 mm., sound, color, 16 min., 1971. Rental $20, 1-3 days, purchase $210
Statistical analyses of many automobile accidents involving drinking drivers suggest that the social drinker rather than the problem drinker is primarily responsible for most accidents on the road. Suggested for high school to adult levels.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

SPIRITS UNDERGROUND 16 mm., sound, color, 6 min., 1970. Rental $12, purchase $90
A drunken subway rider is haunted by a toy train, a horde of little people, and the specter of his drunken grandeur. The hallucinatory nature of his experience is beautifully captured with wax, clay, and latex animation. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

AN UNPLEASANT EVENING 16 mm., sound, b/w, 10 min., 1967. Rental $15, purchase $100
The film depicts the loneliness and rejection that alcoholism breeds. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

WHAT'S IT GOING TO GET YOU PEPPY? 16 mm., sound, b/w, 9 min., 1966. Rental $13.50, purchase $90
A young man is rejected by his girl friend and proceeds to drink himself into oblivion in this graphic and melodramatic story of an adolescent's inability to control or affect his world. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

drug abuse

DIRECCION SIN RUMBO Cuatro Puntos de Vista Sobre las Drogas (MAINLINE TO NOWHERE Four Views of the Drug Scene) SAC 2013
Multimedia drug abuse education kit includes four filmstrips, four cassettes, teacher's guide in Spanish, drug information sheet (English) and "Choose!" game (English), 1973, Suggested for grades 4-8. Purchase $79.95—Spoken Arts, 310 North Ave., New Rochelle, N.Y. 10801

LAS DROGAS EN EL MUNDO MODERNO

Direccion sin rumbo. cuatro puntos de vista sobre las drogas

Four 34 mm. color filmstrips with records or cassettes, 1972. Purchase with records #76-1696, $48.50; with cassettes #76-1695, $53.50
An important new preventive against drug abuse at early ages is shown. The shocking rise in drug experimentation among students in elementary grades presents a serious problem to parents and educators. Often this experimentation starts in the home with prescription pills, airplane glue, and other readily available substances. Suggested for intermediate and junior high levels.—Demco Educational Corp., P.O. Box 1488, Madison, Wis. 53701

LAS DROGAS Y USTED Four 35 mm., color filmstrips with records or cassettes, 1972. Purchase with records #76-3159, $64; with cassettes #76-3160, $72
A filmstrip series for primary-level children with an emphatic early warning against drugs. Preconditions children at primary levels to sav No to drugs. The filmstrips dramatize the often fatal dangers of misusing medicines and drugs, as well as their beneficial uses. The hazards of common toxic household products are also stressed.—Demco Educational Corp., P.O. Box 1488, Madison, Wis. 53701

DRUGS AND THE NERVOUS SYSTEM (Spanish) 16, 8, and super 8 mm., sound, color, 16 min. Purchase $210
Explains the serious disruption of the nervous system caused by drugs—airplane glue, stimulants (amphetamines), depressants (barbiturates, opiates), marihuana, and LSD. Animation. Suggested for elementary and junior high school levels.—Churchill Films, 662 North Robertson Blvd., Los Angeles, Calif. 90069

DRUGS and YOU (Spanish) #1930 16 mm., sound, color, 5 min., 1971. Rental $15, 1-3 days, purchase $75
Set of five separate 30-second television spots interspersed with questions programed between each commercial. Suggested for middle grade to adult levels.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

THE DRUG SCENE (Spanish) #1929 16 mm., sound, color, 16 min., 1971. Rental $20, 1-3 days, purchase $200
The film begins with a free-form sequence, suggesting an analogy of pollution of environment and the mind, then moves into discussion by ex-users and ends with visualization of other ways to enjoy life. Suggested for middle grade to adult levels.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

THE END 16 mm., sound, b/w, 9 min., 1969. Rental $13.50, purchase $90
A young man's marihuana reverie reveals how he responds to the social forces that surround him. A grubby angel and a glamorous devil compete for his loyalties in this morality tale. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011.

FOCUS ON DRUGS (Spanish)
Series of five, 15-minute, 16 mm. color films released in 1972, which are designed to be an interlocking and comprehensive drug education program for the upper elementary to the secondary high school child. Each film has a carefully chosen narrator.—American Educational Films, 132 Lasky Dr., Beverly Hills, Calif. 90212

THE GLUESNIFFER 16 mm., sound, color, 4 min., 1968. Rental $6, purchase $50
A young boy takes to sniffing glue after an argument with his boss. He imagines that he is in the country climbing a tree and falls from a rooftop. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

HIP JEAN'S JEANIE 16 mm., sound, color, 9 min., 1968. Rental $13.50, purchase $100
A young Puerto Rican boy's marihuana fantasy is portrayed in vivid color and motion. The story of Aladdin's lamp is recreated in this Lower East Side version. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

I'LL BE SEEING YOU (Spanish) #1217 16 mm., sound, color, 11 min., 1970. Rental $15, 1-3 days, purchase $140
A film designed for upper elementary level on the dangers of drugs and narcotics. Explains the basic types of drugs and their effects on the human body and on one's entire future. Suggested for middle grade to junior high school levels.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

KING HEROIN 16 mm., sound, b/w, 9 min., 1972. Rental $15, purchase $90
An unromantic look at the junkie's lifestyle: the desperation of being "sick," the rage at being beaten, and the hell of being addicted to "King Heroin." No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

LIFE IN NEW YORK 16 mm., color, sound, 6 min., bilingual dialog, 1970. Rental $9, purchase $80
This film is an exhortation to the Puerto Rican community to improve their condition. Shots of fashionable Park Avenue are intercut with shots of Lower East Side junkies throughout this strong indictment of drug abuse.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

NARCOTICS—THE INSIDE STORY (Spanish) #1308 16 mm., sound, color, 12 min., 1967. Rental $20, 1-3 days, purchase $150
This film acquaints students with effects narcotics and drugs have on the senses and the central nervous system. We protect ourselves from dangerous external influences by using sunglasses, earplugs, crash helmets, and seatbelts, but we also need to protect our bodies from dangerous internal influences. Suggested for middle grade to junior high school levels. —Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

NUMERO UNO 16 mm., sound, color, 5 min., 1971. Rental $10, purchase $75
A "hip" young woman seeks ecstasy and release through a drug experience, which is exposed as shabby, empty, and tragic. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

THE POTHEADS 16 mm., sound, b/w, 5 min., 1968. Rental $6, purchase $50
In montage form, this film effectively captures the hallucinatory nature of marihuana smoking; the filmmaker touches on the self-destructive nature of drug-taking. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011.

TOMORROW NEVER COMES 16 mm., sound, b/w, 9 min., 1967. Rental $13.50, purchase $90
The death of his girl friend causes a young man to escape into the world of drugs. The film is a thorough exploration of adolescent self-destruction. No dialog.—Youth Film Distribution Center, 43 W. 16th St., New York, N.Y. 10011

migrant health

SAFE FOOD #M-935 16 mm., sound, color, 9 min., 1964. Free loan, purchase $40.50
Demonstrates practical methods migrant families can use in cooking, serving, and storing food under camp conditions. Indicates how sound food practices help keep workers well; how poor ones lead to illness, as well as attracting flies, roaches, and rats. This film has a Spanish-American cast. Also available with English-language soundtrack (#M-826).—*Free loan* National Medical Audiovisual Center (Annex), Station K, Atlanta, Ga. 30324. *Purchase* National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

A HEALTHIER PLACE to LIVE #M-934 16 mm., sound, color and b/w, 11 min., 1964. Free loan, purchase $23.45 (b/w), $44.75 (color)
Focuses on housing and other environmental conditions in camps of seasonal crop workers. Shows safeguards against such hazards as pests, dirt, and unsafe water. This film has a Spanish-American cast. Also available with English-language soundtrack (#M-825).—*Free loan* National Medical Audiovisual Center (Annex), Station K, Atlanta, Ga. 30324. *Purchase* National Audiovisual Center, National Archives and Records Service, General Services Administration, Washington, D.C. 20409

nutrition and food sanitation

COMIDA PARA MEJOR SALUD #psN-1-25 35 mm., color filmstrip lesson with cassette soundtrack and reminder card, 1973. Purchase $15.50
Provides a look at the kinds of foods needed to build strong, healthy bodies and to stay well. The four food groups are examined and the values of the foods in them are discussed. Various meals are studied and suggestions are made for improvement.—Multi Media Office, Mt. San Jacinto College, 21400 Highway 79, Gilman Hot Springs, Calif. 92340

FOOD for HEALTH (Spanish) 16 mm., sound, color, 13 min., 1968. Purchase $165
This film deals with balanced diet, proteins and minerals, carbohydrates and fats, vitamins, food guides, and calories. Suggested for junior high to adult levels.—Sterling Educational Films, 241 East 34th St., New York, N.Y. 10016

HEALTH—FOOD and NUTRITION (Spanish) #1303 16 mm., sound, color, 11 min., 1967. Rental $15, 1-3 days, purchase $140
Each meal we eat should have foods from the four basic food groups: dairy products; bread and cereals; fruits and vegetables; and meat, fish, and eggs. These foods provide calcium, vitamins, minerals, and protein to help us stay well, feel wide awake, look our best, and to grow tall and strong. Suggested for primary grades.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

SANITATION: WHY ALL THE FUSS? FS-1 (Spanish) 16, 8, & super 8 mm., sound, color, 10 min. Purchase $122 (16 mm.), $136 (8 & super 8 mm.)
Shows biological reasons for sanitation and the conditions for controlling bacterial growth. Explains the danger of bacteria; how bacteria spread from place to place; and how their growth can be accelerated or retarded. Demonstrates how hands, clothing, kitchen tools, unclean surfaces, rats, roaches, and flies can carry germs. Stresses the importance of cleanliness and the need for proper heating and cooling of foods. Suggested for food service workers.—National Educational Media, Inc., 3518 Cahuenga Blvd., Hollywood, Calif. 90068

EL SECRETO DEL DESAYUNO DE ALEJANDRO Filmstrip kit, color, two parts, soundtrack record, activity record, Spanish- and English-language scripts, children's activity sheets, teacher's guide. Free to persons teaching nutrition to Spanish-speaking children. Nutrition education aid for pre-primary and primary levels. A dog named Alejandro teaches a young boy and girl about the importance of breakfast and nutrition. Includes songs and games.—Cereal Institute, Inc., 135 South LaSalle St., Chicago, Ill. 60603

El secreto del desayuno de Alejandro

personal hygiene

EL CUIDADO DE LA PIEL #426 16 mm., b/w, 11 min., 1969. Purchase $70. Rental charges upon request
Explains why cleanliness is important to good health, and demonstrates proper procedures for cleaning and caring of the skin. The structure of the skin and the functions of the sweat glands and the oil glands are included.—Encyclopedia Britannica Educational Corporation, 425 North Michigan Ave., Chicago, Ill. 60611

HEALTH—PERSONAL CLEANLINESS (Spanish) #1304 16 mm., sound, color, 11 min., 1968. Rental $15, 1-3 days, purchase $140
The relationship of cleanliness to health is illustrated by the strict cleanliness procedures followed by astronauts and all those who deal with spacecraft. The ways, methods, and reasons to keep clean are summarized and the importance of each is discussed. Suggested for primary grades.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

LA HIGIENE PERSONAL EN LAS CHICAS #3228 16 mm., color and b/w, 11 min., 1972. Purchase $87.50 (b/w), $175 (color)
Pam and Monica know that being attractive begins with personal health. On a fun trip through a department store, they look at different items that trigger information about cleanliness, good grooming, and good health, including a brief comment on the relationship between good health, smoking, and the use of drugs. Suggested for junior-senior high to college levels.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

HIGIENE PERSONAL PARA LOS JOVENES #3229 16 mm., sound, color and b/w, 11 min., 1971. Purchase $70 (b/w), $140 (color)
Bill, Steve, Jeff, Larry, and Rich all have special problems regarding personal hygiene and the changes taking place in their maturing bodies. The film offers guidance on the common standards of good body care including shaving, showering, and skin and hair care. Suggested for junior-senior high to college levels.—Coronet Instructional Films, 65 East South Water St., Chicago, Ill. 60601

physical fitness

LA BUENA CONDICION FISICA Y LA SALUD 16 mm. sound, color, 10 min. License fee $90
This third side of the health triangle deals with the importance of keeping the body physically fit and stresses the value of exercise to keep the heart and other muscles and organs functioning properly.—Walt Disney Educational Materials Co., 800 Sonora Ave., Glendale, Calif. 91201

WHY EXERCISE? (Spanish) #2305 16 mm., sound, color, 14 min., 1965. Rental $20, 1-3 days, purchase $175
Emphasizes the fact that the human body makes adaptations to the exercise demands placed upon it and that those adaptations are in the form of increased strength, greater endurance, and improved flexibility. Interestingly demonstrated are types of activities which develop these factors. Animated portions show how posture is maintained and how the movement of the body is achieved through the pulling action of muscles on bones. Suggested for middle grades to junior high school levels.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

prenatal and infant care

HEALTH INFORMATION SERIES IN SPANISH
Set of 35 mm., color filmstrips with record or cassette, instructor's guide. Purchase with record $50 each program, $225 series; with cassette $60 each program, $275 series. For

the three other programs in this series, see "Diseases—diabetes," and "Diseases—emphysema."—Trainex Corp., P.O. Box 116, Garden Grove, Calif. 92642

MATERNITY HOSPITAL ROUTINE (Spanish) 16 mm., sound, color, 16 min., 1968. Purchase $190
This film is designed to allay fears which a prospective mother may have about entering the hospital. She learns what happens in the maternity ward, labor room, and in predelivery tests. The film then details the work of physicians and nurses during actual delivery, methods of baby identification, and the care given in the recovery room. Suggested for junior high to adult levels.—Sterling Educational Films, 241 East 34th St., New York, N.Y. 10016

STRAIGHT TALK ABOUT PREGNANCY AND PRENATAL CARE (Spanish supplement)
Color slide set. Basic slide set is $15 plus $5 for Spanish-language text, script, record, or cassette. Both the basic set and Spanish supplement are needed for a Spanish showing. If both record and cassette are desired, $2 extra. Addressed primarily to women of childbearing age, it should also be used to communicate effectively to men and young adults the urgency of medical care for all pregnant women. The set features supplemental sections on nutrition in pregnancy and labor and delivery. — National Foundation-March of Dimes, 1275 Mamaroneck Ave., White Plains, N.Y. 10605

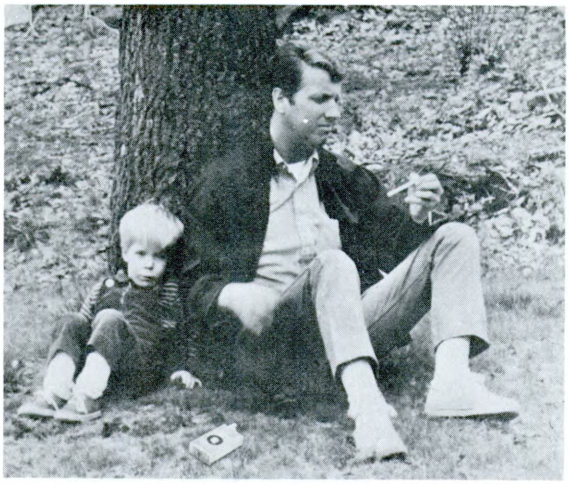
smoking and health

BARNEY BUTT #EM433 (Spanish) 16 mm., sound, color, 12½ min., 1967. Rental $6 one day, $9 two, $12 three, purchase $75
The story of the heart and hard times of a comical cartoon character from his infancy through teenage adventure, smoke-blighted romance, short-winded attempts at sports, failure at work, and so on. Some animation. Aimed at young teen and subteenagers, but also suggested for the general public.—American Heart Association Film Library, 267 West 25th St., New York, N.Y. 10001

BE SMART—DON'T START (Spanish) #3309 16 mm., sound, color, 11 min., 1970. Rental $15, 1-3 days, purchase $135
This film fills a vital need for grades 4 through 6, covering cigarette smoking, and the hazards of starting the habit. Presents opposing opinions and claims of cigarette manufacturers and medical men. This film aims to create a lifetime mental attitude toward smoking, without preaching, at this critical age level. Suggested for middle grades.—Aims Instructional Media Services, Inc., P.O. Box 1010, Hollywood, Calif. 90028

DE TAL PALO TAL ASTILLA #EM306Z TV spot film, 35 mm., sound, color, 60 sec., 30 sec., and 20 sec. versions, 1973. Purchase $15 set of three
Spanish language version of a classic spot in which a little boy imitates his father. An antismoking message. Available from your local Affiliated Heart Association.

TIME PULLS THE TRIGGER (Spanish) 16 mm., sound, color, 23 min. Rental $12 daily, $36 weekly, purchase $235
Imaginary trip through the lungs of a person who is smoking. Shows what happens when a person smokes. Combined live and animated action. Available in five languages in addition to Spanish and English.—Narcotics Education, Inc., 6830 Laurel St., N.W., Box 4390, Washington, D.C. 20012



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Demonstration Programs For Quality Assurance

The Hospital Research and Educational Trust (HRET), an affiliate of the American Hospital Association, has announced that 16 hospitals will participate in 13 demonstration programs designed to assure that hospital patients receive high-quality medical care. The 16 hospitals, with 215,458 patient admissions annually, will receive partial support from the W. K. Kellogg Foundation of Battle Creek, Mich., for the implementation of a Quality Assurance Program (QAP).

According to Colin W. Churchill, director of the trust, the hospitals were chosen on the basis of size and type, geographic location and regrouping arrangements, and varying relationships with other peer review mechanisms. Each hospital will serve also as an educational site.

The field demonstration sites will receive $344,851 of the $665,392 grant allocated for the program by the Kellogg Foundation. The remaining $320,541 has been granted to the trust for the development and support of the project.

The Quality Assurance Program initiated in 1973 by the American Hospital Association makes it possible for physicians of a hospital medical staff to take positive action for the quality control of the care of patients. It is compatible with the Professional Standards Review Organization provided for in Public Law 92-103, Social Security Amendments.

Goals of the 2-year program are to demonstrate the effectiveness of the QAP in selected hospitals, to develop appropriate educational materials that will support its introduction and implementation, and to encourage the adoption of the QAP in community hospitals across the nation.

The demonstration hospitals are: Mary Hitchcock Memorial Hospital, Hanover, N.H.; Augusta General Hospital, Augusta, Maine; Overlook Hospital, Summit, N.J.; Bryn Mawr Hospital, Bryn Mawr, Pa.; Appalachian Regional Hospitals at Beckley, W. Va., Man, W. Va., and South Williamson, Ky.; Mobile Infirmary, Mobile, Ala.; Mercy Hospital and Medical Center, Chicago; Borgess Hospital, Kalamazoo, Mich.; Kansas City General Hospital and Medical Center, Kansas City, Mo.; St. Paul Hospital, Dallas, Tex.; St. Alphonsus Hospital and St. Luke's Hospital, as a joint activity, Boise, Idaho; University of California Medical Center, San Francisco; and Rogue Valley Memorial Hospital, Medford, Oreg.

Kellogg Grant for Study Designed to Improve Quality of Care

A 2-year demonstration and operational study designed to improve the quality of health care in America is underway with the aid of a $1,013,376 grant from the W. K. Kellogg Foundation of Battle Creek, Mich., to the Institute of Professional Standards. The project is co-sponsored and conducted jointly by the American Association of Foundations for Medical Care, the American College of Physicians, the American Medical Association, the American Hospital Association, and the American Society of Internal Medicine.

"This is a major private initiative that will complement the implementation of Professional Standards Review Organization legislation by the Department of Health, Education, and Welfare," said Dr. John Gamble, chairman of the management committee that represents the five co-sponsoring organizations. "Our intent," he said, "is to develop and test alternate approaches to incorporating a greater emphasis on quality assessment and assurance in PSRO." (Professional Standards Review Organizations are expected "to promote the effective, efficient, and economical delivery of health care services of proper quality . . . through the application of professional standards review.")

The project will have six demonstration and study areas, which will be designated in close coordination with the Office of Professional Standards Review, Department of Health, Education, and Welfare, and distributed in different regions of the United States. Tentative plans are for two statewide PSROs in medium-to-large metropolitan areas with up to 1 million populations and two primarily rural PSROs.

The project staff will work closely with each of these provisional PSROs in planning its organization and relationships, defining its existing and needed capabilities for data processing, establishing agreements with fiscal intermediaries, and designing its operations, so that quality assessment and assurance is emphasized.

The relative costs of quality review and utilization review will also be evaluated and compared with the total costs of care of the patients under surveillance. Special attention will be given to the functional relationships between PSROs and the Quality Assurance Program of the American Hospital Association and other hospital-based activities.

The products expected from this combined demonstration-evaluation are documentation and assessment of six representative PSROs that use different methods of utilization control, improved methods of quality assessment that would be directly related to the continuing education of physicians and others giving care, and a viable means of involving representatives of the public at the appropriate levels of review.

The project will include definitive analyses and planning for adding ambulatory care review, including the monitoring of drug prescriptions. The project staff plans to distribute the results promptly and widely so that PSROs still in the developmental stage will be able to use them.

Dr. Donald C. Harrington, a pioneer in peer review and member of the National Professional Standards Review Council, is project director in charge of the central office in Stockton, Calif. Dr. Paul J. Sanazaro, former director of the National Center for Health Services Research and Development, Department of Health, Education, and Welfare, is project manager with responsibility for overall implementation.

Conference in Mexico City On Viruses in Water

An invitational conference on the public health hazards of viruses in water will be held June 9–12, in Mexico City. The conference is sponsored by the American Public Health Association and made possible by a grant from the Carborundum Company of Niagara Falls, N.Y.

The objectives of the conference are to bring together and update information on the question of whether viruses are an ecological and public health problem in water; to identify the "state of the art" of isolating and identifying viruses in water, including the sensitivity of recovery in polluted waters; to exchange information on studies currently in progress; to review and delineate the methods useful in recovery of viruses from water and beneficial research techniques; and to exchange information to determine which, if any, specific viruses constitute a public health problem.

The 3½-day meeting will feature technical papers by internationally known virologists, engineers, and epidemiologists, followed by group discussions. Its structure will enable participants to determine a set of recommendations on viruses in water. It is expected to result in the unification and updating of current knowledge and research efforts, a review and delineation of the research techniques and methods used to recover viruses from water, the establishment of a roster of the researchers and laboratories studying viruses in water, and the development of needed areas of water technology to deal effectively with the issue.

For applications, contact Dr. Richard Wade, American Public Health Association, 1015 18th St., NW., Washington, D.C. 20036.

National Repository Of Nursing Materials

Final discussions to establish a national repository of materials relating to the development of the nursing profession in America were held recently in Washington, D.C.

Margaret E. Walsh, executive director of the National League for Nursing, Dr. Anne Kilbrick, former NLN president, and Faye G. Abdellah, Assistant Surgeon General and chief nurse officer of the U.S. Public Health Service, will work with Dr. Peter D. Olch, deputy chief, History of Medicine Division, National Library of Medicine, as an informal advisory group. One of their main objectives will be to identify appropriate collections of important historical materials of American nursing. The materials may be included ultimately in the collections of the National Library of Medicine.

The National League for

Faye G. Abdellah, Anne Kibrick, Margaret E. Walsh, and Peter D. Olch (left to right) examine some National Library of Medicine manuscript items and early publications of Florence Nightingale.

Nursing is giving this library a collection of papers, microfilm, and photographs which will aid in the documentation of the early history of the American Society of Superintendents of Training Schools for Nurses and the National Organization for Public Health Nursing.

"The National League for Nursing," said Olch, "is to be commended for its concern and interest in the preservation of these materials for the use of interested scholars now and in the future. It is our hope that NLN's action will serve as an example for other organizations and individuals interested in the preservation of historically important nursing materials."

Individuals or organizations aware of important materials related to nursing that should be considered for preservation at the National Library of Medicine should contact Margaret E. Walsh, Anne Kibrick, or Peter D. Olch.

Contract for Training In Reality Orientation

The National Institute of Mental Health and the Division of Long-Term Care of the new Bureau of Health Services Research of the Health Resources Administration, has awarded a $82,600 contract to the American Hospital Association to develop and test training for reality orientation therapy. This technique, designed to help confused persons regain awareness of self and of surroundings, calls for reminding them persistently and consistently of the objective facts of time, place, and person. The concept base for this contract is an outgrowth and extension of the reality orientation therapy technique developed for use in hospitals by the Veterans Administration under its director, Dr. James Folsom.

Dr. Charles C. Edwards, Assistant Secretary for Health, Department of Health, Education, and Welfare, has stated that "This technique, currently being used in approximately 100 nursing homes in various parts of the country, has a potential for use as a preventive to senility in home environments."

Materials under preparation are a training guide, slide presentations, and a training curriculum for training professional and nonprofessional personnel who work with elderly people in their homes or in nursing homes.

This program will be set up and tested within HEW Region V, covering Illinois, Indiana, Minnesota, Michigan, Ohio, and Wisconsin. If training materials receive a high evaluation in Region V, they will be made available for national distribution.

Conference in Miami On Industrial Hygiene

The American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists have announced the convening of the annual American Industrial Hygiene Conference in Miami Beach, Fla., May 12–17, 1974. The conference will feature the latest research and development findings in worker protection. The conference is particularly timely since governmental units, industry, educational institutions, and private organizations are giving increasing attention to occupational health problems because of the Federal Occupational Safety and Health Act.

Exhibits in conjunction with the conference will display the most recent equipment, reference books, and supporting activities for industrial hygiene programs. Conference participants will have an opportunity to become familiar with health-related research at a variety of facilities in the south Florida area.

Further information on the availability of exhibit space and on the technical program may be obtained from William E. McCormick, Managing Director, American Industrial Hygiene Association, 66 South Miller Rd., Akron, Ohio 44313.

Toxic Substances List

The 1973 edition of the Toxic Substances List, currently available from the National Institute for Occupational Safety and Health, contains 25,000 listings of chemical substances, including several thousand listings not cited in earlier editions. In the Toxic Substances List, required annually by the Occupational Safety and Health Act of 1970, attempts are made to identify all known toxic substances that may exist in the human environment and to provide pertinent data on their toxic effects.

In this edition, a slight change of format simplifies the cryptic display of information. Fourteen thousand entries bear the Chemical Abstract Service registry numbers, which assist in accuracy of identification and the elimination of duplicates.

About 500 chemical substances listed in the 1973 edition are covered by the U.S. occupational standards for safe use at the workplace. The data should be particularly valuable to professionals concerned with chemical hazards in the work area.

Single copies of the 1973 edition of the list are available from the Office of Technical Publications, National Institute for Occupational Safety and Health, Post Office Building, Cincinnati, Ohio 45202. (Please include a self-addressed mailing label to assist in answering your request.) Additional copies are available at $7.90 each from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, GPO Stock No. 1733 00016.

Education Notes

Announcements for publications should be forwarded to Health Services Reports 6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.

Faculty Institute on Medical Care. The fifth Faculty Institute on Medical Care, sponsored by the American Public Health Association, will be held June 10–21, 1974, at the University of Michigan, Ann Arbor. This institute is intended to strengthen the teaching of medical care organization in medical schools, schools of hospital administration, schools of public health and of other allied health professions. Registration is open primarily to persons with teaching responsibilities in these educational settings.

Six advanced courses, running concurrently with a basic program of courses, will be offered in evaluative research, the economics of health care, the sociology of health, international comparisons in health and social policy, the political process in health care, and comprehensive health service organizations.

Sixteenth Summer Session of Statistics in the Health Sciences. This session, supported by funds from the U.S. Public Health Service, will be held at the University of Texas

School of Public Health in Houston, Tex., June 20–August 2. Courses will cover such topics as elementary, intermediate, and advanced biostatistics; statistical methods in health services research, environmental health, population planning, and disease control; the sampling of human populations; the design of experiments; biomathematics; demography; and operations research.

These courses are designed to benefit statisticians, epidemiologists, vital statistics registrars, and health science personnel from a variety of agencies and industries, as well as administrators, health planners, and other health workers who use quantitative data in decision making and problem solving. Graduate students and teachers in statistics and in the health, medical, and biological sciences will also be interested in the program.

For further information write to Dr. Richard D. Remington, Summer Session of Statistics, University of Texas School of Public Health, P.O. Box 20186, Astrodome Station, Houston, Tex. 77025.

Publications

FEDERAL

Personal Health Care Expenditures by State. *By Barbara S. Cooper and Nancy L. Worthington. DHEW Publication No. (SSA) 73-11906; 1973; 151 pages; $2.40.*

Center for Disease Control Foodborne Outbreaks. Annual Summary 1972. *DHEW Publication No. (CDC) 74-8185; November 1973; 45 pages. Center for Disease Control, Attn: Enteric Diseases Section, Bacterial Diseases Branch, Bureau of Epidemiology, Atlanta, Ga. 30333.*

The Relationships Between Speech and Reading. By Ignatius G. Mattingly and James F. Kavanagh. *DHEW Publication No. (NIH) 73-475; 1973; 20 pages.*

The Dust Inhalation Diseases: Pneumoconioses. *DHEW Publication No. (NIH) 74-484; 1973; 16 pages; 40 cents.*

Food Allergy. *DHEW Publication No. (NIH) 74-533; 1973; 12 pages; 25 cents.*

National Center for Health Statistics

Prevalence of Selected Chronic Digestive Conditions, United States, July–December 1968. *DHEW Publication No. (HRA) 74-1510, Series 10, No. 83; September 1973; 51 pages; 85 cents.*

Prevalence of Selected Chronic Respiratory Conditions, United States, 1970. *DHEW Publication No. (HRA) 74-1511, Series 10, No. 84; September 1973; 49 pages; 85 cents.*

Current Estimates From the Health Interview Survey, United States, 1972. *DHEW Publication No. (HRA) 74-1512, Series 10, No. 85; September 1973; 74 pages; $1.*

Body, Weight, Stature, and Sitting Height: White and Negro youths 12–17 years, United States. *DHEW Publication No. (HRA) 74-1608, Series 11, No. 126; August 1973; 65 cents.*

Intellectual Development of Youths As Measured by a Short Form of the Wechsler Intelligence Scale, United States. *DHEW Publication No. (HRA) 74-1610, Series 11, No. 128; September 1973; 42 pages; 80 cents.*

A Study of Infant Mortality From Linked Records by Age of Mother, Total-Birth Order, and Other Variables, United States. *DHEW Publication No. (HRA) 74-1851, Series 20, No. 14; September 1973; 52 pages; 85 cents.*

Mortality Trends: Age, Color, and Sex, United States, 1950–69. *DHEW Publication No. (HRA) 74-1852, Series 20, No. 15; November 1973; 40 pages; 70 cents.*

Federal publications listed are obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication. (Publications listed without prices may be obtained from agency.)

NONFEDERAL

Madness and the Brain. *By Solomon H. Snyder, MD. 1973; $7.95. McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, N.Y. 10020.*

Review of Research and Studies Related to the Health Education Aspects of Family Planning (1967–1971). Studies related to school and college programs of family life education. *By Margaret A. C. Young. Health Education Monograph No. 33. 1973; 70 pages; 1–24 copies $3, 25 or more $2.50. Charles B. Slack, Inc., Thorofare, N.J. 08086.*

Review of Research and Studies on the Health Education and Related Aspects of Family Planning (1967–1971). Behavioral and cultural factors. *By Marjorie A. C. Young. Health Education Monograph No. 35. 1973; 63 pages; 1–24 copies $3, 25 or more $2.50. Charles B. Slack, Inc., Thorofare, N.J.*

Review of Research and Studies on the Health Education and Related Aspects of Family Planning (1967–1971). Communication, program planning and evaluation. *By Marjorie A. C. Young. Health Education Monograph No. 34. 1973; 71 pages; 1–24 copies $3, 25 or more $2.50. Charles B. Slack, Inc., Thorofare, N.J.*

Length of Stay in PAS Hospitals, United States, 1972. *October 1973; 162 pages, plus index. Commission on Professional and Hospital Activities, Ann Arbor, Mich.*

Length of Stay in PAS Hospitals, United States, regional, 1972. *October 1973; 635 pages plus index. Commission on Professional and Hospital Activities, Ann Arbor, Mich.*

Health Foods: facts and fakes. *By Sidney Margolius. Public Affairs Pamphlet No. 498. October 1973; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York N.Y. 10016.*

Development of a Nurse Anesthetist Program in the West Indies. *By Dorothy Aeschliman, BSN, MN, and Richard S. Meltzer, MD. 1973; 19 pages. Project HOPE, The People-to-People Health Foundation, Inc., 2233 Wisconsin Ave., NW, Washington, D.C. 20007.*

Comments in Sports Medicine. *1973; $5. American Medical Association, 535 North Dearborn St., Chicago, Ill. 60610.*

Readings in Disaster Preparedness for Hospitals. *1973; 127 pages. American Hospital Association, 840 North Lake Shore Dr., Chicago, Ill. 60611.*

Ombudsmen Around the World: A comparative chart. *By Kent M. Weeks. 1973; 101 pages; $3 (20 percent discount on 10 or more). Institute* *of Governmental Studies, 109 Moses Hall, University of California, Berkeley, Calif. 94720.*

School Intervention. Vol. I. *Edited by William L. Claiborn, PhD, and Robert Cohen, PhD. 1973; 265 pages; $7.95. The Community Mental Health Journal, 2852 Broadway, Morningside Heights, New York, N.Y. 10025.*

Children and Their Parents in Brief Therapy. *Edited by Harvey H. Barten, PhD, and Sybil S. Barten, PhD. 1973; 323 pages; $9.95. The Community Mental Health Journal, 2852 Broadway, Morningside Heights, New York, N.Y. 10025.*

Head Start: Tragicomedy with epilogue. *By James S. Payne, EdD, Ruth Payne, Cecil Merger, MS, and Roxana Davidson. 1973; 253 pages; $9.95. The Community Mental Health Journal. 2825 Broadway, Morningside Heights, New York, N.Y. 10025.*

Childhood Learning, Behavior and the Family. *By Louise C. Taichert, MD. 1973; 112 pages; $7.95. The Community Mental Health Journal, 2852 Broadway, Morningside Heights, New York, N.Y. 10025.*

Review of Research and Studies on Health Education Aspects of Family Planning, 1966–1971: School and college programs in family life education. *Health Education Monograph No. 33. By Marjorie A. C. Joung, DrPH. June 1973; 76 pages; $3. Slack Press, Thorofare, N.J. 08086.*

Salaries and Related Personnel Practices of Voluntary Social and Health Agencies in New York City, September 1972. *June 1973; 48 pages; $5. Community Council of Greater New York, Department of Research and Planning Information, 225 Park Ave. South, New York, N.Y. 10003.*

Retrolental Fibroplasia and Autistic Symptomatology: An investigation into some relationships among neonatal, environmental, developmental and affective variables in blind prematures. *By Joan B. Chase, EdD. June 1973; 215 pages; $4. American Foundation for the Blind, Inc., 15 West 16th St., New York, N.Y. 10011.*

Demographic Data Collection. A summary of experience (Population Council). *By William Seltzer. 1973; 50 pages; $1. Key Book Service, Inc., 425 Asylum St., Bridgeport, Conn. 06610.*

Vital Statistics, Illinois, 1970. *March 1970; 67 pages. Illinois Department of Public Health, Springfield, Ill. 62761.*

Florida Vital Statistics, 1971. *1973; 85 pages. State of Florida Department of Health and Rehabilitative Services, Division of Health, P.O. Box 210, Jacksonville, Fla. 32201.*

Accidental Poisoning in Wisconsin. Deaths and reported cases, 1968–1971. *1973; 39 pages. Division of Health, Wisconsin Department of Health and Social Services, Section of Statistical Services, Box 309, Madison, Wis. 53701.*

Outpatient Services Journal Articles. A collection of current articles related to outpatient services. Second edition. *Edited by Vivian Vreeland Clark, RN, EdD. 1973; 348 pages; $10. Medical Examination Publishing Co., Inc., 65–36 Fresh Meadow Lane, Flushing, N.Y. 11365.*

Light on Your Feet. *By Jules Saltman. Public Affairs Pamphlet No. 345A. 1973; 24 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Can We Conquer Cancer? *By Clifton R. Read. Public Affairs Pamphlet No. 469. 1973; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Cleansing Our Waters. *By Gladwin Hill. Public Affairs Pamphlet No. 497. 1973; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

The President's Review and Annual Report, The Rockefeller Foundation, 1972. *1973; 157 pages. The Rockefeller Foundation, 111 West 50th St., New York, N.Y. 10020.*

What Every Woman Needs to Know About Abortion. By Helen S. Arnstein. *1973; $5.95: $2.45, paperbound. Charles Scribner's Sons, 597 Fifth Ave., New York, N.Y. 10017.*

Before Addiction: How to Help Youth. *By Florence Lieberman, DSW, Phyllis Caroff, DSW, and Mary Gottesfeld, MSS. 1973; 131 pages; $7.95. Behavior Publications, 72 Fifth Ave., New York, N.Y. 10011.*

Crisis Intervention. Vol. 2. Topical series in community-clinical psychology. *Edited by Gerald A. Specter, PhD., and William L. Claiborn, PhD. 1973; 210 pages; $9.95 hardbound, $4.95 softbound. Behavior Publications, 72 Fifth Ave., New York, N.Y. 10011.*

Work is Dangerous to Your Health. A handbook of health hazards in the workplace and what you can do about them. *By Jeanne M. Stellman, PhD, and Susan M. Daum, MD, with contributions by James L. Weeks, MS, Steven D. Stellman, PhD, and Michael E. Green, PhD; illustrations by Lyda Pola. November 1973; 448 pages; $10 hardbound, $1.95 paperback. Pantheon Books, 201 E. 50th St., New York, N.Y. 10022.*

Politics and Law in Health Care Policy. *1973; 400 pages; $3.95 paperback, $7.95 clothbound. Neale Watson Academic Publications, Inc., 156 Fifth Ave., New York, N.Y. 10010.*

Research Methods in Health Care. *1973; 400 pages; $3.95 paperback, $7.95 clothbound. Neale Watson Academic Publications, Inc., 156 Fifth Ave., New York, N.Y. 10010.*

A Report on the New England Region Conference on Population: Proceedings, evaluation, and follow-up. *1973; 234 pages. C. Stephen Baldwin, Staff Associate, Demographic Division, The Population Council, 245 Park Ave., New York, N.Y. 10017.*

COTH Survey of House Staff Policy, 1973. *107 pages. Council of Teaching Hospitals, Association of American Medical Colleges, One Dupont Circle, NW., Washington, D.C. 20036.*

A Study of Risks, Medical Care, and Infant Mortality. Edited by Helen C. Chase, DrPH. American Journal of Public Health Supplement, Vol. 63, September 1973. 56 pages; $2.50. American Public Health Association, 1015 18th St., NW., Washington, D.C. 20036.

Order nonfederal publications from publisher or sponsoring organization.

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Our readers are practicing public health officials, community health practitioners, faculty and students in colleges where the health disciplines are taught, and workers in research institutions, hospitals, and community health organizations.

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HEALTH SERVICES REPORTS publishes a synopsis, in lieu of a summary, of most technical reports. Authors are requested to submit with appropriate papers a synopsis of approximately 250 words. The staff will supply on request information on the preparation of synopses.

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HEALTH SERVICES Reports

VOL. 89 NO. 3

HEALTH SERVICES ADMINISTRATION

MAY–JUNE 1974

Health Services Reports to Resume The Title, *Public Health Reports*

Beginning with the issue of July–August 1974, *Health Services Reports* will resume its former title, *Public Health Reports*. Resumption of the name *Public Health Reports* will also mark another change. The journal will be published by the Health Resources Administration on a bimonthly basis.

Under the aegis of the Health Resources Administration, the journal will be able to take advantage of HRA's emphases on the research, statistical, resource development, and planning functions in the health field. *Public Health Reports* will continue its 96-year-old tradition of publishing significant papers that are concerned with the broad responsibilities of the Public Health Service. The staff will seek papers describing important research and will report on new policies and initiatives in the field of public health.

Cover: Student from Mount Sinai School of Medicine examines a patient under the supervision of his field preceptor (not shown), a HIP medical group partner. Under a joint program of the medical school and HIP, students learn how a health maintenance organization functions. See pages 219–229 for reports on the program and students' perspectives on their experiences.

HEALTH SERVICES
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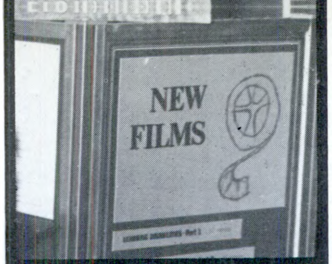

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PROGRAMS, PRACTICES, AND PEOPLE

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Health Services and Mental Health Administration

Drug-Related Deaths in the United States —First Decade of an Epidemic—

DAVID HEWITT, MA, and JEAN MILNER, BA, MSA

Mr. Hewitt is associate professor, and Mrs. Milner is research associate, department of epidemiology and biometrics, University of Toronto School of Hygiene. Tearsheet requests to David Hewitt, Department of Epidemiology and Biometrics, University of Toronto School of Hygiene, Toronto M5S 1A1, Canada.

THIS STUDY TOOK its origin from an earlier analysis of vital statistics relating to the Province of Ontario in which attention was drawn to a recent increase in the rate of suicide among women (*1*). Statistics published annually by the Registrar General of Ontario (*2*) permit some elaboration of this finding since deaths in the category of accidents, poisoning, and violence are cross-classified according to the nature of the external cause (for example, accident or suicide) and the nature of injury (for example, fractures, burns, and effects of poisons). From this source it was established that, within the general increase of female mortality caused by suicide, there had been a disproportionate rise in suicide by means of poisons and that deaths of males by self-poisoning had also increased (although this increase had a smaller impact on the male suicide rate as a whole).

For these reasons we decided to focus our study on death by poisoning, however the external cause had been certified, rather than on the suicide rate, whose validity as a measure is widely and wisely doubted. Scrutiny of more detailed statistics implicated prescription drugs above all other classes of poison as responsible for the recent increase of fatal poisoning in Ontario; this situation is also apparent in U.S. statistics (*3*), which are the subject matter for the following analyses.

Recent Upturn in Drug-Related Deaths

Deaths occasioned by the ingestion of medical drugs may be counted under any of several separate rubrics of the International Statistical Classification (*4*), and the numbers of these deaths must therefore be combined in order to construct the aggregate of interest. The relevant titles are those listed, together with the absolute numbers of deaths so classified in 1958 and in 1967.

Rubric		*1958*	*1967*
323	Drug addiction other than alcoholism	69	202
E870–878	Accidental poisoning by . . . drugs	549	1,860
E953	Therapeutic misadventure in administration of drugs or biologicals	148	210
E970	Suicide and self-inflicted poisoning by analgesic and soporific substances .	1,163	2,689

Figure 1 shows the trend of the crude death rate per million from these four cause-groups combined for available years within the period covered by the 6th and 7th revisions of the International Classification (*4*). Over the first 10 years of this period the rate varied within the narrow limits of 10.5 ± 0.8, although there were certainly shifts, seemingly spurious, within this aggregate. Beginning about 1959 there was a period of increase so rapid that the rate more than doubled within a decade.

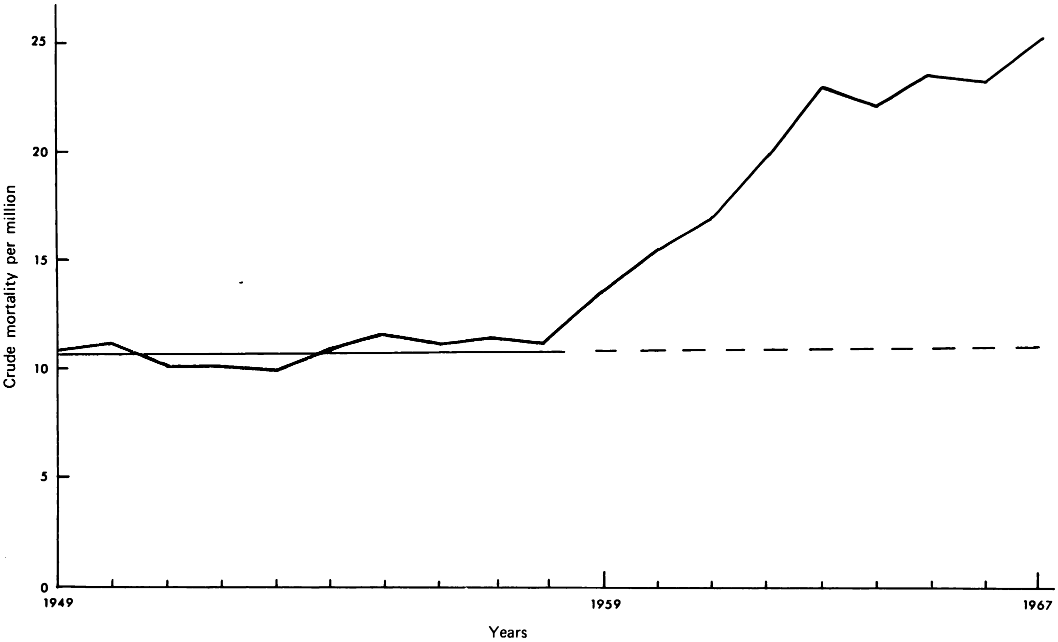
Before one concludes that the trend of figure 1 reflects a true net increase in risk of death, it is necessary to consider what shifts may have occurred into the aggregate of drug-related deaths from certain other cause-of-death groups. The first such group to be considered comprises the deaths attributed to various effects of alcohol. This group is important because of the arbitrariness of selecting an underlying cause when alcohol and barbiturates have been taken together and because overt suicide is excessively common among alcoholics (*5*). Table 1 shows that, between 1954–57 and 1964–67 when the drug-related death rate increased by 109 percent, there was no compensating decline in deaths attributed to effects of alcohol. Table 1 also shows that death from certain classes of poison other than drugs also increased over the same period, so there is no evidence of a shift from that quarter. The rate for suicide by means other than poison did decline (table 1), but only by an amount that was small compared with the increase in drug-related deaths (0.3 per million, compared with 12.2 per million).

To summarize the evidence presented in table 1—there are only limited possibilities of accounting for any part of the apparent increase in drug-related deaths in terms either of changes in certification and coding practice or of changes in methods used by persons who commit suicide. It has to be accepted that the higher rates for 1964–67 do reflect the occurrence of many deaths that would not have occurred under the conditions of the 1950s. It is therefore appropriate to refer to the "excessive prevalence" (*6*) of drug-related deaths in the 1960s as an epidemic.

Demographic Profile of Drug Casualties

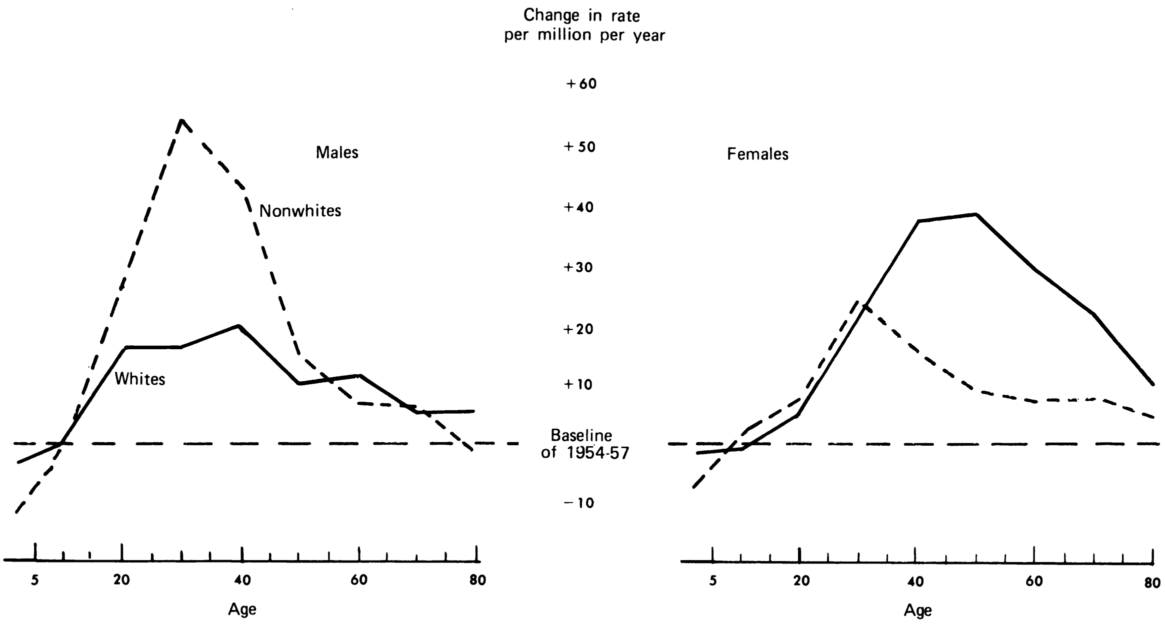
The incidence of excess death in various sections of the population defined by age, sex, and color is depicted in figure 2. As a zero or base-line from which to measure added mortality in each such section, we took age-sex-color-specific rates for the period 1954–57, plotted in the figure along the broken horizontal line. Because no finer cause-of-death classification is available in pub-

Figure 1. Trend of drug-related mortality, United States, 1949–67



NOTE: Deaths were those classified as ISC 323, E870–878, E953, and E970, 6th and 7th revisions.

Figure 2. Poison deaths per million, 1964–67, measured from a baseline of 1954–57, by age, sex, and color



lished tables that give data on age, it was necessary to derive figure 2 from rates of suicide by any poison and of accidental poisoning by any "solid or liquid substance," rather than by drugs alone. In the immediate context this distinction is unimportant except possibly for ages under 15, where truly accidental cases predominate and poison control programs appear to have made some gain. All adult age groups show some increase in deaths caused by poison, the impact being maximal around age 30 for nonwhites, in the 40–50 year group for whites, and negligible beyond the age of 75. In terms of absolute numbers it can be estimated that by the mid-1960s some 2,500 "extra" poisoning deaths were occurring each year in the United States, the modal victim being a white woman in her early forties. Based on 1959–61 life table values (7), the average forfeit of life expectancy associated with these deaths was close to 32 years.

Broadly speaking, the age, sex, and race selection of the newer casualties resembles that of poison deaths in the pre-epidemic period. Put another way, the percentage increases in mor-

Table 1. Comparison of certain mortality rates in latest available period with those of a decade previously

Cause group (I.S.C. numbers, reference 4)	Crude annual rate, per million		10-year change	
	1954–57	1964–67	Absolute	Percent
Drug-related deaths (323; E870–878; E953; E970):	11.2	23.4	+12.2	+109
Suicide (E970)	5.6	13.7	+ 8.1	+145
Accidental	5.6	9.7	+ 4.1	+ 73
Alcohol poisoning and addiction (322; 880)	13.9	15.4	+ 1.5	+ 11
Other poison deaths (879; 881–888; E971–973; E980)	25.2	26.4	+ 1.2	+ 5
Suicide, other than by poison (E963; E974–979)	79.7	79.4	− .3	− .4
Drug-related deaths by type of agent and circumstance:				
Barbiturates (871; E970B)	6.77	11.92	+ 5.15	+ 76
Analgesic and soporific substances and other drugs for which no separate coded classification exists (874; 878; 970H; 970M)	1.78	7.53	+ 5.75	+313
Morphine, salicylate, strychnine, belladonna, etc. (balance of 870–878 and E970), plus drug addiction (323) plus therapeutic misadventure (E953)	2.61	3.94	+ 1.33	+ 51

tality have been fairly uniform over age and sex. This generalization does not cover the exceptionally rapid increase in suicides of young black males, which has been the subject of comment elsewhere (*8*).

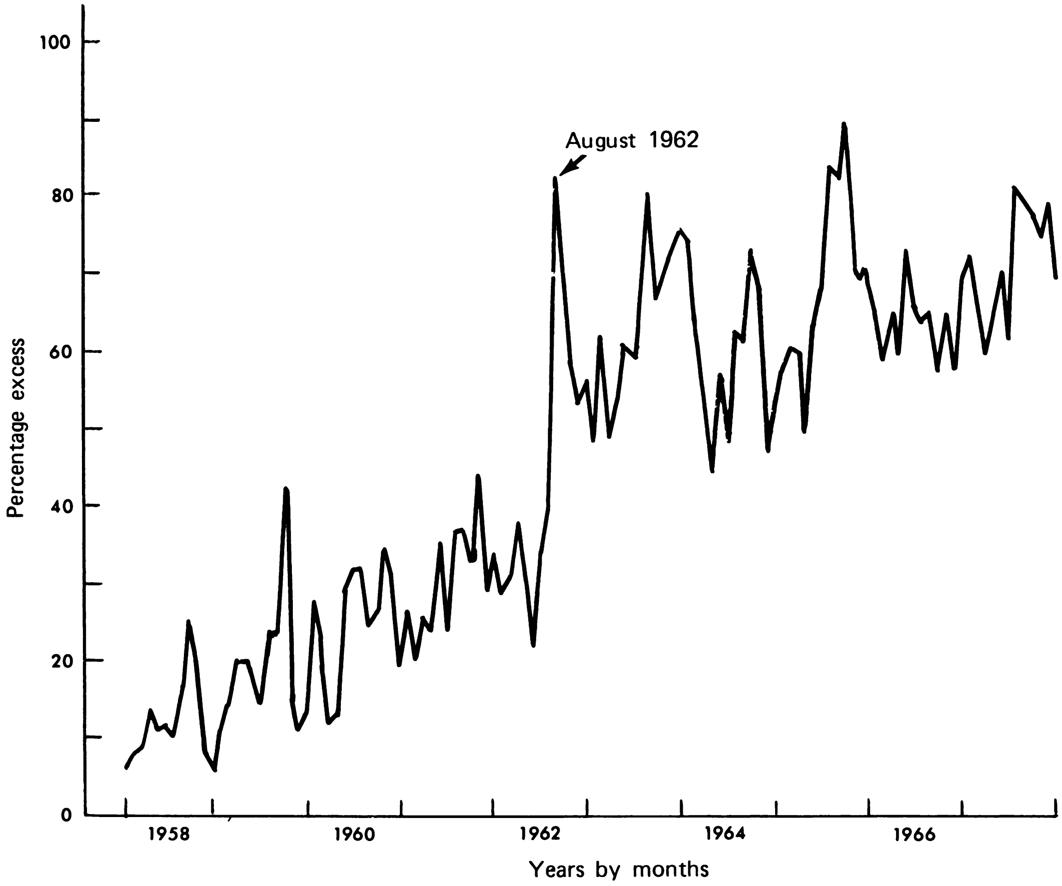
Short-Term Movements

The onset of the rising trend in drug-related mortality seen in figure 1 is so abrupt as to suggest that an analysis in terms of periods shorter than a whole year could be informative. Data are, in fact, published for individual months (*3*) and can be rendered more meaningful by an adjustment for variations in the number of days per month, together with a correction to discount for the widely recognized seasonal effect on suicide rates.

Most analyses of this seasonal pattern, including the recent and otherwise elaborate analysis by Spiers (*9*), have treated suicide as a single entity, without distinction among the means used for self-destruction. The two groupings available in the published table of monthly totals may be regarded as providing a rough distinction between predominantly "outdoor" means (drowning and jumping from high places, but also including cutting and stabbing), and predominantly "indoor" means (poisoning, hanging, and also firearms). Suicides in both these groupings have their seasonal maximum in April, but in December, when suicide by "indoor" means is some 12 percent below peak, the rate of suicide by "outdoor" means is 25 percent below peak. The idea of inconvenience as a factor limiting the number of suicides will be taken up subsequently in the Discussion section.

In figure 3 the monthly numbers of deaths by accidental poisoning by any solid or liquid sub-

Figure 3. Monthly average deaths per day (number of accidental poisonings by solid or liquid substance and suicides by poisons) expressed as a percentage of the average number for the corresponding month for the base period 1954–57



stance and suicides by poisons have been plotted as a percentage of the average number for the corresponding month of the base period 1954–57. The statistical significance of the fluctuations shown in figure 3 cannot be readily assessed. On general grounds, one would expect some negative autocorrelation between successive terms in any such series where the events counted may be subjected to varying degrees of delay or acceleration, and this autocorrelation would make the variance between months greater than for a pure Poisson process (*10*). Hence, the magnitude of the deviations from the trend in individual months is of less interest than the location of the major peaks and their possible matching with events in the social, medical, and pharmaceutical history of the period. Dates at which some temporary peak is suggested by the appearance of figure 3 include August-October 1958, September 1959, August-September 1962, September 1963, and July-September 1965.

By far the most remarkable monthly total was that for August 1962, when psychiatrists practicing in widely separated locations were aware of an unusual frequency of suicide (*11*). This high frequency has been plausibly interpreted as a response to the death in California of the 36-year-old actress Marilyn Monroe, from an overdose of sleeping pills, on August 6, 1962. The whole of the increase in fatal poisonings between July and August of that year occurred within the subtotal certified as suicidal (541 in July, 699 in August); the rate of suicide by means other than poison did not change (1,289 deaths in July and 1,295 in August) (*3*).

To carry out a more exacting test of the hypothesis that Marilyn Monroe's death precipitated an outbreak of imitative acts, it would be necessary to re-sort the original data for July–August 1962 by sex and by exact day of death. The hypothesis would be greatly weakened if the sudden increase were found to involve men as well as women, or if it predated August 6, or if it was delayed by more than a week after that date.

Constancy of the Geographic Pattern

Previous statistical studies with a focus on suicide have detected a tendency for rates to be relatively high in the westernmost part of Canada (*12*) as well as in the western United States (*13*). We will show that risk of fatal poisoning has a geographic pattern resembling—but more intense than—that of suicide by means other than poison. This pattern was essentially the same in the mid-1960s as it had been in the pre-epidemic period.

In order to avoid confounding geographic with racial factors, the analyses on which tables 2 and 3 are based have been restricted to the white population of each State. (Deaths of nonwhites within individual States are not numerous enough to support a parallel analysis.) The mortality measure used in these analyses is the proportional mortality rate, that is, the numbers of deaths from selected causes expressed per 1,000 deaths from all causes, which dispenses with the need for intercensal estimates of State populations by age. As in the two previous sections, it was necessary to include, together with the drug-related deaths, certain categories of poisoning that have not shown any increase. Even for this aggregate, however, table 2 shows a 60 percent rise in the average rate for females (from 2.99 to 4.77), which thus overtook the corresponding male rate.

The intensity of the geographic pattern is indicated by the coefficient of variation of the State rates (standard deviation expressed as a percentage of the mean). For age-adjusted mortality rates from all causes (not shown in table 2) the coefficient of interstate variation is about 6 to 7 percent, but for poison deaths alone, as table 3 shows, it is 6 to 10 times as large, indicating much greater geographic contrasts than occur with the risk of death in general (and implying that little information is lost by using all deaths as the denominator of the poison mortality rate, rather than numbers of the living population at risk). The intensity of the geographic pattern is about twice as great for poison deaths as for nonpoison suicides and, within each of these cause categories, appreciably stronger for females than males. Constancy of the geographic pattern of deaths caused by poison is indicated by a correlation between the two periods exceeding +.9 in each sex, while the pattern of nonpoison suicides is also fairly stable (correlations of +.87 and +.71).

Correlation coefficients can also be used to express the degree of match between the geographic patterns of other pairs of rates. For example, when rates for males and females are compared, State by State, a higher degree of resemblance is found for the poison deaths (coefficients averaging +.88) than for nonpoison suicides (+.69). Correlation between these two cause categories is high in the rates for females (+.75), but only moderate for the rates for males (+.49).

Of the many possibly valid ways in which the geography of fatal poisoning might be summarized, the simplest and most matter-of-fact is in terms of the excessive rates in western States. This description fits best the rates for females, for whom the top third of State rates include those for 10 of the 11 westernmost States (that is, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Washington, and Wyoming, the exception being Utah). Another and smaller cluster of States with high rates lies near the nation's Capital, comprising Delaware, Maryland, and Virginia. What facet of "western-ness" may be the most relevant to the risk of fatal poisoning lies beyond the scope of this paper to determine.

However, because of the prominence given in the literature of psychiatric epidemiology to characteristics of migrants and to the experience of migration, it seems appropriate to make a preliminary test of the hypothesis that the States with high rates of deaths by self-poisoning may tend to be those to which a high proportion of the residents have migrated. Table 3 presents the results of such a test. The index of migration that we used was the percentage of young men in a medically examined sample whose birthplace lay outside their State of residence at the time of their recruitment into the Navy (*14*). As required by the hypothesis, there is a substantial positive correlation between this index and the rate of fatal poisoning, as there also is with the rate of suicide by means other than poison. However, table 3 shows that this index does not correlate with the all-causes, age-adjusted death rate.

Discussion

If it is legitimate to refer to recent developments in drug-related mortality as marking the onset of an epidemic, one may next ask, following Lipinski (*15*) and others, what understanding of the phenomenon can be gained by analyzing it in terms of the classic epidemiologic triad: host, environment, and agent. It is hard to believe that any important changes in host factors have oc-

Table 2. Deaths from selected cause per 1,000 deaths from all causes, by State of residence

Sex	Accidental poisoning by solid and liquid substances plus suicide by any poison		Suicide other than by poison	
	1954–57	1964–67	1954–57	1964–67
Males				
Mean of State rates	3.68	4.17	14.33	13.88
Standard deviation	± 1.56	± 1.95	± 3.26	± 3.96
Coefficient of variation (percent)	42	47	23	29
Correlation between periods	+0.91		+0.87	
Females				
Mean of State rates	2.99	4.77	4.33	4.49
Standard deviation	± 1.93	± 3.41	± 1.42	± 1.57
Coefficient of variation (percent)	65	71	33	35
Correlation between periods	+0.93		+0.71	

Table 3. Correlation over individual States between a measure of inward migration and certain mortality measures of white persons

Sex	Percent of all deaths in 1964–67 that were certified to—		All causes, age-adjusted death rate, 1960
	Accidental poisoning by solid or liquid substance and suicide by poison	Suicide by means other than poison	
Males	+ .645	+ .607	+ .057
Females	+ .740	+ .680	+ .036

NOTE: The measure of migration for a State is the percentage of U.S. Navy recruits whose birthplace was not their State of residence at recruitment. Percentages for 48 States were derived from reference 14.

curred, for if the propensity for self-destruction had been rising in the American population generally, one would surely have seen some upward movement in the rate of suicide by means other than poison, concurrent with the rapid rise in drug-related deaths. That there has been little change in sex, age, and geographic differentials argues against change in the environment as a cause of the epidemic, unless one can think of an environmental factor that, beginning about 1959, has applied equally to all sections of the adult white population. It is easier to name a new "agent," for indeed a multiplicity of new agents, in the form of potentially lethal prescription drugs, have come into circulation during the period in question.

Precisely because they were new, the drugs did not have their own readymade category in the coding used for cause of death statistics, but tended to fall under one of the "other" rubrics constituting the second group in the lower part of table 1. For this group alone, the mortality more than quadrupled in 10 years. The timing of the upturn depicted in figure 1 is consistent with an effect at least partly attributable to certain nonbarbiturate soporifics and antidepressant drugs that came into common use at the end of the 1950s and in the early 1960s.

The impact of these new drugs on the mortality rate is likely to have been the greater because, as with some infectious disease agents, it is the susceptible persons who are the most heavily exposed. Resort to mood-modifying drugs may itself be regarded as a mild form of self-destructive behavior (*16*). Therefore these drugs must often be prescribed to the very class of patient that, whether intentionally or not, is most likely to take an overdose.

Another factor tending to increase population exposure to barbiturates, as well as the newer agents, may have been the spread during this period of membership in prepaid medical plans providing coverage for prescription drugs.

Additionally, outpatient treatment with the newer drugs has been, for some patients, the alternative to confinement in an institution where the risk of overdose is much smaller than in a home setting. Yet we cannot attribute much importance to this relaxation of the physical restraints on psychiatric patients while there is no evidence of a net increase in suicides by means other than poison.

Analysis of the mortality record has thus led us to the conclusion that greater availability of substances that can be used for suicide (and "attempted" suicide) has brought about a substantial net increase in the frequency of suicide. We are aware that this conclusion commits us to a particular view of the etiology of suicide, for it means that suicidal acts may often occur through a fortuitous combination of impulse and opportunity, rather than as the more or less inevitable outcome of a deep and persistent depression.

The distinction between these two views has more than academic importance because it has a bearing on clinical and on public policy. For instance, is gun control an issue that properly lies within the domain of public health? The rate of suicide by firearms is more than 10 times as high in the United States as in England and Wales, although the rate for suicide by means other than firearms is lower; the "excess" of suicides by firearms in the United States runs into several thousands every year. More attention is usually focused on the U.S. to British ratio for the rate of homicide by firearms, which is more than 100, but the number of deaths involved is quite small compared with the excess of suicide in the United States. Hence the lives that might be saved by more stringent control over gun ownership are, in the main, those of the would-be owners.

Could control over one means of self-destruction really reduce the total number of suicides? A recent report from Birmingham, England, shows how this can happen. The carbon monoxide content of the domestic gas supply in that city was reduced over a period of years from about 20 percent to 2.5 percent; during this time the number of suicides by domestic gas fell dramatically, and there was no compensating increase in other forms of suicide, while accidental deaths certified as caused by coal-gas poisoning also declined (*17*). In England and Wales as a whole, suicides by gas fell from 50 per million to 10 per million during the sixties. Although suicide by solid or liquid poisons (mainly medicines) doubled in only 3 years (1960–62), "it has remained constant since and has not reached a level high enough to replace all the gas poisoning suicides which have been avoided" (*18*). In Australia, restriction of the quantity of sedatives that may be supplied on a single prescription has been credited with reversal of the rising trend in overall suicide mortality seen in that country during the early

1960s (*19*).

Another hypothesis to be considered in relation to the mortality record concerns the idea of "contagious suicide" (*11*). It seems that one well-publicized poisoning of a sufficiently prominent person may be enough to precipitate scores of fatal occurrences of a similar kind, just as a socially deviant act like an aircraft hijacking may, through wide publicity, set off imitative acts. If this is so, one would expect the modern mass media to have influenced the pattern of occurrence, if not the total frequency of suicide. In drawing his analogy between mental and physical epidemiology, Penrose (*20*) laid some stress on the sheer size of the crowd into which an agent (micro-organism or pathogenic idea) is introduced as determining the risk that propagation will occur. Certainly television has increased the size of the crowd that can be exposed simultaneously to morbid psychological stimuli.

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Between the mid-1950s and mid-1960s mortality due to ingestion of medically prescribed drugs doubled. This increase was a real change in risk, not a statistical artifact, because it refers to an aggregate that includes deaths certified as accidents as well as those certified as suicides, and because there was no compensating decline in suicide by means other than poisoning, in other accidental poisoning, or in deaths ascribed to alcohol and other addictions. Both before and during this epidemic, rates have been higher in areas that receive many migrants. By the mid-1960s there were about 2,500 "extra" drug-related deaths per year, the modal victim being a white woman in her early forties. Greater availability of one means of self-destruction appears to have raised the death rate for suicides; control over other means (such as guns) would be likely to reduce it.

A manpower training program in an HMO

The Mount Sinai-HIP Joint Program

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AS MEDICAL KNOWLEDGE grows and as health needs of society become clarified, medical schools are confronted with the problem of curriculum change (*1, 2*). In 1966, the Third World Congress on Medical Education recommended that medical schools develop their curriculums in response to the needs of society (*3*). In 1970 the Panamerican Federation of Associations of Medical Schools, in discussing the needed changes in the current health scene, asserted the continued importance of engaging medical education in the advancement of community health (*4*). Health maintenance organizations in general, and prepaid group practice systems in particular, have been singled out in recent years as settings of major educational value for that purpose (*5*). These and many other similar calls are for major changes in medical education and in the delivery of health services. The two are inseparable, and this indivisibility is one reason why medicine is confronted with a dilemma that is so difficult to solve.

Prepaid group practice, operating on the principles of continuing and high-quality medical services delivered to a defined, enrolled population on a prepaid basis, is viewed by the Department of Community Medicine of the Mount Sinai School of Medicine as a health system that offers unique opportunities to implement some of the desired changes. Indeed, with the growing interest in prototypes of fully developed health maintenance organizations (*6*), it becomes essential that medical schools get involved in such agencies. The projected manpower needs make educational ventures a first priority. As a Carnegie Commission report emphasized, "although institutional associations have many potential problems, medi-

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cal schools and prepaid group practice health plans should join efforts in educational ventures to produce a different kind of physician" (*7*).

Beginning with these considerations, the Mount Sinai School of Medicine and the Health Insurance Plan of Greater New York (HIP) established in 1970 a joint program of education for health professionals, closely intertwined with the ongoing service and research activities of both institutions (*8*). The main practice setting for this program is the Yorkville Medical Group (YMG), one of the 27 medical groups that contract with HIP to deliver health services. The program itself, and different roles identified for medical students as learners in a prepaid group practice, have been described elsewhere (*9*). In this paper the program's staff are identified, the cooperative efforts and joint learning of staff and students are described, and the major problems encountered in implementing this experiment are discussed. In the second part of this paper, five former medical students in the program recount their learning experiences and, from their perspective, discuss some of the basic issues presented here.

Staff in the Program

The Yorkville Medical Group serves the Yorkville and East Harlem areas of Manhattan. The group provides services in two centers, one located at 84th St. and Lexington Ave., and the other at 3d Ave. and 124th St. Members of the staff of both centers and of the medical school function as teachers. In general, a member of the medical group's health team functions as a field preceptor for one or two students at a time. The most active participants in the medical group have been the medical director (an internist), two full-time family physicians, one full-time pediatrician, one part-time surgeon, and the health educator. Other staff members of the group, especially the administrator, the supervisor of social services, and the community health worker, have been actively involved as consultants.

Members of the Mount Sinai staff do not provide services to patients; two physicians on the faculty of community medicine and three residents in the department of community medicine function primarily as academic tutors or consultants to the students. Two sociologists, a social worker, a nurse, and an administrative assistant from the department also function as consultants.

The interdisciplinary staff from both institutions share and divide educational responsibilities. It would be an onerous task for members of the medical group with a heavy service load to (*a*) undertake the interviewing of students for placement, (*b*) help the students learn the theoretical structure and basic principles of prepaid group practice, (*c*) help the students understand HIP as a health system, (*d*) analyze critically the different roles of health personnel in the group practice, (*e*) make pertinent bibliographic material available, and (*f*) discuss that material. The faculty of the department of community medicine fulfills this more academic phase of the program.

The field preceptors primarily assume responsibility for the exploration of clinical or administrative issues, or both; serve as professional models in group practice (medical and paramedical); provide the opportunity for experimental learning; and conduct discussions centered around the everyday problems of the medical group. Although the entire medical group partnership has endorsed the affiliation with Mount Sinai, not all 24 physicians in the group have expressed interest in working with students. Currently, more than half of the physicians are participating at least to some degree, and three have faculty appointments in the school's department of community medicine.

The Students as Learners in the Field

Students have entered and participated in the program at different stages of their careers and in a variety of ways. An experience in prepaid group practice is an option in the required and elective community medicine programs. More than 60 students have participated in the required community medicine curriculum in the first, second, and fourth years, in a summer apprenticeship program, or in an elective program. All students who have entered the program chose to do so; none were assigned to the YMG against their expressed wishes or interests.

The first step in the individual learning experience is for each student to specify his educational objectives for the assignment. In consultation with his academic tutor, and during contact with the field staff, he defines reasonable specific knowledge and skill objectives that he expects to have achieved by the end of the available period of time.

By the end of the experience, a change in the behavior of the student should have occurred.

The student is expected to have acquired an elementary understanding of the theory of prepaid group practice and of existing examples in the United States, gained clinical knowledge and epidemiologic skills in the identification and solution of a community health problem, and had an opportunity to observe and analyze in detail the form of practice in one medical group of HIP. Most students go far beyond these achievements; they are able to compare an academic ideal with their perceptions of reality, they learn how to deal with common health problems, and they begin to appreciate the importance of accepting responsibility for the health care of a known population as opposed to the "sickness care" of individual patients.

Through participation in the definition of what he or she should learn, the student becomes an active partner in the learning-teaching process. The health educator in the group practice commented: "When we were first beginning our adolescent program [student] S.T.'s assistance was invaluable. We all learned together."

After the student has defined his objectives, the academic tutor helps him to identify a feasible role in the Yorkville Medical Group. This role can be predominantly clinical, administrative, epidemiologic, or sociological, but the student is expected to have some clinical involvement in primary care. The strongest interest of most medical students is clinical. Their interest in organizational issues is expressed as a desire to understand the context in which they will carry on their clinical work. During the experience, the student spends most of his time in the field, meeting his academic tutor at least once a week for interpretation, analysis, explanation and, if necessary, modification of the objectives or assigned role. The specifics of student roles and their evaluation are described in detail in another publication (*8*).

The Student as Partner for Change

If the desired change in medical education is related to change in medical care, the participation of medical students in this double process of institutional change is of paramount importance. Many Mount Sinai students have had impact on the educational process and on the health system itself. The student body, as a group, has triggered the introduction of a variety of important innovations within the Yorkville Medical Group, particularly at the East Harlem Center. The health accountant at the center, reporting her observations on student learning, said, "I saw many weak spots in our program, and the students saw even more. Many of these weaknesses I felt needed changing, but the students were able to subtly induce the doctors and the administrator to bring about change."

Early in our field trials, the community medicine faculty realized that it would be difficult to initiate any joint activity within the medical group without the students. The town-gown split was too wide in our community. In addition, prepaid group practice in general and HIP in New York City have been stigmatized by academia for more than 25 years. Nonetheless, medical education was recognized as a neutral subject, and the group was eager to have students. Research and service programs followed the entry of students into the group. With the common concern of a new kind of medical education, the academicians and the practitioners began to cooperate and to trust each other. Bringing together town and gown was the most important function of the students as agents of change. The health accountant also reported, "The doctors went along with the changes because they were students and it was part of their program." Students are able to demand consultation with any member of the departmental faculty, and they can then bring this information to the medical group. With developing trust, the Mount Sinai faculty are now asked directly to be consultants to the group.

The faculty also are aware of being changed by the students. An academician has a problem in knowing the reality of a community. The practitioner knows, but has little time to teach. The student functions as a bridge to bring knowledge back to the medical school, which then influences the student's education. At least one of the authors has come to appreciate the fundamental importance of primary care through this program.

Students have been instrumental in introducing the group to the Weed problem-oriented record (*10*), to the Williamson technique of continuing education and quality assessment (*11*), as well as to current research data in such areas as drug addiction and nutritional disorders of adolescents. One physician in the group commented that "the presence of students has stimulated the entire staff, causing them to try to put their best foot forward. They have been responsible for establishing interdisciplinary case conferences from which our entire staff has benefited. They serve as a stimulus to my continuing education. They have also given me cause to wonder and ponder the newer trends and changes in medical education, and their intimate effect on the practice of medicine." The students' accounts in the second part of this paper illuminate these effects on their preceptors.

Implementation—Problems and Rewards

In a program where responsibilities are shared by two different organizations (a university and a health system), with very different ultimate goals (education and service), and therefore with health professionals performing very different roles, there are problems in developing and maintaining interinstitutional relationships. The usual town-gown distance inevitably leads to distrust and lack of understanding and appreciation of each other's roles.

For example, when the department of community medicine of Mount Sinai made its first approaches to the Yorkville Medical Group, there was an avowed fear on the part of the group's staff that the school's goal might be to learn everything about that particular prepaid group practice in order to set up a competing system. This feeling is no longer a serious problem. The distance between HIP as an enrolling health plan agency and the medical profession has historically been even greater. Prepaid group practice has been attacked over the years by organized medicine and stigmatized by academia. Attempts had been made by HIP to gain medical school involvement (*12*) with poor results. Indeed, it is undoubtedly true that medical schools have had a part in weakening the image and potentials of HIP, especially through what medical faculty have taught their students.

The existing distance might very well have been unbridgeable without the students. Students were accepted where faculty was not. As the students continued to come to the centers and faculty from the medical school and physicians from the group began to meet around a common educational task, trust began to develop. Eventually, some members of the group began to realize that members of the

Students, staff, and a community medicine resident during a lunch break

An academic tutor and a field preceptor exchange ideas outside the East Harlem center of the Yorkville Medical Group of HIP

department of community medicine had skills and knowledge that could be useful to the group. At the same time, the faculty were learning to respect the educational capabilities of the primary care physicians and other members of the health team. This problem is far from solved; no more than five of the physicians, the administrator, and the health educator in the medical group have been involved with students to any great degree.

The primary problem from the practitioners' point of view has been the extra time needed for teaching. The field preceptors assume major responsibility for the total care of a large number of families within the group. A family physician who functions as an excellent field preceptor commented: "My heavy patient load and lack of time is one of my major difficulties. This has often meant that I did not have the time to spend explaining how I reached certain conclusions or why I did certain things. At present, I am not sure how this can be solved." The cost of time spent to educate students requires careful analysis and a source of funding separate from service funds.

The authors believe that students in their first 2 years of medical school can assume meaningful roles in serving as consumer advocates, in collecting epidemiologic information, in helping to improve a statistical system, and in other similar functions. Such tasks, however, do not relieve the physician's load, and his involvement with the student, if not well organized, can be demanding. By his fourth year, with some clinical knowledge, the student can care for his own small panel of patients under the tutelage of the physician and, with a well-defined role, he can be of help to the physician.

One strength of the program is early involvement. The motivation of first- and second-year students to see patients and learn simple skills about clinical primary care is very great. The authors encourage early responsibility in the physician's office and are reluctant to limit work with the physicians to the student's fourth year. It has been found that physical diagnosis can be taught very effectively in the physician's office. A partial solution to this burden on the medical group physicians is the system of shared responsibility between the field preceptor and the academic tutor previously described. The sharing of educational responsibilities has been helpful to the tutors and preceptors in understanding each other's roles. Since primary care has not been taught in medical schools until recently, the faculty have had to learn about primary care, evaluate their strengths, interpret their weaknesses, and appreciate the importance of organizational issues. The members of the medical group have had to learn basic elements of epidemiology, administration, social science, and education.

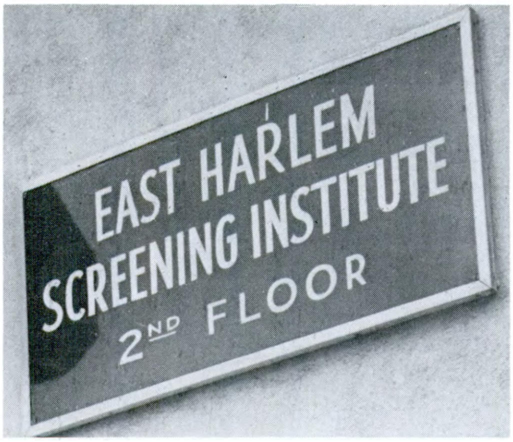
By and large, students have had amazingly few problems working in this field setting. Self-selection must have a great deal to do with this. It is probably true that a student trained in a rigidly structured clerkship program who is suddenly required to work in such a field situation would not do as well.

No major problems have arisen with patients. A question often asked, "How can private patients be part of education programs?" is a legitimate concern in this program. Prepaid group practice is still a form of private practice; the only major difference is the method of payment.

One family physician in the medical group highlighted this problem. Dr. E. stated: "To not have the patient feel this is another clinic and to present the student so that he is accepted and that the patient feels at ease [is a problem]." Physicians make it a practice to ask the patient if he minds having one student in the room. Almost none do.

Students at all levels often have more time than the physicians to spend on the patients' problems, and patients have responded well to this attention. Some students have become involved with families and visited their homes or have gone with family members to local agencies and even to court. In general, the student can function quite well in dealing with those who have chronic diseases, for whom the quality of the relationship and of the patient's health education is very important. Indeed, the authors believe that having students at the centers can be a definite plus as far as the patients are concerned.

Dr. E. also asserted, "I have tried to overcome this by assigning certain patients to the students for care and followup. For this reason, I prefer to have students assigned for an extended period of time rather than a few weeks." If the student's presence is explained properly to the patient, the patient sees him as another member of the health team. While he learns, he becomes a legitimate partner in the provision of medical care and often an important agent to achieve desired changes in patient behavior.



Student Perspectives on Learning in a Prepaid Group Practice

STUART H. BENTKOVER, RICHARD BERNSTEIN, MD, ALLAN GREENBERG,
PHILIPPA NEWFIELD, MD, and STEVEN THACKER, MD

THE FIVE INDIVIDUAL learning experiences which follow illustrate some opportunities for learning which are unique to ambulatory and in-hospital care in a prepaid group practice (ppgp).

S.T.

S.T.'s exposure to ppgp first centered on organizational issues. During an elective in his first year of medical school, he was a participant-observer in the planning of a comprehensive health care clinic which brought a union, a hospital, and a medical school together with an existing health plan. There was little "doing" in this elective; observing and reading predominated, along with constant feedback to and from a tutor.

During his second year S.T. completed an elective in the adolescent program of the East Harlem Center. The adolescent program is concerned with the health needs of the adolescent members of families enrolled in the ppgp. Both the adolescent program and the medical group's educational program were in their formative stages at the time S.T. took this elective. Nevertheless, with the cooperation of his academic tutors, field preceptor, and the staff of the adolescent program, S.T. was able to formulate objectives and develop a student role. The adolescent clinic was scheduled from 3 to 6 pm every Wednesday, and interdisciplinary conferences began 30 minutes before each clinic. Every Thursday, medical school faculty and HIP staff met to discuss the educational and service aspects of the program.

S.T. also joined social work students and the family health worker to make home visits, and involvement with patients led him into a drug rehabilitation center and civil court as a patient advocate. Furthermore, he helped adapt a history form to the particular clinic setting and resources, and he designed the organizational framework for program evaluation. Coupled with his input on specific issues, this evaluation was crucial in the subsequent extension of the adolescent program.

A critical aspect of this elective was S.T.'s role as a partner to promote change. S.T. confronted an unfamiliar situation without a defined role. With the freedom to develop his ideas, he was able to mold the student role from that of an ob-

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A full-time family physician discusses a health problem with a medical student and a community medicine resident

server to one of physician's apprentice, taking histories on his own and doing physical examinations under the supervision of the physician. His efforts were rewarded by the respect of the group physicians and his input was instrumental in the further acceptance of students by the HIP staff.

In all these electives, therefore, S.T. developed clinical and organizational skills while acquiring knowledge in clinical medicine and health care delivery. He also clearly demonstrated the active role a student can perform as an agent of change in a health care system.

S.B.

During the summer following his first year of medical school, S.B. worked with another medical student and a social work student identifying the problems of drug abuse in the adolescent population enrolled at the East Harlem Center of the medical group. The students helped design a questionnaire to identify potential or current drug users, and it is now used in the intake procedure for all new participants in the adolescent program. S.B. also led informal discussion groups with the adolescents, and student-organized outings led to the establishment of a full-time recreational program at the clinic. The center's staff regards this program as an alternative to the boredom and frustration which often lead ghetto adolescents to drug abuse. S.B. also worked with an urban-planning student, evaluating patient charts and determining the exact size of the adolescent segment of the subscriber population eligible for the new adolescent program. Their recommendations led to program expansion and record modification.

During the following summer, S.B. worked with a full-time pediatrician in the group as his field preceptor. He was given the responsibility of interviewing parents and examining acutely ill children and adolescents as they came to the office. The pediatrician verified his findings, explained them to the parent, and prescribed appropriate therapy. At the end of each session, S.B. and the pediatrician discussed the medical and social implications of the cases.

The pediatrician felt that students had a definite effect on his attitude. He believed that interaction with the students constantly encouraged him to review current pediatric literature. However, the exposure also frustrated him because he wished that he had more time to spend teaching and learning. The pediatrician is now actively engaged with other students.

Thus while learning clinical pediatrics, S.B. helped stimulate the continuing education of his field preceptor. Also, his research demonstrated the value of good-quality medical records in the delivery of comprehensive care as well as the research and health planning implications of a defined population.

R.B.

During an elective in his first year of medical school, R.B. studied the history, economics, and organization of ppgp. The following summer he worked with another student and a faculty preceptor on an epidemiologic study in which they documented differing use rates of medical services for non-Medicaid and Medicaid HIP subscribers. HIP later implemented an aggressive outreach program to inform Medicaid subscribers how to use the health plan better.

During an elective course in his second year, R.B. spent one afternoon a week seeing patients with the medical director of the Yorkville Medical Group in his internal medicine practice. R.B. also accompanied the director to meetings at the central offices of the health plan and discussed administrative problems with him. For R.B., the medical director was a role model that differed significantly from those available in the teaching hospital. One afternoon a week was spent in an interdisciplinary group discussion with nurses, the administrative assistant, social workers, the health educator, and faculty members from Mount Sinai. These sessions provided an interesting perspective on the problems of a ppgp.

During his third-year community medicine

Mount Sinai medical students, staff from the Yorkville Medical Group of HIP, and medical school staff during a case conference

clerkship, R.B. spent part of his time in planning a project to integrate the YMG with a community hospital in East Harlem. As a fourth-year student, R.B. worked with another student in the adolescent program. With the cooperation of two practitioners and a health accountant, the students converted the medical records to Weed's problem-oriented format (*10*). In addition, they became involved with the application of Williamson's technique (*11*) for assessment of outcome and quality care to several problems frequently encountered in the adolescent program.

For R.B., ppgp provided a rich environment for learning about clinical medicine, epidemiology, team functioning, health care organization, financing, planning, and quality care assessment. Furthermore, he made contributions in subscriber education and medical records.

P.N.

P.N. worked two summers in a temporary job at the central office of HIP, researching Puerto Rican health practices and attitudes and learning about the organization of HIP. During her third year in medical school she participated in the continuing education program of the staff in the adolescent program of the East Harlem Center and worked with R.B. in the conversion of the program's records to the Weed system.

Upon completion of her surgical clerkship, P.N. worked with a surgeon in the medical group. In an effort to understand his role as a member of the ppgp, she accompanied the surgeon throughout the day. She participated in morning rounds, operating room procedures, office hours, clinics sessions, and conferences.

P.N.'s experience demonstrated to her the continuity of prehospital, inhospital, and posthospital surgical care in this ppgp and provided the opportunity for her active participation in the delivery of this care. The value of her clinical experience in surgery was in "learning by doing." The surgeon's willingness to delegate responsibility to a student was predicated upon adequate and honest student-physician interaction. Furthermore, assignment of responsibility to the student freed the physician to attend to other problems and partially compensated for the time he devoted to teaching.

Working in different levels of a ppgp, P.N. learned the central organizational functions of that system of health care delivery, as well as the particular role of a surgeon within the system. She developed means to improve physician understanding of the patient population and methods for quality care assessment.

A.G.

In the summer after his second year of medical school, A.G. worked in the East Harlem Center as a physician's apprentice. Early in the summer, his role was limited to observing his field preceptor's practice. However, A.G. felt that group practice should offer students clinical responsibilities comparable with those offered in a teaching hospital. He and his academic tutor suggested this to the family physician. Initially hesitant to delegate some of his patient care responsibilities, the physician soon accepted this concept.

This acceptance laid the groundwork for the development of a graduated program of learning which enabled A.G. to assume increasing clinical responsibility commensurate with his ability. He interviewed and examined patients and, upon the completion of each examination, the family physician corroborated A.G.'s findings and discussed the patient's management and prognosis.

A.G. was also given the responsibility to organize weekly case conferences in the adolescent program. These sessions were designed to improve the understanding and management of common medical and social problems. He prepared each conference protocol and presented the case to the multidisciplinary staff of the center and consultants from Mount Sinai.

A.G., therefore, learned clinical medicine in an ambulatory setting by working with a primary care physician in a multidisciplinary group; he obtained a broader understanding of the patient in his environment through group problem-solving sessions. Finally, he helped a practitioner in a ppgp re-evaluate his goals for student education in the medical group.

Discussion

A prepaid group practice is an appropriate and rich setting for medical education. As indicated previously, there are ample opportunities for acquiring traditional clinical skills in data collection and diagnosis. What has been of special importance to the students in this experiment is the opportunity to learn these skills in a primary care setting. Students follow a limited number of patients with their field preceptors over an extended period; the long-term management of patients with somatic, emotional, financial, housing, and other problems is a particular challenge.

In a ppgp a multispecialty-multidisciplinary team faces a challenge, and good team care demands an interaction which can provide a traumatic, yet often critical, learning experience for the student. Beyond simple observation of an existing team, a medical student in a ppgp can learn conjointly with students in other health care fields. In this setting the student confronts the dilemma of role definition as an integral part of learning.

Students encounter in a ppgp a group of physicians who are legally, morally, and financially responsible for the well-being of a defined population of subscribers. Students can become involved in preventive services like sex and drug education for high-risk teenagers, annual physical examinations, and breast cancer screening. This intimate engagement in the health maintenance of a defined population serves as a valuable contrast to the mainly curative activities in teaching hospital wards and emergency rooms.

Electives in basic science and clinical research structured around faculty research are offered in the teaching hospital; clinical research at YMG is oriented around the needs of patients. Many have written on the potential of such research (*5*) in a ppgp. In this setting, actual health problems provide the data for learning basic epidemiologic skills through useful research. The YMG has provided the basis of projects for those with research interests in patient care, health services organization, and epidemiology. Furthermore, there have been opportunities to learn about pragmatic problems of administration, financing, and health care organization within the framework of ppgp.

Participation in a ppgp has led students to define a spectrum of roles. Unlike a teaching hospital, ppgp lacks the historical precedent of student involvement. After experimenting with various roles, students have molded a place for themselves as observers, consumer advocates, clinical and administrative apprentices, researchers, health accountants, and health care planners (*9*).

Contributions to faculty development, health care delivery by existing organizations, and interinstitutional relationships resulted from this program. Students learned useful skills while gaining knowledge and evolving attitudes in a setting which offers a valuable supplement to a hospital-based medical education. Progress is possible because of faculty and practitioner recognition and undergraduate testing of new student roles as partners in an educational enterprise.

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Survey of Need for a New Professional

The Clinic Liaison Educator

HARVEY IS 8 YEARS OLD. He came to the clinic for evaluation because his teacher reported that, although he is pleasant, cooperative, and conversant on many topics, he has great difficulty reading. He omits words, confuses similar words, and loses his place regularly. His writing is awkward and careless with omitted and run-on parts; he cannot write in a straight line. In gym he constantly confuses directions and has difficulty dressing himself. The principal and social worker report that he cries when his mother leaves him at school and again when she picks him up, and he doesn't relate well to other children. He looks pale and stunted for his age and, according to his mother, he takes medication for an allergy and "low blood." The school psychologist found him difficult to test because he was "constantly moving and manipulating any object he could get his hands on." His mother says she fears he is retarded. His father travels and is almost never home.

Thomas W. Todd, EdD
Pamela Bock Rossiaky, MEd
Brynn Ballou, MEd

Dr. Todd is director of the Liaison Educator Program at the University Affiliated Cincinnati Center for Developmental Disorders. Mrs. Rossiaky, formerly a liaison educator trainee, is an educational diagnostician in Racine, Wis. Miss Ballou was a former liaison educator at the center and is now program director at the Resident Home for the Mentally Retarded in Cincinnati.

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Tearsheet requests to Dr. Thomas W. Todd, University Affiliated Cincinnati Center for Developmental Disorders, 3300 Elland Ave., Cincinnati, Ohio 45229.

CLINIC: (to school) We have diagnosed Harvey's problem as a case of idiopathic hypoglycemia with possible minimal cerebral dysfunction. But not conclusively.

SCHOOL: (to clinic) What does that mean?

CLINIC: This means that Harvey has many of the symptoms of the effects of low blood sugar, but that these symptoms could also reflect other common medical problems. In addition, he seems to have emotional problems which, in such cases, usually tend to mask actual physical symptoms. Such overlapping renders a definitive diagnosis almost impossible.

SCHOOL: What do you suggest we do?

CLINIC: We recommend special class placement in a learning disabilities classroom. He may also need additional private tutoring.

SCHOOL: Where do we find someone qualified to conduct this special tutoring?

CLINIC: We cannot guarantee we will find a tutor for Harvey. This is not actually part of our job, and we usually leave this responsibility with the schools.

SCHOOL: Have you made prescriptive educational recommendations for Harvey?

CLINIC: Not exactly. Most of that will be up to you. Our clinic is staffed only by diagnosticians in pediatrics, neurology, psychiatry, psychology, and speech and hearing. Regrettably, we have been unable to find a qualified clinic professional who would be of more help to you. We are also struggling financially and might not be able to employ someone anyway. We must rely on you for educational assessment and diagnosis. Is someone available to do that?

SCHOOL: Maybe, maybe not. There are several very capable teachers in the system who have had such experience, but they have their own regular classrooms. Even our school psychologists are not qualified to deal professionally with cases such as Harvey's. Of course, we'll do the best we can. Send us a copy of what findings and recommendations you do have; perhaps we can find someone to interpret their educational implications. Meanwhile, what do you suggest we tell his parents?

CLINIC: We have discussed the problem with them already. We feel they are beginning to understand that Harvey is not retarded and that he has emotional problems, but we have done all we can. They seem very anxious, and we feel that they need counseling. We suggest you recommend someone or provide a counselor for them.

SCHOOL: Our teachers are our only parent counselors, and Harvey's teacher just can't give his parents any more time. His mother calls her nearly every day, and she's actually not trained for counseling parents. We will try, however, to find a community agency that can help them. Do you feel that Harvey needs special materials that we might not have here at the school?

CLINIC: That depends on the results of your educational diagnosis. Medically speaking, no. If you need help in this area, you might call the special education department of the university. That's the only suggestion we feel confident in giving.

SCHOOL: We have had these problems before. It's always the same. We need help.

CLINIC: Yes, it's exasperating. We wish we could help you more. If you have questions, call and we will do what we can.

SCHOOL: Thanks very much. Let us know if we can be of service to you.

The preceding dialog is a grim illustration of the less than perfect communication between schools and clinics. Training programs have not produced the professional who could dissipate the confusion. This professional would need to function particularly in five roles.

1. Retrieve educational data concerning a particular child's current school performance for clinical evaluation
2. Conduct educational evaluations within the clinic which result in prescriptive educational recommendations
3. Consult with the clinical staff regarding availability of special school services, appropriate educational techniques and materials, and the practicality of implementing clinical recommendations at the school level
4. Interpret clinic findings to local school staff and parents
5. Assist schools in finding effective alternative methods of working with a particular student. These would include supplying sources of materials, informing teachers of similar cases and how they were handled, and aiding schools in securing additional support from auxiliary programs which provide financial resources or equipment such as wheelchairs.

This professional could then expedite resolution of the postdiagnostic confusion and implement Harvey's remediation in 2 weeks instead of 2 months. In this paper, the connecting link between schools and both mental retardation and psychiatric clinics is referred to as the liaison educator.

The difficulty confronting those who would seek to become this newly developing specialist is a lack of training programs. Professionals at the University of Cincinnati recognized the need and began designing a program specifically for educators who wish to work in clinical settings. Orientation was weighted necessarily toward an interdisciplinary approach with corresponding practical experience.

With these concerns in mind, we devised a questionnaire and sent it to the directors of more than 250 mental retardation (MR) and psychiatric clinics. Fifty-three percent of the questionnaires were returned. From the responses, 32 pairs (one MR and one psychiatric clinic) were matched according to location of the clinics, size of the geographic area they serve, and size of the student population they represent. Results have been interpreted only in general terms; the emphasis is on the new and important information revealed by the results.

Clinic directors were referred to the previously defined job responsibilities of the liaison educator and asked whether they employed such a person, whether they needed one, what level of training he should have, to whom he would be directly responsible, what geographic area and total population he would serve, and what salary he would receive.

In addition, the participating clinics were asked specific questions about their particular setting, including how many students they served directly annually, what proportion of the total population in their area they served, and what age categories the clinic served. Two important considerations concerned the areas of exceptionality that clinics were evaluating among their clients (and therefore those areas for which the liaison educator would be responsible) and what competencies the educator must have to qualify for the liaison position. Respondents were cöoperative and enthusiastic.

Need for a Liaison Educator

The need for the liaison educator as a personnel position was overwhelmingly verified. A composite drawn from the responses indicated that both types of clinics wanted a person who would be directly responsible to the director of the agency and would serve a population of more than 100,000 students living in several counties. The clinics would pay $9,000 to $12,000 a year to a liaison educator with a master's degree. The need was established, at least in a general sense, on the basis of these responses from the clinics, expressed in percentages:

Question-answer	*Mental retardation*	*Psychiatric*
Yes, we do employ a person who functions in a capacity similar to that of a liaison educator ..	40.6	34.4
No, we do not employ one	59.4	65.6
Yes, we need a liaison educator	90.6	75.0
No, we do not need one	9.4	15.6
We're not sure	..	9.4

Between 72 and 81 percent preferred a specialist on the master's level. Preference for someone with a bachelor's degree was negligible, and a doctoral degree holder was selected by 19 percent of the MR clinics and 42 percent of the psychiatric clinics.

The discrepancy between selection of the educational levels could reflect the clinic directors' belief that a master's graduate could fill the responsibilities while, understandably, they might have most confidence in a PhD degree holder.

The question of salary probably also lends appeal to the selection of persons with a master's degree. The comparatively sizable response to the choice of someone with a doctorate might also reflect underlying attitudes about existing master's programs; that is, present programs simply are not comprehensive enough to encompass the considerable spectrum of training a liaison educator needs. This point warrants discussion, which will be taken up later.

Salary and Supervision

"If only we had the money" and "no funds" were among the comments in response to questions of training level and salary. References to the Federal budget squeeze provided insight into the financial situation affecting many clinics. The message which seemed to emerge from the responses was "this sounds great, but please, we'd rather not see a pretty pie we can't eat." Despite possible monetary limitations, the salary level most often selected from the six salary scales presented was the $9,000–$12,000 bracket, the base salary for a master's degree holder. Salaries and responses, in percentages, were as follows:

Salary	*Mental retardation*	*Psychiatric*
Bachelor of science:		
$6,000–$9,000	28.1	18.6
$9,000–$12,000	15.6	21.9
Master of education:		
$9,000–$12,000	53.1	56.3
$12,000–$15,000	28.1	18.6
Doctor of philosophy:		
$14,000–$17,000	34.3	40.6
$17,000 or more	6.3	6.3

Many clinics listed several responses to the salary question, which coincided with varied responses to the level of training that would be appropriate to the clinic's needs. One reason could be that those in the service professions tend to hire the most qualified person in terms of his personal suitability to a particular clinic rather than in terms of his actual credentials. In other words, this field remains one area in which employment depends largely upon the individual person.

Another possibility might be that, although between 72 and 81 percent of the clinics wanted a master's graduate, between 44 and 40 percent of them selected a salary between $6,000 and $8,000. Admittedly, this inconsistency might reflect the difficulty with the question format; there were six answer choices in three categories (bachelor's, master's, and doctorate degree holders).

Table 1. Areas of the liaison educator's responsibilities, by type of disability (in percentages)

Type of disability	Mental retardation	Psychiatric
Educable mentally retarded	96.9	53.1
Trainable mentally retarded	96.9	37.5
Emotionally disturbed	75.0	100.0
Socially maladjusted	78.1	84.4
Learning disabilities	87.5	87.5
Speech impaired	78.1	15.6
Physically handicapped	78.1	15.6
Chronic health problems	56.3	15.6
Hard of hearing	68.8	9.4
Deaf	59.4	6.3
Partially sighted	68.8	9.4
Blind	53.1	3.1

Possibly respondents are indicating that they want the best and most qualified person, but they cannot quite come up with the cash to pay him. It seems reasonable to assume that clinics do not expect to employ a master's graduate for a bachelor's level salary.

The clinic directors were decisive about the person to whom the liaison educator would be directly responsible. The responses, in percentages, follow:

Supervisor	*Mental retardation*	*Psychiatric*
Clinic director	75.9	74.2
Director of special education	13.8	16.1
Other (pediatrician, medical director, coordinator of children's services, social work director, and so forth)	10.3	9.7
Total	100.0	100.0

Client Population

The question, For what geographic area would the liaison educator be responsible? produced the following answers, expressed in percentages:

Area	*Mental retardation*	*Psychiatric*
Counties	50.0	40.6
County	37.5	50.0
City	9.4	9.4
No response	3.1	..
Total	100.0	100.0

Difficulty in answering this question probably stems from a fundamental difference between the two types of clinics. The mental retardation clinic serves primarily a diagnostic function and the psychiatric clinic, a treatment function. Staff of mental retardation clinics see more clients than psychiatric clinics and serve as an evaluative and referral unit. It is unlikely that MR clinics will have many classrooms. In contrast, psychiatric clinics tend to house not only classrooms and residential services, but they also receive numerous referrals from the more comprehensive MR diagnostic clinics. In addition, diagnostic concerns of the psychiatric clinic generally are limited to the psychological realm, while a broader spectrum of problems may be handled through the diagnostic procedures of the MR clinic. Psychiatric evaluation is a major function of the MR clinic, but all evaluations are not conducted in terms of psychiatry, as is customary in a psychiatric clinic. This situation could be caused in part because psychiatric clinics are administered by psychiatrists, while MR clinics tend to be more interdisciplinary and are headed by physicians, psychiatrists, social workers, speech and hearing specialists, and educators.

Answers, in percentages, to the question, How large is the student population your clinic serves? were as follows:

Size of student body	*Mental retardation*	*Psychiatric*
Less than 10,000	12.5	25.0
25,000	9.4	9.4
50,000	15.6	18.6
100,000 or more	62.5	37.5
No response	0	9.5
Total	100.0	100.0

Respondents may have been confused about whether the question sought to ascertain the population directly served or the population which direct service represents.

Funding sources for the two types of clinics are similar and perhaps, depending upon the clinic's function and size, are equivocal in total budget monies. MR diagnostic clinics, however, may be less dependent upon private monetary sources than psychiatric clinics. In some instances, therefore, psychiatric administrators may have latitude in selecting those who qualify for their service. Mental retardation clinics are simply more dependent upon the public than psychiatric clinics since they need and expect more support from public than private sources. This fact implies that the general public should be able to demand a greater accountability to its needs. (Chances are that Harvey's family will take him to a county diagnostic clinic or general hospital clinic, rather than an orthogenic school, although he may need and get exactly the same evaluative treatment at either place.)

What is most important, regardless of size of population represented, source of funding, or function of the institution, is that respondents confirmed that the competencies of a liaison person needed by either type of clinic are the same.

Duties of the Liaison Educator

Areas of disability for which the liaison educator would be responsible differ markedly between the clinic types, as evidenced by the data in table 1. That the MR diagnostic clinic serves a more comprehensive spectrum of children is demonstrated by the responses.

For example, Roger, the liaison educator in an MR diagnostic clinic, evaluates those who are retarded, blind, partially seeing, deaf, hard-of-hearing, speech-impaired, physically handicapped, brain damaged, and disturbed. He knows that his training must be kaleidescopic and that he is expected to deal with every area of exceptionality. Ray, the liaison educator in the psychiatric clinic, evaluates mostly the disturbed and maladjusted, partly as a result of referrals from Roger, and partly because his clinic is specialized. But there is a good possibility he may encounter those who have speech, auditory, visual, physical, cerebral, or central nervous system disorders. He knows that the balance of his work will be primarily in one area but that he should be ready for those with multiple disabilities. Therefore, both men must command similar expertise. In addition, both must deal extensively with the public in counseling parents, consulting with staff and schools, understanding available community resources, evaluating individual problems, and recommending prescriptive programs.

The competencies needed by the liaison educator, as expressed by the clinic directors, are ranked in table 2. Major differences in ranking can be accounted for in terms of institutional function and the role that the educator would, of necessity, assume. Possible explanations of the differences revealed in table 2 follow.

Table 2. Rank order of competencies or duties according to frequency

Competence or duty	Mental retardation	Psychiatric
Prescriptive teaching techniques for remediation	1	1
Individual educational assessments	2	5
Knowledge of resources (school, community, pupil personnel)	3	3.5
Diagnosis and remediation of severe educational problems	4.5	2
Interdisciplinary orientation	4.5	7.5
Behavior modification	6.5	3.5
Parent counseling	6.5	6
Knowledge of instructional materials	8	11
Interviewing	9	10
Classroom observational techniques	11	9
Learning theory	11	13.5
Group dynamics	11	13.5
Diagnostic tutoring	13	7.5
Report writing	15	16
Knowledge of medical terminology	15	18
Applied research	15	17
Evaluation of reading and visual literacy	17.5	15
Development of education remediation packets	17.5	12
Systems analysis	19	(1)

[1] Not selected.

1. MR clinics make referrals for those needing diagnostic tutoring; psychiatric clinics provide it, in part, onsite through the development of education remediation packets.

2. Because MR clinics are more comprehensive and less specialized than psychiatric clinics, they lean toward interdisciplinary orientation; consequently, those trained in a discipline such as social work would be able to assume more of their professional job responsibilities.

3. Behavior modification is probably used more in psychiatric treatment programs; MR clinics are not as treatment oriented.

4. Classroom orientation techniques are fundamental to behavior modification.

5. The comprehensive spectrum of MR evaluation demands greater knowledge of medical terminology than does psychiatric diagnosis.

6. Because treatment in psychiatric clinics is usually long range, the liaison educator will naturally have sustained contact with parents, which requires greater emphasis on interviewing and parent counseling techniques. Conversely, the liaison educator in an MR clinic would need greater specialization in making initial educational diagnoses.

The composite picture of this professional is that of a multifaceted specialist who puts in considerable time dealing clinically with the overload of questions which physicians, neurologists, psychiatrists, speech and hearing specialists, psychologists, and social workers are asked but cannot be expected to answer. He understands the jobs of these other professionals, but he is the one who ties together all the loose ends of parents-school-community after having helped determine the interdisciplinary diagnosis.

When Harvey's mother asks the neurologist whom she can hire for diagnostic tutoring, he will no longer turn away with no answer or suggestions; neither will the clinic psychologist waste time trying to find the company that sells the appropriate pencil and paper for the child's work. The liaison educator can provide these services and help the clinics serve their clients as effectively as possible. The authors hope that, as a result of the survey, training programs will begin to emerge and trained professionals will then be available to fill these new positions in clinics.

At the Oakland, Calif., facility of the Kaiser-Permanente Medical Care Program, the library is part of the comprehensive delivery system

A Health Education Library for Patients

F. BOBBIE COLLEN, RN, MEd, and KRIKOR SOGHIKIAN, MD, MPH

WITHIN THE TRADITIONAL framework of the physician-patient relationship, the primary concern of the physician is usually the diagnosis and treatment of a patient with a presenting problem. Underlying basic assumptions that are generally accepted are (*a*) responsible understanding by the patient of the medical advice given and (*b*) sufficient motivation for compliance with the physician's instructions because of the patient's desire to recover and stay well. Consequently, the area of specific educational mode and content; assessment of the patient's level of comprehension, ability or capability to concur or comply, or both; and recognition of the barriers to that end have received little attention. Thus, any determination of the patient's insights and educational needs before the possibility of any desirable behavioral change may have been overlooked or relegated to an office nurse, a family member, or a community resource.

Recently, with more awareness of this distinction between medical advice and instructions and the patient's level of understanding and concomitant desire to comply, there has been an increasing use of audiovisual instructional aids in physician's examining offices and outpatient waiting rooms (*1,2*). Additionally, the trend today is toward more emphasis on the preventive and health maintenance aspects of medical care.

The Oakland, Calif., facility of the Kaiser-Permanente Medical Care Program is a large prepaid group practice in an urban, ambulatory setting. A pilot program was developed at this facility to actualize a concept of a more rationally organized medical care delivery system (*3*) through allocation of medical resources according to needs of patients as detected by a health testing service. Within this system (fig. 1), incoming patients are triaged to sick care for discovered illness, to preventive maintenance care for early or asymptomatic disease, and to health care for health protection and maintenance information. A health library for patients was conceived as a subcomponent of health care which would enhance learning about health and disease; it has been developed as an integral part of the comprehensive delivery system.

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Purposes of Library

The health education library for patients was designed to provide the following

—a centralized service to which the physician may refer patients for clarification, explanation, and information leading to adequate comprehension of the nature and management of specific disease or other health problems,

—a similar service for patients referred by nurses and other health workers,

—an information resource available on self-referral to all members, sick or well,

—a health education resource for the community at large,

—a training ground in health-related education for students and volunteers, and

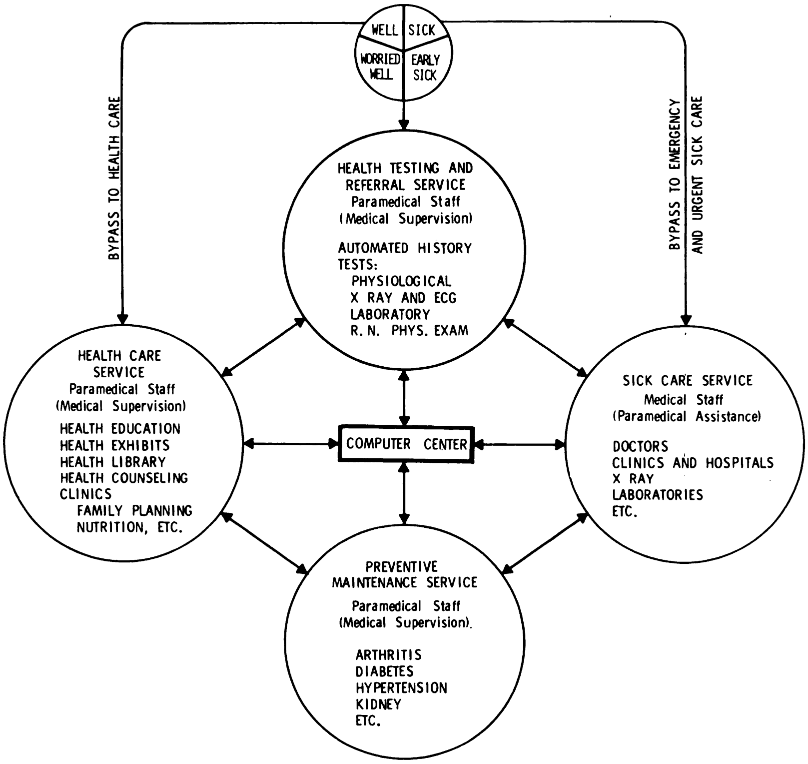
—a library resource to staff members and instructors for inservice education, research, and other assistance.

In terms of more distant goals, a centralized library resource may have potential value for (*a*) saving physicians', nurses', and other health staff's time spent in repetitious tasks in patient education, (*b*) improving the quality of the physician-patient relationship through better understanding of disease-related conditions, (*c*) serving as an avenue for better patient satisfaction with supportive services, and (*d*) reducing ultimate costs of health care through more optimal use of health professionals' services.

Perceived Need

Before the library resource was developed and implemented to fulfill the preceding purposes, the medical staff and a random sample of 1,287 Kaiser-Permanente members were surveyed to assess their receptivity to this concept. A questionnaire distributed to 150 attending physicians at the Oakland Medical Center yielded an 84 percent response. Of these physicians, an average of 31 percent were definitely interested and willing to use such a projected referral service, and another 31 percent stated that they would consider referral to a library program if they felt that

Figure 1. Triage system used in Kaiser-Permanente Medical Care Program, Oakland, Calif.



it would help their patients. Of the Kaiser-Permanente members surveyed, one-third expressed interest in using a potential library resource as a learning center. Since there was no specific prototype on which to base decisions, these responses by both physicians and health plan members were accepted as preliminary predictive figures against which later utilization results might be measured.

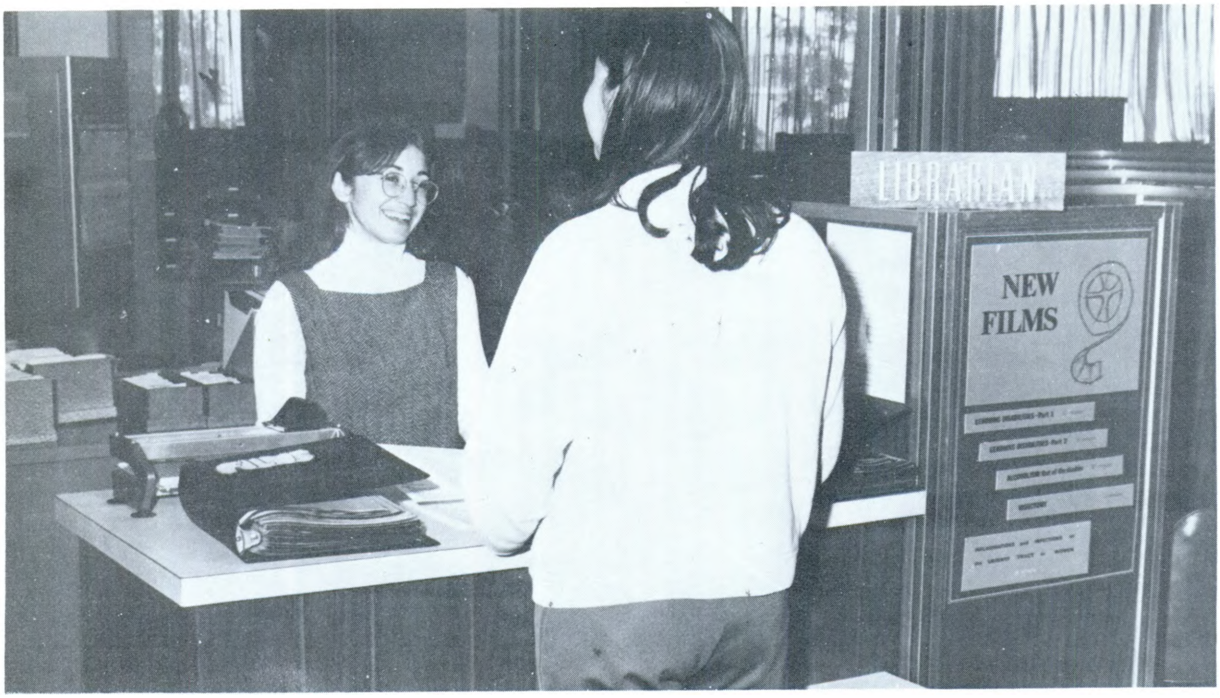
Description of Library

The Patient Health Library was designed to emphasize the use of audiovisual media as educational devices. At the entrance of the allocated 2,000 square feet of space, a comfortably furnished reading area—having an upholstered sofa, chairs, and reading carrels—invites perusal of printed materials available from a pamphlet rack or open book shelves. Beyond the reading area and facing the entry is the registration counter, which is surrounded by 24 individual viewing booths arranged to form a square. Staff members who service incoming patients are stationed at desks inside the square, which also houses the software materials and a television control unit. The exterior of the square provides access to the booths, each of which is numbered and equipped with a swivel and movable chair, a cart holding an audiovisual projector, two sets of headphones, a light-buzzer system for signaling a need for assistance, and a pad and pencil for taking notes. Positioned for easy loading of programs by a staff member, the projectors have rear-view screens so that viewers can watch programs in a variety of formats, including 16-mm film, super-8-mm motion picture, filmstrip-with-sound, cassette, audiotape, and slide carousel.

The rear section of the library has an area for viewing closed-circuit videotape and a small projection room for audiences of up to 15 persons. The perimeter of the room is lined with shelves for reference materials, storage, and additional carrels.

Materials

Search for health education materials suitable for a lay audience, both adult and juvenile, is a continuing staff endeavor. Each audiovisual program in the expanding inventory requires preview and consensus by a selection committee of physicians, nurses, health educators, other resource staff, and potential viewers as to its suitability for the target population. The programs pertain to both health and disease in the human lifespan and include newborn and infant care, the child at each stage of growth and development, guidance for pre-adolescents, teenage problems, family life education, including family planning and prenatal care, immunizations, nutrition and weight control, disease prevention, and acute and chronic disease conditions.



Specific audiovisual programs have been developed internally at the request of staff physicians or other health professionals, who then have served as consultants to provide content and to review the product for suitability and accuracy. A description of each program is contained in annotated, illustrated catalogs listing the film inventory by title. Printed lists of titles are updated periodically for distribution.

Printed materials comprising an expanding reading collection, which complements and supplements the nonprinted programs, consist of books, clipping files, and take-home pamphlets on display in the lounge area. Health subjects range from allergy to urology; the most popular to date is family planning and prenatal care. Much effort continues to be expended in procurement or production, or both, and distribution of printed materials to reinforce the audiovisual programs. Additionally, a large variety of reference readings, including articles, books, and encyclopedias, are being added to the collection. As of December 31, 1973, the library contained more than 250 audiovisual programs, 320 books, and more than 150 pamphlet titles (which are distributed at no charge).

In addition to access to the materials mentioned, library visitors may call on the librarian for further services or be referred to other resource persons such as physicians, health counselors, or other paramedical staff (for example, a nutritionist) or to educational programs (for example, smoking cessation), to adjacent health-exhibit theaters, or to community services and agencies. Thus, the library is an educational resource and an information center that guides visitors through a complex health care system.

Operation of Library

Present staffing for the Patient Health Library includes a librarian, a library assistant, and a small corps of volunteers, under the guidance of an education director. Administrative decisions are the responsibility of the physician project chief. The library is open 6 days a week—from 9 am to 5 pm on Monday, Tuesday, Thursday, and Friday; from 9 am to 8:30 pm on Wednesday; and from 1 to 5 pm on Sundays. Access to the library is free of charge to drop-in visitors, as well as to patients who are referred. Referrals may be from any of the staff physicians, nurse practitioners, nurses, or allied health workers from any Kaiser-Permanente facility.

Patient or visitor flow is uncomplicated. On entering the library, each person registers at the counter, is informed about the library services and pertinent supplementary materials, and is then directed to a booth for the first program. The library worker demonstrates use of the headphone and call button, then starts up and checks the program for synchronization. The visitor, in private or with a companion, views the program, signals when finished, and moves on to the next library activity (for example, another film or reading), or leaves.

A registration form, or library record, is used to collect data on all health plan visitors except those who merely browse or ask quick-answer reference questions. The data gathered include personal statistics (sex, birth date, medical record number), source of referral to the library (physician, registered nurse, receptionist, self, and if appropriate, clinic or department), and materials used during the visit. In addition, the library record notes persons and departments (for example, health counselor, exhibit theater, smoking cessation program) to which the visitor was referred by library staff members. The library records are punched for statistical tabulation by the computer and then weeded and routed to the chartroom for insertion into each patient's chart. Thus, the physician can learn at a quick glance whether or not his patient complied with his educational instructions and to what other educational resources, if any, his patient was referred.

Use of the Library

The Patient Health Library opened for service in July 1969. Orientation of the staff took the form of noon meetings for physicians and invitational guided tours for administrative and employee personnel. Open-house events were held for the health plan members. The formal opening received community television and newspaper coverage. A descriptive brochure was produced and distributed by mail and by posting at strategic clinic areas.

Adoption of the library service as an integral part of the health care delivery system has been a gradual process. Growth in use according to monthly tallies has proceeded from a beginning figure of 82 visitors in June 1969 to 581 in June 1973 (with a peak attendance of 948 registered in March 1973), a growth increase of more than 700 percent. Figure 2 shows growth in 6-month increments from January 1970 through June 1973; the total number of visitors from January to June 1973 was more than double that registered in the same 6 months 3 years previously. While documentation of the number of film showings is now entered separately for users on an individual, group, and class basis, the incidence of growth—the July 1969 figure of 98 film showings compared with the June 1973 record of 1,122 film viewings—was about 1,000 percent

Figure 2. Use of health education library, by number of visitors and film showings, January 1970–June 1973

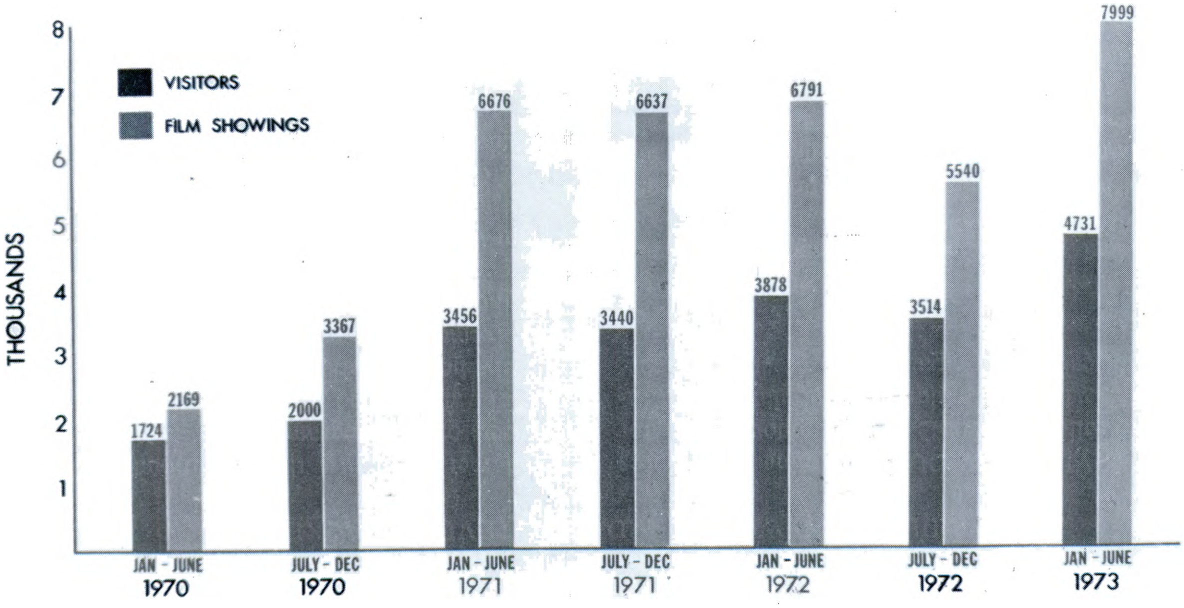
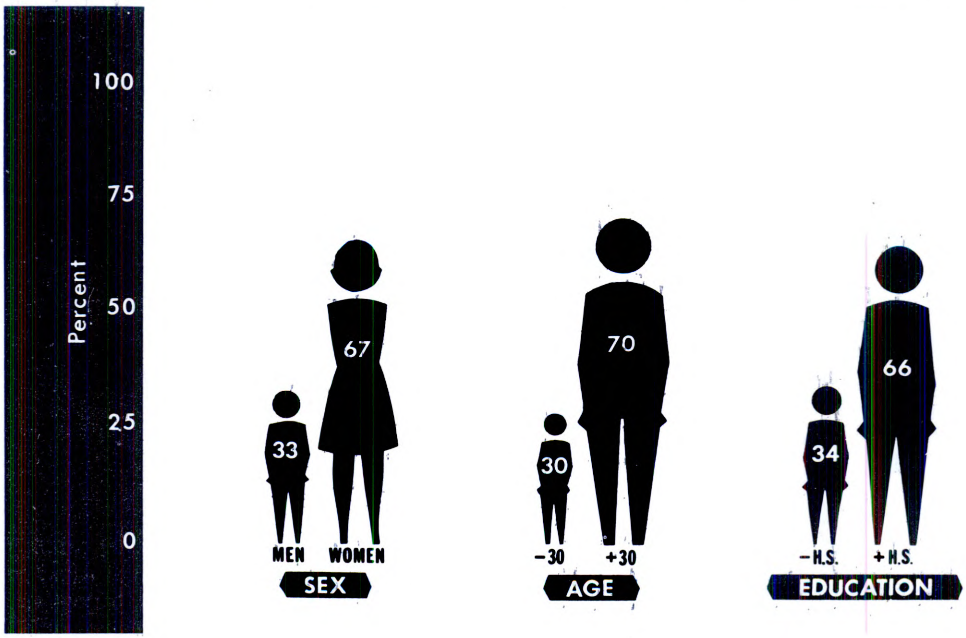


Figure 3. Characteristics of visitors to health education library



over a 4-year period. In 6-month increments, the total for January to June 1973 of 7,999 film showings was more than triple the total viewed for January to June 1970.

Concerning characteristics of viewers, the attendance records (fig. 3) showed that women users outnumbered men in an approximate ratio of 3 to 1. This preponderance of women may be due to the very active use of the library for viewing of family planning and prenatal films, which may also account for the predominance of visitors under age 30. While the educational level of all attendees is not documented on an ongoing basis, a sample survey conducted recently disclosed a rather high academic level of visitors; the largest segment had completed high school, and an impressive portion of one-third of those reported having had college or postgraduate experience. This finding corroborates the documentation of other studies that the better educated will more readily take educational opportunities and points up the need for some outreach effort for the less educated who have a need at least as great as that of the library users.

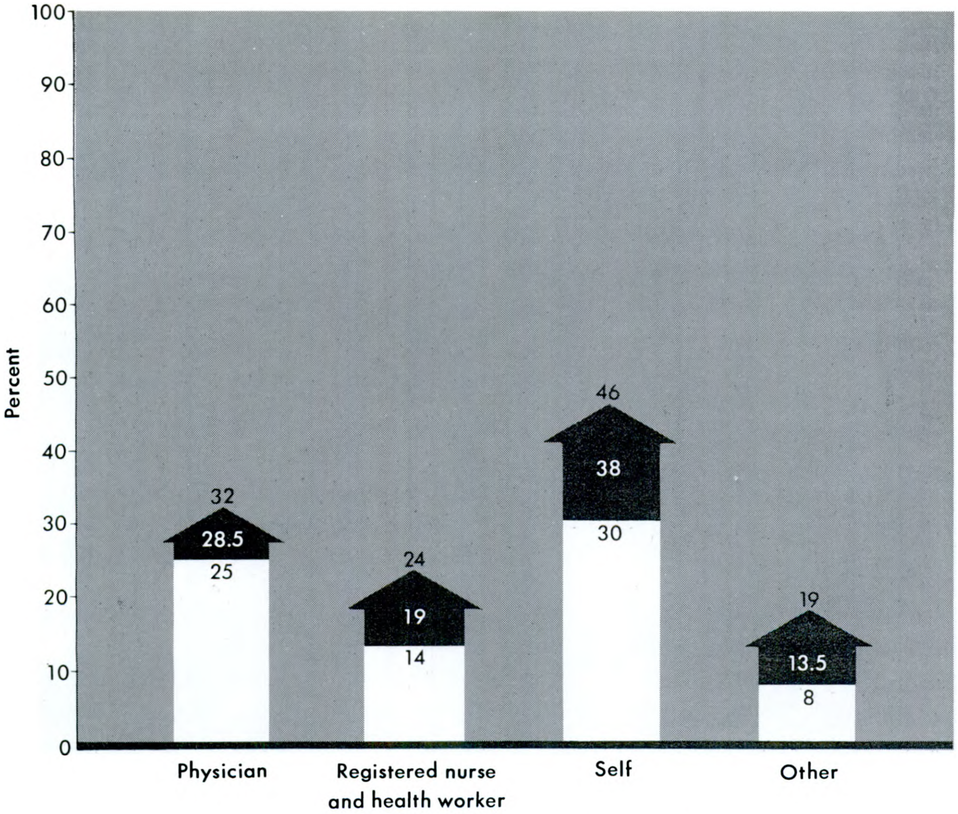
The sources of referrals as reported by the visitors (fig. 4) showed a slow but steady increase in referrals by physicians and nurses. The preliminary baseline survey figure of 31 percent of the physicians who indicated intent to refer patients to a library resource was confirmed by the actual referrals, which ranged from 25 to 32 percent for physicians. Referrals from nurses ranged from 14 to 24 percent. Thus, approximately half of the attendees were referred from professional sources. Approximately 35 to 40 percent of the visitors were making return visits.

The results of studies, conducted periodically since the library opened, to determine patients' reactions to the library concept and to services rendered, indicate a high degree of acceptance and satisfaction. Viewed as a complement to health care, 92 percent of 114 respondents in a recent survey saw the library as necessary, very helpful, or helpful. Similarly, 92 percent of the respondents perceived the quality of materials available as excellent, very good, or good.

Additional Services

The library staff has developed mini-libraries to assist instructors in the various educational and counseling activities offered at the Health Education Center. Also, reference materials relating to the roles of nonmedical staff in the delivery of health care to patients have been amassed and cataloged for use. An unexpected discovery was that faculties of nearby community colleges were referring students to the library. As the collection of printed materials grew and requests for borrowing them became more frequent, a limited lending system for these materials was imple-

Figure 4. Use of health education library, by sources of referrals of visitors



NOTE: Range of referrals and averages, 1970–73

mented. Additionally, requests for loans of audiovisual programs for use in the clinic waiting rooms and hospital areas are being accommodated. Another area of assistance is in answering requests and giving advice on setting up a similar library service in other areas, both locally and in other States. The library is presently becoming a demonstration model for visitors from all parts of the globe.

Discussion

A central health education library for persons seeking care in a defined medical setting can be used by medical care providers to relieve them of the task of repeating instructions while providing their patients with information.

While it is recognized that attitudes, beliefs, and meanings of illness and health as they are perceived and applied by the varied mix of a target population (*4*) would certainly color the results of their library experiences, it is also considered essential that commitment to the feasibility of the library concept, and involvement in its development and implementation by the providers of care, is an important factor influencing success (*5*). The enlistment of more active support from a greater proportion of physicians and nurses and other health workers is difficult for a number of reasons. Among these are (*a*) the newness of this concept and its unproved status, (*b*) the unfamiliarity of physicians with such a resource service since it had never before been one of the traditional armament of prescriptive choices, and (*c*) the time required for inservice education through contacts, reports, and other approaches directed to making and keeping the library actively visible. As with all modalities involving change, resistance must be overcome, and this factor holds true here as well.

Over the 3 years of its existence, the library has become a learning center with expanding numbers of visitors, who come not only in direct response to physician referral, but also because they themselves are seeking health information. The library is also serving a useful purpose as a demonstration model for other providers of care in a variety of different settings.

Conclusions and Implications

From our experience, it has become apparent that a health education library for patients in an established ambulatory care setting can serve a useful function for both care providers and patients. While the percentage of physician referrals has been relatively low, it is growing slowly and holds promise for more active use by physicians with enhanced awareness and cooperation. For persons who are professionally referred, approximately half of all users, the library seems to have positive potential for providing materials that can clarify concepts and instructions regarding disease-related conditions and health problems and possibly result in improved satisfaction, concurrence, and compliance with prescribed treatment. For all users, the library is a repository for specialized health information.

Evaluation of the impact of such a resource in terms of achieving the short- and long-term objectives described should be undertaken in depth. For this kind of evaluation, planning is presently in process.

The implications from this study are that there is potential for a health library for patients to be used as an educational tool by providers of care in many settings; that the success of such an operation as a resource and learning center requires cooperation of professional staff and consumer patients; that people of all ages, mostly in the younger categories, are amenable to this method of health education; and that further exploration in this direction would be both desirable and feasible.

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Daily morning exercise periods prevent assembly line workers from becoming fatigued and stiff from sitting for long periods—Novosti Press Agency photo

Health Services in a Soviet Auto Plant

YEVGENI ANDRIANOV

MUTUAL UNDERSTANDING and good relations between a shop's physician and its management are considered very important at the Gorky Automobile Works in the Volga region of Central Russia. The chief of the plant's medical services, Dr. I. Grinvald, stated in an interview, "We are doing everything in our power to systematically draw the attention of the factory management and the public to various health aspects among workers."

Every month, the Gorky enterprise gathers information on the number of illnesses among its 20,000 employees and the sanitary conditions of its shops, and the data are processed in the plant's computer center. The results are submitted to the plant's management, to the trade union committee, to the accident prevention department, and to the management of the shops and services. The rate of absenteeism due to illness is an important factor in quarterly and annual production reports. Therefore shop managers zealously approach the dynamics of illness and accidents among workers, juxtaposing them with graphs of production fulfillment.

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Medical Services

The factory physicians operate a modern medical facilty. The plant's medical services include a polyclinic that can accommodate 3,200 patients a day, a 250-bed hospital, a radioisotope diagnostic laboratory, a physiotherapy outpatient clinic equipped to handle 3,000 patients daily, a dental polyclinic, and a women's advisory center. A round-the-clock first aid station and a trauma section are also staffed by the plant's physicians. All of these medical services are provided free of charge to the workers.

In line with the structure of its production lines, the plant has five treatment sections. Each section includes a related group of occupational sectors, and each is directly concerned with specific production processes. This means that physicians treat conditions that are related to specific production procedures. The shop's medical brigades, including therapists and other specialists, are formed on similar principles.

The aim of the plant's medics (physician assistants) and physicians is not only to cure patients but also to prevent diseases. "In order to identify and prevent occupational diseases in good time," Grinvald noted, "we administer various vaccinations and mass medical examinations—chest X-rays, gynecological examinations, dental examinations, and so on."

To prevent occupational diseases the shop's health facilities have initiated preventive measures. Workers who are exposed to occupational hazards receive physiotherapeutic treatment, such as massages, thermal baths, inhalation, and ultraviolet irradiation during their lunch breaks. These treatments also have proved useful in shops where there are frequent cases of hypertension. The effectiveness of these measures has surpassed all expectations—the incidence of illness in these shops has decreased almost threefold over the past few years.

"A new employment practice has been introduced at the plant," according to the chief physician. "A worker who must change occupations for health reasons is invited to participate with the medical-control commission in choosing another position."

The rehabilitation of invalids is organized with management's support. A section in the hospital is reserved for the rehabilitation of patients with complications from accidents. In one shop an industrial rehabilitation section is being built which combines training and productive labor for patients.

The plant devotes a great deal of attention to medical examinations of the workers. Over the past 10 years the number of workers undergoing medical examinations has almost doubled. The plant annually allots 20,000 rubles ($23,300) for treatments to guard against reoccurrences of previous illnesses or conditions. Dermatologists and venereologists, in cooperation with the staff of the central laboratory of industrial hygiene, have achieved tangible results in the prevention of skin diseases.

Labor Conditions

Several provisions of the anual collective agreement between management and the workers are devoted to the improvement of labor conditions, questions of social insurance, and housing. The women's council of the plant's trade union com-

Factory health care personnel analyze random air samples taken in the work areas in special light projectors—Novosti Press Agency photo

mittee compiled a list of jobs that are not recommended for women as a supplement to the agreement.

The observance of normal labor conditions is controlled by the plant's central laboratory of industrial hygiene. The laboratory has prepared a sanitary-hygiene manual for all shops which specifies measures necessary to maintain acceptable labor conditions. For instance, at the laboratory's demand, the use of ethylated gasoline was banned in automotive shops. In other sections of the plant, ventilation and lighting systems have been reconstructed. The tension of electromagnetic fields has been reduced, and much has been done to decrease noise volume.

All new projects for shop reconstruction, equipment modernization, and other improvements are considered by the sanitary inspection commission, part of the plant's medical services. Last year 267 such projects were reviewed. Forty were rejected because they did not meet the sanitary requirements. For example, when a metal plating shop was being modernized to increase its capacity, the sewage installation was not changed. The commission halted renovation until designers increased the installation's sewage capacity by 1½ times.

Patient in the surgical department of the health center receives pressure chamber treatment—Novosti Press Agency photo

A comparison of random and self-selected samples of urban and rural residents

Distribution of Visual Acuity in Egypt

**MOHYI-ELDIN SAID, FRCS, ED, HYMAN GOLDSTEIN, PhD,
AHMAD KORRA, MCh, and KHALIL EL-KASHLAN, DrPH**

IT IS GENERALLY UNDERSTOOD that if one intends to undertake a sample survey of the prevalence or distribution of a characteristic in the population of a community, the sample should be representative of the population. It must be drawn scientifically so that the results may be generalized to the population with a known sampling error. Every individual in the population sampled will, in scientific sampling, have a known probability of falling into the sample. If the individual is able to change that probability by self-selection, the sample is no longer scientific.

It is of some interest to determine just what happens to the sample as reflected in the distribution of normal or of severely impaired vision when

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self-selection replaces scientific sampling, such as random sampling. What would be the relationship of the distributions of visual acuity by age, sex, eye, and urban-rural residence in samples based on random selection to those found by use of self-selected samples?

In a previous paper (*1*) we compared differences in blindness prevalence rates found in (*a*) a 4 percent random sample of households (consisting of approximately 11,000 persons of all ages and socioeconomic levels) visually screened in some urban and rural areas in and around Alexandria, Egypt, with (*b*) those of a self-selected sample of approximately 145,000 persons in the same geographic areas. The crude blindness rate for the random sample was almost 2½ times that for the self-selected sample. The self-selected sample was characterized by reduced percentages of older males and females in urban and rural areas—percentages that were statistically significant—as were the reduced percentages of females in both areas in the self-selected sample.

Since, in general, age-specific blindness prevalence rates among the elderly are higher than among the young and since overall rates for females are higher than those for males, it is possible that the differences in composition by age and sex, aforementioned, might explain the differences in the crude prevalence rates of the two samples. The greatest percentage decrease in rates of the self-selected sample occurred in the rural areas.

Objectives

This study was based on the data secured in the earlier study (*1*). The objectives were to determine whether significant differences by age, sex, eye, and urban-rural residence exist between the distributions of visual acuity in two samples from the same populations in Egypt—one drawn randomly and the other self-selected.

This study was ancillary to a long-term investigation with these objectives: (*a*) to determine, by scientific sampling and vision screening, baseline prevalence rates and causes of blindness in some urban and rural areas in Egypt and their relationship to age, sex, and urban-rural residence and (*b*) to set up a blindness register in these areas based on voluntary self-selection of a population for vision screening so that needed restorative and rehabilitative services could be provided to those screened and confirmed as blind. That study has been described elsewhere (*2*).

In determining baseline prevalence rates, the sample selected must be random so that generalization may be made to the population from which it is drawn. On the other hand, in setting up a blindness register to identify as many blind as possible for the purpose of offering them services, the sample is usually self-selected.

Methods

Data for this study were obtained during phases 1 and 2 of the Blindness Register Demonstration Project in Egypt (*2*).

Visual acuity and field of vision were determined by examination of persons in each sample by a trained physician or ophthalmologist. Acuity of vision of each eye was measured metrically by the Titmus optical vision tester and a tumbling E slide. Equipment and methodology have been described in detail elsewhere (*3*). The conversion table used for distance visual acuity follows:

Snellen	
English	*Metric*
20/20	6/6
20/30	6/9
20/40	6/12
20/50	6/15
20/60	6/20
20/100	6/30
20/200	6/60

Phase 1

Phase 1 of the investigation was concerned with prevalence rates derived from random samples of urban and rural populations. The two districts selected as the urban sampling frame did not necessarily represent Alexandria, nor did the 23 villages selected as the rural sampling frame represent all villages in the area around Alexandria. The results from the samples may be generalized only to the populations of these sampling frames. The goal was to have approximately 5,000 persons in each of the urban and rural samples. Households, rather than persons, were used as sampling units because it was impossible to secure listings for any locality of persons in the general population.

The Alexandria Department of Social Affairs had complete up-to-date listings of households in Alexandria by districts and subdistricts. The population of the rural sample was determined by population counts of the local health authority. A household was defined as those persons sharing one dwelling unit. When the study was started in April 1965, the urban and rural areas in the study each had a population of about 127,000. In view of the fact that census data showed that an average Egyptian household consisted of five persons, samples of approximately 1,000 urban households and 1,000 rural households were randomly selected. These households constituted, in effect, a sample of approximately 4 percent from each area. All age groups were represented in the sample studied, except for the great majority of those under 5 years of age for whom it was difficult to get reliable data under conditions of the survey. All examinations were given in the homes.

Phase 2

Phase 2 was concerned with prevalence rates as derived from study of self-selected samples of the urban and rural populations. After phase 1 was completed, an attempt was made to set up a blindness register for the total population in the urban and rural areas selected for study in phase 1. A 6½-month interval separated the starting dates for phases 1 and 2. Publicity, offering visual examinations (exactly like those given to members of the random samples in phase 1) to any interested residents, was directed to the urban and rural areas. Examination teams set up conveniently located clinics for this purpose, and they also made these examinations available at times suitable for those who found it inconvenient to come during working hours.

With a Titmus Optical Company vision tester to measure visual acuity by means of a tumbling-E slide, each eye was examined separately, starting with the right eye. The person was examined with his eyeglasses if he normally wore them.

Table 1. Percentage distribution of persons examined in urban and rural areas, by age and sex, for phase 1 (random sample) and phase 2 (self-selected sample)

Age in years	Urban			Rural			Total		
	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes
Phase 1									
Number	2,087	3,026	5,149	2,879	2,956	5,835	4,966	6,018	10,984
Under 10	16.7	12.4	14.2	12.6	10.4	11.5	14.3	11.5	12.8
10–19	33.4	32.5	32.9	31.2	28.0	29.6	32.2	30.3	31.1
20–29	12.4	17.6	15.5	12.3	17.9	15.1	12.3	17.7	15.3
30–39	12.4	16.0	14.6	15.9	21.4	18.7	14.4	18.7	16.3
40–49	11.5	9.8	10.5	13.8	11.1	12.4	12.8	10.4	11.5
50–59	8.0	6.6	7.2	8.6	7.0	7.8	8.4	6.8	7.5
60 or older	5.5	5.0	5.2	5.6	4.2	4.9	5.5	4.6	5.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Phase 2									
Number	40,716	36,112	76,828	36,201	31,325	67,526	76,917	67,437	144,354
Under 10	17.6	19.1	18.3	12.6	9.4	11.1	15.3	14.6	14.9
10–19	42.2	35.9	39.2	38.3	28.8	33.9	40.4	32.6	36.7
20–29	11.2	13.2	12.2	13.8	19.3	16.3	12.4	16.0	14.1
30–39	10.2	13.6	11.8	16.0	19.2	17.5	13.0	16.2	14.5
40–49	10.7	8.7	9.7	9.8	9.6	9.7	10.3	9.1	9.7
50–59	5.1	6.2	5.6	6.2	7.6	6.8	5.6	6.9	6.2
60 or older	2.9	3.4	3.1	3.3	6.0	4.6	3.1	4.6	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2. Percentage distribution of visual acuity of males and females in urban areas by sex, age, and eye for phase 1 (random sample) and phase 2 (self-selected sample)

Age group	Number	Visual acuity, right eye							Visual acuity, left eye						
		6/6	6/9	6/12	6/15	6/20	6/30	6/60 or less	6/6	6/9	6/12	6/15	6/20	6/30	6/60 or less
Males															
Phase 1															
Total, age-adjusted	2,087	45.3	21.0	11.8	5.9	4.6	3.2	8.3	41.6	24.2	12.1	4.6	5.6	3.8	8.3
Under 10	348	43.1	29.6	11.5	4.0	4.3	1.4	6.0	38.8	29.3	12.1	3.4	6.6	4.9	4.9
10–19	698	54.9	21.8	8.0	4.9	3.6	1.6	5.3	50.6	26.5	8.9	3.6	3.2	2.4	4.9
20–29	259	52.9	18.5	10.8	5.4	3.1	2.7	6.6	51.0	18.2	12.4	5.8	4.2	.8	7.7
30–39	260	48.1	16.9	12.7	5.0	3.8	3.8	9.6	43.1	23.1	13.5	3.1	6.2	2.7	8.5
40–49	240	28.8	20.0	18.8	8.3	7.1	4.2	12.9	25.4	22.1	16.2	7.5	9.2	7.9	11.7
50–59	167	21.0	18.0	21.0	13.8	7.2	6.0	13.2	18.6	25.8	16.8	9.6	9.6	3.6	16.2
60 or older	115	7.0	13.9	14.8	8.7	13.0	16.5	26.1	6.1	11.3	18.3	3.5	11.3	16.5	33.0
Phase 2															
Total, age-adjusted	40,716	46.4	24.4	16.7	3.8	5.2	1.6	2.0	44.8	24.8	13.4	6.3	4.1	4.0	2.6
Under 10	7,171	47.9	24.5	17.5	3.8	4.9	.9	.5	48.4	22.0	18.4	5.9	3.8	1.2	.3
10–19	17,194	54.8	25.0	15.6	2.2	1.6	.5	.4	55.2	24.9	12.4	4.1	1.3	1.2	1.0
20–29	4,583	57.6	16.9	12.4	3.6	5.0	3.0	1.4	55.4	25.9	7.9	4.3	2.3	2.0	2.1
30–39	4,162	48.1	23.4	16.4	4.5	5.1	.9	1.6	44.4	30.4	14.0	2.8	4.3	2.4	1.8
40–49	4,357	30.8	31.8	21.7	6.1	5.2	1.7	2.7	24.1	32.6	14.7	14.8	5.7	5.5	2.7
50–59	2,079	13.7	30.0	18.6	7.5	17.9	5.8	6.6	11.3	14.0	15.1	13.5	18.6	15.9	11.7
60 or older	1,170	6.7	22.0	24.5	4.7	20.5	5.5	16.2	4.6	9.4	16.3	15.2	8.9	29.8	15.7
Females															
Phase 1															
Total, age-adjusted	3,062	33.6	24.0	12.9	6.6	7.8	4.5	10.7	30.6	27.3	12.7	6.3	6.3	5.7	11.0
Under 10	381	38.0	29.0	13.3	3.7	6.4	4.3	5.3	34.8	30.6	12.8	6.1	4.5	5.8	5.3
10–19	994	44.2	26.4	11.6	5.2	3.3	2.2	7.1	40.7	30.7	10.6	4.2	4.5	3.2	6.0
20–29	539	37.3	23.0	11.0	7.4	7.4	3.9	10.0	34.3	26.3	13.7	6.9	6.5	5.0	7.2
30–39	491	26.3	23.2	12.8	9.0	11.8	4.3	12.6	23.8	29.1	14.5	7.3	6.5	4.9	13.8
40–49	300	20.0	22.0	16.7	7.7	10.7	7.7	15.3	16.3	25.3	14.7	9.0	8.7	10.3	15.7
50–59	203	10.3	16.3	17.2	11.3	18.2	5.9	20.7	10.3	14.3	14.8	9.8	11.8	11.8	27.1
60 or older	154	3.2	6.5	13.6	9.7	16.9	18.2	31.8	2.0	6.5	13.6	7.1	13.0	13.0	44.8
Phase 2															
Total, age-adjusted	36,112	35.0	24.4	16.1	7.6	6.7	5.1	5.0	37.3	25.6	13.9	7.1	7.8	4.5	3.6
Under 10	6,886	50.9	25.9	12.2	4.7	4.0	2.0	.3	51.1	28.5	11.4	4.5	4.5	......	......
10–19	12,952	45.3	27.9	15.5	5.0	2.9	2.6	.8	49.1	27.2	12.8	4.4	3.9	2.1	.5
20–29	4,757	39.1	20.7	21.9	8.5	3.6	2.0	4.2	40.6	24.5	15.0	9.0	5.9	2.7	2.3
30–39	4,914	24.9	28.9	17.1	10.7	9.8	4.4	4.2	25.6	32.7	15.8	7.3	8.2	6.8	3.6
40–49	3,133	12.4	23.7	21.8	10.8	12.2	10.7	8.5	17.5	24.4	19.2	12.0	13.6	8.4	4.9
50–59	2,248	8.2	8.3	13.2	16.1	20.6	14.1	19.6	8.2	8.8	16.1	16.5	22.8	10.8	16.8
60 or older	1,222	3.1	11.6	2.7	5.5	16.4	24.4	36.2	5.2	8.4	6.6	7.9	23.0	22.8	26.2

Table 3. Percentage distribution of visual acuity of males and females in rural areas by sex, age, and eye for phase 1 (random sample) and phase 2 (self-selected sample)

Age group	Number	Visual acuity, right eye							Visual acuity, left eye						
		6/6	6/9	6/12	6/15	6/20	6/30	6/60 or less	6/6	6/9	6/12	6/15	6/20	6/30	6/60 or less
								Males							
Phase 1															
Total, age-adjusted	2,879	22.9	19.6	17.1	11.5	10.7	8.0	10.2	19.5	21.8	16.8	9.2	11.5	8.7	12.4
Under 10	364	15.7	21.4	19.5	10.7	14.0	13.2	5.5	16.5	21.7	16.8	9.1	14.3	15.4	6.3
10–19	899	29.1	20.6	17.9	11.4	8.8	6.3	5.9	23.7	25.2	16.1	9.5	9.6	7.4	8.4
20–29	353	25.8	19.0	15.6	15.0	11.3	4.0	9.4	23.5	20.1	19.0	7.4	11.9	7.6	10.5
30–39	458	25.5	21.4	17.2	9.4	7.9	7.2	11.4	20.3	20.7	19.4	7.6	10.7	7.0	14.2
40–49	396	20.2	20.0	14.4	11.4	11.6	8.6	13.9	15.9	21.0	15.9	12.4	13.6	6.6	14.7
50–59	248	8.9	14.9	16.9	13.3	15.7	11.7	18.6	7.7	14.9	15.7	10.5	13.7	12.1	25.4
60 or older	161	2.5	6.8	12.4	8.1	14.3	13.0	42.9	3.1	13.0	10.6	8.7	11.2	6.2	47.2
Phase 2															
Total, age-adjusted	36,201	41.8	23.1	16.2	6.3	4.6	3.6	4.5	37.9	29.3	14.0	5.0	4.0	4.6	5.3
Under 10	4,578	42.0	28.0	20.6	5.8	3.1	..	.5	39.8	32.0	15.8	4.0	.9	7.5	..
10–19	13,866	51.1	25.6	14.6	4.2	2.2	1.0	1.2	48.8	30.4	12.3	3.5	2.2	.8	2.1
20–29	4,979	45.1	23.8	13.4	5.7	3.7	4.6	3.8	41.0	30.6	10.6	5.9	3.7	3.7	4.5
30–39	5,807	41.2	17.0	18.4	7.0	6.3	5.3	5.0	36.6	27.2	16.0	4.2	5.0	3.6	7.5
40–49	3,544	31.3	22.7	18.2	6.4	8.1	6.9	6.3	23.1	32.4	13.6	5.8	8.2	7.1	9.8
50–59	2,233	21.6	17.3	16.3	13.0	9.1	11.8	10.9	12.9	23.5	20.8	12.1	8.0	10.8	11.9
60 or older	1,194	3.4	11.7	10.3	15.2	12.0	10.1	37.2	1.8	13.6	17.2	8.2	13.6	18.5	27.0
								Females							
Phase 1															
Total, age-adjusted	2,956	11.6	17.0	16.0	13.4	14.6	12.7	14.7	9.7	16.0	16.2	11.4	16.8	13.3	16.5
Under 10	309	10.4	21.7	16.8	10.4	14.6	18.8	7.4	10.4	19.1	16.5	9.7	17.2	19.1	8.1
10–19	827	15.1	20.6	17.5	13.7	13.8	10.5	8.8	12.9	19.7	18.6	11.6	16.7	9.4	11.0
20–29	528	14.4	17.6	18.4	17.4	11.7	10.6	9.8	10.6	21.2	16.7	15.3	14.6	10.4	11.2
30–39	634	9.9	19.2	18.1	14.5	15.6	10.1	12.5	9.0	12.5	18.9	12.1	17.8	13.6	16.1
40–49	328	8.5	7.6	13.1	15.6	18.6	16.8	19.8	4.6	8.8	14.0	11.6	20.1	19.2	21.6
50–59	206	3.4	3.4	8.7	8.7	20.4	14.6	40.8	3.4	5.3	6.3	8.2	18.0	16.5	42.2
60 or older	124	..	1.6	1.6	4.0	10.5	13.7	68.6	..	.8	3.2	4.0	8.9	17.7	65.3
Phase 2															
Total, age-adjusted	31,325	32.8	22.2	15.7	5.6	8.4	6.1	9.2	28.8	25.5	15.1	5.6	9.1	6.9	9.1
Under 10	2,939	39.0	29.4	19.9	4.8	4.1	1.5	1.4	35.5	35.9	16.5	3.6	5.5	1.5	1.5
10–19	9,026	43.8	26.4	14.3	5.1	6.2	1.9	2.3	37.8	29.8	14.6	5.4	6.5	3.0	3.0
20–29	6,041	40.0	21.9	17.4	5.1	8.4	3.8	3.4	35.1	24.4	16.4	6.0	10.1	4.4	3.7
30–39	6,006	28.8	20.4	19.1	5.7	11.8	6.8	7.5	22.5	24.2	19.8	4.4	11.8	9.6	7.7
40–49	3,025	9.4	19.3	16.8	10.9	17.4	16.7	9.5	13.4	17.5	16.6	9.3	15.7	15.4	12.1
50–59	2,394	2.7	4.7	8.1	5.1	10.7	21.6	47.0	3.1	7.7	6.2	8.0	12.9	25.4	36.8
60 or older	1,894	3.1	..	4.3	2.5	6.6	15.7	67.7	1.8	3.4	2.3	4.4	10.8	10.4	66.8

The best visual acuity of each eye was determined by starting with a visual acuity of 6/60 (20/200) and by successive steps reaching the eye's best visual acuity. If the better eye had a visual acuity of 6/60 or less, correcting lenses were added after retinoscopy to improve the visual acuity to at least 6/30. If the person's visual acuity was 6/60 or less in the better eye with the best correction, he was referred to the ophthalmologist as blind for confirmation of the findings and, if confirmed as blind, for possible determination of the cause.

Results

Urban and rural samples by age and sex. Table 1 shows the distribution by age and sex of persons screened visually in urban and rural areas in phase 1 (random sample) and in phase 2 (self-selected sample). Among urban residents the self-selected sample showed increases in percentages of persons under age 20 who were examined and decreases in percentages of persons 50 and over examined as compared with the random sample. Among rural residents an increase in the percentage examined under age 30 was seen in the self-selected sample and a decrease in the percentage of persons examined aged 50 and over, as compared with the random sample.

Visual acuity. The percentage distribution by age for the random and self-selected samples of visual acuity in the right and left eye of all males and females examined in urban areas is shown in table 2. Also shown are the age-adjusted percentages for each visual acuity by sex and eye.

For urban males the age-adjusted percentage with visual acuity of 6/6 in the right eye for the random sample was 45.3 percent, and for the self-selected sample, 46.4; in the left eye for the random sample, 41.6, and for the self-selected sample, 44.8. (Age adjustment was accomplished by using as a standard population the age distribution of persons comprising the random sample and the self-selected sample.) In both samples and each eye the percentage of urban males with 6/6 visual acuity dropped rapidly after age 40 to 7.0 in the right eye and 6.1 in the left eye in the random sample, and to 6.7 in the right eye and 4.6 in the left eye in the self-selected sample in the age group 60 or older.

Employers in Egypt accept 6/12 as the average level of vision needed for most jobs. In the random sample 78.1 percent had 6/12 or better visual acuity in the right eye and 77.9 in the left eye; in the self-selected sample the respective percents were 87.5 and 83.0. It appears that, in general, the acuity of the right eye is somewhat better than that of the left eye. The reason for superiority of the right eye, which is also evident in other comparisons, is not clear.

Each eye in both samples showed, in general, an increase in the percentage of those with visual acuity of 6/60 (20/200) or less with increase in age, rising sharply in the random sample at age 60 or older and in the self-selected sample at age 50. In every age group, as well as in all age groups combined (age-adjusted total), the self-selected sample had lower percentages of these severely impaired males for each eye than did the random sample.

For urban females the age-adjusted percentage with visual acuity of 6/6 in the right eye was, for the random sample, 33.6, and for the self-selected sample, 35.0; in the left eye these respective percentages were 30.6 and 37.3.

The percentages in both samples and in each eye for urban females with 6/6 visual acuity dropped rapidly after age 30, to 3.2 in the right eye and 2.0 in the left eye in the random sample and to 3.1 in the right eye and 5.2 in the left eye in the self-selected sample in the age group 60 or older (table 2).

"Normal" visual acuity in urban females was generally poorer, began to decline at an earlier age, and in old age reached a lower level than in urban males.

There was an increase with age in the percentage with visual acuity of 6/60 or less in each eye among urban females; the percentage increased sharply at age 50 in both the random and self-selected samples. In general, as with urban males, the age-specific percentages in the self-selected sample were lower than those in the random sample. A higher percentage of visual acuity 6/60 or less was found in urban females in either eye and in both samples than was evident in urban males.

Table 3 shows the percentage distribution by age for the random and self-selected samples of visual acuity in the right and left eyes of all males and females by age examined in rural areas.

For rural males the age-adjusted percentage with visual acuity of 6/6 in the right eye for the random sample was 22.9 and for the self-selected sample, 41.8; in the left eye, for the random sample, 19.5, and for the self-selected sample, 37.9. The percentages are lower than they were for the urban males. The percentage difference, however, is much greater in the random sample than in the self-selected sample. In the random sample, the rural male percentage is about half that of the urban male. In both samples, the percentage of rural males with 6/6 visual acuity decreased rapidly after age 50 to 2.5 in the right eye and 3.1 in the left eye in the random sample in the age group 60 or older, and after age 40 to 3.4 percent in the right eye and 1.8 percent in the left eye in the self-selected sample in the oldest age group.

In the random sample 59.6 percent of the males had 6/12 or better visual acuity in the right eye and 58.1 percent in the left eye; in the self-selected sample these percentages were 81.1 and 81.2 respectively. The percentages with visual acuities of 6/12 or better in the random sample of rural males are considerably below similar percentages for the urban males. Although 6/12 is the average level of acuity needed for employment in most jobs in Egypt, it is probable that persons with less acuity can get by in rural occupations, because these occupations do not demand as keen a vision.

As in urban areas, the percentage of rural males with visual acuity of 6/60 or less in either eye rose with age in both samples, increasing rapidly in the random sample in both eyes after age 50; in the self-selected sample the increases were marked in each eye after age 60 or older. The percentages for every age group and for the age-adjusted total were lower for each eye in the self-selected sample than in the random sample. The rural male percentages were higher than similar percentages among urban males for the age-adjusted totals and for practically every age-specific percentage for both samples and each eye.

The data on rural males indicated, as did those on urban males, that in general the visual acuity of the right eye is better than that of the left.

For rural females the age-adjusted percentage with visual acuity of 6/6 in the right eye was, for the random sample, 11.6, and for the self-selected sample, 32.8; in the left eye these percentages were 9.7 and 28.8. The percentages are lower than they were in the case of urban females, with the greatest differences observed in the random sample, where the rural female percentage is about one-third that of the urban female.

Table 4. Differences between random sample and self-selected sample in age-adjusted percentages of persons with visual acuity of 6/6, 6/15, and 6/60 or less, by urban-rural residence, sex, and eye

Visual acuity	Urban		Rural	
	Males	Females	Males	Females
Right eye:				
6/6	[1]−1.1	[1]−1.4	−18.9	−21.2
6/15	2.1	−1.0	5.2	7.8
6/60 or less	6.3	5.7	5.7	5.5
Left eye:				
6/6	−3.2	−6.7	−18.4	−19.1
6/15	−1.7	[1]− .8	4.2	5.8
6/60 or less	5.7	7.4	7.1	7.4

[1] Not statistically significant at the 5 percent level.

NOTE: Minus sign indicates that the self-selected sample percentage exceeds the random sample percentage. All differences except the 3 footnoted items are significant at the 5 percent level.

As in the case of urban females, the percentage of rural females with visual acuity of 6/6 in both samples and in each eye decreased with age. It dropped sharply in the random sample in the right eye after age 50 to a low of 0 percent, and in the left eye after age 40 to a similar low; in the self-selected sample it decreased rapidly in the right eye after age 40 to 3.1 and in the left eye, after age 30, it dropped to 1.8 in the age group 60 or older.

The percentage of rural females with visual acuity of 6/60 or less in either eye increased with age in both samples, rising rapidly in the random sample in each eye after age 50; in the self-selected sample the percentage in each eye also rose rapidly after age 50. For practically every age group and for the age-adjusted total, the percentages for each eye were lower in the self-selected sample than in the random sample. The rural female percentages were higher than similar percentages among urban females for the age-adjusted totals and for practically every age-specific percentage for both samples in each eye.

Table 4 presents differences in age-adjusted percentages between the random sample and the self-selected sample of persons with visual acuity of 6/6, 6/15, and 6/60 or less by urban-rural residence, sex, and eye. It is evident that with respect to urban males and females, there is no significant difference in 6/6 visual acuity of the right eye between that found in the random sample and that in the self-selected sample. At the

6/15 level, males show a statistically significantly increased percentage for the random sample, but the females show statistical significance for an increased percentage in the self-selected sample. However, at a visual acuity of 6/60 or less, both urban males and females show increased percentages for the random sample.

For the left eye in urban males and females, the percentage with visual acuity of 6/6 in the self-selected sample was statistically significantly greater than that in the random sample; however, the percentage with visual acuity of 6/60 or less was decreased significantly in both sexes when compared with that in the random sample. Again, only in the 6/15 visual acuity level is there some uncertainty. Both sexes showed decreased percentages at that level in the random sample, but only in males was the difference statistically significant.

In rural males and females the findings are consistent for both sexes and for each eye at each of the three visual acuity levels. In each eye males and females show statistically significant increases at the 6/6 visual acuity level in the self-selected sample, as compared with the random sample. At the 6/15 level and the 6/60 or less level, however, the reverse picture is evident. At each of these visual acuities the percentage found in the random sample is significantly greater than that in the self-selected sample.

It is obvious that at any given age the percentages of the different visual acuities must total 100 percent. As age increases, the percentage for 6/6 decreases while that for 6/60 increases. In view of the fact that the age-adjusted 6/6 percentage for the self-selected sample is greater than that for the random sample and that the age-adjusted 6/60 percentage for the self-selected sample is less than that for the random sample, it is obvious that a graph of these two curves would show a crossover at some visual acuity level between 6/6 and 6/60. The differences in the findings pertaining to the 6/15 level between urban and rural areas, mentioned previously, might be related to the rates of decrease of the two curves and the visual acuity level at which they cross. For instance, if the curves cross at a visual acuity level better than the 6/15 level, such as those in the rural areas, the random sample percentage at the 6/15 level will exceed that of the self-selected sample at that same level. If they cross at a visual acuity level worse than the 6/15 level, such as those for the left eye of males or females in urban areas, the self-selected sample percentage at the 6/15 level will exceed that of the random sample at that same level.

Discussion

Before this study no data were available on visual acuity on a communitywide basis in developing countries, including Egypt. Therefore, the data obtained in this study have special significance because all groups of the population were represented, and standard techniques and equipment were used.

A comparison of visual acuities of each eye of random and self-selected samples of urban and rural residents indicated that for males and females the distributions of visual acuity were different in the two samples. In the self-selected sample, the age-adjusted percentage of so-called "normal" vision (6/6) was significantly greater in both urban and rural areas for each eye of males and females than it was in the random sample. Similarly, the percentage of those with severely impaired vision or blindness (6/60 or less) was significantly less in the self-selected sample than that in the random sample. These findings tie in well with those found in a previous study (*1*) with the same samples in which it was found that binocular blindness prevalence rates in the self-selected sample were significantly lower than those in the random sample for males and females in urban and rural areas in Egypt.

What would explain the findings mentioned previously? It is true that in the urban areas a significantly greater percentage of persons under age 20 were in the self-selected sample (57.5 percent) than in the random sample (47.1 percent). The same is true for the rural areas; a greater proportion of the under age 20 group are in the self-selected sample (45.0 percent) than in the random sample (41.1 percent). Younger people, in general, have better visual acuity than older people. But, even when age-adjustment was undertaken, the adjusted findings show the same picture.

It is possible that a person who feels confident that he is normal or near normal in a function being tested is more likely to self-select himself for the test. Though refusal to cooperate is possible, of course, for persons randomly selected for a sample, that possibility occurred much too infrequently to be of significance in this study. In the urban areas 1,000 families were randomly selected for the study, and of these only 18 (1.8

percent) refused to cooperate. In the rural sample every one of the 1,000 families randomly selected cooperated.

In a random sample, within the limits of sampling error, what is found in the sample reflects what exists in the community sampled. Therefore, what is found in a self-selected sample or any other type of biased sample represents the effects of factors that distort to a greater or lesser extent the distribution in the community of what is being measured.

The effect of self-selection on increasing the percentage with 6/6 visual acuity in the sample was more evident in rural than in urban areas. The effect of self-selection on the proportion of persons with visual acuity of 6/15 was not clear in the urban area but was evident in the rural area. Finally, self-selection resulted in decreased percentages of persons in the sample with visual acuity of 6/60 or less. Males and females showed about the same change in percentage. Urban and rural area residents showed about the same percentage change.

In both the random and self-selected samples, the urban males and females had better vision than their rural counterparts. This was true, in general, for each eye. Among the possible causes for such differences may be the greater exposure to eye infections in the rural areas and the scarcity of services, preventive or curative, available in these areas. An additional explanation for the differences may lie partly in the fact that people in rural areas are less educated than in urban areas. This lack of education may result in poor sanitary procedures in the home, such as the use of a common towel, and often the failure of rural persons to take proper care of their eyes. The lower socioeconomic levels of people in rural areas and the difficulties in getting transportation from village to city may also contribute to delays in seeking medical attention and care. As a result, visual disorders of people in rural areas are, in general, not detected or treated early.

In both the random and the self-selected samples, males had better visual acuity than females in both urban and rural areas. This may be related to the fact that males are the breadwinners of the family in Egypt. Thus, they are more likely than females to seek medical advice and to have their vision corrected by glasses. Furthermore, females may be somewhat reluctant to wear glasses for cosmetic reasons.

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SAID, MOHYI-ELDIN (University of Alexandria, Egypt), GOLDSTEIN, HYMAN, KORRA, AHMAD, and EL-KASHLAN, KHALIL: ***Distribution of visual acuity in Egypt. A comparison of random and self-selected samples of urban and rural residents. Health Services Reports, Vol. 89, May–June 1974, pp. 247–255.***

A comparison was made of the results of house-to-house vision screening of a 4 percent random sample of households (consisting of about 11,000 persons of all ages and socioeconomic levels) in some urban and rural areas in and around Alexandria, Egypt, with the results of screening of a self-selected sample of about 145,000 persons in the same geographic areas.

Comparisons were made of age-adjusted percentages of the various visual acuities for each eye by sex and urban-rural residence for the random and self-selected samples.

The self-selected, age-adjusted percentages for visual acuity of 6/6 (20/20) were significantly increased over those of the random sample. This was true for the age-adjusted percentages for each sex and for each eye and by urban-rural residence. When comparisons were made of similar percentages for visual acuity of 6/60 (20/200) or less, the findings show that the percentages were significantly decreased in the self-selected sample when compared with the counterpart percentages in the random sample. Generally, the changes in percentages because of self-selection were greater in rural areas than in urban areas.

A Geographic Analysis of Counties Without an Active Non-Federal Physician, United States, 1963-71

ROSS MULLNER, MS, and THOMAS W. O'ROURKE, PhD, MPH

THE NUMBER of physicians in the United States totaled 260,484 in 1960. A decade later the number rose to 334,028, an increase of almost 75,000. During the same period the number of physicians per 100,000 population also increased from 141 to 159 (*1*). Despite these marked increases, the number of counties without a practicing non-Federal physician grew from 98 in 1963 to 132 in 1970 (*2*).

These counties, which contain nearly half a million people, have encountered great difficulty in attracting a physician (*3*). Clinics have been built, incomes guaranteed, numerous letters written to medical schools, and full-page advertisements published in newspapers and medical journals in the hope of attracting a physician. The seriousness of this situation has been further expressed by local newspaper editorials, civic groups, and politicians. One resident of a West Virginia county without a physician expressed the problem in the following way (*4*):

> We are 35 miles away from hospital facilities. We have sent people in an ambulance into Clarksburg and we have had people die on the way in, and immediate medical attention could have saved some of these people. . . . We have tried everything we know to get a physician. We have advertised in periodicals, medical journals, newspapers; we sent out 120 letters to medical universities all over the country and Army discharge

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centers. We haven't had a direct reply from any of these. We have had people come in, but for one reason or another they didn't want to locate there.

Although many authors have written about the maldistribution of physicians in the United States, few have discussed or attempted to analyze the specific factors related to the growing number of counties lacking a physician. We have investigated this important problem from a geographic perspective. Specifically, our objective was twofold: (*a*) to investigate the temporal and spatial pattern of counties lacking physicians and (*b*) to analyze variations among these counties in terms of their socioeconomic, ethnic, and spatial characteristics. The unit of analysis employed in this study was limited to those counties without an active non-Federal physician for 1 or more years during the period 1963–71. As such, it should be noted that the findings, generalizations, and inferences of this investigation are limited to, and specific for, counties with this characteristic. It would be unwarranted to interpolate the findings of this study to counties which have had the continued services of a non-Federal physician during this period. Data for the study were obtained from the American Medical Association's Distribution of Physicians series for each of the 9 years (*5*).

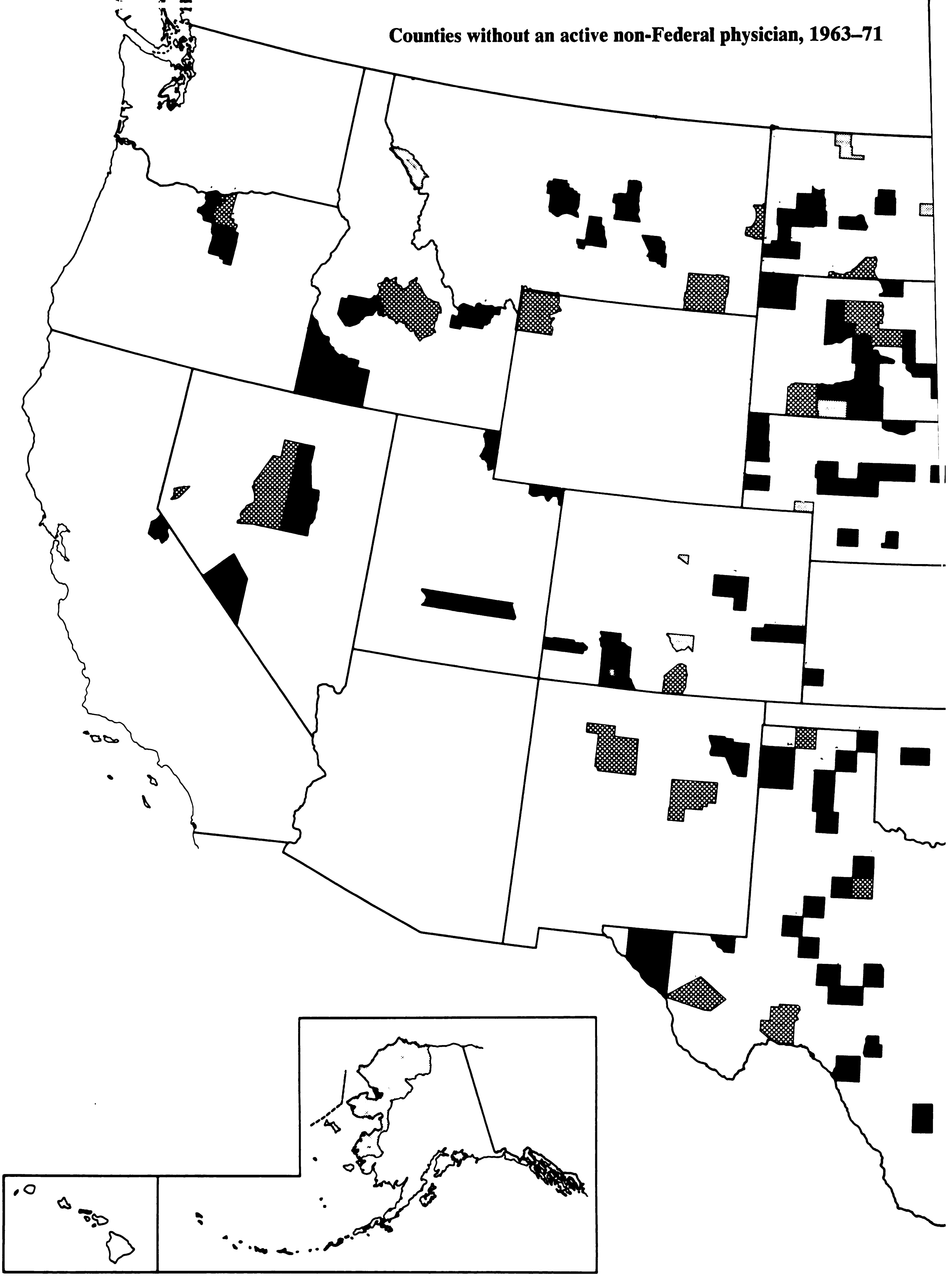
Methodology

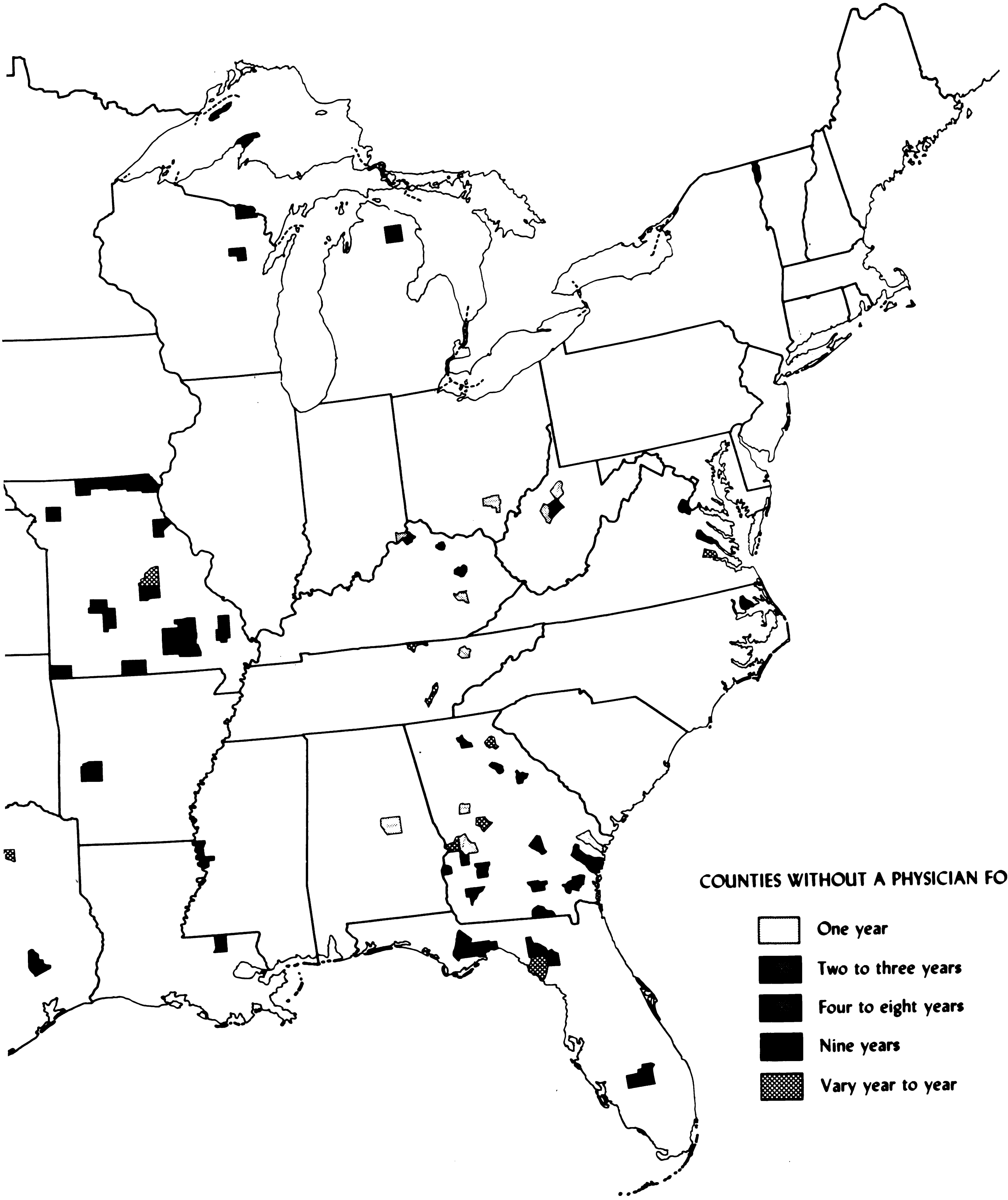
After the data were collected, 179 counties were identified which had lacked the services of a physician for 1 or more years. To investigate temporal variations, these counties were divided into five groups. The first group (N = 22) consisted of those counties without a physician for 1 year. The second group (N = 23) was composed of those counties which lacked a physician for 2 to 3 years. Group 3 (N = 38) consisted of those counties without a physician for 4 to 8 consecutive years. Group 4 (N = 69) was composed of those counties without a physician for the total length of the study period, 9 years. The last group (N = 27) consisted of those counties which varied from year to year with respect to having a physician. For example, if a county did not have a physician for 2 consecutive years, then had one for 1 year, and later did not have a physician for the rest of the period, it was included in the fifth group.

To investigate the spatial variation of the counties, the five groups were plotted on a map (see chart). From the map, five patterns can be recognized. First, a majority of the counties are in isolated rural areas with small populations—for example, Alpine, Calif., with a population of 484; Clark, Idaho, with 741; and Petroleum, Mont., with 675 (*6*). Second, several are adjacent to highly urbanized counties defined by the census as a Standard Metropolitan Statistical Area (SMSA). From this fact, one can conjecture that the large urban areas tend to create a "shadowing effect" with respect to physicians locating in adjacent counties. Examples of this pattern include Hudspeth, Tex., adjacent to the El Paso SMSA; Union, Tenn., which is contiguous to the Knoxville SMSA; and De Kalb, Mo., adjacent to the St. Joseph SMSA (*7*). Third, many of the counties, especially those in the Great Plains and the Rocky Mountain regions, are located at great distances from medical schools. Billings, N. Dak.; Harding, S. Dak.; and Judith Basin, Mont., are examples of this (*8*). Fourth, several counties without physicians have high concentrations of ethnic groups, such as American Indians and blacks. In fact, many contain Indian reservations. Todd, S. Dak., is part of the large Rosebud Indian Reservation; Glades, Fla., contains the Brighton Reservation; and Sandoval, N. Mex., contains the Jemez, Zia, Santo Domingo, and Cochita Reservations (*9*). Counties with high concentrations of blacks included Issaquena, Miss., Taliaferro, Ga., and Charles City, Va., with 62, 63, and 74 percent, respectively, in this ethnic group (*6*). It should be noted that the patterns just described are not mutually exclusive. Significant overlap is more the rule than the exception.

To test the validity of these patterns with respect to the five county groups, 14 socioeconomic, ethnic, and spatial variables were obtained for each county and used in an analysis of variance test. Twelve variables—total population, population density, percent population change, percent Indian, percent black, percent total nonwhite, median income, percent of population with income below the poverty level, median age, percent of population 65 years or older, fertility ratio, and percent of population rural—were obtained from the 1970 U.S. Census of population. The 13th and 14th variables, distance to the nearest SMSA and distance to the nearest medical school, were obtained by plotting the total number of SMSAs and medical schools in 1970 on a map and measuring the linear distance from each county to each of these variables (*7,8*).

Counties without an active non-Federal physician, 1963–71




COUNTIES WITHOUT A PHYSICIAN FOR:
One year
Two to three years
Four to eight years
Nine years
Vary year to year

A one-way analysis of variance test was then applied to determine significant differences among the means of the five groups for each of the 14 variables (*10*). The level of significance was set at the 0.05 level. After calculation of the *F* values, six variables were found to vary significantly: total population, population density, percent population change, percent of population 65 years or older, distance to the nearest SMSA, and percent of population rural. The results of the analysis are shown in table 1.

Results

The results reveal that two of the patterns identified earlier, distance from medical schools and high concentrations of ethnic populations, did not vary significantly among the five groups. Although the four variables used to test these relationships, percent Indian, percent black, percent total nonwhite, and distance to nearest medical school, were not significant, the last variable was just under the significance level. It should also be noted that the two economic variables used in this study, median income and percent of population with incomes below poverty level, although seemingly important in attracting and supporting a physician, were not significant.

Since the analysis just described tested only for the overall hypothesis of differences among the five means for each variable, a followup analysis of variance test, using all pairwise combinations for each of the six significant variables, was undertaken (*10*). The followup test was employed to indicate which means among each variable were significantly different. Again the level of significance was set at the 0.05 level. The results are shown in table 2.

If one looks at the significant variables in table 2, it is apparent that total population and population density for group 4, those counties without a physician for 9 years, varied from all other groups. These counties in group 4, with an average population of only 2,331 and an average density of 4 persons per square mile, were below a population threshold level capable of attracting a physician. These findings tend to support Marshall and co-workers who stated that population size is the most important single element in determining physician location (*11*).

For the variable, percent population change, group 4 varied significantly from groups 3 and 5. Group 4 experienced the sharpest rate of population decline, —11.1 percent, while only group 3, those counties without a physician for 4 to 8 years, and group 5, those counties which varied from year to year, had an increase in population, 1.6 percent and 8.4 percent respectively.

For the next variable, percent of population 65 years or older, group 5 varied from groups 1, 2, and 3. Group 5 had the lowest percentage of elderly, 9.8 percent, while group 2, those counties without physicians for 2 to 3 years, had the highest, 13.4 percent. Groups 1 and 3 both had values of 12.7 percent. These results indicate that no specific trend appears to exist with respect to

Table 1. Mean and *F* values of selected variables for counties without a non-Federal physician, 1963–71

Variable	Group 1 (1 year without)	Group 2 (2–3 years without)	Group 3 (4–8 years without)	Group 4 (9 years without)	Group 5 (varying period)	F value
Total population	5,551.9	5,013.0	4,730.6	2,331.4	5,430.4	[1] 7.70
Persons per square mile	15.4	12.6	11.2	4.2	12.0	[1] 4.21
Percent population change	—2.1	—3.0	1.6	—11.1	8.4	[1] 5.53
Percent Indian	1.5	.4	5.0	3.6	9.3	1.50
Percent black	9.5	8.0	7.0	5.8	7.1	.24
Percent total nonwhite	11.1	8.7	12.4	9.6	16.8	.71
Median income (dollars)	$6,352.4	$5,851.6	$6,463.4	$6,318.8	$6,441.9	.48
Percent population with incomes below poverty level	22.2	24.8	21.6	20.3	23.9	1.08
Median age of population (years)	30.3	31.8	30.9	30.8	27.5	1.94
Percent population 65 years or older	12.7	13.4	12.7	11.5	9.8	[1] 3.52
Cumulative fertility rate[2]	409.8	382.0	394.1	401.6	422.5	.71
Miles to nearest medical school	154.7	138.6	168.8	208.2	193.7	2.29
Miles to nearest SMSA	68.8	72.2	85.8	113.4	98.0	[3] 3.06
Percent of population rural	81.9	80.4	90.7	94.8	78.8	[1] 5.64

[1] Significant at 0.01 level.

[2] Ratio of cumulative number of children born per 1,000 women in the age group 35–44 years.

[3] Significant at 0.05 level.

SOURCES: Reference 6 for data on all but two variables; reference 8 for distance to the nearest medical school; reference 7 for distance to the nearest SMSA.

Table 2. *F* values for selected variables from intergroup comparisons of counties without a non-Federal physician, 1963–71

Variable and group	Group 2	Group 3	Group 4	Group 5
Total population:				
1	.384	.698	[1]40.486	.008
2		.084	[1]26.744	.107
3			[1]18.191	.352
4				[1]17.755
5				
Population density:				
1.	.718	.811	[1]41.857	.455
2		.093	[1]25.490	.013
3			[1]7.852	.024
4				[1]8.528
5				
Percent population change:				
1	.027	.547	3.593	1.949
2		1.222	3.890	3.053
3			[1]12.294	1.331
4				[1]15.409
5				
Percent 65 and over:				
1	.456	.003	1.493	[1]8.511
2		.470	3.878	[1]11.415
3			1.919	8.073
4				3.751
5				
Distance to nearest SMSA:				
1	.035	.983	[2]6.599	2.066
2		.814	[2]6.706	2.101
3			[2]4.137	.538
4				.913
5				
Percent rural:				
1	.071	3.117	[1]11.335	.209
2		[2]4.326	[1]14.355	.055
3			1.654	[2]4.517
4				[1]14.189
5				

[1] Significant at 0.01 level. [2] Significant at 0.05 level.

the distribution of physicians and percent of elderly population. An interesting aspect which the investigators are currently following up is whether counties with relatively larger proportions of persons over 65 years were able to attract physicians more easily after the institution of Medicare than before its inception.

With respect to the variable of distance to the nearest SMSA, group 4 varied from groups 1, 2, and 3. Group 4 was the farthest away, on the average, from the nearest SMSA, a mean distance of 113 miles, while the mean distance for group 1 was 69 miles, 72 miles for group 2, and 86 miles for group 3. From this, one can conjecture that geographic distance is an important variable to a physician in that the greater the distance from a large urban center, the less likely it is that a county can attract a physician.

The last variable, percent of population rural, demonstrated the greatest variation among the groups. The main pattern consisted of group 4's varying from groups 1, 2, and 5. Group 4 was the most rural, 94.8 percent, while group 5 was the least rural, 78.8 percent. The other patterns consisted of group 2's varying from group 3 and group 3's varying from group 5. One can conclude that the two groups which lacked a physician for the longest periods (groups 3 and 4) were also the most rural and tended to vary most from the other groups.

Conclusion

This analysis distinguished a core group from a fringe group of counties with respect to attracting a physician. The core group consisted of those 69 counties which did not have a physician for the entire 9 years of the study period. The fringe group, on the other hand, consisted of the other 110 counties which had no physician for from 1 to 8 years. The core group, as this study indicated, can be differentiated from the fringe group by small total population and sparse density, steep rate of population decline, and geographic isolation from urban centers.

Further, the one characteristic which seemed to hamper most the ability of these counties to attract a physician was a small total population. This study indicated that, for this variable, there is a population threshold level below which a physician will not locate. One may also conjecture that this threshold has been and will be increasing with time. For example, in 1963 the average population of counties without a physician was 3,008, while in 1971 the average population was 3,629. Several recent trends in medicine also appear to support this conjecture. First, a smaller number of physicians have been entering into general private practice, while conversely, a greater number have been entering specialized hospital-based practice (*12*). Kissick, in discussing this trend, stated (*13*):

> Specialization in medical practice, a post-World War II occurrence, and concentration of health manpower in hospitals, or institutionalization, have reached major proportions. . . . At the present time, the situation is rapidly approaching in which almost nine out of every ten graduates of the nation's medical schools enter specialty training.

The second trend is increased medical technology. Physicians are becoming increasingly reluctant to locate in counties without, for example, standard laboratory facilities and are more prone to locate where specialized equipment, colleagues, and allied personnel are readily available. Mechanic said that practice without these amenities tends to frustrate ". . . the physician who feels he cannot implement the level of scientific training he received." He further stated that the physician feels that rural practice ". . . would isolate him from a colleague network, more complex diagnostic and treatment aids, and the ancillary assistance available in more densely populated areas" (*14*).

Last, the trend toward group practice has been increasing. For example, Somers indicated that in 1967 approximately 60 percent of all physicians were in some sort of group practice or hospital-based practice. With the advent of increased group practice, population threshold levels have further increased, thus tending to intensify differences between medical "haves" and "have nots" (*15,16*).

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The Challenge of Neonatal Mortality in an Urban Hospital

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THE NEONATAL MORTALITY RATE in the United States was 18.7 per 1,000 live births in 1960; 17.7 in 1965 (*1*), a decline of 5.3 percent; and 14.9 (provisional) in 1970 (*2*), a further decline of 15.8 percent. The major portion of this significant decline (20.3 percent) in the past decade occurred during the latter half.

The neonatal mortality rates have declined less in large metropolitan centers, presumably because of a proportionate increase of births among the poor, especially the nonwhites and Puerto Ricans, and the exodus of middle-class whites to the suburbs. In Philadelphia, the neonatal mortality rate fell from 24.2 per 1,000 live births in 1960 to 20.7 (*3*) in 1970—14.4 percent in contrast to the nationwide decline of 20.3 percent during the same 11-year period. In New York City, the neonatal mortality rate declined from 19.2 per 1,000 live births in 1960 to 18.0 in 1969 (6.2 percent), whereas in Detroit, the rate declined from 23.5 per 1,000 live births in 1960 to 19.8 in 1968 (15.7 percent).

Temple University Hospital Data

At Temple University Hospital in Philadelphia, there were 26,377 live births during the 10 years from 1960 to 1969. The neonatal mortality data for the two 5-year periods, 1960 to 1964 and 1965 to 1969, are compared in this paper. Also, some factors responsible for the high neonatal mortality rate in this university-affiliated, private, nonprofit hospital are discussed.

The patients who use the hospital's obstetrical services consist of a large group from the lower socioeconomic class, predominantly nonwhite and Puerto Rican (house patients) and a smaller group of private patients who receive prenatal care in the offices of board-certified obstetricians. Approximately 10 percent of the house patients who come for delivery have had no prenatal care.

The data presented here include all live-born

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infants who exhibited a heart beat, respiratory effort, or muscular movement, regardless of birth weight or gestational age. The neonatal deaths include those live-born infants who died in the first 28 days of life.

Comparisons of Data

Live births and neonatal deaths for the two 5-year periods are presented in table 1. During the second 5-year period, 3,423 fewer infants were delivered than in the first period. The proportion of infants born on the private service (95 percent white) decreased from 36 to 26 percent —a decrease of 2,443 infants. Although births on the house service decreased by 980, they increased from 64 to 74 percent of the total births from the first to the second 5-year period. With the increasing proportion of house patients during the second 5-year period, the incidence of low birth weight rose from 13.7 percent to 16.5 percent.

Comparison of the mortality rates for the two 5-year periods reveals that, despite reductions in each low birth weight category and a corresponding decrease in the low birth weight mortality from 164.6 to 147.4 per 1,000 live births, between the first and second 5-year periods the total neonatal mortality rate increased from 25.3 to 27.5 per 1,000 live births.

The increase in neonatal mortality in the second 5-year period reflects the increase of the low birth weight rate from 13.7 to 16.5 percent and an increase in the number of births of infants weighing less than 1,500 grams from 2.7 to 3.3 percent of the total births. If the low birth weight rate in the second 5-year period had been 13.7 percent (that of the first period), 321 fewer low birth weight infants would have been born, and a neonatal mortality rate of 23.4, rather than 27.5, per 1,000 live births would have occurred.

The increase in full-term mortality from 3.1 to 3.8 per 1,000 live births during the second 5-year period was responsible for an increase in the neonatal mortality of 0.5 per 1,000 live births. The infants who weighed less than 1,500 grams in the second 5 years accounted for 73.8 percent of the neonatal deaths and 83.4 percent of the deaths of low birth weight infants. Of all the neonatal deaths, 88.3 percent were among low birth weight infants.

The mortality rates for the low birth weight groups in the second 5-year period at Temple University Hospital were lower than those reported elsewhere (*4–6*). These lower rates at Temple may be due to the preponderance of nonwhite infants who are known to have increased survival rates in the low birth weight categories.

The percentage distributions of live births by birth weight groups for the United States in 1968 (*7*), Sweden in 1965 (*8*), and Temple University Hospital from 1965 to 1969 are shown in table 2. At the hospital, the incidence of low birth weight infants was twice that of the United States as a

Table 1. Live births and neonatal deaths, according to birth weight groups, 1960–64 and 1965–69, Temple University Hospital, Philadelphia

Birth weight (grams)	Live-born infants			Neonatal deaths			
	Absolute numbers	Percent of total	Percent of low birth weight	Absolute numbers	Per 1,000 live births	Percent of total	Percent of low birth weight
				1960–64			
0–1,000	204	1.4	10.0	187	916.6	49.6	55.5
1,001–1,500	194	1.3	9.5	83	427.8	22.0	24.6
1,501–2,000	449	3.0	21.9	42	93.5	11.1	12.5
2,001–2,500	1,200	8.0	58.6	25	20.8	6.6	7.4
0–2,500	**2,047**	**13.7**	**100.0**	**337**	**164.6**	**89.4**	**100.0**
2,501 and over	12,853	86.3	....	40	3.1	10.6	....
Total	14,900	...	....	377	25.3	...	....
				1965–69			
0–1,000	182	1.6	9.6	162	890.1	51.3	58.0
1,001–1,500	193	1.7	10.2	71	367.8	22.5	25.4
1,501–2,000	372	3.2	19.6	24	64.5	7.6	8.6
2,001–2,500	1,146	10.0	60.5	22	19.2	6.9	7.9
0–2,500	**1,893**	**16.5**	**99.9**	**279**	**147.8**	**88.3**	**100.0**
2,501 and over	9,584	83.5	....	37	3.8	11.7	....
Total	11,477	...	....	316	27.5	...	....

Table 2. Percentage distribution of live births, by birth weight, United States, Sweden, and Temple University Hospital

Birth weight (grams)	United States, 1968[1]	Sweden, 1965[2]	Temple University Hospital, 1965–69
0–1,000	0.6	0.2	1.6
1,001–1,500	.7	.4	1.7
1,501–2,000	1.6	1.0	3.2
2,001–2,500	5.4	2.9	10.0
0–2,500	**8.2**	**4.5**	**16.5**
2,501 and over	91.8	95.6	83.5

[1] SOURCE: reference 7.
[2] SOURCE: reference 8.

Table 3. Neonatal mortality rates, by birth weight, United States, Sweden, and Temple University Hospital

Birth weight (grams)	United States 1960[1]	Sweden 1965[2]	Temple University Hospital, 1965–69
0–1,000	912.8	881.3	890.1
1,001–1,500	521.5	475.9	367.8
1,501–2,000	180.6	153.7	64.5
2,001–2,500	41.4	47.5	19.2
0–2,500	**171.6**	**151.5**	**147.8**
2,501 and over	5.5	2.8	3.8
Total	18.4	9.2	27.5

[1] SOURCE: reference 9.
[2] SOURCE: reference 8.

whole and almost four times that of Sweden. Infants weighing less than 1,500 grams are born almost three times as frequently at Temple as in the United States and more than five times as frequently as in Sweden.

The neonatal mortality rates by birth weight groups for the United States in 1960 (*9*), Sweden in 1965 (*8*), and Temple University Hospital from 1965 to 1969 are shown in table 3—the U.S. figures are the most recent available. The mortality rates in each weight category for the hospital were less than those for the United States, but the total neonatal mortality rate was 48 percent higher. The mortality rates for the groups weighing between 1,000 and 2,500 grams at the hospital were considerably less than those for Sweden, whereas the rates for the infants weighing less than 1,000 grams and more than 2,500 grams were slightly higher than those of Sweden.

The total neonatal mortality among low birth weight infants at Temple was slightly less than that of Sweden and considerably less than that for the total United States in 1960. However, the total neonatal mortality rate at the hospital for 1965–69 was almost three times that for Sweden in 1965 and slightly less than twice that of the provisional figure of 14.9 for the United States in 1970 (*2*).

Discussion

The high neonatal mortality rate at Temple University Hospital is a result of the high rate of low birth weights and the birth of excessive numbers of infants weighing less than 1,500 grams. Geijerstam (*8*), in an analysis of Swedish and U.S. neonatal mortality data, also concluded that the higher rates for the United States as compared with Sweden is caused mainly by a higher proportion of low weight births.

The excessive proportion of infants weighing less than 1,000 grams in our study reflects the inclusion of all live births, regardless of weight or gestational age. Other studies, however, have excluded very small infants. Potter and Davis reported that in their study 38 percent of the neonatal deaths occurred among infants weighing between 400 and 1,000 grams (*6*). In our study, 51.3 percent of the neonatal deaths occurred among infants weighing less than 1,000 grams. Potter and Davis' data covered the 5 years from 1961 to 1966 in a population with a low birth weight rate of 8.4 percent. In a large maternity hospital in Helsinki where 43,420 births took place over a 6-year period and the low birth weight rate was 5.06 percent, 64 percent of the neonatal deaths occurred among infants weighing between 601 and 2,500 grams (*10*). At Temple University Hospital, 88 percent of the neonatal deaths occurred among infants weighing less than 2,500 grams.

Thus, as the preceding figures clearly show, reports of neonatal mortality should include all live births—regardless of weight or gestational age—so that the data can be directly compared.

Race and social class are related to low birth weight and to neonatal and perinatal mortality rates. The U.S. 1968 low birth weight rates were 7.1 for whites and 13.7 for nonwhites (*7*); the neonatal mortality rates per 1,000 live births were 14.7 for whites and 23.0 for nonwhites (*11*). In Philadelphia in 1970 the neonatal mortality rates per 1,000 live births were 15.0 for whites and 27.7 for nonwhites; the low birth weight rates were 8.2 for whites and 16.0 for nonwhites (*3*).

In a report of the 1958 British Perinatal Mortality Survey (*12*), high perinatal mortality was associated with low socioeconomic class. Bedger and associates (*13*) reported a high incidence of low birth weight and infant mortality in the low socioeconomic class in Chicago. Donabedian and associates (*14*), in a study of data for Boston for 1950 to 1954, found a fivefold difference in perinatal mortality between census tracts having the highest and lowest socioeconomic status. Yerby (*15*), in an analysis of births in New York City, and Hendricks (*16*), in a study of patients in Cleveland, reported the association of high rates of low birth weight and perinatal mortality with low socioeconomic status. Baird (*17*) related low birth weight rates to lower socioeconomic station in Aberdeen. Naeye and Blanc (*18*), in an analysis of autopsy data, reported that the poorest families had twice the rate of infections as the most prosperous, and blacks had about double the rate for whites and Puerto Ricans. Balfe (*19*) stated that "infant mortality is for the most part a social rather than a medical problem."

Conclusion

Clifford (*20*) stated that the prevention of prematurity is the sine qua non for reduction of mental retardation and other neurologic disorders. This statement can be extended to include neonatal mortality as well.

The improvement of neonatal mortality rates in the United States in the latter half of the past decade, during which time there was a stationary low birth weight rate (from 1965 to 1968 it ranged from 8.2 to 8.3 percent), seems to have resulted from improved obstetric and pediatric care. In Philadelphia, the neonatal mortality rate decreased over the past few years despite an increase of the low birth weight rate from 11.5 in 1968 to 11.7 in 1970. Any further reduction of the low birth weight rate with concomitant reduction in neonatal mortality in urban centers and urban hospitals will depend, in addition to improvement of obstetric and pediatric care, upon improvement of other aspects of the quality of life of the indigent population. These aspects may include improvement of health care in the areas of nutrition, sanitation, sex and health education, and family planning services. Better housing, jobs, and education may also be essential to maximal health gains.

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The Impact of Legal Abortion: Redefining the Maternal Mortality Rate

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INDUCED ABORTION is associated with several clinical and demographic measures. Recent reports have demonstrated the relative safety of early surgical termination of pregnancy (*1–3*) as well as the relationship between legal abortion and a decline in birth rates and fertility indices (*4,5*). New York City data suggest that out-of-wedlock births may also be decreased, and Evrard (*6*) has further suggested that widespread use of abortion may affect the maternal and perinatal mortality rates.

In this paper we will examine the effect of varying utilization of induced abortion on the maternal mortality rate and the relationship between nonviable conceptions and the measurement of maternal risk. We will attempt to show the limitations of the traditional maternal mortality rate as a measure for describing or comparing maternal risks for different cohorts. Alternative methods of measurement will be discussed.

The traditional maternal mortality rate is expressed as the ratio of the number of maternal deaths (numerator) to the live births (denominator) in a defined population per unit of time. It seems likely that the rationale for the traditional measure stems from the fact that live births were the most readily obtainable quantity useful for measuring maternal risk. In addition, we might speculate that it is derived from a notion of a cost to benefit ratio—the cost in maternal deaths for the benefit of a given number of live births, that is, the cost of successful reproduction.

When the large majority of known pregnancies ended in live births, the traditional maternal mortality rate (TMMR) represented an adequate measure of pregnancy risk which was useful for both descriptive and comparative purposes. Because conceptions ending in spontaneous or induced abortion were difficult to ascertain, their relationship to the maternal mortality rate could not be fully appreciated. The legalization of induced abortion has resulted in a substantial increase in knowledge concerning the incidence of

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nonviable conceptions. Because it is currently possible to identify many of these heretofore unknown pregnancies, it is important to determine the ways in which they might affect the maternal mortality rate. Understanding of the way in which this rate is affected would permit one to consider how the measurement of maternal risk might be redefined in order to reflect current knowledge.

As defined, the traditional maternal mortality rate is not a true proportional rate of the type $a \div (a+b)$ but, in fact, is a ratio, $a \div b$. It is important to note this distinction because deaths attributed to complications of induced or spontaneous abortions, ectopic pregnancies, or stillbirths enter the numerator, although the conceptions from which these deaths occur are excluded from the denominator. It is apparent, therefore, that the risk associated with conception and all of its possible terminations is not actually being measured by the TMMR because the denominator does not fully represent those at risk of death from all conceptions. Risk measured against a denominator of live births (the TMMR) is misleading because a substantial proportion of maternal mortality results from stillbirths and abortions as well as live deliveries. The contribution of induced abortions alone was estimated to account for 38 percent of maternal deaths in New York City between 1960–71 (*2*). Since live births represent only a portion of the total conceptions, the traditional maternal mortality rate inevitably overestimates the risk attributable to conception, which is referred to in the subsequent discussion as the actual maternal mortality rate (AMMR). It will be shown that the extent of this overestimate, that is, the difference between the TMMR and AMMR, depends upon the proportion of nonviable conceptions.

Comparison of TMMR and AMMR

The effect of excluding nonviable conceptions from the denominator of the traditional maternal mortality rate results in an overestimate, indicated as the "percent overestimate" of the actual maternal risk as shown in tables 1 and 2. New York City (*2,7*) and Japan (*8*), where large numbers of abortions and good statistical reporting systems exist, reveal differences between the actual and the traditional rates ranging from 12 to 78 percent. Since considerable underreporting of nonviable conceptions is likely, the percent overestimate should be interpreted as representing the minimum estimate of difference between the TMMR and AMMR.

The data in tables 1 and 2 show that induced abortion, because of its frequency, makes a larger contribution to the difference between the actual and traditional rates than do other types of known fetal loss. The ratio of stillbirths to live births has remained fairly constant over time and can be ignored as a major explanation of variations in the difference. These findings are particularly well

Table 1. Maternal mortality estimates, New York City residents, 1968–71

Item	1968	1969	1970	1971
	Number			
Maternal deaths	66	77	68	37
Total known conceptions	159,981	164,231	192,355	216,011
Live births	141,920	146,221	149,192	131,970
Stillbirths	17,394	17,112	[1] 23,711	[2] 17,000
Induced abortions:				
Legal	608	850	19,349	67,032
Illegal [3]	59	48	103	9
	Rate per 10,000			
TMMR (maternal deaths ÷ live births)	4.7	5.3	4.6	2.8
Maternal deaths ÷ live and stillbirths	4.1	4.7	3.9	2.5
AMMR (maternal deaths ÷ total known conceptions)	4.1	4.7	3.5	1.7
Percent overestimate (TMMR − AMMR ÷ AMMR)	12.8	12.3	28.9	63.7

[1] Increase may be due to inclusion of some induced abortions.

[2] Authors' estimate of stillbirths. Accurate data not available because of overlap in reporting stillbirths and induced abortions since July 1970.

[3] Most illegal abortions are unreported. Tietze (*9*) has estimated the incidence to be at least 50,000 per year before July 1970.

SOURCE: of data in table, references 2, 7.

NOTE: TMMR = traditional maternal mortality rate, AMMR = actual maternal mortality rate.

Table 2. Maternal mortality estimates, Japan, 1950–67

Item	1950	1955	1960	1965	1966	1967
	Number					
Maternal deaths	4,117	3,095	2,097	1,597	1,266	1,351
Total known conceptions	3,043,592	3,084,100	2,848,578	2,828,562	2,317,600	2,831,752
Live births	2,337,507	1,730,692	1,606,041	1,823,697	1,360,974	1,934,958
Stillbirths	216,974	183,265	179,281	161,617	148,248	149,304
Induced abortions: legal	489,111	1,170,143	1,063,256	843,248	808,378	747,490
	Rate per 10,000					
TMMR (maternal deaths ÷ live births)	17.6	17.9	13.1	8.8	9.3	7.0
Maternal deaths ÷ live and stillbirths	16.1	16.2	11.7	8.0	8.4	6.5
AMMR (maternal deaths ÷ total known conceptions)	13.5	10.0	7.4	5.6	5.5	4.8
Percent overestimate (TMMR — AMMR ÷ AMMR)	30.2	78.1	77.4	55.3	70.3	45.8

SOURCE: of data in table, reference 8.

NOTE: TMMR = traditional maternal mortality rate, AMMR = actual maternal morality rate.

illustrated by the New York City data (table 1), which show a marked increase in differences between the actual and traditional maternal mortality rates before and after the introduction of the liberal abortion law in July 1970. The apparent increase in fertility in 1970 and 1971 may be attributed to two factors, decrease in illegal abortions and the availability of legal abortions. Registration of legal abortions has shed light on the current patterns of abortion utilization and has enabled Tietze (*9*), on the basis of current age-specific fertility rates, to conclude that at least 50,000 illegal abortions may have occurred annually in New York City before the introduction of the liberal abortion law. Most of these would be replaced by legal abortions, which are now being reported. It is also probable that the widespread utilization of legal abortions may result in their acceptance by women who might not have sought illegal abortions before July 1970.

Table 2 describes fertility in Japan between 1950 and 1967. Since 1955 the number of reported abortions has declined, which is reflected in the decreasing percent difference between the TMMR and AMMR. The low number of Japanese births in 1966 is presumably due to the traditional belief that girls born in the "Year of the Fiery Horse" do not make good wives. Many families apparently avoided childbirth to preclude the expected difficulty of marrying off daughters born in that year. The fact that induced abortions did not increase appreciably in 1966 may indicate the extent to which induced abortions are not reported in Japan.

The relationship between the TMMR and AMMR may be derived as follows:

$$TMMR = d \div y$$
$$AMMR = d \div (y + z)$$

where

$TMMR$ = maternal deaths ÷ live births per year
$AMMR$ = maternal deaths ÷ total conceptions per year
z = number of nonviable conceptions per year
y = number of live births per year
d = number of maternal deaths per year

then

$$TMMR \div AMMR = (d \div y) \div [d \div (y + z)]$$
$$TMMR \div AMMR = (y + z) \div y$$
$$TMMR \div AMMR = 1 + (z \div y)$$

The effect of exclusion of nonviable pregnancies on estimates of maternal mortality is evident from the last equation, since it is clear that the difference between the TMMR and AMMR depends only on the ratio of nonviable pregnancies to the total live births $(z \div y)$. The larger the term $(z \div y)$, the greater the difference between the traditional measure and the actual rate observed when conceptions are used to define those at maternal risk. The exclusion of 10 percent of the nonviable pregnancies from the traditional measure, therefore, will result in an overestimation of 10 percent; exclusion of 20 percent, an overestimation of 20 percent, and so forth, relative to the actual rate. We have shown the theoretical limitations of the TMMR, and in the following discussion we will show that legal abortion may cause the TMMR to react in unpredictable ways, thereby addressing the question of whether or not the TMMR may be readily interpreted and should be retained as a useful comparative measure.

Legal Abortion and the TMMR

Interpretation of the measurement of maternal risk is made difficult because an increase in early surgical abortions can affect the numbers of maternal deaths and live births in several ways.

1. For a given conception cohort, each abortion reduces the denominator of the TMMR because of the mutually exclusive nature of abortion and live birth. When large numbers of legal abortions occur, fewer women are exposed to the risks of death from delivery and the puerperium, but more are subject to the risk of the abortion procedure. The relationship is not, however, a simple 1:1 exchange (that is, one abortion averts one live birth) since a woman who aborts a pregnancy is quickly at risk of again becoming pregnant. For demographic purposes, more than one abortion is needed to avert one birth (*10*).
2. In actual practice there is replacement of most (but not all) illegal terminations by legal abortions (*5,9,11*), and in some circumstances a demand for additional abortions may occur owing to the facility with which legal abortions can be obtained (*9*).

As a result of this fluid situation, the TMMR could show a decrease, an increase, or be unchanged, depending upon the numbers and associated "case-fatality" of legal compared with illegal abortions and of deliveries occurring under different hypothetical circumstances. These possibilities may be illustrated by assuming that population size, conception rate, and the risk of delivery remain constant and that all maternal deaths result from legal or illegal abortion (early pregnancy deaths) or delivery (late pregnancy deaths). Spontaneous abortion and stillbirth rates are also assumed constant, but for ease of presentation they are excluded from consideration since they account for a relatively small and constant proportion of maternal deaths over time. The relationship between the TMMR, abortion, and delivery can be represented mathematically.

$$TMMR = (dd + dla + dia) \div n$$

where

dd = deaths from live deliveries
dla = deaths from legal abortions
dia = deaths from illegal abortions
n = number of live deliveries

The deaths from legal and illegal abortions may be combined into a single term (da), representing deaths from all abortions, and the above expression rewritten as

$$TMMR = (dd + da) \div n$$
$$TMMR = (dd \div n) + (da \div n)$$

which is the risk of delivery ($dd \div n$) plus the ratio of abortion deaths to deliveries ($da \div n$).

Table 3. Comparison of traditional and actual maternal mortality under hypothetical conditions before and after legalization of abortion

Item	Before	After
Maternal death rate per 10,000 live births	5	5
Abortion death rate per 10,000 abortions	10	1
Number of live births	100,000	50,000
Number of delivery deaths	50	25
Number of abortions	10,000	60,000
Number of abortion deaths	10	6

NOTE: Following are rates per 100,000 for the traditional maternal mortality rate (TMMR) and the actual maternal mortality rate (AMMR).

Rates per 100,000 before legalization:

$$TMMR = 50 + 10 \div 100{,}000 = 60$$
$$AMMR = 50 + 10 \div 100{,}000 + 10{,}000 = 55$$

Rates per 100,000 after legalization:

$$TMMR = 25 + 6 \div 50{,}000 = 62$$
$$AMMR = 25 + 6 \div 50{,}000 + 60{,}000 = 28$$

The relationship between the TMMR and legal abortion can now be seen more clearly. If we assume that risk of delivery ($dd \div n$) remains constant, variation in the TMMR results from change in the ratio ($da \div n$). If legal abortions merely replace previously illegal abortions and if the risk of legal abortion is less than that of illegal abortion, the number of abortion deaths (the numerator) will decrease. Since the number of deliveries is unchanged, the TMMR will fall.

Consider, however, the hypothetical situation in which legal abortion becomes available in the absence of preexisting illegal abortion. Even if the mortality from legal abortion is low, the deaths attributable to it will increase from zero and the number of live births will fall, resulting in an increase of the TMMR despite the generally accepted safety of early abortion (provided that those women undergoing abortion represent a random sample of the pregnant women and not a selected group carrying a higher than average risk at the time of delivery). By increasing the propor-

Table 4. Maternal deaths by cause, New York City residents, 1966–71

Cause of maternal death	1966	1967	1968	1969	1970[1]	1971
Abortion	31	20	21	24	22	9
Ectopic pregnancy	2	7	8	5	11	4
Delivery, puerperal, toxemia, other	47	49	37	48	35	24
Total	80	76	66	77	68	37

[1] Legal abortion from July 1, 1970. SOURCE: reference 7.

Table 5. Legal abortions to women ages 10-49 by color, New York City residents, 1970–72

Age group (years)	Female population, 1970		Legal abortions, 1970–72		Ratio per 1,000 resident women	
	White	Nonwhite	White	Nonwhite	White	Nonwhite
10–14	211,777	96,014	186	696	0.9	7.2
15–19	219,834	84,755	7,850	10,894	35.7	128.5
20–34	668,452	251,114	36,484	45,586	54.6	181.5
35–49	553,928	189,584	5,526	5,834	10.0	30.8
Not stated	....	......	661	992	...	....
Total	1,653,991	621,467	50,707	64,002	30.7	103.0

SOURCE: reference 7.

tion of pregnancies terminating in abortion, the ratio ($da \div n$) of the TMMR can increase to a theoretical maximum approaching infinity as the number of live births approaches zero in a given period of time. A high TMMR could occur despite a low case fatality ratio for legal abortions.

Now consider the case where a small number of illegal abortions carrying a high mortality are replaced by a large number of legal abortions with a relatively low mortality. Hypothetical yet plausible values for variables affecting the TMMR again result in an increase in the TMMR, even when the overall number of maternal deaths is falling (table 3).

Finally, if consideration is given to situations in which fertility is not held constant, one alternative result is that the ready availability of abortion may cause a decrease in either overall utilization or the effective utilization of contraceptive methods, resulting in the abortion of many pregnancies without altering the number of deliveries. Here also, one might see an increase in the TMMR, since abortion deaths would increase relative to the unchanged number of deliveries. Space limitations preclude a complete discussion of additional situations which could be proposed to show the limitations of the TMMR.

Through the mechanisms just discussed, large numbers of legal abortions could alter the traditional maternal mortality rate even if no changes occurred in such important variables as the quality of prenatal care or medical treatment at delivery. The further possibility that the TMMR has the potential to change unpredictably indicates that it is of limited usefulness as an index of risk. Although a decline in the TMMR has usually followed the legalization of induced abortion, it should not be expected that a decrease will occur invariably. Public health workers who must interpret the TMMR cannot be certain what risks they are measuring, since the ratio or mixture of abortions and live births will be determined by differences in local reproductive practices.

The amount and direction of expected change in the TMMR is also likely to be influenced by selective factors in abortion utilization. Following the legalization of abortion in 1970, New York City experienced a rapid fall in births and maternal deaths (tables 1 and 4). The TMMR fell to a record low level (table 1) partly because of the fall in abortion deaths (table 4). The differences in abortion utilization by white and nonwhite women (table 5) suggest that selective factors do play a role in the reduction of the TMMR. Women at high risk of delivery or puerperal complications and those at high risk of complications from illegal abortion may be among those especially likely to seek an abortion.

A second important but unknown factor relates to the demographic effect resulting from women who obtain abortions outside their home State. These abortions may affect both the maternal deaths and live births in the home State, depending upon the incidence of the practice. The implications for TMMR can only be conjectural at present, since little is known concerning abortions of nonresidents.

Redefining Maternal Risk

The interpretation of the TMMR is dependent upon knowledge of (*a*) the proportion of pregnancies ending in abortion as opposed to delivery and (*b*) the relative mortality associated with those two mutually exclusive pregnancy outcomes. From inspection of the AMMR, it is apparent that its interpretation is similarly dependent upon knowledge of *a* and *b*. Although total conceptions would appear to be the ideal denominator of exposure to risk, this number does not relate specifically to those risks attributable either to abortion or delivery. Nonspecificity is a major liability in view of the complexity of interpreting maternal risk when abortion is legal. Since different cohorts would have variable proportions of abortions and deliveries, the AMMR (like the TMMR) would not be a legitimate tool for making cohort comparisons or statements about the quality of medical care in different places or at different times.

The problem can be resolved if maternal risk is estimated for each of three component periods of pregnancy, as defined by the widely accepted trimester intervals of gestation. Risks for each trimester would be the maternal deaths during the relevant trimester in relation to either of the following two methods:

1. All pregnant women at the start of that trimester; that is, applying the principle of life table analysis, or

2. The terminating events in that trimester; that is, termination mortality rates. Overall terminations would comprise the total of induced and spontaneous abortions, ectopic pregnancies, stillbirths, and deliveries of live infants. A more sensitive and desirable refinement would be the mortality rate for each specific type of pregnancy outcome, analogous to the case-fatality ratio.

Formulas for calculating maternal risk for both methods are given in table 6. Numerators are identical for both, but different denominators are used for the first and second trimester. Rates would coincide in the third trimester because all pregnancies continuing to that period terminate in delivery (some being stillbirths); thus the denominators are identical.

Both the life table and termination mortality rate methods would be advantageous because each would provide numerators and denominators at several stages of pregnancy, thereby allowing more analytic flexibility than either the TMMR or AMMR. Determination of risk, using the proposed methods, requires the registration of all recognized conceptions, a time-consuming and costly procedure. However, the indices thus generated would be more sensitive to real changes in maternal risk and medical care because of the separation of earlier terminations from later deliveries. Registration of all conceptions would also provide relevant data concerning such important causes of fetal loss as spontaneous abortion and ectopic pregnancy, and it would contribute greatly to the understanding of the reproductive process. As new or increased services for legal abortions become available, registration of these terminations will surely be necessary to monitor the clinical safety and demographic impact of this procedure. Many States have or are currently developing a reporting system for legal abortions.

Table 6. Estimators of maternal risk by trimester of pregnancy—life table method compared with the termination mortality rate

Period	Life table method[1]	Termination mortality rate
1st trimester	Maternal deaths ÷ total known conceptions	Maternal deaths ÷ 1st trimester terminations (includes induced and spontaneous abortions and ectopic pregnancy).
2d trimester	Maternal deaths ÷ total known conceptions — first trimester fetal losses	Maternal deaths ÷ 2d trimester terminations (includes induced and spontaneous abortions and ectopic pregnancy).
3d trimester	Maternal deaths ÷ deliveries (live and stillbirths)	Maternal deaths ÷ deliveries (live and stillbirths).

[1] Life tables usually measure the probability of survival over time with respect to a single cause of nonsurvival. In applying life tables to maternal mortality, there are two causes of nonsurvival, that is, termination of pregnancy because of fetal death due to the abortion, or circumstances leading to maternal death.

Consideration should be given to development of an expanded reporting mechanism designed to include all types of fetal loss, including the month of gestation at which the pregnancy is terminated. Such reporting should be legally mandated to insure compliance.

Both proposed methods have certain limitations. The major difficulties are first, that the ascertainment or quality of reporting of early spontaneous abortions, many of which are unsuspected, may vary in different localities and, second, that denominators consisting of total conceptions or trimester terminations include variable proportions of different pregnancy outcomes for different cohorts. Because rates derived from both methods would be dependent upon the relative and variable proportions of pregnancy events, particularly induced abortion and delivery, comparisons between different cohorts may require the additional procedure of rate adjustment.

The termination mortality rate would provide a somewhat better measurement than the life table method because it relates risk more directly with the duration of pregnancy at termination and is more easily calculated. However, because it does not resolve the problem of the variable proportions of pregnancy events, its usefulness as a comparative measure or as an index of the quality of medical care is somewhat limited.

As the limitations of the TMMR become generally recognized, it is expected that the method of assessment of maternal risk will change. For the present, the most sensitive and useful comparisons should be made by comparing mortality rates from similar pregnancy events, the most important of which are induced abortion and delivery.

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The maternal mortality rate has traditionally been measured by the ratio of deaths from all maternal causes to live births in a defined population per unit of time. Maternal deaths from abortions and stillbirths affect the numerator, but not the denominator, of the rate.

This paper addresses the issue of whether or not the maternal mortality rate as currently defined is an adequate index of risk by examining several aspects of theoretical and practical importance. The complex relationship among legal abortions, illegal abortions, live births, and maternal deaths is discussed, and consideration is given to some hypothetical situations in which the traditional maternal death rate could increase despite declining maternal deaths.

The paper also seeks to stimulate discussion of ways in which the measurement of maternal risk might be improved. It is recommended that all recognized conceptions be made legally reportable, including an estimation of the gestational age at which pregnancy is concluded, and that maternal mortality rates which are event specific and specific by trimester of termination replace the traditional maternal mortality rate for comparisons of different cohorts of pregnant women.

Pesticides and Human Health —An Epidemiologic Approach—

STEPHEN H. GEHLBACH, MD, WILTON A. WILLIAMS, BS, JIMMIE S. WOODALL, BS, and JOHN I. FREEMAN, DVM, MPH

PESTICIDES cause several deaths in North Carolina each year, and they are responsible for many nonfatal poisonings. They rank fourth on the list of poisonings reported to the Duke Poison Control Center (*1*). Pesticide products are abundant because they are essential to agriculture and pest control in homes. In 1971 pesticide production in the United States exceeded 1 billion pounds (*2*), including 34,000 registered products representing 800 different compounds (*3*). Their widespread availability creates a significant health hazard.

The North Carolina Pesticides Program began in January 1969 as 1 of 16 federally sponsored programs initiated to determine the impact of pesticides on human health. Early activities were limited to air monitoring and submitting autopsy specimens for residue analysis. Over a 4½-year period, the program has expanded into an aggressive epidemiologic attack on many health-related problems of pesticides. The major activities of the program include investigation of acute poisonings, community usage studies, occupational exposure monitoring, information service, and legislation and control.

Investigation of Acute Poisoning

During the spring of 1970, a voluntary pesticide poisoning reporting system was initiated. In this system, report forms are sent to practicing physicians, poison control centers, and health departments across the State. As completed cards are returned, reporting physicians are contacted, and when further information is required, a field investigation is begun. From 1970 to 1972, 381 cases of pesticide exposure were reported to the North Carolina Pesticide Program, and 154 were investigated in detail. Of the 381 cases, 155 were symptomatic, and 29 were fatal. Almost half the cases were children under 10 years old.

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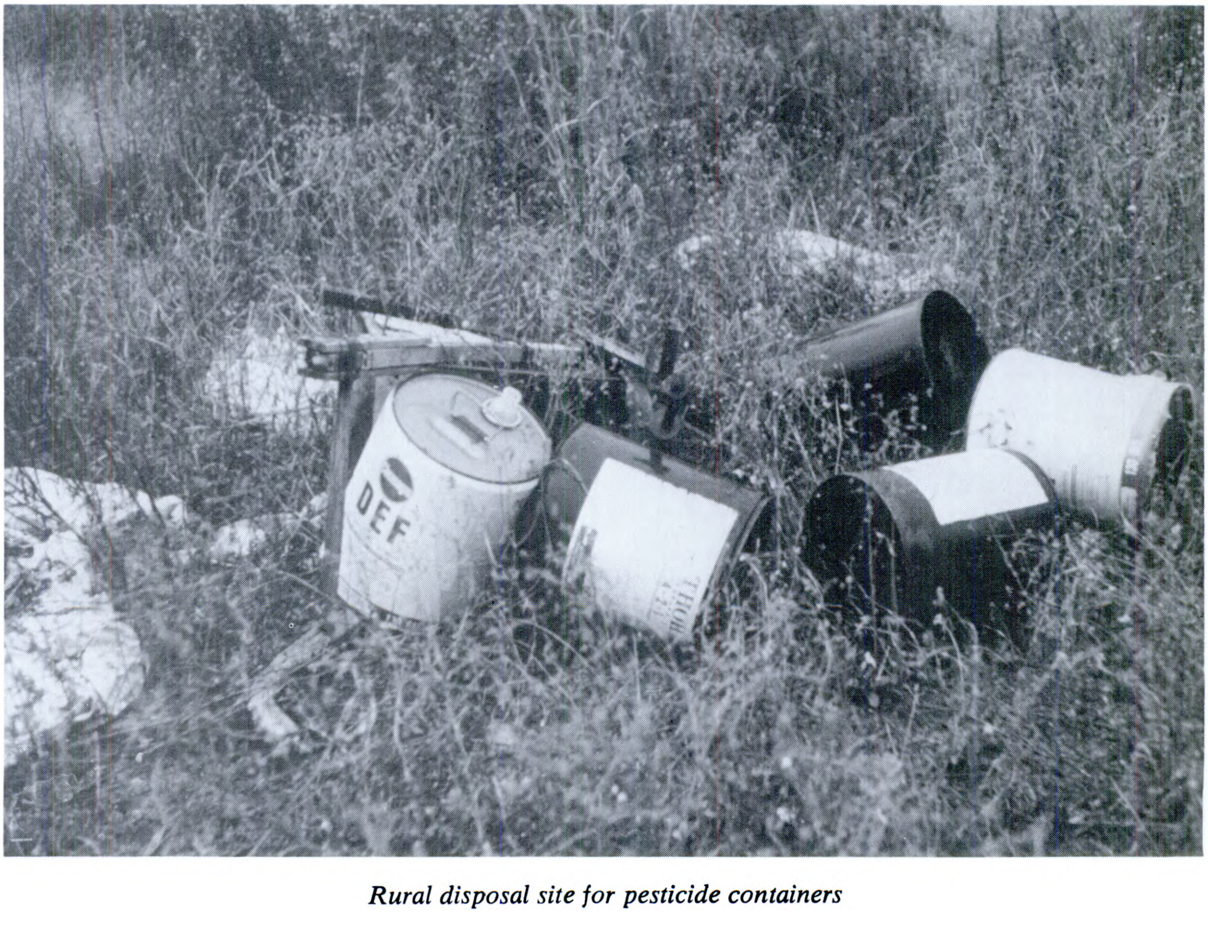
Onsite inspection of a farm or home often yields information that is not obtained by the most thorough routine history.

Case 1

A 7-year-old girl was in a comatose state when admitted to the hospital. She had experienced nausea and vomiting the evening before admission. She was treated symptomatically. After a restless evening, the patient lost her ability to walk, complained of difficulty seeing, and became progressively unresponsive. Physical signs included miosis, rales in both lung fields, and minimal response to painful stimuli. While the possibility of poisoning was considered, no history of exposure could be obtained despite careful questioning of her parents. An immediate inspection of her home revealed a discarded 5-gallon drum collecting rainwater in the backyard. The label identified the original contents as Dasanit, a potent organic phosphate insecticide. Neighborhood children reported that the girl had been making mudpies using a plastic bottle filled with water from the pesticide drum on the day she became ill. She had sprayed some of the water into her mouth. Her diagnosis was confirmed by a depressed blood cholinesterase level, and she had a dramatic clinical response to atropine and 2-PAM.

Many reports of child poisoning are those of asymptomatic episodes which involve questionable ingestions or exposure to low-toxicity compounds such as warfarin, but in our investigations, three-fourths of the patients in the older age groups were symptomatic. Many severe poisonings were due to occupational exposure—applying pesticides or harvesting treated crops. Twenty-six percent of all our cases were agriculture related.

Agriculture poisonings occur when farm personnel disregard the label precautions to wear protective clothing and respirators when mixing or applying pesticides or when they enter fields before the suggested waiting period after application.



Rural disposal site for pesticide containers

Case 2

A 15-year-old black male fainted while "cropping" (harvesting) in a tobacco field. He arrived at the hospital emergency room in a semistuporous condition with marked salivation, muscle fasciculations, and constricted pupils. The diagnosis of organic phosphate poisoning was confirmed by a serum cholinesterase that was less than 10 percent of normal, and he responded to atropine therapy. Investigation at the farm where he became ill revealed that 4 days earlier the patient had been operating a tractor-drawn spray rig in the tobacco field when a second rig passed and accidentally sprayed him with parathion (organic phosphate insecticide). He did not feel sick at the time, but he became gravely ill when he was exposed to pesticide residue on the tobacco leaves several days later.

Pesticide Studies

Community usage. The risk of poisoning in a community depends on usage patterns and prevalence of pesticides in the area. A countywide survey was conducted during 1969–70 to evaluate pesticide storage, disposal, and application patterns on 245 randomly selected farms. All active farms used some pesticides. The results suggested a serious poisoning potential when 68 percent of the farmers indicated that they had never used safety clothing during application. Seventy percent of the farmers discarded used containers in the woods or left them in the fields.

A recent survey of 100 retail outlets in one North Carolina county showed that almost 1,200 pesticides produced by 228 manufacturers were available, including some extremely hazardous and obsolete substances such as phosphorus and thallium sulfate. (Thallium products have not been registered for home use since 1965.) More than 40 products could be purchased for roach control alone, with toxicities varying from moderately toxic to super toxic, as classified by Gleason (*4*).

The types of stores which sell pesticides and the number of products they carry are shown in

Hogs rummage among empty pesticide containers

Number of pesticide products found in 97 retail stores in 1 county, North Carolina

Type	Stores surveyed[1]	Pesticide products found Mean	Range
Grocery	18	14	2–39
Rural general	6	20	4–37
Service station	5	1	1–2
Hardware	6	40	6–60
Farm supply	35	51	12–113
Combination farm center	6	80	30–54
Variety	12	16	2–52
Pharmacy	7	20	13–51
Nursery	2	43	25–62
Total	97	32	1–113

[1] Of 100 stores surveyed, 3 did not carry pesticides.

the table. The plethora of products makes identification and treatment difficult, since frightened parents often recall only that their child got into "roach poison" without knowing whether it was sodium fluoride, boric acid, or an organic phosphate. Few retailers can offer expert advice on handling all the toxic compounds available to consumers.

Occupational exposure. Pesticides are formulated by 23 plants in North Carolina. Supplied with bulk chemicals from large manufacturers, these small plants combine and repackage products for farm and home use. Plant workers are at high risk from inhalation and dermal absorption of pesticides.

For several years, personnel from the pesticide program have monitored cholinesterase levels in three groups of formulators. While no clinical illness has occurred in the plants under surveillance, we have recommended removing workers from exposure areas when their cholinesterase levels became depressed. We also participate in a study with the North Carolina State University Agricultural Extension Service monitoring blood cholinesterase levels among groups of tobacco and cotton scouts who make field counts of insects to determine the need for pesticide applications.

Discussion

The North Carolina Pesticide Program publishes monthly newsletters and poison control notes which supply physicians with up-to-date information, including treatment advice, about morbidity patterns which occur throughout the State. We have distributed charts describing available pesticides, signs of poisoning, and treatment methods to 158 emergency rooms throughout North Carolina. Manuals on pesticide poisoning have been distributed to physicians on request.

Collecting information on pesticide misadventures is of little value if there are no remedies to the problem. Our data have provided impetus for legislation, already passed in the General Assembly, creating tighter controls on the use of pesticides. Members of our staff sit on the interagency North Carolina Pesticide Board and the North Carolina Pesticide Advisory Committee. These two groups are responsible for regulating all aspects of pesticide use in the State, from licensure to the difficult problems of environmental contamination and disposal.

While the North Carolina Pesticide program is still too young to have brought about a dramatic reduction in pesticide morbidity, the trend is encouraging. Excellent cooperation between physicians, poison control centers, and our program has resulted in improved identification and treatment of persons with pesticide poisoning. Farmers are shifting pesticide usage from highly toxic parathion to less dangerous carbamates and bacterial controls. The North Carolina Department of Agriculture and the North Carolina State University Extension Service have begun a drive to educate farmers in the safe use of farm chemicals. The North Carolina Pesticide Board has restricted sales of many of the most toxic pesticides. It is also working toward improving facilities for disposal of hazardous waste. Continuing epidemiologic analysis of acute poisonings and usage patterns, maintaining surveillance of exposed workers, and continuing promotion of regulatory control should result in further progress.

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Venezuelan Equine Encephalitis Epidemic in Texas, 1971

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AN OUTBREAK of equine encephalitis occurred in Venezuela in 1936, and a virus—later designated as Venezuelan equine encephalitis (VEE) virus—was isolated from the brain of an infected horse (*1,2*). Since that time, VEE virus has been implicated in many outbreaks of equine and human disease in South and Central America (*3,4*).

In late winter and spring of 1969, an outbreak of VEE that affected human beings and equines occurred in Ecuador. In May and June 1969, fatal cases among equines were reported from the Pacific coastal regions of Guatemala. VEE isolates from equines, human beings, and mosquitoes in these outbreaks were subtype IB (*4–6*). By November 1969, VEE had been observed in El Salvador and southern Mexico (*7*), and in 1970 the epidemic moved north. At the International Round Table on VEE in Mexico City in May 1971, co-sponsored by the Mexican Ministry of Agriculture and Livestock and the Pan American Health Organization, it was reported that VEE had been active in the northern part of the Mexican State of Veracruz in April and that between January 1970 and May 1971, 700,000 equines had been vaccinated with a live-virus vaccine. This vaccine, which had already been used in more than a million equines in Central America (*4,8*), was developed by the U.S. Department of Defense (*9*).

When it appeared likely that the virus would enter the United States in early summer 1971, plans for joint action were made by agriculture and health authorities of Texas, the United States, and Mexico, and by the U.S. Department of Defense. In mid-June, intensive mosquito and equine surveillance was established in southern Texas by a task force representing the U.S. Government and Texas. Planned control measures were based on the premises that a barrier of vaccinated equines would halt the progression of the epidemic and that mosquito control would buy the time needed to establish the immune barrier.

By late June, equine and human cases compatible with VEE were being reported along the Gulf of Mexico just south of Brownsville, Tex. On June 23, the U.S. Department of Agriculture and the Texas Animal Health Commission approved

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The authors were with the Bureau of Epidemiology and Bureau of Laboratories, Center for Disease Control, at the time of this study. Dr. Zehmer is now in private practice of veterinary medicine in Alexandria, Va. Dr. Dean is a resident, Division of Dermatology, University of Colorado Medical Center, Denver. Dr. Sudia is chief, Arbovirus Ecology Section, and Dr. Calisher is chief, Arbovirus Research Section, Vector Borne Diseases Branch, Bureau of Laboratories, Center for Disease Control, Ft. Collins, Colo. Ms. Sather is a supervisory research microbiologist, San Juan Tropical Diseases Laboratory, Puerto Rico. Dr. Parker is chief of veterinary public health at the Center for Disease Control.

Staff of the U.S. Department of Agriculture, the Texas State Health Department, and the Texas Animal Health Commission assisted in the collection of data and equine specimens.

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use of the VEE vaccine in 13 of the southernmost counties of Texas. Equine owners were encouraged to vaccinate their animals, but vaccination was not mandatory. Vaccination was started on June 25, 1971.

Outbreak in Texas

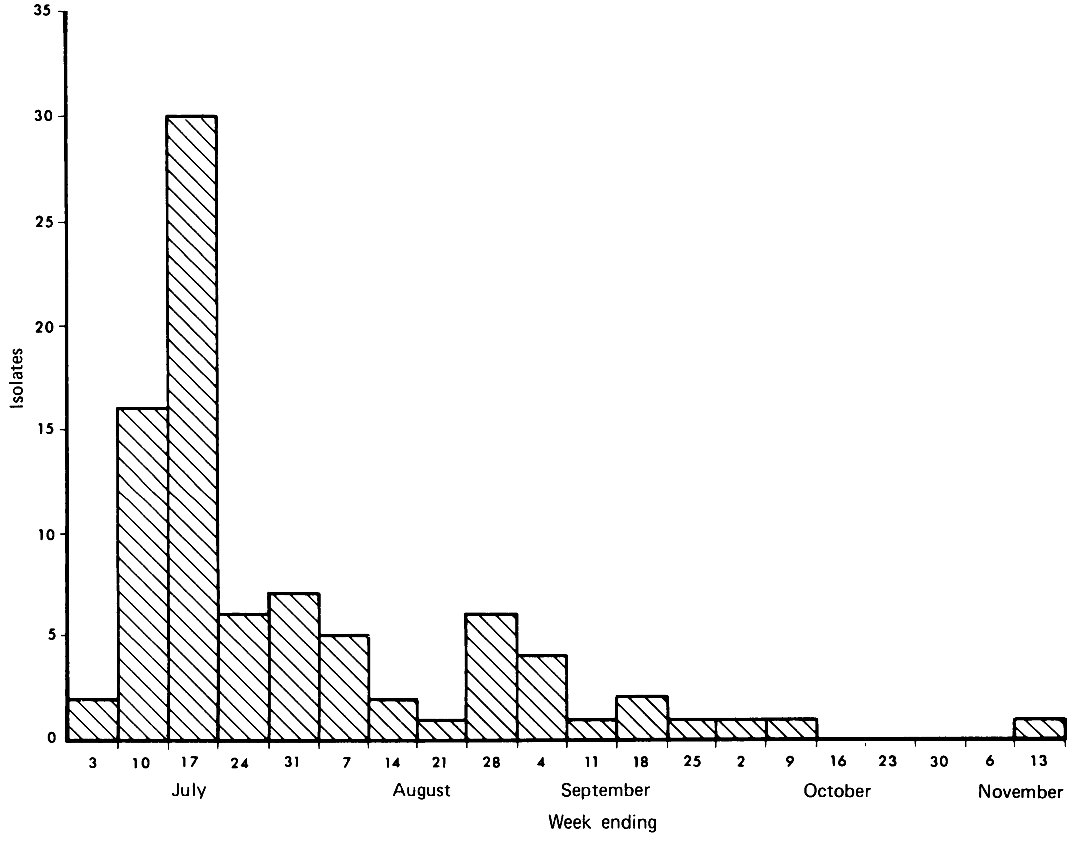
The first confirmed case of VEE in Texas was in Live Oak County, 150 miles north of the lower Rio Grande Valley. Virus was isolated from blood drawn from a sick horse on June 30; no secondary cases stemmed from this early infection.

In the first week of July, surveillance teams observed encephalitis fatalities among horses in Cameron County, and VEE virus was isolated from a blood sample of a horse near Brownsville on July 1. The virus was first isolated from mosquitoes collected June 28 just west of Brownsville. The first confirmed case in man also occured near Brownsville; the symptoms began on July 5, and the virus was isolated from a blood sample drawn on July 8.

Despite strong encouragement from the U.S. Department of Agriculture and the cooperation of all the local veterinarians, only about 65 percent of the equines in Cameron County had been vaccinated by July 10. On July 17, a mandatory, free vaccination program was started by the Department and by the end of July, about 90 percent of the equines in the lower Rio Grande Valley had been vaccinated (personal communication, Dr. H. E. Metcalf, U.S. Department of Agriculture).

During the first 3 weeks of July, the equine epidemic was restricted to Cameron and Hidalgo Counties in the lower Rio Grande Valley and the Corpus Christi-San Patricio County area on the Gulf coast. The epidemic peaked in these areas in the second and third weeks of July and then declined rapidly as more equines were vaccinated (fig. 1) and ultra-low-volume malathion was sprayed over a large area by airplane. The epizootic continued through the summer and early fall, with cases occurring farther west along the Rio Grande until October. In the Cameron and Hidalgo County area, an estimated 10 percent of

Figure 1. Isolations of VEE virus from equines, by date of collection, Texas, 1971



the equine population died of VEE, and more than 1,500 equines are believed to have died of VEE in the State (*10*).

Attempts were made to obtain blood or tissue specimens, or both, from ill animals for virus isolation and to obtain followup blood specimens from recovered animals to test for neutralizing antibody. The tests were performed at the Center for Disease Control in Atlanta and at the Department of Agriculture's Animal Disease Laboratory at Denver. Isolation and identification of the epidemic strain of VEE virus in suckling mice or in duck embryo cell cultures constituted a laboratory confirmation. Also, detection of VEE antibody in a 1:5 or 1:50 dilution of serum in a plaque reduction (90 percent) test in duck embryo cell cultures was considered proof of infection in animals not vaccinated against VEE more than 4 days before blood collection and with titers lower against Eastern equine and Western equine encephalitis viruses than against VEE.

Equine cases in Texas were detected through cooperative efforts of veterinarians and local, State, and Federal personnel. USDA veterinarians, epidemiologists, and pathologists investigated on the premises. The Center for Disease Control provided the services of field veterinarians and established an equine surveillance system in Texas in cooperation with county extension agents. In addition, the USDA investigated reports of equine encephalitis throughout the country, and the CDC Arbovirology Section was the main laboratory resource for the USDA in ruling out VEE as the cause of disease in nonepidemic areas.

Epidemic VEE virus was isolated from 87 horses representing 75 infected herds in 26 Texas counties (fig. 2). Of the 87 isolates, 61 were from specimens collected between June 30 and July 31 (fig. 1); 23 of the 87 were from Cameron or Hidalgo, and 10 were from San Patricio. Most of the isolates were from a two-countywide band along the Gulf of Mexico or the Rio Grande. Also, 105 equine cases were identified as VEE by serum neutralization tests. All but 3 of these 105 cases were from counties where the virus had been isolated from horses; in those 3 cases the VEE antibody titer was $\geqq$ 1:150, and Eastern and Western equine encephalitis titers did not exceed 1:5.

The farthest-west county where virus was isolated was Presidio. The isolation was from a nonvaccinated foal whose blood was sampled on September 13. The last equine case recorded in Texas was from Starr County; it was confirmed by virus isolation from a nonvaccinated horse on November 7.

Soon after the first cases in horses were reported, a VEE surveillance system for human beings was established by CDC and the Texas State Department of Health in Cameron and Hidalgo Counties. These two counties have a combined population of about 350,000, which is served by seven hospitals. Surveillance consisted of daily reporting of all patients hospitalized with illness compatible with VEE. Virus isolation or serologic tests, or both, were carried out at CDC or the Texas State Health Department. The surveillance system was expanded to cover 39 hospitals in 14 counties in Texas. Reports and blood specimens were submitted daily.

All but 2 of the 88 laboratory-confirmed cases of human-epidemic VEE documented in the United States in 1971 occurred in July. The majority occurred in Cameron and Hidalgo Counties (fig. 2). The most common symptoms were fever, headache, and myalgia. Vomiting and drowsiness were less common, and sore throat and gastrointestinal illness were less frequent. The frequency for teenage males was somewhat higher than expected. No deaths or cases of frank encephalitis were documented.

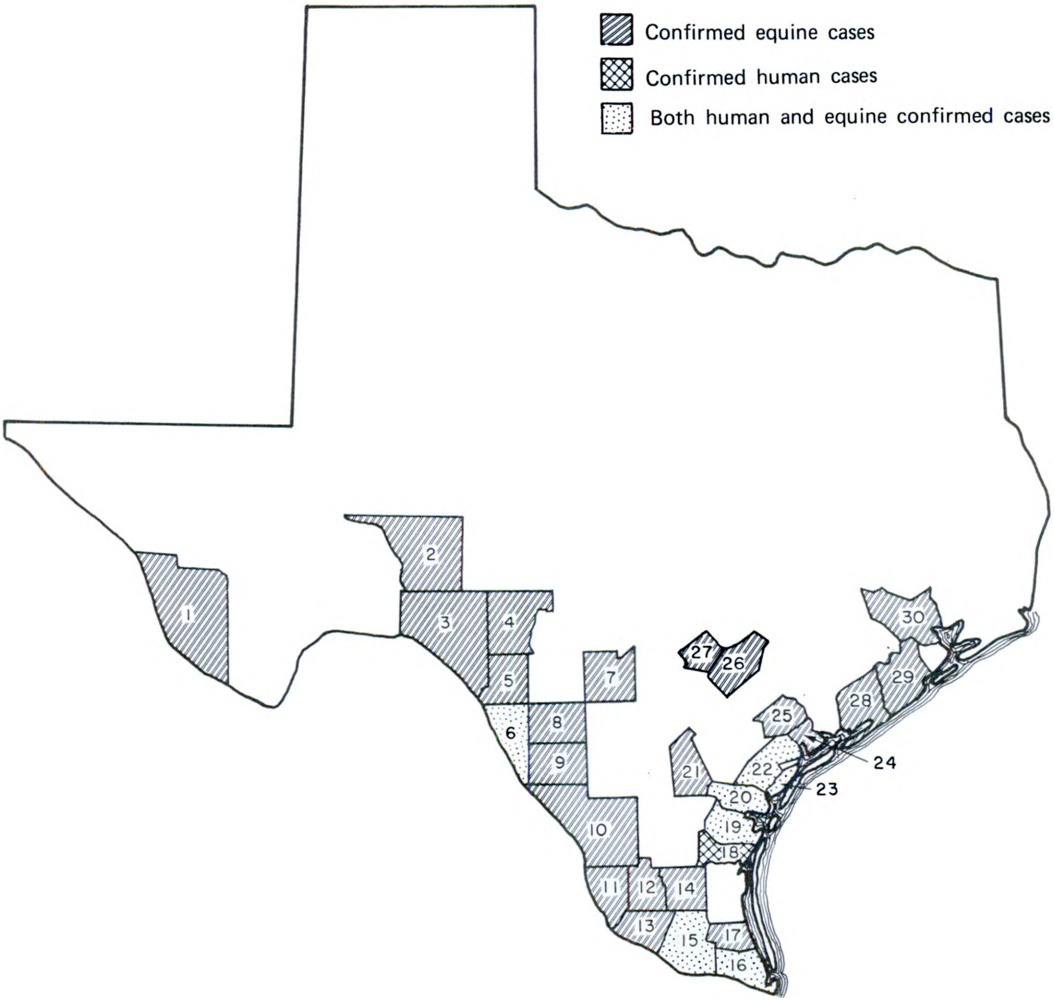
In late August, in a coastal town of about 3,000 persons in southern Texas, histories were obtained from 32 percent of the population and blood specimens from 19 percent. Serologic tests revealed that 3.3 percent had antibody to VEE; 91 percent of these had been symptomatic. The most common symptoms were again fever, headache, myalgia, and vomiting. Since VEE was unknown in this town before July 1971, we assumed that antibody indicated infection during the epidemic. Attack rates were similar for males and females. A higher attack rate was noted for both sexes in the age group 10 to 19 years.

National VEE Emergency

On July 16, the U.S. Secretary of Agriculture declared a national VEE emergency, and on July 17, VEE vaccine was made available to veterinarians throughout Texas, Arkansas, Oklahoma, New Mexico, and Louisiana, with a Federal fee-basis program to pay veterinarians for vaccinating horses. On July 25, the program was extended to California, Arizona, Mississippi, Alabama, Georgia, and Florida and on August 24, to Kentucky, Tennessee, North Carolina, South Carolina, Virginia, Maryland, Delaware, New Jersey, and the District of Columbia. Approximately 2.8 million horses—90 percent of the total in these States—were vaccinated. VEE vaccine became commercially available in September 1971, under a special license granted by the Veterinary Biologics Division, USDA.

On July 9, the Texas Animal Health Commis-

Figure 2. Counties with confirmed equine and human cases of VEE, Texas, 1971



Counties

1. Presidio
2. Crockett
3. Val Verde
4. Edwards
5. Kinney
6. Maverick
7. Medina
8. Zavala
9. Dimmit
10. Webb
11. Zapata
12. Jim Hogg
13. Starr
14. Brooks
15. Hidalgo
16. Cameron
17. Willacy
18. Kleberg
19. Nueces
20. San Patricio
21. Live Oak
22. Refugio
23. Aransas
24. Calhoun
25. Victoria
26. Gonzales
27. Guadalupe
28. Matagorda
29. Brazoria
30. Harris

sion began prohibiting the movement of horses in Texas, and on July 13, the quarantine was extended to all of Texas. Exempted from the quarantine were owners who had certificates showing that their animals had been vaccinated against VEE at least 14 days earlier. On July 19, a Federal quarantine was established in Texas, Arkansas, Louisiana, New Mexico, and Oklahoma.

The Arbovirology Section of CDC began vector studies on June 21 to determine whether mosquitoes were infected with VEE virus and to evaluate the relative importance of the various species as vectors. More than 130,000 mosquitoes were collected, and more than 250 isolations were made of VEE virus. The species primarily involved were *Aedes sollicitans, Psorophora discolor,* and *Psorophora confinnis.*

The USDA asked for Air Force planes to spray the lower Rio Grande Valley, and spraying began on July 11. Commercial aircraft were also used. Between July 11 and August 14, approximately 10.5 million acres along the Gulf coast of Texas and Louisiana were sprayed with ultra-low-volume malathion or dibrom. About 3 million acres were sprayed twice.

Vector studies were continued in the Brownsville area from mid-August through October as a postepidemic followup. More than 100,000 mosquitoes were collected; none were infected.

Vertebrate studies were started in mid-July. Sampling continued until spring of 1972. More than 3,000 serum samples from wild and domestic birds and mammals were tested. In July, VEE virus was isolated from an opossum collected east of Brownsville and from a gray fox and a sandwich tern collected near Corpus Christi. In the last 2 weeks of July in an area with many equine fatalities, VEE infection in the small wild mammal population was low (less than 5 percent). In contrast, antibody incidence in cows, goats, and sheep sampled in the same general area was very high (more than 50 percent).

Summary and Conclusions

An epidemic of Venezuelan equine encephalitis (VEE) occurred in Texas in the summer and fall of 1971. An extensive surveillance program network was established to detect equine and human disease and mosquito infection. VEE virus was isolated from horses, human beings, mosquitoes, and small vertebrates. Control measures included vaccination and quarantine of horses and aerial spraying of insecticide to reduce mosquito populations.

Results of various investigations support the following conclusions. VEE disease was limited to the southern half of Texas; cases occurred in human beings only in areas in which there were cases in horses and were more likely to occur in areas having large numbers of infected horses. None of the human infections were fatal, and the equine vaccination and quarantine programs and mosquito control efforts limited the epidemic.

No equine cases of VEE were reported in 1972, nor were isolations of the virus made from mosquitoes. The only ill persons (two) were thought to have been exposed in Mexico.

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Planning for the Economic and Career Impact of a Sickle Cell Anemia Program

JOHN J. McNAMARA, MD, MPH

ALTHOUGH many health problems achieve publicity and priority through emotional appeals on behalf of those who are afflicted with the disorder, few health problems are invested with symbolic, civic, or ethnic content. Poliomyelitis and its association with President Roosevelt is perhaps the best example of a health issue achieving this civic symbolism and subsequent grassroots support through the vehicle of the March of Dimes. Recently the problem of sickle cell anemia has become invested with the symbolic ethnic identity of the black community. The relatively widespread nature of the disorder naturally focuses the community's concern. The prevalence rate of sickle cell anemia in black infants in this country is 1 in 400. Approximately 1 in 10 blacks are heterozygous carriers of the trait for hemoglobin S, and therefore information about their sickle cell status should be available, *if desired,* to serve as a basis for informed decisions about childbearing. The fact that the molecular biology of the disease is well elaborated and yet no cure or even fully successful treatment is available increases community concern. Finally, the probable survival advantage held by the trait carrier in malarial regions (*1*), balanced polymorphism, is often mentioned in public media presentations on sickle cell anemia, and it is presented in terms of the tenacity, strength, and will to live of the black race. This turns defect into asset and makes the resolution of the former concerns seem less difficult.

Although some black professionals have been concerned about placing too much emphasis on sickle cell anemia when clearly many other health problems disproportionately affect persons in the poverty group, the symbolic content of the disease, plus its discrete, limited implications, make it an issue easy to champion. Recent articles, however, have documented the relative unawareness of the black population about sickle cell anemia. A survey in Richmond, Va. (*2*), disclosed that only 30 percent of those questioned had ever heard of this disease. In a group of military recruits screened for sickle cell disorders (*3*), only 5 of 75 identified as having traits had any awareness of this problem in themselves or in other family members.

Funding for Sickle Cell Anemia

The low public awareness of sickle cell anemia has been coupled with a low priority for funding from government sources and from foundations. Scott (*4*) has compared the relative incidence of sickle cell anemia to other rare diseases such as cystic fibrosis and muscular dystrophy and matched these with dollar figures raised by voluntary agencies. Although the incidence of sickle cell anemia and cystic fibrosis is about equal, 20 times as much money was raised for cystic fibrosis. The incidence of muscular dystrophy is only two-thirds that of sickle cell anemia, but 80 times as much money was raised for muscular dystrophy.

Scott (*5*) has called for a reordering of priorities and adequate support for research and treatment for sickle cell disorder. Clearly, government support and increased private support for sickle cell anemia will be forthcoming. Current Federal allocations are in the range of $10 million, and bills with much higher dollar figures are currently before the Congress. Community expectations on the potential funding are often unrealistically elevated. Groups look toward this as a source of support for many activities directly and indirectly related to the management of sickle cell anemia. Groups seeking funding for sickle cell screening have looked at it as a vehicle to introduce high school students to science. Others see it as a way to engage black people in the health care delivery system. Almost all see it as a source of training and jobs.

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Economic Impact of Sickle Cell Program

The dimensions of the potential job impact are not clear. Also the dollar economic impact is unclear, but presumably large. An example of this conception of potential large dollar input appeared in a recent issue of the Black Panther newspaper. The headline was "The Sickle Cell 'Game,' Phoney Foundations Try to Sabotage Black Panther Party's Sickle Cell Program." The article expresses the following sentiment: "The overwhelming majority of these sudden sickle cell foundations do not have as their goal the wiping out of sickle cell anemia. To the contrary, they would rather the disease remain, killing off black people, so that they can continue to perpetuate their organization, and make the big profits that the 'Sickle Cell Game' is now pulling in" (*6*). Clearly this kind of rhetoric operates on several levels. The primary concern here is the assumption of big "profits" inherent in potential sickle cell programs.

Rational, comprehensive health planning must deal with the issue of profits. The success and impact of a health program will, in large part, be conditioned by the realistic expectations of those involved. Ignoring such considerations can only lead to program dissatisfaction, program underutilization, and ultimately, program failure. From the positive side, it is imperative to incorporate rough job and economic estimates into initial plans to achieve anything other than short-term dollar benefits, especially if meaningful career development is a secondary goal.

Table 1. Distribution of black population (N = 605,336) in six California counties, by age group

County	Age group (years)		
	Under 15	15–24	25–44
Los Angeles	84,013	132,830	202,041
Alameda	15,412	31,066	39,054
San Francisco	9,475	17,990	25,254
Contra Costa	4,405	8,091	9,679
San Mateo	2,822	4,870	7,161
Santa Clara	2,167	3,704	5,329
Total	118,294	198,551	288,518

Table 2. Approximate unemployment of black youth aged 15–24 in six California counties

County	Male		Female	
	Total	Unemployed	Total	Unemployed
Los Angeles	61,519	11,073	71,311	17,114
Alameda	15,147	2,726	15,919	3,820
San Francisco	8,593	1,534	9,397	2,254
Contra Costa	3,855	693	4,236	1,017
San Mateo	2,385	429	2,485	596
Santa Clara	1,836	330	1,868	448
Total	93,335	16,785	105,216	25,249

NOTE: Grand total unemployed male-female is approximately 42,034.

Considerations in California

In 1970 the total population of California was 19.9 million, of which 1.4 million persons (7 percent) were black. Seventy-nine percent of the black population live in six counties (table 1), and the remainder are widely scattered throughout the other 52 counties in the State. The six counties are in the San Francisco Bay area and Los Angeles. Obviously a program directed at sickle cell anemia will be focused on this geographic area.

To estimate the impact of a sickle cell anemia program on jobs, knowledge of program content is critical. Buetler and associates (*7*) have outlined some hazards of indiscriminate screening, and they suggest that two appropriate target groups for testing are young children and women of childbearing age. Women found to have the disease should be given genetic counseling.

A sickle cell screening and counseling program will have a variety of component parts. Some components will be professional and some nonprofessional but will be potentially leading, with training, to a professional level. The training will include counseling, outreach, and some aspects of testing. In the absence of existing community genetic counselors for mass screening programs, it is difficult to estimate the number of man-hours needed to insure adequate training of community counselors, as well as to actually provide counseling for screenees with the disease. Based on some funding proposals that we have analyzed, a reasonable estimate is 1 man-hour per patient screened, which includes training and actual service. In the six counties under consideration, this estimate means that about 600,000 man-hours, or about 300 man-years, would be needed to accomplish the job. To screen and counsel 79 percent of the black population in California, therefore, approximately 300 community residents might be employed in a sickle cell program.

Of course, black professionals would be included in the sickle cell program, and the total cost of the project might be large. However, black professionals not employed in the program presumably would have other employment. Thus, the net gain to the local community is about 300 new short-term jobs. A continuing screening-counseling program would require fewer personnel to cover newborns and newcomers to the community.

Young people would be a prime target for employment in a sickle cell program. An estimated 40,000 black youths in the target area are currently unemployed. The 1970 national percentages of unemployment among black youth aged 16–24, were as follows:

Age	*Male*	*Female*
16–17	27.8	36.9
18–19	23.1	32.9
20–24	12.6	15.0

Immediate implementation of a sickle cell program with job opportunities aimed at these youths would alter their unemployment rate by only 0.7 percent. Thus there would be little impact on the unemployment situation, and recognition of this fact could lead to addressing the question of black unemployment realistically and to the development of meaningful health careers relating to mass screening for genetic diseases.

Program development for sickle cell anemia may be a model for development of general genetic screening programs. Attention to ethical and social issues is essential. The guidelines published by a research group on the ethical, social, and legal issues in genetic counseling point to a direction to take. Concerning counseling, they state that "well-trained genetic counselors should be readily available to provide adequate assistance for persons identified" (*8*).

Programs have not yet been established to prepare counselors for mass genetic screening programs. However, with the widespread interest in genetic diseases and the importance of aggregate genetic disease in a population's health status, many genetic screening health programs of similar types will likely be developed. A good example is the Tay-Sachs Program. Therefore, the role of the genetic counselor is not connected with only sickle cell anemia, and employment opportunities will occur in other screening programs.

In California the Bureau of Maternal and Child Health has been working with the Center for New Health Careers in the State Department of Public Health to formulate guidelines for the development of meaningful careers at all levels in genetic screening health programs. Obviously, health professionals must aim at insuring (*a*) that the training is conducted in a manner that will bring about its recognition by educators, (*b*) that it is related to, and builds on, previous formal education, and (*c*) that it becomes a vehicle for facilitating future formal training. Also, training should capitalize on the life experience of the trainee and develop that person's empathy and understanding.

Because the counseling effort required in mass genetic screening cannot be accomplished by doctoral level persons, a graduate program leading to a master's degree in genetic advising has opened on the campus of the University of California at Berkeley. Six students entered this program in the fall of 1973. Clearly such a program is not directly relevant to the question of entry level positions in a mass screening program. However, it does present a new career ladder for employees participating in mass screening at the entry level.

Conclusion

Planning for new health programs must consider community expectations, develop projections of economic impact that will add realism to these expectations, and look toward long-term benefits from career development.

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Administrative Problems and Solutions in Screening for Gonorrhea

A GONORRHEA CULTURE PROGRAM directed at high-risk women was begun in the District of Columbia in 1969. This program was limited in scope and chronically plagued by severe shortages in manpower and supplies. Also, the only facilities participating were components of the Department of Human Resources or the Department of Corrections of the District of Columbia Government.

When early in 1972 the Department of Health, Education, and Welfare made available to the States grant funds that were earmarked for the control of gonorrhea through education and extensive screening of asymptomatic women, the District's Department of Human Resources received a grant for this purpose through the Center for Disease Control. Funds from this grant enabled the Department to provide supplies and services to public and private providers of venereal disease services and removed the financial barrier that had previously hindered citywide venereal disease screening operations. The Community Health and Hospitals Administration (CHHA) of the Department of Human Resources thereupon drew upon previously acquired experience and the skeletal network already in existence and began to build a complete system for gonorrhea control, including education, screening, reporting, and followup. This program became operative in July 1972.

An intensive educational campaign was waged throughout the Washington Metropolitan Area that has broken the circles of fear, apathy, and shame surrounding venereal disease. The public at large and the health professionals have begun to show a willingness to discuss venereal disease and to accept the screening process. The educational component of this overall drive has been reported elsewhere (*1*). Our purpose here is to examine the major problems that the Community Health and Hospitals Administration encountered in establishing a gonorrhea screening operation and the solutions that were devised. A quick re-

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view of the results achieved may serve as an evaluative index of these efforts.

Conceptual Model

The overall objectives of the District's gonorrhea screening program is to break the chain of transmission of the disease by identifying and treating asymptomatic carriers, who primarily are women. Ideally, to achieve this objective a cervical culture for *Neisseria gonorrhoeae* should be taken every time a woman has an examination at a medical facility, public or private.

A gonorrhea screening program has three major components: an intake point, a laboratory facility, and a control center (see chart).

Under ideal conditions the intake point should be able to handle the following functions:

1. Collection of specimens, usually a swab from the cervix. Occasionally rectal and throat swabs are taken.
2. Initial processing of the specimen, which includes inoculation to the culture medium and initial incubation
3. Followup of screenees whose cultures are reported to be positive
4. Treatment of patients
5. Health education and information directed at patients and their contacts
6. Reporting of all these activities to the control center.

Intake points may vary from the offices of private physicians to the outpatient departments of large hospitals and may include group practices, neighborhood health centers, university and college health clinics, public venereal disease clinics, free clinics, and the facilities of departments of correction.

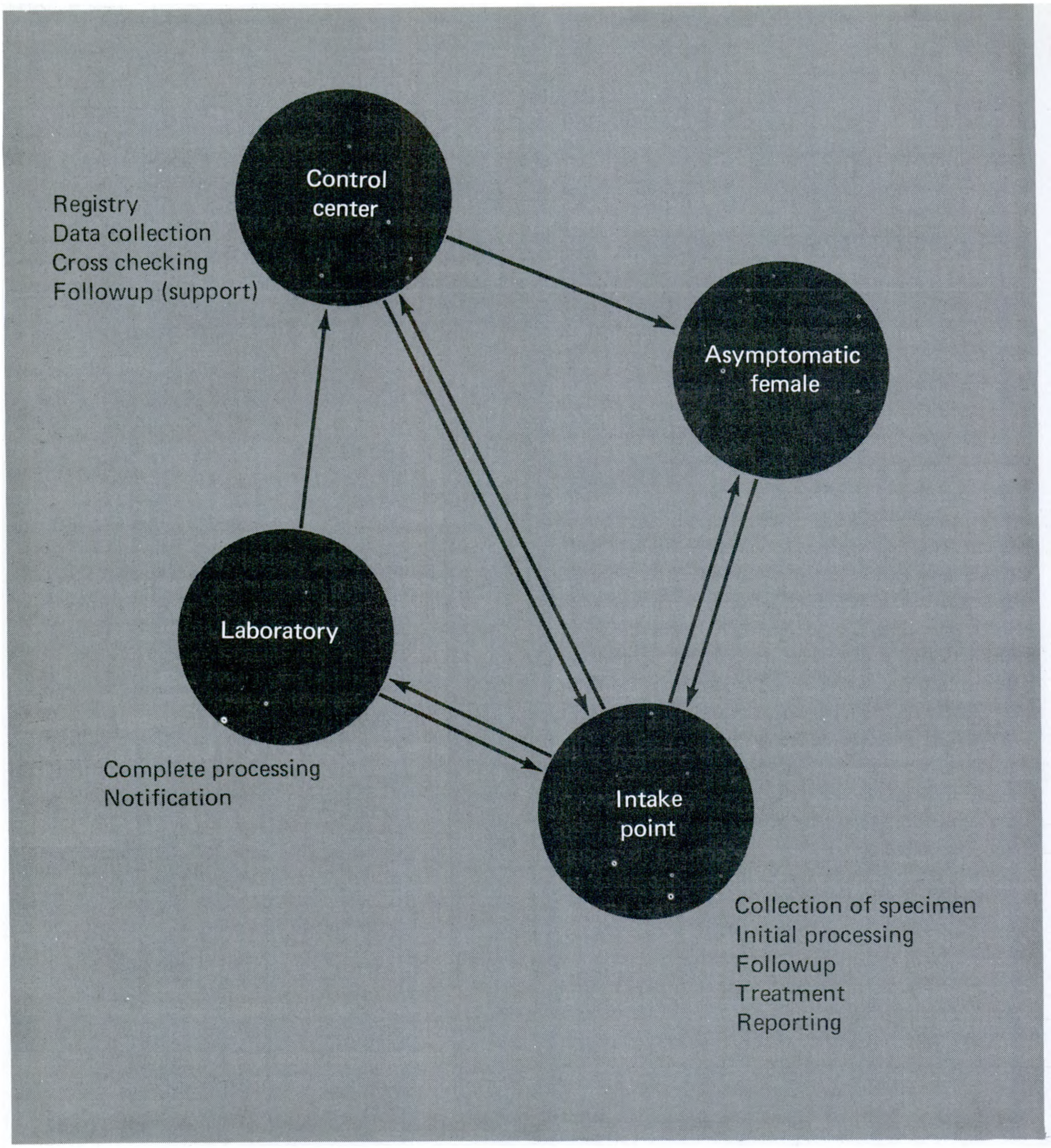
The laboratory should provide (*a*) complete processing of the specimen and final identification of growth and (*b*) notification to the parties concerned of the test results. The control center should provide for (*a*) a central registry for gonorrhea cases; (*b*) the collection, compilation, and initial tabulation of all pertinent data; and (*c*) records research and the initiation of followup.

Problems in Implementation

Implementation of the D.C. gonorrheal screening effort was begun at the clinics operated by the Department of Human Resources and at other facilities with which the Department has smooth, cooperative arrangements. From the outset several problems of varying complexity were identified.

Personnel. An initial survey of prospective intake points revealed that physicians, nurses, clerks, and laboratory technicians were already performing at what they considered to be their

Model of gonorrhea screening operation



maximum capacity. The city's central laboratory was not prepared to absorb the projected increase in the volume of specimens that would result from the gonorrhea program. This hurdle, however, was cleared by adding a few positions and indoctrinating, motivating, and sometimes redirecting the existing staff.

Almost all personnel at the intake point lacked knowledge of the natural history of gonorrhea, its causative agent, and the requisite culturing techniques. Therefore, in several onsite training sessions, personnel of CHHA's Venereal Disease Epidemiology Section stressed the proper procedures for collecting specimens and for inoculating, labeling, and incubating the medium. They made frequent spot checks of procedures and discussed results with the staff members concerned.

The attitudes of the staff toward venereal diseases received attention at the highest level. The director of the Department of Human Resources, the administrator of the Community Health and Hospitals Administration, and all other high officials of the Department consistently emphasized the importance that they attached to the venereal disease control efforts. The message was carried to every employee, and the response was gratifying.

Materiel. During the initial phase of the screening operation, procurement of supplies was difficult. It took some time to establish a proper routine for maintaining a continuous flow of selective culture media, disposable specula, gloves, and canisters, and even of candles and matches. The requisite incubators were not delivered by the manufacturer until several months after the initial order for them.

Pickle jars were used to store petri dishes after inoculation. To create an atmosphere in the jar with sufficient concentration of carbon dioxide (CO_2), a candle had to be lit, and the jar properly closed every time a culture was stored. Many technicians burned their fingers in the process. With the purchase of long fireplace matches this problem was solved. Suitable pickle jars with large openings, however, were not easy to find despite the cooperation of many restaurants and delicatessens. Also, such jars hold only 10 to 12 petri dishes each, and normal-sized incubators will hold only 2 jars at a time. This difficulty was overcome by replacing the pickle jars with a stainless steel box for the petri dishes; such a box holds from 10 to 12 cultures and occupies half the space of a pickle jar.

Policies and Procedures

Creation of a unified screening program posed several decision-making and procedural difficulties, none of which was easily overcome.

Processing of cultures. Ideally, each intake point should have full capabilities for processing cultures and identifying growths. Proximity of these capabilities to the attending staff and outreach workers saves valuable time and effort. From the outset, however, circumstances appeared to be driving us in the opposite direction from these goals.

Not only were properly trained technicians not available at most public intake points, but the existing personnel were also reluctant to assume additional responsibilities. The widespread shortage in qualified manpower resulted in a continuous lack of coverage at these clinics. Technicians were sometimes drawn from other areas, and at other times clinics went unattended. Obviously, systematic screening cannot be carried out with such erratic personnel coverage.

In the few clinics in which incubation was undertaken, the procedures and criteria varied widely from one site to another so that the results were somewhat unreliable. The staffs of these clinics, realizing their own handicaps, chose to send the cultures that they found to be positive to the central laboratory for final confirmation. To make this situation more complex, none of the public clinics had one designated person who was responsible for the followup and reporting of positive results. These basic problems convinced everyone concerned with gonorrhea screening of the necessity for the central processing of cultures for all the public clinics.

Two centrally located points, the District's central laboratory and the Northwest Health Center, were therefore selected as the primary processing centers. These two facilities had the qualified manpower and the proper logistical support to sustain uniform, uninterrupted, high-quality screening efforts. Almost all of the intake points fed their cultures into these two centers. Exceptions were granted to those intake points that had demonstrated they had the technical capability to process their own specimens properly.

Transportation. The key to success with centralized processing is an efficient and reliable pickup and delivery service. Personnel at intake points should incubate cultures overnight whenever possible. The availability of Transgrow culture media has made screening possible on Friday afternoons, evenings, and weekends and at points where incubation is not feasible. In each clinic petri boxes are to be deposited in a designated location for pickup at a given time, along with all pertinent forms.

Use of outside agencies to supply messenger service was at first considered, but all those contacted were reluctant to enter into a contractual agreement. The Department of Human Resources' messenger service was then given this responsibility. Some messengers, however, showed resistance to carrying the cultures. This resistance was overcome through intensive health education, in which the natural history of gonorrhea, its modes of transmission, and the requisite safety measures to follow in handling laboratory specimens were explained.

The messengers also had to be shown the importance of timing their services between the central facilities and the intake points. The pool of messengers in the Department was limited, and services and communications within the whole screening program were frequently disrupted. Nevertheless, with continuous emphasis on the importance of the screening program and open support for it by all concerned in the Department, we were able to alleviate this difficulty.

Currently, the Department's messenger pool serves only part of the network of intake points; a larger part is served by two health technicians hired by the Venereal Disease Control Branch, who act as combination messengers and followup community workers.

Reporting. Before the gonorrhea screening program was implemented, the whole reporting phase of the gonorrhea control effort had been haphazard. Our first step was to find an instrument to fulfill a multipurpose function—reporting and control. The instrument selected was an existing Department of Human Resources form, DHR–161, which was designed for reporting the results of laboratory examinations for gonorrhea; each form consists of three NCR (no carbon required) copies—white, green, and yellow. (A copy of this form will be supplied upon request to Khoury.)

At all intake points without laboratory capabilities, a form DHR–161 must be initiated by the clerk receptionist, attached to the patient's chart, and given to the attending physician.

After the specimen is collected, it has to be labeled. Identification of the Transgrow bottle did not pose any difficulty. On the other hand, identification of the Thayer-Martin petri dish was more perplexing, since most of the clerks at first affixed the identifying label to the cover of the dish. Because the labeled top of the dish was removed during processing, there were frequent errors in identification of the specimen until everyone was told to put the label on the bottom part of the dish. After the specimen is inoculated, a DHR–161 is attached to the Transgrow bottle with a rubber band. For petri dishes, the forms are assembled and attached to the petri box, which is picked up by the messenger service.

At the central laboratory the culture is incubated for 18 to 24 hours and then read. If no growth is seen, it is reincubated for another 18 to 24 hours and read again. If no growth is seen at the second reading, the culture is discarded. Thayer-Martin media with suspicious growth and all Transgrow bottles are flooded with oxidase before they are discarded. If growth is seen at either reading, the organisms are routinely identified by means of oxidase tests and gram stain and occasionally through sugar fermentation and identification of fluorescent antibodies.

The laboratory staff records the results of this processing on the DHR–161. The white part of the form is returned to the intake point, the green part is retained by the laboratory, and the yellow part is forwarded to the Venereal Disease Epidemiology Section, which serves as a control center.

The intake points with laboratory capabilities follow similar procedures. The reporting of results differs, however, in that the intake points send the green copy of DHR–161 to the Venereal Disease Epidemiology Section. Thus a readymade color coding system is available.

Treatment centers. Until the start of this screening effort the two venereal disease clinics operated by the Department of Human Resources were the only public clinics that treated patients for gonorrhea. None of the neighborhood health centers, the maternal clinics, or similar outpatient facilities treated this disease. Therefore, to cope with the increase in patient volume expected to result from the screening, a number of changes had to be made in the Department's clinical facilities.

Since all screening facilities of the Community Health and Hospital Administration were expected to be capable of providing adequate treatment for all their patients, CHHA's administrator requested these facilities to provide treatment for gonorrhea. Nevertheless, the clinic staffs' fears that a patient might possibly have deadly reactions from the penicillin used in such treatment deterred some of them from readily providing treatment. To overcome their reluctance these CHHA facilities were offered resuscitation equipment as well as training in the differentiation and management of penicillin reactions.

Also, upon our request, special teams from the Public Health Service came to the District to study the two venereal disease clinics. (The teams' members came from the Center for Disease control at Atlanta, Ga., and from Region III of the Department of Health, Education, and Welfare, with headquarters in Philadelphia, Pa.) Based on these teams' recommendations, changes were made in the procedure and functions of the clinic staffs that substantially increased treatment capacity.

One venereal disease clinic opened in the evening three times a week to accommodate those who preferred after-work hours, and it was an immediate success.

Uniform treatment procedures based on Public Health Service recommendations were established and adhered to by all the public facilities treating venereal disease. Private providers were urged to adopt the same procedures.

Control center. Before this screening program was begun, no central registry for gonorrhea cases existed in the District. Creation of such a registry was therefore immediately undertaken; this control center became a unit within the Venereal Disease Epidemiology Section. Followup workers were attached to this unit, and each was assigned special intake points.

All the results recorded on DHR–161 forms are forwarded to the control center. The control clerk separates the forms by intake point and then by positive results, no growth, or overgrowth. Intake points that process their own cultures dispatch DHR–161s to the center only for their positive cultures; they are asked to provide a monthly grand total of all cultures processed in the facility.

Negative results are filed; no other action is taken. A high rate of overgrowth usually triggers an inquiry into the techniques used for handling specimens or the sterility of the selective media. Several hundred culture plates were thus proved to be contaminated before their inoculation, and corrective measures were taken at the source. If the selective medium is assumed to be sterile, such a high rate might indicate a faulty technique in collection or inoculation, or in both procedures. The rate of overgrowth is frequently used as an index for evaluation.

Positive cultures are checked against the files for reports of current morbidity or of duplicate cultures. If no information is found in the record and the intake point does not conduct its own followup, an epidemiologic report is initiated and assigned to the community worker covering that intake point. Because the form used nationally in syphilis epidemiology (HSM9.2936 CDC) was found to be a useful instrument, it was adopted for the epidemiologic report.

The personnel of intake points that conduct their own followup are questioned by the community worker to establish the patient's status. The worker routinely offers assistance in getting unresponsive patients to the intake point or to another facility for treatment, and such offers are frequently accepted.

Each case remains open until a disposition is reached. One copy of the HSM–9.2936 is filed at the control center, and the intake point is provided with one copy. This arrangement provides specific data, which are placed in the patient's medical folder for future reference. A morbidity report is completed on all patients brought to treatment. Final statistics are based on completed morbidity reports and not on any intermediary action.

Results and Discussion

This special gonorrhea screening effort started officially in the District of Columbia on July 1, 1972. By the end of the month 1,971 cultures had been collected from 16 intake points; the venereal disease clinics contributed 30 percent of the total. In June 1973 a total of 9,254 cultures were collected from 53 intake points, and the venereal disease clinics contributed only 8.0 percent of the total. As anticipated, the rate of positive cultures decreased from 12.0 percent in July 1972 to 5.0 percent in June 1973, as the rate of cultures provided by the nonvenereal disease clinics increased. During these 12 months a total of 72,242 gonorrhea cultures were processed, of which 4,486 (6.2 percent) were positive.

Compared with the national averages for the fiscal year 1973 (*2*), these results show that the positive rate is higher than the national average of 4.9 percent. The District of Columbia venereal disease clinics yielded a positive rate of 22.7 percent, which is also higher than the national average of 18.9 percent for venereal disease clinics.

The target population in gonorrhea screening is comprised of women aged 15 to 44, and in 1970 the District of Columbia had 213,405 women in this age group (3). Generally speaking, our screening program reached one of every three women in this target group.

A widely publicized index of success in gonorrhea screening is the ratio of women to men treated and reported. Despite the large increase in the District of Columbia in the total number of cases reported (41.5 percent), and particularly in the total number of women screened, treated, and reported, this index failed to improve substantially. Apparently men responded as well as women did to the control efforts, as the percentages of patients of each sex with reported gonorrhea cases in the fiscal years 1968–73 show.

Fiscal year	*Percentage of men*	*Percentage of women*
1968	76.1	23.9
1969	73.8	26.2
1970	73.1	26.9
1971	79.3	20.7
1972	78.4	21.6
1973	71.3	28.7

These results may provide the basis for a review of the absolute validity in this context of the female-to-male ratio as an index of success in gonorrhea screening.

Another pertinent question is whether this wide screening operation had any effect on the age profile of these patients in whom gonorrhea was detected, reported, or both. Initial results, however, indicate that the age distribution in the District of Columbia of the patients detected, reported, or both, has remained similar to that seen in previous years. Between fiscal years 1968 and 1972, women 15 to 24 accounted for three of every four D.C. women reported as having gonorrhea (72-75 percent). During the first 6 months of fiscal 1973, this age group accounted for 68.5 percent of the positive results detected through the screening program and for 71.7 percent of all the women reported as having gonorrhea.

Although gonorrhea screening in the District of Columbia proved to be a tedious operation, it was one that progressed to rather complete success, thanks to careful planning and execution and the enthusiastic support of all concerned.

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KHOURY, SAMI A. (Department of Human Resources, District of Columbia), and JOYNER, LINWOOD C.: ***Administrative problems and solutions in screening for gonorrhea. Health Services Reports, Vol. 89, May–June 1974, pp. 286–292.***

Citywide screening for gonorrhea was started in Washington, D.C., on July 1, 1972. Before the screening could be initiated, however, several difficulties pertaining to personnel, supplies, equipment, policies and procedures, and transportation had to be overcome. Two laboratories were selected to process most of the *Neisseria gonorrhoeae* cultures received from the providers of venereal disease services participating in the screening program. A control center, to which community workers were attached, was established in the Venereal Disease Epidemiology Section of the D.C. Department of Human Resources.

By the end of June 1973, there were 53 intake points participating in the screening, and 72,242 cultures had been processed. The overall rate of positive cultures was 6.2 percent. This intensive gonorrhea screening operation, however, failed to change substantially the ratio of women to men treated and reported, although there was a 41.5 percent increase in the total cases reported as compared with fiscal year 1972. Men responded as well as women did to the gonorrhea control efforts.

Information and Education Program "To Free Metro D.C. of VD"

ROBERT H. CONN, EdD, MPH

A RESURGENCE of venereal disease in the United States after the quiescence of the 1950s caught the nation by surprise. A public satisfied that conquest of this disease was only a penicillin shot away turned to other concerns and is only now awakening to the reality that not only is venereal disease still with us, it is more widespread than ever before.

If, as Dr. Leona Baumgartner has said, "Communication is as much a part of medicine as penicillin" (*1*), then we must look to communication as at least the first step in a new battle strategy for the war on venereal disease. Acting on this premise, the staff of the Community Health and Hospital Administration of the District of Columbia Department of Human Resources established a comprehensive venereal disease information and education program in February 1972, which was highlighted with a Clinical Week, October 8–14, 1972.

U.S. Venereal Disease Rates

By 1972 infectious syphilis and gonorrhea had been on the increase in the United States for more than a decade. During fiscal year 1960 there were 12,471 reported cases of infectious syphilis in the country, or a rate of 7.1 per 100,000 population. By fiscal 1972 that number had climbed to 24,000, a rate of 11.7. The gonorrhea statistics are even worse. In fiscal 1960 the Public Health Service recorded 246,697 cases of gonorrhea, a rate of 139.6. By fiscal 1972 the number of cases had skyrocketed to an unprecedented 718,401 and a rate of 349.7 (*2a*). And even these dramatic statistics do not tell the entire story, since many cases are not reported. It is estimated that private physicians treat more than four of every five venereal disease cases in the United States, but report only one in five (*3*).

Venereal Disease in the District

The nation's Capital experienced the same general rise in venereal disease as the rest of the country. Because the District of Columbia is subject to domestic, national, and international scrutiny, public health officials of the city feel special concern about the incidence of venereal disease. Some 750,000 people reside in the District, and millions of tourists visit the city each year.

In fiscal year 1971 the District's infectious syphilis rate was fourth highest among U.S. cities of 200,000 population and over; in fiscal 1972 its infectious syphilis rate put the city in first place among cities of that population. The gonor-

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rhea rate was fourth highest in fiscal 1971, a position the District maintained in fiscal 1972.

The District supports an active casefinding program on an ongoing basis, and this perhaps accounts at least in part for its high venereal disease rate. According to Dr. Raymond L. Standard, D.C. health director, "Statistics do not give an accurate picture of the District's syphilis and gonorrhea problem. Our good case finding program has catapulted us into first place in reported cases of infectious syphilis and fourth place in reported cases of gonorrhea among cities with populations of 200,000 and over in the U.S."

Target Population

Obviously, before an attack can be made upon venereal disease, we need to know who has it. Fortunately the answer is now available. Teenagers and young adults have a higher incidence than other age groups. During the calendar year 1971 the Public Health Service reported that the rate of infectious syphilis in the United States was highest in persons 20–24 years of age, followed by those 25–29, and then by those 15–19. In the same year the gonorrhea rate was highest in persons 20–24, followed by those 15–19, and then by those 25–29 (*2b*). Other statistics offer even greater detail: gonorrhea is twice as prevalent among those 25 years and younger as among those over 25 (*4*). One of every five high school students is likely to contract gonorrhea before graduating (*3*).

But knowledge of the groups that are susceptible to venereal disease is also not enough. Antibiotic therapy can cure gonorrhea and syphilis, but the simplistic assumptions of the 1950s that venereal disease would soon be conquered have proved to be naive. Eighty percent of the American women with gonorrhea are asymptomatic. What good is penicillin when four of every five women with gonorrhea do not know they have it, do not seek treatment, and thus spread the infection to unsuspecting partners during sexual activity? An educational program, designed to provide information in terms people understand, is needed if we are to break the chain of infection.

Education and Information Plan

To overcome public apathy about venereal disease, an education and information plan spanning county and State lines was therefore put into effect in February 1972 in the Washington metropolitan area. Medical and lay representatives of the District and the neighboring jurisdictions of Montgomery and Prince Georges Counties in Maryland and of Arlington, Alexandria, Fairfax, Loudoun, and Prince William Counties in Virginia were brought together to review the plan and join forces in a campaign to "Free Metro D.C. of VD."

Four objectives for the campaign were agreed upon: (*a*) to provide information about venereal disease, (*b*) to make people aware of the symptoms and encourage them to seek medical care early, (*c*) to alert the community to the medical facilities where diagnosis and treatment were available, and (*d*) to show people how to enter the medical care system.

The staff of the Department of Human Resources realized that the full cooperation of local and areawide agencies and private individuals would be needed to implement the plan. Accordingly, for advice and active participation the staff turned to governmental health agencies, news media, medical societies and their auxiliaries, the Social Hygiene Society, the Health and Welfare Council, schools and colleges (including administrative staff, teachers, and students), hospital insurance groups, civic and citizens groups, pharmaceutical organizations, drug manufacturers, fraternal orders, labor unions, hospitals, libraries, and other voluntary agencies and persons interested in this public health problem.

Letters were sent to community groups inviting their participation, and 43 sent written endorsements of the education and information program. As the program gained momentum, special interest groups added their support.

Committees to Implement the Program

Committees were set up to perform a variety of functions.

Community Action Committee. A Community Action Committee was assigned the responsibility for discussing venereal disease control with community groups. Each committee member in effect became a teacher and "passed the word." Teenagers shared equally in the planning and implementation of the educational task. By meeting with their peers and discussing venereal disease in the language of the youth culture, they were able to strip away the barriers of jargon and correct misconceptions. Representatives of the Spanish-speaking and the Chinese communities

Bus cards, placed in 1,400 D.C. Transit buses during October 1972, carried the theme of the venereal disease educational program and advertised the V.D. Hot Line telephone number

performed a similar service for their constituencies. In some areas block leaders went from door to door distributing printed materials about venereal disease and answering questions.

School Committee. Representatives from the area medical schools, nursing schools, colleges and universities, and public and private schools were invited to a meeting to discuss the venereal disease problem. The venereal disease epidemic and the high rates of infectious syphilis and gonorrhea among high school and college students were discussed, and a School Committee was organized. Committee members agreed to encourage students and faculties to participate in the venereal disease education program. Training sessions were conducted for teachers and student leaders, who in turn carried the message to other teachers and students. Talks about venereal disease and rap sessions in classrooms and dormitories and on campuses provided authoritative information, and misconceptions were corrected. Students from a number of colleges created attractive exhibits.

On one campus a venereal disease information booth, with the comic character Lucy as a motif, was set up where students and others could go for answers to questions about prevention, symptoms, and treatment facilities. Some 75,000 brochures were distributed to students in the public schools, where they were used as a basis for class discussion. Posters especially prepared for the campaign were displayed in places where students congregated. These posters advertised the VD hotline, a telephone number which anyone could call for information.

Public Information Committee. To provide information to large numbers of people in the metropolitan area, experts from the news media, public relations specialists, and other persons proficient in communications were invited to review the venereal disease problem and suggest appropriate steps to take in reaching the public.

Bringing together representatives of the press, radio, and television early in the campaign offered an extra dividend. Mild interest in the venereal disease problem often turned to commitment. Not only were news releases, spot announcements, editorials, and special radio and television programs prepared, but news media representatives saw to it that they were actually used. Almost every radio and television station in the area provided information about the venereal disease campaign. Some stations were, of course, more generous with time than others. WETA-TV, the public broadcasting station, produced a 1-hour local program, which followed a 1-hour national program entitled "VD Blues" that starred Dick Cavett. Following this 2-hour broadcast, WETA-TV aired an additional 1-hour program in which participants from the "Free Metro D.C. from VD" campaign answered questions on venereal disease. The cost of the local presentation, estimated at

Almost 400 persons attended a news conference called at the District of Columbia City Hall to focus attention on the venereal disease problem and the educational program designed to help control it. Representatives from area newspapers, television stations, and radio networks were present, along with reporters and news editors from high school and college newspapers.

approximately $10,000, was assumed by the local television station.

The Public Information Committee, with representation from other committees, designed pamphlets, posters, bus cards, and buttons saying "I'm VD Free, Are You?" Twenty thousand of the buttons were reproduced, and they were in demand continuously from the time they were introduced until the supply was depleted.

Throughout the campaign almost a quarter of a million pamphlets were distributed, and 2,500 posters were placed in schools, colleges, drugstores, banks, shopping centers, clinics, public buildings, community centers, and the offices of physicians, dentists, podiatrists, and other professionals. Arrangements were made to place the bus cards in 1,400 D.C. Transit buses.

Medical Committee. Physicians from the medical societies and the official health agencies of the area formed the nucleus of a Medical Committee, which formulated overall medical policy. The committee made arrangements for 55 different locations where people would be able to go for venereal disease testing, diagnosis, and treatment during Clinical Week.

Areawide hospitals and a few private practitioners volunteered to take part in the screening program. At some locations there was no charge; at others the cost varied according to ability to pay. Some of the clinical facilities extended their hours into the evening so as to accommodate as many people as possible.

Arrangements were made to provide the clinics with cultures, antibiotics, and a messenger service. If a clinic in the District did not have a laboratory, cultures were taken to the laboratory of the D.C. Department of Human Resources for analysis. Results of the tests were made available to the physician as quickly as possible. Also, a reporting system was set up to provide venereal disease investigators with the information needed for followup.

Speakers Committee. A number of persons were recruited and trained for a Speakers Committee. Members of this group discussed venereal disease control with community groups and in school assembly programs. From time to time the speakers oriented recreational leaders and others to the venereal disease problem, and these persons passed the information along to youngsters at playgrounds and recreation centers.

Strategy

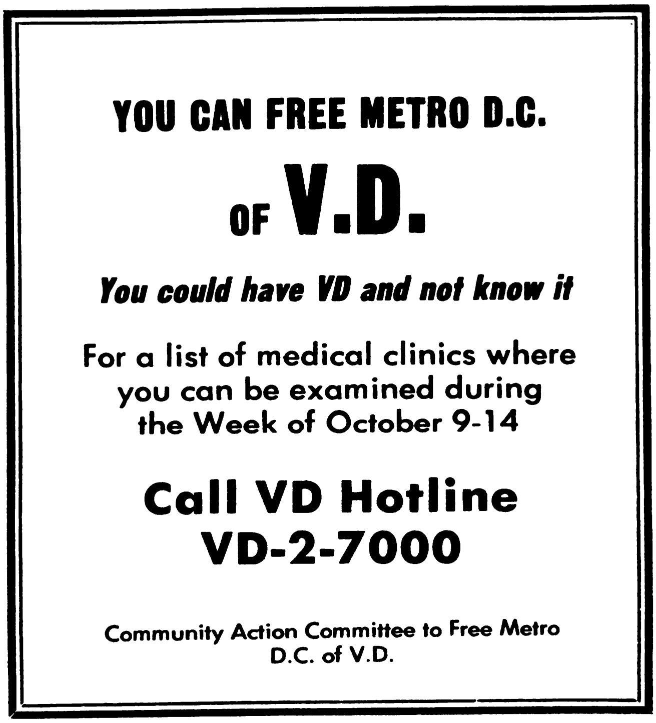
Each of the municipalities that took part in the "Free Metro D.C. of VD" campaign was encouraged to follow the District's program plan, but to make changes in accordance with local needs. From time to time representatives from the District and the other municipalities met to exchange ideas and review activities. It was 8 months from the February planning stages to the program's highlight—Clinical Week.

A list was prepared of the hospitals, clinics, and a few physicians' offices that would be available during Clinical Week to screen, diagnose, and treat persons with venereal disease. Three thousand copies of this list were reproduced and distributed to schools, colleges, community groups, and clinics before the beginning of October. To further publicize the campaign, the Public Information Committee invited the news media, reporters from college and high school newspapers, and representatives from community agencies to a news conference conducted in the D.C. City Hall. Press kits, put together in advance, were distributed at this conference to almost 400 persons. Mayor Walter E. Washington issued a venereal disease proclamation for the occasion, as did executive officers of some of the other jurisdictions taking part in the program. The news conference was widely reported in area newspapers and on radio and television.

Hot Line

The VD hotline was established to provide an easily accessible channel for public information. The telephone number, VD 2-7000, was advertised in pamphlets, posters, bus cards, and through the news media. High school teenagers who had been briefied on the most important questions and answers about venereal disease manned five telephones. Their preparation included attendance at six training sessions, in which the following subjects were presented and discussed: venereal disease control; the symptoms of gonorrhea, syphilis, and other venereal diseases; complications from untreated disease; screening procedures; treatment facilities; and the importance of providing complete and up-to-date information to those who request it. The teenagers, all of whom worked for the project part time and attended school full time, earned $1.60 an hour. The largest portion of the funds for the hot line came from the Neighborhood Youth Corps, but these funds were supplemented by monies from the D.C. Government.

The hot line, housed without charge in space



YOU CAN FREE METRO D.C.

OF **V.D.**

You could have VD and not know it

For a list of medical clinics where
you can be examined during
the Week of October 9-14

Call VD Hotline
VD-2-7000

Community Action Committee to Free Metro
D.C. of V.D.

A paid announcement was printed three consecutive days in the two District of Columbia daily newspapers to encourage attendance at the venereal disease cilincs being held during Clinical Week provided by the D.C. Recreation Department, became operational during the latter part of September 1972; by the end of the year it had received more than 4,000 telephone calls. By March 1973 almost 29,000 calls had been received, an average of more than 100 calls a day since September 1972. This figure includes all persons who telephoned during each 24-hour period. Those calling after 9 pm one day and before 3:30 pm the next afternoon were answered with a recorded message giving clinic locations in the area.

Large cards advertising the VD Hot Line were placed in the District's 1,400 buses, and many buses continued to display the posters long after the October campaign. This practice was true also for many of the 2,500 posters placed in community agencies, hospitals, clinics, pharmacies, banks, shopping centers, store windows, and other public buildings.

Educational Activities

In the months before the campaign the program participants inundated the Metropolitan Washington area with information on venereal disease. Approximately a quarter of a million pamphlets on the venereal diseases were distributed, primarily to school youngsters and young adults. Scores of training sessions were conducted for school teachers, recreational leaders, and community representatives. Teachers discussed venereal disease control in the classroom. High school students were trained to answer questions about venereal disease and brought groups of students together to correct misconceptions about venereal disease and to discuss it openly and freely in terms that youngsters understand. College students held meetings in dormitories, student union buildings, and other places where young people congregated. Orientation sessions, some sponsored by drug manufacturers, were set up for physicians.

Twenty thousand buttons reading "I'm VD Free, Are You?" were distributed at community meetings, in classrooms, on college campuses, and during inservice training sessions. Although the supply was exhausted within 2 months after the initial distribution, people were still wearing the buttons months later. Unexpectedly, the buttons became a "conversation piece" and seemed to spark informal conversations about venereal disease control and the educational program itself.

Cost of Program

The program's major expenses totaled $16,785, a nominal outlay which can be divided into two categories: (*a*) the cost of publicity materials and (*b*) the cost of medical services and supplies.

Item	*Cost*
Pamphlets (225,000)	$ 4,300
Posters (2,500)	380
Campaign buttons (20,000)	495
Cards for buses (1,400)	490
Labor to put up and take down bus cards	700
Advertising space on 1,400 buses	donated
Advertisements in 2 daily newspapers for 3 days	845
News clipping service for 3 months	75
Materials for culturing specimens	2,600
Antibiotics	200
Overtime for evening clinics (physicians nurses, clerical, and so forth)	6,700
Total	$16,785

These items do not reflect the thousands of dollars' worth of professional time donated by news media experts, nor the value of the radio and television spot announcements that were contributed, the funds that were added by pharmaceutical agencies to pay for training sessions for physicians, the testing and treatment facilities that were made available without charge during Clinical Week, nor the time contributed by volunteers.

Evaluation of Program

In many respects an information and education program defies evaluation. It is possible, however, to draw some conclusions on the basis of quantitative comparisons. For example, the amount of space in area newspapers devoted to venereal disease control for a 3-month period before the campaign (June through August 1972) was 25 column inches, compared with 2,256 column inches for a 3-month period during the campaign (September through November 1972).

Although we have no exact count of the radio and television stations that presented venereal disease information during June, July, and August 1972, the general consensus was that few, if any, programs on the subject had been presented. During September, October, and November, however, 21 radio and television stations publicized venereal disease education. Each of these stations reported using 15-, 30-, and 60-second spot announcements. The frequency of the announcements ranged from several an hour to a few each week. In addition, editorials and 60-minute programs were aired. Four television stations provided 10-, 20-, 30-, and 60-second spot announcements several times a day.

During Clinical Week 2,833 people were screened for venereal disease. Of these, 338 were found to have gonorrhea and 35, infectious syphilis.

Cases found	*Males*	*Females*	*Total*
Total screened	1,451	1,382	2,833
Gonorrhea	246	92	338
Infectious syphilis	25	10	35

After the campaign private physicians sent more cultures from female patients to the laboratory of the Department of Human Resources for analysis than they had previously, as the following table shows. It gives the results of tests for gonorrhea of the cultures private physicians sent to the laboratory during two 3-month periods in 1972, before and after the campaign.

Period	*Persons tested*	*Results*	
		Negative	*Positive*
July 1 to Sept. 29	449	431	18
Sept. 30 to Dec. 29	4,183	4,062	75

This upward trend continued, and a special program that was geared toward obtaining gonorrhea culture tests provided more than 100,000 of these tests during 1973 among women in Washington, D.C., between the ages of 15 and 44. Excluding duplicates and out-of-city residents, this proportion is at least 7 times higher than the national goal of 5 percent.

During October 1972, the month in which the awareness program reached its peak, 2,484 patient visits were made to the Northwest Central Venereal Disease Clinic, or a daily average of 119. In that month the clinic reached an all-time high in the number of patient visits, and 909 males were found to have gonorrhea.

The primary and secondary syphilis rates before and after the campaign reversed themselves, as the following figures show:

Stage of syphilis	*Cases 1st 8 weeks of 1972*		*Cases 1st 8 weeks of 1973*	
	Number	*Percent (N=126)*	*Number*	*Percent (N=130)*
Primary	44	35	68	52
Secondary	82	65	62	48

One might conclude from these figures that those with infectious syphilis were both recognizing it earlier and obtaining medical care.

Conclusion

If venereal disease casefinding and reporting efforts in the District of Columbia continue at the current pace during the next few years, venereal disease rates will probably continue to rise; as the rates go up, more and more patients will be treated, and more contacts will be found. Through the years, however, as people learn how to prevent venereal disease, the rates should begin to recede. Health officials in the District of Columbia believe that the final battle against venereal disease has begun.

REFERENCES

(*1*) Baumgartner, L.: Better communications for better health. Natl Tuberc Assoc Bull 52: 5, October 1966.

(*2*) Center for Disease Control: VD fact sheet 1972. DHEW Publication No. (HSM) 73-8195. Atlanta, Ga., 1973: (*a*) p. 9; (*b*) pp. 14 and 15.

(*3*) A summary for parents and students on VD 1972. Educational Summaries, Inc., Pasadena, Calif., 1972, p. 1.

(*4*) Metropolitan Life Insurance Company: Facts you should know about VD. New York City, 1971, p. 1.

CONN, ROBERT H. (District of Columbia Department of Human Resources): *Information and education program "To Free Metro D.C. of VD." Health Services Reports, Vol. 89, May–June 1974, pp. 293–299.*

A low-cost community-action program designed to control the spread of venereal disease by providing information about it was instituted in the District of Columbia and its neighboring jurisdictions early in 1972. This program crossed county and State lines. It brought together representatives from official health agencies and community groups. Teenagers and young adults participated in planning the educational program and implementing suggestions that had been approved by the committees set up to organize the program. The week of October 8-14, 1972, was designated as Clinical Week. During this week, 55 sites in hospitals, government buildings, and the offices of private physicians were staffed by medical specialists, who provided the public with screening tests for gonorrhea and syphilis. Any person diagnosed as having a venereal disease was treated. Almost 3,000 people used the clinical facilities during this week; 338 were found to have gonorrhea, and 35 syphilis.

Programs, Practices, People

Applications Are Invited For EMS Systems Research

The Emergency Medical Services Systems Act of 1973 (Public Law 93–154) authorizes the Secretary of the Department of Health, Education, and Welfare to provide support to States, local agencies, and other entities to plan, improve, and expand comprehensive and integrated systems to care for medical emergencies. Support for Emergency Medical Services Systems research will be provided through grants to public or private nonprofit entities; and through contracts to private (nonprofit or profit) entities and individuals.

Coordination of services. Existing technical information and medical capabilities seem to be adequate to deal with many medical emergencies, but efforts to provide more effective services have been hampered by the fragmentation of activities at the local and national levels. Under the act all community elements, including consumers, will have an opportunity to participate in the development of the EMS systems, and existing resources will be fully utilized.

The act is not directed at system components, such as transportation, communications, or equipment, but at the development of complete and coordinated delivery systems. Authority for support of research in emergency medical techniques, methods, devices, and delivery is included in the act.

Research. The research will focus on the development of valid and useful information needed to assist in the design of community systems and in the development of policies. Projects using experimental or quasi-experimental designs are particularly desirable because they can improve the validity and generalizability of research results; interdisciplinary approaches are strongly encouraged.

Program interests encompass a wide variety of research areas, including organizational analysis, the efficacy of medical devices, pathophysiological changes following injury, consumer roles, and many others. The impact on EMS systems design of new policies and programs, such as health maintenance organizations, legislation on medical devices, or National Health Insurance, will also be addressed.

An EMS system is not conceived to be an isolated collection of resources, but rather a coordinated set of responses by the health care delivery system to a patient-initiated request for emergency care. Research efforts directed toward the design of efficient and effective EMS systems should consider the effects of these systems on other health and socioeconomic problems.

Grant and contract proposals will be evaluated by peer review groups and administered in accordance with applicable regulations, policies, and procedures of the Bureau of Health Services Research. Grant proposals will be accepted for each deadline date (June 1, October 1, and February 1) beginning June 1, 1974. Notifications of proposed contract procurements will be announced in the Commerce Business Daily. Unsolicited contract proposals will be received at any time.

"Guidelines for Research in Emergency Medical Services Systems," grant application kits, and further information may be obtained from the Bureau of Health Services Research, Attention EMS, Health Resources Administration, DHEW, Rockville, Md. 20852.

Bibliographies Available From National Library Of Medicine

Bibliographies on specific biomedical subjects are published periodically by the National Library of Medicine, National Institutes of Health. Prepared by MEDLARS in response to requests from physicians, researchers, and educators, these bibliographies are available to interested health professionals on request. They may be obtained (request by number) from the National Library of Medicine, Literature Search Program, Reference Section, 8600 Rockville Pike, Bethesda, Md. 20014.

73–8 Drugs in control of narcotic addiction. Supplement to LS 71–17. July 1971 through February 1973. 245 citations.

73–9 Acupuncture. Supplement to LS 72–1. March 1972 through March 1973. 90 citations.

73–10 Hospital architecture. January 1970 through March 1973. 330 citations in English.

73–11 Drug therapy of alcoholism. Supplement to LS 70–1. January 1970 through March 1973. 257 citations.

73–11 Psychotherapy in alcoholism. January 1970 through February 1973. 108 citations in English.

73–13 Psychological aspects of cancer. January 1970 through March 1973. 126 citations in English.

73–14 Neoplasm models. January 1970 through March 1973. 589 citations in English.

73–15 Psychopharmacology in geriatrics. Updates Literature Search 70–15. April 1970 through May 1973. 258 citations.

73–16 Control of obesity by diet. Updates LS 70–16. April 1970 through May 1973. 159 citations.

73–17 Sudden unexpected death in infants. Updates LS 71–14. April 1971 through June 1973. 108 citations.

73–18 Psychosurgery. January 1970 through May 1973. 99 citations.

73–19 Health aspects of prison populations. January 1970 through May 1973. 302 citations.

73–20 Cholelithiasis: etiology and drug therapy. January 1970 through July 1973. 147 citations.

73–21 The microwave oven. January 1970 through July 1973. 37 citations.

73–22 Adverse effects of intrauterine devices. January 1970 through July 1973. 372 citations.

72–23 Nomenclatures, subject headings, and classifications. January 1970 through July 1973. 511 citations.

73–24 Rape. January 1970 through June 1973. 64 citations.

73–25 Adverse effects or toxicity of implant materials. January 1970 through June 1973. 215 citations.

73–26 The hospital emergency room. January 1970 through June 1973. 194 citations.

73–27 Laparascopic sterilization. January 1970 through July 1973. 80 citations.

73–28 Child abuse. January 1970 through July 1973. 303 citations.

73–29 Chemistry of common poisonous plants. January 1970 through July 1973. 156 citations.

73–30 Chagas' disease. January 1970 through July 1973. 404 citations.

73–31 Asbestos toxicity. January 1970 through July 1973. 363 citations.

73–32 Hypertension: diagnosis, occurrence and prevention (with emphasis on studies in the U.S.). January 1970 through July 1973. 216 citations in English.

73–33 Doping and sports. January 1970 through August 1973. 46 citations.

73–34 Herpesviruses and the etiology of mammalian tumors. January 1970 through August 1973. 182 citations.

73–35 Mental retardation: facilities, rehabilitation, services (with emphasis on the U.S.). January 1970 through August 1973. 253 citations in English.

73–36 Therapy of enuresis with imipramine. January 1970 through September 1973. 57 citations.

Health Insurance Benefits Advisory Council Supports Health Education

The Health Insurance Benefits Advisory Council, (HIBAC) [established by law, to advise the Secretary of Health, Education, and Welfare on matters concerning Medicare-Medicaid programs] at a January 11, 1974, meeting approved the following recommendations:

1. Mandatory health activities in all health care programs, to be financed by third-party intermediaries and carriers
2. Establishment of a high-level Office of Consumer Health Education within the Department of Health, Education, and Welfare
3. Congressional approval of legislation authorizing the creation of a National Center for Health Education
4. Distribution of consumer health education information and materials to all appropriate providers and third-party intermediaries and carriers and to all appropriate governmental health and insurance departments and agencies, unions, and other consumer representatives.

The recommendations to be submitted to the Secretary of Health, Education, and Welfare essentially follow those made by the President's Committee on Health Education and the HIBAC Subcommittee on Health Education.

Reduction of Lead in Paints Is Recommended

Reducing the permissible lead content of paints from the present 0.5 percent to the "lowest practicable" concentration is recommended in a "Report of the Ad Hoc Committee to Evaluate the Hazard of Lead in Paint," prepared for the Consumer Product Safety Commission by the National Academy of Sciences.

The report states that inadequate scientific information on lead poisoning prevents setting a more precise, scientific standard at this time. Special emphasis should be given to learning the lead absorption rate of children—the primary victims of lead poisoning. Between the ages of 1 and 6, many children develop pica. The condition is so common, according to one estimate, that 600,000 U.S. children would show increased blood lead content if tested. The report also notes that little is known about the chemical significance of increased blood lead content in children and suggests that further research investigate possible physical and behavioral effects.

The eight-member panel that authored the report defined "lowest practicable" concentration as the "lowest concentration that can be achieved by existing technology." The panel pointed out that such a recommendation "must inevitably involve a value judgment in which one balances the likelihood of health damage at a given lead concentration against the likelihood of health damage from substitute materials, the effect of the change on the performance of the paint, and the cost of making the change."

The panel further stressed that any regulation governing the maximal lead content of paint must be based on the practicability of controlling the lead that enters paint accidentally during processing and on the availability of reliable analytic procedures. For example, in recent tests "lead free" paint was found to contain as much as 0.03 percent lead because of impurities in its stated ingredients.

The report also recommends that the Consumer Product Safety Commission set up a national paint surveillance system to insure that (**a**) established standards are being met, (**b**) such standards are reviewed biannually in the light of any additional information on lead that becomes available, and (**c**) research is sponsored to identify the normal amount of lead in the human body, sources of accidental lead in paints, and better methods of analyzing the lead content of paint and body tissues.

In the report, health departments and hospitals of major urban centers are encouraged to adopt compatible methods for the mass screening of children and for identification of the signs and symptoms of lead poisoning. Information from these sources, according to the report, should be deposited in a national registry that would prepare annual reports on the incidence of community lead poisoning and on new results from screening programs.

Copies of the report may be obtained from the Director, Public Affairs, Consumer Product Safety Commission, 1750 K St., NW., Washington, D.C. 20207.

American Academy Of Medical Administration

The 17th annual convocation and annual meeting of the American Academy of Medical Administration will be held August 11, 12, 1974, at the Continental Plaza Hotel, Chicago.

For information write Noel Barber, American Academy of Medical Administrators, 6 Beacon St., Boston, Mass. 02108.

Oral Vaccine for Cholera And Other Diseases

A basic research study, under a fellowship from the Boston-based Medical Foundation and grants from the National Institutes of Health and the U.S. Army Medical Research and Development Command, strongly suggests that an oral vaccine would provide better protection against cholera than the presently used injected type. The current type has proved to be only partially effective and does little to prevent people from becoming carriers.

The research, conducted at the Massachusetts General Hospital, has now demonstrated that antibodies in the gastrointestinal tract will protect a person from cholera. By preventing the toxin that is released in the intestine by cholera bacteria from attaching itself to the intestinal cell, these antibodies apparently can prevent the severe diarrhea and dehydration that might otherwise lead to death from cholera.

Proof of the manner in which the antibodies give protection underscores the need for producing or administering an oral vaccine, since this type would produce the greatest amount of antibodies in the intestine and thus be most effective in preventing disease.

The principal investigator for the study is Dr. W. Allan Walker, chief of the pediatric gastrointestinal unit at the hospital. His co-workers are Dr. Michael Fields, assistant head of the gastrointestinal unit, Beth Israel Hospital, and Dr. Kurt J. Isselbacher, chief of the gastrointestinal unit, Massachusetts General Hospital.

The new results relating to cholera represent one aspect of an overall study, under the Medical Foundation grant, of the role played by antibodies in intestinal secretions or on the surface of intestinal cells in protecting people from both infectious and allergic diseases.

The gastrointestinal tract is vulnerable to a host of agents, such as bacteria, viruses, and toxins, which potentially can cause diarrhea and cholera-like diseases. These agents can also pass from the intestine into the circulation and affect other vital organs such as the liver(and cause hepatitis), the kidney (and cause nephritis), or the heart (and cause carditis). Walker will attempt to evaluate the different types of antibodies present in the gastrointestinal tract and investigate other specific disease states in addition to cholera, trying to determine how they can be controlled.

American Academy Of Pediatrics Offers Immunization Flyer

A one-page flyer urging parents to make sure their children are adequately immunized against communicable disease has recently been made available by the American Academy of Pediatrics.

The flyer warns that "One in three preschoolers aren't immunized" and points out that the childhood diseases, such as measles, rubella, poliomyelitis, whooping cough, and diphtheria, can cripple and kill children.

The flyer also contains an immunization schedule recommended by the Academy and urges parents to check with their family physician or local public health department if they are unsure about their child's immunization status.

The flyers, $3 per 100, are available from the American Academy of Pediatrics, Dept. P., Box 1034, Evanston, Ill. 60204.

New Publication Explores Contributions of Midwives

At the 16th congress of the International Confederation of Midwives, October 28–November 3, 1972, in Washington, D.C., 2,000 participants from 99 nations discussed future contributions of midwives to family planning, midwifery education and legislation, nutrition for maternal and child care, and effects of technology on the quality of childbirth.

The proceedings of the congress have been published by the International Confederation of Midwives and the American College of Nurse-Midwives. "New Horizons in Midwifery," a 250-page, paperback volume includes reports of preliminary and business sessions, photographs of events, and 40 scientific and educational papers.

The book may be purchased for $6.50 per copy ($3.50 for ACNM members) from the American College of Nurse-Midwives, ICM Congress Publications Office, 550 N. Broadway, Rm. 114, Baltimore, Md. 21205.

WHO Fellowships For Health Workers

The World Health Organization will make available in 1975 a limited number of short-term fellowships for travel abroad related to the improvement and expansion of health services in the United States. This support is offered to U.S. citizens engaged in operational or educational aspects of public health who are employed by non-Federal governmental agencies or educational institutions.

In selecting applicants, a special committee will consider the person's professional background, the field and locale of the proposed study, and the utilization of the experience by the applicant on his return. Employees of the Federal Government are not eligible. Applications will not be considered for the purpose of pure research projects, for attendance at international meetings, nor from students in the midst of training at either the undergraduate or graduate level. Applicants may not be over 55 years of age.

A fellowship award will cover per diem and transportation. Except in very unusual circumstances, it will be limited to short-term travel programs averaging about 2 months. Employers of successful applicants will be expected to endorse applications and to continue salary during the fellowships. Priorities of award will be established up to the total of the funds available. The deadline for the receipt of completed applications is September 30, 1974.

Further information may be obtained from Dr. Robert W. Jones III, Chief, International Education Branch, Fogarty International Center, National Institutes of Health, Room 2B-55, Bldg. 31, Bethesda, Md. 20014.

Education Notes

Announcements for publication should be forwarded to Health Services Reports 6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.

International Conference on Alcohol, Drugs, and Traffic Safety. The Sixth International Conference on Alcohol, Drugs, and Traffic Safety will be held in Toronto, Canada, September 8–13, 1974. It is being held in association with the International Committee on Alcohol, Drugs, and Traffic Safety and the International Council on Alcohol and Addictions.

Plenary sessions papers will deal with the epidemiology of alcohol and drug-related traffic accidents; pharmacological, physiological, and psychological aspects relevant to driving impairment; analytic methods [for detection of alcohol and other drugs in blood samples, for example]; control and prevention [drinking-driving laws]; and public education and information.

The registration fee is $50. Participants are urged to register before the conference. For registration forms and more information, write to Conference Manager, Sixth International Conference on Alcohol, Drugs, and Traffic Safety, 33 Russell St., Toronto, Ontario M5S 2S1 Canada.

Biohazard and Injury Control in the Biomedical Laboratory. Tuition-free short courses teaching practical methods to control potential health and safety hazards in the laboratory will be conducted in 1974 by the University of Minnesota School of Public Health. These courses, sponsored by the National Cancer Institute, will introduce basic theory and practices of laboratory safety and contamination control.

Senior-level technicians from all biomedical research laboratories, particularly viral oncology research units, are invited to attend. Technicians are offered a choice of three courses. Two 3½-day courses, featuring both laboratory and lecture sessions, will be conducted in Minneapolis at the University of Minnesota June 11–14 and again September 17–20, 1974. A 3-day course without laboratory sessions will be held at the National Institutes of Health in Bethesda, Md., December 10–11, 1974.

Because the courses are tuition free, each laboratory pays only its representative's travel and living expenses. Enrollment is limited. For more information and applications, write to Dr. Donald Vesley, School of Public Health, 1158 Mayo, University of Minnesota, Minneapolis, Minn. 55455.

Master's Program to Prepare Local Public Health Directors. The Department of Health Administration, School of Public Health, University of North Carolina at Chapel Hill, offers a 21-month Master of Public Health program to prepare students for executive positions in local health agencies. It includes a 7-month placement in a local agency with a local health director as preceptor.

A limited number of traineeships are expected to be available. Persons with a baccalaureate degree from an accredited institution and at least 2 years of administrative experience in health-related organizations are eligible for admission. For further information, write to the Community Health Services Administration Program, Department of Health Administration, School of Public Health, University of North Carolina at Chapel Hill 27514.

Publications

FEDERAL

Brucellosis Surveillance, 1972. *DHEW Publication No. (CDC) 74-8186; February 1974; 14 pages. Center for Disease Control, Attn.: Bacterial Zoonoses Sect., Bacterial Diseases Division, Bureau of Epidemiology, Atlanta, Ga. 30333.*

Special Health Career Opportunity Grants. *DHEW Publication No. (HRA) 74-5; 1973; 27 pages.*

Solid Waste Recycling Projects. A national directory. *By Penelope Hansen. SW-45 (EPA); 1973; 284 pages; $2.15.*

Solid Waste Demonstration Projects. Proceedings of a symposium, Cincinnati, Ohio, May 4–6, 1971. *By Patricia L. Stump. SW-4p (EPA); 1972; 256 pages; $1.50.*

Solid Waste Management. Available information materials. *SW-58.20 (EPA); October 1973; 59 pages.*

Survey of Facilities Using Land Application of Wastewater. *EPA-9-73006; $6.80.*

Hepatitis. *DHEW (NIH) 74-122; 1974; 12 pages; 30 cents.*

Do We Care About Research Animals? *DHEW Publication No. (NIH) 74-355; folder. Office of Science and Health Reports, Division of Research Resources, National Institutes of Health, Bldg. 31, Room 5B-39, Bethesda, Md. 20014.*

Manganese. *1973; 191 pages; $5.50. Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Ave., NW., Washington, D.C. 20418.*

Directory, State and Areawide Comprehensive Health Planning Agencies Under Section 314 of the PHS Act. *DHEW Publication No. (HRA) 74,001; July 1973; 94 pages.*

Section 1122 of the Social Security Amendments—Some Questions and Answers. *DHEW Publication No. (HRA) 74,002; 1974; folder.*

Uniform Hospital Discharge Data Demonstration: A summary report (second printing). *DHEW Publication No. (HRA) 74-3102; March 1973; 77 pages.*

The Computer Assisted EKG From Laboratory to Community. *DHEW Publication No. (HRA) 74-3104; September 1973; 37 pages.*

A Profile of the United States Public Health Service, 1798-1948. *By Bess Furman in consultation with Ralph C. Williams, MD, author of The United States Public Health Service, 1798–1950. DHEW Publication No. (NIH) 73-369; 487 pages; $4.35.*

National Center for Health Statistics

Impairments Due to Injury, United States, 1971. *DHEW Publication No. (HRA) 74-1514, Series 10, No. 87; December 1973; 53 pages; 90 cents.*

Acute Conditions, Incidence and Associated Disability, United States, July 1971–June 1972. *DHEW Publication No. (HRA) 74-1515, Series 10, No. 88; January 1974; 68 pages; $1.05.*

Health Characteristics by Geographic Region, Large Metropolitan Areas and Other Places of Residence, United States, 1969–70. *DHEW Publication No. (HRA) 74-1513, Series 10, No. 86; January 1974; 56 pages; 90 cents.*

Federal publications may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Single copies may be obtained from the originating bureau.

Information for Contributors to Health Services Reports

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Our readers are practicing public health officials, community health practitioners, faculty and students in colleges where the health disciplines are taught, and workers in research institutions, hospitals, and community health organizations.

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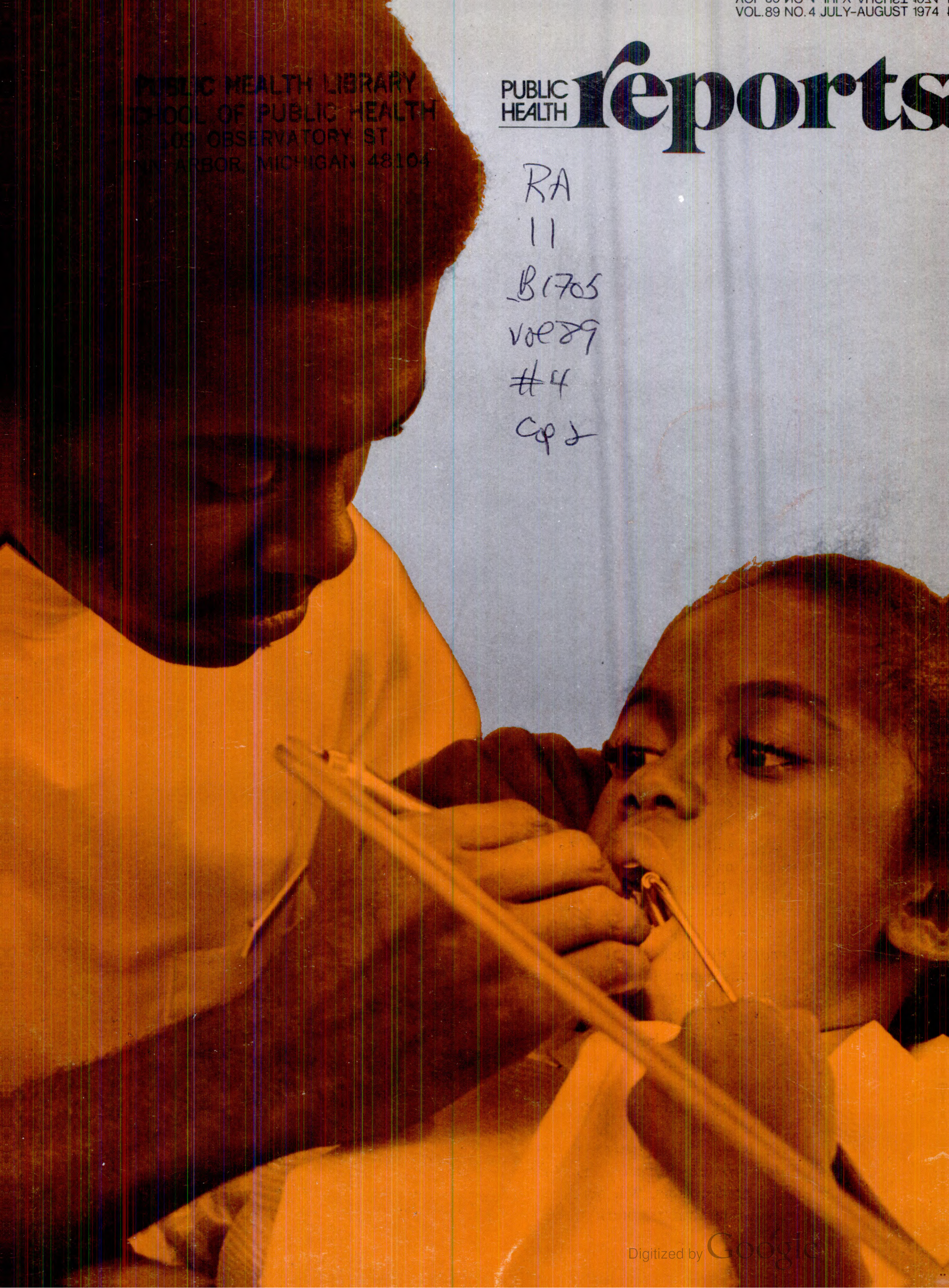
PUBLIC HEALTH reports



New—and Old—Directions

This issue of *Public Health Reports* is the first to be published under the aegis of the Health Resources Administration. I am proud to welcome the journal to HRA, and I would like to assure readers that it will continue to focus on the broad spectrum of responsibilities of the Public Health Service.

The journal began in 1878 as a modest one-page bulletin issued by the Supervising Surgeon-General of the Marine Hospital Service. After 46 issues, the *Bulletin of the Public Health* expired. Publication was resumed in 1887 as the *Weekly Abstract of Sanitary Reports,* and in 1896 the *Abstract* became *Public Health Reports.*

In 1952, the weekly was amalgamated with three technical periodicals of the Public Health Service, the *Journal of Venereal Disease Information,* the *CDC Bulletin,* and the monthly *Tuberculosis Control* issue of *PHR* to form the monthly *Public Health Reports.* The journal's format continued relatively unchanged until 1971, when organizational changes in the Department of Health, Education, and Welfare brought about a redesigned format and a new name, *HSMHA Health Reports.* Fourteen months later the name was again changed to *Health Services Reports,* to reflect a major emphasis of the Health Services and Mental Health Administration.

With the resumption of the title, *Public Health Reports,* I would reiterate Surgeon General Leonard A. Scheele's statement in the January 1952 issue. "The pages of the new *Public Health Reports,* like those of its predecessors, will be open to responsible authors, outside as well as within the Federal service, in the United States as well as abroad."

The first issues of the *Bulletin* in 1878 carried reports of the great Mississippi Valley yellow fever epidemic that claimed 20,000 lives; today's public health practitioners face very different challenges. Our aim in 1974 is to make the journal a real forum for the exchange of ideas and a stimulus to new concepts in health planning, administration, and research.

KN Endicott

Kenneth N. Endicott
Administrator,
Health Resources Administration

COVER—Special psychological training is necessary for dentists who plan to specialize in pediatric dentistry. Here a child cooperates with a dental student by holding the saliva ejector. (Photo from the Bureau of Health Resources Development, Health Resources Administration) The impact of Medicaid and neighborhood health centers on the use of dental services in an urban area is examined in an article beginning on page 325.

PUBLIC HEALTH reports

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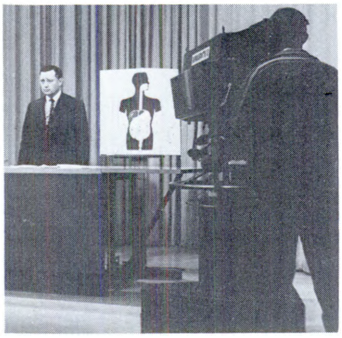

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PUBLIC HEALTH reports

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Programs, Practices, People

An Assessment of Provider Behavior in Shared Professional Facilities

JONATHAN M. METSCH, DrPH,
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AND WENDY DONN, RN, MPH

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AS DISCUSSIONS INTENSIFY on the possible shape and substance of national health insurance, it becomes essential to consider the impact of alternative proposals beyond narrowly defined programmatic objectives, such as increasing the public's ability to acquire services or minimizing the cost of catastrophic illness. Anderson (*1*) warned of the second-order consequences of innovative health programs, and he observed the tendency of health planners to overlook consideration of possible, unanticipated effects and wider social ramifications of program plans while concentrating on desired outcomes.

In the view of White (*2*), one such area of concern should be the relationship "between the manner in which the patient finances his medical care, the manner in which the physician collects his earnings, and the manner in which his earnings are distributed to him," particularly as they relate to the influence of various payment systems on standards of care, levels of practitioner interest, and patient and provider satisfaction. Addressing this point, Brown (*3*) criticized government at all levels for not having used its power of financing to assure the delivery of adequate care to the poor while often surrendering to the power of the professional.

Financing schemes spawn new methods of delivery, as evidenced by emphasis on inpatient care where insurance contracts cover diagnostic procedures and the current proposals to develop health maintenance organizations, given the availability of Federal seed money. When a financing mechanism is followed by the development of new methods for delivery of care, evaluation efforts should be initiated to assess the validity of these configurations in light of program objectives, as well as unanticipated consequences. While the need for such evaluation has long been apparent (*4,5*), recent studies have focused on consumer behavior when there is new access to medical care (*6–9*), with little attention to provider behavior when there is increased demand for services—perhaps because these studies were of demonstration projects in which provider behavior is predetermined by the program plan.

Since complete understanding of the implications of financing mechanisms requires studies of both consumer and provider behavior, such studies should be made in natural—rather than demonstration—practice settings where provider behavior can be examined. The need for investigations of provider behavior becomes especially important when one considers that 12 methods of providing ambulatory care have been identified, yet the extent to which each satisfies the criteria of comprehensiveness, accessibility, and quality of care has not been definitively determined (*10*).

Shared Professional Facilities

Health professionals who provide care for medical assistance (Medicaid) eligibles in New York City often practice in shared professional facilities (SPFs). While SPFs vary greatly, the New York City Department of Health has developed the following operational definition: "Three or more health care professionals providing services on the same premises and sharing a common waiting area, equipment, and/or supporting staff, one or more of whom bills the Medical Assistance Program on a fee-for-service basis."

The estimated more than 300 SPFs currently operating in ghetto areas of New York City provide a natural setting for assessment of provider behavior in response to a program which lifts financial constraints on obtaining health care for a vast consumer group. While some SPFs have control systems that should promote quality of care, it has been found that generally there is a high degree of interrelationship among practitioners but little effort to develop linkage mechanisms between them for coordinated patient care. This finding indicates a need for development of prototype control systems and the designation of a governmental agency in a given jurisdiction to monitor their implementation and use as management information systems in order to evaluate provider behavior in a SPF.

In this paper, we describe a survey to evaluate the delivery of health care services in SPFs and discuss policy implications and the need for regulation of provider behavior when financing mechanisms increase consumer access to care.

Scope of SPFs

The sample for this study consisted of 32 shared professional facilities. They were selected randomly to represent the boroughs of New York City, because of differences in patient volume and in a few instances because of consumer complaints.

During the summer and fall of 1973, the 32 SPFs were visited by teams composed of a program research analyst and professional consultants (physicians, dentists, podiatrists, and optometrists) and a sanitarian from the health department. Specific visit dates were unannounced, although an announcement of the site visit program was mailed to each of the SPFs by the health department. When necessary, a health department employee telephoned, but did not identify himself or herself as a department employee, a SPF a week or so before the visit to find out what types of practitioners worked there so that appropriate professional consultants could be selected for the visit.

The SPFs vary in the numbers and types of health professionals they house—from a few practitioners in one profession only (for example, 5 physicians) to large multidisciplinary combinations (for example, 17 physicians, 5 podiatrists, 2 chiropractors, 4 dentists, and 3 optometrists). While physicians usually represent the largest single professional group in a facility, often they are exceeded in number by the total of other practitioners (for example, 5 physicians, 6 dentists, and 1 podiatrist).

The daily volume of patients in the 32 facilities ranges from less than 25 to 125 or more, as follows:

Daily patient volume	*Facilities*	
	Number	*Percent*
Less than 25	1	3
25–49	8	25
50–74	7	22
75–99	5	16
100–125	4	13
125 or more	7	21

The majority of the patients are on Medicaid; in nine of the facilities, 98 to 100 percent of the patients receive medical assistance. The percentages of Medicaid patients in the 32 facilities are as follows:

Percent Medicaid patients	*Facilities*	
	Number	*Percent*
More than 90	19	60
80–89	7	22
70–79	3	9
69 or less	3	9

The predominant form of pecuniary relationship between the entrepreneur who owns the facility and the practitioners who provide services in it is a mechanism whereby the practitioner pays a fixed percentage (usually 40 to 50 percent) of his gross Medicaid billing to the entrepreneur. The financial arrangements in all 32 facilities are as follows:

System	*Facilities*	
	Number	*Percent*
Fixed rental	9	28
Percent of gross billing	10	32
Either percent of gross billing or fixed rental	11	34
Other	2	6

Assessment Criteria

The purpose of the assessment phase of the survey was to examine the extent to which services delivered within SPFs meet standards of continuity, coordination, accessibility, and acceptability. The measures used to make these standards operational are consistent with definitions and methodologies reported in the literature *(11–13)*. For discussion purposes, criteria are classified as those relating to either structure or process.

The reader may conclude that we apply standards appropriate to group practice to SPFs. In our judgment, however, our criteria befit a system of care that falls between individual private practice and group practice as evidenced by SPFs which call themselves "family health centers," "groupe medico," and so on. Thus, while we do not have expectations for such mechanisms as team conferences to develop patient care plans or peer review, the criteria selected do consider the extent to which the SPF can attend to different types of patient care needs on an ongoing basis.

Structural criteria. Structural criteria deal with accessibility and coordination of care, monitoring of workload, emergency and inpatient care linkage mechanisms, the designation of a physician as professional director, the organization of the record system, and the availability of full-time professional practitioners.

To determine whether care is accessible, a standard was developed which assumed that beyond routine weekday hours, services should be available evenings (after 5 pm) and on Saturdays. The basis of the assumption is that services should be available to patients without interfering with their workday or school attendance, nor should obtaining services necessitate complex personal arrangements (for example, babysitters and use of taxis).

To facilitate coordinated care by designated practitioners, appointment systems must allow adequate time for practitioner-patient contact. While first visits may be of necessity on a walk-in basis, followup and referrals should be on an appointment basis to allow, for example, time for the practitioner to review the charts of patients who fail to keep revisit appointments and the initiation of patient contact if indicated.

A daybook containing records of all appointments kept and broken as well as of walk-in patients should be maintained in order to monitor activity at the facility. Such monitoring permits a determination if the quality of care delivered may be jeopardized by patient volume and an assessment of the referral relationship among practitioners.

A formal system for emergency care during hours when the facility is closed should be in operation, whether in the form of an answering service or a designated hospital emergency department. A SPF should also have a formal arrangement with a backup facility so that bed availability is maximized and to promote admissions to hospitals in or near the catchment area of the SPF.

It is desirable that the professional director of an SPF be a physician who is onsite to coordinate operations, in particular, to develop written policies and procedures for triage of walk-in patients, referrals among practitioners at the facility and offsite, and use of ancillary services. The professional director should also be responsible for the maintenance of the daybook, the management of the record system, emergency arrangements, and transfer agreements with inpatient facilities.

An optimal record system would be completely centralized, with all practitioners in all professions sharing the same charts. Thus, for example, medical histories are available to the dentists and optometrists, and a complete record with input from all professions is available to the hospital-based practitioner who may coordinate care upon admission. If each profession maintains its own charts (shared by all practitioners within that profession) abstracts should be prepared for the records maintained by other professions; thus, for example, a dentist is aware of critical medical problems that may affect his treatment decisions. A completely decentralized record system where each practitioner maintains his own records is least desirable because there is no written intraprofessional or interprofessional communication, although there may be an extensive amount of patient referrals among the various types of practitioners within a facility.

The final structural criterion focuses on the extent to which practitioners work full time (31 hours or more of patient contact per week), with particular emphasis on the number of full-time primary medical and dental practitioners, since continuous care may be compromised if primary practitioners are available only on a limited basis. It is assumed that as a minimum at least one full-time medical practitioner should be available in each SPF so that walk-in patients can be seen by a generalist rather than by a part-time specialist who may be onsite.

Process criterion. The process criterion relates to the outcome of professional audits. Medical, dental, podiatric, and optometric audits are accomplished as part of the assessment process by practitioners in these professions who serve as health department consultants. A satisfactory rating on the medical audit is based on evidence of complete histories and physical examinations, documented followup care, annotated referrals, and recording of medications prescribed, laboratory and radiologic tests ordered, and immunizations given. A satisfactory rating on the dental, podiatric, and optometric audits is based on a sufficient recordkeeping system, adequate equipment, and indications that the patients are afforded comprehensive rather than only one-visit episodic care. Thus, the professional auditors do not attempt to assess the efficacy of care but basically determine whether information on the patient care process is recorded in a satisfactory or unsatisfactory manner. These standards are logical extensions of audit procedures of private practitioners who bill the New York City Medical Assistance Program (*14–18*).

Findings

Since the entrepreneurs generally feel that they are dealing with independent practitioners and therefore are not responsible for monitoring professional activity, management information systems typical of neighborhood health centers, for example, are not evident. Program assessment data are collected by the study teams during the visits by using a detailed questionnaire to interview administrators and practitioners, as well as by checking signs, bulletin boards, worksheets, and practitioners' schedules. Efforts are made to validate information by obtaining it from multiple sources within the facility to the greatest extent possible. For the most part, SPF personnel have cooperated with the site visit team.

Structural criteria. Accessibility of care, as measured by the availability of evening, Saturday, and Sunday sessions, is satisfactory in 19 of the 32 facilities. At the remaining 13 sites, the standard is either completely unsatisfied (1 site) or only partially satisfied (12 sites). The availability of care beyond routine weekday hours follows:

System	*Facilities*	
	Number	*Percent*
Evenings and Saturdays	18	56
Evenings, Saturdays, and Sundays	1	3
Saturdays, no evenings	10	32
Evenings, no Saturdays	1	3
Saturdays, Sundays, no evenings	1	3
None	1	3

For the most part, appointment systems are not in effect in the SPFs. Eight of the facilities observed have no appointment system whatsoever; therefore, 100 percent of their patients are walk-ins. As the following percentages show, a walk-in rate of more than 80 percent is more than typical:

Percent walk-in patients	*Facilities*	
	Number	*Percent*
100	8	25
90–99	4	12
80–89	6	19
70–79	3	9
60–69	3	9
50–59	5	17
less than 50	3	9

Of the 32 SPFs, 15 keep daybooks. Thus, in more than half of the facilities patient volume is not evaluated, and referral patterns among practitioners are not monitored. Only six of the SPFs have emergency arrangements, and only four have formal arrangements with backup facilities.

While 13 of the 32 SPFs have professional directors, 5 have neither a professional director

Table 1. Types of record systems in 32 shared professional facilities

Type	Fully implemented	Partially implemented	Total[1]
Completely centralized[2]	4	...	4
Centralized by profession[3]	6	[4] 18	24
Completedly decentralized[5]	4	[4] 18	22
Total	14	36	50

[1] Total is more than 32 because many facilities have dual systems operating simultaneously.

[2] All practitioners use the same charts.

[3] All practitioners within a profession use the same charts.

[4] These 2 types always appear together in the sample where partial implementation is observed.

[5] Each practitioner maintains his own charts.

nor an administrator and thus a complete absence of any managerial control. The management characteristics of the facilities follow:

Management	*Facilities* Number	*Facilities* Percent
Professional director:		
Yes	13	41
No	19	59
Administrator:		
Yes	26	81
No	6	19
Professional director or administrator:		
Neither	5	16
Both	12	38
Administrator only	14	43
Professional director only	1	3

The types of record systems observed are shown in table 1. Although only four facilities have a completely centralized system, it is important to note that none of these have dentists on their staff. Invariably, dentists maintain their own records.

Finally, continuous primary medical care may well be compromised since only 27 percent of the primary practitioners work full time and 31 percent work only 10 hours or less a week in the SPFs (table 2). At 7 of the 28 sites observed on this dimension, no full-time primary medical practitioner is available.

Process criterion. The outcomes for 13 of the 32 medical audits, 14 of the 19 dental audits, and 5 of the 14 podiatric audits meet the standards described, indicating that satisfactory care is often available at SPFs although not universally and at different levels for different professions (table 3). Again, these standards are related primarily to the recording of patient care information based on the assumption that what is not recorded in the chart is useless, regardless of the clinical capability of the practitioner.

Discussion

The findings suggest that while quality of care as assessed through professional audits is often satisfactory, the criteria of accessibility, continuity, and coordination are not satisfied in SPFs. From observations at the 32 facilities, it seems that a type of group practice has evolved that is based on a pecuniary relationship with little professional or managerial control.

Since accessibility is often not optimal, it may well be that patients use SPFs when convenient but obtain services elsewhere (for example, hospital emergency departments, other SPFs, or offices of private practitioners) when the SPF is closed. If obstacles to accessibility necessitate obtaining services from multiple sources, the problems usually associated with fragmented care —such as lack of practitioner continuity and the nondevelopment of comprehensive health care records—ensue.

Table 2. Number and percent of practitioners in 28 shared professional facilities, by number of hours they work per week

Practitioners	31 hours or more		21–31 hours		11–20 hours		6–10 hours		5 hours or less		Total number practitioners
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Primary medical practitioners[1]	28	27	18	17	26	25	14	14	18	17	104
Medical specialists	1	1	5	5	6	6	29	29	58	59	99
Dentists	14	61	3	13	4	18	1	4	1	4	23
Podiatrists	8	25	6	19	4	12	13	41	1	3	32
Optometrists	2	29	0	0	4	57	1	4	0	0	7
Chiropractors	1	12.5	1	12.5	2	25	4	50	0	0	8
Total	54	20	33	12	46	17	62	23	78	28	273

[1] General practitioners, internists, pediatricians, and osteopaths.

Table 3. Outcome of professional audits in 32 shared professional facilities

Type of audit	Excellent		Satisfactory		Unsatisfactory		Total audits
	Number	Percent	Number	Percent	Number	Percent	
Medical	4	13	9	28	19	59	32
Dental	0	0	14	74	5	26	19
Podiatric	0	0	5	36	9	64	14
Optometric	0	0	0	0	1	100	1
Total	4	6	28	42	34	52	66

The high walk-in rate suggests that followup visits are as much patient initiated as practitioner ordered, that often no mechanism exists to assure that the patient receives coordinated rather than episodic care, and that patients may well be receiving care from more than one primary practitioner within a profession.

The finding that 17 of the SPFs do not maintain daybooks means that they have no mechanism to assure that enough time is allotted for appointments, to allow quality care and to make certain that referrals are medically indicated.

The general lack of any emergency arrangements or any formal arrangements with backup facilities suggests that both emergency and inpatient care are poorly integrated with ambulatory care, if not completely divorced. Patient care is compromised when linkage mechanisms between different entry points into the health care systems have not been properly developed.

As indicated, many SPFs lack managers. Without managers, essential systems such as the use of a daybook, emergency arrangements, and formal agreement with a backup facility are unlikely to be implemented.

The high number of partially decentralized or completely decentralized record systems suggests that communication among practitioners is minimal. At sites where charts are centralized by profession, no abstracts of work done by other professions were observed.

That dual systems often operate simultaneously may be particularly problematic. For example, all primary medical practitioners, some medical specialists, and the podiatrists may share centralized charts, whereas other medical specialists, dentists, and optometrists maintain their own records. Thus, in some cases intraprofessional and interprofessional communication takes place, but in others it is nonexistent. Practitioners may assume that information is being shared because one set of a patient's experiences is attributed to another set of experiences; this attribution may be entirely inappropriate and, of course, injurious to the patient.

Primary care is the core around which all other services should be coordinated. The predominant pattern of part-time primary medical practitioners raises critical questions as to the extent to which patient care is continuous or coordinated within SPFs.

Although entrepreneurs of SPFs state that they house independent practitioners, the following evidence suggests extensive interrelationship among the practitioners.

- The SPFs observed are primarily moderate to high-volume operations catering to patients on medical assistance, with noticeable interdisciplinary referral patterns. In at least eight SPFs, onsite referrals appear excessive, and the need for such referrals remains essentially undocumented. Moreover, it is often unclear which practitioner, if any, takes overall responsibility for coordinating a given patient's care.
- The predominant factor in the pecuniary relationship between entrepreneur and practitioners is that the former receives a fixed percentage of the latter's gross billing to Medicaid. Thus, the most financially rewarding type of operation is one which has a high volume of patients and which allows only a short time for practitioner-patient contact.
- Since a significant portion of the visits are on a walk-in basis and most of the practitioners work part time in the facilities observed, it is likely that patients needing primary medical care see only the available practitioner, who may be a part-time specialist rather than a predesignated generalist.
- The practitioners often share X-ray equipment (28 sites) and clinical laboratory facilities (15 sites), as well as associated technicians.

- Record systems at all but four sites (where there is complete decentralization) are somewhat integrated, indicating a decision to cooperate to some extent by the practitioners.
- Of the 32 facilities, 26 employ administrators who are partly responsible for deploying the shared ancillary personnel among practitioners (for example, medical and dental assistants), and 13 have professional directors who monitor professional activities.
- Daybooks are kept by 15 of the facilities to allow evaluation of volume and referral patterns or to allow the entrepreneur to monitor activity in order to assess his financial position.

Despite the obvious group practice type of relationship seen in the 32 facilities, there is little indication of efforts to self-regulate or to monitor provider behavior and responsibility.

Conclusions and Recommendations

Pauly (*19*) stated that "fee-for-service reimbursement methods provide a strong productivity-increasing incentive" and "since the physician's income under such a system varies directly with the number of units of service rendered, one might expect the fee-for-service system to induce the physician to try to get patients to consume more units of service than they would have consumed under other kinds of reimbursement." His assumption is borne out by the findings of this study and accentuated in the SPF setting by the usual financial agreement between entrepreneur and provider where volume benefits both parties.

The findings suggest that controls are needed to insure that adverse second-order consequences as manifested in some types of provider behavior are not deleterious to the consumers. The potency of controls is demonstrated by the statistical relationship between having a professional director and a satisfactory rating on the medical audit ($X^2 = 3.97, P = .05$) and having a daybook and a satisfactory rating on the medical audit ($X^2 = 4.39, P = .05$), as shown in the following figures for the 32 facilities.

Medical audit	*Professional director*		*Daybook*	
	Yes	*No*	*Yes*	*No*
Satisfactory	8	5	9	[1]4
Unsatisfactory	5	14	6	13

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[1] Expected value of 6.9

The composite picture of dental practice in the SPFs is quite encouraging (74 percent satisfactory rating on professional audits) and must partly be attributed to the level of full-time dentists (61 percent) compared with the other professional staff (tables 2 and 3).

With controls such as a designated professional director, a daybook, hours of service that promote accessibility, appointment systems emphasizing fixed followup and referral appointments, formal emergency and backup facility arrangements, functional record systems, and a minimum acceptable number of full-time primary practitioners, the adequate delivery of care noted in a number of SPFs should become more evident in general.

Implications

Configurations such as shared professional facilities exemplify likely provider behavior when financial constraints are lifted on consumer access to health care services, particularly in ghetto areas or where there is a dearth of service sources. The concern of all parties must be the quality of the delivery of care and not an abstract polemic on the delivery of health services in the urban ghetto. SPFs may well fill a gap that more traditional institutions and providers have either failed or chosen not to satisfy. To insure the effectiveness of SPFs, however, standards are needed for the delivery of care and the monitoring of provider performance.

To achieve acceptance and enforcement of governmentally defined standards, the professions at which these standards are aimed and consumer representatives should participate in developing the guidelines. Initial emphasis should be on criteria that apply to professional activity in either the individual private practice or the group practice setting in order to focus discussion on standards rather than on the issue of whether or not shared professional facilities are group practices. Particularly important in this regard are appointment systems, arangements for emergency care, transfer agreements with inpatient institutions, and well-documented medical records.

Regardless of legislative intent, second-order consequences such as the provider behavior reported here are still possible. Given this potential, government must assume the responsibility for regulation.

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Unanticipated second-order consequences of health programs when financial constraints are lifted may become manifest in both consumer and provider behavior. While consumer behavior in such programs has been well studied, little attention has been directed to provider behavior when there is increased demand for care.

In New York City more than 300 shared professional facilities (SPFs) have opened in ghetto areas to provide services to medical assistance (Medicaid) eligibles. While the SPFs vary greatly, the New York City Health Department has developed the following definition: "Three or more health professionals providing services on the same premises and sharing a common waiting area, equipment, and/or supporting staff, one or more of whom bills the Medical Assistance Program on a fee-for-service basis."

To assess the extent to which comprehensive, coordinated, continuous, and accessible care is provided in a sample of 32 SPFs in the boroughs of New York City, a site-visit study was conducted. Teams composed of a program research analyst, professional consultants, and a sanitarian looked at practitioner workload, management information and control systems, emergency and inpatient care linkage mechanisms, the designation and role of a professional director, the organization of record systems, the availability of full-time practitioners, and the adequacy of information recorded on patients' charts.

The results of the study suggest that a type of group practice has evolved which is based on a pecuniary relationship with little in the way of professional and managerial controls. To assure effective delivery of care, a designated professional director, a daybook, hours of service that promote accessibility, appointment systems, emergency and backup facility arrangements, functional record systems, and a minimum level of full-time practitioners are needed.

An Inexpensive Methodology for Immunization Surveys

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AN INEXPENSIVE methodology for performing accurate immunization surveys has been developed by the Tennessee Department of Public Health. It is described here in sufficient detail to enable public health agencies to perform such surveys even if they have limited personnel and limited access to consultants and libraries.

Approximately half of Tennessee's population of 4 million lives in 4 metropolitan areas; the

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other half is distributed throughout the State. All 95 county health departments in the State provide some scheduled clinic time for immunizations. In the past, however, the information that we collected from these county health departments provided only the age and race distribution of the children given immunizations by each local health department. Although this distribution is helpful, it can be misleading because each department gives immunizations to nonresidents, and children in each geographic area receive some immunizations from providers other than the local health departments. Thus, we still needed to know what the immunization levels were in any given county.

Therefore, we in the Tennessee Department of Public Health decided to conduct county-specific immunization surveys of 2-year-olds. We knew that by applying sound sampling techniques and by accounting for all children in the sample, the survey could provide the information we needed. Once a survey was completed, we wanted to be able to state with predefined accuracy the immunization levels and sources of immunizations of 2-year-olds. We also wanted to see if it was possible to preselect from birth certificate information those children likely to be unimmunized by certain characteristics of their mothers and to see if we could spot clusters of unimmunized children in geographic areas so that we could focus our immunization resources in those areas.

We hoped that when the data collected showed an unacceptable percentage of unimmunized children, we could implement special immunization programs in those areas that had refused us permission to carry out such programs in the past. The basis for the refusal had often been a disagreement over what the immunization levels in the county actually were, since we were unable to accurately estimate the activity of private physicians. The disagreement would no longer hold, we believed, when we had accurate information about the extent of the participation of the private medical community.

We decided to conduct our surveys on a county-by-county basis for two major reasons. The first reason was that, after the surveys were completed, the health officer would not be able to argue that his county was not well represented by a multicounty survey showing poor immunization levels. The second reason was that the counties differ widely in (*a*) number of immunizations given per private physician per year (table 1), (*b*) number of public health clinic hours per population per week, and (*c*) percentage of target population reported immunized by county health departments (table 1).

Methodology

We developed a methodology that could be carried out by one or two persons. Our agency has limited resources and could not assign a large number of persons to this project.

The method of performing surveys of 2-year-old children in Tennessee is divided into two sections: (*a*) drawing the sample and preparing for the survey and (*b*) using the sample to obtain the immunization data.

The steps that we take to draw the sample and make it ready for use in conducting the survey are as follows:

1. The immunization section obtains from the data processing section a line listing of birth certificate information printed at random on children who will be 2 years old when we will be conducting the survey in the county. For example, we would obtain a listing of children born from January 1, 1970, through December 31, 1970, if we were going to begin our survey on January 1, 1973. These printouts contain all the identifying data we need except mothers' addresses.

2. Once we know how many children will be 2 years old at the time of the survey, we are ready to determine the size of our sample. We decided beforehand that we wanted our surveys to generate a 7½ percent precision factor at 95 percent confidence levels, assuming that the children were as likely to be immunized as they were to be unimmunized. If we were sampling the whole universe of 2-year-olds, our sample size would need to be only 178. This sample size is obtained by applying the forumla $n = \frac{T^2 \times P \times (1-P)}{D^2}$ where *n* equals the number in the sample size, *T* equals the variable associated with the confidence level (designated by the investigator, usually 95 percent), *P* equals the expected proportion of children immunized, (1—*P*) equals the expected proportion of children not immunized, and *D* equals the acceptable proportion of error. As intriguing as it might be to assess the statewide

Table 1. Immunizations given 2-year-olds by private physicians and by county health departments per year, Tennessee

County	Number of 2-year-olds	Number of private physicians	Immunizations given by—			
			Private physicians[1]		Health departments[2]	
			Number	Percent	Number	Percent
Montgomery	962	11	452	47	318	33
Greene	853	17	358	42	401	47
Rutherford	1,256	14	502	40	653	52
Putnam	657	6	223	34	263	40
Maury	692	15	194	28	415	60
Blount	1,104	17	298	27	640	58
Obion	531	15	122	23	361	68
Stewart	93	3	21	22	48	52
Madison	1,198	15	252	21	719	60
Union	162	1	28	17	104	64
Bedford	482	13	72	15	395	82
Claiborne	330	6	43	13	257	78
Macon	183	3	24	13	134	73
Robertson	496	11	55	11	397	80
Scott	329	4	33	10	227	69

[1] Includes only children who received all their immunizations from private physicians.

[2] Includes only children who received all their immunizations from the health department.

NOTE: For this table "private physicians" include both pediatricians and general practitioners.

immunization status of 2-year-olds with the sample size of 178, we would have no use for such a statewide assessment because of the wide variation among geographic areas. We obtain the needed sample size for any specific county by applying the formula $S = \dfrac{n}{1 + \dfrac{n}{N}}$ where S equals the sample size for the county, n equals the number needed if the universe were to be sampled, and N equals the number of resident births in the county during the year that the 2-year-olds were born.

3. Once the sample size has been determined, we adjust that number upward to allow for those that we expect to have moved. Our experience and the experience of school systems allow us to make this adjustment.

The children in the sample are selected by dividing the sample size into the number of 2-year-olds in the county; this gives us the number of records skipped between those picked from the line listing. For example, in a county having 1,500 age 2 children where it is determined that a sample of 150 is needed, every 10th record would be taken. For the first record, a number from 1 through 10 would be drawn at random, and then every 10th record after the first one would be taken. An Immunization Survey Data Form is then completed on each child selected from the line listing for the survey.

The information on the data form includes the birth certificate number, date of birth, and the county of birth if it is different from the county of residence. The sample is then placed in numerical order, based on the birth certificate number, to make it ready for the next step. At this point, one person has spent 2 full hours on the survey.

4. The sample forms are then taken to the vault containing original birth records, where the following information is obtained: mother's name, including her maiden name; father's name; address; race; mother's educational level; number of other siblings in the family; the month prenatal care began; and the number of prenatal visits.

The sample is then screened against the infant death register and the infant adoption register for the county to be surveyed, and those found on either register are removed from the sample. If the number of forms removed from the sample as a result of death or adoption is larger than anticipated, the child following the one originally selected from the line listing is included in the sample. We check the quality of samples by comparing the percentages of white and nonwhite children in the sample with 1970 census data. So far we have never drawn a sample which varied more than 2 or 3 percent from the census data.

5. The survey forms are then taken by our secretarial staff to the South Central Bell Telephone Company offices in Nashville, where telephone numbers are checked. The company's offices in Nashville maintain listings for all of their districts in the State and make them available for our staff's use. The secretaries first check for a listing at the address given on the birth certificate under the father's name, and, if none is found, the mother's maiden name is checked. This procedure provides us with telephone numbers for about one-half of the families before we go into the county.

6. The last action required before conducting the survey is obtaining detailed maps from the Tennessee Department of Highways of the area to be surveyed. These detailed maps make finding the houses where the children live both easy and fast.

In advance of actually collecting the data, local newspapers and television and radio stations are notified that the county is to be surveyed, and a picture of the person conducting the survey appears in the local newspapers. We feel that this helps to prepare the citizens for strangers knocking on their doors. At least to this date no one has refused to give us information.

The following are the steps in actual data collection:

1. The person conducting the survey arrives at the health department early on a morning when the immunization records are not going to be in heavy use. Each sample form is checked against the health department records, and when a record is found, the immunization status of that child is recorded on the form. Only forms containing current information are labeled complete. The proportion of 2-year-olds who have current immunization records at the health department has ranged from a low of 40 percent to a high of 77 percent. This check of health department records usually requires about 3 hours for one person to do.

2. Incomplete forms are separated into those with and those without telephone numbers.

3. The surveyor then calls the mothers of 2-year-olds for whom telephone numbers have been obtained. Immunization information is noted on the form during each telephone interview, and the form is then labeled compete. When the surveyor cannot reach a mother by telephone during the day, he calls again after 7 pm. The evening calls are more often successful than not.

4. When forms are incomplete, home visits must be made to collect the data. The surveyor (who is usually a field representative, a position which requires a bachelor's degree and 4 years of experience) usually takes one of the detailed maps and plots the sample having incomplete forms with the help of the public health nurse or sanitarian, or both. When the sanitarian or nurse does not know a location on the map, the surveyor requests assistance from post office stations. This assistance has been valuable to us in all surveys and has reduced considerably the time it would take to do the surveys. By having the sample previously plotted on the detailed maps, the surveyor is able to keep the time spent in the field getting from place to place to an absolute minimum.

When a surveyor visits a mother, he inquires about the immunization status of the child in the sample and tries to verify the data collected from the mother by looking at any records she has. If the surveyor discovers that the child is not adequately immunized, he informs the mother about the county health department's next immunization clinic.

When the surveyor fails to find someone at the address shown on the form, it is his responsibility to determine if the family has moved elsewhere in the county or is no longer living in the county. Surveyors check for addresses with agencies such as the electric, water, and gas companies, or refuse collection organizations. When the field investigation part of the survey has been completed, the records on the whole sample are complete. For the surveyor to leave the county at the end of the survey, each child in the sample must fall into one of three categories: (*a*) known immunization status, (*b*) known to have moved outside the county, or (*c*) known to be dead.

In summary, by carefully planning the work and making total use of all available time, two persons can conduct a survey in a county by working 2 full days and 1 night. This means that the whole survey, drawing the sample and gathering the data, can be done by two people in 3 days, or by one person in 5 days. The 5 man-days cost $165. Getting the survey done quickly, with no loose ends remaining, has impressed the health officers whose counties we are surveying. The process itself seems to make them realize that we know what we are doing. As a result, they readily accept the data that we get from the surveys.

Results

The surveys have provided all the information that we had originally hoped for. We have been able to (*a*) determine accurately the immunization levels of 2-year-olds, (*b*) determine the sources of the immunizations, (*c*) spot clusters of unimmunized children in a defined geographic area, and (*d*) conduct special immunization programs as a result of the surveys.

Since we did not know the immunization status of those 2-year-olds who migrated into a county, we could assume that all of them were not immunized, that they were immunized the same as the rest of the county, that their immunization levels were the same as those achieved by the health department throughout the State, that they were the same as those found in the county surveyed that had the worst immunization levels, or that they were fully immunized.

After testing the foregoing assumptions, as shown in the following example for Rutherford County, we chose the assumption that in-migrant children were immunized the same as the rest of the county.

Assuming that in-migrants' immunization status was—	*Percent immune to measles*
Same as survey sample	82
Not immunized	70
Same as State average	78
Same as worst county surveyed	78
Fully immunized	84

We discovered that immunization status makes little difference unless one assumes a fully immunized or a fully unimmunized status of children moving into a county.

After the survey data are tabulated, they are sent to the county health officer with our recommednations for special programing. Additionally, the unimmunized and inadequately immunized are plotted on a map of the county, and this information is used in locating clinic sites for special immunization programs as well as for helping us make decisions on where to focus our surveillance efforts.

The sample data are also tabulated in such a way that we can relate immune status to certain characteristics of a mother, such as her educational level, the number of other siblings in the family, the month prenatal care began, and the number of prenatal visits, as shown in table 2. The data from Rutherford County do not show the expected large difference in education or prenatal care level between immunized and nonimmunized children.

Conclusion

Immunization surveys can be completed for an entire county of any size during 5 man-days. The prevalent myth that surveys require an army of statisticians and surveyors is discredited. Data obtained from the immunization surveys have identified unmet immunization needs and stimulated action to meet the needs. The methodology described in this article can be adapted to most geographic areas where birth registration is nearly complete.

Table 2. Rutherford County immunization survey of 2-year-olds, October 1972

Immunization status	Educational level of mother (years)	Number of other siblings	Mean month prenatal care began	Mean number of prenatal visits
Completed all immunizations	11.73	0.73	3.76	8.84
Immunized by private physician	13.08	.48	3.61	8.80
Immunized by private physician and health department	11.20	1.60	3.10	9.40
Immunized by health department	10.47	.81	4.04	8.77
Did not complete all immunizations	11.16	1.75	4.47	7.34
Incomplete DTP and oral poliomyelitis, no measles or rubella	10.86	1.71	4.50	7.07

Factors Influencing Variations in Distribution of Dental Manpower in an Urban Area

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HUMAN ECOLOGISTS, urban planners, and other social scientists have been concerned with the factors associated with the distribution of human activity in time and space. A rather large body of literature exists on why certain forms of social organization tend to develop more readily in some geographic areas than others or to distribute in different patterns throughout the nation. Several theoretical constructs have been devised to explain variations in the distribution patterns for all types of industries, institutions, and organizational forms.

These theoretical perspectives have been applied to the study of service industries to demonstrate that tertiary industries that sell products directly to the ultimate consumers will locate where the consumers are. More specifically, service industries tend to concentrate and prosper in areas having sufficient population density and where the educational and income levels of the population are relatively high (*1–3*). This perspective applies also to medical and dental services.

National and regional studies on the distribution of medical and dental services have been conducted by Marden (*4*), Rimlinger and Steele (*5*), Tryon (*6*), and Boudreau (*7*). The findings of these investigators indicate that physicians and dentists are distributed in patterns similar to population size, per capita personal income, education, and other socioeconomic characteristics. Generally, the supply of medical manpower varied directly with the size and socioeconomic status of the populations in the areas studied.

Although several intrametropolitan studies (*8–10*) found that in some areas population size and characteristics account for a sizable proportion of the variance in the distribution of health services, the results of these and other studies suggest that other factors may have some impact on distribution. In fact, urban land use, transportation, and other economic and geographic factors may be more important in determining where health services locate than the variables traditionally used in urban analyses.

Distribution of Dental Services

A variety of variables have been used in numerous studies of factors influencing the distribution of dental services; however, none have attempted to simultaneously compare the relative influence of demographic, socioeconomic, and ecological variables. Therefore, the present study was undertaken to accomplish this task.

This study expands on earlier efforts to explain variations in the intra-urban distribution patterns of health services. It focuses on dental services and attempts to provide empirical support for the general proposition that factors such as land use and transportation are far more important in explaining variations in the intra-urban supply and distribution of dental services than population size, density, and general characteristics. Other investigators have shown that differences among census tracts regarding the location of dental services can be attributed to the socioeconomic characteristics of the populations residing in the tracts. My view is that this is not the case in urban areas, and that locational decisions are often based on factors such as the availability

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of offices, public transportation, and parking rather than knowledge of the characteristics of the population residing in the vicinity of the site being considered for a dental office.

To support the preceding proposition, I (*a*) describe the intra-urban distribution of dental services for a single metropolitan area, (*b*) relate these patterns to selected social and environmental characteristics of specific geographic subunits, and (*c*) statistically examine the proposition that dental services tend to cluster in areas where other services, especially health services, are located and that this clustering phenomenon is more directly related to environmental factors such as land use, convenience, and access than population characteristics.

Study Methods

The study was conducted in the Hartford, Conn., Standard Metropolitan Statistical Area (SMSA). All data were obtained from secondary sources. Information on dental manpower was taken from official documents of the Connecticut State Dental Commission and compared with local telephone directories to reduce registration errors. Data on the population and its social and economic characteristics were obtained from 1970 census records and local agencies which had compiled statistics for various reasons. Finally, data on transportation and land use were obtained from local planning and transportation agencies.

Three variables used in this study were selected on the basis of previous studies, and several new variables were introduced to facilitate the present analysis. For example, percentage nonwhite, population density, and ratio of dentists to population have been used previously; however, for this study they are used somewhat differently, according to a method developed by Stockwell (*11*). On the other hand, new variables depicting land use and transportation were developed specifically for this study. The following are the variables used, their abbreviations, and their operational descriptions:

Business use (BUS): percent economic activity devoted to business use (computed from land use records)

Transportation (TRANS): number of bus trips per day passing through census tract (computed from bus company records)

Socioeconomic status (SES): composed of occupational level, family income, and educational level (areas ranked according to relative score)

Percent nonwhite (PNW): taken directly from census records

Residential office (RO): percent activity devoted to residential office use (computed from land use records)

Industrial (INDUS): percent activity devoted to industrial use (computed from land use records)

Population density (DENS): density per square mile (taken directly from census records)

Commercial (COMM): percent land use devoted to commercial purposes (computed from land use records)

Residential (RESID): percent land use devoted to residential purposes (computed from land use records)

Dentists (RATIO): ratio of dentists to population (computed from manpower reports)

The census tract was the unit of analysis used in this study. There were two reasons for this choice: (*a*) census tracts provide a convenient source of data from census records and a simple method for coding and arranging other variables and (*b*) the census tract is a widely used unit of analysis for urban ecological analyses.

In addition, the analysis was limited to the town of Hartford, rather than extended into the other towns in the Hartford SMSA. Hartford is the capital of Connecticut and the major retail trade and business center for its 27-town SMSA, and as such it represents the core city. The city's principal industries are insurance, banking, food processing, and manufacturing. It has four major hospitals and a variety of health care facilities.

The primary reason for focusing this initial study on one town was the limited source of data on some of the variables selected for analysis. In subsequent studies, it may be desirable to obtain the same type of data for the entire SMSA. The present analysis, however, is limited to the 49 census tracts in Hartford.

Specific analysis included simple correlation and regression techniques. Zero-order correlation coefficients were used to determine whether the nine independent variables were actually associated with the supply of dentists and whether these associations were in the predicted direction. A hypothesis was considered to be supported if the correlation coefficient between an independent variable and the supply of dentists was non-zero and the sign was in the predicted direction. Second, beta weight analysis was used to determine the relative influence of each independent variable on the supply of dentists. Beta weights are standardized regression coefficients that are commonly used to compare the direct effects of each independent variable on the dependent variable. In addition, the standard errors of the betas were analyzed to provide some indications of how much confidence could be placed in the betas obtained. Furthermore, the ratio of beta to its standard errors was computed, according to a technique suggested by Hadden (*12*) in which any ratio less than 2.0 could be considered trivial. Finally, the multiple correlation coefficient was used to determine whether the nine independent variables accounted for an appreciable amount of the variation in distribution of dentists.

The distribution of dentists among the 49 census tracts varies considerably. Several tracts located in heavily industrialized and commercialized areas have no dentists. Other tracts located near hospitals and professional office buildings contain a relatively large number of dentists.

The following nine hypotheses being examined are based on the concept that dental services in Hartford are clustering in areas where transportation is adequate and land use is devoted to health care and office facilities rather than in areas where the population resides.

H_1: the greater the degree of business use in a census tract, the greater the supply of dental services

H_2: the greater the number of bus trips per day, the greater the supply of dental services

H_3: the higher the socioeconomic status of the residents in a census tract, the lower the supply of dental services

H_4: the greater the percentage of nonwhites in a census tract, the lower the supply of dental services

H_5: the greater the degree of residential office use in a census tract, the greater the supply of dental services

H_6: the greater the degree of industrial land use in a census tract, the lower the supply of dental services

H_7: the greater the population density in a census tract, the lower the supply of dental services

H_8: the greater the degree of commercial land use in a census tract, the lower the supply of dental services

H_9: the greater the degree of residential land use in a census tract, the lower the supply of dental services

Findings

A matrix of correlations among the variables used in the analysis (table 1) indicates that the hypotheses for business use and transportation and the supply of dentists are supported by the zero-order correlations. Additionally, the hypotheses for population density and residential use also receive some support. The remaining hypotheses, however, do not appear to receive any support from the zero-order correlation coefficients. These findings suggest that land use and transportation may in fact be more important determinants of dental manpower distribution than the social and demographic characteristics of the population residing in census tracts.

While the zero-order correlation coefficients reveal the existence or lack of existence of associations, such associations may possibly arise through the co-action of several variables. To determine the independent effects of each variable, beta weight analysis was used to control for the other variables. The beta weight analysis among the nine independent variables and the distribution of dentists among the 49 census tracts are summarized in table 2. Only three of the variables used in this analysis had ratios of beta to its standard error which exceeded 2. Business use and transportation showed ratios of +9 or more, while residential office use had a negative ratio of —2.55. In addition, the total set of variables explains approximately 67 percent of the variance in supply of dentists among the 49 census tracts.

Discussion and Conclusions

This study has provided empirical evidence that the availability of public transportation, zoning, and land use are important determinants of where dentists locate in a city. Both the zero-

Table 1. Matrix of correlations among variables for Hartford, Conn.

Variables	(1) BUS	(2) TRANS	(3) SES	(4) PNW	(5) RO	(6) INDUS	(7) DENS	(8) COMM	(9) RESID	(10) RATIO
(1) Business use (BUS)	1.00	.552	−.200	−.149	−.037	−.194	−.218	−.089	−.329	.740
(2) Transportation (TRANS)		1.00	−.281	−.176	.285	.006	−.254	−.047	−.510	.641
(3) Socioeconomic status (SES)			1.00	−.631	.168	−.274	−.223	−.328	.347	−.101
(4) Percent nonwhite (PNW)				1.00	−.132	.168	.098	.307	−.029	−.087
(5) Residential office (RO)					1.00	−.132	−.006	−.116	−.533	.000
(6) Industrial (INDUS)						1.00	−.262	.387	−.410	−.083
(7) Population density (DENS)							1.00	−.103	.250	−.293
(8) Commercial (COMM)								1.00	−.270	−.097
(9) Residential (RESID)									1.00	−.310
(10) Dentists (RATIO)										1.00

Table 2. Summary of multiple regression and correlation analysis among nine independent variables and the supply of dentists for Hartford, Conn.[1]

Variables	Standardized regression coefficient (beta)	Standard error of beta	Ratio of beta to standard error
(1) Business use (BUS)	[2] .603	.061	9.89
(2) Transportation (TRANS)	[2] .525	.053	9.91
(3) Socioeconomic status (SES)	.159	.093	1.71
(4) Percent nonwhite (PNW)	.141	.072	1.96
(5) Residential office (RO)	[2] −.130	.051	−2.55
(6) Industrial (INDUS)	.095	.062	1.53
(7) Population density (DENS)	.077	.041	1.88
(8) Commercial (COMM)	−.036	.044	−0.82
(9) Residential (RESID)	−.052	.046	−1.13

[1] Coefficient of determination (R2) = .669

[2] Beta exceeds its standard error by a factor of 2.0 or more.

order correlation coefficients and the beta weight analysis tended to support the hypothesized relationships. These findings indicate that dentists in Hartford are selecting locations which are convenient to public transportation and where facilities are available for the practice of dentistry. The dentists do not appear to be locating in densely populated areas or areas zoned for purposes other than business; they also seem to be avoiding areas zoned for residential office use, as indicated by the beta weight analysis.

One explanation for these findings may be that dentists in Hartford are providing services for population groups living outside of the town. In fact, in a recent survey it was found that 46 percent of the patients of Hartford dentists were from outlying towns (*13*); this may be one reason why these dentists select locations convenient to transportation. However, it does not explain the strong association found in the present study between public transportation and the supply of dentists because the buses in Hartford serve only local population groups.

The strong association between land use and the supply of dentists is not surprising. Dentists and other professionals often seek locations where adequate facilities are available and where other professional colleagues are practicing. It is particularly important that prospective dental office sites have adequate electrical and plumbing systems to support the special needs of dental operatories. Thus, buildings designed to accommodate these needs are more desirable.

As predicted, the social, demographic, and economic characteristics of the census tracts are not associated with the supply of dentists. This finding supports the concept that location decisions are not necessarily based on considerations of the population residing in the immediate vicinity of the dental practice as well as the observations of others regarding the decline of neighborhood professional practices and the growing trend toward clustering and centralization of health professionals in certain areas of a city. Physicians' offices are usually clustered around hospitals and clinics, and the same appears to be true of dental practices.

Although the findings from this study lend support to the hypothesized relationships described, it is recognized that generalizations to other cities and towns cannot be made until further studies are conducted. It is also recognized that a census tract analysis within a medium-sized city has certain limitations. Regardless of the limitations of the present study, it has demonstrated that ecological and urban geographic factors need more consideration when analyses of the distribution of dental manpower are performed.

The findings of the present study suggest that future analyses should focus more attention on the distribution patterns for dental services in terms of their relative accessibility to patients by public transportation lines and to the implications of centralizing dental care facilities within national or planned service areas. The town of

Hartford appears to represent the center of a dental service area which draws patients from outlying towns. Although one could argue that dental services should be distributed according to population density, this should not be the only factor.

Analysis such as the one performed in this study could be used as a basis for determining how local dental manpower might be more equitably distributed to make it accessible to all population groups. For example, if we find that the availability of public transportation is not associated with the supply of dentists, attention could then be focused on either providing transportation or placing dentists in locations which are more convenient to the population. Further, if we find that dentists are not locating in areas where zoning regulations deter the location of dental practices, then we could recommend zoning changes. Finally, if we find that dentists are locating primarily in high socioeconomic areas, rather than in high density areas, or in areas where their practices are most accessible, then changes in their distribution patterns could be recommended.

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A study was conducted which simultaneously examined the influence of demographic, socioeconomic, and ecological variables on variations in the distribution of dental practitioners among census tracts in Hartford, Conn. Data were obtained from secondary sources and categorized by census tracts. Nine hypotheses were formulated and examined by multiple correlation and regression techniques. Independent variables included five measures of land use (business use, residential office, industrial, commercial, residential), transportation, population characteristics, and population density. Four of the hypotheses were supported in the simple correlation analysis, but only three were supported in the beta weight analysis. Also, the total set of nine independent variables explained 67 percent of the variance.

It was concluded that land use and transportation have more influence on variations in the distribution of dentists in Hartford than population density or composition or socioeconomic characteristics. The inconsistency of these findings with those from other studies suggests a need for more attention to the influence of ecological factors in the study of manpower distribution patterns in future research and planning.

Impact of Medicaid and an OEO Health Center on Use of Dental Services in an Urban Area

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THE CONCEPT OF ACCESS to adequate health services as a basic right for all instead of a privilege of only those who can afford it is increasingly reflected in public policy decisions related to health care. This concept has significantly influenced recent allocations of public funds to support health facilities such as neighborhood health centers (NHC) and health care payment mechanisms such as the Medicaid program. As a result of the neighborhood health centers and Medicaid, and because of general increases in the standard of living, social class differentials in the use of medical care services have been steadily decreasing (*1–4*).

Nationally, this trend toward more equal utilization of health services has been less pronounced for dental care (*5,6*). Since both neighborhood health centers and Medicaid provide medical and dental health service benefits for the poor, the question why socioeconomic differentials have persisted for dental care needs closer examination.

In this paper we report observed changes in social class differentials in use of dental health services in an urban community in upstate New York over a 4-year period, 1967–71 and offer an explanation for the persistence of these differentials.

In an earlier paper (*7*) we presented findings from the first Household Survey of the Rochester Child Health Studies. The findings, documented

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in great detail, indicated that socioeconomic differentials account for most of the variations (in addition to age differences) in the use of dental care. In fact, in no other area of health care utilization examined in the Rochester Child Health Studies did we find such strong and clear-cut relationships with socioeconomic status. Compared with national averages, the utilization rates for our community were considerably higher, probably reflecting the highly skilled industry and above national average income.

The initial 1,000 family survey of 1967 was followed by a 500 family survey in 1969 (*8*) and by a final 1,200 family survey in 1971 (*4*). The first and last samples were based on address files. Families with children under 18 years old were selected from these files. The 1969 survey used as a sampling frame the enrollment lists of Medicaid and Blue Cross (family contracts). Medicaid recipients were intentionally overrepresented. Although weight factors were employed in this analysis to correct for the bias, we still cannot consider the 1969 sample completely comparable to the samples used in the 1967 and the 1971 surveys.

The wording used in the dental care section of the 1969 and 1971 questionnaires was identical, but differed somewhat from that used in the 1967 survey. It started with the simple "When did (child's name) *last* see a dentist?," then inquired about the name of the dentist or clinic, the reason for this last visit, whether the child goes for routine checkups and if so, how often. Details about the means of transportation used to reach the dentist or clinic and the time required to do so were obtained in the 1967 survey, but not in the later ones. Also, for children, contacts with the school hygienist were not counted in the later surveys as a dental visit, as was done in 1967. Dental visits were then limited to visits to a dental office or clinic without regard to who delivered the services—the dentist or hygienist. Thus, prophylaxis, examinations, and X-rays given by the dental hygienist in the dentist's office or clinic were regarded as a visit.

Socioeconomic differentials were assessed by comparing utilization patterns of respondents living in different areas of the county. Each address was coded by census tract. The census tracts were then grouped in five categories from lowest to highest, based on a combined ranking by median house value, median family income, median number of years completed in school, and percentage of work force in professional occupations.

Findings

Time interval since last visit. Table 1 presents findings on the percentage of respondents who reported a dentist visit within the 12 months preceding the interview. In 1967 and 1971, 46 percent and 31 percent, respectively, of the children from the lowest socioeconomic area had made a dental visit within the past year in contrast to 88 and 79 percent in the highest socioeconomic area. For mothers, the 1967 and 1971 percentages were 45 and 58 percent in the lowest area and 84 and 87 percent in the highest area.

There was no clear trend toward a more equitable distribution of dental care services by social area over the 4 years. For children, the proportion who saw a dentist declined. Some of this decline is a result of the 1967 definition of dental visits for children, which included seeing dental hygienists at school, frequently the only dental contact

Table 1. Percentage of children (age 3 and over) and mothers who visited a dentist during preceding 12 months, by socioeconomic area, Monroe County, N.Y.

Socioeconomic area	Children			Mothers		
	1967 (N=1,955)	1969 (N=2,155)	1971 (N=2,515)	1679 (N=1,355)	1969 (N=923)	1971 (N=1,134)
Highest	87.8	77.9	78.8	83.7	77.5	86.9
High	69.4	74.8	69.0	69.7	66.7	79.2
Medium	68.9	64.5	63.8	62.2	61.2	69.1
Low	44.0	42.9	44.1	38.0	41.7	48.9
Lowest	46.2	27.7	31.0	45.0	41.1	58.4
All areas	66.8	65.7	62.7	61.8	62.8	71.8

NOTE: Numbers of mothers and children for 1967 and 1969 are slightly inflated because of weight factors. For 1971, the numbers are self-weighting samples.

Table 2. Percentage [1] of children (age 3 and over) and mothers visiting a dentist at a clinic [2] on the last visit, by socioeconomic area, Monroe County, N.Y.

Socioeconomic area	Children			Mothers		
	1967	1969	1971	1967	1969	1971
Highest	0.4	0.9	1.1	...	...	...
High	2.7	4.7	2.5	1.9	...	1.5
Medium	2.0	4.8	6.3	3.2	.6	3.4
Low	13.0	36.7	24.5	1.5	17.1	18.1
Lowest	46.2	80.4	53.0	...	55.0	36.0
All areas	4.2	8.4	7.5	1.9	3.5	5.1

[1] Missing values (all years) and school hygienist (1967 only) excluded for percentage computation.

[2] Hospitals, Eastman Dental Center, and neighborhood health center.

for many children from low income families in any given year. For maternal care, where the definition of a dental visit was comparable in all surveys, there was an overall increase in the percentage seeing a dentist, from 62 percent in 1967 to 72 percent in 1971. Although this increase was observed across all socioeconomic areas, its highest magnitude occurred in the lowest and low socioeconomic areas.

Type of facility. Traditionally, increases in use of medical care by the poor have not come through the private sector. Thus, the proportion of medical care, especially child and maternal care given at public clinics, in hospital outpatient departments and emergency rooms, or in health centers, has steadily increased over recent years. The data obtained in this study suggest that dental care utilization is lagging behind in this respect (table 2). While only 80 percent of the ambulatory medical care contacts for children in Monroe County are now in the private sector (*9*), about 92 percent of the last dental care contacts are still in the private sector, although the trend is also toward a greater involvement of the public sector.

Since children have always had more access than adults to dental health services at clinics in Rochester (Eastman Dental Center), it is not surprising that the proportion of mothers using clinic services in the lower income areas showed a greater increase than that for children after the NHC and expanded hospital service programs began. About 5 percent of the dental visits of mothers were to clinics in 1971 in contrast to only 2 percent in 1967.

Reason for last visit. Socioeconomic characteristics determine not only the frequency of dental visits and their place of delivery, but also the type of care received (table 3). About 60 percent of all child and 50 percent of all maternal visits were for preventive services, with little change between 1967 and 1971; large differences continued to be observed among socioeconomic areas. In 1971, only 34 percent of the dental visits of children from the lowest socioeconomic area were for preventive services in contrast to about 70 percent of those from the highest socioeconomic area. For similar maternal socioeconomic groups, these proportions were 23 percent in the lowest and 58 percent in the

Table 3. Percentage of children (age 3 and over) and mothers visiting a dentist for preventive reason on the last visit, by socioeconomic area, Monroe County, N.Y.

Socioeconomic area	Children			Mothers		
	1967	1969	1971	1967	1969	1971
Highest	73.9	66.0	70.2	61.3	57.9	58.3
High	63.7	63.1	65.3	53.3	47.9	56.5
Medium	65.3	55.7	59.6	46.1	40.7	53.4
Low	59.2	48.9	43.9	28.6	27.5	24.1
Lowest	56.3	39.8	33.8	15.9	8.7	23.2
All areas	65.3	58.8	60.5	48.1	43.2	50.1

Table 4. Percentage of children (age 3 and over) and mothers visiting a dentist for emergency reason on the last visit, by socioeconomic area, Monroe County, N.Y.

Socioeconomic area	Children			Mothers		
	1967	1969	1971	1967	1969	1971
Highest	6.1	4.1	0.7	4.2	5.9	3.5
High	5.8	1.8	.8	7.7	9.2	7.4
Medium	5.8	5.0	3.8	11.9	11.8	11.4
Low	15.0	11.2	12.2	30.0	33.7	18.0
Lowest	21.2	31.5	10.3	25.0	48.1	23.2
All areas	7.4	5.2	3.4	11.4	13.3	10.3

highest group. Data on the proportion of emergency visits are presented in table 4. Although the proportion of child emergency visits may have declined (from 7 to 3 percent), the difference between areas as to the proportions of emergency visits remained about the same.

Discussion

Study data. The greatest changes observed during this study relate to the two lower socioeconomic areas. From 1967 to 1971 the decline in the percentage of children with a visit in the preceding 12 months is largely attributable, as noted previously, to a change in the definition of a dental visit. The decline in the proportion of preventive visits is also related to the exclusion of the school hygienist visit. Several factors may be associated with the more equal distribution of maternal visits: (*a*) the availability of dental health service benefits under the Medicaid program, (*b*) the availability and accessibility of dental service at the NHC, and (*c*) the expansion of hospital dental service programs in the area.

An interesting finding in this study was the increase in the proportion of clinic visits made by low income groups. Despite declines in these visits between 1969 and 1971, following rather dramatic increases between 1967 and 1969, the increases were still substantial. Again, some of these results may be artifacts of the methodology, such as the special sampling frame chosen in 1969, but they probably also reflect some real changes.

The 1969 increases may be ascribed to the large number of persons eligible for Medicaid benefits up to April 1968 before the first change in Medicaid legislation in New York State, the high percentage of persons who applied for Medicaid and received dental care under this program (*10*), and the accessibility of dental services at the new NHC as well as in expanded hospital-based dental programs. The declines noted in 1971 may largely stem from the change in Medicaid legislation in 1969, which reduced the number of eligible persons and the scope of services and changed the reimbursement schedule to private practitioners (*11*).

Our basic finding is that socioeconomic differences in utilization rates persisted throughout the study period, although the NHC and expanded hospital and Medicaid programs seem to have had some effect on the pattern of use of dental health service by low income persons in Rochester. Better access to care and less emergency care seem to have been major improvements. The responsiveness of the care system to changes in Medicaid regulation, such as in fee schedules and eligibility criteria, is remarkable.

Future direction. Social inequality is still primarily responsible for the lack of parity in use of dental health services across population groups. To obtain this parity through the abolition of social inequality is probably utopian, but to reduce its impact through special programs in selected fields such as health care is probably realistic. However, the efforts made in this direction up to now have been insufficient.

Plans to move further in this direction are underway in Rochester; the NHC program will be expanded from one to four centers. Medicaid will have a capitation plan covering dental care services for low income persons while a new prepayment plan marketed by Blue Shield will cover similar benefits for the employed population. Since these programs only reduce financial barriers, health facilities delivering care must continue to work toward the realization of the opportunities by extending their programs. These programs should include (*a*) outreach, (*b*) readily available and accessible clinic services, (*c*) comprehensive care, (*d*) continuous monitoring of patient and provider satisfaction, (*e*) career ladder programs for auxiliary personnel, and (*f*) an appropriate health education program.

In 1975, a new survey will examine the effect of the expanded health center program and new prepayment plans. In addition, the survey will monitor the level of patient and provider satisfaction and the effect of a health education program on patient motivation toward dental care. This research will provide valuable information on the remaining nonfinancial barriers between dental health services and the poor (*12,13*).

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The impact of two new health programs—Medicaid and neighborhood health centers—on the use of dental health services in Rochester, N.Y., was investigated over a period of 4 years, 1967–71. Data collected in 1966 on a 1 percent probability sample of young families with children were used as baseline information for determining the level of this impact over the study period.

Generally, findings in this study demonstrate that even when financial barriers are removed, social class stratification persists as an important determinant of the pattern of utilization of dental health service.

The specific results of the study showed that (*a*) the greatest changes in the use of dental health services occurred among residents from the lower socioeconomic areas, (*b*) the proportion of mothers' visits increased overall while the proportion of children's visits was less affected, (*c*) mothers' visits to clinics increased significantly, from less than 1 percent in 1967 to 36 percent in 1971 (lowest socioeconomic area), but less significantly for children of the same socioeconomic standing, from about 46 percent to 53 percent for the same time period, and (*d*) emergency visits for both children and mothers declined; again, the greatest declines were observed for residents of lower socioeconomic areas.

Associations Between Coronary Mortality and the Weather, Chicago, 1967

EUGENE ROGOT

STUDIES DEALING specifically with coronary mortality as related to weather are rare, even though coronary heart disease (CHD) is the leading cause of death in the United States. The few studies that have been published appear to only touch the surface. The data collected are often by season or month, only rarely by week, and almost never by day, and the numbers involved are often too small to permit any sort of statistical analysis in depth. Also, the areas chosen for study and the periods covered may be such as to completely bar investigation of certain topics. This study for Chicago overcomes some of these obstacles. It is a sequel to one of cardiovascular mortality in Memphis (*1*) and to a related study in Chicago (*2*).

In the Memphis study daily weather and mortality records for the 3 years 1959–61 were used to study associations of deaths and weather. The weather variable found to be most strongly associated with CHD deaths was the daily average temperature. An inverse relationship with temperature was found for coronary heart disease, whether or not respiratory disease was present. The general pattern observed was somewhat L-shaped, with the sharp change occurring between the 10 to 29° F days and the 30 to 39° F days.

The major aims of the Chicago study were to measure any excess in coronary deaths (by age, race, and sex of decedent) that was related to daily temperatures, snowfall, and other weather factors and to determine, by using data on multiple causes of death, whether any excess in CHD deaths could be linked to respiratory disease.

All deaths occurring in Chicago in 1967 were studied. The primary or underlying cause of death, as well as any contributory causes appearing on the death certificate, were coded. In all, there were 14,418 deaths due to coronary heart disease (category 420 in the Seventh Revision of the International Lists (*3*)).

Information obtained from the death certificate included the type of certifier (whether coroner or not); the month, day, and hour of death; decedent's sex, race, and age at death; and the interval between onset and death for the immediate cause of death.

Weather information for Chicago recorded at Midway Airport was obtained from the U.S. Weather Bureau for each day of 1967. This included daily temperatures, precipitation, snowfall, amount of snow on the ground, wind speed, hours of sunshine, and relative humidity.

Since multiple-cause coding was used, deaths could be tabulated in a number of different ways. Significant for this investigation was the presence of a respiratory disease along with coronary heart disease.

Results

By way of background, figure 1 shows the deaths from the major cardiovascular (CV) diseases according to the daily average temperature. For all CV diseases (categories 330–334, 400–468) and for coronary heart disease, clear-cut relationships to temperature of a generally inverse nature are evident; for stroke (categories 330–334) and for the remaining CV diseases, no clear-

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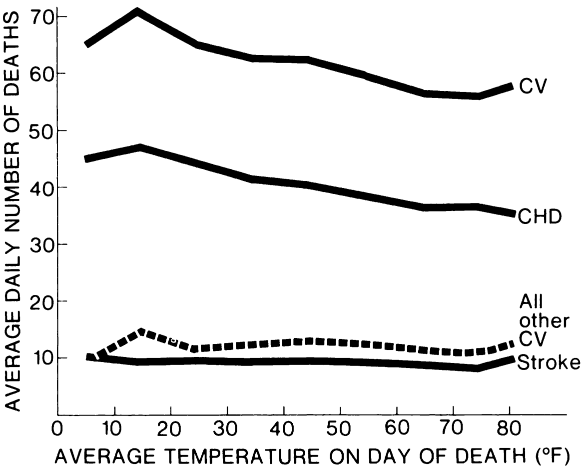
Mr. Rogot is a statistician with the Epidemiology Branch, National Heart and Lung Institute, National Institutes of Health. This article is based on a paper he presented at a seminar in environmental physiology held at the John B. Pierce Foundation, New Haven, Conn., November 15, 1971. Tearsheet requests to Eugene Rogot, National Heart and Lung Institute, Room C-829, Landow Bldg., 7910 Woodmont Ave., Bethesda, Md. 20014.

Figure 1. Average daily deaths from cardiovascular diseases by average temperature on day of death, Chicago, 1967



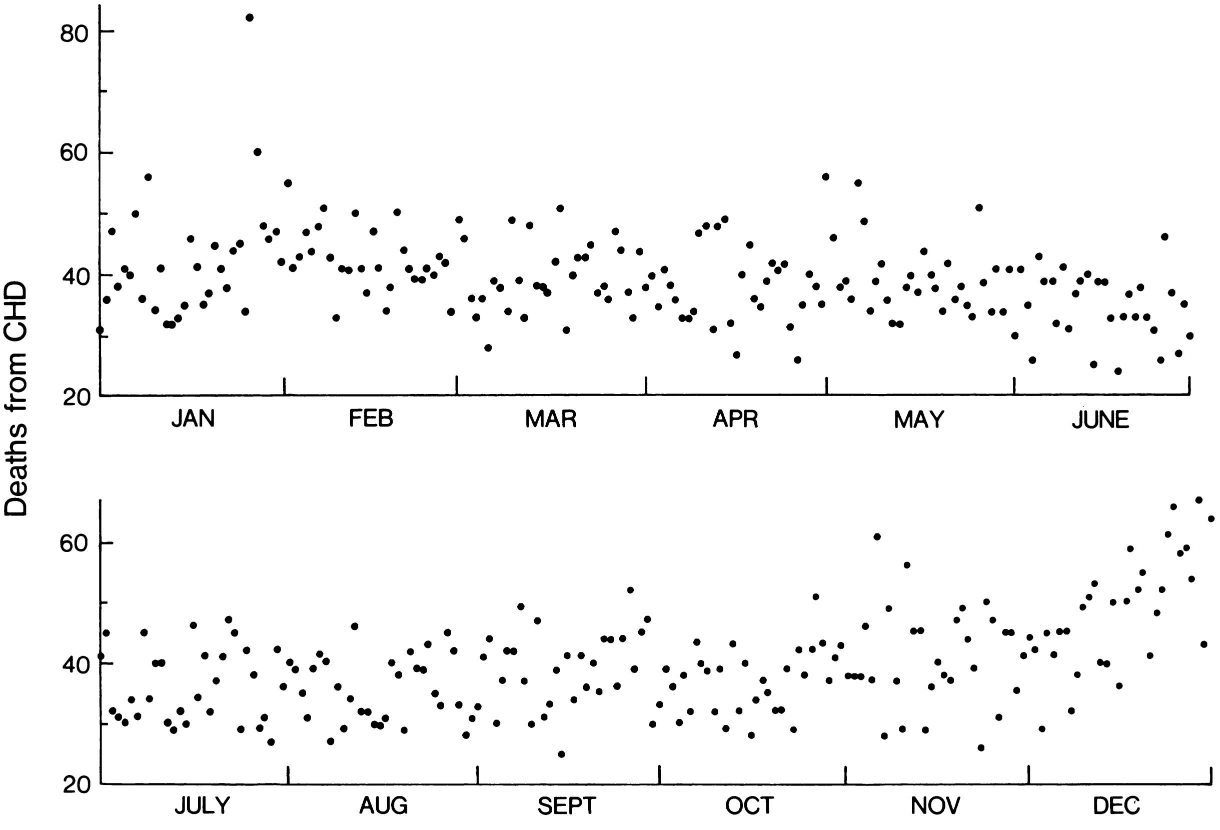
NOTE: CV—ICD (7th revision) 330–334 and 400–468; CHD—ICD (7th revision) 420; Stroke—ICD (7th revision) 330–334; All other CV—ICD (7th revision) 400–416 and 421–468.

cut relationship to the daily temperature emerges.

Unlike the earlier Memphis study (*1*), in which an L-shaped pattern was observed, the average daily number of deaths from coronary heart disease in Chicago has a straight-line relationship with daily average temperatures. Mortality was highest for days under 20° F, averaging 45–47 deaths per day, while for days with temperatures in the 80s there was a low of 35 deaths per day.

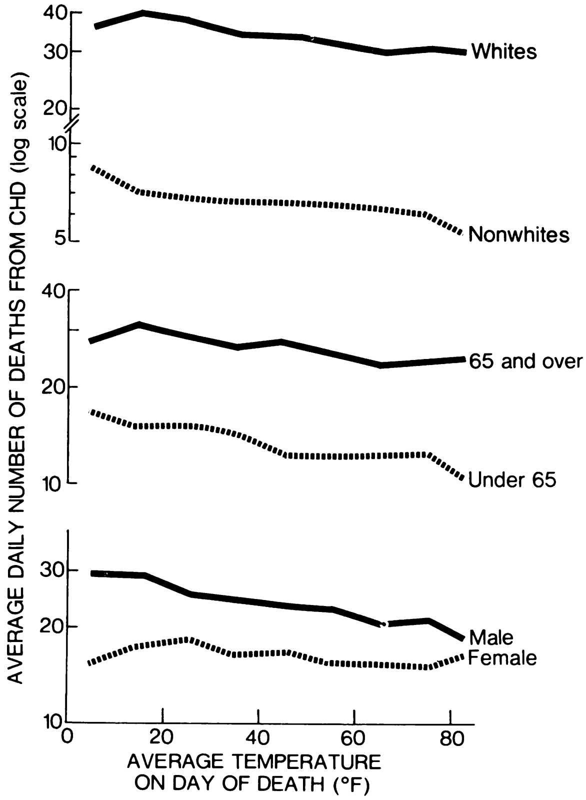
Figure 2 shows the daily deaths from coronary heart disease. There was considerable day-to-day fluctuation in the number, ranging from a low of 24 for June 18 to a high of 83 for January 26, with an average of about 39 per day. The high of 83 deaths occurred on the first day of a record blizzard and was followed by 60 deaths on the second day of the storm. There were clusters of consecutive days with high or low mortality (fig. 2), the most striking one being a succession of 15 days at the end of the year with a total of 829 coronary deaths. In this period an average of 55 deaths occurred per day, which was about 40 percent above normal.

Figure 2. Daily deaths from coronary heart disease, Chicago, chronologically for 1967



NOTE: Coronary heart disease (CHD)—ICD (7th revision) 420.

Figure 3. Average daily deaths from coronary heart disease by race and average temperature, age and average temperature, and sex and average temperature, Chicago, 1967



In figure 3 the CHD deaths by daily average temperature are shown separately by decedents' race, sex, and age. These deaths were plotted on semi-log paper in order to make a more compact set of graphs and also to facilitate comparison of the percentage changes in mortality with temperature as indicated by the slopes of the curves. The pattern for whites appears to be generally similar to that for nonwhites; also, the under 65 and 65 and over groups show essentially similar patterns. A comparison of the patterns for males and females indicates a basic difference. For males there is a strong fairly consistent inverse relationship between CHD deaths and temperature; for females no clear or consistent relationship is seen.

In table 1 the average number of deaths per day from coronary heart disease according to precipitation and average temperature is presented in the top righthand section. Here the cutoff points for the temperature groups divide the year into three nearly equal parts. For days with an average temperature under 41°F, the CHD mortality was highest for days with snowfall, next highest for days with rain, and lowest for the remaining days. For each of the other two temperature groups, the days with rain averaged somewhat more deaths than days with no rain.

FIGURE 3 NOTE: Coronary heart disease—ICD (7th revision) 420.

Table 1. Average daily coronary heart disease deaths for selected weather variables, Chicago, 1967

Weather variable	Days with average temperature Fahrenheit—			Average daily CHD deaths with average temperature Fahrenheit—		
	Under 41°	41–62°	63° or more	Under 41°	41–62°	63° or more
Precipitation:						
Snow	38	...	...	45.2	...	...
Rain	14	45	39	43.9	40.0	37.7
No rain, no snow	72	75	82	41.7	38.3	35.9
Average wind speed (miles per hour):						
Under 10	35	35	71	42.9	37.1	36.6
10–12	40	42	31	41.3	40.9	35.1
13 or more	49	43	19	44.4	38.5	38.3
Hours of sunshine:						
0–2	57	49	9	43.3	40.0	37.3
3–8	45	32	39	43.4	39.6	37.0
9–15	22	39	73	41.2	37.0	36.1
Maximum relative humidity (percent):						
Under 81	50	45	32	41.7	37.2	35.9
81–88	43	32	44	41.8	39.0	35.
89 or more	31	43	45	46.7	40.6	37.6

NOTE: Coronary heart disease (CHD)—ICD (7th revision) 420.

Table 1 also shows the mortality from coronary heart disease according to (*a*) average wind speed together with average temperature, (*b*) hours of sunshine together with average temperature, and (*c*) maximum relative humidity together with average temperature.

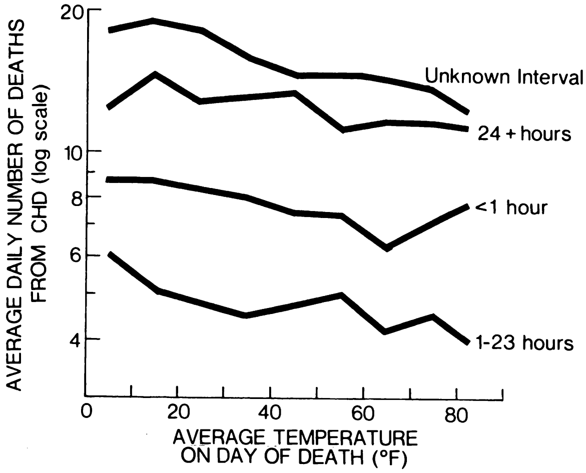
The results of controlling for the known effect of temperature upon mortality can be seen in the right half of table 1, which shows that CHD deaths vary directly with the average wind speed and the maximum relative humidity and that they also vary inversely with the hours of sunshine. In all three instances, however, the associations are only slight.

Daily CHD deaths were also studied according to the daily high and low temperatures, the amount of snow on the ground, maximum wind speed, percentage of possible sunshine, and minimum relative humidity. The results generally were similar to those already described for closely related weather variables.

In studying deaths as related to weather, "sudden" deaths from coronary heart disease may be of major importance. Here we used information taken from death certificates for the interval between the onset of illness (for the immediate cause of death) and death.

Figure 4 shows CHD mortality by average temperature separately for intervals less than 1 hour, for 1–23 hours, for 24 hours or more, and for an unknown interval. The less-than-1-hour category may be considered "sudden" CHD deaths. Although these deaths increased at higher temperatures, overall the observed patterns appeared to be fairly similar. (The last point on the line is based on only 6 days and may not be meaningful). Thus, the inverse relationship of death with temperature appears to be largely independent of the suddenness of death.

Figure 4. Average daily deaths from coronary heart disease in relation to interval from onset of immediate cause of death to death and average temperature on day of death, Chicago, 1967



NOTE: Coronary heart disease—ICD (7th revision) 420.

One aim of the investigation was to determine, by using data on multiple causes of death, whether any excess in CHD deaths could be linked to respiratory disease. In the Memphis study this question had been posed, and the answer was negative. That is, the excess in CHD deaths observed in cold weather could not be linked to the reported presence of a respiratory disease. In table

Table 2. Average daily deaths by presence or absence of coronary heart disease and of respiratory disease and by daily average temperature, Chicago, 1967

Daily average temperature (°F)	Number of days	CHD and R	CHD but no R	R but no CHD	Neither CHD nor R
1– 9	6	3.8	45.2	13.0	54.7
10–19	15	4.8	46.1	13.9	53.0
20–29	37	3.5	44.7	13.4	52.1
30–39	60	3.9	41.6	12.6	53.0
40–49	59	3.8	40.7	13.0	52.3
50–59	50	3.4	39.5	12.7	51.9
60–69	73	3.5	36.7	11.6	51.0
70–79	59	2.7	37.7	11.3	51.5
80–83	6	3.0	37.2	11.0	55.3
Total	365	3.5	40.0	12.4	52.1

NOTE: Coronary heart disease (CHD)—ICD (7th revision) 420; respiratory disease (R)—ICD (7th revision) 470–527.

Table 3. Average daily deaths from coronary heart disease by maximum relative humidity, snowfall, average temperature, and sex of decedents, Chicago, 1967

Percent maximum relative humidity	Average temperature Fahrenheit			
	Less than 41°		41–62°	63° or more
	Snow	No snow		
	Average daily deaths for both sexes			
Less than 81	38.9	42.3	37.2	35.9
81–88	45.0	39.2	39.0	35.8
89 or more	50.0	44.9	40.6	37.6
	Average daily deaths for males			
Less than 81	23.1	25.2	22.1	20.8
81–88	27.7	24.2	22.4	20.7
89 or more	31.8	25.9	24.2	21.2
	Average daily deaths for females			
Less than 81	15.8	17.1	15.1	15.2
81–88	17.3	15.0	16.6	15.1
89 or more	18.2	19.0	16.4	16.4
	Number of days			
Less than 81	8	42	45	32
81–88	19	24	32	44
89 or more	11	20	43	45

NOTE: Coronary heart disease—ICD (7th revision) 420.

2 the same question is now presented for Chicago for 1967. The results confirm those for Memphis (see column labeled "CHD but no R").

Table 3 presents the average daily deaths from coronary heart disease according to sex of decedent for the categories "temperature-snowfall" and "humidity."

Overall, the results are more striking for males than for females. The range shown for males is 21 to 32 deaths per day; for females the range is only 15 to 19. Temperature, snowfall, and humidity seem to be related to CHD mortality for males, but the picture for females differs. Snowfall does not appear to be relevant; temperature and humidity may be.

A different vantage point is afforded in table 4. Here correlations are shown for combinations of these three weather variables with CHD mortality. These correlations are based on daily values, that is, 365 points. Temperature and snowfall seem to be related to deaths of males, but temperature and humidity may be the important factors for females. Save for the humidity values, the correlations are higher throughout for males than females. *R* values in this table were obtained as byproducts from a multiple linear regression program in which 10 weather variables were included. The other seven variables were: range in temperature, precipitation, inches of snow on the ground, average wind speed, hours of sunshine, percentage of possible sunshine, and change in temperature from the preceding day. It is interesting to note that when all 10 were included, the *R* values were 0.52 for both sexes—0.54 for males and 0.27 for

Table 4. Selected correlations of weather variables with daily coronary heart disease deaths, by sex of decedents, Chicago, 1967

Independent variables	*R* values		
	Both sexes	Males	Females
1. Average temperature (°F)	—0.36	—0.39	—0.15
2. Snowfall and sleet (inches)	.35	.40	.10
3. Maximum relative humidity (percent)	.13	.06	.15
Variables 1 and 2	.46	.50	.16
Variables 1 and 3	.44	.43	.25
Variables 2 and 3	.36	.40	.17
Variables 1, 2, and 3	.50	.52	.25

NOTE: Coronary heart disease—ICD (7th revision) 420.

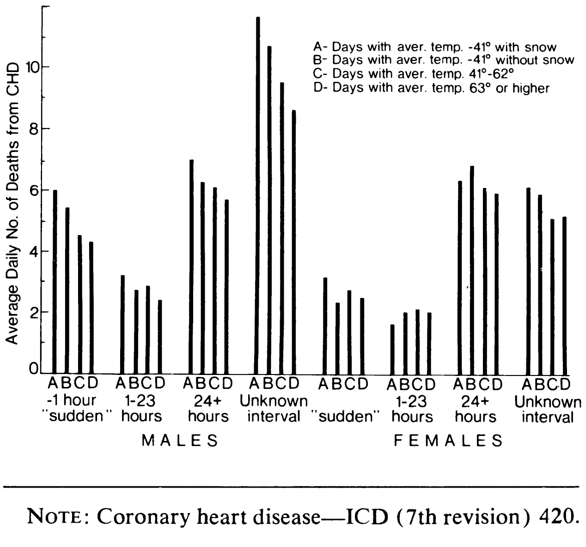
females. Thus, it appears that little is gained by adding new variables to the three with which we began.

Figure 5 presents the average daily deaths from coronary heart disease according to sex for the categories "temperature-snowfall" and "interval." As before, the patterns for males are clear cut, but those for females are not.

In figure 6 the average daily deaths from coronary heart disease are given by the categories "sex," "temperature-snowfall," and "hour of death." For the coroner-certified deaths, the time of death was not given on the death certificate. For males the observed gradient by snowfall-temperature A>B>C>D is clearly present and remarkably similar in all three groups. Also of interest here is the consistently greater number of CHD deaths occurring in the daytime as compared with nighttime. This observation holds also for females. It appears highly unlikely that the coroner-certified deaths could be so heavily biased in the direction of nighttime deaths that this result could be upset.

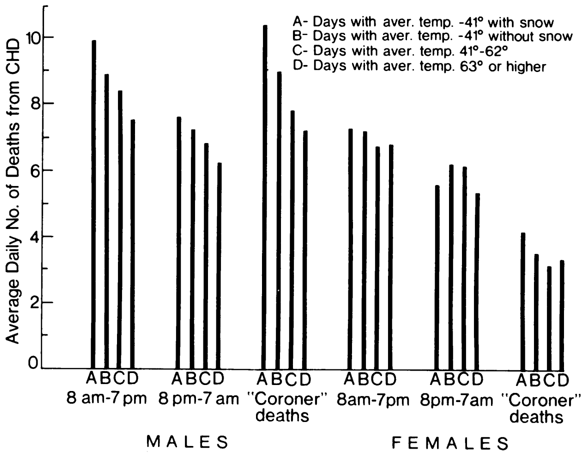
Figure 7 can now be studied in conjunction with table 5. This chart attempts to illustrate the time of "sudden" CHD deaths of males in relation to periods of snowfall for each of the 16 days with 1 inch or more of snow. For example, on January 4, 1967, according to the Weather Bureau, snow fell from 1:15 pm to 1:35 pm and again from 2:19 pm to past midnight. According to our mortality records taken from the death certificates, one man died of a sudden coronary attack between 2 and 3 am, one between 4 and 5 am, one between 11 am and noon, and one between 2 and 3 pm. Thus one death is counted as occurring during a snowfall period and three deaths as occurring outside a snowfall period, on January 4.

Figure 5. Average daily deaths from coronary heart disease by interval from onset of immediate cause of death to death, average temperature on day of death, snowfall, and sex of decedents, Chicago, 1967



NOTE: Coronary heart disease—ICD (7th revision) 420.

Figure 6. Average daily deaths from coronary heart disease by hour of death, average temperature on day of death, snowfall, and sex of decedents, Chicago, 1967



NOTE: Coronary heart disease—ICD (7th revision) 420.

Over all of the 16 days shown in figure 7, 50 deaths were observed during snowfall periods and 41 outside such periods. This result is recorded as "50 + 's" and "41 — 's" under the heading "Observed" in the lowest panel of table 5. Now, if time of death were wholly independent of snowfall, what should be expected in the way of pluses (+'s) and minuses (—'s) for the 91 deaths shown in figure 7? We simply added the total time (in minutes) that it snowed during these 16 days and divided this figure by the total number of minutes in 16 days. This operation gives an "expected" percentage—in this case 39.6. Applying this percentage to 91 yields 36.0 expected for plus (+) and 55.0 for minus (—).

Comparing the observed values with the expected (table 5), we see little difference for most groups. It is only the "male < 1 hour" (or sudden CHD deaths) category and possibly the 1–23

Table 5. Observed and expected coronary heart disease deaths by sex, interval from onset of immediate cause of death to death, and whether death occurred during a snowfall period (+) or not (—), Chicago, 1967

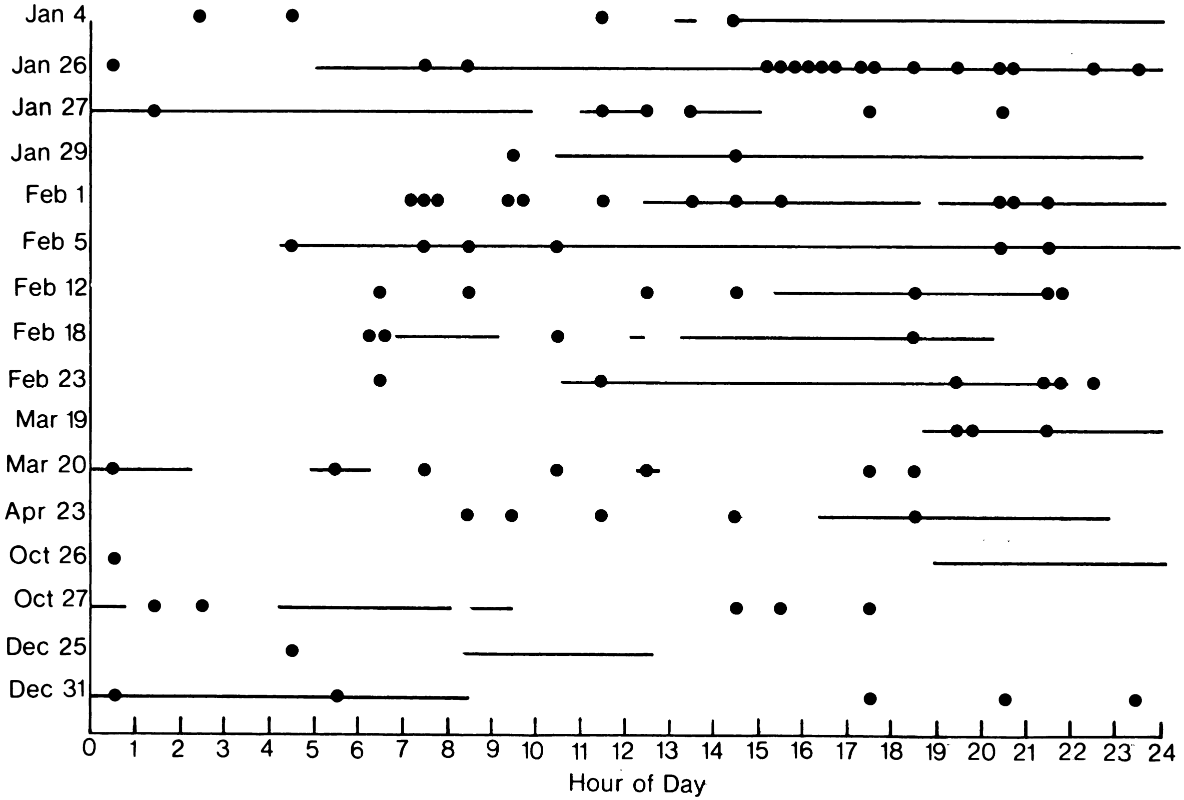
Sex of decedents and interval in hours	Observed deaths		Expected deaths [1]	
	+	−	+	−
	38 days with snowfall			
Both sexes	407	749	382.5	773.5
Less than 1	108	151	87.8	171.2
1–23	63	117	58.7	121.3
24 or more	162	344	165.7	340.3
Unknown interval	74	137	70.2	140.8
Males	242	424	219.8	446.2
Less than 1	70	94	56.1	107.9
1–23	44	77	38.9	82.1
24 or more	88	176	85.8	178.2
Unknown interval	40	77	39.0	78.0
Females	165	325	162.7	327.3
Less than 1	38	57	31.7	63.3
1–23	19	40	19.7	39.3
24 or more	74	168	80.0	162.0
Unknown interval	34	60	31.3	62.7
	22 days with less than 1 inch of snow			
Both sexes	177	445	171.0	451.0
Less than 1	38	84	33.5	88.5
1–23	27	77	28.6	75.4
24 or more	81	205	78.6	207.4
Unknown interval	31	79	30.2	79.8
Males	102	261	99.8	263.2
Less than 1	20	53	20.1	52.9
1–23	19	55	20.3	53.7
24 or more	45	110	42.6	112.4
Unknown interval	18	43	16.8	44.2
Females	75	184	71.2	187.8
Less than 1	18	31	13.5	35.5
1–23	8	22	8.2	21.8
24 or more	36	95	36.0	95.0
Unknown interval	13	36	13.5	35.5
	16 days with 1 or more inches of snow			
Both sexes	230	304	211.5	322.5
Less than 1	70	67	54.3	82.7
1–23	36	40	30.1	45.9
24 or more	81	139	87.1	132.9
Unknown interval	43	58	40.0	61.0
Males	140	163	120.0	183.0
Less than 1	50	41	36.0	55.0
1–23	25	22	18.6	28.4
24 or more	43	66	43.2	6 .8
Unknown interval	22	34	22.2	33.8
Females	90	141	91.5	139.5
Less than 1	20	26	18.2	27.8
1–23	11	18	11.5	17.5
24 or more	38	73	44.0	67.0
Unknown interval	21	24	17.8	27.2

[1] Expected numbers were derived separately for the 22-day period and for the 16-day period by applying the proportion of the entire study period in which snow fell (or did not fall) to the total deaths (with known time of death) in each "sex-interval" category. Expected numbers for the 38-day period were then obtained by addition.

NOTE: Coroner-certified deaths are omitted since time of death was not recorded on the death certificate.

Coronary heart disease—ICD (7th revision) 420.

Figure 7. Hours of "sudden" coronary heart disease deaths of males in relation to 16-day periods with snowfall of 1 inch or more, Chicago, 1967



NOTE: Coronary heart disease—ICD (7th revision) 420.

hour category for the high snowfall days for which an excess of pluses (+'s) is noted. This result would tend to support the notion that actual exposure to snowfall may be the cause of the increased mortality observed for the sudden CHD group. That this result holds only for the high snowfall days seems reasonable.

Discussion

These results can be placed in perspective by considering a general framework for their interpretation. To do this, we pose a set of questions and attempt to answer them by using data from the study.

1. Is there an association between daily temperatures and deaths from coronary heart disease (CHD)? What is the nature of this association? Direct? Inverse? Linear? Exponential? Is the association independent of the well-known seasonality of respiratory disease? What of other weather factors, such as snow, rain, wind, and relative humidity?

2. Do the associations observed for coronary heart disease hold for males as well as for females? For whites and nonwhites? For young and old? Do they hold for "coroner" deaths as well as for "noncoroner" deaths?

3. How closely can we tie any observed relationship to actual exposure to the weather? For example, is there an association between daily temperatures and sudden deaths from coronary heart disease occurring outdoors? Indoors? During the day? At night?

4. Are there any specific activities related to the weather that appear to increase the mortality risk? For example, does shoveling snow increase the risk of sudden death from heart attack?

5. How do the associations found between daily temperatures and CHD mortality tie in with observed geographic differences in CHD mortality? Do areas with one kind of climate tend to have higher CHD mortality than areas with another kind?

6. What role does air pollution play?

7. Is the association of daily temperatures and CHD mortality more pronounced in the year of an influenza epidemic?

8. What inferences can be made with respect to an association between daily temperatures and the incidence of coronary heart disease? What of other weather factors?

This study has been concerned mainly with the first two questions, which may be answered as follows. Yes, there is an association between daily temperatures and deaths from coronary disease. It is an inverse linear association and appears to be independent of the well-known seasonality of respiratory disease. The pattern for coronary heart disease holds for males but not for females. It holds for whites and nonwhites and for young and old.

When temperature is controlled, the data for CHD mortality suggest that there are more deaths on days with snowfall than on days with none and that there is a small direct relationship to the daily relative humidity. The associations hold for coroner-certified deaths as well as for noncoroner-certified deaths, as may be seen in figure 6.

With respect to the third question, the analyses of sudden CHD deaths according to the hour of death and the daily average temperature showed similar patterns for deaths occurring during the day and deaths occurring at night (these data are not shown). This result is contrary to the notion that direct exposure to the weather is relevant. On the other hand, there is a hint that direct exposure is relevant in that an inverse relationship with temperature was observed for CHD deaths of males, but not for CHD deaths of females. The assumption is that males in general spend more time outdoors than do females. Of course a special study could pin down any association between daily temperatures and sudden CHD deaths occurring outdoors.

Questions 4–8 remain unanswered, although table 5 and figure 7 give some data on CHD deaths during periods of snowfall. Many attractive areas for research remain. Each requires investigation in its own right and ideally would cover a wide number of areas and a period of years.

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ROGOT, EUGENE (National Heart and Lung Institute): ***Associations between coronary mortality and the weather, Chicago, 1967. Public Health Reports, Vol. 89, July–August 1974, pp. 330–338.***

Daily weather and mortality records for Chicago, Ill., for 1967 were used to investigate associations of coronary heart disease (CHD) deaths and weather. The weather variable most strongly associated with CHD mortality was the daily average temperature. An inverse linear relationship was observed between temperature and CHD deaths, whether or not respiratory disease was present. This pattern held for males but not for females; similar patterns were observed for whites and nonwhites and for persons under and over 65. Sudden CHD deaths showed much the same inverse linear relationship to temperature as did other CHD deaths.

When temperature was controlled, positive associations were noted for CHD mortality and snowfall. This result held for males but not for females. Also, when the temperature was controlled, there appeared to be a weak direct relationship between CHD deaths and daily relative humidity. The association between snowfall and temperature with deaths from coronary heart disease held for coroner-certified deaths as well as for noncoroner-certified deaths.

An interesting observation was the consistently greater number of CHD deaths occurring in the daytime as compared with night-

Results of detailed examination into the time of death in relation to periods of snowfall supported the notion that actual exposure to snowfall was the cause of the increased mortality observed for the sudden CHD group.

Comparison of Tasks and Activities in Physician-Medex Practices

❦

ARTHUR R. JACOBS, MD, MPH, KENNETH G. JOHNSON, MD, PAUL BREER, PhD, AND EUGENE C. NELSON, MPH

THE MAJOR PREMISE underlying the physician's assistant movement is that physicians spend too much time performing tasks which could be safely delegated to another type of worker, if that worker were properly trained and available. The MEDEX programs, previously described by Smith (*1*) and Strauss (*2*), represent one approach to the training of physician's assistants. A large number of physician's assistants have been trained and deployed through MEDEX programs.

The present study is concerned with the activities of physician's assistants of the Medex type in primary care settings. Each Medex trainee in this study received 3 months of didactic classroom training at Dartmouth Medical School and spent 1 year in apprenticeship with his preceptor-physician. The major emphasis in the didactic period is on teaching the Medex to take a complete history and skillfully perform a physical examination. In addition, the trainee is taught to follow written protocols for the management of patients with a number of common presenting complaints (*3*).

Much of the debate concerning the usefulness and appropriateness of the physician's assistant has centered around two possible roles that this worker could assume. One role is that of an assistant to the physician, someone who could gather information for the physician and carry out his instructions (*4*). The other role, often cited by those with reservations about the usefulness of physician's assistants, is that they might become relatively independent providers of medical services, involved in diagnostic and therapeutic decision making without benefit of the educational or licensing procedures required of physicians. All directors of MEDEX programs, however, are univocal in stating that the Medex will not exercise independent medical judgment because he is not qualified to do so and because he is specifically trained not to do so.

MEDEX program trainees have varied backgrounds of formal training and extensive experience in the care of military or civilian patients. All trainees share 3 months of core classroom-based experience before entering into unique preceptorships. The preceptor is given wide latitude in determining the tasks and responsibilities which his Medex will assume in the practice setting. Since each Medex has experienced a highly individualized educational process, the question of whether a Medex is, in fact, acting as a relatively independent provider is a very real one.

All the authors are with the Department of Community Medicine, Dartmouth Medical School in Hanover, N.H. Dr. Jacobs is an assistant professor, Dr. Johnson is professor and chairman, Dr. Breer is a research associate, and Mr. Nelson is an associate.

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Methods

The information reported here was generated from two instruments: a 24-hour activity log and a task inventory list, part of the "Uniform Manpower Evaluation Protocol" developed at the National Center for Health Services Research and Development, Department of Health, Education, and Welfare. Additional information on characteristics of patients was obtained from patient-contact forms maintained by the physician during the study period. All instruments were completed either by the physician before the arrival of his Medex, or several times during the preceptorship by both the Medex and the physician to document changes during the training period. Since this study is primarily concerned with providing a picture of a "finished" Medex and not with the evolutionary stages, only the data from the final collection period near the end of the training are presented.

Each physician and each Medex indicated on the activity log where and how he spent the day. Days were divided into half-hour periods, and the respondent checked whether each half-hour period was spent in his home, office, hospital, or other location and whether it was devoted to patient care, medical education, or personal matters. Respondents were instructed to maintain activity logs for 14 consecutive days in each of five collection periods. Ten physicians and all 22 Medex complied in the last period. Hourly figures were converted to percentages, and then the activity log results were averaged among all physicians and all Medex to produce a single profile for each provider type (physician and Medex) of what happens in a typical day by activity and location. The results may be somewhat biased because 12 physicians did not submit activity logs and some respondents may have recorded an entire day's activities at the end of the day rather than at half-hour intervals as requested.

If a Medex was functioning relatively independently, the profile of his day would not be expected to differ significantly from the physician's. If, on the other hand, his primary function was to gather data, he could be expected to be spending more of his working time at the physician's office than at the hospital or in the homes of patients. In addition, the Medex would log more personal time at home than the physician because his duties would require less time than the physican's functions.

The task inventory (copyright 1971, Technomics, Inc., 7405 Colshire Drive, McLean, Va.) is a list of specific, mutually exclusive tasks which cover a significant portion of the tasks attendant to providing services in a primary care setting. The respondents, physicians, and Medex reported the frequency with which each task was performed in the past month and the time required for the completion of each task. Multiplying frequency by duration produced a measure of total time spent on each task during the month in question. Twelve physicians and all 22 Medex completed task inventories at the end of the preceptorship.

To facilitate interpretation, the 460 tasks in the inventory were divided into 10 categories, and the time spent in each category was computed as a percentage of the total time. When the percentages are averaged for preceptors, and then similarly for the Medex, the two profiles indicate how each type of provider distributed his time among the tasks.

Responses to the task inventory rely entirely on the respondent's subjective perception of his activities. Accuracy primarily depends on the accuracy of the providers' perceptions. When the time spent for each task is multiplied by its frequency and the products for all tasks added together, the resulting total time is significantly more than one would expect these physicians to spend at work. A likely explanation is that the physicians record separate times for tasks that are actually being performed simultaneously. Physicians, for example, often take a history while examining a patient. Similarly, physicians often counsel patients while treating them or writing a prescription. Thus, a physician may correctly report that it takes him 10 minutes to give emergency treatment or first aid for laceration and 5 minutes to counsel and instruct the patient in the treatment regimen for laceration when in fact only 10 minutes have actually elapsed.

The task inventory categories, their descriptions, and an illustration of each task follow:

Patient handling. Physical handling of patient primarily for transport, comfort, and support: for example, prepare skin site with antiseptic before incision, suturing, treatment, or examination.

Patient instruction. Diagnostic and therapeutic instruction and counseling: for example, explain major surgical procedure to patient and family.

Patient examination. Diagnostic tests and measurements, observations, monitoring, and related tasks involving the patient (does not include clinical laboratory procedures): for example, check blood pressure.

Patient treatment. Direct application of therapeutic procedures and related tasks: for example, give emergency first aid for shock.

Treatment planning. Organizing and coordinating the direct application of therapeutic procedures and related tasks: for example, evaluate symptoms of patient complaining of shortness of breath.

Handling and preparation of medications. Receipt, storage, preservation, preparation, dispensing, and issuing medications, including related calculations: for example, answer inquiries about drug reaction.

Laboratory tests and procedures. Collection, processing, and analysis of biological specimens and environmental samples, including related calculations: for example, determining pH of gastric juice.

Training. Education or skill development, or both, of medical personnel in formal or on-the-job settings: for example, train other employees.

Administrative tasks. Complex tasks not concerned with direct patient care but required to manage, maintain, administer, and operate health care delivery systems: for example, dictate summaries of these functions.

Recordkeeping tasks. Noncomplex routine tasks not concerned with direct patient care but required for the maintenance of records, processing of forms, and simple coordination of activities: for example, maintain duty, call, or emergency roster.

As an assistant to the physician, the Medex would be expected to spend more time than the physician in data-gathering tasks that are in the categories of examination of patients and laboratory tests and procedures and less time in the areas of treatment, decision making, and counseling that are in the categories of treatment, treatment planning, and instruction of patients. Also, it would be anticipated that the physician would spend more time performing tasks in the administrative category, since these tasks often require complex management decisions concerning the operation of the practice.

During the activity log and task inventory data collection periods, patient-contact forms were maintained on the age and sex of each patient seen in the practice. This information was used to determine whether the patients seen by the physician differ from those seen by the Medex. With respect to age, it was expected that a larger proportion of patients seen by the Medex would be young, because younger patients tend to have less serious complaints and often they are brought to the physician's office for routine physical examinations and preventive care.

With respect to sex, it seemed likely that more females than males would be seen by the physician. The military and didactic training of the Medex did not include obstetrical or gynecologic tasks; hence, a large number of female patients would not be seen by the Medex. Women of childbearing age represent a sizable portion of a primary care physician's adult patients. If the Medex routinely does not see these patients, then the age and sex distribution of the patients he does see will be affected.

To determine if preceptors and Medex do, in fact, serve a different clientele, the percentage of patients in each age and sex category was computed for all the patients seen by the physician alone, the Medex alone, and by both the physician and the Medex.

Table 1. Percentage of time physicians and Medex spent, by activity log category

Activity log category	Physicians (N = 10)	Medex (N = 10)	Probability[1]
Own home:			
Medical education	1.6	2.0	ns
Personal	53.1	66.2	ns
Office:			
Business	15.9	17.6	ns
Medical education	1.3	.4	ns
Hospital:			
Emergency	2.1	1.3	ns
Routine	14.8	7.4	<.05
Patient's home:			
Emergency	.6	.1	<.05
Routine	.8	.4	ns
Travel:			
Emergency	.2	.1	ns
Routine	3.4	1.8	ns
Other locations:			
Emergency	.8	.1	ns
Routine	4.1	2.1	ns
Medical education	1.4	.5	ns
Total	100.0	100.0	....

[1] Sign test based on 10 physician-Medex pairs.
NOTE: ns, not significant.

Results

Activity log. The activities of 10 physicians and their respective Medex as reported on their activity logs at the end of the preceptorship are shown in table 1. Significant statistical differences between the activities of physicians and the Medex appear in two categories: hospital—routine and patient's home—emergency. As predicted, the Medex spends a smaller percentage of his time in making hospital routine and patient's home emergency visits. The hospital and the patient's home are areas of more independent action than the physician's office. The Medex spends more time in the office than does the physician, presumably receiving more supervision there than would be possible at other locations. As expected, there is a sizable percentage difference between physician and Medex in the category home—personal, but the difference falls short of statistical significance.

Task inventory. Table 2 shows a comparison of the task inventory data from 12 physicians and 22 Medex and represents all of the task inventories completed during the last part of the preceptorship phase of training. The frequency of each task was multiplied by the time necessary to perform the tasks in each category and summed to obtain an estimate of total time spent for that month. The sum of total time spent provided the denominator for percentages of total time spent in each of the several categories presented. The Medex in the sample spent significantly more time in examination of patients than the physicians. The physicians reported significantly more time spent in instruction of patients and in administrative tasks. The reported differences between Medex and physicians in treatment planning suggest greater physician involvement in this activity.

Table 2. Percentage of time physicians and Medex spent, by task inventory category

Task inventory category	Physicians (N=12)	Medex (N=22)	Probability[1]
Patient handling	0.1	0.3	ns
Patient instruction	17.9	14.8	<.05
Patient examination	34.3	47.9	<.05
Patient treatment	10.8	8.3	ns
Treatment planning	25.4	20.1	ns
Medications	1.1	1.4	ns
Laboratory tests and procedures	1.5	2.9	ns
Training	.8	.3	ns
Administrative tasks	3.7	.8	<.001
Recordkeeping tasks	4.3	3.3	ns
Total	100.0	100.0	....

[1] Sign test based on 12 physician-Medex pairs.
NOTE: ns, not significant.

The results of the task inventory provide a clearer picture of the activities of the Medex compared with those of a physician. The Medex is more involved in patient examination and less involved in patient instruction, treatment planning, and administrative tasks. This coincides with the role of a Medex as an information gatherer for the physician, but the differences are at a relatively low level of significance in all categories except administrative tasks. A detailed examination of the patient instruction, patient treatment, and treatment planning categories seems indicated since it is possible that preceptors and Medex not only differ with respect to the broader task categories, but also in the specific tasks making up the categories. Therefore, the five tasks reported most frequently by physicians and Medex in each of these categories were extracted. The Medex, while certainly active in each category, apparently performs somewhat different tasks from those performed by the physician (see box, p. 343).

In the patient instruction category, the role of the Medex is more that of a provider of information for the patient than of a counselor. The physician provides more of the in-depth information about treatment plans to the patient while the Medex is more involved in practical, day-to-day matters. The patient treatment tasks are less complex for the Medex than for the physician. In the area of treatment planning, an information gathering and synthesizing component for several of the tasks reported by the Medex is seen; for example, "Consult physician or nurse to obtain information or advice on patient care."

The age and sex distribution of patients seen by the physicians alone, the Medex alone, the physicians and the Medex together, and other nonphysician, non-Medex provider combinations for the 15 practices that completed patient-contact forms is shown in table 3. The findings suggest that the Medex, as expected, is seeing proportionately more children and young adults. Almost half of the patients seen by the Medex are under age 25, whereas this same age group represents little more than a third of the physicians' clientele. It is possible that the activity of the Medex with the younger

FIVE TASKS PHYSICIANS AND MEDEX PERFORMED MOST FREQUENTLY WITHIN THREE TASK INVENTORY CATEGORIES

Tasks performed most frequently by physicians	Tasks performed most frequently by Medex
Patient Instruction	
1. Counsel and instruct patient in the treatment regimen for upper respiratory infection	1. Explain, answer questions about physician's instructions to patient or family, or both
2. Listen to patient or family, or both, discuss personal problems	2. Listen to patient or family, or both, discuss personal problems
3. Explain, answer questions about treatment procedure by telephone	3. Inform patient of procedures required before and during examination, test, or treatment
4. Provide support, reassure family of patient's condition or progress	4. Inform patient of progress of therapy
5. Explain physiological basis for therapy to patient or family, or both	5. Explain, answer patient's questions about symptoms, disease, or treatment
Patient Treatment	
1. Give emergency treatment for laceration	1. Apply or change sterile dressing
2. Prescribe symptomatic treatment for influenza	2. Suture skin
3. Prescribe symptomatic treatment for colds	3. Clean wound, cut, or abrasion
4. Give emergency treatment for sprain, strain, or torn ligament	4. Give first aid for insect bite
5. Give emergency treatment for fractures	5. Give first aid for laceration
Treatment Planning	
1. Evaluate symptoms of patient complaining of sore throat or cough	1. Evaluate patient's progress and response to therapeutic regimen
2. Evaluate symptoms of patient complaining of nasal or sinus problems	2. Review past and present medical-dental history to plan care
3. Screen patients by telephone to determine need for medical attention	3. Consult physician or nurse to obtain information and advice on patient care
4. Evaluate symptoms of patient complaining of nervousness	4. Evaluate symptoms of patient complaining of sore throat or cough
5. Evaluate symptoms of patient complaining of chest pain	5. Evaluate patient's sociocultural background

patients has freed the physicians to spend more time with their older and more seriously ill patients.

The proportion of female patients seen by the physicians is significantly greater than the corresponding value for the Medex (table 3). The fact that the Medex are seeing proportionately fewer females probably influences the age distribution of their patients. Women in the childbearing years visit physicians' offices far more frequently than men in the same age groups (*5*), and very few Medex reported performing obstetrical-gynecologic tasks.

Of all the patients seen during the period in which patient-contact forms were maintained, 1,464 were seen by the physicians alone, 588 were seen by the Medex alone, 566 were seen by the physicians in combination with the Medex, and 504 were seen by other providers such as nurses and medical assistants (table 3).

Table 3. Number and percentage of patients, by age and sex, seen by physicians, Medex, and other providers of care

Age group (years) and sex of patients	Physicians		Medex		Physicians and Medex		Other provider combinations		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Age										
Under 1	65	4	22	4	34	6	22	4	143	5
1- 4	62	4	37	6	33	6	15	3	147	5
5–14[1]	131	9	81	14	81	14	34	7	327	10
15–24[2]	272	18	125	21	89	16	90	18	576	18
25–44	394	27	135	23	143	25	118	23	790	25
45–64	322	22	112	19	107	19	133	26	674	22
65 and over	218	15	76	13	79	14	92	18	465	15
Sex										
Male	573	39	308	52	263	46	154	31	1,298	42
Female[3]	891	61	280	48	303	54	350	69	1,824	58
Total	1,464	100	588	100	566	100	504	100	3,122	100

[1] $P<.001$. [2] $P<.05$. [3] $P<.01$.
NOTE: Percentages rounded.

Discussion

The results indicate that the activities of a Medex can be clearly distinguished from those of a physician. The activities of the Medex are office based, and the Medex is less active in areas away from the physician's office and more involved in patient examination and information gathering than the physician. The tasks the Medex performs most frequently are different from those tasks performed most frequently by the physician. The patients the Medex cares for tend to differ from those of the physician in both age and sex, and the Medex sees fewer patients than the physician.

It is important to remember that all of the information and conclusions reported in this study apply to a class of Medex trainees who had just ended their first year in the field. It is possible that the role of the Medex will change as he gains additional expertise and when he becomes a salaried employee who must "earn his keep" in the physician's practice. For example, the core curriculum for the first class of trainees did not include obstetrical and gynecologic tasks. As a result, very few Medex reported performing these tasks. However, it has been learned that several Medex now assume more responsibility in this area. This single change could influence the age-sex distribution of patients seen by the Medex, as well as tasks performed by the Medex.

Physician's assistants are often thought of as one solution to the health care delivery crisis. Resources are being allocated to train physician's assistants. Quantitative data are needed not only to determine the actual role of physician's assistants in ambulatory care but also to evaluate the appropriateness of the role. Studies should again be performed after the Medex have spent a more substantial amount of time in the physicians' practices. Collection of data by trained observers is a method which could be used to obtain the needed information and to validate the research methods employed in this study. Only in this manner can goals of training programs be revised and the benefits of allocating resources to the training of physician's assistants be determined.

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An Exploratory Study of Associate Degree Programs for Mental Health Workers

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THE FIRST ASSOCIATE DEGREE program in mental health was established at Purdue University in 1965 (*1*); since then, the growth of similar programs has been extremely rapid. Simon (*2*) has traced some of the early history of these programs. The most recent survey indicated that there were about 150 throughout the country (*3*). The National Institute of Mental Health (NIMH), which has been instrumental in stimulating the growth of these programs, funded the first one at Purdue and has since provided grant support for more than 40 others across the country. This Institute has also funded two regional education groups, the Western Interstate Commission for Higher Education (WICHE) and the Southern Regional Education Board (SREB), which have in turn provided stimulation and consultation to colleges and to the field of mental health regarding the training and utilization of workers with associate degrees.

These associate degree programs are concerned with preparing a mental health generalist, that is, a worker who after 2 years of academic and fieldwork experience would be prepared to enter a variety of job roles in mental hospitals, community mental health centers, retardation facilities, geriatric settings, and other community agencies that need additional manpower. Those persons engaged in the early planning of these programs had hoped that new jobs would be established for many of the graduates and that

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these new jobs would help alleviate some of the traditional problems of mental health delivery systems.

One traditional problem was inadequate coordination between the helping agencies and the highly specialized professionals within a single facility, which often resulted in treatment programs that were fragmented and confusing to those seeking help. Insufficient attention was given to the total situation and needs of the individual patient. The highly specialized professionals often tended to view a patient from their own idiosyncratic perspective (that is, as a diagnostic label, a testing case, or the like) and to ignore the total or whole person. And prospective patients frequently had difficulty either to hook into the appropriate starting place in the service delivery system or to maintain a satisfactory continuity once the treatment process began. Because of their pathological condition, lack of information, and lack of influence in the system, prospective patients were often unable to be effective spokesmen for themselves.

One job model for the mental health worker (MHW), which was designed to alleviate problems such as these, provides for assigning the worker 6 to 10 patients for whom he has primary treatment responsibility (*4*). The mental health worker would serve as advocate, broker, mobilizer, teacher, and coordinator for the patients, using the various professionals as consultants and supervisors in the planning and implementation of the patients' treatment and followup. This model and other related new roles for MHS graduates would logically lead also to new work roles for the professionals and permit more effective use of their skills in program planning, consultation, and research and evaluation.

The need for research to evaluate the effectiveness of these MHW educational programs and to study the impact of this new type of worker on the mental health service delivery system was urgent. To this end, the National Institute of Mental Health in 1971 funded an evaluation project at the Department of Psychiatry and Behavioral Sciences of Johns Hopkins University. The staff of this project, which is called the Center for Human Services Research, has been conducting studies at the national level to clarify the scope and significance of this new source of manpower—a source that has taken on the appearance of a major movement in the development of mental health manpower. As of June 1972, there were an estimated 2,700 MHW graduates, and such graduates are expected to exceed 17,000 by June 1976 (*3*).

We describe an exploratory study of MHW programs that was conducted by the Center for Human Services Research in the fall of 1971. At that time seven interviewers each visited an active MHW program that had graduated several classes of mental health workers and sought to obtain firsthand information on the state of the programs and the work activities and success of the graduates. This information was used by the center to determine salient issues for future research and to formulate preliminary job models based on the graduates' work experiences.

Study Sample and Methods

The seven colleges surveyed in the study were located in Alabama, Colorado, Florida, Indiana, Maryland, and Ohio. (Two of the colleges were in Maryland and the others in each of the other five States.) They were among the institutions having the most mature MHW programs.

Three of the seven interviewers were from the staff of the Center for Human Services Research and four were outside consultants selected to provide a range of viewpoints. The consultants included an MHW graduate, a program director, a sociologist, and a social psychologist.

Open-ended questions were included in the interview forms to generate rich and diverse data, and the results are reported in narrative form. We realize that these results are not representative of all mental health programs or all mental health worker graduates. Nevertheless, they do represent models to which newer programs can turn and from whose experience newer programs may benefit.

Interviews were carried out at each college with the program director, the dean of academic affairs, three program graduates, the graduates' supervisors, and one co-worker of each graduate. When a graduate had more than one supervisor, the one with whom the graduate had spent the most time was interviewed. "Co-worker" was defined as that person in the organization (professional or nonprofessional) who had worked most closely with the graduate since his or her employment began.

After each visit to a program site, the interviewer summarized his observations and evaluative comments in a written report, which was later sent to the appropriate program director for the director's use in further development of his program.

Regional and State Activities

Four of the colleges whose programs were studied were served by the Southern Regional Education Board. This board helped these colleges (which were located in Alabama, Florida, and Maryland) with program development by providing individual consultations with the SREB staff, by arranging for the college staff's attendance at SREB planning conferences, and by supplying SREB publications. The three programs outside the South also benefited from SREB conferences and literature. In the West, the Western Interstate Commissioner for Higher Education was playing a major role in program development by the time of our study. The WICHE project has focused on establishing programs for minority groups, primarily Chicanos and Indians.

Interestingly, a certain person or certain persons provided a coalescing force for the inception of each of the seven programs, but during the initial planning they did not know of each others' activities. The events leading to the inception and development of this new movement merit more documentation and study.

State departments of mental health participated to some degree in the early development of each of the programs. In some cases personnel of the State mental health department had been a driving force behind program development, while in other cases the State personnel had acted as more passive onlookers. At the time of our study, four of the six States had developed entry job specifications for graduates. Three of the States had at least a two-step classification (career ladder). There were plans for, and talk of setting up, more extensive career ladders in all six States to allow graduates vertical and lateral mobility. Nevertheless, extensive development and implementation of such ladders were still needed at the time of our study.

By the time of the study, three States (Alabama, Maryland, and Ohio) had held meetings of mental health personnel, college personnel, or both, to exchange information. These States were establishing more MHW programs than the others, but the persons who were interviewed differed as to whether this development was desirable. Many expressed concern that with too many programs MHW graduates would saturate the job market. There appeared to be little agreement at any of the seven colleges as to the appropriate number of programs for their State or region or the best size for these programs. Most deans and program directors expressed a need for State and regional coordination to help resolve such issues.

Results

Numerous unresolved issues were uncovered at each of the seven sites of the programs. Our report, however, focuses primarily on those generic issues that were common to most, or all, of the programs visited.

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Characteristics of programs. The programs were located in both urban and small-city colleges. The primary objective of these institutions was to serve the needs of their community or geographic region. The programs varied in size from 16 to 158 students; they had from 2 to 4 full-time faculty members. All were regarded as successful by the deans of the colleges where they were located and by the programs' directors. Five of the seven colleges had received NIMH grants to aid in the initial establishment of their programs. The other two had received supporting grants from the States in which they were located. One objective index of success was that five of the colleges had assumed financial support for their programs upon the termination of Federal funding. The other two were still receiving outside grant support at the time of the study.

Although the programs had succeeded in placing most of their graduates in mental health settings, their most pressing need still was to obtain more jobs for graduates. The program staffs at each setting clearly articulated this concern, but organized efforts at finding more jobs usually were not being made. What was done was frequently considered by the interviewers to be piecemeal; usually the program director or a faculty person aided individual students in their job seeking. The interviewers saw a need for more continuous information from community agencies about manpower requirements.

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Program goals. Each program was primarily concerned with the goal mentioned earlier—preparing students to be mental health generalists, that is, workers with a broad background in the behavioral sciences and mental health who could move into a wide variety of jobs in the field. The program directors hoped that the jobs filled by the MHW graduates would add coordination, continuity, and speed to the treatment programs of individual patients. They also anticipated that some graduates would work as assistants to mental health professionals, taking on part of the work previously performed by the professionals.

The seven programs varied in the degree to which they were affiliated with, and trained their graduates for jobs within, a single mental health setting. Two programs were closely affiliated with a State mental hospital; one was affiliated with a community mental health center and another, with a large State residential treatment center for habilitation of the mentally retarded. There was a general consensus among the persons interviewed that students should have fieldwork experience in more than one setting before they graduated so that they could apply their skills in different ways and thus become more generic.

The staffs of the seven programs were also concerned with providing the student with an educational base that could be transferred to baccalaureate programs in related areas. These very broad, and sometimes conflicting, goals (for example, meeting course requirements for transferability versus having a more job-oriented focus in the curriculum) were usually not spelled out in detail. As a result, there was some uncertainty among faculty and students, which was reflected in the ambivalence of students about whether to seek a job immediately after graduation or to enter a baccalaureate program and in faculty uncertainty about decision making in respect to curriculum revision. In addition, students were frequently not prepared for the role of seeking out and obtaining new jobs. Since the roles or jobs for which they were trained did not exist, the MHW graduates frequently had to convince those already employed in the mental health setting of their potential usefulness. Specialized training within the MHW training programs to prepare students for such "lobbying" was reported by staff members of several of the programs.

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Administrative housing of programs. The administrative status and housing of the MHW program was still unresolved at a number of the colleges visited. Some of the programs were regarded as separate departments, while others functioned as a section of another department (such as a department of psychology). Wherever the program functioned as part of another department, members of the mental health faculty often had received their appointments from the parent department instead of from a mental health department. Some faculty members held appointments in both kinds of departments, but controversy concerning allegiance and priorities arose as a result of these joint affiliations. The dean of one college was debating whether the mental health program should be placed with medically oriented programs (under allied health) or grouped with other human services programs.

Although the administrative personnel expressed confusion about the nature of the MHW programs, the program directors tended to disavow the medical model in mental health and to prefer alignment with a department of human services rather than one with a medical orientation. Several program directors also expressed misgivings about being part of a department of psychology, fearing that this would lead to the training of assistants to psychologists.

Each of the seven colleges studied had programs in the allied health-human services fields, but little joint activity in planning or educating has resulted. (There has been little collaboration, for example, between mental health staffs and nursing staffs in most of the colleges.) This situation may have led to some duplication in educational experiences. Such duplication is not only expensive but deprives students of the potentially rich experience of learning how other professionals carry out their work. In addition, none of the MHW programs had established collaborative relationships with graduate training programs for mental health professionals. If the two groups of mental health trainees could work together while in training, their understanding and utilization of each others' skills following graduation would likely increase.

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Other program characteristics. The program directors had considerable freedom in setting up their own curriculum and selecting faculty members, although the final authority for decisions on the curriculum ordinarily rested with a curriculum committee, and decisions about the selection of faculty rested with the academic dean. The programs were all functionally similar to traditional academic departments in the degree of freedom with which their staffs could carry out their program goals; that is, the staffs reported considerable autonomy.

One rather surprising observation in our study was that some of the mental health programs were not well understood by faculty and students in other programs in the colleges. Since none of the mental health programs was new, the need for more and better communication within the colleges is apparent.

All directors of the programs reported conducting some sort of "screening"—usually interviewing prospective students and attempting to "counsel out" potentially undesirable candidates. Only one program, which had a strict quota system tied to its screening, rejected large numbers of candidates. This program also appeared to have a "high prestige" image within the college—an image not apparent at the other six locations. A more systematic study of the various types of screening used and their effectiveness seems to be indicated.

Another surprise was the observation that none of the seven colleges were trying to evaluate their programs. A majority of the programs, however, had been evaluated earlier, usually as part of their NIMH grant activities. Only one was actively using an advisory board or committee of community representatives, although several had originally formed and used such boards.

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Deans. Six of the seven deans interviewed considered the further development of allied health programs (under which they included mental health) as one of their top priorities. Nevertheless, within the allied health field, the deans' responses to questions concerning allocation of funds for faculty and other program resources (such as space, secretarial support, and new faculty) suggested that mental health programs generally had a lower priority than some of the more traditional health programs such as nursing.

Although faculty members and students outside the mental health area seemed to need more information about the mental health programs, the deans interviewed were on the whole knowledgeable about, and supportive of, these programs. Several deans were concerned about the lack of visible jobs for graduates; others expressed the view that it was not the responsibility of the college to guarantee jobs and noted that graduates might have to leave the community to find mental health work. All, however, expressed optimism about the future of these training programs.

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Program directors. The program director was viewed by the other persons interviewed as the key to a successful program. The disciplines represented by the program directors included psychology—5 directors; psychiatric nursing—1; and special education—1. Six program directors had their doctorates; one had a master's degree. The directors were diverse in terms of training and background, and only one had substantial training in college administration before being appointed director.

Four of the directors had initially developed their programs; three were serving as the second director. All seven seemed dedicated to the welfare of their programs. Several expressed a strong preference for a student-centered climate in which students would have significant input and the roles of faculty and students would be blurred, but no clear-cut evidence emerged as to whether their programs functioned more democratically or better than those under more traditional directors. Several of the original directors expressed a certain amount of disillusionment. Their original expectations had been that "this new type of mental health worker would help to change the custodial orientation of the field," but these expectations were still largely unmet. These directors commented that some of their graduates were beginning to sound like traditional workers in their comments about patients (that is, they were less humanistic and more cynical). One can infer that these directors did not consider their programs at fault since only one reported that he was planning major changes in his progam's goals or direction in the near future.

Changes in the programs that had occurred or that were being considered reflected a consistent tendency to broaden the progam goals toward a human services or community services focus (for example, to include special education, work in the corrections field, and so forth). The reasons given for this broadening included: (*a*) pressure to enlarge the job market, (*b*) a belief that such broadening was the general trend in the mental health field, and (*c*) some graduates had found jobs and were performing effectively in related fields of helping people.

Certain common elements were noted among the program directors. Most did not have a significant amount of contact with other program directors. Most were also not so closely in touch with students on a day-to-day basis as they had been earlier. (Both of these elements suggest that the program directors are isolated and need interaction with their peers.) Several directors seemed to feel that there were fewer rewards from working in the program than there had been originally. Although much community work needed to be done in the areas of job development, inservice training for new graduates, and general education related to mental health workers, the directors reported that they were spending relatively little time in these areas. They partially attributed this situation to an increased workload and insufficient release time from the college to attend to activities other than teaching. Another related factor mentioned was that the stimulation and challenge of establishing a new vocation had partially worn off with time. The program directors generally divided their work time among interviewing prospective students, counseling students, general administrative work, teaching, special projects (such as preparing publications and developing syllabuses), and community development. Further job analysis would be necessary to determine accurate percentages for the time devoted to each activity.

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Faculty. Each of the seven faculties studied was interdisciplinary; psychiatry, social work, activity therapies, and so forth, were represented. The faculties of two colleges included program graduates who were working either as volunteer instructors or as full-time faculty members. Most of the programs used one or two part-time faculty members who were professionals from local agencies. Some part-time staff members had been awarded faculty status and pay; others had not. The field work supervisors usually provided supervision of the students without pay or faculty appointment.

Most of the program directors and members of the faculty had entered the program with experience in clinical work, but with little or no background in teaching. Although they did not designate this lack as a problem, it apparently led to some difficulty in certain educational activities—for example, in preparing course syllabuses, delivering lectures, devising grading systems, and the like.

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Students. The majority of the students in the programs were young white women of middle-class background. The program directors reported that initially a significant number had been older women whose families were partially or completely raised, but in most programs the percentage in this category had reportedly decreased. None of the programs had difficulty in attracting prospective students, although few were males or members of minority groups. One college did report that about 60 percent of its students were black. The students in all seven programs appeared involved and enthusiastic about them, but they shared general feelings of uncertainty about their professional futures in view of the job market.

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Graduates. The seven colleges had a total of 225 graduates from the MHW programs, with a range of 13 to 58 (median 31). Data were collected on 27 graduates in interviews. The graduates tended to be older than the national average age for MHW graduates—30 years. A majority had no direct mental health experience before entering the program. Taken as a group, the graduates viewed themselves, and were viewed by their supervisors and co-workers, as performing effectively on the job. Some were described as making outstanding contributions to their work.

The graduates' work settings were diverse—State mental hospitals, community mental health centers, outpatient clinics, State homes for the mentally retarded, a Veterans Administration hospital, day care facilities, an alcoholism and drug abuse treatment center, and others. All the settings were clearly mental health (or mental retardation) facilities.

Most of the graduates interviewed were employed in the agencies where they had done their fieldwork. As students they had made a positive impression on the professional workers in these settings, which had led to their employment after graduation.

In general, there was little, if any, formal preparation at the setting for the graduate's entry into the job, and as a result, many of the graduates were initially given a great deal of freedom in developing their own jobs. Indeed, some expressed dissatisfaction because they had been left too much on their own during this period.

All of the graduates worked directly with patients to a significant degree. Their job activities included psychotherapy, group therapy, psychological testing, behavior modification, teaching, interviewing, behavioral observation and recording, family therapy, outreach work, and the supervision and inservice training of aides and attendants. One graduate was the head of a mental health workers' department in a mental hospital. One was on the faculty of a mental health program.

An examination of the graduates' jobs from the standpoint of the schema formulated by the Southern Regional Education Board in 1967 (*4*) reveals that the graduates performed most often in the roles of behavior changer, evaluator, teacher-educator, care-giver, and data manager (keeper of patients' records); the roles of advocate, broker, administrator, and mobilizer received less emphasis. The roles of outreach worker, community planner, and assistant to a specialist were also filled by a few graduates. Most graduates filled multiple roles, an observation suggesting that this aspect of the "generalist" goal was being met. A few graduates were working in more limited (specialist) roles (for example, as a low-level assistant to an occupational therapist).

The levels of functioning of the graduates varied considerably, but most were performing at an "appropriate level" (SREB 1967: Level II—apprentice, technician, or assistant—associate degree or somewhat higher; Level III—journeyman, associate, or technological—bachelor or arts). Some were filling roles (mainly that of "behavior changer") that are at the beginning professional level.

The performance of this group of graduates suggests that associate degree workers can perform many traditional mental health tasks in a relatively competent manner. It also suggests that most of them are not being used in innovative roles that focus on outreach, prevention, community planning, or broker-advocate work. Their work roles, of course, reflect the orientation of their work settings. Most of the settings in our study were moving from a traditional focus on treatment to a community mental health orientation, but they were not yet well organized in primary prevention and the coordination of diverse treatment elements. Some graduates, however, were filling innovative roles in community mental health centers, which are not so tradition-bound as the hospitals.

Only one setting had established a mental health workers' department. Most of the mental health workers were assigned to an interdisciplinary, therapeutic team, which provided the basis for their primary work group. Their professional identification as mental health workers within these teams, however, usually remained strong, and they maintained high aspirations for their work.

The majority of graduates had jobs indistinguishable, except for salary (a range of $6,000–$8,000), from those at other levels at their work settings, and many expressed dissatisfaction because although they viewed themselves as performing the same job as other professionals, they did not receive as much pay. The graduates tended to be satisfied with the content of their work but were unsure about the future because there was no long-range career ladder. The one exception was a three-level career ladder in Maryland.

Although supervisors expressed positive views about the graduates' work, most appeared to have little first-hand information about it. Supervision often appeared to be sporadic, frequently being on a demand basis rather than being regularly scheduled. Specific on-the-job training and firsthand observation and evaluation of the graduates' skills were rare.

The graduates reported that their fieldwork was the most valuable part of their training. They ranked the group dynamics component of their curriculum second, followed by their other specialized courses. General education courses were ranked last.

A number of graduates recommended better screening of prospective mental health students. The graduates made a number of other recommendations about the curriculum; most of these suggestions clustered in the skills training area (notably knowledge and skills for treatment of families and drug abuse). Several mentioned the need to know more about the interrelationships of human services delivery in a community. Some said that the programs should supply better supervision for fieldwork. Most, however, expressed a generally positive view of their educational programs.

Few graduates reported that resistance by other workers was a significant factor in their adapting to their jobs. Several interviewers, however, inferred that such resistance existed and believed that it tended to be stronger in other workers who either knew little about the graduate's function or whose territory overlapped the graduate's (usually social workers, nurses, aides, and attendants). Further study of these and other environmental constraints probably would be enlightening.

Most graduates had already started, or were planning to continue, their education, although many were enrolled in curriculums with little or no relevance to their immediate or planned work in mental health (for example, a program leading to a bachelor's degree in psychology). Most expressed interest in continuing their education in the field of mental health, but reported that there were no feasible opportunities to do so. Although some of the graduates knew of the several new baccalaureate programs in mental health, almost all felt tied to their particular geographic region by marriage or other reasons. In Maryland some of the graduates were participating in the new bachelor's programs in mental health that had recently been initiated at Antioch College, Morgan State College, and Towson State College.

Conclusion

The seven programs studied were relatively healthy and viable, although a number of unresolved administrative issues remain. Program goals appear to need more clarification; screening and evaluation require further study. Our study of the graduates also revealed other needs—for the development of more human services jobs they can fill, preparation of the work setting for the graduate's job entry, adequate supervision, measurement of the graduate's competency, and the further development of career ladders.

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TRUE, JOHN E. (Johns Hopkins University Medical School), YOUNG, CARL E., and PACKARD, MARY E.: ***An exploratory study of associate degree programs for mental health workers. Public Health Reports, Vol. 89, July–August 1974, pp. 345–352.***

In an exploratory study of seven assoicate degree programs for mental health workers in six States, 21 graduates, their supervisors at work, and their peers were interviewed, as were the directors of the programs, academic deans of the colleges where the programs were located, and faculty of the programs. The graduates seemed to be performing well in both traditional and innovative job roles, but they complained of inadequate salaries, underdeveloped career ladders, and too little supervision in the beginning period of their work.

The college administration staffs regarded these associate degree programs as viable, although all seven deans recognized that expansion of the job market for graduates was the most pressing need. The program directors and faculty members reported a need for more release time to work in the community in order to create jobs for the graduates.

Career ladders were not adequately articulated in most States so that upward mobility of the graduates was limited, and the number of males and members of minority groups entering these programs was found to be small. The interviewers were of the opinion that the programs could benefit from more continuous information from community agencies as to their current and future manpower needs. Also, the agencies engaging these graduates apparently need to conduct training programs for them and provide them with more extensive supervision as they begin their work. The programs' directors expressed the belief that these workers can perform well in a wide variety of human service jobs in which the emphasis is on human interaction.

Further evaluative research needs to be carried out so that the competency of the graduates can be measured better, program goals can be refined, and prospective students can be adequately screened. Nevertheless, these associate degree programs appear to offer one promising approach to the alleviation of the continuing manpower shortage in the mental health field.

Navajo Infant Mortality, 1970

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INFANT MORTALITY among nonwhites in the United States is much higher than that of whites (*1–3*). Unavailability of health services, low income, poor housing and sanitation, and large families have been found to be significant factors associated with high infant mortality (*1–3*). American Indians have many of these characteristics, but they are unique in that since 1955 their health care has been provided by the Indian Health Service of the Public Health Service.

The Navajos, the largest tribe of American Indians, live on a 25,000-square-mile reservation of barren, semi-arid land adjacent to portions of Arizona, New Mexico, and Utah. Living conditions are harsh for most Navajo families. Their unemployment rate is high, and many live in crowded one- or two-room houses without running water. Often, water must be hauled for many miles. Some Navajos rely on the traditional medicine man for their health care, and others receive care at several of the Indian Health Service facilities. Those who seek care often face major transportation problems. Under these circumstances, it is difficult to obtain accurate data on health care for the Navajos.

The present study was undertaken to establish the current mortality rate for Navajo infants as accurately as possible and to identify factors associated with infant deaths.

Methods

A major source of data for the study was the Census Bureau maintained by the Navajo Tribe. Births and deaths are registered with the bureau from copies of birth and death certificates transmitted by Indian Health Service hospitals and by State health departments. Births of almost all Navajos residing in the reservation area take place in Indian Health Service hospitals. Although the Navajo population is quite mobile, most movement occurs within the reservation and the adjacent States. Thus, we believe that most infant deaths are made known to the Navajo Census Bureau by the present reporting system. (Followup of 276 infants born at Fort Defiance Indian Hospital in 1971–72 revealed that only 12 had been moved out of the reservation and the adjacent areas during their first year of life.)

In July 1972, birth certificates filed at the Navajo Census Bureau were reviewed to identify

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live births to Navajos (at least one-half blood quantum recorded on the birth certificate) residing on or adjacent to the Navajo Reservation during 1970. Deaths during the first year of life among this cohort of 1970 births were identified from death certificates at the bureau (*4–6*). Records of Indian Health Service hospitals on and near the reservation were examined for details associated with deaths and to identify deaths among the 1970 cohort of births which might not have been recorded with the Navajo Census Bureau. Primary cause of death was established from hospital records because many death certificates showed that diagnoses were indefinite or nonspecific.

Each hospital chart in the infant death population (study group) was reviewed to determine age at death, cause of death, sex, birth weight, length of gestation, postnatal illness, and Apgar score (a numerical expression of the condition of a newborn infant at 60 seconds after birth, being the sum of points gained on assessment of the heart rate, respiratory effort, muscle tone, reflex irritability, and color). Information was obtained from the mother's hospital chart on birth order, maternal age, history of previous child loss, number of prenatal care visits, trimester of first prenatal care visit, and problems with pregnancy or delivery.

A comparison group was established by selecting the Navajo infant born next at each facility after a study group infant and who survived the first year of life. The same information was recorded for the comparison infants and their mothers as for the study infants and their mothers. The study group consisted of 108 infants who died and the comparison group, 106 infants. Records of two of the infants who died were not identified until after the field phase of data collection for the study had been completed. Additional comparison group infants were not selected; thus, the disparity in numbers of infants in the study and comparison groups.

Results

Mortality. A total of 3,424 Navajo infants were registered with the Navajo Census Bureau as born on or near the reservation in 1970; 84 deaths were registered with the bureau. Hospital records of death were found for 78 of the 84 dead infants, as well as 24 additional members of the 1970 birth cohort for whom there was no record of death at the bureau. Also, hospital records were found of deaths of two infants born in 1970 for whom Navajo Census Bureau birth certificates could not be found and whose place of birth was undetermined; these unlinked deaths were not included in the study. The infant mortality rate of the 1970 cohort was 31.5 per 1,000 live births. Of the 108 deaths, 51 or 47 percent (14.9 per 1,000) occurred during the neonatal period (first 28 days of life) and 57 or 53 percent (16.6 per 1,000) during the postneonatal period (remainder of the first year of life).

The primary causes of neonatal and postneonatal death are shown in table 1. Respiratory distress syndrome, prematurity, and congenital malformations accounted for 75 percent of the neonatal deaths. Infectious diseases accounted for 60

Table 1. Primary causes of infant deaths, Navajos, 1970

Cause	Neonatal		Postneonatal		Total	
	Number	Percent	Number	Percent	Number	Percent
Respiratory distress syndrome...	19	37.3	0	0	19	17.6
Prematurity....................	13	25.5	0	0	13	12.0
Congenital malformation........	6	11.8	10	17.5	16	14.8
Aspiration or anoxia............	4	7.8	1	1.8	5	4.6
Infection......................	3	5.9	9	15.8	12	11.1
Pneumonia.....................	2	3.9	3	5.3	5	4.6
Meningitis.....................	1	2.0	6	10.5	7	6.5
Gastroenteritis.................	1	2.0	16	28.1	17	15.7
Sudden death syndrome.........	1	2.0	5	8.8	6	5.6
Accidents......................	0	0	1	1.8	1	0.9
Other..........................	1	2.0	3	5.3	4	3.7
Unknown.......................	0	0	3	5.3	3	2.8
Total deaths............	51	...	57	...	108	...

Table 2. Abnormal conditions during neonatal period, Navajo infants, 1970

Conditions	Study group						Comparison group (N = 106)	
	Neonatal deaths (N=51)		Postneonatal deaths (N=57)		Total deaths (N=108)			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Jaundice	4	7.8	9	15.8	13	12.0	17	16.0
Infection	5	9.8	11	19.3	16	14.8	4	3.8
Cardiac murmer	4	7.8	6	10.5	10	9.3	2	1.9
Congenital malfunction	9	17.6	11	19.3	20	18.5	1	0.9
Birth weight 2,500 grams or less	39	76.5	13	22.8	52	48.1	9	8.5
Cyanosis	17	33.3	3	5.3	20	18.5	5	4.7
Respiratory distress syndrome	26	51.0	3	5.3	29	26.9	0	0
Meconium stain	2	3.9	7	12.3	9	8.3	2	1.9
Flaccidity	5	9.8	0	0	5	4.6	1	.9
Rales	6	11.8	0	0	6	5.6	1	.9
Aspiration or anoxia	2	3.9	3	5.3	5	4.6	4	3.8
Heart rate <100 per minute	7	13.7	0	0	7	6.5	0	0
Apnea	5	9.8	0	0	5	4.6	2	1.9
Birth injury	4	7.8	1	1.8	5	4.6	0	0
Others	12	23.5	9	15.8	21	19.4	11	10.4
Total conditions	147	....	76	....	223	....	59	....

percent and congenital malformations for 18 percent of the postneonatal deaths.

Characteristics of infants. The Navajo infant deaths showed a male predominance of 1.21:1, with a neonatal ratio of 1.32:1 and a postneonatal ratio of 1.12:1. The male to female ratio of infants in the comparison group was 1.00:1.

Of the 108 dead infants, 54 (51 percent) had birth weights of 2,500 grams or less; 41 of these died in the neonatal period. Of the 106 comparison group infants, only 9 (8.5 percent) weighed 2,500 grams or less at birth.

Gestational age was estimated from information on birth certificates and on the hospital charts for mothers and infants. The study group infants had shorter gestational periods than the comparison infants. Almost all of this difference occurred among infants who died in the neonatal period. Almost half of the neonatal death infants (47 percent) had estimated gestational ages of 31 weeks or less. Only 4 percent of the postneonatal death infants and none of the comparison infants had such short estimated gestational ages. Comparable figures for estimated gestational ages of 35 weeks or less were 61 percent for the neonatal death group, 11 percent for the postneonatal death group, and 3 percent for the comparison group.

No difference was found in the birth order of study and comparison group infants, with the exception of those whose birth order was 10th or higher; there were 10 study and 5 comparison infants in this category.

A total of 78 of study and 37 of comparison group infants had one or more abnormal conditions which were identified in the neonatal period. A total of 60 of the study and 14 of the comparison infants had more than one condition. Both of these differences in frequency of neonatal period problems between study and comparison infants were statistically significant (X^2, 1 df, $P < 01$). Of the infants with abnormal conditions in the neonatal period, study infants averaged 2.9 and comparison infants averaged 1.5.

Infants dying in the neonatal period, infants dying in the postneonatal period, and comparison group infants differed in various ways with respect to abnormal conditions in the neonatal period (table 2). When the numbers of observations were sufficient, tests of statistical significance were performed for differences between groups (X^2, 1 df, $P < .05$). In almost all instances, the presence of problems in the neonatal period was strongly associated with death in the neonatal period and in many instances with death in the postneonatal period. Conditions in the neonatal period that were more frequent at a statistically significant level in neonatal death infants than in postneonatal death infants were low birth weight, cyanosis, and respiratory distress syndrome. Conditions more frequent at a statistically significant level in the neonatal death group than in the comparison group were congenital malformation, low birth weight, cyanosis, and respiratory distress syndrome. Infection was significantly more frequent in infants subsequently dying in the postneonatal period than in those dying in the neonatal period. Finally, infection, congenital malformation, and low birth weight were more frequent at a statistically significant level in postneonatal death infants than in comparison group infants.

The mean of 5-minute Apgar scores for the study group was 6.4 compared with 8.6 for comparison group infants. This statistically significant difference (t test, $P < .01$) in Apgar scores was attributable entirely to the low mean score of the neonatal death group (3.7). There was no statistically significant difference in mean Apgar scores for the postneonatal death and the comparison groups.

Characteristics of mothers. Study and comparison group mothers were similar with respect to age and marital status. The mean age of the study group mothers was 26.2 years and of comparison group mothers, 26.3 years. There was no statistically significant difference between the mean age of mothers of infants dying in the neonatal or postneonatal periods. There were 30 unmarried mothers at the time of birth of infants in the study group (28 percent) and 28 in the comparison group (26 percent). A history of previous reproductive loss was given by 39 percent of the study group mothers and 21 percent of the comparison group mothers. The proportions of mothers with previous reproductive loss were 38 percent for the neonatal death group and 39 percent for the postneonatal death group. Reproductive loss included fetal death, stillbirth, abortion, neonatal death, or postneonatal death.

A total of 56 study group mothers (52 percent) and 39 comparison group mothers (37 percent) either had no prenatal care or only one visit for prenatal care. Thirty-four study group and 32 comparison group mothers had two to four prenatal care visits. Eighteen study group mothers (17 percent) and 35 comparison group mothers (33 percent) had five or more prenatal visits. These differences were statistically significant (X^2, 2 df, $P < .05 > .01$). No differences were observed in the trimester of first visit among study and comparison group mothers who had one or more prenatal visits or among mothers whose infants died in the neonatal or postneonatal periods.

Table 3. Problems during pregnancy, Navajos, 1970

Problems	Study group [1]				Comparison group [2] (N=106)	
	Neonatal deaths [3] (N=51)		Postneonatal deaths [4] (N=57)			
	Number	Percent	Numbet	Percent	Number	Percent
Edema	2	3.9	5	8.7	10	9.4
Hypertension [5]	1	2.0	5	8.7	6	5.7
Excess weight gain [6]	1	2.0	1	1.8	1	0.9
Preeclampsia [7]	2	3.9	11	19.2	8	7.5
Proteinuria	1	2.0	2	3.5	3	2.8
Urinary tract infection	3	5.9	4	7.0	4	3.8
Anemia [8]	11	21.6	6	10.5	7	6.6
Diabetes mellitus	1	2.0	0	0	1	.9
Other infections	4	7.8	1	1.8	11	10.4
Seizure disorder	1	2.0	1	1.8	1	.9
Varicose veins	0	0	2	3.5	2	1.9
Polyhydramnios	5	9.8	0	0	0	0
Other	7	13.7	4	7.0	4	3.8
Total problems	39	....	42	....	58	....

[1] 45 study group mothers had 81 problems.

[2] 38 comparison group mothers had 58 problems.

[3] 24 mothers of neonatal death infants had 39 problems.

[4] 21 mothers of postneonatal death infants had 42 problems.

[5] Systolic>140 or diastolic>90, or both, at any time during pregnancy.

[6] More than 35 pounds for single birth.

[7] Diagnosis on chart or record of hypertension, edema, and proteinuria.

[8] Hematocrit less than 35 percent.

Table 4. Problems during delivery, Navajos, 1970

Problems	Study group [1]				Comparison group [2] (N=106)	
	Neonatal deaths [3] (N=51)		Postneonatal deaths [4] (N=57)			
	Number	Percent	Number	Percent	Number	Percent
Forceps [5]	3	5.9	1	1.8	3	2.8
Cesarean section	3	5.9	2	3.5	1	0.9
Breech	12	23.5	3	5.3	0	0
Premature rupture of membranes [6]	13	25.5	7	12.3	2	1.9
Prolonged labor	5	9.8	0	0	3	2.8
Endometritis	3	5.9	2	3.5	8	7.5
Cord prolapse	0	0	1	1.8	0	0
Abruptio placentae	4	7.8	1	1.8	0	0
Nuchal cord	0	0	3	5.3	3	2.8
Amnionitis	5	9.8	3	5.3	1	.9
Lacerations	0	0	4	7.0	7	6.6
Placenta praevia	2	3.9	0	0	0	0
Precipitous (unsterile)	3	5.9	1	1.8	4	3.8
Meconium stain	2	3.9	2	3.5	3	2.8
Others	1	2.0	4	7.0	4	3.8
Total problems	56	....	34	....	39	....

[1] 59 study group mothers had 90 problems.
[2] 28 comparison group mothers had 39 problems.
[3] 38 mothers of neonatal death infants had 56 problems.
[4] 21 mothers of postneonatal death infants had 34 problems.
[5] Excluding low-outlet forceps.
[6] More than 24 hours before delivery.

Forty-five of 96 (47 percent) study group mothers and 38 of 103 (37 percent) comparison group mothers for whom information was available had one or more pregnancy problems that were identified in their hospital records. For 19 of the study group mothers and 13 of the comparison group mothers more than one problem of pregnancy was identified. These differences were not statistically significant (X^2, 2 *df*, $P > .05$). Of the mothers with problems, the study group averaged 1.8 and the comparison group averaged 1.5. Among study group mothers, there was no difference in the percentage of those with problems or the average number of problems during pregnancy between those whose infants died in the neonatal or postneonatal periods.

The frequencies of problems during pregnancy of mothers of infants dying in the neonatal period, infants dying in the postneonatal period, and infants surviving the first year of life are shown in table 3. Where the numbers of observations were sufficient, tests of the statistical significance of the differences between groups were performed (X^2, 1 *df*, $P < .05$). There was a statistically significant higher frequency of anemia in mothers of neonatal death infants than in those of postneonatal death and surviving infants. Mothers with hematocrit values of less than 35 percent were considered to be anemic. Usual hematocrit values of Navajos living at 5,000 to 7,000 feet elevation are 5 to 7 percent higher than values of persons living at sea level (7). There was a significantly higher frequency of preeclampsia in mothers of postneonatal death infants than in mothers of neonatal death infants and surviving infants.

Fifty-nine of 102 (58 percent) study group mothers and 28 of 106 (26 percent) comparison group mothers for whom information was available had one or more problems associated with delivery that were identified in their hospital records. Twenty-eight of the study group mothers and eight of the comparison group mothers had more than one problem of delivery. These differences were statistically significant (X^2, 2 *df*, $P < .01$). Of mothers with problems, study group members averaged 1.5 and the comparison group 1.4.

Table 4 shows the frequencies of problems during delivery of mothers of infants dying in the neonatal period, infants dying in the postneonatal period, and infants surviving the first year of life. Where the numbers of observations were sufficient, tests of statistical significance of the differences between groups were performed (X^2, 1 *df*, $P < .05$). There was a statistically significant higher frequency of breech presentation and premature rupture of membranes in mothers of neonatal death infants than in those of postneonatal death infants and surviving infants.

Both mothers of infants dying in the neonatal and in the postneonatal periods had higher frequencies of single and multiple problems associated with delivery than comparison group mothers. Mothers of neonatal death infants had higher frequencies of both single and multiple problems than did mothers of postneonatal death infants.

Discussion

The results of this study reaffirmed the low neonatal and high postneonatal mortality rates of Navajo infants and revealed some maternal and infant attributes associated with neonatal and postneonatal death. Three questions about this study seem appropriate to discuss:

1. Did the study method using Navajo Census Bureau data produce different mortality rates from those of the Indian Health Service?
2. What explanations can be offered for the observed neonatal and postneonatal mortality rates and associated circumstances?
3. What are the program implications of these findings?

The neonatal rate of 14.9 per 1,000 live births and the postneonatal mortality rate of 16.6 per 1,000 live births determined in this study were similar to those reported (15.3 and 16.9) for all American Indians in 1967 (*2*) and for Navajos (13.6 and 15.5) in 1970 (*8*). The 1970 report of the Indian Health Service used the Tribal Census Bureau to identify births and the bureau plus Indian Health Service records to identify deaths. Despite the seeming similarity of methods used in compiling the Indian Health Service report and the one presented here, the numbers of observations differed markedly, even though the mortality rates were almost the same. The Indian Health Service identified 770 more Navajo births and 14 more infant deaths than did the linked-record study.

The comparison of the Indian Health Service findings with those of the present study for 1970 does not indicate that the additional labor of linking birth and death records resulted in appreciably different estimates of the mortality rate. However, the results obtained by using these two methods will have to be compared for other years before there is sufficient evidence to indicate that the similarity in 1970 findings resulted from equivalency of methods rather than fortuitous circumstances. The use of the hospital record rather than the death certificate as the source document for describing infant deaths resulted in different classifications of the cause of death by the Indian Health Service and the present study. In our opinion, the deduced causes of death from hospital records were more accurate. There were numerous instances in which the primary cause of death listed on the death certificate was grossly inconsistent with hospital chart observations.

The Navajo neonatal mortality rate of 14.9 in this study was only slightly greater than the 1970 U.S. rate of 13.5 for whites and much lower than the neonatal mortality rate of 21.6 for nonwhites (*9*). This favorable neonatal rate may in part be related to hospital delivery (estimated at 98 to 99 percent of Navajo births) and postnatal maternal and infant care by specialists. The rate also may reflect the rate of low birth weights among Navajos (only 7 to 8 percent), which is lower than rates among blacks and which limits the number of Navajo infants at risk of dying in the neonatal period from causes associated with this condition. The high Navajo postneonatal mortality rate, compared with white and black populations in the United States, is likely related to poor sanitation and nutrition and limited use of health services. The predominance of infectious disease as the cause of death in this period supports this observation.

The associations identified in this study were not unexpected. The highest levels of association were of neonatal death with maternal problems during delivery and abnormal conditions in infants during the neonatal period. Thus, mothers with breech deliveries, prolonged labor, faulty placentation, and intrauterine infection were more likely to have infants who died early. Infants who exhibited cyanosis, flaccidity, rales, bradycardia, apnea, respiratory distress syndrome, birth injury, low birth weight, and congenital malformations were more likely than other infants to die during the first month. Women with poor reproductive histories, preeclampsia, and poor use of prenatal care had higher infant mortality than other women, but it was not determined that these associations were directly causal or whether they occurred indirectly as manifestations of a common single factor or general lifestyle.

The infant mortality rates observed were lower than had been nticipated. In terms of program implications, these lower rates suggest, at least, that present maternal and child health programs of the Indian Health Service be maintained. The aspects of these programs which have been strengthened in recent years and which appear to be directly related to problems associated with infant mortality are prenatal care, infant nutrition, sanitation, and health education. Additionally, there has been steady improvement in the living standards and educational levels of Navajos.

It seems that programs aimed at preventing or mitigating infectious diseases in infants should have high priority, since these disorders account for almost two-thirds of the postneonatal death rates. It is a matter of speculation whether increased amounts of prenatal care or changes in hospital obstetrical care can reduce the frequency or mitigate the outcome of some of the problems of pregnancy and delivery which are associated with neonatal death. Labeling and special followup of high-risk infants and their families might aid in reduction of postneonatal deaths, although the effectiveness of this device alone could be expected to be limited since many deaths occurred also in non-high-risk infants. It is possible that postneonatal deaths from infectious disease might be decreased by general improvement in sanitation and sanitary education, better nutrition to increase host resistance, and increased accessibility to health care and education in its use.

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BRENNER, CHARLES (Department of Community Medicine, University of Pittsburgh School of Medicine), REISINGER, KEITH S., and ROGERS, KENNETH, D.: ***Navajo infant mortality, 1970. Public Health Reports, Vol. 89, July–August 1974, pp. 353–359.***

A total of 3,424 Navajo Indian infants born on or near the Navajo Reservation in 1970 were identified from records of the Tribal Census Bureau. During their first year of life, 108 of these infants died, according to records of the bureau and of Indian Health Service hospitals. The hospital chart of each infant who had died was reviewed to ascertain circumstances associated with the death, and information was also obtained from the mother's chart concerning characteristics of pregnancy and delivery. The same observations were recorded for a comparison group of infants and mothers established by selecting the Navajo infant who was born next after a study infant and who survived the first year of life.

The neonatal mortality rate was 14.9 and the postneonatal mortality rate was 16.6 per 1,000 live births. Infants who died compared with those who survived the first year of life had lower birth weights, shorter gestational ages at birth, more problems in the immediate postnatal period, and a higher incidence of congenital malformations. Their mothers were more likely to have had a previous reproductive loss, to have received lesser amounts of prenatal care, and to have had more problems associated with pregnancy and delivery than mothers of infants who survived the first year of life.

The mortality rates observed were lower than anticipated and may reflect effective maternal and child health programs as well as improvement in general living standards. Deaths in the postneonatal period due to infectious disease appear to be a high priority problem and one likely to be improved by health education and increased accessibility to health care.

Influence of Postpartum Home Visits on Postpartum Clinic Attendance

FRANK I. MOORE, PhD, PENELOPE BALLINGER, BA, AND JOSEPH D. BEASLEY, MD

A KEY ISSUE in current discussions of improved health delivery systems is the effective use of new health manpower. While the indigenous paraprofessional worker has recently emerged as an important component in the delivery of a variety of health services, it has become apparent to a number of observers that extensive research is still needed into the ways in which this new and valuable resource might be most effectively committed (*1–8*). Closely associated with this issue is the need to provide new health workers with opportunities for career development so that they may realize their full potential while achieving a program's goals.

Thus, it is necessary to identify and explore service areas in which new health manpower might be engaged, to provide the training necessary for delivering the services, and to evaluate the effectiveness of such manpower utilization. The study reported here is addressed to these issues. Specifically, the study focused on the effectiveness of a paraprofessional, the family health counselor, in making postpartum home visits for the Louisiana Family Planning Program.

Setting

Within the Louisiana Family Planning Program, operated by the Family Health Foundation, the paraprofessional position of family health counselor, originally titled auxiliary health worker, has been systematically upgraded through the gradual addition of new tasks needed to provide the services required for achieving the program's goals. Planning has assured that each new task is compatible with the worker's base of existing tasks, enabling her to take maximum advantage of her previous training and experience while extending the scope of her performance.

Initially, the family health counselor's role consisted of recruitment of patients for family planning services (outreach home visits) and maintenance of patients (followup home visits). Successful extension of this role into various "special assignments" (such as followup of patients in need of repeat Papanicolaou tests) demonstrated the ability of the worker to deal with patients having severe and sensitive health problems and to promote fuller use of health

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The authors are with the Tulane University School of Public Health and Tropical Medicine. This paper is adapted from one presented at the annual meeting of the American Public Health Association, Maternal and Child Health Section, in Atlantic City, November 16, 1972. Tearsheet requests to Dr. Frank I. Moore, Associate Dean, Tulane University School of Public Health and Tropical Medicine, New Orleans, La. 70112.

services among the indigent population. Somewhat later, the role was broadened to encompass teaching the initial family planning class in reproductive physiology and contraceptive methods, thereby further developing the worker's abilities in educating patients.

Pilot Study

A pilot study was designed to test further expansion of the family health counselor role to include visiting postpartum women at home after their discharge from Charity Hospital in New Orleans, where approximately 95 percent of the city's indigent women are delivered.

The goals of the postpartum home visit were to encourage clinic attendance for postpartum examination and to educate and encourage the mother toward helping her to return to a healthy pre-pregnant state and to have a healthy baby.

An evaluation of manpower utilization for postpartum home visits centered on the following objectives: (*a*) to examine the effectiveness of the visit in influencing clinic attendance for postpartum examination and (*b*) to identify services needed by the women visited and to specify the types of services the family health counselors can provide in relation to these needs.

The outcome of evaluation with respect to the first objective—the influence of home visits on subsequent clinic attendance—is the focus of this paper. A comparison was made of the percentages of kept appointments among three groups of postpartum women in order to test the following two hypotheses:

1. Women who are visited and encouraged to keep their postpartum appointments will keep their appointments at a higher rate than women who are not visited.
2. Women who are visited and given information on basic child care and care of themselves in addition to encouragement to keep the postpartum appointment will keep their appointments at a higher rate than women who are visited but only encouraged to keep their appointments.

Method

According to established program practice, each woman delivering at Charity Hospital in New Orleans is contacted on the maternity wards when 1 to 2 days postpartum by a representative of the Louisiana Family Planning Program. The representative offers each woman an appointment for a postpartum examination at one of the program's clinics 4 to 5 weeks after delivery, explains briefly the concepts of family planning, and describes the services available at the clinics.

The sample. The sample for this study consisted of 1,800 medically indigent residents of Orleans Parish who delivered at Charity Hospital between May and September 1971. Each woman was contacted on the maternity ward and given an appointment for a postpartum examination at one of the Louisiana Family Planning Program clinics.

The sample members were then randomly assigned to one of three groups consisting of 600 women each, as follows:

Group 1—women who were visited at home and given information on child care and self-care, as well as encouragement to keep the postpartum appointment.

Group 2—women who were visited at home but only for the purpose of encouraging them to attend the clinic for postpartum examination.

Control group—women who were not visited at home.

The three study groups were compared for differences in terms of patient variables which might affect the appointment outcome. Chi-square tests revealed no significant differences among the groups in the distribution of sociodemographic variables which might be associated with clinic attendance. These variables included the patient's age, race, marital status, religious affiliation, education, number of pregnancies, previous contraceptive usage, and previous attendance at a Louisiana Family Planning Program clinic.

Ninety-two percent of the sample members were black; their mean age was 23.1 years; they had completed an average of 10.4 years of schooling; and they had experienced a mean of 2.9 pregnancies at the time of the study.

The home visitors. In preparation for conducting postpartum home visits of the type provided to women in group 1, six family counselors (selected on the basis of competence in overall job performance and skill in interviewing) participated in a 3-week training program developed by a multidisciplinary team representing various departments within the Louisiana Family Planning Program. The training program consisted of lectures, demonstrations, group discussions, and role-playing situations centered around the major topics of the postpartum home visit. The topics included health of the newborn, health of the mother, assessment of the health-related aspects of the home environment affecting the immediate well-being of the mother and infant, and information on care of the infant.

The interview schedule was designed to insure that every home visit of this type included certain basic content areas covered in the training curriculum and provided data needed for evaluative purposes. The interviews averaged 58 minutes each.

To conduct the second type of home visit, for encouragement to keep the postpartum appointment, six family health counselors were selected whose level of past performance (in terms of percentage of kept appointments out of total given) on home visit assignments matched the records of the family health counselors visiting women in group 1. These counselors participated in a 3-day training program designed to acquaint them with the interview form to be used and to review their interviewing procedures.

Interviews conducted with women in group 2 were focused on the importance of the postpartum examination and lasted an average of 30 minutes.

Results

In conducting postpartum home visits, emphasis was placed on contacting the postpartum woman within 10 days after hospital discharge, with home visit attempts continuing up until 1 week before the scheduled appointment date. Assignments on women not contacted by that time were turned in at the weekly staff meeting preceding the appointment date. (These assignments differed from those termed "not located" in that the latter outcome was used to designate those assignments on which the worker had determined that the prospective patient did not reside at the address given, but was unable to obtain any further information regarding her whereabouts.)

The results of home visits activity for groups 1 and 2 were as follows:

Outcome	*Group 1*		*Group 2*	
	Number	*Percent*	*Number*	*Percent*
Total women to be contacted	600	100.0	600	100.0
Moved out of area	9	1.5	8	1.3
Not located	13	2.2	16	2.7
Not contacted by 1 week before scheduled appointment	38	6.3	5	.8
Refused interview	0		3	.5
Interview obtained	540	90.0	568	94.7

Interviews were obtained with 90 percent of the women in group 1 and 95 percent of the women in group 2; more of the assignments in group 1 than in group 2 were turned in as not contacted by 1 week before the scheduled appointment date. This difference was due primarily to the limited time available to family health counselors in group 1 for conducting home visits, as a result of their involvement in other program activities during the course of the study. In both home visit groups the percentages of women who had moved out of the area and who were not located (as operationally defined) were relatively low.

The outcomes of the postpartum appointments (expressed as percentages kept and not kept out of the total scheduled) for the three study groups are presented in the following table. Women in the home visit groups who were not actually interviewed were excluded from the totals in order to obtain an accurate measure of the effects of the home visit.

Study group	*Percent postpartum appointments*	
	Kept	*Not kept*
Group 1 (N=540)	79.4	20.6
Group 2 (N=568)	83.5	16.5
Control group (N=600)	75.8	24.2

The difference in kept appointment rates between group 1 and the control group was not statistically significant, while there was a statistically significant difference ($P < .01$) between the kept appointment rates of group 2 and the control group. These findings lend only partial support to hypothesis 1, which predicted a significantly higher rate of clinic attendance among women who were visited at home than among those who were not. The second hypothesis, which predicted a significantly higher rate of clinic attendance among women in group 1 than in group 2, is not supported by the results. Indeed, the direction of difference in kept appointment rates between the two groups is contrary to that expected, with members of group 2 exhibiting a nonsignificant tendency to keep appointments at a higher rate than members of group 1.

Within each study group a significant relationship was found between clinic attendance and the number of pregnancies thus far experienced, with the percentage of kept appointments decreasing as the number of pregnancies increased.

It was found that among women having experienced from one to three pregnancies, those in the home visit groups kept their appointments at higher rates than those who were not visited, with only slight differences in kept rates between the two home visit groups. Among women having experienced four or more pregnancies, however, those in home visit group 2 continued to keep their appointments at a higher rate than those not visited, while the rate of kept appointments in home visit group 1 actually dropped below the rate of those not visited. In short, it appears that the two types of home visits were about equally effective in terms of clinic attendance for women in their first to third pregnancy, but had a differential impact on women in their fourth or higher pregnancy.

Discussion

The prediction of higher rates of clinic attendance among members of group 1 than among members of group 2 was based on the assumption that the information given to group 1 would impress the women with the benefits of curative and preventive health practices to the extent that they would be motivated to a higher rate of clinic attendance than those not receiving such information. The findings in this regard, however, do not validate this assumption.

In light of the implications of the findings reported, it is worthwhile to briefly consider some of the factors which may have contributed to the results.

Interviews conducted with group 1 women dealt with the health care of the newborn and of the postpartum woman, with much emphasis placed on the care of the newborn. Data collected in the homes visited within the first 5 weeks following hospital discharge showed that a majority of the women interviewed were cognizant of the basics of infant health care covered in the interview and showed a strong tendency to seek proper medical consultation when needed.

Whether these findings suggest a pattern which might continue beyond the time of the interview is not indicated in the data collected. A major limitation of the study in this regard was that contact with the postpartum woman was restricted to only one home visit when the infant was still quite young. While the timing of the home visit was dictated by the desire to provide services to the mother as soon as possible after discharge and to test the effects of the home visit on postpartum clinic attendance, followup contacts would have yielded information on changes over time. Followup information would have indicated whether knowledge and practices in the 1- to 5-week period were predictive of later practices and later health problems, and it may have revealed topics that require further emphasis during the initial contact.

The data did show that, among the women interviewed, there was a greater need for information dealing with the care of the postpartum woman than for the information on infant care that was included in the interview. Concerning topics dealing with maternal health, it was found that approximately 50 percent or more of the women required either full or partial explanation of the topics by the family health counselor; for example, only 43 percent could identify symptoms needing a physician's attention. This finding leads to the speculation that if more emphasis had been placed on maternal health care, the hypothesized effect might have been obtained.

The differential impact of the two types of home visits among women at gravidity four or more has already been mentioned. Since similar differences were not observed between the two home visit groups among women at lower gravidity, the possibility exists that women who had experienced several pregnancies may have actually reacted unfavorably to a home visit devoted in large part to providing basic child care information. If so, this subgroup might benefit more from a shorter, more narrowly focused initial visit followed by continued educational and supportive visits. In fact, the higher rates of clinic attendance among the women in group 2 at all gravidity levels suggest that either the twin goals of the informational home visit (providing health information and influencing clinic attendance) may have been conflicting or that the content of the visit requires modification in order to bring about the intended effect. Such modification might consist of attempting to tailor the home visit approach to the needs of specific subgroups in the population, rather than relying on a single, uniform type of visit for all mothers.

A third possibility is that the time limitations which were imposed upon family health counselors visiting members of group 1 may have altered the style of the home visits, thereby diminishing their impact. However, analysis of changes in interviewing time over the study period revealed a gradual decrease for both groups of workers, suggesting that this variable alone would not account for the results obtained.

A final observation concerns the rate at which appointments were kept in the control group, whose members received no home visits. Among these women, 75.8 percent of the postpartum appointments were kept. Since this percentage is considerably higher than is typically reported for return on postpartum appointments in programs serving the medically indigent, it is noteworthy. Also, given this high rate of response in the nonintervention situation, it is difficult to obtain dramatic differences in clinic attendance through the intervention process.

The purpose of this brief discussion has not been to offer explanations which could fully account for the results obtained in this study, but rather to suggest additional factors which might be taken into consideration in interpreting the findings reported.

Comment

Although, under the conditions of this study, a postpartum home visit can affect the keeping of the postpartum appointment, significant differences in home visit and control groups were found only when the home visit was focused solely on encouragement to keep the postpartum appointment. It appears that while a postpartum home visit in which health-related information as well as encouragement to keep the postpartum appointment are offered may be a useful means of providing health information to the postpartum woman, it had relatively little effect on clinic attendance.

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Supplying Health Care to Nondelegates During 1972 National Political Conventions

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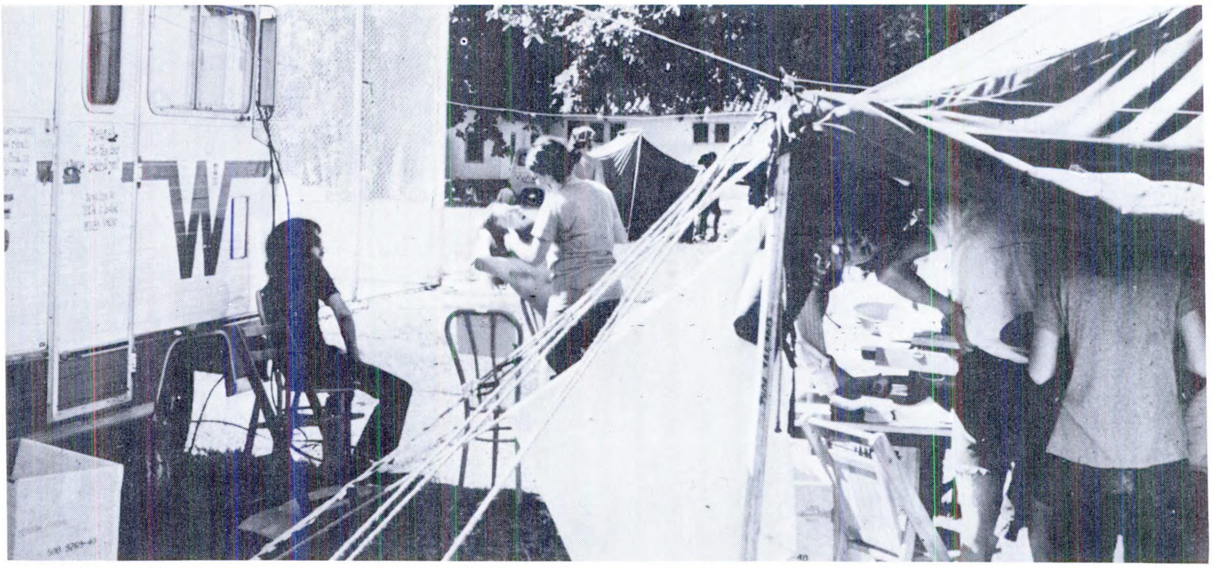

MIAMI BEACH was selected as the site of the 1972 nominating conventions of the Democratic and Republican parties. The County Manager of Dade County, in which Miami Beach is a municipality, was designated by the Governor to coordinate local planning for the conventions. He, in turn, designated the Comprehensive Health Planning Council of South Florida, Inc. (HPC), to plan for health service delivery during the conventions. This nonprofit, voluntary health agency was organized under P.L. 89-749, the Comprehensive Health Planning Act of 1966.

In May 1972 this council therefore appointed an ad hoc committee to coordinate emergency services planning for the two conventions, which were scheduled 5 weeks apart: the Democratic, July 10–13, and the Republican, August 21–23. Because the first convention was then only 8 weeks away, this 30-member committee was operating under stringent time constraints. The committee's goals were (*a*) to make adequate primary and emergency health services readily accessible to convention visitors and (*b*) to assure appropriate and efficient use of existing health facilities.

An early activity of the committee was to research the experience of other communities that had planned for political conventions. There was concern that Miami and Miami Beach might undergo violence like that experienced at the 1968 Democratic Convention in Chicago. The staff also investigated the methods other communities had used to provide health services for other mass assemblies of people, especially for large numbers of protesters. In the experience of Washington, D.C., with mass protests (*1–4*), the factors that affected the delivery of health services to such groups included advanced planning, the number and age of the participants, the amount and type of civil disobedience, the duration and location of the assemblies, and the location of available medical facilities.

Health worker takes information from new patient at Flamingo Park medical tent

Since the Democratic and Republican parties were preparing for the health care of their delegates, the main need seemed to be the delivery of health services to nondelegates, those persons not officially connected with the conventions who were expected to come to Miami Beach to voice protests. Health care plans for the political party officials would be included in an overall community plan so that the ad hoc committee's main focus would be the nondelegates.

Complicating the creation of a suitable plan were several unknowns. How many nondelegates would assemble and where? What sources of financial and manpower assistance would be available? Would demonstrators remain in the Miami area during the 5-week convention interim?

Based on the experience of other communities, committee members made certain assumptions about the nondelegates. Many would be young and healthy, and most of their health problems would be minor (sunburn, respiratory infections, minor injuries, and drug abuse). On these assumptions, the planners determined that the major need would be for first aid and basic primary health care. They decided, however, to formulate contingency plans for the delivery of emergency health services in the event of massive civil disobedience.

Accurate predictions could not be made about the number of nondelegates to expect, but estimates ranged from 5,000 to 250,000. The

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The work described was supported in part by the Division of Emergency Health Services, Health Services and Mental Health Administration, Department of Health, Education, and Welfare, under Regional Order No. PLD–12255–72. Tearsheet requests to David Rosenfield, MD, 47 Midland St., Worcester, Mass. 01602.

planners did not know where the nondelegate assemblies would occur or where campsites for the nondelegates would be located. They hoped, however, that Dade County and the City of Miami Beach would designate camping areas having adequate water and sanitary facilities. The planners decided to rely upon volunteer health manpower from Dade County, but sources for financial assistance were less readily identifiable. Accepting these uncertainties and assumptions, the health planners drafted a health care plan.

Plan for Health Services

The health planning council's ad hoc committee drew up a plan for the delivery of primary health care and emergency services based upon an initial outline submitted by Rosenfield, who was a member of the committee. The plan provided for primary and emergency health care, including emergency first aid and triage, and for the care of the common medical problems of ambulatory patients and the problems occasioned by drug abuse (*5*).

For each group of 20,000 nondelegates, there was to be one central primary care facility and three to five satellite units from which health care services would be delivered. The central facility would also be a supply, communications, and transportation center. Separate areas for the treatment of drug problems and for tear gas decontamination would be included in the central facility. Satellite units would serve as extensions of the primary care facility, providing primary care at campsites and other areas of congregation.

The staffing plans for the primary care units were based on a concept of primary care teams, made up of physicians, nurses, and allied health personnel. Also, "street medics," consisting of medical and nursing students and paramedical personnel, would mingle with the crowds, identify medical problems, render first aid as needed, and assist the sick or injured to reach health facilities.

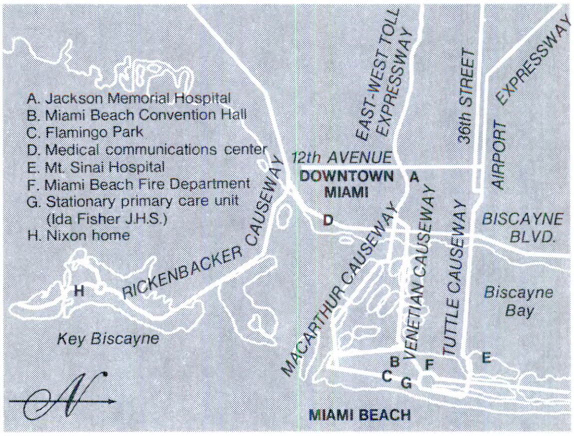
The Dade County Department of Public Health was assigned organizational and operational responsibility for implementing the plan. An operations chief was appointed and an organizational structure prepared.

Implementing the Plan

In July, preceding the Democratic Convention, certain steps were taken to implement the plan. Flamingo Park, located on Miami Beach (see map), was identified as the major campsite area for nondelegates. Subsequently, the Ida Fisher Junior High School, two blocks from this park, was selected as the central primary health care facility. The map shows the location of these two areas in relation to the convention hall.

Two mobile health care vans (a 40-foot trailer and a 20-foot camper) were loaned by other county health departments to serve as satellite health care units. The Public Health Service supplied a large tent and also cots, blankets, and other heavy medical supplies. A grant from the Emergency Medical Services Section of the Florida State Division of Health provided funds for the purchase of the rest of the medical supplies that were procured locally by the Dade County Department of Public Health. (A list of these supplies, equipment, and drugs—103 items—will be supplied by Rosenfield upon request.)

Medical care facilities for nondelegates at 1972 national Democratic and Republican Conventions, Miami and Miami Beach, Fla.



Approximately 100 lay and 300 health professional volunteers were recruited by the American Red Cross, the Dade County Medical Association, the University of Miami School of Medicine, and other health professional associations and were trained.

Members of the faculty from the University of Miami School of Medicine prepared more than 8 hours of video tapes to train health professional volunteers so that they would be cognizant of the potential health problems of the nondelegates and of methods for their treatment. The subjects of these tapes included sun-related conditions, gastroenteritis, venereal disease, cardiopulmonary resuscitation, drug abuse problems, first aid, and the initial care of injuries. The training for the street medics was coordinated by a member of the Medical Committee for Human Rights (MCHR), who had had previous experience with health services delivery during demonstrations in Washington, D.C. These trainees participated in sessions on crowd psychology, police tactics, Red Cross first aid, and drug abuse.

An administrator from Jackson Memorial Hospital, Miami, a county-owned facility, coordinated the scheduling of all the volunteer staff members. Twenty-four-hour coverage by physicians, nurses, and other members of the primary care team was planned. Street medic teams of two to four persons were scheduled to be available during possible demonstration periods.

The transportation services provided to patients were to depend on the severity of the patient's illness or trauma. The fire rescue squad of Miami Beach was to provide care and transportation in response to emergency situations, while a private ambulance service that was under Dade County contract was to provide routine ambulance transportation. In addition, shuttle buses were to operate hourly from 7 am to midnight between the central primary care facility on Miami Beach and the Jackson Memorial Hospital for the nonemergency transportation of volunteer workers and ambulatory patients.

Communications were given a high priority in planning for the health care that would be available for delivery during the actual political conventions; resources, however, were not available to support the desired communications network. Telephone communications among the three primary care units and local police agencies, hospitals, and ambulance services were provided under a contract with the Southern Bell Telephone Company. In the absence of adequate radio communications, Miami Outreach, an affiliate of the National Young Men's Christian Association, was to provide a mobile communications network consisting of a base station and several two-way radio units located in mobile vans. The mobile vans were to follow congregations of demonstrators on the streets and provide communications for reporting street activities and related difficulties. Street medics were to call for assistance through the Miami Outreach communications system.

The Democratic Convention

During the Democratic Convention the 3,000 to 5,000 nondelegates included approximately 2,000 persons who camped in Flamingo Park. The 20-foot camper became a primary care unit in this park, while the 40-foot trailer was parked one block from Miami Beach Convention Hall. Both the central primary care unit at Ida Fisher Junior High School and the Flamingo Park unit

New patient waiting to give information at Flamingo Park medical tent

Nondelegate patient visits charted during 1972 Democratic and Republican Conventions

Complaints	Democratic	Republican	Total visits	
			Number	Percent
Minor injuries	72	215	287	37.5
Upper respiratory infections	57	80	137	17.9
Sunburn and heat exhaustion	27	21	48	6.3
Gastrointestinal	23	24	47	6.1
Dermatological	16	61	77	10.1
Neuropsychiatric	14	11	25	3.3
Gynecologic and genitourinary	10	10	20	2.6
Venereal disease	10	13	23	3.0
Drug-related	8	14	22	2.9
Ophthalmological	7	9	16	2.1
Lower respiratory infections	6	12	18	2.3
Alcohol-related	4	0	4	.5
Dental	3	7	10	1.3
Fractures	0	1	1	.1
Miscellaneous	13	18	31	4.0
Total visits	270	496	766	100.0

were kept open 24 hours daily; the facility near the convention hall was open primarily during convention hours.

The health care system for nondelegates became functional 2 days before the Democratic Convention and remained in operation for 1 day after the convention, a total of 7 days. Formal health care records were kept on 270 patients, who made 309 visits to the three primary care units. Their complaints are summarized in the table.

The most common reasons for visits were minor trauma and upper respiratory infections. There were few problems related to drug abuse. Only 24 patients were referred to Jackson Memorial Hospital: 15 for specialty consultations and laboratory tests, 4 for X-rays, 2 for suturing, 2 for drug overdose, and 1 for replacement of a colostomy bag. Only one patient was hospitalized, a man suspected of having hepatitis.

In addition to the patients for whom formal records were made, there were 405 minor patient encounters for which no charts were kept. These encounters consisted pimarily of dispensing salt tablets and performing minor first aid.

Interconvention Period

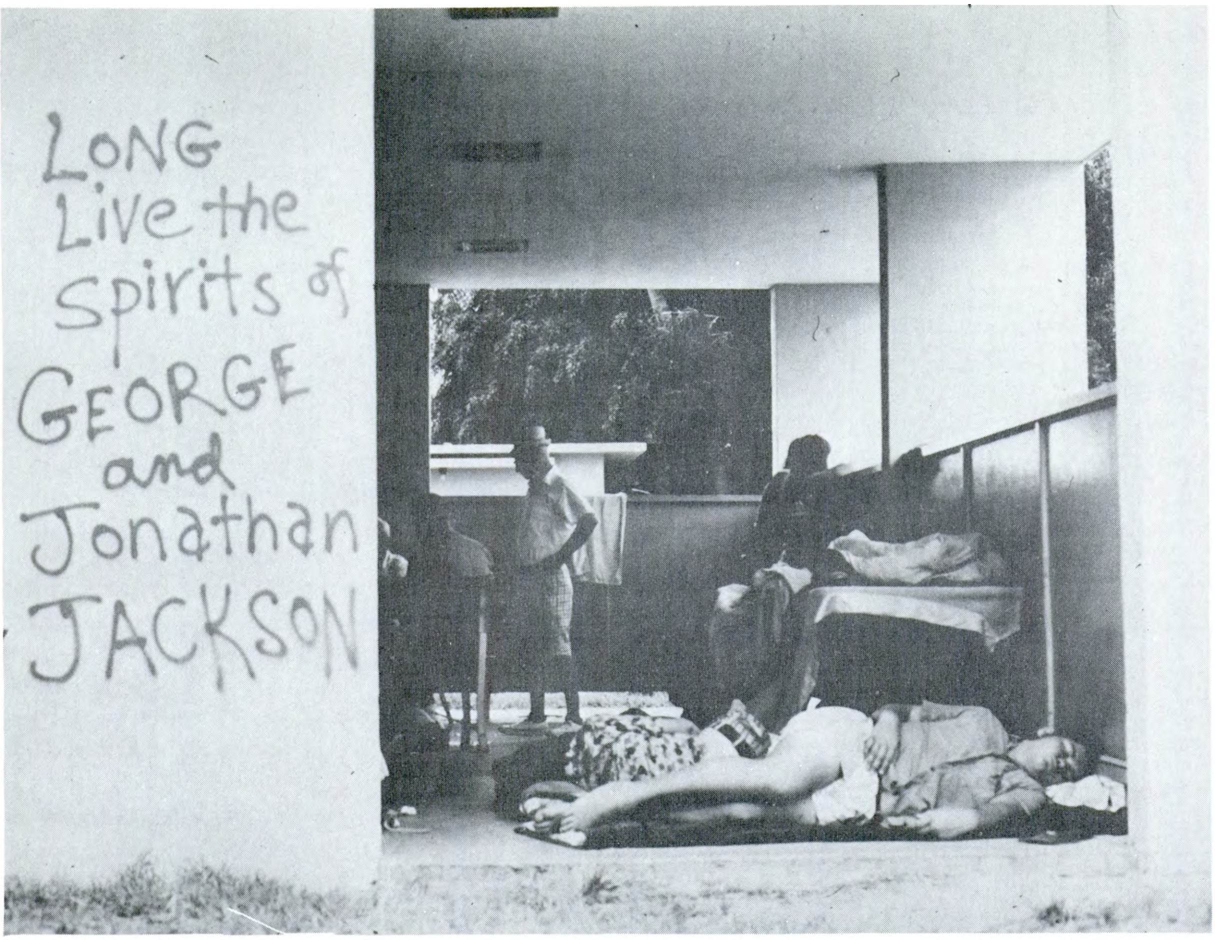
The nondelegates voluntarily left Flamingo Park on the day after the Democratic Convention, so that it was unnecessary to provide health services in the interim before the Republican Convention. The ad hoc committee, therefore, had an opportunity to evaluate the implementation of its plans during the Democratic Convention and to revise them before the Republican Convention.

The committee members found that their original assessment of the characteristics of the population that would need to be served and health problems that would arise had been essentially correct except that the numbers of nondelegates were overestimated and, consequently, their health care requirements. Utilization of the junior high school site was not sufficient to warrant its use as a treatment area during the Republican Convention. Only the primary care units at Flamingo Park and the Convention Hall were maintained. In addition, a large treatment tent was erected adjacent to the Flamingo Park camper unit. The junior high school location was maintained primarily as a backup supply area.

To provide better radio communications between street medics and the Flamingo Park primary care unit, hand-carried two-way radios were added for the Republican Convention.

The Republican Convention

The Republican Convention experience differed from that of the earlier Democratic Convention in three aspects—the number of demonstrators, the type of protests, and the police reaction. During the Republican Convention approximately 5,000 nondelegates resided in Flamingo Park. Health care was provided for 7 days, including 3 days before the convention. On the final night of the convention, protest leaders planned massive non-



Revolutionary slogan does not disturb peaceful slumber of two young visitors at Flamingo Park shelter

violent civil disobedience. Their plan called for preventing convention delegates from attending the final session by staging sit-down demonstrations that would block intersections leading to Convention Hall.

When these planned demonstrations occurred, they were accompanied by some acts of vandalism. The police used tear gas for crowd control, and street medics and staffs of the primary care units treated an estimated 500 to 1,000 persons for tear gas exposure during the final evening. The treatment used for tear gas exposure and minor tear gas burns consisted primarily of profuse irrigation with water. There were no known serious injuries resulting from these incidents.

Formal records were kept on 496 patients during the Republican Convention, not including the patients treated for tear gas exposure. The problems of these patients are summarized in the table. As during the Democratic Convention, the most common complaints were minor injuries and upper respiratory infections; again, few drug-related problems were encountered.

Of the 496 patients charted, 28 were referred to Jackson Memorial Hospital: 12 for specialty consultation and laboratory tests, 10 for X-rays, 3 for dental extractions, and 3 for suturing. Two patients were admitted to the hospital: one admission was psychiatric; the other, orthopedic. The orthopedic patient was a 20-year-old woman who had suffered a trimalleolar ankle fracture when hit by a car near Convention Hall on the evening of the massive demonstrations. Also, several dogs were brought to the Flamingo Park health facility for veterinary consultation.

First-aid tents, set up in Flamingo Park by Miami Outreach and by the Vietnam Veterans Against the War, served as first-aid buffers for the primary care units. The impact of the street medics was difficult to measure, although their role in providing first-aid care, especially to tear gas victims, was clearly evident and valuable.

General Evaluation

After the Republican Convention, the ad hoc committee again met to evaluate the entire process of providing medical care to nondelegates. Following are some of the comments of its members:

1. A major initial need was to identify the resources that would be required to assure adequate medical supplies. These resources were not identified or made available until the week just before the Democratic Convention. Planning and implementation would have been facilitated by their earlier identification.

2. The plan for providing care was successfully implemented and its goals were achieved: the primary care units provided adequate health care for the nondelegates, and local health facilities were therefore not abused.

3. The provisions for primary health care proved more than adequate. With the same facilities, it was estimated that at least twice as many persons could have been cared for adequately.

4. Although the emergency capability of the system was not seriously challenged, committee members considered the provisions made for emergency health care to be less than optimal. During the last evening of the Republican Convention, when emergency health care capabilities were needed, the need for better interagency communications and coordination became evident since the police, the ambulance service, and health care workers were unable to communicate well with each other.

5. Throughout the convention period only a small number of patients with drug-related problems came to the primary care units. A partial explanation may be that many persons with minor complaints such as "bad trips" chose to be treated by their friends or by the nonmedical volunteers of Miami Outreach. That few of these problems were serious can be largely attributed to the self-administered security force that had been organized by the nondelegates to keep pushers of hard drugs out of Flamingo Park. In addition, unidentified drugs were obtained and analyzed by Miami Outreach, and the results were advertised to the park's residents in a daily newsletter.

6. Despite crowded conditions and less than optimal food preparation facilities, there was no serious outbreak of gastroenteritis. This achievement can be explained partially by the clean water and toilet facilities provided by Dade County and its department of public health.

7. Finally, an intangible factor contributed to the success of this health care program. During both conventions there was a spirit of cooperation and a readiness to communicate among health planners, Dade County officials, and the nondelegate groups. Cooperation and communications improved as people became more accustomed to working together.

Summary

The Comprehensive Health Planning Council of South Florida, Inc., was assigned the task of planning for health service delivery during the two conventions. Aware that Republicans and Democrats had already made plans for health care for those officially connected with the conventions, the ad hoc committee of the council formulated a plan for supplying health services to the possibly large numbers of young people who might come to the area to voice protests during the conventions. The plan stressed primary and emergency medical services. The Dade County Department of Public Health was assigned organizational responsibility for implementing the plan.

During the conventions the health care services were used by the nondelegates, but only a comparatively small number of nondelegates came to Miami Beach. The plan appeared to successfully achieve its two main goals of making primary medical care available to nondelegates and of preventing the abuse of local health facilities. The emergency capabilities of the health care system established for nondelegates were not seriously challenged, but the need for better interagency communications among police, ambulance services, and health workers was evident.

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Some Factors Affecting Staff Attitudes Toward Offering Intrauterine Devices to Adolescent Patients

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THE LARGE NUMBER of adolescents seeking contraceptive services and the acknowledgement of their need for such services by the medical community have led to changes in attitudes as well as in the provision of services. These changes are exemplified in the following statements of two professional organizations.

The American Academy of Pediatrics recommended in April 1971 that:

> . . . the teenage girl whose sexual behavior exposes her to possible conception should have access to medical consultation and the most effective contraceptive advice and methods consistent with her physical and emotional needs; the physician so consulted should be free to prescribe or withhold contraceptive advice in accordance with his best medical judgment in the best interests of his patient.

The American College of Obstetricians and Gynecologists issued the following statements in

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May 1971 concerning contraceptive services to minors:

> The never-married, never-pregnant, sexually involved female has not yet been reached with effective contraception. The laws of some states indirectly prohibit this service for minors and thereby prevent the gynecologist from serving them or place the physician in legal jeopardy if he does so. . . .
>
> The unmarried female of any age whose sexual behavior exposes her to possible conception should have access to the most effective methods of contraception. In order to accomplish this, the individual physician, whether working alone, in a group or in a clinic, should be free to exercise his best judgment in prescribing contraception and, therefore, the legal barriers which restrict his freedom should be removed.
>
> These restricting legal barriers should be removed even in the case of an unemancipated minor who refuses to involve her parents. A pregnancy should not be the price she has to pay for contraception. On the other hand, in counseling the patient, all possible efforts should be made to involve her parents.
>
> The contraceptive services should be offered whenever possible in a broad spectrum counseling context which would include mental health and venereal disease. Every effort should be made to include male partners in such services and counseling.

Provision of contraceptive services for girls from menarche to age 17 poses the question of suitability of the various methods available for this age group. Individualization is the key word in the approach to the teenage contraceptor. No one method is best for all patients. While effectiveness is the primary consideration, equally important are the possible long-range effects of certain methods. Furthermore, even if a particular method is proved to be fully effective, with no side effects, would it be used successfully by the younger patients?

In view of the increasing use of intrauterine devices (IUDs) by adolescents and the development of more efficient devices, a study was undertaken to attempt to identify how staff attitudes influenced the use or nonuse of IUDs among the young patients of two clinics.

Survey of Clinic Procedures

The two clinics selected for the study provide contraceptive services to adolescents up to age 17. Clinic A has a comprehensive program for unwed pregnant adolescents and provides contraceptive services postpartum. Clinic B has a freestanding family planning program which provides contraceptive services to previously pregnant and never-pregnant adolescents.

The contraceptive methods prescribed for 142 patients during a 1-year period in clinic A and for 272 consecutive patients during a 5-month period in clinic B were as follows:

Method	*Clinic A*		*Clinic B*	
	Number patients	*Percent*	*Number patients*	*Percent*
Pill	23	16	215	79
IUD	98	70	10	4
Diaphragm	0	0	27	10
Other	0	0	4	1
None	21	14	16	6
Total	142	100	272	100

All the patients in the two clinics were under age 17, as mentioned before. Their marital status and number of pregnancies were as follows:

Characteristic	*Clinic A*	*Clinic B*
Marital status:		
Single	142	263
Married	0	5
Separated	0	0
Not reported	0	4
Number of pregnancies:		
None	0	210
One or more	142	54
Not reported	0	8

There was a marked difference in the types of contraceptive methods prescribed at the two clinics. At clinic A, 70 percent of the study patients were using IUDs and only 16 percent the pill. At clinic B, 79 percent of the study patients were on the pill and only 3.6 percent were using IUDs. As shown in the preceding table, the only major difference between the two populations was in the number of previous pregnancies. Most of the relatively few previously pregnant girls at clinic B had had a previous abortion rather than a live birth; of the small percentage of clinic B patients using IUDs, 40 percent were in this group.

To evaluate the effect of a patient's having had a previous pregnancy on the attitude of the staff toward prescribing an IUD, each member of the clinic was given a questionnaire concerning choice of contraceptive method and basic knowledge of intrauterine devices. The questions on choice of method were:

1. In numerical order of preference, please indicate what you consider to be the contraceptive method of choice for all healthy, sexually active adolescents (menarche to age 17): oral contraceptive, IUD, foam, diaphragm, rhythm, other.
2. What method do you prefer for the sexually active never-pregnant adolescent?
3. What method do you prefer for the sexually active previously pregnant adolescent?

The types and numbers of staff members in each clinic were as follows:

Types	*Clinic A*	*Clinic B*
Clerk	1	5
Family planning coordinator	1	6
Registered and public health nurses	3	8
Certified nurse-midwife	0	1
Social worker	1	0
Physicians	7	5
Total	13	25

For purpose of analysis, the physicians were separated from the other health personnel who influence the patients' choice of method. In both clinics, unless there was a specific contraindication, the physician usually accepted the method prescribed by other personnel and agreed to by the patient. Therefore, the influence of the other health personnel is very important.

Results

The responses to the questionnaire showed a strong preference by all personnel in both clinics for oral contraceptives and IUDs over the other methods. Although the first question asked for rank order of preference, only the first choice is considered in this analysis.

In response to question 1, the physicians in both clinics ranked oral contraceptives and IUDs almost equally as preferred methods. Among the other personnel, those in clinic A clearly preferred the IUD, while those in clinic B preferred oral contraceptives.

Concerning the method of choice for the never-pregnant adolescent (question 2), the physicians and other personnel in both clinics preferred oral contraceptives. Even the other personnel in clinic A showed less preference for the IUD than they did in response to question 1.

As to the method preferred for the previously pregnant adolescent (question 3), all but physicians of clinic B showed less preference for the IUD than they did for the never-pregnant girl.

Among the physicians in clinic A, where IUDs are preferred, there was a reversal in choice of method between questions 2 and 3, whereas the physicians in clinic B showed no change. Among the other health personnel, those in clinic A preferred IUDs in response to all three questions, but less so for the never-pregnant adolescents than for the previously pregnant; the same changes were indicated by the other personnel of clinic B, but to a lesser degree.

The responses to specific questions regarding knowledge of effectiveness of IUDs for adolescents indicated that knowledge was adequate among all groups in both clinics, and no specific patterns emerged.

Discussion and Conclusion

A major factor affecting the use of IUDs by adolescents in this study was the attitude of the clinic staffs toward inserting these devices in nulliparous patients.

Not all methods of contraception are equally applicable to the adolescent population. The use of diaphragms, condoms, or foam, for example, are considered by many patients to be inconvenient and to interfere with the spontaneity of the sexual encounter, particularly by the adolescents who want to do the "natural thing." Thus, oral contraceptives and IUDs have become the most commonly used methods by young girls.

There are advantages and disadvantages to both methods. Properly taken, oral contraceptives almost always afford complete protection. However, the lifestyle of adolescents is not always adaptable to daily medication. Discontinuance and failure rates are higher among young girls than among older women. Rauh and associates (*1*) reported a 30 percent failure rate in an adolescent population. Discontinuance rates are also affected by the ability of adolescents to deal with the more common side effects of oral contraceptives; undue reactions to side effects and discontinuance are often associated with a young girl's feelings of guilt and anxiety. Too often, when an adolescent discontinues the pill, she does not turn to alternate methods and pregnancy occurs.

The long-range effects on a growing girl of the daily administration of a potent steroidal compound have not been fully elucidated. The absolute contraindications to prescribing oral contraceptives are the same for the adolescent as for the adult. Of these contraindications, special emphasis must be placed on (*a*) impaired liver function from drug-associated hepatitis and (*b*) undiagnosed abnormal genital bleeding, in light of recent findings of vaginal carcinoma in young patients whose mothers had taken estrogens during pregnancy (*2*).

Hastening of epiphyseal closure and the resulting decreased stature caused by estrogens has been thought to be another contraindication for adolescents. However, bone growth is completed in most girls by age 14 or 15. After that age, the use of estrogens in the low-dosage oral contraceptives will probably have little influence on the normal teenager. But, the use of oral contraceptives by adolescents who do not have normal menstrual patterns is an area of concern. As many as 2 to 3 percent of patients taking the pill have post-treatment amenorrhea and anovulation, and most of these patients have had these conditions before they started to use oral contraceptives (*3*). The effects of estrogens on metabolic factors such as glucose tolerance, renin release, and protein changes are under study (*4*).

A major disadvantage of the IUD is that it is not absolutely foolproof against pregnancy. Removal by a professional is necessary when pain and excessive bleeding occur. Also, spontaneous expulsions occur more frequently among nulliparous patients than among parous ones (*5*). Reports of recent studies, however, indicate that modification of the size, shape, and composition of IUDs may lead to lower rates of expulsion and removal and higher efficacy, even for nulliparous patients (*6,7*). Moreover, despite the high removal and expulsion rates with IUDs, ineffective use of oral contraceptives can lead to higher pregnancy rates than occur with the use of IUDs (*8*). Melton and Shelton (*9*), in a study comparing the continuation rates of patients using the pill or the IUD, found a higher continuation rate with the IUD—probably, they suggested, because of the inconvenience of taking the pill. This finding may be even more probable for young girls.

Many factors affect the choice of a specific contraceptive method by adolescents. Certainly, the patient enters the clinic with some knowledge gained from other sources. Some of this information may be erroneous and some true. A clinic which provides teenagers with an unbiased presentation of all approved contraceptive methods permits the patient to choose a method according to her needs (*10*).

Although in some instances the teenager will have made a firm decision as to contraceptive method before she comes to the clinic, usually the counseling provided will help her choose the method best suited to her lifestyle. Given this opportunity to choose her method, commensurate with medical approval, she will have more of a commitment to use it.

In a previous study (*11*), it was noted that the nulliparous girls preferred the pill while young mothers equally preferred the pill and the IUD. This observation agrees with the findings of our study, but we also found that staff attitude may be an important factor in influencing the patient's choice of method. Ideally, the attitude of the staff in counseling a patient should be unbiased; however, our study results indicate staff bias against the IUD for the never-pregnant adolescent.

Clinic A's postpartum patients were largely influenced by the staff to use the IUD. Other factors also were contributory. The new mother herself may wish to use a method that does not need positive reinforcement. Or, it may be that the staff reasoned that the girls who had recently delivered needed to have a contraceptive method that would require minimal initiative and maintenance. In either case, the attitude of the patient or the staff influenced the patient's decision.

The clinic B staff overwhelmingly favored the oral contraceptive for the never-pregnant teenagers. Although 20 percent of the girls attending this clinic had had pregnancies before their initial clinic visit, they were not immediately postpartum or postabortal. The staff attitude was more favorable toward the IUD for the previously pregnant teenagers. However, the use of the device among this group of patients was not significant, perhaps because of the timing of insertion of an IUD. Since the medical staff at clinic B inserted IUDs during menses, frequently a second visit to the clinic was required. Experience showed that if the insertion was not performed at the first visit, the patient often failed to return. In fact, of five patients asked to return when they were menstruating, only one did return. Therefore, at clinic B oral contraceptives were preferred, even for the parous patients.

Attitude is based on knowledge and experience. The survey revealed that knowledge was comparable in the two clinics. Clinic A had experienced good results with insertion of IUDs in postpartum patients. Clinic B had experienced diminished returns when a second visit was required for proper timing of the insertion. That these factors influenced the attitude of the staffs of the clinics was reflected in a bias toward one contraceptive method. Other factors being equal, this attitudinal bias affected the extent of use of the IUD by the adolescent patients.

In conclusion, as newer intrauterine contraceptive devices are tested, the knowledge and experience gained must be disseminated if attitudes are to be changed and if more nulliparous adolescents are to use these devices.

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MARINOFF, STANLEY C. (Group Health Association, Inc., Washington, D.C.) and FIEDLER, DOLORES E.: ***Some factors affecting staff attitudes toward offering intrauterine devices to adolescent patients. Public Health Reports, Vol. 89, July–August 1974, pp. 372–376.***

The large number of adolescents seeking contraceptive services and the acknowledgement of their needs for such services by the medical community has led to increased use of contraceptives by adolescents. The choice of a contraceptive method by the adolescent patient depends on many varied factors. The lifestyle of adolescents precludes the use of some methods. Oral contraceptives are poorly tolerated and used. Thus, intrauterine devices (IUDs) are becoming the method of choice. This paper investigates some of the factors affecting staff attitudes toward offering intrauterine devices to adolescent patients.

The use of IUDs in two clinic populations which provide contraceptive services to adolescents was surveyed. One clinic has a comprehensive program for unwed pregnant adolescents; the other has a freestanding family planning program providing contraceptive services to previously pregnant and never-pregnant adolescents. When contraceptive services were offered to the previously pregnant females, 80 percent used IUDs; of the never-pregnant females, only 4 percent used IUDs. The staffs of the two clinics were surveyed to evaluate the effect of a patient's previous pregnancy on their willingness to prescribe IUDs.

The experience of the staff of the freestanding clinic as well as quasi-legal questions concerning contraception by adolescents influenced the staff's attitude and decreased the use of IUDs by nulliparous patients.

Medical Costs and Other Aspects of Dog Bites in Baltimore

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⁂

INJURIES CAUSED BY DOG BITES have grown to epidemic proportions in recent years and are now of major public health significance. Animal bites may lead to dangerous viral and bacterial infections, such as rabies, pasteurellosis, and tetanus, and the injuries may result in permanent scars, severe disability, and even death (*1*).

During 1972, a total of 7,436 animal bites, including 6,922 dog bites, were reported to the Baltimore City Health Department. These totals represented a 147 percent increase over the 2,933 animal bites, including 2,884 dog bites, reported for 1953. The rate per 100,000 population rose from 303 to 836 during the same period, a 186 percent increase (*1, 2*).

In February 1973, William Donald Schaefer, Mayor of Baltimore, appointed an Advisory Committee on Canines to study and evaluate the increasing problems of animal bites and stray dogs

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and to make recommendations to implement better animal control measures. Much information that had been gathered and published over the years was available to the committee (*1–4*); however, to our knowledge, no definite information on the medical costs and material losses from animal bites had been published in recent years.

Because information regarding the financial burden of dog bites was desired, the Baltimore City Health Department decided in late February 1973 to conduct two surveys. In addition to seeking information on medical costs, we wished to collect data on the degree of disability sustained by the dog bite victims and the ownership of the biting dogs.

The First Survey

In March, questionnaires were sent to the victims in the 500 dog bite cases reported from November 1, 1972, through January 4, 1973. Although these months are the "seasonal low" for dog bites, it was decided to survey the cases because of the possibility of the victims forgetting details of an incident occurring more than 3 months earlier. The 3-month time frame was also chosen because medical costs and long-term effects of dog bites may not be apparent until at least 2 months after such incidents.

Of the 500 questionnaires sent, 20 were returned because of an incorrect address or other reasons pertaining to mail delivery. Of the 480 questionnaires apparently delivered, 214 were completed and returned, a response of 45 percent.

The patients in half of the cases for which questionnaires were completed were children under 15 years (table 1), a finding consistent with other studies (*1, 3*). Also, 62 percent of the persons bitten were male, and 38 percent were female.

The victims' visits to a medical facility (physician's office, hospital, or clinic) and days of disability were tabulated. The results were as follows:

Medical facility visits or disability days	*Number of persons*	
	Visits	*Days*
0	5	134
1	160	31
2	37	14
3 or more	12	35
Total	214	214

Eighty patients reported being disabled 1 or more days. Parents of 51 school and preschool children reported disability or time lost from school of up to 14 days. Of 29 adults reporting various periods of disability, 1 claimed being disabled 3 months after the bite. Other extensive periods of disability reported were 75 days, 60 days, 30 days, and 27 days. Time lost from work ranged up to 14 days. It is interesting that the 49

Table 1. Age and sex of persons bitten by dogs, Baltimore, November 1, 1972–January 4, 1973

Age group (years)	Male	Female	Total	
			Number	Percent
0–4	10	9	19	8.8
5–14	56	30	86	40.3
15–24	22	13	35	16.4
25–44	20	7	27	12.6
45–64	15	12	27	12.6
65 and over	7	7	14	6.5
No age given	3	3	6	2.8
Total	133	81	214	100.0

Table 2. Dollar costs to 45 persons reporting medical bills and at least one other expense resulting from a dog bite, Baltimore, November 1, 1972–January 4, 1973

Range of costs	Number of persons	Percent of group	Average cost	Total cost
Up to $25	7	15.5	$19	$135
$26–$50	27	60.0	37.50	1,011
$51–$100	8	17.8	72	579
More than $100	3	6.7	162	485
Total	45	100.0	$49	$2,210

Table 3. Ownership of dog and who paid the expenses of the dog bite victim, Baltimore, November 1, 1972–January 4, 1973

Dog's owner	Total cases		Owner paid		Owner did not pay	
	Number	Percent	Number	Percent	Number	Percent
"Our dog"	40	18.7	40	100.0	0	....
Neighbor's or friend's dog	89	41.6	12	13.7	77	86.5
Stranger's dog	48	22.4	5	10.4	43	89.6
Dog's owner unknown	37	17.3	0	....	37	100.0
Total	214	100.0	57	26.3	157	73.7

patients (23 percent) who made two or more visits to a medical facility were also disabled 2 or more days.

Twenty-one persons (10 percent) required sutures for their wounds; one patient required 30 stitches, and another, plastic surgery to repair a severed nose. A total of 120 persons, or 56 percent of the group, reported that they had visible scars as a result of the bite. The scars ranged from one-fourth of an inch to 6 inches long.

Tetanus injections were administered to 199 persons. Some of the 15 patients not given injections had been immunized shortly before they were bitten. To the best of our knowledge, none of the victims surveyed received antirabies vaccine; no cases of rabies in dogs have occurred in Baltimore City since 1947.

The direct medical expenses incurred by the bitten persons or their families were as follows:

Medical bill	*Number*	*Percent*
None	6	3
Up to $10	14	6
$11–$25	65	30
$26–$50	56	26
More than $50	10	5
Paid by medical assistance or insurance plan	63	30
Total	214	100

In 30 percent of the cases there was no information about medical costs. Most of the patients in these cases were covered by a public medical assistance plan, and no expense statements were sent to them. The average bill for the 145 patients reporting medical costs was $38.50. For the 121 cases in which medical expenses ranged from $11 to $50, the average cost was $25.50. The three highest medical bills reported were $756, $721, and $350.

Those who had been bitten, or the parents of children who were bitten, were asked the cost of repairing or replacing clothing damaged in the incident and any other costs incurred. Only 52 patients reported damages to clothing; 38 reported costs up to $10, and 14, costs of more than $10. One person reported clothing damages of $98.

Forty-nine persons reported other expenses. These included veterinary bills for an injured dog, babysitting payments, cab fare, damage to an automobile, and loss of salary because of time away from work. The largest amount claimed was $201, and represented lost salary. Two other patients reported salary losses of $125 and $75. One man reported damage amounting to $75 caused when he climbed on his car to avoid further injury by an attacking German Shepherd.

To ascertain expenses for those who sustained clothing damage as well as other expenses, we analyzed 45 cases in which medical and at least one other type of expense was reported (table 2).

Analysis of total costs was complicated by the 30 percent of those bitten who were covered by medical assistance or other plans. Some of these persons sustained damage to clothing or other property, but they did not know the cost of their medical treatment. However, with these limitations in mind, it is interesting to compare the medical costs previously listed with the total expenses (table 2). The average medical bill was $38.50, but the average total cost was $49, an increase of more than 25 percent. It is worth remembering that a single dog bite accident may result in costs of several hundred dollars or more.

We were interested in obtaining information on the ownership of the biting dogs and on how many owners paid the expenses of the victims. One in five patients were bitten by the family dog; two in five by dogs living in the neighborhood; and the other two in five by dogs belonging to strangers or dogs whose owners were not known (table 3).

Table 4. Summary of hospital survey of treatment of dog bite victims, Baltimore, February 1972–February 1973, in percentages

Item	Number hospitals reporting	Average for hospitals reporting	Range
Site of bite:			
Face, head, neck	19	12.5	0– 40
Hands, arms	19	27.4	5– 45
Legs	19	57.5	20– 95
Patients admitted to hospital	17	1.0	0– 10
Patients needed followup treatment	18	38.7	0–100
Patients received tetanus toxoid	19	90.5	43–100
Patients received antibiotics	17	20.3	0– 60
Bites required sutures	18	11.9	0– 90
Standard emergency room charge (dollars)	19	$18.30	$10–$28
Charge for suture (dollars)	16	$23.25	$6–$58
Charge for antibiotic (dollars)	7	$5.60	$2.60–$10
Charge for toxoid (dollars)	16	$2.18	$.50–$10

About 26 percent of the dog owners paid all or part of the medical expenses that resulted from the bite; however, 40 persons were bitten by their family pet. The victims' expenses were paid for only 17 persons (12.4 percent) of 137 bitten by someone else's dog whose owner was known. Furthermore, if we omit the 40 family dog cases and include the bites by dogs whose ownership was unknown, only 17 of 174 persons (less than 10 percent of those bitten) were reimbursed for their expenses by the dog's owner.

Respondents were also asked for additional comments. Those who replied were generally concerned about the increasing problem of stray and ownerless dogs on the city's streets, and the threat they posed to innocent pedestrians.

The Second Survey

Simultaneously with the survey of dog bite victims, a questionnaire was sent to both the physician and administrator in charge of the emergency departments of all 20 Metropolitan Baltimore hospitals. Replies were received from 19 hospitals. Each respondent was asked to estimate certain aspects of dog bite management in his hospital's experience during the previous 12 months. Replies from the hospitals are summarized in table 4.

Considering the limited number of cases and hospitals surveyed, the range of medical expenses, and the seriousness of individual injuries, there is an interesting similarity in the average costs cited by the hospitals and the responding patients. These were as follows:

Item	*Hospital*	*Patient*
Average medical charge	$32.00	$38.50
Patients needed hospitalization (percent)	1.0	1.0
Patients needed more than 1 visit (percent)	38.7	23.0
Patients received tetanus toxoid (percent)	90.5	93.0
Bites required sutures (percent)	11.9	10.0

Because the hospital data did not include the more costly injuries, the hospitals' average costs tended to be lower than those reported by the patients.

The hospitals reported that, of the persons bitten, one of eight sustained wounds of the face and neck, one of four were bitten on the upper extremities, and more than half, on the lower extremities (table 4). These data correspond to findings in a Norfolk, Va., study in which 15 percent of the bites were of the face, head, and neck; 33 percent of the upper extremities; and 52 percent of the trunk and lower extremities (*3*). One of five patients treated at the hospitals was given antibiotics.

Discussion and Comments

As in most cities in the United States, there has been an increase in the number of dogs in Baltimore that are obtained for companionship or for protection. The result is an increase in the free-ranging (owned or ownerless, unsupervised and free-running) dogs (*5*). Also, there has been an increase in dog bites, as reflected in the records of the Baltimore City Health Department. Dog bites can be expensive in terms of medical costs, costs of torn clothing, lost wages, and other expenses.

Baltimore's health department has recorded animal bites for 20 years and has endeavored to keep the public informed of the potential problems of animal bites, how to avoid being bitten, and what to do when one is bitten.

In this report we have been concerned with the medical and related costs of dog bites, which have proved to be significant. The two surveys have yielded baseline information not readily available heretofore in this area of public health. We hope the results of the surveys will aid public health officials attempting to estimate the medical expenses and other costs attributable to animal bites and to obtain public support for effective animal control measures.

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BERZON, DAVID R. (Baltimore City Health Department), and DeHOFF, John B.: ***Medical costs and other aspects of dog bites in Baltimore. Public Health Reports, Vol. 89, July–August 1974, pp. 377–381.***

The public health hazard of dog bites has grown to epidemic proportions. It has also created a significant financial burden in terms of medical costs and other losses for those injured. To obtain baseline information on such medical costs, the Baltimore City Health Department conducted surveys of bite victims and of the emergency rooms of area hospitals to collect information regarding their experience with dog bites. The survey of patients covered the period November 1, 1972-January 4, 1973, while the hospital survey covered 12 months prior to February 1973. The survey of victims also included questions on the degree of disability sustained and the ownership of the biting dog.

Of 214 responses (45 percent) to 480 questionnaires, 145 patients reported medical costs averaging $38.50; the highest medical bills were $756, $721, and $350. Sixty-three persons (30 percent) were covered by medical assistance or insurance plans and had no information on their medical costs. For 45 persons reporting medical costs and at least one other type of expense, the average total cost was $49. The average hospital charge reported by 19 of 20 hospitals surveyed was $32.

One in five patients was bitten by the family dog, two in five by a neighborhood dog, and two in five by dogs belonging to strangers or persons unknown. Fewer than 10 percent of those bitten by dogs not belonging to them were reimbursed by the dog owner for the expenses incurred.

Two hundred and nine patients visited a medical facility; 80 reported disability days; the longest period was more than 3 months. Children reported up to 14 days absence from school, and adults lost up to 14 days from work. The hospitals reported that more than half of the bites were on the leg, more than one in four on the hands and arms, and one in eight on the face, neck, and head.

The results of the two surveys may aid public health officials in estimating medical expenses and other costs of animal bites and in obtaining public support for effective animal control measures.

Directories of Ambulatory Health Care Facilities

A report of an experience in compiling and publishing lists of services available to the public in neighborhood health centers and hospital outpatient departments and emergency rooms in the Greater Boston area

JOANNE AGABABIAN, MSW, KATHLEEN CRAMPTON, MA, MPH,
AND ANDREW G. JESSIMAN, MD, MPH

A DIRECTORY of neighborhood health centers in the local Boston area was compiled by a group of health consumers and providers in December 1970. Information on each center included address, telephone number, regular clinic hours, fees, languages spoken at the center, and types of health services available. By August 1971, the directory had been published in booklet form and 50,000 copies were available to the public (*1*).

Several months later, discussions began on the possible expansion of the directory to include neighborhood health centers located throughout the Greater Boston area and to list hospital emergency and ambulatory care. The difficulties encountered in a project of this magnitude and the process of its completion are reported here.

Background

Publication of the original directory of neighborhood health centers was supervised by a steering committee composed of consumers, providers, and health planners and coordinated by Action for Boston Community Development (ABCD), the local antipoverty agency. The booklet was distributed by local community service agencies, and the response to it was very favorable in terms of requests for copies from consumers and organizations. Public response also indicated a need for information on other ambulatory health care services available in the Boston metropolitan area.

Ms. Agababian is the community specialist of the Health Planning Council for Greater Boston, Inc., Ms. Crampton is the community health associate at the Medical Foundation, Inc., and Dr. Jessiman is associate director of the Peter Bent Brigham Hospital. Tearsheet requests to Kathleen Crampton, Community Health Associate, The Medical Foundation, Inc., 29 Commonwealth Ave., Boston, Mass. 02116.

The feasibility of expanding the directory was examined by the steering committee at a meeting with representatives from local hospitals and the Massachusetts Department of Mental Health. The hospital representatives largely agreed that information about their services would lead to their more efficient use by the public; they therefore supported the committee's plans and were willing to assist with the project. Representatives from the Massachusetts Department of Mental Health, however, informed the committee that they were in the process of preparing their own listing of mental health services. Since a duplication of information might result, it was decided to omit the mental health services category from the directory. The directory was to be expanded to include information on hospital emergency rooms and outpatient departments. At the same time, the neighborhood health center section was to be updated and the geographic area covered was to be extended to include all of Greater Boston.

There was considerable debate on the desirability of including all the information in one booklet. The Tri-State Regional Medical Program provided funding, but restricted its use to information on hospital services. As a result, it was necessary to drop plans for one inclusive directory and proceed with plans for two separate booklets—one on neighborhood health centers and the other on emergency rooms and outpatient departments. To coordinate the directories, the steering committee approached the local comprehensive health planning or "b" agency, the Health Planning Council for Greater Boston. Recognizing that the aims for the directories matched the planning council's goal of providing information to the public on health services, the council agreed to provide staff to coordinate the directories and fund a portion of the printing. The remainder of the cost for the printing was underwritten by the Medical Foundation, Inc., a United Fund agency.

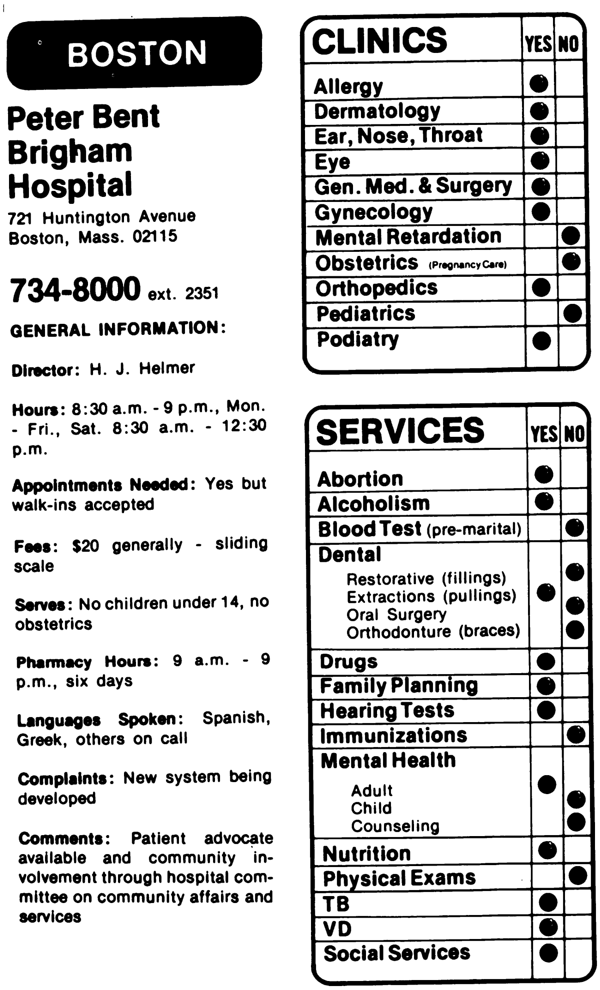
The Two Directories

The community specialist of the Health Planning Council supervised the mechanics of data collection and coordination. Assistance was provided by three work-study students from local universities. Information was gathered by personal interviews with hospital and neighborhood center administrators. The information was compiled and typed and returned to the administrators for verification before publication. This process took 9 months—3 for developing policy, 3 for collecting information, and 3 for printing.

While the updating of the health center information went smoothly, collecting the hospital information presented several problems. One was that, unlike the neighborhood health centers, there was no common nomenclature for the individual components of care provided by each institution. It was not until the information from the hospitals was compiled that this problem became clear. Some of the hospitals, while not having indicated that they operated a specific clinic, did provide the services in a clinic offering more general services. For example, family planning might be offered in gynecology, medical, or family planning clinics, depending on the hospital. A standard format was considered essential for the directory to be useful to the consumer. Hence, the steering committee had to devise a listing for both clinics and services available.

Another problem was the skepticism expressed by administrators of several smaller hospitals as to the usefulness of listing certain types of information. For example, there was resistance to releasing information about fees, as charges often depended on a patient's ability to pay.

Finally, verification of the information collected on each institution proved difficult. Hospital spokesmen, clinic managers, hospital administrators, or physicians in charge often did not know what services were offered or differed in their perception of these services.



BOSTON

Peter Bent Brigham Hospital

721 Huntington Avenue
Boston, Mass. 02115

734-8000 ext. 2351

GENERAL INFORMATION:

Director: H. J. Helmer

Hours: 8:30 a.m. - 9 p.m., Mon. - Fri., Sat. 8:30 a.m. - 12:30 p.m.

Appointments Needed: Yes but walk-ins accepted

Fees: $20 generally - sliding scale

Serves: No children under 14, no obstetrics

Pharmacy Hours: 9 a.m. - 9 p.m., six days

Languages Spoken: Spanish, Greek, others on call

Complaints: New system being developed

Comments: Patient advocate available and community involvement through hospital committee on community affairs and services

CLINICS	YES	NO
Allergy	●	
Dermatology	●	
Ear, Nose, Throat	●	
Eye	●	
Gen. Med. & Surgery	●	
Gynecology	●	
Mental Retardation		●
Obstetrics (Pregnancy Care)		●
Orthopedics	●	
Pediatrics		●
Podiatry	●	

SERVICES	YES	NO
Abortion	●	
Alcoholism	●	
Blood Test (pre-marital)		●
Dental		
Restorative (fillings)		●
Extractions (pullings)	●	
Oral Surgery		●
Orthodonture (braces)		●
Drugs	●	
Family Planning	●	
Hearing Tests	●	
Immunizations		●
Mental Health		
Adult	●	
Child		●
Counseling		●
Nutrition	●	
Physical Exams		●
TB	●	
VD	●	
Social Services	●	

Distribution of the Directories

Since the goal of the steering committee was to get the directories to the public, an effective system of distribution was critical. The experience with the first edition of the neighborhood health center directory had not proved satisfactory. The directories had been delivered to community agencies with letters asking them to distribute the pamphlets to their communities and staffs. However, we feared that agency staffs benefited more from the directories by using them as reference manuals. Also, by limiting the distribution to those associated with community social service agencies, we were missing the most important group—those who were not.

Taking these limitations into account in planning the distribution process, the steering committee wanted to identify locations where a broad section of people would have access to the directories. Obviously, it would be impossible to reach the entire Greater Boston population with limited funding and only 50,000 copies of each directory. Hence, several of the larger chain supermarkets in the Boston area were approached. Four of the largest chains with stores in low and middle income areas agreed to deliver the boxes of the pamphlets to their stores and to instruct their managers to distribute them at checkout counters.

To insure that the public would know about the directories, the public relations department of one of the funding agencies prepared press releases for newspapers and community service spots for local radio and television stations, indicating where and when the directories would be available at supermarkets. This publicity generated such demands that the supermarket chains asked for additional boxes of the directories. In addition, all community service agencies were notified by mail about the availability of the directories and were encouraged to order copies. All participating hospitals (those with emergency rooms and outpatient departments) and neighborhood health centers were given 100 copies of each directory for their own use.

Evaluation and Future of the Directories

Trying to evaluate whether the directories were being used by the public was of continual concern to the committee, as well as to one funding agency. This agency provided additional funds for a small tear-out post card to be included in each directory. The return rate has been too small to be significant in evaluating the effectiveness of the directories. Only 167 post cards from the hospital directory and 48 from the neighborhood health center directory were returned. One explanation for the differences in the return rate may be that the hospital directory post cards were prepaid. All the returned post cards contained positive comments about the usefulness of the directories and requested that the coverage be expanded to include outlying suburban communities and other emergency services, such as police and ambulance.

Thus far the community demand has failed to motivate the steering committee to produce a new edition. Several explanations have been offered: funds for such projects are no longer as available as they were a few years ago, and the market for the directories may have been saturated. Counting all the editions published, some 150,000 copies have been made available in the Boston area. This has probably been enough to reach a large number of professionals and one of every six households in the metropolitan area.

Unfortunately, the steering committee will never know who used the directories and for what purposes. Intuitively, the steering committee identified the general public and the professionals who provide health care services or information as the main consumer groups. Based on selective informal feedback, the committee generated one pamphlet for two very different sets of consumers. No analysis was undertaken to determine what information these two groups wanted, how best to transmit it to each, and whether the information was useful to either. While the steering committee believes that they were valuable, and requests for copies continue from agencies—such as the telephone company for its operators—any future effort should include experts in health education, production, and marketing. Moreover, any information effort should be incorporated into some larger planned public health education program. Finally, a total evaluation should be included to determine the effectiveness of the programs.

The "b" agency which is responsible for the directory's future sees it as part of its responsibility to educate the public about available health services. In the future, the steering committee will identify its target populations, weigh various methods of transmitting the information to them, choose those which best meet the needs of the particular target groups to be reached, and initiate an evaluation process to determine effectiveness.

BOSTON

Peter Bent Brigham Hospital

721 Huntington Avenue
Boston, Mass. 02115

EMERGENCY SERVICES PROVIDED	YES	NO
General	●	
Pediatric		●
Maternity		●
Dental	●	

AVAILABLE IN HOSPITAL 24 HOURS	YES	NO
Doctor	●	
R.N.	●	
X-Ray	●	

734-8000 ext. 2344 - 5,6

Administrator of ER: Andrew Jessiman, M.D.

Languages Spoken: Spanish 9-5:00 p.m., after that no organized interpreters.

Fees: $25 - main emergency room, $15 general practice unit. Does not include: X-Ray, Lab, Supplies

Emergencies Referred to Other Hospitals: Obstetrics and Pediatrics unless life threatening.

Complaints: Write to Administrator

Comments: 5:00 p.m. - 10:00 p.m. Mon. - Fri., 10:00 a.m. - 10:00 p.m. Sat., 12 noon - 10:00 p.m. Sun. general practice unit for non-emergency patient. Hospital committee on community affairs - consumer dominated

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Irregular Reporting of Tuberculosis Cases by Laboratories in Nassau County, N.Y.

RAYMOND J. MURRAY, MD, CHRISTOPHER H. HAYDEN, AND FRANK ZAHN

NASSAU COUNTY, a diverse and growing county in New York State, has a population of approximately 1,500,000. Until recently, the county was considered to be a bedroom area for New York City because most of its residents commuted to work in the city.

In recent years, however, industrial developments have accelerated, and new job openings have attracted workers from the city. Among this influx of workers are minority groups from low socioeconomic backgrounds who moved from crowded housing in high-tuberculosis-incidence areas in New York City to crowded housing in the county where they formed high-tuberculosis-incidence pockets. However, the trend in Nassau County is toward a slow but continued decreasing tuberculosis morbidity. For example, in 1972, 103 new cases of active tuberculosis were reported—a case rate of 7.2 per 100,000 population, which represents a decrease of 57 cases or 35.8 percent from the 159 cases reported in 1971.

Part of the decrease in reported cases is more apparent than real. Of the 159 cases in 1971, 34 were reported as activity undetermined, probably active. All of the cases were counted as active, but 17 were later determined to be inactive tuberculosis. If these corrections had been incorporated into the 1971 morbidity data, Nassau County would have reported 142 new active cases rather than 159. In 1972, 9 reported cases were later determined to be inactive, and these cases were not tallied in the final count of 103 cases for that year. In actuality, therefore, Nassau County reported 39 (27.4 percent) fewer cases in 1972 than in 1971. Nevertheless, this decrease is somewhat startling in view of the consistent tuberculosis morbidity pattern over the previous 4 years: 160 cases in 1969, 157 in 1970, and 159 in 1971.

Dr. Murray is deputy commissioner and director of personal health services and tuberculosis control, Mr. Hayden is a public health advisor, and Mr. Zahn is coordinator of the Tuberculosis Control Program, Nassau County Department of Health. Tearsheet requests to Frank Zahn, Nassau County Department of Health, 240 Old Country Road, Mineola, N. Y. 11501.

The critical question then is whether this decrease is real or whether it represents underreporting by private medical groups. As more cases are diagnosed and more patients are treated by private physicians and general hospitals, there will be an increased tendency—whether intentional or not—for these groups not to report cases of tuberculosis to the health department.

It should be noted that during 1971 private physicians and general hospitals reported 33 percent of the tuberculosis cases in Nassau County, 21 percent of the cases in upstate New York, and only 4 percent of the cases in neighboring Suffolk County. While the percentage of private physicians in Nassau County reporting and treating tuberculosis patients appears high compared with other areas, the county has many accessible medical care facilities. The percentage is expected to grow in the future when the county's only tuberculosis hospital is closed.

Faults in Laboratory Reporting

On reviewing the history of a patient with reported tuberculosis, the staff of the Tuberculosis Control Program of the Nassau County Department of Health often learned that the patient had had a positive bacteriological finding while in a general hospital. Yet, the hospital laboratory had not reported this finding to the health department.

The New York State Public Health Law, "Control of Acute Communicable Diseases," title 1, article 21, section 2102, clearly states that laboratories must report all evidence of communicable disease (for example, tuberculosis) to a health department, as follows:

> Communicable Diseases: Laboratory Reports and Records:
> I. Whenever any laboratory examination discloses evidence of communicable disease, the results of such examination together with all required pertinent facts shall be immediately reported by the person in charge of the laboratory, or the person making such examination, to the local or state health official to whom the attending physician is required to report such case.

Despite this law, we discovered that many laboratory directors were laboring under the misconception that they had fulfilled their reporting obligation when they reported the positive finding to the patient's physician. Our survey, described subsequently, showed that the requirements for reporting have been ignored. We also noted that the law was never forcibly enforced and probably never will be, because it is a law that is subverted primarily by ignorance of its existence rather than by a true intent to conceal.

By checking the records of reported positive tuberculosis findings, personnel of the Tuberculosis Control Program learned that almost as many different procedures were used for reporting as there were laboratories. Some reported by telephone, some by mail. Some immediately reported microscopic findings, and others reported only after obtaining the confirmatory culture results. When laboratories waited for culture results before reporting, the health department would often experience a 4- to 8-week delay before obtaining a case report and providing contact followup.

In the survey it was found that some laboratory directors avoided reporting positive microscopic findings, since the acid-fast bacteria noted are not always conclusive evidence that true tuberculosis exists. While this is understandable, it is safer to assume that the patient should be closely supervised until proof, one way or the other, is established. Indeed, patients have been known to leave the hospital and to have positive culture findings 6 to 8 weeks later. When the health department is brought into the case early, it can establish treatment and arrange for supervision quickly if the culture becomes positive.

Survey of Laboratories

To help to more accurately define and eventually resolve the foregoing problems, we suggested that the Tuberculosis Control Program conduct a survey of the laboratories in the county that perform mycobacteriology. With permission from the health commissioner, personnel of the program established the following objectives for the survey

- to define the current reporting procedures of each laboratory performing mycobacteriology,
- to institute a simple, standardized procedure by which laboratories could report positive findings to the department of health, and
- to assess the capabilities of the laboratories in the county to perform the various studies (smear, culture, drug sensitivity, and so forth) in tuberculosis mycobacteriology.

From the New York State Division of Laboratories in Albany, we obtained a list of the 20 laboratories in the county with permits to perform mycobacteriology. A questionnaire was mailed to each laboratory requesting information about the types of tests performed, current reporting procedures, the volume of tests performed, and positive results obtained in 1972. The responses from this questionnaire unexpectedly resulted in retroactive case reports on a few patients not reported previously to the health department.

When the questionnaire was returned, the surveyors visited the laboratory to (*a*) clarify responses given on the questionnaire, (*b*) obtain the names and identifying information on each of the patients with positive tuberculosis findings, and (*c*) introduce the laboratory personnel to a new laboratory reporting card which the Tuberculosis Control Program had recently developed for reporting all positive tuberculosis findings. The card was devised as a quick, easy way for laboratories to report tuberculosis findings. It provides the following

- check boxes for categories of reported findings,
- specimen types and microscopic and cultural results,
- mailing instructions (all cards are mailed to the health department),
- patient's name and address, and
- name and address of treating physician (this assures that the patient can be followed after discharge).

Using the lists of patients with positive laboratory findings during 1972, the program personnel checked the records file to identify those patients not reported to the health department by the laboratories.

Preliminary Results

All 20 laboratories responded to the questionnaire. Two of these laboratories no longer process specimens for tuberculosis. Another two are county laboratories which processed almost 50 percent of the specimens in the county in 1972. Since the Tuberculosis Control Program works closely with the two county laboratories, and since their reporting has always been prompt and complete, we did not include these laboratories in the following analysis.

Of the 16 remaining laboratories, 6 are in proprietary hospitals, 7 are in voluntary hospitals, and 3 are privately owned. These 16 laboratories processed 5,108 specimens for tuberculosis during 1972. Each laboratory indicated that it performed culture examinations on almost all specimens submitted, which was evidenced by the fact that of the 5,108 specimens processed, 5,055 (99 percent) were processed by culture.

Only two of the laboratories immediately report positive microscopic results to the health department. Eight laboratories report only when culture findings are positive, even though the microscopic results may have been positive. Two laboratories report positive findings to their hospitals' admitting or nursing offices and assume that these offices will forward the reports to the health department. We discovered, however, that the admitting or nursing offices actually report to the health department only if they can obtain a tuberculosis case report from the patient's physician.

Four laboratories have no procedure for direct or indirect reporting of positive findings to the health department. One of these laboratories sent its positive culture findings to a county laboratory for drug sensitivity studies and incorrectly assumed that the county laboratory would report the findings to the department. The other three laboratories claimed that they did not know they were required to report positive findings to the health department.

On visiting each of these 16 laboratories, the surveyors reviewed the laboratories' books and identified the names of the persons with positive tuberculosis findings during 1972. They then checked the Tuberculosis Control Program records to see if information had been received on these persons and to determine how long it took for the information to be received.

Of the 49 persons with positive bacteriological findings, the health department had records on 32. For the remaining 17 persons (34.7 percent) identified by the surveyors in the books of 7 separate laboratories, the department had no records or reports from any source. All but one of these laboratories had stated that they had some means of notifying the department of positive findings. In fact, the department had records on other patients with positive findings from six of these laboratories.

Of the 32 persons with positive findings reported to the health department, 24 were positive on microscopic examination. The Tuberculosis Control Program records for these 24 persons were carefully reviewed to determine how long it took the health department to receive a notification on them and if the first notification was by a positive laboratory report. The results of this review were as follows:

Number of days to receive notification	*1st notification by—*		*Total*	
	Laboratory report	*Other*	*Number*	*Percent*
1–5	5	8	13	54.2
6–20	0	7	7	29.2
21 or more . . .	1	3	4	16.6

Only 13 of the 24 persons with positive microscopic findings were reported within 5 days, and for only 5 of the 13 the health department received first notification by a laboratory report. For most of the other 8 persons, the department was first notified when the patient was referred to a county facility for treatment of tuberculosis. Of all the 24 persons with positive findings, only 6 were reported to the health department by a positive laboratory report.

Discussion

The preliminary results indicate that a significant number of patients with positive tuberculosis findings are not being reported to the department of health. Indeed, the department received no notification on 17 (34.7 percent) of the 49 patients with positive findings during 1972. These may well represent 17 persons with active tuberculosis for whom the health department has no information regarding adequacy of treatment or contact followup. The reason why these persons were not reported by seven laboratories has not yet been determined. The staff of six of these laboratories had stated that they had some means of notifying the department of possible findings, and furthermore, the department had records from all six on other patients with positive findings. Rather than a conscious effort not to report, this situation seems to indicate confusion on the part of the laboratory personnel as to when and where to report positive findings.

The Tuberculosis Control Program is now communicating with the physicians of each of these 17 persons to obtain a definitive diagnosis or disposition.

The current inconsistencies in the reporting procedures of the various laboratories have important implications for effective tuberculosis control. Only 2 of the 16 laboratories surveyed report to the health department immediately upon obtaining positive microscopic findings; the other laboratories report only upon obtaining positive culture results. Therefore, several weeks could elapse before the health department is notified of a potentially infectious case of active tuberculosis. This is valuable time lost, when the department could be providing such services as consultation, treatment, and contact followup.

If the laboratories had been reporting to the health department immediately upon obtaining microscopic results, one would have expected that (*a*) the health department would have received reports within 5 days and (*b*) a positive laboratory report would have been the health department's first notification on a patient. Yet, of the 24 persons with positive microscopic findings during 1972, only 5 (20.8 percent) were reported to the health department within 5 days, and their laboratory reports were the first source of health department notification.

To help resolve the inconsistencies in reporting, the Tuberculosis Control Program devised a report card on which laboratories were asked to report all positive tuberculosis findings, and the staff visited each laboratory to introduce the card to the laboratory director and personnel. The following three features of the card, should expedite and simplify future reporting:

Patient's address. Previous reports often failed to include the patient's address, and the Tuberculosis Control Program staff had to contact the laboratory for this information. Also, many laboratories asked where they should report positive findings on persons outside the county. They were instructed to report all positive results to the Nassau County Department of Health, and the department would forward reports on noncounty residents to the appropriate agency.

Patient's physician and address. Previous reports also failed to include this information. The name and address of the physician will help to expedite the department's followup activities in obtaining a diagnosis or disposition.

Reporting positive findings. Each laboratory is being asked to complete a card on every positive microscopic or culture examination, or both, for tuberculosis. If the specimen is positive on microscopic examination, the laboratory will complete a card and check either "culture pending" or "culture not done." The laboratory will complete a second card if the specimen is subsequently positive by culture examination.

In conclusion, the data indicate that a laboratory survey and visit program of the kind described can be valuable as a tuberculosis casefinding tool and as a means of expediting the followup of patients with positive reports.

ADDENDUM

Nassau County was one of the few localities in New York State which reported an increase in reportable cases of tuberculosis in 1973 (103 cases in 1972 and 137 cases in 1973). Through the laboratory reporting system, 20 new cases among county residents were documented, and 4 out-of-county residents with positive cultures were reported to other health departments.

PROGRAMS□PRACTICES□PEOPLE

Symposium in New York City On Nutrition and Aging

■ Internationally known investigators will gather for a 2-day Symposium on Nutrition and Aging in New York City, November 21–22, 1974. The meeting, sponsored by the Institute of Human Nutrition of Columbia University College of Physicians and Surgeons, will be chaired by Dr. Myron Winick, director of the institute.

The purposes of this meeting are to review significant information pertaining to nutrition and the processes involved in aging; to examine in depth the effects of diet on nutrition of the elderly; to explore those areas where new research is occurring and where more research is needed; and to document the means by which nutritional services are being brought to the elderly and how these means can be improved.

For further information write Director, Institute of Human Nutrition, Columbia University, 511 W. 166th St., New York, N.Y. 10032.

National Center Updates Health Resources Statistics

■ Between 4.3 and 4.5 million professional and allied health workers are employed in the United States. More than 2 million of them are in nursing and nursing services, according to the latest available estimates on a variety of personnel active in the health occupations.

Next to nursing, the largest single group of health workers is the more than half million medical and secretarial assistants. Active physicians numbered around 334,000 in 1971 and dentists, 103,750. There were 7,733 hospitals and 22,558 nursing homes in 1971 with a combined total of about 2,748,000 beds. In the same year, Americans made 133 million visits to hospital emergency rooms, and visits to outpatient departments were more than double the number in 1962.

The publication giving these data is updated and revised each year. It provides information on numbers, geographic location, specialty, educational requirements, and other characteristics of health manpower. It also reports the numbers of inpatient, outpatient, and nonpatient facilities and services, such as blood banks, clinical laboratories, or ambulance services. Information on licensure and accreditation is included, primary and alternate titles in the health occupations are listed, and the types of health facilities licensed by the States are identified.

For single copies of "Health Resources Statistics: Health Manpower and Health Facilities, 1972–73" (DHEW Publication HSM 73–1509) and reprints, write to the National Center for Health Statistics, Room 9–45, Parklawn Bldg., 5600 Fishers Lane, Rockville, Md. 20852, or telephone 301 443–1600. Multiple copies may be purchased at $4.65 each from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

AHA Produces Audiovisuals For Treatment of Alcoholism

■ A large percentage of the more than 33 million patients admitted to U.S. hospitals yearly are suffering from alcoholism as a second medical problem. In an effort to educate hospital employees in how to deal with these patients, the American Hospital Association (AHA) will soon make available to its member institutions a complete audiovisual program developed with a $350,000 grant from the National Institute on Alcohol Abuse and Alcoholism.

The three-phase program was tested in four hospitals —University of Minnesota Hospitals, Minneapolis; Ridgeway and Sidney R. Forkosh Memorial Hospitals, Chicago; and Binghamton General Hospital, Binghamton, N.Y.

The package includes materials for planning and training hospital personnel and educating the community through a combination of sound/slide films, motion pictures, and other materials directed at specific audiences such as staff physicians and nurses, social workers, dietitians, clergy, volunteers, Alcoholics Anonymous and other volunteers, and the community.

One motion picture is aimed at the hospital staff and is devoted entirely to the treatment of the alcoholic person in the emergency department; others are aimed at the patient and his family. There are 19 sound/slide films directed to staff members involved with treating alcoholic patients. Also included are two manuals, "Coordinator Guide for Planning" and "Coordinator Guide for Training."

According to William Alderman, associate director of AHA's alcoholism program, division of continuing health care, "Hospitals have been reluctant to start alcohol treatment programs because of a general lack of staff training. In addition, when alcoholic patients are in the hospital for treatment of another problem, the staff is not trained to identify and treat the alcoholism also. Alcoholic patients have been labeled as difficult. However, hospitals with established treatment programs have found that alcoholic patients are no more difficult to treat than other sick patients."

For further information on AHA's alcoholism package, write William Alderman, American Hospital Association, 840 N. Lake Shore Drive, Chicago, Ill. 60611.

Intellectual Development Of Youths Surveyed

■ The intellectual development of U.S. youths was surveyed in the Health Examination Survey conducted by the National Center for Health Statistics. The survey, completed in 1970, focused on physical and intellectual growth and development as well as on other aspects of adolescent health.

A national representative sample of 12–17 year old noninstitutional youths was given a health examination by physicians, dentists, psychologists, and other health specialists. The information on intellectual development is based on the results of a short form of the Wechsler Intelligence Scale for Children (WISC). The abbreviated version, used because of time limitations, consists of two subtests—one on vocabulary and one on block design.

Results of the verbal tests indicated, as was expected, that verbal skills increase as youths grow older and progress in school. The same trend was observed for the nonverbal aspects of intellectual development that were assessed by the block design test. Youths who had dropped out of school did better on the nonverbal than the verbal test. As measured by these tests and a previous survey of children, both the verbal and nonverbal aspects of mental growth rose rapidly during the younger years and more slowly during the older years for the age group 6–17.

Estimates for the 12–17 year olds revealed a tendency for boys to perform better than girls on the two tests. On the test of verbal skills, the difference between the average scores of the two sexes lessened as the youths grew older, and by the age 17 these scores were identical. On the test of spatial reasoning, boys on the average scored slightly higher than girls. Results of the present study, however, lend support to the hypothesis that the content or nature of the two WISC subtests is somewhat biased in favor of boys.

Intellectual Development of Youths, as Measured by a Short Form of the Wechsler Intelligence Scale, United States. DHEW Publication No. (HRA) 74–1610, Series 11, No. 128; September 1973; 42 pages; 80 cents.

Transportation sites have been established at 12 senior citizen centers which serve 4 of San Francisco's 5 districts. Plans are to include the fifth district in the near future.

Elderly Patients Bussed To Dental Care

■ Students at the University of the Pacific School of Dentistry in San Francisco provide low-cost dental care to senior citizens who are brought to the school in an 18-passenger MicroCoach. This effort, the Outreach Dental Program for the Elderly, gives the students a broadened experience in geriatric dentistry while answering the dental needs of an underserved segment of society.

The school works with senior citizen organizations throughout San Francisco to locate eligible persons. The average age of the patients is 73; the oldest has been 88. Comprehensive dental care is provided, with emphasis on prosthodontics, which most senior citizens need. On the average, eight visits to the clinic are required for prosthodontics. Minimal fees are charged in accordance with a schedule based on the patient's income.

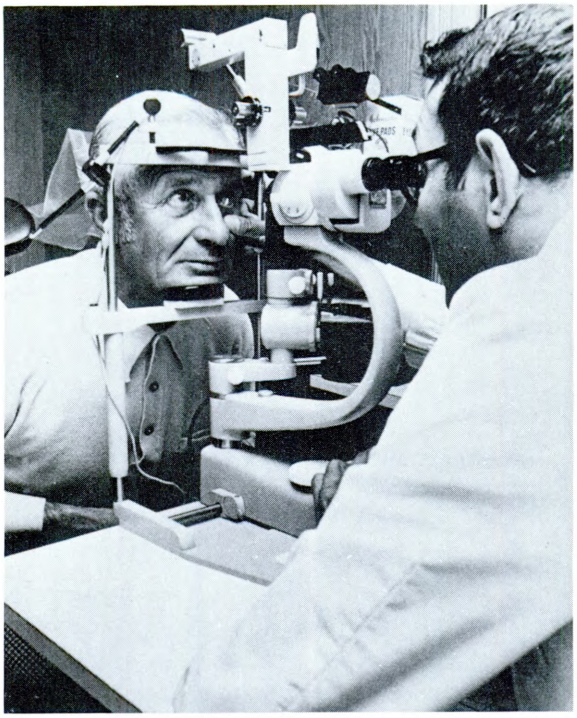
The dental students and the project's coordinator, Tracy Lange, a registered nurse, talk to groups at senior citizens centers about proper care of teeth and dentures and other dental health topics. The coordinator also helps senior citizens link up with other agencies that can help with their medical or social needs.

The bus picks up and returns groups of patients to the centers. It is equipped with a hydraulic lift for loading wheelchair patients, and two specially designed wheelchairs lock into place inside the bus. The wheelchairs are reinforced to withstand stress when the bus makes sudden stops. An attendant on the bus and the driver have been trained in first aid and the safety needs of senior citizens. Forty-six percent of the elderly patients have physical limitations.

"Transportation is of vital concern to older persons, particularly those with locomotor handicaps," Dr. George Nevitt, the project's director and chairman of the school's Department of Community Dentistry, pointed out. "Many of them," he said, "live far from the dental school and find it inconvenient and tiring to travel by city buses to get here."

This program for the elderly is supported by a $64,548 grant awarded by the California State Office on Aging under Title III of the Older Americans Act. Transportation sites have been established at 12 senior citizen centers, which serve 4 of San Francisco's 5 districts. Plans are to include the fifth district in the near future.

Framingham Eye Study Seeks Risk Factors In Blindness



This patient had been blind in one eye for 10 years. During an eye study examination, the beginning of a detached retina was discovered in his good eye. Surgery was performed, and vision was restored in 24 hours—NIH photo

■ The Framingham Eye Study is the first large-scale epidemiologic investigation which attempts to identify the risk factors associated with the four leading causes of blindness and visual disability in this country—cataract, diabetic retinopathy, glaucoma, and macular degeneration.

The study, begun in October 1972 and continuing through 1974, is supported by a contract from the National Eye Institute to the Department of Ophthalmology of the Boston University School of Medicine. It is directed at the same population that has participated for more than 20 years in the Framingham Heart Study conducted by the National Heart and Lung Institute.

Because the current investigation is designed to study a strictly defined population, as many eligible participants as possible (about 3,000) will need to be examined if the results are to reflect the status of the group. Therefore efforts are being made to explain to the community the value of the epidemiologic research.

Substitutes Are Being Sought For Certain Pesticides

■ The Environmental Protection Agency has recently established a program to identify and test substitutes for pesticides that are judged to be substantially hazardous. These substitutes could be other chemicals or alternate means of pest control.

The new program consists of three main strategies:

1. Reviewing pesticides not registered by the Agency and seeking less hazardous substitutes that are acceptable in terms of risk-benefit analysis. Special attention will be given to specialty or minor crop uses.
2. Creating liaison between the Agency and the pesticide industry, pesticide users, and the academic community to stimulate production of substitutes and to initiate research for the development of better, less hazardous pesticides.
3. Developing through research the knowledge that is needed (*a*) to review those pesticides whose effects are in question and (*b*) to upgrade the techniques and methodologies used in analyzing and testing the pesticides in man and the environment.

Funding for the "Substitute Chemicals Program" for the fiscal year 1974 was $5 million, an amount added to EPA's 1974 budget specifically for the purpose on recommendation of the House Appropriations Subcommittee on Agriculture and Environmental and Consumer Protection. The program is being staffed by 50 EPA personnel in the Office of Research and Development and the Criteria and Evaluation Division of the Office of Pesticides Programs. Funding for fiscal year 1975 is also $5 million.

The Environmental Protection Agency will hold three formal symposiums a year to review the program's progress and to present results. Pesticide producers, contractors involved in the program, the academic community, and others interested in the program will be invited to participate.

Under the 1972 amendments to the Federal Insecticide, Fungicide and Rodenticide Act, the Environmental Protection Agency is responsible for insuring that pesticides will not cause unreasonable risk to man or the environment.

NCHS Continues Program Of Decennial Life Tables

■ The National Center for Health Statistics is undertaking a program of preparation, publication, and analysis of life tables based on the 1970 Census of Population and the registered deaths for the 3 years 1969–71. Life tables for each State and the District of Columbia will be published in a separate report; it is expected there will be five reports for the United States: (i) life tables, (ii) actuarial tables, (iii) methodological report, (iv) evaluation report, and (v) life tables analyzed by causes of death.

Each decennial census beginning with that of 1900 has been followed by the publication of a number of life tables based on the census population data and registered deaths. Those relating to censuses up to and including that of 1940 were published by the Bureau of the Census. In 1946 the responsibility was transferred to the Public Health Service.

The national life tables will probably be published in late 1974, and the State reports will follow soon afterwards.—THOMAS N. E. GREVILLE, *National Center for Health Statistics*

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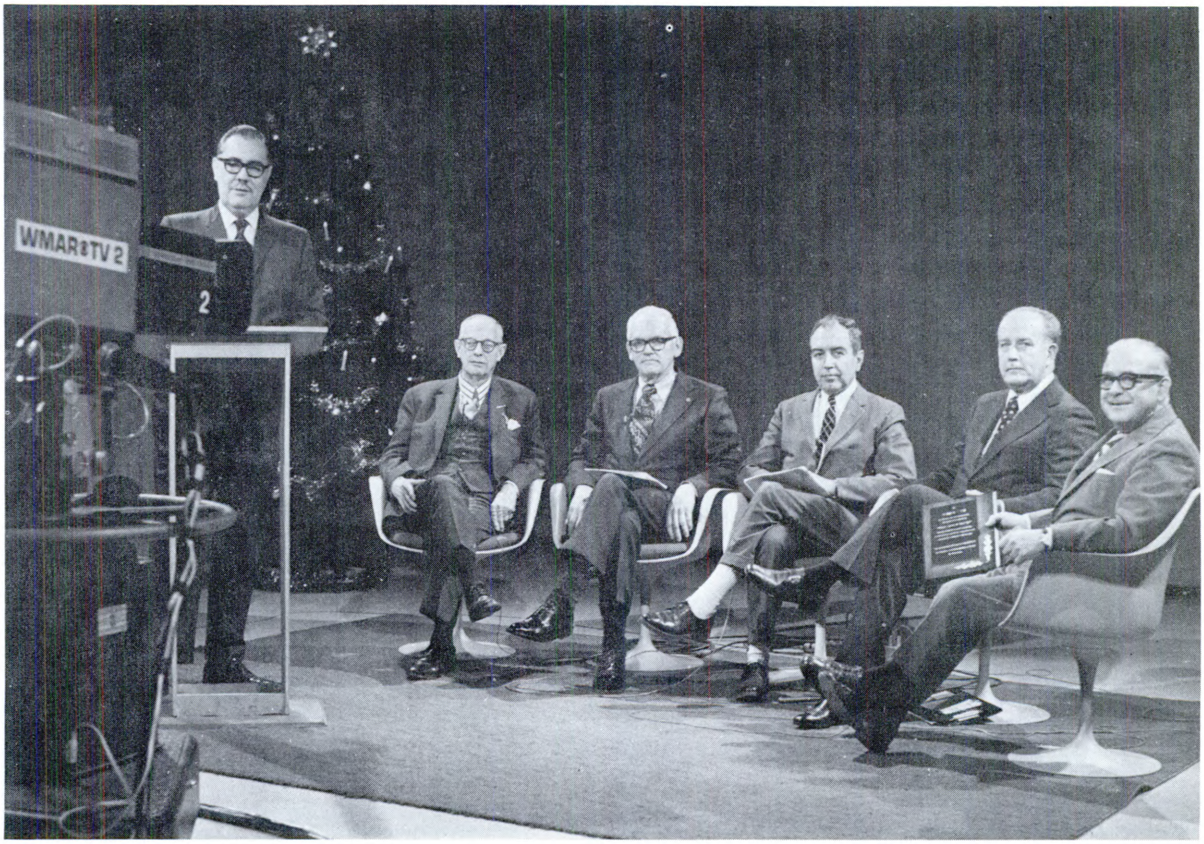
The 25th Anniversary of 'Your Family Doctor'

Participants in a Baltimore TV health education program, "Your Family Doctor," commemorate its 25th anniversary. They are left to right—Jack Redfern, chief of the health department's Community Health Information, who portrays Dr. John Worthington (a family physician who serves as moderator); Dr. Huntington Williams, a retired commissioner of health, who initiated the program; Dr. Manning Alden, president elect of the Medical and Chirurgical Faculty of Maryland; Dr. Robert E. Farber, commissioner of health; Mayor William Donald Schaefer; and David V. R. Stickle, director of public affairs, WMAR-TV.



■ "Your Family Doctor," a 15-minute public service series now telecast twice weekly on WMAR-TV, Baltimore, had its 25th anniversary and 1,237th showing on December 15, 1973, and its sponsors, the Baltimore City Health Department and the Medical and Chirurgical Faculty of Maryland, in cooperation with WMAR, celebrated with a special telecast.

Supplementing the department's popular radio broadcasts, begun in 1932, the TV series was inaugurated in 1948 through the efforts of Dr. Huntington Williams, then Commissioner of Health of Baltimore City. It is the oldest continuous health educational-medical series on television. Dr. Williams participated in the anniversary program along with Dr. Manning W. Alden, president of the Medical and Chirurgical Faculty of Maryland; Dr. Robert E. Farber, the present Commissioner of Health of Baltimore City; William Donald Schaefer, Mayor of Baltimore; David V. R. Stickle, director of public affairs of WMAR-TV; and Jack Redfern, chief of the health department's division of community health information, who portrays the family doctor in the series (see photo).

Programing

A variety of presentations are used in the series—interviews, panel discussions, films, demonstrations, drama, question-and-answer sessions, and combinations of these. The moderator of the series is a fictitious general practitioner, named after Dr. John Worthington, Baltimore's first health officer, who was appointed in

"Your Family Doctor" presents a program on the digestive system, its diseases, and how it works, with emphasis on preventive aspects—moderator Jack Redfern, left, and guest Dr. Howard Raskin, head of Gastroenterology, University of Maryland School of Medicine.

1792 by the Governor of Maryland to protect the city from yellow fever, then prevalent in Philadelphia. The program is written by a staff member of the television station in cooperation with guest participants or medical consultants. A television committee, consisting of members of the State and city medical societies and the city health department, provides program guidance. Physicians, health workers, and educators from the medical faculties of both the Johns Hopkins and University of Maryland medical institutions, as well as from governmental, voluntary, and private agencies, aid in the production and by their participation give the program authenticity and variety. Production supervision is maintained by the director of the bureau of health information and the chief of the division of community health information.

A sampling of titles of individual programs over the years shows that emphasis has been placed on local, timely public health programs and problems and on informing viewers about maternal and child health, heart disease, cancer, nutrition, and environmental health. The series has also provided information on poison prevention, home accident prevention, automobile safety, eye safety, hunting and fishing safety, fire prevention, and swimming and boating safety. For promoting boating safety the series was honored with an award from the U.S. Coast Guard in 1972. Programs have dealt with the work of the World Health Organization, the research functions of large medical centers, the work of local medical and health agencies, careers in health, and historical aspects of medicine, pharmacy, and public health.

Accomplishments and Honors

The series has served to enlist community support for many health projects. The several immunization campaigns conducted in recent years in Baltimore City owe a measure of their success to this program. Master of public health candidates and other students from the Johns Hopkins School of Hygiene and Public Health, as well as visiting health officials from the United States and abroad, have observed and studied the series. Moreover, it has stimulated interest in developing similar health education television programs elsewhere. Color films made from the videotapes of two recent programs in the series have been shown widely. One titled "The Many Hats of Laurie and Harriett" deals in documentary style with the work of the public health nurse, focusing on public health nursing as a career. The other, "Sandra Came Home Again," is a case study of Baltimore's attack on lead paint poisoning in children.

In assessing the effect of "Your Family Doctor," Dr. Farber, Baltimore's Commissioner of Health, has stated: "It is our belief that next to personal health teaching by members of the medical and health professions and the widespread influence of the press, no single medium of mass health information and education is so important as that provided by the radio and television industry. There is no doubt in my mind that this health television series has made important contributions to the progress we have realized in many areas of public health work in Baltimore."—JOSEPH GORDON, *Director, Bureau of Health Information, Baltimore City Health Department.*

U.S. Mortality Trends By Age, Color, and Sex

■ Crude death rates in the United States have been stable from 1954 to 1969 except during influenza epidemic years. This stability, however, is not characteristic of death rates for specific age groups. The stability of the crude rate can be explained by the offsetting effects of (*a*) the changing age distribution of the population, which is significant because mortality risk varies with age, and (*b*) the changing age-specific death rates.

Male-female mortality differentials in the crude death rates have also remained relatively constant (about 135 male deaths per 100 females). The picture is different for age-specific rates, for which the differentials have widened over the years. The age-specific male mortality frequently is much above that for all ages combined, and excess mortality generally is greater among white persons than among persons of other races.

The peak sex differentials in 1969 were in the age group 20–24, in which there were 308 male deaths per 100 female deaths among white persons and 290 male deaths per 100 female deaths among persons of other races.

Although sex differentials in mortality are higher among white persons than among persons of other races, they have widened more markedly among persons of other races. At ages 20–24, for example, the sex ratio for white persons increased from 2.17 in 1950 to 3.08 in 1969, a 42 percent increase. For persons of other races of the same ages, the ratio in 1969 was double that in 1950, 2.0 compared with 1.44; this was likewise the case at ages 15–19. For every age group through 55–59, the increase in the sex differentials was much greater among persons of other races than among white persons.

To some degree the immediate explanation of excess male mortality is found in the diseases or injuries that cause death more frequently in males than females and that occur more often at one age than another. For example, motor vehicle accidents have accounted in great measure for the rising male death rate at ages 15–19 and 20–24.

Mortality Trends: Age, Color, and Sex, United States —1950–69. DHEW Publication No. (HRA) 74-1852, Series 20, No. 15; November 1973; 40 pages; 70 cents.

New Films on Blindness And Visual Impairment

■ The American Foundation for the Blind last spring conducted the first in a series of workshops designed to explore the initial steps of an overall program to integrate visually handicapped youths into sighted recreational activities. These workshops focused on the problems, needs, and possible solutions to this dilemma of these young people. The meetings revolved around a panel discussion by an adult moderator and sighted and visually impaired youths. Each meeting featured demonstrations of typical recreational and athletic events in which youths who were either blind or had limited vision participated with their sighted peers.

These workshops were the basis for a film, "Out of Left Field." It offers a tangible illustration of what is involved in initiating a program to integrate blind and visually impaired youths into sighted community recreational and social activities.

Another new American Foundation for the Blind film, "Not Without Sight," uses novel visual effects to illustrate visual impairment. In a courtyard in the School of Optometry in Birmingham, Ala., children's toys and felt tiles are used to illustrate tunnel vision, which occurs in glaucoma and retinitis pigmentosa. "Not Without Sight" also describes, using words of visually impaired persons and specially conceived animation and live effects, what cataracts, macular degeneration, and diabetic retinopathy do to vision.

"Out of Left Field," 6½ minutes, 16 mm., color, rent per screening $1.50 plus $4.50 for shipping. Because prints are limited, requests should be submitted at least 3 weeks before designated date of showing. "Not Without Sight," 19½ minutes, 16 mm., color, price $120, rent $19 per screening. Available from the American Foundation for the Blind, Public Education Division, 15 West 16th St., New York, N.Y. 10011.

American Foundation for the Blind photos

Exposure To Inorganic Arsenic And Sulfur Dioxide At Workplace

■ The National Institute for Occupational Safety and Health (NIOSH) recommends reducing the Federal standard for occupational exposure to inorganic arsenic and sulfur dioxide. The current standard for arsenic and its organic compounds, except arsine and lead arsenate, is 0.5 mg As per cubic meter; the level recommended is 0.05. The current standard for sulfur dioxide is 5 ppm for up to a 10-hour day, 40-hour week, over a working lifetime; the level recommended is 2 ppm.

NIOSH estimates that 1.5 million workers are potentially exposed to inorganic arsenic, which is primarily produced in smelting ores of other metals (mainly copper). It also estimates that 500,000 workers are potentially exposed to sulfur dioxide, which is encountered in many industrial operations. The NIOSH recommendations have been published in new criteria documents.

Inorganic arsenic. The arsenic document cites an increased incidence of cancer upon exposure to airborne arsenic at levels of 0.2 mg As per cubic meter. There are no data on health effects below this level. Nevertheless, compliance, with the NIOSH-recommended standard of 0.05 will reduce the incidence of cancer in arsenic workers. In addition to causing cancer, exposure to inorganic arsenic can result in disorders of the skin, gastrointestinal tract, central nervous system, optic nerves, and peripheral nervous system.

Sulfur dioxide. NIOSH has concluded from experimental and epidemiologic studies that exposure to sulfur dioxide at the existing Federal standard of 5 ppm can cause adverse respiratory effects by increasing airway resistance in a significant number of workers. Some workers are especially sensitive to these effects. In addition, there is evidence that the effects produced by sulfur dioxide are enhanced by airborne particulate matter and that sulfur dioxide may promote the carcinogenic action of other airborne substances. Compliance with the NIOSH-recommended standard of 2 ppm should prevent sulfur dioxide from having adverse effects on the health and safety of workers.

Single copies of the complete criteria documents, "Criteria for a Recommended Standard . . . . Occupational Exposure to Inorganic Arsenic" and "Criteria for a Recommended Standard . . . . Occupational Exposure to Sulfur Dioxide," are available from the Office of Technical Publications, National Institute for Occupational Safety and Health, Post Office Building, Cincinnati, Ohio 45202. Include self-addressed mailing label.

education notes

■ **Institutes in the Care of Premature and Other High-Risk Infants.** In the fall of 1974, the Institutes for Physicians and Nurses in the Care of Premature and Other High-Risk Infants, sponsored by the New York State Department of Health and the U.S. Department of Health, Education and Welfare, will begin their 26th year. The institutes are designed to meet the needs of physicians and nurses in charge of hospital high-risk and premature nurseries and special centers of teachers in medical schools and schools of nursing, and medical and nursing directors and consultants in State and local programs for the care of such infants.

The attendance at each institute is limited to six physicians and six nurses. Early application is essential since plans are contingent on the number of applications received. Participants pay no tuition fee, and stipends are provided to help cover expenses during attendance.

For fiscal year 1974–75, the following five institutes are scheduled:

PHYSICIANS

Mar. 5, 12, 19, and 26 and Apr. 2.
May 12–23.

NURSES

Sept. 16–Oct. 11.
Jan. 6–31.
Mar. 3–14, 19, and 26 and Apr. 2.

Joint physician-nurse sessions will be held on the Wednesdays of the March–April institute. This institute is intended for persons who can commute daily to the New York Hospital-Cornell Medical Center.

For additional information: Box 143, Institutes in the Care of Premature and Other High-Risk Infants, New York Hospital, 525 East 68th St., New York, N.Y. 10021.

Announcements for publication should be forwarded to Public Health Reports 6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.

publications

FEDERAL

Sinusitis. *DHEW Publication No. (NIH) 74-540; 1974;* 30 cents.

Flu. *DHEW Publication No. (NIH) 74-187; 1974; 25 cents.*

Tetanus. *DHEW Publication No. (NIH) 74-602; 1974; 7 pages.*

Machine Diagnosis and Information Retrieval in Medicine in the USSR. *Edited by A. A. Vishnevskiy, I. I. Artobolevskiy, and M. L. Bykhovskiy. DHEW Publication No. (NIH) 73-424; 1973; 138 pages.*

Planning for Hospital Pharmacies. *HEW Publication No. (HRA) 74-4003; 1974; 125 pages; $1.55.*

National Center for Health Statistics

Preliminary Findings of the First Health and Nutrition Examination Survey, United States, 1971–1972. Dietary intake and biochemical findings. *DHEW Publication No. (HRA) 74-1219-1; 1974; 193 pages; $2.15.*

Language and Adjustment Scales for the Thematic Apperception Test for Children 6–11 Years. *DHEW Publication No. (HRA) 74-1332, Series 2, No. 58; December 1973; 70 pages; $1.05.*

An Assessment of the Occlusion of the Teeth of Children 6–11 Years, United States. *DHEW Publication No. (HRA) 74-1612, Series 11, No. 130; November 1973; 52 pages; $1.*

Reading and Arithmetic Achievement Among Youths 12–17 Years as Measured by the Wide Range Achievement Test, United States. *DHEW Publication No. (HRA) 74-1618, Series 11, No. 136; February 1974; 32 pages; 65 cents.*

Blood Pressure Levels of Children 6–11 Years: Relationship to age, sex, race, and socioeconomic status, United States. *DHEW Publication No. (HRA) 74-1617, Series 11, No. 135; December 1973; 24 pages; 60 cents.*

Chronic Conditions and Impairments of Nursing Home Residents: United States, 1969. *DHEW Publication No. (HRA) 74-1707, Series 12, No. 22; December 1973; 46 pages; 85 cents.*

Examination and Health History Findings Among Children and Youths, 6–17 years, United States. *DHEW Publication No. (HRA) 74-1611, Series 11, No. 129; November 1973; 71 pages; $1.*

Literacy Among Youths, 12–17 Years, United States. *DHEW Publication No. (HRA) 74-1613, Series 11, No. 131; December 1973; 28 pages; 55 cents.*

Age at Menarche, United States. *DHEW Publication No. (HRA) 74-1615, Series 11, No. 133; November 1973; 29 pages; 65 cents.*

Color Vision Deficiencies in Youths 12–17 years of Age, United States. *DHEW Publication No. (HRA) 74-1616, Series 11, No. 134; January 1974; 34 pages; 70 cents.*

Selected Characteristics of Nursing Homes for the Aged and Chronically Ill, United States, June–August 1969. *DHEW Publication No. (HRA) 74-1708, Series 12, No. 23; January 1974; 38 pages; 80 cents.*

100 Years of Marriage and Divorce Statistics, United States, 1867–1967. *DHEW Publication No. (HRA) 74-1902, Series 21, No. 24; December 1973; 61 pages; 90 cents.*

Remarriages, United States. *DHEW Publication No. (HRA) 74-1903, Series 21, No. 25; December 1973; 27 pages; 65 cents.*

Federal publications listed are obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication. (Publications listed without prices may be obtained from agency.)

WORLD HEALTH ORGANIZATION

Manual on Larval Control Operations in Malaria Programmes. *Prepared by the WHO Division of Malaria and Other Parasitic Diseases. WHO Offset Publication No. 1. 1973; 199 pages; Geneva.*

The Work of WHO, 1973. Annual report of the Director-General to the World Health Assembly and to the United Nations. *Official Records of the World Health Organization, No. 213. 1974; 323 pages; Geneva.*

Field Methods for the Control of Trachoma. *Edited by M. L. Tarizzo. 1973; 48 pages; Geneva.*

Environmental and Health Monitoring in Occupational Health. *Report of a WHO Expert Committee. WHO Technical Report Series No. 535. 1973; 48 pages; $1.75; Geneva.*

Malaria Control in Countries Where Time-Limited Eradication is Impracticable at Present. Report of a WHO Interregional Conference. *WHO Technical Report Series No. 537. 1974; 66 pages; Geneva.*

Toxicological Evaluation of Certain Food Additives with a Review of General Principles and of Specifications. Seventeenth Report of the Joint FAO/WHO Expert Committee on Food Additives. *WHO Technical Report Series No. 539. 1974; 40 pages; Geneva.*

International Histological Classification of Tumours: No. 9. Histological Typing of Ovarian Tumours. *By S. F. Serov and R. E. Scully in collaboration with L. H. Sobin and pathologists in 10 countries. 1973; 56 pages, illustrated. Book including set of 134 colour transparencies, $51.00; book only, $16.50; Geneva.*

Modern Management Methods and the Organization of Health Services. *Public Health Papers No. 55. 1974; 100 pages; Geneva.*

Control of Air Pollution in the USSR. *By N. F. Izmerov. Public Health Papers No. 54. 1973; 157 pages; $3.15; Geneva.*

Trace Elements in Human Nutrition. Report of a WHO Expert Committee. *WHO Technical Reports Series No. 532; 1973; 65 pages; $1.75; Geneva.*

Postgraduate Education and Training in Public Health. Report of a WHO Expert Committee. *WHO Technical Report Series No. 533; 1973; 68 pages; $1.75; Geneva.*

Twenty-Sixth World Health Assembly, Geneva, 7–23 May 1973. Part II. Verbatim records of plenary meetings, summary records and reports of committees. *Offical Records of World Health Organization, No. 210. 1973; 536 pages; $5.95; Geneva.*

Laboratory Techniques in Rabies. Third edition. *Edited by Martin M. Kaplan and Hilary Koprowski. WHO Monograph* Series No. 23. 1973; 367 pages; $14.40; Geneva.

Methods for the Analysis of Human Chromosome Aberrations. *Edited by K. E. Buckton and H. J. Evans. 1973; 44 pages; $3.60; Geneva.*

WHO Expert Committee on Drug Dependence. Nineteenth report. *WHO Technical Report Series No. 526; 1973; 38 pages; $1.20; Geneva.*

Advances in Methods of Fertility Regulation. Report of a WHO Scientific Group. *WHO Technical Report Series No. 527; 1973; 42 pages; $1.20; Geneva.*

Chemotherapy of Malaria and Resistance to Antimalarials. Report of a WHO Scientific Group. *WHO Technical Report Series No. 529; 1973; 121 pages; $2.10; Geneva.*

WHO Expert Committee on Biological Standardization. Twenty-fifth report. *WHO Technical Report Series No. 530; 1973; 6 pages; Geneva.*

The Use of Viruses for the Control of Insect Pests and Disease Vectors. Report of a Joint FAO/WHO meeting on insect viruses. *WHO Technical Report Series No. 531; 1973; 48 pages; $1.20.*

World Directory of Medical Schools, 1970. *1973; 147 pages; $6; Geneva.*

Twenty-Sixth World Health Assembly, Geneva, 7–23, May 1973. Part I. Resolutions and Decisions, Annexes. Official Records of the World Health Organization, No. 209. *1973; 110 pages; $2.10; Geneva.*

WHO publications may be obtained from Q Corp., 49 Sheridan Ave., Albany, N.Y. 12210.

NONFEDERAL

What We Know About Headaches. Public Affairs Pamphlet No. 502. By Arthur S. Freese. December 1973; 20 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave., South, New York, N.Y. 10016.

Population and the American Future. *Public Affairs Pamphlet No. 503. By Elizabeth Ogg. January 1974; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Helping the Handicapped Teenager Mature. Public Affairs Pamphlet No. 504. By Evelyn West Ayrault. February 1974; 27 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.

Pakistan: A demographic report. *By Shahid Javed Burki. Population Bulletin, Vol. 29, No. 4, 1973; 36 pages; 50 cents. Population Reference Bureau, Inc., 1755 Massachusetts Ave., NW., Washington, D.C. 20036.*

Hawaii: Growing pains in paradise. By Tadd Fisher. *Population Bulletin, Vol. 29, No. 3. 1973; 40 pages; 50 cents. Population Reference Bureau, Inc., 1755 Massachusetts Ave., NW., Washington, D.C. 20036.*

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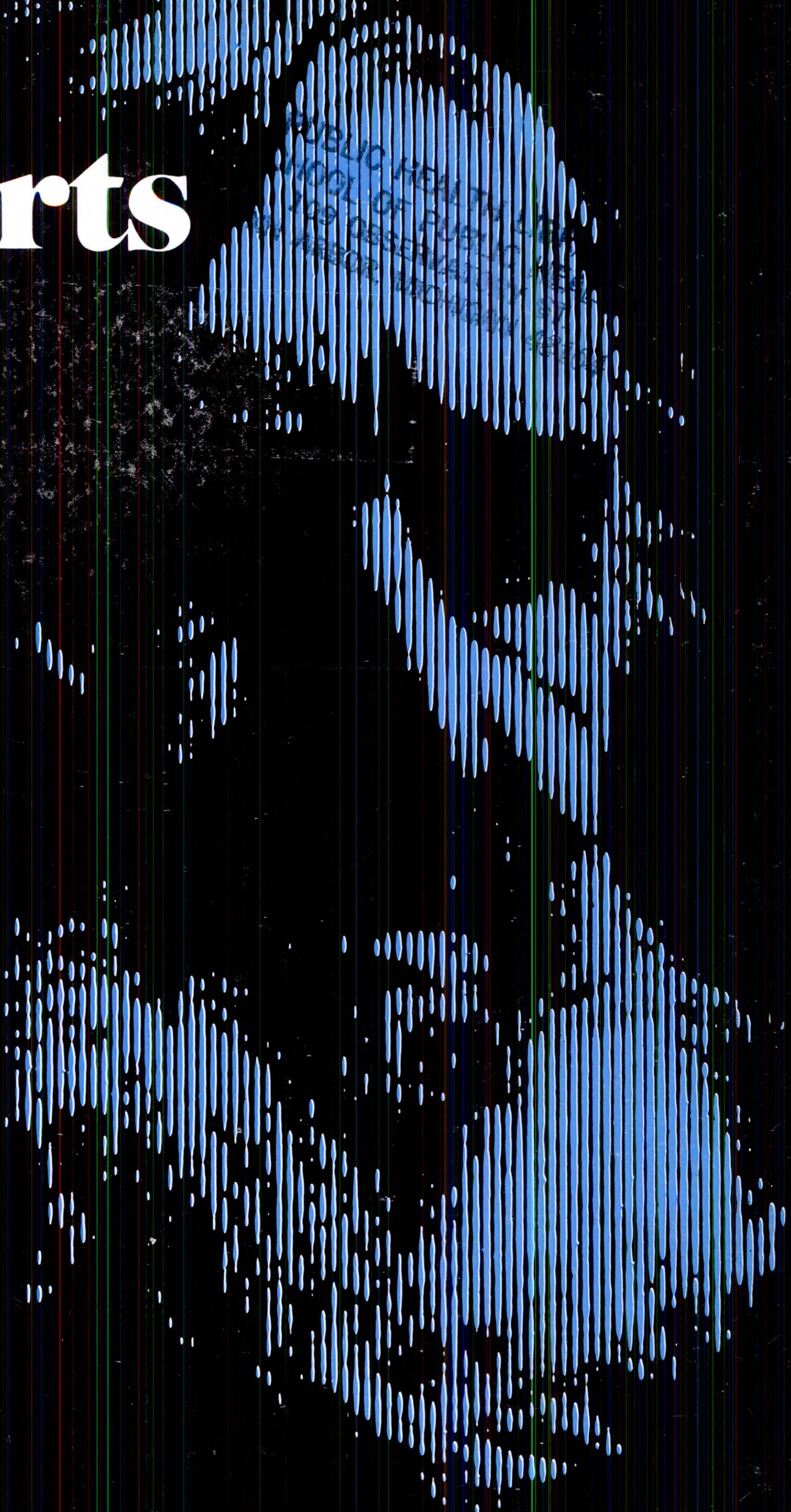


Health Care and Health Careers

We in the Health Resources Administration are particularly pleased by the advance program of the American Public Health Association's 1974 meeting. It was our hope that this year APHA would make a special effort to discuss problems that poor people and minority groups face in the area of health care and health careers.

To this end, we have collaborated with APHA to bring about participation by disadvantaged people and groups in the October 20–24, 1974, meetings in New Orleans, La. We have taken this step because we believe there are few things of more immediate importance to the health care industry of this nation than is the effort to bring the benefits of American medical expertise to all our people.

We still do not know enough about the health care of the disadvantaged. We still need to do a great deal of catching up in researching the special health problems in the ghettos, barrios, reservations, and rural backwaters of America. These problems may be nutritional, they may be genetic, they may be environmental. They may derive from a shortage of the most rudimentary kind of medical attention. They may be occupationally related. But whatever their genesis, they exist; they are stubborn; and they have not received their due share of attention in the past.

It is high time we gave them our gravest attention. We have set up a special program in the Office of the Administrator of HRA with explicit instructions to seek out answers to the health care and career problems of the disadvantaged. The Office of Health Resources Opportunities (OHRO) is specifically designed to apply itself to the problems of poor people, Black people, Native American people, Chicano people, all people who by reason of sex, or age, or race, or economics—or even of simple geography—cannot easily avail themselves of the health care and career opportunities the rest of us take so much for granted.

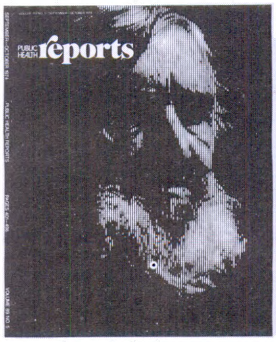
It was OHRO which—together with the Health Services Administration—led the way in working with APHA to bring about in 1974 the program emphasis on the health of poor people.

And we wish the participants at the New Orleans meeting good luck and much wisdom in their deliberations. One thing is certain: if the needs of the disadvantaged people of America are to be met—as I believe they must be—we are going to have to apply to the problem all the concentrated wisdom and good will we can find.

KMEndicott

Kenneth M. Endicott, MD
Administrator, HRA

COVER—Old age often brings problems—social dislocation, loss of income, poor health. The authors of the article on page 403 seek to help medical care providers arrive at a better understanding of these problems so that the dying patient will receive the kind of care that will enable him to regard himself "as still part of a humane and caring society."



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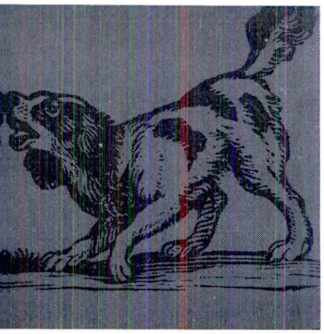

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Programs, Practices, People

JAMES O. CARPENTER, PHD,
and CHARLES M. WYLIE, MD

On Aging, Dying, and Denying

Delivering care to older dying patients

DYING IN OLD AGE is a subject of distant postponable concern to most health professionals since they are interested primarily in the prevention and adequate treatment of disease. Even those who are close to the care of dying older patients are uncomfortable in confronting the specter of death in their clients. In the health professions, the overwhelming commitment of training, talent, and funds to curing and healing, although important, may weaken the thrust for better care of the dying and render it unlikely that an older person's last days will be spent in a supportive social environment in which his death is regarded as an individual and unique event. A patient with no future at all attracts both hostility and denial. When death becomes inevitable, many health professionals withdraw from its bruising assault and redirect their efforts elsewhere.

Yet, many readers of this journal are deeply interested and involved in comprehensive health care, which—if it is truly comprehensive—should help dying older patients as well as younger curable patients. There is a rising concern about the delivery of humane care, a push for open discussion of complex moral issues, and a growing recognition that we must openly communicate with both the terminally ill patient and his family. As a first step in overcoming our aversion to dealing with death at an advanced age, we need to examine the complex issues associated with the management of the older dying patient. That is the purpose of our paper.

Sociological Perspectives

Technological and other advancements have rendered obsolete many attributes of the older person, such as his wisdom, that were highly valued in the more rural society of 19th century America. The power that the older person enjoyed in the extended family of the past has also been reduced in the emergent nuclear family of industrialized society. In modern society older parents may continue to help their children, and in turn, the children may assist their elders. The power of the older family member over family decisions, however, has faded in comparison with that of earlier decades.

Today some 25 percent of the persons aged 65 and over live alone or with nonrelatives (*1*). About three times as many older women as men live alone or with nonrelatives, a circumstance reflecting, among other things, the greater life expectancy among women. Older women also appear to be at greater risk of institutionalization. In the segment of the older population residing alone or with unrelated persons, social disengagement and isolation may occur. These observations suggest the need for health and social support services to compensate for the possible absence of family members of older patients facing death.

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To understand the possibilities for improving the care given the older dying person, we must consider the social climate in which the older population lives. Many older people subsist on small, fixed incomes in an inflationary economy; in 1970 half of those who were not living with their families had incomes below the poverty level. Some older citizens have been forced to retire, while others have done so voluntarily. For both groups, retirement may have entailed a reduction of activities, loss of contact with their working colleagues, and a reduced income.

A century ago about two-thirds of U.S. men aged 65 and older were still in the labor force, compared with only 25 percent today (*1*). The shift from having one's hours dictated by the work organization to having free time and a reduced income has implications for the quality of life of the older person. Because an older person not in the work force is no longer seen by society as being "productive," he may find himself regarded as having a lower social status. Many older people cope successfully with this transition. Socially isolated retirees seem to have the most difficulty in adjusting to their new status. Indeed, one investigation disclosed a "low will to live" in 48 percent of socially isolated retired steelworkers in contrast with only 7 percent of the retirees who were socially integrated (*2*). As one retired worker pointed out, "I don't worry about the next life. I've got enough hell right here." Not surprisingly, those older persons who find themselves socially devalued and isolated may experience depression and hold negative views of themselves and of life in general.

Presumably the younger person looks to the future, whereas the older person is seen as engaging in a review of his past life. Although such a review may be helpful to many older persons, for the socially isolated who have experienced social estrangement, this period of life review may parallel a process of social disengagement, of dying socially. And social death, the extreme stage of social isolation, may contribute in complex ways to biological death.

To a considerable extent modern society defies age and denies death. Our health care providers come from such a society, and therefore few can conceive realistically of their own senescence and death, even though they recognize that death is a universal phenomenon. Their training in this area has been inadequate so that they are often only able to react as laymen to dying patients, rather than on the basis of sound academic knowledge. Thus, both at the beginning and in the midst of the professional's career, education must increasingly focus on the dynamics of senescence and dying and on management of the dying patient. When, through such education, we as health providers come to realize that our own deaths are likely to take place in a health care setting, a large step will have been taken toward improving the environment of the older dying patient.

Stresses of Bereavement and Relocation

The great impact of bereavement on the health of older survivors is now well documented. In a study of 4,486 widowers aged 55 years and older, Parkes and associates found that 213 had died within 6 months after the loss of their wives (*3*). This figure was 40 percent higher than the expected mortality for married men of the same age. After the 6-month period the death rate of the widowers dropped to that of married men. The authors point out that "if as seems most likely, the painful effects of bereavement on physical health are a response to psychological stress, then anything that mitigates this stress can be expected to reduce the risk of its physical effects." Other research, suggesting that grief is a syndrome leading to greater use of physicians for both psychiatric and nonpsychiatric symptoms, clearly shows the need for preparing physicians, nurses, and others to deal with the physical and psychological needs of the bereaved.

Unfortunately, few health agencies use death notifications or other approaches to single out older persons who may need supportive care. Yet, health professionals and community volunteers might help blunt some of the sharp and traumatic edges of grief in the bereaved elderly. In one pilot treatment program designed to assist the bereaved, a psychiatric social worker was accepted by 90 percent of the persons who were contacted (*4*). More communities might organize widow to widow programs in which widowed volunteers give support to newly bereaved women, with some mutual benefit accruing to both groups.

Through what practical steps can we help the bereaved? Gerber has suggested the following approach: (*a*) help the person express, verbally and emotionally, the pain, sorrow, and common feelings of guilt; (*b*) facilitate his gradual return to social activities with friends or relatives; (*c*) help him deal with such practicalities as legal problems; (*d*) mediate referral for health care if indicated; and (*e*) offer assistance in making future plans (*4*). Few health care providers may now be ready to give such help and many may doubt that it should be part of a comprehensive health and social support system, but such steps seem essential if we are to reduce the unnecessarily high incidence of disease and distress during bereavement.

Faced with increasing illness and reduced social support, some older persons head inescapably toward a new life within institutional walls. Thus, the issues of death and dying are for the older person often intertwined with those of living in an institution. Gustafson provocatively conceives of the "career" of many nursing home patients as that of a dying trajectory (*5*). Markson is among those who suggest that hospitals and comparable institutions have used other facilities, such as psychiatric hospitals, as dumping grounds for dying older persons (*6*). As Glaser points out, hospital beds, in which care that is technically good is given, are thus "freed up" by referring older persons to marginal institutions (*7*). Such institutions, in turn, have few resources to meet the complex medical, emotional, and social needs of the dying elderly.

Studies of enforced relocation suggest that moving the older patient against his or her will to another location may speed the downhill course to death. Even awaiting such a move has been shown to have negative effects. For example, Prock found that people awaiting relocation to an old age home had a worse psychological status than those who were already institutionalized (*8*). Among their characteristics were "general anxiety and tension, high emotional reactivity, a sense of helplessness and powerlessness, a tone of depression accompanied by low self-esteem, interpersonal patterns suggesting an active withdrawal from those around them, and some signs of ego disorganization. A quality of 'my life is over' permeated the waiting list group."

Older people waiting to move to a new location can best be described as dying socially. The anticipatory grief associated with the expected loss of familiar surroundings and of close friends, relatives, and even of staff members of an institution where they have been living may precipitate adverse biological changes. One resident of a medical care facility, when informed that she had to be moved because the facility was closing down, said that she would rather die than move to the new nursing home. Two days later she was dead; whether by coincidence or cause and effect is not known. Clearly, the increased morbidity and mortality that may occur in older people confronted with involuntary relocation should be prevented whenever possible. Since the older patients who are to be relocated are the persons most concerned in such moves, it helps to give them an active role in the advance planning and decision making about the move and to have them visit the new facility before they actually move (*9*). The resulting lessening of uncertainty and fear reduces the patients' anticipatory grief and its adverse effects.

Site of Death

Advances in technology, the concentration of modern, complex medical equipment in major hospitals, and the wide variety of specialists engaged in delivering care are among the factors that have increased the proportion of deaths occurring within institutional walls. The encouragement that insurance gives to hospitalization, the paucity of home health care services, the loss with the advance in age of many friends and relatives, and the limited financial resources of many of the elderly may further contribute to this pattern for the older population. Lerner reports that for the nation as a whole, 50 percent of all deaths in 1949 and 61 percent of all deaths in 1958 occurred within institutions (*10*). Today the figure is probably 70 percent.

The way the environment of the older dying person is organized within an institution (including the beliefs, values, and behavior of the institution's staff), its organizational goals, and the available resources considerably affect the care and support he is given. In the general hospital, for example, the dying patient and family members undergo an experience that to them is unique and moving, but that is more common and less personal to the staff. Routine patient care and routine administrative activities continue, accompanied perhaps by impersonality or even a withdrawal of interest from the dying patient. In long-term institutions, the older person may be assigned to the "vegetable garden"—an area where the soil is rarely tilled sufficiently to nurture dignity and social support in the face of death. Kastenbaum calls for professionals to recognize that many of the dying are conscious of their surroundings and miss those interpersonal relationships which have steadily been withdrawn (*11*). On some wards older dying patients may be treated as if they were already dead, or at least as if they were deeply unconscious, childlike, and unaware of what people were saying around their beds.

Hinton and others have noted the covert reluctance of some staff members to care for the dying person (*12*). Markson described hospitals in which a combination of great age and terminal illness apparently would cause a patient to be despised by medical and lay personnel alike. Unless death came on schedule, the hospitals would suggest transfer of the patient to a State mental hospital (*6*). Even in an intensive care unit of a hospital where younger patients predominate, the staff may use detachment, constant activity, and other measures to cope with the frequent deaths that occur. Coombs and Goldman describe how laughter helped the staff of one such hospital unit relieve some stresses, while other staff members were helped by intentionally losing themselves in their work (*13*). They found that the delicate balance between detachment and concern was most often tipped by the patient's age; the weight of many years appeared to tip the scales decisively in the direction of detachment.

In a study of possible "dead on arrivals" in a hospital emergency room, Sudnow found that "the older the patient, the more likely is his tentative death taken to constitute pronouncible death. . . . Very old patients who are initially considered to be dead solely on the basis of the ambulance driver's assessment of that possibility were seen to be put in an empty room to wait several moments before a physician arrived. . . . The older the person, the less thorough is the examination he is given. . . ." (*14*). Routinized practices like these emerge as an organization seeks to meet curative, youth-oriented goals, goals that, in turn, may reflect the views of the broader "gerontophobic" society.

No institution is immune to the social stereotypes of its surrounding culture. Comfort is of the opinion that a fear of aging and confrontation with one's own mortality are often reflected in a "gerontophobia" that adversely affects the care of the older patient (*15*). Death in an old patient may sometimes be treated as a social gain for all concerned since resources will no longer seem to be drained away by a person considered to be of low social value. Yet an emphasis upon cure, however essential it may be for all health institutions, should not prevent them from giving the humane care needed by the older dying patient and his family.

A Chance to Live

The elderly patient dying in a humane and caring environment is our major theme. We would not, however, like this major thrust to obscure another shortcoming in the health care given the older person—the failure to rediagnose when a new emergency arises. It is easier to accept an established diagnosis for an elderly patient than to repeat the diagnostic effort when a new emergency occurs. It is often simpler to label a condition as terminal illness rather than to rediagnose the condition, but upon rediagnosis, a new and controllable disease may be unexpectedly found. That the extra effort can prove worthwhile is exemplified by the following case.

Over a 3-week period, headache developed in a 74-year-old retired merchant; he had difficulty in speaking and experienced weakness in the right side of the body. When he became unconscious he was admitted to the hospital with spasticity of the right arm and leg. A cerebral thrombosis had been diagnosed 2 years before, and with little effort the man's condition could have been diagnosed as the terminal stage of a second stroke. However, a more extensive diagnostic effort was considered worthwhile to insure that no error had occured. A large clot within the skull, apparently caused by a relatively minor and unmentioned accident, was thereupon discovered and surgically removed. Antibiotics for pneumonitis, good nursing care, and restoration of the fluid and electrolyte balance greatly improved the patient's condition. After several weeks he returned to the normal activities of a man in his seventies.

Conclusion

The major objective of health care is to improve the quality of life. We do this partly by preventing and controlling disease so that the person continues to function for as long as possible; we also alleviate the distress of disease and impairment so that life continues to be worthwhile even though accompanied by some undesirable conditions. Health providers may not always feel compelled to prolong in the aged the grave discomfort of terminal illness. Nevertheless, there is some purpose in endowing the last stages of life with those ingredients of health care that will help the dying patient feel that he is still part of a humane and caring society, which continues its concern for the individual even when health services cannot be justified by cost-benefit analyses.

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Problems, Personnel, and Proficiency of Small Hospital Laboratories

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Continuing Education for Laboratory Personnel, a project of the Washington/Alaska Regional Medical Program, brought workers to 18 established centers for 5 to 15 days of one-to-one, preceptor-guided training

THE REGIONAL MEDICAL PROGRAMS (RMP), established by legislation passed in 1964, focused on postgraduate continuing education in medicine directed mainly at physicians. Similar attempts to extend this priority to the allied health field elicited considerable discussion, but only a few efforts are noteworthy.

This final report follows a preliminary report (*1*) of an allied health project of the Regional Medical Program for Washington and Alaska entitled, "Continuing Education of Laboratory Personnel." The project existed for 5½ years and gained the participation of 67 percent of the 135 hospital laboratories whose employees were the target group of the project. Staff of Federal and State institutions were excluded from the project. It cost $208,000 and provided 1,326 training days for individual trainees, plus five major seminars for approximately 500 technologists and technicians. Objective measurements of proficiency were taken over a 3-year period of 42 laboratories of small hospitals having 100 beds or less. The measurements were obtained from returns of the Basic A Quality Control Program of the College of American Pathologists (CAP).

In 1967, one author, RAF, performed an on-site survey of the clinical laboratories of approximately 50 percent of the hospitals having 100 beds or less in Alaska and Washington. Of the 135 hospitals in the two States, 66 percent had

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100 or less beds, a percentage that approximates the national average (2). The results follow:

1. Most laboratory personnel had no access to means of improving their knowledge and skills unless they were supervised by a pathology group. (These are private firms which also provide consultant services under contracts with hospitals.)
2. A major mode of learning new techniques was by job hopping.
3. Formal educational background in laboratory work was limited in the groups surveyed.
4. Formal quality control, routine instrument maintenance, adequate laboratory facilities, recordkeeping, or adequate knowledge of bacteriology and proper bacteriological materials essentially did not exist.
5. Isolation from educational facilities meant staff had no way to correct their deficiencies.
6. Many hospital administrators had no technical background and judged the effectiveness of their laboratories through profit and loss statements or complaints of the medical staff, or both.
7. Clinical physicians generally assumed that accuracy and precision existed and judged the effectiveness of the laboratory through its speed, availability, and price for services.
8. At the academic or governmental level the designers of allied health education programs

Office of Information Services, University of Washington

Trainee from Providence Hospital, Anchorage, Alaska, (right) is given instructions by the supervisor of the microbiology department of King County Hospital, Seattle, Wash.

presumed that laboratory workers had adequate basic knowledge, and the programs frequently overshot the needs of the personnel in peripheral laboratories.

9. Many clinical laboratories (one of the few departments dealing with all patients and physicians) had no medical spokeman in the hospital.

10. Continuing education of laboratory technicians and technologists was essentially limited to universities and major medical centers. The course content of refresher seminars held by these centers and the laboratory worker curriculums of junior colleges bore little relationship to the on-the-job problems these workers encountered.

To correct these deficiencies, a program was organized which called upon the cooperation of all medical centers to establish a "buddy system." In the system, workers in small institutions could seek training and consultation from the nearest large teaching center. Training at the center was on a one-to-one basis and scheduled at the trainee's convenience.

Eighteen training centers in major population areas were selected, including 16 hospitals and 2 blood banks. Criteria for selecting them were as follows:

1. Laboratory accreditation by the College of American Pathologists
2. Participation in a national quality control program with proved excellence
3. The presence of a medical technology training program
4. An onsite evaluation by RAF.

These centers made their facilities and staff available to the surrounding communities (*a*) to provide refresher training, (*b*) to facilitate the institution of new procedures, (*c*) to attempt standardization of laboratory techniques, and (*d*) to establish lines of consultation in times of need.

The directors of the 18 training centers formed the steering committee of the project, and continuity was achieved by the full-time administrative assistant, VEH, to whose dedication and interest the program's success can largely be attributed.

Refresher courses lasting 5 to 15 days in the major fields of chemistry, hematology, microbiology, blood banking, and cytology were offered at a time convenient to the trainee. The trainee selected the area of interest and defined his needs; however, his choice of courses had to be consistent with the instrumentation available in the technician's laboratory in order to be acceptable for training. Scheduling was arranged by the administrative assistant. The project provided transportation and per diem reimbursement to the trainee as well as a stipend to the training center to cover the costs of the session.

The trainee was asked to evaluate the training after 3 months, and after 6 months the training center evaluated the trainee and the program from its viewpoint.

A locum tenens was added to the program in 1970 in order to free trainees in isolated one-man laboratories. The locum tenens' experience working in various laboratories also yielded a wealth of information to complete the profile of the laboratories, their personnel, and the attitudes of hospital administrators. This service proved too expensive to continue after 1971.

In the third year, a proficiency testing program was initiated which, during 1971, 1972, and 1973 enrolled 42 small institutions in the CAP's quality control program.

This program is a quarterly national testing service in which samples are sent to participating laboratories. The test results and the methods used for analysis are submitted to the CAP for evaluation against the performance of reference laboratories. The limits of acceptable performance are based on values submitted by peer group members, using an equivalent method. The results for each method are used to calculate the mean and standard deviation (SD). Values outside ± 3.0 SD of the mean are excluded, and the mean and SD are recalculated, using the remaining values. Good performance represents the range of values within ± 1.0 SD of the mean; acceptable performance within ± 2 SD of the mean. Values outside these limits are rated as unacceptable.

The data derived from this testing service were analyzed by VEH for relationships between performance of laboratories and the hospital's size, extent of the staff's training and background, presence or absence of professional supervision, and the impact of continued participation in the CAP testing program. The results were reviewed by the director. We had planned a more positive entree into quality control, using this technique as a means of detecting areas of deficiencies. However, termination of the RMP budgeting, effective in June 1973, stalled the new proposal, and at this time its future remains uncertain.

Results of the Project

Locum tenens' onsite evaluations, 1970 and 1971. Following are findings for 31 laboratories resulting from the locum tenens' working experiences and visits:

1. Technologists and technicians were eager to participate in a continuing education program.
2. Ninety percent of the working force questioned had not attended an educational program within the past 5 years.
3. Fifteen laboratories had no quality control program.
4. Four laboratories had the quarterly College of American Pathologists' proficiency testing program as their only means of quality control.
5. Four other laboratories had initiated additional quality control, but recordkeeping was insufficient to permit evaluation of performance.
6. Equipment was obsolete, in need of repair or maintenance, or operated under suboptimal conditions in many facilities. No maintenance or calibration records could be produced. No funds were available for new books, journals, new equipment, or adequate consultation in 25 of 31 institutions. In one instance, a textbook was requested from the RMP because of a lack of funds within the hospital.
7. Eight laboratories were reconverted closets.
8. New methods were either introduced by contact with manufacturers' representatives or by new employees.
9. No consultations with medical center laboratories occurred.
10. Hospitals administrators had no criticisms of the quality of work. Major areas of their concern were budgets, overtime, and availability of technicians and technologists 24 hours a day.

Trainees. This project elicited uniform interest and participation throughout Alaska and Washington. Among hospitals with 74 beds or less, 100 percent of those in Alaska and 76 percent of those in Washington participated (fig. 1). Of the hospitals with 75 or more beds, 48 percent participated.

The project commenced in 1968. Figure 2 illustrates that approximately 25 percent of trainees returned each year; the remaining 75 percent were new participants. The increased overall activity noted in 1970 coincided with the activities of the locum tenens and the decline in 1971, with threatened termination of funding. Attempts to achieve funding from the participating hospitals were fruitless because of their limited resources.

About 17 percent of the trainees had had no formal training. Military trainees comprised 11.9 percent of the group; however, the quality of their

Figure 1. Participation of hospitals in Washington and Alaska according to number of beds

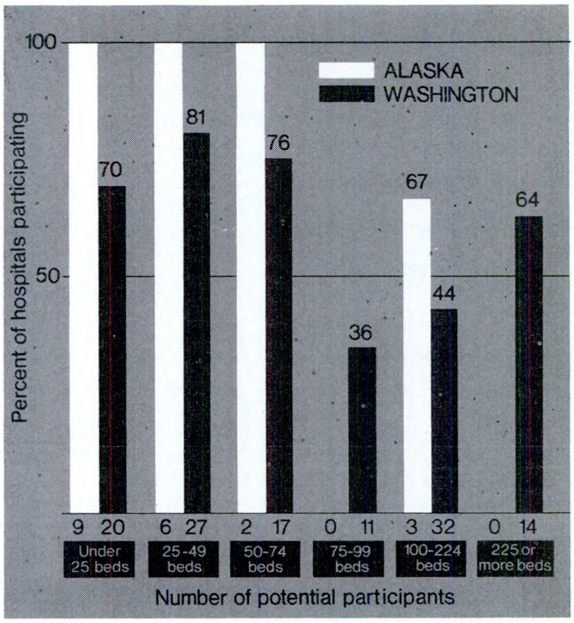
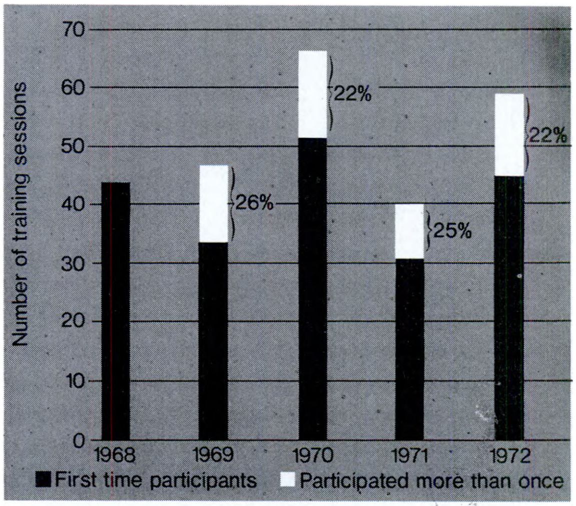


Figure 2. Participants who returned for training in other subjects, by year



experience and training varied with the location and length of their duty assignments. The distribution of educational background in laboratory work follows:

Background	*Percent of trainees*
No formal training	17.3
Military training	11.9
Formal training:	
1 year or less	34.2
2 years	9.6
3 years	3.8
4 years or more	20.4
No information	2.8
Total	100.0

Of the 435 requests for courses, microbiology was the most popular, representing 24.8 percent of the total (table 1). Next in popularity were blood banking (23.2 percent), hematology (18.9 percent), and clinical chemistry (16.8 percent). The length of the training periods requested for microbiology and blood banking was longer than for the other courses.

Proficiency testing. With the accumulation of data resulting from our sponsorship of the CAP proficiency testing program in 1971, it became evident that the participating clinical laboratories in the two States could be divided into three cate-

Table 1. Training requests according to subject, 1968–72

Subject	1968	1969	1970	1971	1972	Total[1]
Microbiology	27	23	25	12	19	108
Blood banking	18	19	27	20	17	101
Hematology	27	12	15	12	17	83
Clinical chemistry	30	17	14	5	8	74
Parasitology	12	1	5	2	3	23
Immunology	9	2	3	1	1	16
Other[2]	4	4	15	3	4	30

[1] The total of 435 requests resulted in 255 training sessions. Not all applicants were able to arrange for training; some applicants were not acceptable for 1 reason or another; some applicants were able to cover more than 1 subject during a single training session.

[2] For the 5 years, "other" included—in 1968 equipment observation, pregnancy tests, cytology, and tissue work—in 1969 cytogenetics, use of controls, electrophoresis, and medical photography—in 1970 histology (2 sessions), cytology (2 sessions), isotopes, electrophoresis, instruction in IL blood gas setup and maintenance (2 sessions), administration, respiratory measurement equipment, medical photography, quality control reporting (2 sessions), coagulation, and 1 subject unidentified—in 1971 laboratory management (2 sessions) and urinalysis—in 1972 cytology, histology, radioisotopes, and arterial puncture.

Table 2. Average scores in the College of American Pathologists' quality control program for all laboratories, all years

Laboratories and year	Number of hospitals	Number of tests	Performance ratings (percent)					
			Good	Range of good	Acceptable	Range of acceptable	Not acceptable	Range of not acceptable
Group 1:								
1971	6	701	74.2	51.2–86.8	15.6	8.9–25.8	10.2	2.6–26.9
1972	7	1,282	73.8	56.4–91.4	13.0	4.3–32.7	13.2	0 –28.9
1973[1]	6	627	73.8	56.2–86.0	13.3	3.8–27.1	12.8	6.0–32.7
Group 2:								
1971	6	855	69.9	48.4–85.3	17.8	8.7–31.3	12.3	2.0–30.3
1972	8	1,646	78.8	60.0–90.5	13.5	2.4–27.3	7.7	0 –16.4
1973[1]	30	3,679	79.6	66.0–90.6	13.5	8.0–20.0	6.9	0 –19.9
Group 3:[2]								
Overall performance for 1971–73	9	3,840	80.0	...	13.0	...	7.0	...
Not acceptable for—								
1970							7.3	...
1971							7.4	...
1972							6.9	...

[1] Only for 3 quarters of the year.

[2] Data on group 3 submitted for our use were rounded to the nearest hundredth and compiled for all 3 years. Charts were included that allowed us to formulate the breakdown by year only for not acceptable performance.

NOTE: Group 1 institutions had no pathology consultation; group 2 had limited pathology consultation; group 3, the control group, had pathology consultation including quality control programs.

Table 3. Average scores in the College of American Pathologists' quality control program for all laboratories participating 2 or more years

Laboratories and year	Number of hospitals	Number of tests	Performance ratings (percent)					
			Good	Range of good	Acceptable	Range of acceptable	Not acceptable	Range of not acceptable
Group 1:								
1971.........	7	839	74.1	51.2–86.8	15.9	8.7–25.8	10.0	2.4–26.9
1972.........	6	1,132	74.3	56.7–91.4	12.9	4.3–32.7	12.8	2.0–28.9
1973[1].......	3	327	69.6	56.2–87.8	13.2	8.0–27.1	17.2	6.2–32.7
Group 2:								
1971.........	4	574	75.0	63.0–85.3	15.8	8.7–26.1	9.2	2.0–20.8
1972.........	7	1,438	77.1	74.6–86.8	13.8	7.7–25.4	8.1	0 –12.9
1973[1].......	11	1,309	80.1	72.4–90.6	12.9	5.6–20.4	6.9	0 –14.9
Group 3:								
1970.........	6	(2)	81.7	73.6–86.3	11.1	6.5–18.2	7.2	5.2–10.7
1971.........	6	(2)	80.6	69.2–85.4	12.5	7.7–15.9	6.9	3.7–16.9
1972.........	6	(2)	76.4	68.2–82.1	16.4	14.5–19.3	7.2	3.4–12.5

[1] Only for 3 quarters of the year.
[2] Unknown.

NOTE: Group 1 institutions had no pathology consultation; group 2 had limited pathology consultation; group 3, the control group, had active pathology consultation including quality control programs.

gories according to the form of outside consultation provided.

Group 1. Institutions with no pathology consultation
Group 2. Institutions with limited pathology (tissue only) consultation
Group 3. Institutions with active pathology consultation, including quality control programs.

Forty-two out of a possible 92 institutions with 100 beds or less participated in the basic A, CAP series during 1971, 1972, and 1973. Some laboratories participated more than 1 year, for the total of 65 surveys. The 65 surveys performed over a 3-year period represent 8,984 individual laboratory tests in the fields of chemistry, blood banking, hematology, microbiology, urinalysis, and serology. Institutions supervised by pathology groups with formal quality control programs were not included in the analysis, but their proficiency testing data were made available to us, and they formed our control group, group 3.

In both group 1 (institutions without pathology consultation) and group 2 (those with tissue pathology consultation only), the hospital administrator or a member of the medical staff was the nominal supervisor of the clinical laboratory.

Tables 2 and 3 present the performance of the participating and control group laboratories in percentages of the test results rated good, acceptable, and not acceptable. In table 2, the average performances of the three groups are compared, regardless of length of participation. In the first year unacceptable performance (>2, SD) of the laboratories was 10.2 percent for group 1, 12.3 percent for group 2, and 7.3 for group 3. No improvement was exhibited by group 1 institutions, with 13.2 percent and 12.8 percent unacceptable performance in the second and third years. For the group 2 institutions, unacceptable performance declined to 7.7 and 6.9 for the second and third years. There was no change in the control group.

Table 3 contains performance data for only those institutions which participated for more than 1 year in the testing program. Again, group 1 institutions failed to improve, exhibiting 10.0, 12.8, and 17.2 percent unacceptable performance over the 3 years. Group 2 institutions showed definite improvement, with 9.2, 8.1, and 6.9 percent unacceptable performance during the same period. It should be noted that only three hospitals remained in group 1 by the third year. Many had acquired professional supervision by that time and were added to group 2.

This preceptor program, which included per diem and transportation expenses for the trainee and a stipend for the training center, had an average cost of $65 per training day for Washington and Alaska (table 4). The actual costs of providing training in Alaska were about 40 percent higher than for Washington; however, this sum was offset by the greater number of hospitals and trainees from Washington. Alaska supplied 17 percent of the trainees, although its population was only 8.0 percent of the combined population.

Table 4. Chronology of the program and costs per trainee, 1969–72

Year	Training sessions	Training days	Average training days per trainee	Average costs [1]	
				Per trainee	Per training day
			Total program		
1968	42	228	5.4	$311	$57
1969	48	247	5.2	322	63
1970	67	335	5.0	343	69
1971	40	244	6.1	434	71
1972	58	272	4.7	314	67
Total	255	1,326	5.3	$345	$65
			By State		
1968:					
Alaska	12	104	9.0	$433	[2] $50
Washington	30	124	4.1	262	63
1969:					
Alaska	10	78	7.8	443	[3] 57
Washington	38	169	4.4	293	66
1970:					
Alaska	6	43	7.2	669	109
Washington	61	292	4.8	300	63
1971:					
Alaska	6	49	8.2	992	121
Washington	34	195	5.7	336	59
1972:					
Alaska	9	35	3.8	337	98
Washington	49	237	4.8	302	63

[1] Includes per diem, travel, and training center costs.

[2] This low cost reflects 47 days of onsite training for which no training center costs were accrued. Salaries of 2 persons giving onsite training were paid by the hospitals benefiting.

[3] 35 days of onsite training accounts for the low cost.

Discussion

This project, which was directed at meeting the educational needs of personnel in laboratories of hospitals with 100 beds or less, elicited participation from 100 percent of Alaska's hospitals and 76 percent of those of Washington over the 5½ years (fig. 1). Each year 25 percent of all participants returned for additional sessions (fig. 2) and, in addition, telephone communication between the training centers and the trainees in times of need was a beneficial spinoff. Approximately 50 percent of the total working force in the laboratories of the target hospitals was mobilized and involved in an educational experience which was the first of its kind.

The success of stimulating this degree of interest rested on three factors:

1. Training on a one-to-one basis
2. Education in the friendly environment of a training center laboratory whose staff had planned for the visit, with reimbursement for the center
3. Reimbursement of the trainee for per diem and transportation expenses.

The reimbursement of preceptors for per diem and transportation has been a controversial issue as it applies to practicing physicians in view of their income. However, the success of this project is, in large part, attributed to the use of per diem and transportation reimbursement to assist the trainee who, without some financial assistance, would be unable to support travel and per diem expense. These observations are supported by the personal comments of Dr. David Lackman, director of laboratories, State Health Department of Montana, who noted in September 1973 that conferences sponsored by his department offering per diem and transportation were those faced with overflow enrollment.

The use of existing medical centers with ongoing operations and training techniques was an important innovation, since it did not obligate the program to set up expensive faculties or laboratory facilities which are fragile to unexpected budgetary manipulations. The training center stipend paid by the project obligated the center to provide a worthwhile educational experience.

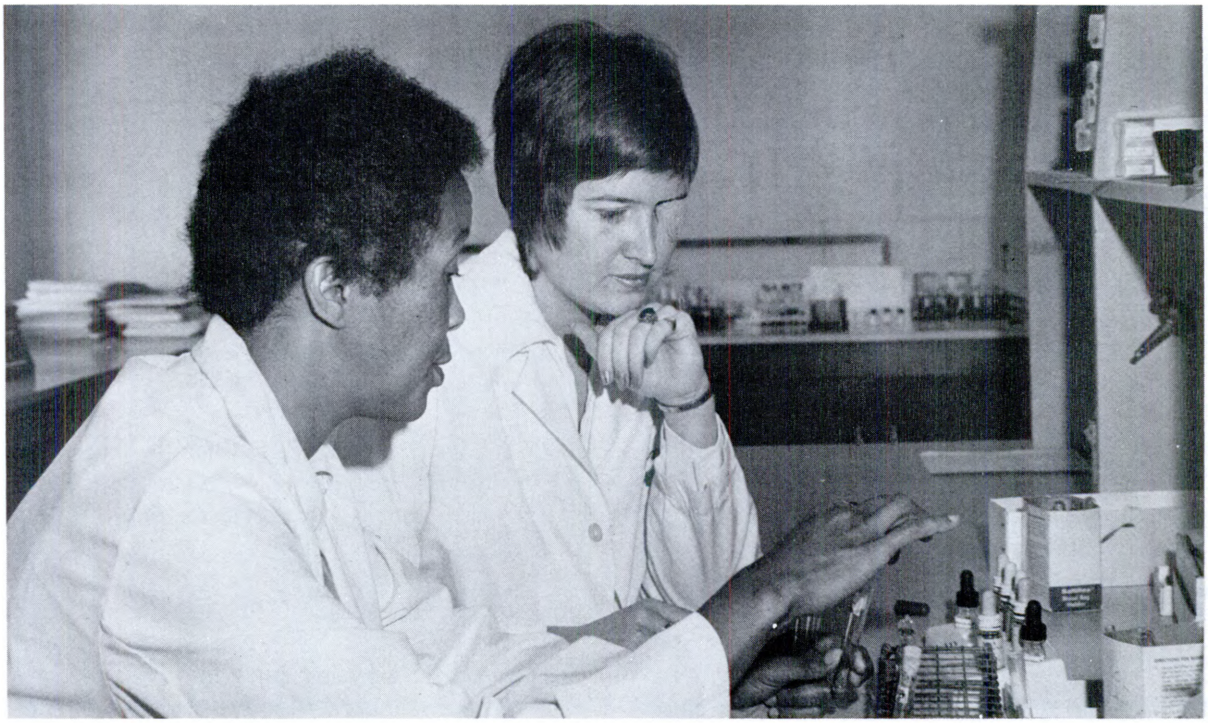
The costs of training outlined in table 4 are relatively low and compare favorably to the daily cost of training in any public institution. However, community colleges and other public institutions could not offer the scope of opportunity on a one-to-one basis for such sums.

At the conception of the project the advisory committee questioned the advisability of spending time and effort on trainees with limited formal training. At the time, we were aware that some laboratory personnel did have limited backgrounds, but data collected during the project revealed the lack of training to be widespread and, as indicated earlier, only 20 percent had completed a formal 4-year program.

Microbiology and blood banking were the most frequently requested courses. These subjects are the most difficult to learn without tutoring. Also, blood banking activities, because of the possibly fatal consequences of mistakes, are the most threatening tasks of the clinical laboratory. Participants with less training gravitated to these more critical programs, indicating a desire to improve their basic knowledge.

In addition, we called upon the centers to use their student grading system to evaluate our trainees. We assumed that medical center laboratories and blood banks with large staffs and teaching experience should be able to judge adequately the performance of an outside technician over a 5- to 15-day period. Most trainees received an average or better rating from the teaching supervisors, who considered them capable, eager to learn, and well worth the effort. At the King County Blood Bank, where strict supervision was maintained, trainees successfully competed for grades with college students in the medical technology training program of the University of Washington. We concluded that members of our target group were not only interested in improving, but they also had the ability to learn.

During the original survey the educational opportunities available to laboratory personnel were reviewed. A list of seminars and symposiums offered by universities, medical centers, instrument manufacturers, and government-sponsored agencies, such as the Center for Disease Control, included numerous sophisticated sessions directed at people with adequate technical background. However, 51.1 percent of our trainees had less than 1 year of formal training, and it is obvious that these seminars do little to fill the basic needs of these technicians.



At the King County Blood Bank in Seattle, Wash., one of the training centers, the teaching supervisor (left) works with a medical technologist from St. Joseph's Hospital, Tacoma, Wash.

Therefore, an underlying system of education which emphasizes specific, basic information such as proper dishwashing procedures, instrument selection and maintenance, incubator and refrigerator temperature calibration, quality control, and proper pipette procedures is essential because these matters are frequently overlooked by personnel with limited training. Even staff with full training tend to become lax in performing these procedures if supervision is minimal or absent. Without these basics, quality control is poor, as demonstrated by the proficiency data we have reported in this paper.

Pathology groups provide the only form of comprehensive consultation to hospital laboratories in Washington and Alaska, and the quality of the relationship with particular institutions depends upon the extent to which the administrator will defer the actual management of the laboratory to the pathologist. In the majority of hospitals in this project, the administrator directed the laboratory, or he sought out a pathologist, in name only, to satisfy the regulations of the Joint Commission on Hospital Accreditation. The general opinion was that this requirement increased the expense to the hospital needlessly, and the consulting pathologist was prevented from taking an active part in the management of the clinical laboratory. In some situations, the laboratory technologist possessed knowledge to improve laboratory performance but lacked the authority to influence the administrator or the hospital board. The pathologist, on the other hand, occasionally could recruit support from the medical staff and thus acquire sufficient influence to guide the hospital laboratory.

Most administrators are trained businessmen with little technical experience and are frequently unaware of the technical pitfalls confronting the laboratory staff. In the beginning of this project we approached the Washington State Hospital Association and requested it to name an administrator as a representative for our advisory committee. There was no response. Subsequently, the accumulation of data on hospital laboratories through statistics gathered from our onsite surveys and our sponsorship of the quality control basic A program of the CAP generated some interest.

Interest was particularly evident in Alaska where we were able to enlist active and enthusiastic support from the medical community under the leadership of the Alaska Hospital Association. This manifestation of concern has resulted in phenomenal improvement in proficiency; the unacceptable performance rate for Alaskan laboratories dropped from 12.6 percent in 1972 to 6.4 percent in 1973. By contrast, with the termination of the Washington program in mid-1973, the unacceptable performance rate increased from 6.9 percent in 1972 to 9.5 percent in 1973.

The Washington and Alaskan programs independently solicited funding from the same sources. The Alaskan program is currently functioning, having achieved funding from State and Federal sources as well as through a grant from the Kellogg Foundation. In large part this success was due to the active, aggressive support of the State's hospital association.

Outgrowths

The medical technology training program of the University of Washington was intimately associated with this project through RAF's dual role as director of both programs at the conception of the RMP project. The university's program now permits students to spend their last 3 months of training in peripheral hospitals in either State. Some of the first students have elected to stay in these rural areas. In general, the experience and contacts of the Washington/Alaska Regional Medical Program permitted the introduction of such dispersed educational experience in attempting better distribution of registered technologists in areas far from the university centers. It is hoped that this policy will help to increase the number of formally trained personnel in rural areas. However, without adequate laboratory standards, these graduates will be unable to effect changes in physical plants or the policies of operating the laboratory. This situation can demoralize staff members and lead to staff resignations. Telephone consultation between trainees and centers in times of need has already been discussed.

The move toward requiring the professional consultations of a pathologist when the participating institutions became aware of their lagging proficiency was largely responsible for the improved performance of these hospitals. An examination of the data indicates that this improvement had not yet reached a plateau at the termination of this project. On the contrary, the waning performance levels in Washington during 1973 indicate that external monitoring of quality and the opportunity for continuing education are extremely important in laboratory performance.

Conclusions

Several conclusions can be drawn from the project.

1. The complexity of the clinical laboratory is consistently underestimated by persons both in and out of the laboratory when those persons are inadequately trained.

2. A quality control program, by itself, does not assure improved performance without some expert consultation.

3. The mere presence of an expert, albeit an informal one, appears to substantially improve laboratory performance through the benefits of consultation.

4. Active consultation by a pathologist appears to improve performance further if the consulting service has reasonable authority in the management of the laboratory.

5. An active continuing education program permitting access to training centers is an essential part of laboratory management, and support for these programs must be derived from sources other than the technologists because of their expense.

6. Standards for laboratories are essential if administrators, hospital boards, and Joint Commission inspection teams are to evaluate accurately the performance of laboratories under their jurisdiction.

Through this project, we successfully provided an educational experience and improved the proficiency of the majority of the laboratory personnel in small and rural hospitals of Washington and Alaska. The data presented indicate that we were responsible for improving the performance of most laboratories through interinstitutional and agency awareness and cooperation. However, the lack of competent consultation and of standards for personnel and facilities to guide hospital administrators, hospital boards, and communities are the most significant deterrents to a solution of the problems presented in this paper.

This project dealt with only one scientific field, the clinical laboratory, which has its advance guard at the university, with its practical application extending into the rural parts of the country. Although the subject dealt with was one of the oldest allied health professions, the conclusions are applicable to any medical or nonmedical scientific field which finds its practical application at some distance from the centers of development.

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The purpose of this allied health project of the Washington/Alaska Regional Medical Program was to answer the educational needs of laboratory workers in hospitals having 100 beds or less. These comprise 66 percent of the hospitals in the two States. The training scheme developed for the project can be applied to other allied health personnel; faculty, libraries, and laboratories are not required, merely access to them.

The project existed for 5½ years and elicited participation from 67 percent of the 135 laboratories whose workers were the target group. Technicians were offered 5 to 15 days of preceptor-guided training at the nearest large teaching center. The 18 centers received stipends for the training and the trainees, per diem and travel payments. The project cost $208,000 and provided 1,326 training days and five major seminars for approximately 500 technologists and technicians.

The basic A series quality control program of the College of American Pathologists was used to obtain objective measurements of laboratory performance. Forty-two laboratories of hospitals with 100 beds or less participated in the program for 1, 2, or 3 years. Laboratories with outside pathology group consultants were able to decrease the percentage of test results that were not acceptable; laboratories lacking such consultation showed no improvement.

An onsite survey of the laboratories and the reports of a locum tenens, who freed workers to attend training courses, were the sources of other data on the problems and operating procedures of the small laboratories in the two States.

Apparent Changes in Cancer Mortality, 1968

A study of the effects of the introduction of the Eighth Revision International Classification of Diseases

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THE INTERNATIONAL CLASSIFICATION of Diseases (ICD) is revised decennially to improve its usefulness and to bring it up to date. Unfortunately, the revision of code books used for classification of diseases creates problems. Not only do code numbers change, but the categories sometimes include different entities. The resulting break in comparability of cause-of-death statistics presents a problem for those who study trends in mortality. The effects of changes on mortality statistics resulting from earlier revisions of the ICD have been reported previously (*1–3*).

Our concern is with the impact on the 1968 cancer mortality statistics of the introduction of the eighth revision of the ICD in 1965 (*4*) that was adapted for use in the United States (*5*). When it was observed that U.S. lung cancer deaths had increased nearly twice as much from 1967 to 1968 as they had increased in the previous 4 or 5 years—from 5 to approximately 10 percent—a research project was devised to study all sites of cancer, as well as of the lung.

In this paper we show the increase or decrease in cancer mortality figures for each site of cancer from 1967, when the seventh revision of the ICD (*6*) was being used, to 1968, when the eighth revision (*4*) was used for the first time.

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Effect of Changes on Trends

Trends in cancer mortality have been studied for almost a century (*7–11*). In studying these trends, it has been difficult to determine if breaks in continuity of mortality from certain sites are real or a result of changes introduced by revised classifications or changes in coding rules. Changes in coding procedures have affected long-term trends for other causes of death in the past. For example, changes in the method of selecting the cause of death for primary mortality tabulations between the fifth and sixth revisions of the ICD resulted in a decline of approximately 50 percent in the number of deaths assigned to diabetes (*2*). Sometimes such changes make it difficult to trace the long-term trends for a cause of death, especially when minor changes occur that may be undetected without careful study.

The National Center for Health Statistics is concerned with such changes and tries to evaluate the effects of changes on mortality data. Comparison studies are made when the ICD is revised; a sample of death certificates is coded by the two different systems, and comparability ratios are published (*3, 12*). These studies enable public health workers to evaluate the net effects of changes in categories and coding procedures.

Selection of Primary Cause

Compilations of mortality statistics usually include only one cause of death in the tabulations. This cause is designated as the "underlying cause," and is defined in the ICD as "(a) the disease or injury which initiated the train of morbid events leading directly to death or (b) the circumstances of the accident or violence which produced the fatal injury."

For about 25 percent of deaths, physicians record only one cause. A recent report by Armstrong and Israel (*13*) on U.S. deaths in 1968, the first recent year in which multiple causes were tabulated, showed that only one cause was mentioned in 24.5 percent of the more than 1 million death certificates studied; in the remaining 75 percent of the death certificates, generally a sequence of events or diseases was entered. In the Third National Cancer Survey's 1969–71 series of 172,510 deaths, where cancer was mentioned somewhere on the certificate, 40 percent showed cancer only (unpublished data, National Cancer Institute).

In the majority of instances, the physician who completes the death certificate indicates what he believes to be the underlying cause of death. Problems arise when (*a*) the physician mentions several diseases and fails to indicate which, in his opinion, was the underlying cause or (*b*) the physician uses ambiguous language.

To assist in the classification of the underlying cause of death, one section in the ICD for international use includes broad guidelines for the selection and interpretation of causes of death. These instructions are not very detailed. Concerning cancer, instructions are given only for multiple sites. Although the instructions for multiple sites are not included in the ICD adapted for use in the United States (ICDA), they are incorporated in the Vital Statistics Instruction Manuals prepared by the National Center for Health Statistics (*14–17*). These manuals contain highly specific coding rules accompanied by detailed examples.

Trends in Lung Cancer Death Rates

Between 1963 and 1967 deaths from all sites of cancer in the United States increased about 2 percent each year, and cancer of the lung and bronchus increased approximately 5.7 percent annually (table 1). In 1968, however, the first year that the eighth revision of the ICD went into effect, the annual increase for primary lung and bronchus cancer rose to 9.6 percent and then fell to 4.1 percent in 1969 (table 1). Secondary cancer of the thoracic organs—secondary of lung, bronchus, pleura, and mediastinum—showed an average annual increase of 14.8 percent between 1963 and 1967, a drop of 61.5 percent in 1968, and an increase of about 16 percent in 1969,

Table 1. Total U.S. mortality for certain categories of malignant neoplasms and all sites, 1963–69

Year	Primary or unspecified lung, bronchus, trachea, pleura			Secondary thoracic organs [1]			Unspecified site			All sites		
	Number of deaths	Differences		Number of deaths	Differences		Number of deaths	Differences		Number of deaths	Differences	
		Number	Percent		Number	Percent		Number	Percent		Number	Percent
1963	43,568	...	...	1,220	...	...	13,587	...	...	285,362	...	...
1964	45,838	+2,270	+5.2	1,411	+191	+15.7	13,938	+351	+2.6	289,577	+4,215	+1.5
1965	48,483	+2,645	+5.8	1,612	+201	+14.2	15,000	+1,062	+7.6	297,588	+8,011	+2.7
1966	51,478	+2,995	+6.2	1,859	+247	+15.3	14,789	−211	−1.4	303,736	+6,148	+2.1
1967	54,407	+2,929	+5.7	2,116	+257	+13.8	16,194	+1,405	+9.5	310,983	+7,247	+2.4
1968	59,656	+5,249	+9.6	815	−1,301	−61.5	14,936	−1,258	−7.8	318,547	+7,564	+2.4
1969	62,130	+2,474	+4.1	945	+130	+16.0	14,744	−192	−1.3	323,092	+4,545	+1.4

[1] **Bronchus, lung, mediastinum, pleura, and other respiratory organs.**

similar to what it had been before 1968. Although the number of deaths classified to cancer of other and unspecified sites had fluctuated from 1963 to 1967, a notable decrease of about 8 percent occurred in 1968. The relatively sharp increase in the number of primary lung and bronchus cancer deaths in 1968, coupled with the decreases in secondary cancer of thoracic organs and cancer of other and unspecified sites, suggested that these shifts were due in part to classification changes.

Comparison of Cancer Mortality, 1967–68

In evaluating changes in cancer mortality from 1967 to 1968, it is important to study the effect of secular trends in diseases independent of changes in classification. Table 2 shows the number of U.S. cancer deaths coded to the various sites in 1967, when the seventh revision of the ICD was used, and the number coded to these equivalent sites in 1968, when the eighth revision, adapted, was used. To make the 1968 figures comparable to the 1967 mortality figures, a conversion table prepared by the American Cancer Society was used to identify the comparable categories (*18*).

Table 2 also shows expected deaths (based on the average annual increase or decrease from 1963 to 1967) and the ratio of observed to expected deaths in 1968. The ratio of 1.04 for lung and bronchus cancer means that an additional 4 percent or 2,078 more lung cancer deaths than expected were recorded. If this difference was real, it would be a matter of considerable importance. However, the greatest decrease for any site occurred in cancer of the thoracic organs (lung, bronchus, mediastinum) specified as secondary—a ratio of 0.45 or a 55 percent reduction. There was also a 12 percent decrease in cancer of other and unspecified sites. The observed decrease from 1967 to 1968 for these two categories suggested that something connected with the implementation of the eighth revision ICD could have accounted for at least part of the large increase in lung and bronchus cancer and could also have affected the changes for some other sites of cancer.

It should be pointed out that there is not always a one-to-one correspondence between the contents of the categories for a site of cancer in the seventh revision and that for the same site in the eighth revision ICD. In both the sixth (*19*) and seventh (*6*) revisions, a distinction was made in the classification of cancer of the lung specified as primary (162.1) and cancer of the lung unspecified as primary or secondary (163); this sometimes caused confusion in calculating the total number of lung and bronchus cancer deaths. Several followback studies (*20,21*) have revealed that in the vast majority of cases the physicians who reported cancer of the lung (and did not specify primary) as the cause of death meant that the lung was the primary site. Additionally, not all countries used these categories in the same way. An examination of mortality figures (*22*) shows four different ways of using these rubrics:

1. Using only rubric 162; for example, Israel and Denmark.
2. No separation between 162 and 163 or adding together 162 and 163; for example, France, Germany, and Chile.
3. Using both 162 and 163, but many more cases of 162; for example, Canada, Norway, and Great Britain.

Table 2. U.S. deaths from specific sites of cancer in 1967 and 1968 and ratio of observed to expected deaths in 1968

Site	Number of deaths			Ratio of observed to expected, 1968
	Observed, 1967	Observed, 1968	Expected, 1968[1]	
Total malignant neoplasms	310,983	318,547	317,731	1.00
Buccal cavity and pharynx	6,718	7,294	6,773	1.08
Lip	143	184	135	1.36
Tongue	1,544	1,704	1,537	1.11
Salivary gland	596	595	591	1.01
Mouth and gum	1,525	1,645	1,549	1.06
Oropharynx	605	867	619	1.40
Hypopharynx	426	477	441	1.08
Other and unspecified pharynx	1,879	1,822	1,911	0.95
Digestive system	96,694	98,009	97,371	1.01
Esophagus	5,627	5,804	5,753	1.01
Stomach	17,050	16,901	16,530	1.02
Small intestine	715	665	705	0.94
Large intestine excluding rectum	33,082	34,030	33,727	1.01
Rectum	10,431	10,405	10,341	1.01
Liver and biliary passages, primary, NOS or secondary	11,255	11,251	11,410	0.99
Pancreas	16,886	17,381	17,301	1.00
Peritoneum and unspecified digestive organs	1,648	1,572	1,625	0.97
Respiratory system	60,202	64,300	64,320	1.00
Nose, nasal cavities, middle ear, and accessory sinuses	572	649	585	1.11
Larynx	2,797	2,836	2,865	0.99
Lung, bronchus, trachea, primary or unspecified	54,507	59,656	57,578	1.04
Mediastinum and thoracic organs, NOS and secondary lung and other thoracic organs	2,426	1,159	2,571	0.45
Genitourinary	55,064	55,728	55,444	1.01
Breast	28,217	29,081	28,968	1.00
Cervix uteri	7,411	7,108	7,216	0.99
Corpus uteri	1,743	1,756	1,831	0.96
Other parts uterus, uterus unspecified	3,989	3,895	3,884	1.00
Ovary, fallopian tubes, broad ligament	9,168	9,489	9,342	1.02
Other and unspecified female genital organs	805	878	780	1.13
Prostate	16,345	16,848	16,579	1.02
Testis, other and unspecified male genital organs	947	962	946	1.02
Kidney	5,894	6,117	6,060	1.01
Bladder and other urinary organs	8,762	8,675	8,915	0.97
Other specified sites and unspecified	33,271	31,986	34,219	0.93
Melanoma	2,872	2,976	2,980	1.00
Skin, excluding melanoma	1,852	1,424	1,838	0.77
Eye	344	363	341	1.06
Brain and other parts of nervous system	7,153	7,508	7,225	1.04
Thyroid gland, other endocrine glands	1,474	1,400	1,487	0.94
Bone	1,853	1,768	1,872	0.94
Connective tissue	1,374	1,423	1,447	0.98
Lymph nodes, secondary or unspecified	155	188	148	1.27
Other and unspecified sites	16,194	14,936	16,934	0.88
Lymphoma	16,481	16,692	17,045	0.98
Lymphosarcoma, reticulum cell sarcoma, and other forms of lymphoma	9,064	9,151	9,388	0.97
Hodgkin's disease	3,446	3,353	3,490	0.96
Multiple myeloma	3,879	4,088	4,080	1.00
Mycosis fungoides	92	100	100	1.00
Leukemias	14,336	14,375	14,552	0.99
Polycythemia vera[2]	......	506	......	......
Myelofibrosis[2]	......	576	......	......

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[1] Expected deaths based on applying average annual percentage increase or decrease 1963–67 to observed deaths in 1967.

[2] Not considered malignant neoplasm in seventh revision ICD.

NOTE: NOS = not otherwise specified.

4. Using both 162 and 163, but many more 163 cases; for example, United States, Japan, and Finland. (In Nos. 3 and 4, the ratio of deaths from malignant neoplasms in 162 to the total in 162 and 163 varied widely among countries.)

Therefore, when the ICD was revised for use in 1968 only one category (162.1) was provided for malignant neoplasm of bronchus and lung. This change and others are shown in the conversion table mentioned earlier (*18*). Some details from this conversion table and the mortality figures for certain sites of cancer in 1967 and 1968 appear in table 3. As shown in this table, code numbers 162 (malignant neoplasm of bronchus, lung, trachea, and pleura, specified as primary) and 163 (malig-

Table 3. Comparison of U.S. mortality figures for certain sites of cancer in 1967 and 1968 showing corresponding categories in the seventh and eighth revisions ICD

7th revision ICD, category and site	1967 number of deaths	8th revision ICDA, category and site	1968 number of deaths	Differences	
				Number	Percent
Malignant neoplasms of:		*Malignant neoplasms of trachea, bronchus, and lung:*			
162 Bronchus, trachea, and lung specified as primary					
162.0 Trachea	117	162.0 Trachea	131		
162.1 Lung and bronchus	21,336	162.1 Lung and bronchus	59,236		
162.2 Pleura	19	163.0 Pleura	289		
162.8 Multiple sites	7				
163 Lung, unspecified primary or secondary[1]	32,928				
Total	54,407	Total	59,656	+5,249	+9.6
164 Mediastinum and thoracic organs, NOS	310	163.1 Mediastinum	305		
		163.9 Respiratory and thoracic organs, NOS	39		
Total	310	Total	344	+34	+11.0
165 Thoracic organs (secondary)	2,116	197.0 Lung, specified as secondary	691		
		197.1 Mediastinum, specified as secondary	14		
		197.2 Pleura, specified as secondary	99		
		197.3 Other respiratory organs specified as secondary	11		
Total	2,116	Total	815	−1,301	−61.5
199 Other and unspecified sites	16,194				
		195.0 Abdomen, intra-abdominal cavity	1,439		
		195.1 Pelvis, pelvic viscera, recto-vaginal septum	347		
		195.9 Other neoplasms of ill-defined sites	905		
		197.4 Small intestine, including duodenum, specified as secondary	7		
		197.5 Large intestine and rectum, specified as secondary	41		
		197.6 Peritoneum, specified as secondary	108		
		197.9 Other digestive organs specified as secondary	42		
		198 Other secondary malignant neoplasm	2,304		
		199.0 Multiple (generalized) malignancy	8,507		
		199.1 Other (cancer, site not specified)	1,236		
Total	16,194	Total	14,936	−1,258	−7.8

[1] Since category 163 included pleura, NOS (not otherwise specified), it is impossible to tell how many of these 32,928 deaths were due to pleura. Therefore, no direct comparison can be made of deaths in 1967 and 1968 from pleura.

nant neoplasm of lung unspecified as to whether primary or secondary) in the seventh revision are equivalent in the eighth revision to 162 (malignant neoplasm of trachea, bronchus, and lung) plus 163.0 (pleura). Detailed conversions like this must be applied in order to make valid comparisons. For example, in 1967 category 199 (other and unspecified sites) showed 16,194 deaths, while in 1968 this category showed only 9,743 deaths, a reduction of 6,451 deaths or 39.8 percent. This is not a correct comparison. Actually, the additional categories 195, 198, and part of 197, as shown in table 3, should be included; this would bring the total deaths in 1968 to 14,936, a decrease of only 7.8 percent.

Because of the nearly 10 percent increase in deaths from cancer of lung and bronchus and other changes in related categories, a meeting was convened of representatives of the National Cancer Institute, the American Cancer Society, and the National Center for Health Statistics to discuss the changes that had occurred. As a result of this meeting, a research project was conducted to (*a*) examine the effects of changes in coding rules between the seventh and eighth revisions in classifying malignant neoplasms and (*b*) code a sample of death certificates by the codes and rules of both revisions to determine the net effect of these changes. The findings of this research project are reported in this paper.

Revision in Coding Rules

Some of the international rules and the instructions issued by the NCHS for use in the United States are pertinent in studying changes in the classification of cancer deaths between the seventh and eighth revisions. The rules on cancer that appear in these revisions are as follows.

Seventh revision, ICD, vol. 1., page 371

V. Malignant neoplasms of multiple sites

If malignant neoplasms of more than one site are entered on the certificate, the site indicated as primary should be selected. This indication may be the specification of one site as "primary", or of the other(s) as "secondary" or as "metastases", or an acceptable order of entry pointing to one site as the primary. Malignant neoplasm of liver or lymph nodes without specification as primary should be assumed to be secondary and assignment made to the other site mentioned, even if this is entered in Part II. *Malignant neoplasm of lung if selected as the presumptive primary site should be assigned to 163 unless specified as primary.*

If there is no indication as to which was the primary site (for example, if sites are entered on the same line or in a sequence which does not point to one as the primary), *assignment should be to malignant neoplasm of multiple sites (199), except where the classification provides specifically for multiple sites within three-digit categories (140.8, 141.8, etc.).*

Malignant neoplasm of multiple sites, specified as secondary, should be assigned to 199.

Eighth revision, ICD, vol. 1, page 435

V. Malignant neoplasm of multiple sites

If malignant neoplasms of more than one site are entered on the certificate, the site indicated as primary should be selected. This indication may be the specification of one site as "primary", or of the other(s) as "secondary" or as "metastases", or an acceptable order of entry pointing to one site as the primary. Malignant neoplasm of liver or lymph nodes without specification as primary should be assumed to be secondary and assignment made to the other site mentioned, even if this is entered in Part II.

If there is no indication as to which was the primary site (for example, if sites are entered on the same line or in a sequence which does not point to one as the primary), *prefer a defined site to an ill-defined site in category 195 and of two or more defined sites prefer the first mentioned.*

Of two or more specified sites of secondary malignant neoplasm, prefer the first mentioned.

The italicized statements in the preceding rules point out the difference between the two versions. The last sentence of the first paragraph in the seventh revision rules was omitted in the eighth revision rules because category 163 (malignant neoplasm of lung unspecified as to whether primary or secondary) was dropped in the eighth revision. The italicized changes in the second paragraph of the eighth revision giving priority to a defined site or to the first-mentioned site would tend to increase the number of deaths coded to specific sites and decrease the number coded to the unspecified site category. For example, a certificate reporting "cancer of lung and breast" as the underlying cause would have been coded 199 (malignant neoplasm of other and unspecified sites) by use of the rules in the seventh revision ICD but would be coded 162.1 (malignant neoplasm of lung) by use of the rules of the eighth revision ICD.

Excerpts from the instructions developed for U.S. users of the seventh and eighth revisions for coding deaths follow.

The Vital Statistics Instruction Manual, Part 2, Cause-of-Death Coding, 1966, NCHS, page 55, developed for the seventh revision, states:

> Metastatic—Malignant neoplasm, "metastatic" or specified as "metastatic of" a site, with no other site mentioned, will be assigned to the category for the primary neoplasm of the site mentioned, unless the site is lung, pleura, liver or lymph nodes. In the latter case, the assignment is made to the secondary neoplasm of the specified site.

Based on this instruction, when a certificate read metastatic neoplasm of lung, pleura, liver, or lymph nodes, and another specific site, the other specific site was presumed to be primary in the United States during the use of the seventh revision ICD. For example, a death certificate reading "metastatic carcinoma of lung and breast" was coded to carcinoma of the breast as the primary site because, according to the instructions, lung was considered to be a metastatic site. On the other hand, when neoplasms of more than one of the sites listed—lung, pleura, liver, or lymph nodes—were qualified as metastatic, both sites were considered to be secondary. For example, a report of "metastatic cancer of lung and lymph nodes" was coded to category 199 which included malignant neoplasm of multiple secondary sites.

The Vital Statistics Instruction Manual, Part 2, Cause-of-Death Coding, 1968, NCHS, page 47, developed for the eighth revision, states:

> *Metastatic*—The term "metastatic" or "metastatic of" qualifying a site of a malignant neoplasm does not affect the coding of the malignant neoplasm unless the site of the neoplasm is liver or lymph nodes. In the latter case, the assignment is made to the secondary neoplasm of the specified site (197.7 or 196) if it is the only site mentioned on the certificate of death.

The deletion of lung and pleura from this instruction about sites which are coded as secondary if qualified as "metastatic" would result in a reduction in the number of deaths classified to 165 (secondary malignant neoplasm of thoracic organs) and an increase in the number classified to 162.1 (malignant neoplasm of lung and bronchus). This helps to account for the large decrease in category 165 mentioned previously and shown in tables 1 and 3.

Introduction of ACME System

In addition to coding rule changes, there was a change in the method of coding causes of death in the United States in 1968. The National Center for Health Statistics developed and started to use a computer system (called ACME) for selecting the underlying cause of death. Before 1968, selection of the underlying cause of death was made by trained coders. In 1968, coding clerks started assigning code numbers for each entry on the medical certification form.

The ACME system, an acronym for Automated Classification of Medical Entities, applies the rules for coding causes of death in a manner similar to that used in the manual coding process and selects the underlying cause. Detailed coding instructions and the "decision tables" used in the computer system are given in parts 2 and 2a of the Vital Statistics Instruction Manuals (*15–17*).

The ACME system has been favorably compared with the manual coding system by NCHS. In this paper, we report only on a sample of cancer deaths coded manually according to the seventh revision ICD and to the eighth revision ICDA by the ACME program. These same death certificates were also coded manually by the eighth revision. There was a difference of only 1.3 percent in the underlying cause selected by the ACME computer system and the manually coded results. A separate report on these cases was given to NCHS for use in making needed adjustments in the ACME program. It appeared that the ACME system was not quite as accurate as the manual system in selecting the underlying cause.

Coding a Sample of Cancer Deaths

A sample of 2,752 death certificates was drawn from the American Cancer Society's Cancer Prevention Study (*23*) because these were readily available to us. From 1959 to 1960, the American Cancer Society had enrolled more than 1 million men and women in a long-term prospective study. The subjects filled out a detailed questionnaire about themselves, and they are being followed by Cancer Society volunteers. Death certificates for those who die are obtained from State health departments. When about half of the death certificates for deaths reported in the 1971–72 period of followup had been received, a sample was drawn for our study. This sample consisted of 25 percent of the death certificates with cancer mentioned, either as underlying or contributing cause, that had been received for persons who died during 1966 to 1971 in 10 States. Because of the particular interest in lung cancer, the sample was augmented by an additional 150 death certificates that mentioned lung cancer.

The death certificates were then coded according to the eighth revision ICDA, and the underlying cause of death was selected by both the ACME program and by manual coding. The certificates were then coded independently according to the seventh revision by a coder familiar with the instructions in use with this revision. Table 4 shows the results of the manual coding by the seventh revision and of the ACME system according to the eighth revision ICDA. In general, the

Table 4. Results of sample survey: number of deaths coded for each site according to seventh and eighth revisions ICD

Site	Number of deaths coded by— 7th revision ICD	Number of deaths coded by— 8th revision ICDA computer (ACME) system	Percent increase or decrease
Buccal cavity and pharynx	52	55	+5.8
Lip	0	0	
Tongue	17	17	
Salivary gland	7	7	
Mouth and gum	12	14	
Oropharynx	0	1	
Nasopharynx	6	6	
Hypopharynx	2	2	
Pharynx, NOS	8	8	
Digestive system	742	736	−0.8
Esophagus	43	44	
Stomach	100	102	
Small intestine	9	7	
Large intestine, excluding rectum	288	285	
Rectum	86	87	
Liver and biliary passage, primary	40	39	
Liver, NOS or secondary	26	26	
Pancreas	138	137	
Peritoneum	6	5	
Unspecified digestive organs	6	4	
Respiratory system	571	580	+1.6
Nose, nasal cavities, middle ear, and accessory sinuses	3	5	
Larynx	14	14	
Bronchus, trachea, lung, pleura, specified primary	194 }535	}548	+2.4
Lung, unspecified primary or secondary	341		
Mediastinum, thoracic organs, NOS	1	4	
Bronchus, trachea, lung, pleura, specified secondary	18	9	−50.0
Breast	245	246	+0.4
Genitourinary organs	408	402	−1.5
Cervix uteri	29	27	
Corpus uteri	13	13	
Other parts uterus, uterus unspecified	14	13	
Ovary, fallopian tubes, broad ligament	98	98	
Other and unspecified female genital organs	6	5	
Prostate	127	128	
Testis	0	0	
Other and unspecified male genital organs	0	1	
Kidney	43	43	
Bladder and other urinary organs	78	74	
Other specific sites and unspecified	226	211	−6.6
Melanoma	13	13	
Skin, excluding melanoma	7	7	
Eye	3	3	
Brain and other parts of nervous system	70	69	
Thyroid gland	8	8	
Other endocrine glands	1	1	
Bone	11	11	
Connective tissue	13	16	
Lymph nodes, specified or unspecified	1	1	
Other and unspecified sites	99	82	−17.2
Lymphoma	117	118	−0.8
Lymphosarcoma, reticulum cell sarcoma, and other forms of lymphoma	68	68	
Hodgkin's disease	18	18	
Multiple myeloma	31	32	
Mycosis fungoides	0	0	
Leukemias	95	96	
Total malignant neoplasms	2,458	2,447	−0.4
Polycythemia vera [1]	2	2	
Myelofibrosis [1]	0	1	
Benign neoplasms [2]	9	10	
Neoplasms of unspecified nature [2]	9	13	
Non-neoplasms [2]	276	282	

[1] Classified as malignant neoplasms in eighth revision ICDA, but not in seventh revision ICD.

[2] Some certificates mentioned cancer as a contributing cause.

NOTE: NOS = not otherwise specified.

results for most sites agreed with the data reported for the United States. The sample showed a 2.4 percent increase in deaths coded to lung cancer, a 50 percent decrease in secondary cancer of the thoracic organs, and a 17.2 percent decline in cancer of other and unspecified sites.

Of particular interest was analysis of the decrease in cases coded to secondary cancer of the thoracic organs and of cancer coded to other and unspecified sites. Of the 18 deaths coded to 165 (secondary cancer of thoracic organs) by the seventh revision, 12 were coded to 162.1 (primary lung cancer) by the eighth revision adapted, 1 was coded to 492 (emphysema), 4 were coded to 197.0 (secondary lung cancer), and 1 was coded to 197.2 (secondary cancer of pleura). In other words, of the 18 cases in this sample which were coded as secondary cancer of the thoracic organs by the seventh revision rules, 12 (67 percent) were coded as primary lung cancer by the eighth revision rules. This would produce an overall increase in primary lung cases when applied to the total U.S. deaths. Of the four cases coded to secondary lung cancer by the eighth revision, one was coded 191 (skin cancer), and three were coded to 199 (other and unspecified sites) by the seventh revision.

Of the 99 death records coded to 199, cancer of other and unspecified sites, by the seventh revision, only 82 were coded to an equivalent category by the eighth revision. Two cases were coded to primary lung cancer. Some examples of cases that were not coded to equivalent categories in the two revisions follow.

Example 1:

I (a) Pulmonary edema—CHF
(b) Metastatic carcinoma liver and lung

This case was coded to 199, cancer of other and unspecified sites by the seventh revision, and to 162.1, cancer of lung by the eighth revision. The U.S. coding rules in use with the seventh revision provided for the specification of malignant neoplasm of certain sites, including the liver and lung, as secondary if qualified as "metastatic." The international rules in use with the seventh revision specified that malignant neoplasm of multiple secondary sites should be coded to 199. When the eighth revision went into effect in 1968, the U.S. rule for coding "metastatic" neoplasm of lung was changed. Lung was omitted from the list of sites considered to be specified as secondary when qualified as "metastatic." Liver was not omitted from this list. As a result of this change, this death was assigned to the site of cancer not considered to be specified as secondary, that is, to cancer of lung (162.1). (See previous discussion under "Revision in Coding Rules, Vital Statistics Instruction Manuals, Metastatic," 1966 and 1968.)

Example 2:

I (a) Bronchopneumonia
(b) Carcinomatosis of brain
(c) Carcinoma of palate and tonsil

The seventh revision code assignment for this case was 199, carcinoma of other and unspecified sites, and the eighth revision code was 145.1, carcinoma of palate. These code assignments differed because there was a change in the international rule governing the classification of malignant neoplasm of multiple sites entered on the same line on the death certificate with no indication as to which was primary. The seventh revision rule provides for assignment to 199; the eighth revision rule provides for assignment to the first-mentioned site.

Discussion

Certainly, the changing of codes every 10 years, as well as ground rules, makes it difficult to study trends in specific diseases. A more difficult problem arises in studying trends in death rates in long-term prospective epidemiologic studies. While changes in coding procedures may have little effect on overall cause-of-death statistics, these changes can have a noticeable effect on the number of deaths assigned to individual categories. Therefore, in a long-range study it might be advisable to use the same coding rules even though the international rules change in the interim. This would also apply in comparing death rates for several different studies that were conducted in different periods of time, as well as to epidemiologic studies in which international comparisons are made.

The World Health Organization has recognized the problem of international comparisons in previous years. In 1959, a three-way comparison of coding *(24)* in the General Register Office of England and Wales, the Dominion Bureau of Statistics in Canada, and the National Office of Vital Statistics of the United States was made under the direction of the WHO Center for Classification of Diseases. For this study a comparison deck was made up of 6,000 death certificates—2,000 certificates from each of the participating countries.

The certificates were drawn by a systematic sampling of deaths occurring in 1958. The certificates in the comparison deck were coded independently by a cause-of-death coder in each of the three offices according to the regular procedures in use in the particular office in 1958. The results of this study showed a 6.3 percent difference in overall cause-of-death code assignments. The 6.3 percent difference consisted of cases for which at least one of the three offices disagreed with the other two.

In the sample of 6,000 deaths, there was the usual percentage of cancers (16 percent) or about 1,000 deaths from malignant neoplasms. For 3 percent of these cancer deaths, there were coding discrepancies between one or more of the three countries. Of the 32 certificates with differences, 11 were assigned to cancer by two countries but to a noncancerous condition by the third country. Usually, the United States coded these to a cardiovascular disease rather than to the cancer. Three of the cases differed only in assignment of the fourth digit. In 11 of the remaining 18 certificates one or more of the countries coded to 199, other and unspecified site of cancer, while the other countries coded to a specific cancer site. When the study was completed, the persons engaged in the study in the three countries met with WHO and tried to arrive at a uniform interpretation. The results of the study obviously indicate that the three countries did not always use the same ground rules, nor did they interpret the medical terms in a similar manner.

One reason for having a standard international code is to allow the countries participating in its use to compare their statistics, to discover real differences, and to determine the reason for these differences.

There is no value in having an international agreement to use the same classification system for mortality comparisons between countries if the rules in each country for applying these codes are so different that comparisons are not valid. Precise rules for selecting the underlying cause should be spelled out by the World Health Organization in its next revision of the ICD. More detailed instructions for coding cancer, especially metastatic cancer, are necessary to eliminate ambiguity in interpretation of these rules by the various countries. Only then can accurate international comparisons be made.

Additionally, it would be desirable to repeat a study, such as the one described, with more than three participating countries, using the eighth revision rules as interpreted in each country. After the results of this study are analyzed, WHO would know how to better present the rules for choosing underlying cause of death, especially as to cancer, for its forthcoming ninth revision of the ICD.

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Between 1963 and 1967, U.S. lung cancer deaths increased about 5.7 percent annually. This rate nearly doubled to 9.6 percent in 1968 when the Eighth Revision International Classification of Diseases was used for the first time. At the same time, it was also observed that malignant neoplasms of thoracic organs, specified as secondary, decreased 62 percent, and malignant neoplasms of other and unspecified sites decreased 8 percent.

It was suspected that these differences were not real and might be caused by changes in classification or coding rules introduced by the eighth revision ICD. A research project was conducted to evaluate the effects of this revision on cancer mortality for all sites. A sample of cancer deaths was coded by both the seventh and eighth revisions. The results showed an increase of 2.4 percent in lung cancer due to changes in classification and coding rules. Of the 18 cases coded to secondary cancer of the lung in the seventh revision, 12 or 67 percent were coded to primary lung cancer when the eighth revision was used. Also, 2 of 99 cases classified as cancer of unspecified site in the seventh revision were coded to lung cancer by the eighth revision. Based on this study, it can be assumed that most of the departures from previous trends that occurred in cancer mortality between 1967 and 1968 reflect classification changes rather than an actual increase or decrease in deaths.

The results of previous comparisons of cause-of-death coding for three countries indicate that another comparison should be made by using the eighth revision ICD in as many countries as possible. The results of such a study should be considered when the rules are revised for the ninth revision so that international comparisons would become more valid.

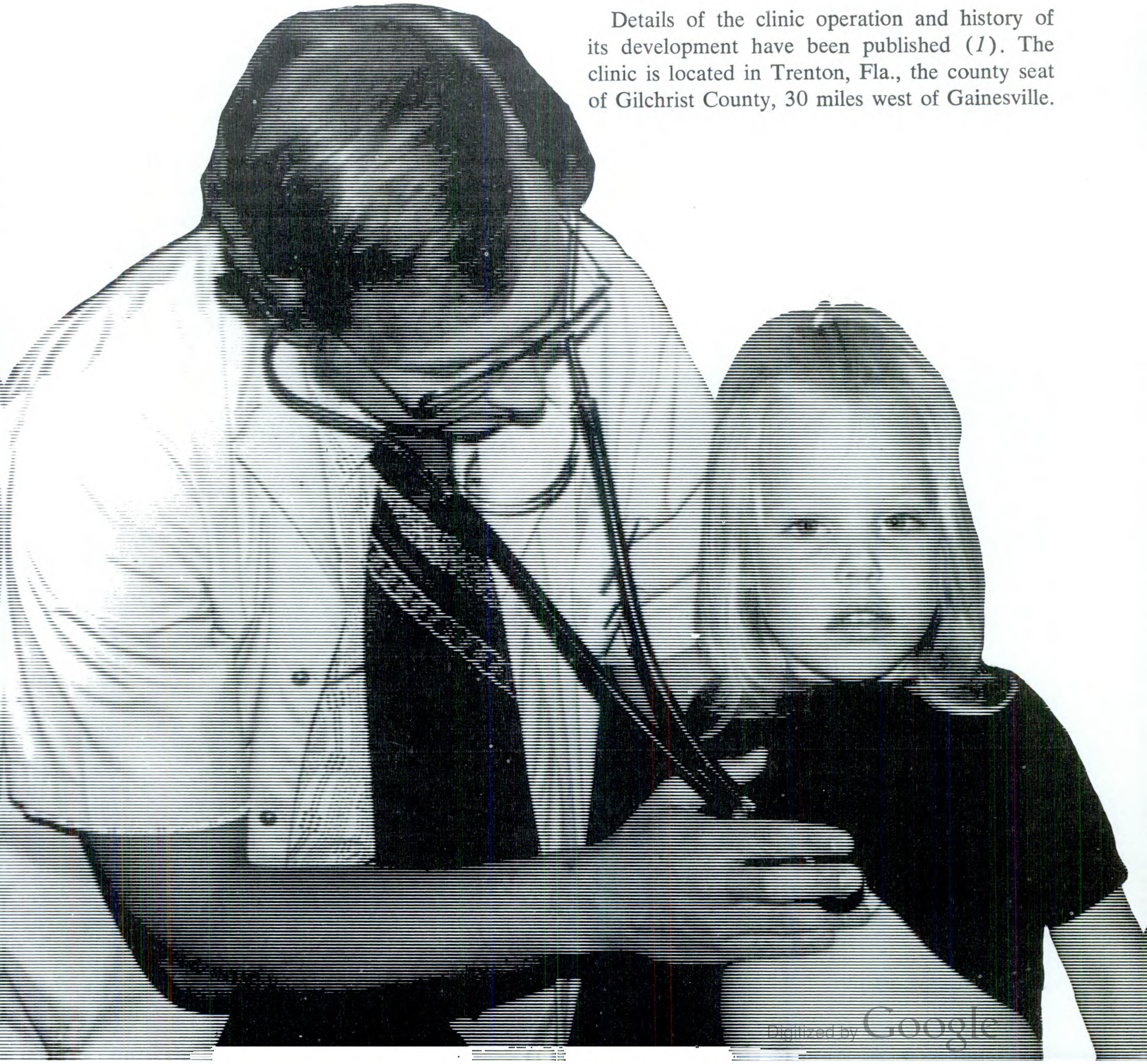
Evaluation of Physician's Assistants in Gilchrist County, Florida

RICHARD A. HENRY, MD

PHYSICIAN'S ASSISTANTS have been providing primary health care for the residents of a physicianless rural county since August 1971. This is a report of the impact of two physician's assistants on the population in the community as revealed by two sociological surveys and an analysis of events within the practice setting.

Background

Details of the clinic operation and history of its development have been published (*1*). The clinic is located in Trenton, Fla., the county seat of Gilchrist County, 30 miles west of Gainesville.



Its operation during the first year was restricted to residents of Gilchrist County, except for emergencies.

As a result of the community's inability to entice a physician to Trenton, meetings were initiated by community representatives with members from the Department of Community Health and Family Medicine at the University of Florida College of Medicine. It was proposed that physician's assistants, supervised by physicians from the department, be used to deliver primary care. The proposal was accepted and implemented.

The reasons for the involvement of department physicians were twofold. First, we were in the process of implementing a training program for physician's assistants and a family practice residency program. We saw this as an opportunity to provide an educational facility for both types of trainees. Second, we were interested in studying several important factors in the use of physician's assistants who were not under the umbrella of an institutional or physician employer. The specific factors considered vital to this evaluation were quality of care provided, acceptance by the physician's assistants of this responsibility, acceptance by the community and the patients treated, acceptance by the physicians of the surrounding communities who previously had provided care for this population, favorable attitudes toward cost and accessibility of health care services, and lessening apprehension of county residents about the lack of health and emergency care facilities.

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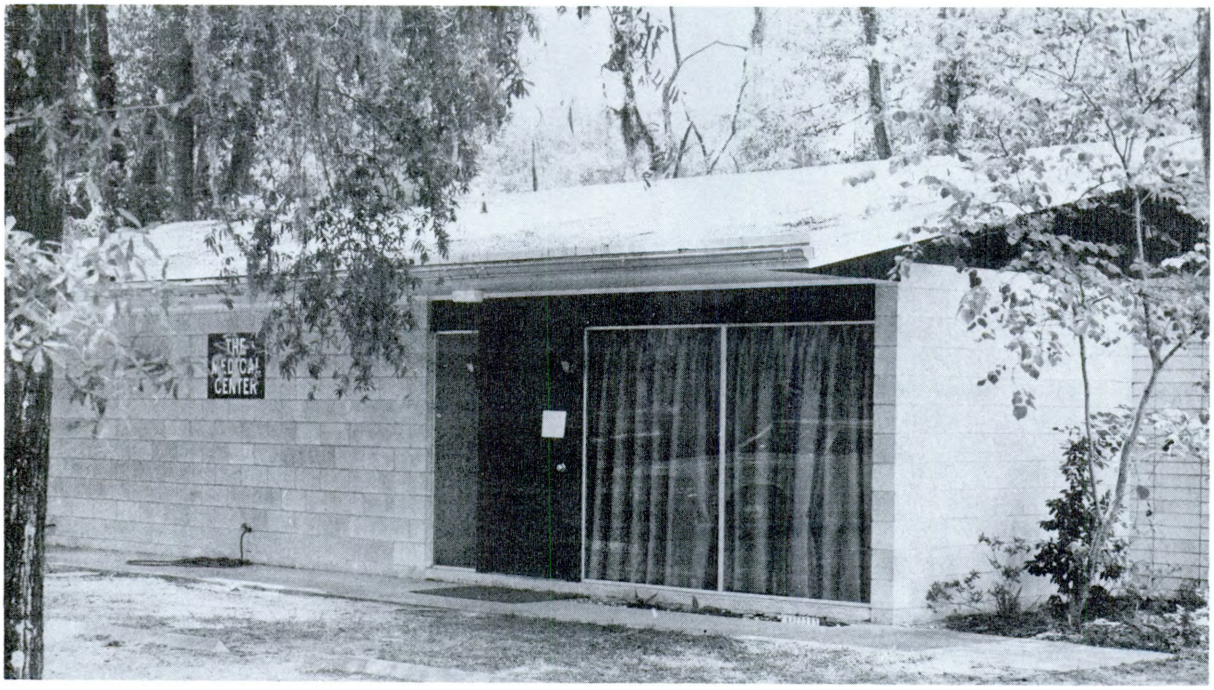
A review of the content of primary ambulatory care practices revealed that the majority of problems presented (approximately 80 percent) are either minor injuries or illnesses or of an uncomplicated and repetitive nature, for which diagnosis and treatment are appropriate to the training of a physician's assistant. This encouraged us to depart from the conventional physician-provider model of health care services.

From August 16, 1971 (when the clinic was opened) through August 15, 1972, there were 3,380 total patient visits which included scheduled patients, drop-ins, home visits, and emergencies. Analysis of 480 consecutive patient visits revealed that the content of the practice closely resembled the content of other primary care practices (*2*).



The 480 visits were for the following conditions:

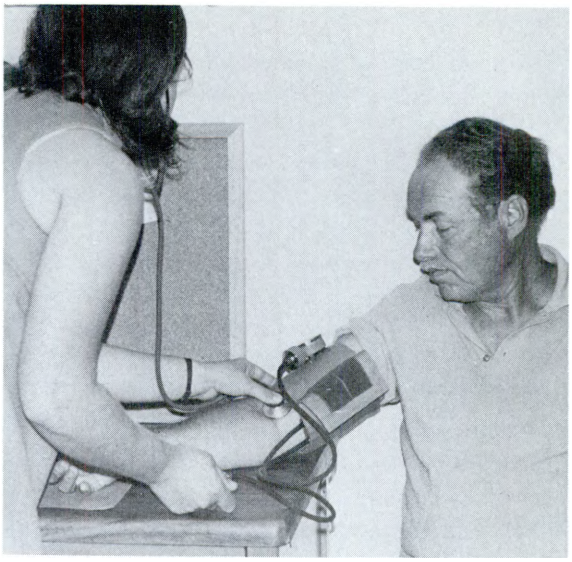
Conditions	*Number of patients*	*Percent of illnesses*
Respiratory disease	123	26
Cardiovascular disease	67	14
Skin disease	53	11
Mental or emotional disease	43	9
Trauma	38	8
Musculoskeletal disease	33	7
Gastrointestinal disease	24	5
Kidney or bladder disease	24	5
Endocrine disease	20	4
Liver or gallbladder disease	5	1
Other	50	10
Total	480	100

The supervising physicians were present at the clinic an average of 4 days a week for 2 to 3 hours. The physician's assistants lived in the community and manned the clinic round-the-clock throughout the week. Expectations of medical competence of the physician's assistants were that they would be able to accurately identify and adequately treat common injuries and illness. Most importantly, they were expected to identify and refer patients with conditions beyond their competence.

Method

Dr. Gary Spencer of the Department of Sociology at the University of Florida (now at the University of New York at Syracuse) conducted a survey of the residents of Gilchrist County before the clinic opened and repeated the survey 1 year later. Bias on the part of the providers of care at the clinic and myself was thus minimized. The first survey covered the demographic characteristics of the population and their health habits and attitudes. The second survey, taken at the same time of the year, covered the same areas and included questions relating to the clinic.

Trained interviewers, directed by Spencer, administered a questionnaire to the female heads of households (who usually make health decisions for the family in southern rural populations). The interviews took 40 to 60 minutes and contained questions relating to family and individual health attitudes, experiences, and practices. A random sample (1,700) was obtained and validated from the county population of 3,500—approximately 800 families. The sample in both surveys included more than one-third of the county's family population. Eighty-five percent of the original respondents participated in the second survey which provided an excellent comparison.



Following are the responses of the 260 clinic users who participated in the second survey:

Factor and question	*Survey 2*	
	Number	*Percent*
Utilization of clinic:		
Adult use of clinic in 1 year	83	32
Child use of clinic in 1 year	145	56
Home visit from clinic in 1 year	10	4
Provider:		
Care provided by physician's assistant alone	204	78
Care provided by nurse, physician's assistant, or physician	56	22
Patient acceptance:		
Liked physician's assistants—		
Very much	204	78
Somewhat	46	18
Not at all	10	4
Ease of talking to physician's assistant (compare to physicians)—		
Easier	80	31
Same	155	59
More difficult	25	10
Patient cost acceptance:		
Compare clinic to other settings—		
More economical	152	58
Same	98	38
More expensive	10	4
Accessibility:		
Compare geographic accessibility to other settings—		
More accessible	218	84
Same	26	10
Not as accessible	16	6
Compare time accessibility (waiting time and ease of getting appointment)—		
More asscessible	192	74
Same	52	20
Not as accessible	16	6
Attitudes:		
Compare quality of care to other settings—		
Better	36	14
Same	195	75
Not as good	29	11

Results

Respondents who stated that they were not getting enough health care were asked if it was because it was not available. At the time of the first survey, 31 percent said that this was the reason. At the time of the second survey, only 0.3 percent gave this as the reason.

Respondents were asked if they worried about the lack of emergency care. At the time of the first survey, 26 percent stated they worried all or most of the time; at the second survey, the figure was 14 percent.

Every patient encounter was recorded on a problem-oriented medical record form and reviewed by the supervising physician before it was filed. The review included assessment of the completeness and documentation of subjective and objective findings and the appropriateness of laboratory orders or procedures to support the assessment of the problems identified. The treatment plan was scrutinized for thoroughness and compatibility with assessment. Flow charts, used regularly for chronic conditions, provided graphic evidence of efficacy of therapy.

The opinion of the six supervising physicians regarding quality of care, as evidenced from consultations, discussions, and chart review, was that it was exceptionally good. Ten percent of the patient encounters resulted in consultation or referral to the physician or institution of their choice. Another 10 percent resulted in a discussion (without referral or consultation) of the patient's case with the supervising physician. These were initiated either by the physician's assistant when he wanted to discuss his findings or treatment or by the physician superviser when there were minor disagreements on the data base, the assessment of the problem, or the plan of therapy. For 80 percent of the visits, patients were adequately and appropriately treated by the physician's assistant with no required or requested input by a physician. In no instance was there a disagreement so serious as to jeopardize the patient because of inappropriate treatment.

Acceptance by physicians who had treated the residents of the county before the establishment of the clinic was evidenced by the fact that, of the 16 physicians identified in the survey who were named by 85 percent of the respondents as being their regular physicians, 13 either referred patients to the clinic for some care or provided clinical summaries for patients treated by them to facilitate followup care by the physician's assistant.

Many factors other than those cited were evaluated but will not be published until the raw data are further refined. For example, hospitalization rates for adults in the county dropped from 15 percent at the time of the first survey to 10 percent at the time of the second. However, yearly variations in hospitalization rates are not available. If we compare clinic users to nonusers we cannot determine from these data whether there was a self-selection process in effect.

Health perception data, comparison of health care from the two surveys, health interference with daily activities, and many other results are being studied and prepared for future publication.

The evaluation of acceptance of the physician's assistant by the patient and the quality of care provided have been studied in many other practice settings. Invariably these evaluations are good to excellent when the physician's assistant is introduced by an established physician or institution. The study results presented here indicate that the physician's assistant, removed from the favorable bias of the institution or physician employer, is an acceptable provider of health care in a primary ambulatory setting for most of the problems presented. It is important that no evidence of additional hazard to the patients has emerged from this study.

Summary

Two physician's assistants have been providing health care to a rural physicianless county for the past 2 years. Two population surveys were conducted to seek medical socioeconomic attitudes and health care information. The first survey was conducted before the physician's assistants began their activities, and the second was conducted 1 year later. Comparison and evaluation of data, plus analysis of practice content, indicate that this model of health care is at least comparable to conventional ambulatory care settings in terms of acceptance, cost, quality, accessibility, impact, and population attitudes.

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MCH Responsibilities and Opportunities Under National Health Insurance

HELEN M. WALLACE, MD, MPH

A look at Sweden and the United Kingdom

IT IS LIKELY that in the 1970s there may be a national health service or a national insurance program in the United States in some form. It may cover all the population or only such high-risk, vulnerable groups, as the elderly, mothers and children, the chronically ill, and the handicapped. It may cover comprehensive health care for everyone or be limited to those requiring care for catastrophic illness. It may include efforts to improve the health care delivery system for all or some of the population, or it may still be largely an insurance, bill-paying program, as it is at present, for the elderly and the indigent. It may cover the broad range of services needed to provide inpatient care, ambulatory care, and home care. Many choices and options are open to the United States.

In anticipation of a new national health insurance program or a new national health service in our country in some form in the 1970s, it is timely and, in fact, imperative, that those in all existing fields of public health study and analyze existing services and programs, begin to define their future roles, and make plans for the future. In this article steps are taken to do this for the field of maternal and child health. Whenever the term "maternal and child health" (MCH) is used, I include the subareas of maternal health, child health, school health, handicapped children, adolescence, family planning, abortion, and the care of children and youth in special settings or circumstances such as day care, foster homes, institutions, courts, camps, and other settings.

Many major issues and questions require public, civic, professional, and legislative debate, discussion, agreement, and planning. For example, one issue is the role and interrelationships of the Federal, State, and local levels of government, the voluntary agencies, and the professional societies. A second issue is concerned with the extent of coverage of the population—the types of recipients of care, the volume of the population to be covered, and the need to provide more even geographic distribution of services. A related issue is

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the need to develop a regional plan for the planning and delivery of services.

One set of issues is concerned with the health delivery system: should there be one monolithic system of health care, or will there be opportunity for a pluralistic plan using several approaches? Who will provide primary care? How can preventive, treatment, and rehabilitative care be combined and integrated? What relationships can be developed between those delivering primary care and those who are consultants? How can inpatient and ambulatory care be integrated?

Issues relating to the content of patient care include what will be provided, what will quality control consist of, and will it be possible to provide special and more intensive efforts for high-risk groups.

There is a series of manpower issues, including the need to plan for the number required, their qualifications, recruitment, preparation, and distribution.

There are a number of funding issues including the sources of funds, the possibility of channeling funds to improve the health care delivery system versus a bill-paying program only, the methods of reimbursing providers, the role of government and of other possible intermediaries such as health insurance companies, the need for cost control, and the need for separate funds for special services for special population groups.

General Principles

In making plans for a national health service or a national health insurance program, the following basic principles need to be kept in mind. Health care is considered to be a right of everyone (*1*). The government has the responsibility to see that it is provided. Access to health care needs to be available to all, regardless of socioeconomic status, ethnic group, or geographic location. Barriers to health care need to be eliminated. Preventive services need to be included and free. Quality control and cost control need to be built into the health delivery process and system.

A look at the general outline of MCH services in two countries which already have national health services and national health insurance may assist U.S. health planners.

At present, in both the United Kingdom and Sweden, there are visible and identifiable MCH services and personnel. The United Kingdom has had a national health service since 1948, and Sweden, since 1955. The staff of these services provide MCH leadership in these countries, along with the leaders of professional societies, organizations, and universities. In each country, there is a clear public policy which recognizes the needs of mothers and children. Special provision for them is made within the framework of the national health care system. Each country has a designated unit responsible for making health services available and accessible to all mothers and children without cost.

Organization of MCH Services

United Kingdom. At the national level, a separate unit within the United Kingdom's national Department of Health and Social Security is responsible for MCH, including child health services and services for handicapped children; responsibility for school health has recently been placed in the MCH unit. The MCH agency is also partly responsible for some children at high risk, such as abused children. A separate unit, closely associated with MCH, is responsible for maternal health. The national responsibility for family planning has largely been carried in the past by a voluntary agency, the Family Planning Association.

At the regional level, a system of regional centers for handicapped children is planned, and some centers are being developed.

At the local level, the 174 local health authorities are responsible for the MCH services. A medical officer of health is in charge of MCH services for most local authorities. These authorities provide midwifery, health visiting, home nursing, child health services, family planning, immunizations, health centers, welfare food services, and care of premature infants. The local education authority operates school health services, and there are local medical officers in charge of these in some areas. Personal social services are available through local social service departments.

Sweden. The National Board of Health and Welfare of Sweden has a separate unit for child health services; a pediatrician is its full-time director. Two other units are responsible for services to the mentally retarded and for maternal health and family planning; the second unit has a part-time obstetric consultant. The National Board of Education has a pediatrician in charge of school health. Each of the 25 counties and three large cities is responsible for local MCH services, which are headed by a pediatrician recruited from a hospital pediatrics department, as well as for local maternal health and child centers. A county medical officer serves as a medical advisor to the county board of education.

Basic Preventive Services

Maternal and child health is the single most strategic area in which to apply preventive health services. Children and youth, mothers with young children, and pregnant women not only represent a large part of the total population but they are also the most vulnerable group and the group which responds most readily to preventive measures. In both the United Kingdom and Sweden, their vulnerability is clearly recognized.

Sweden. Sweden's network of local maternal health centers are of two types (*2*). The 118 type 1 centers are connected with a hospital department of obstetrics and gynecology and are headed by an obstetrician. The 549 type 2 centers are always headed by a district medical officer or another type of physician. Some type 2 centers are combined with child welfare centers.

Almost all pregnant women receive prenatal and postnatal care, including family planning services, at these centers. Basic maternity care is provided by nurse midwives who are reinforced by obstetricians. Thus, any patient with an early complication of pregnancy can be placed quickly under the care of an obstetrician. Delivery of normal patients is by nurse midwives; patients with any abnormality are delivered by obstetricians. All deliveries take place in hospitals.

Sweden also has a network of child welfare centers (*2*). Their staffs see 99 percent of all infants born during the first year of life and continue to supervise 69 percent of them until they are 7 years old. Basic preventive services consist of health education, immunizations, health assessment of children, screening for handicapping conditions, anticipatory guidance, and advice in child rearing, nutrition, safety, and accident prevention. A special new health assessment of 4-year-olds has recently been introduced.

The school health services cover all pupils in the compulsory first nine grades and pupils in secondary schools. Health examinations are given to children in grades 1, 4, 7, and 9. The examinations in grades 7, 8, 9, are looked upon as having an important vocational component. School lunches are provided to all children in grades 1–9 and to some youths in secondary schools. There is considerable emphasis on sex education in the schools.

In Sweden, family planning information is available in schools and from hospital maternity services. The availability of this service varies among the counties, that is, there may be a considerable waiting period for service. The patient formerly had to pay for the visit to the physician (12 K or $3) and for oral contraceptives or an IUD. Contraceptive advice is now generally provided free of charge.

Abortion services are generally available, and the operation is performed only by obstetricians in hospitals. The reason for most abortions is termination of an unwanted pregnancy. Other reasons are related to the health of the mother or fetus.

Sweden, for a number of years, has had one of the lowest infant mortality rates in the world (11.1 per 1,000 live births in 1971), and it has one of the lowest maternal mortality rates (10 per 100,000 live and stillbirths in 1970).

It is estimated that 212,000 children, or 20 percent of the preschool children in Sweden, are receiving some form of day care at present. Another concern is for school children who have no one at home when the school day is over (*3*); at present there are free time centers for 10,000 children of school age.

United Kingdom. In the United Kingdom, 90 percent of all deliveries are now performed in hospitals, largely by nurse midwives supported by obstetricians. Prenatal care is shared by the general practitioner in his office and the midwife and obstetrician at the hospital. Thus, the maternity patient may receive prenatal care from the general practitioner until 30–34 weeks of pregnancy. During that time, she will be referred to the hospital where she is seen by the midwife; if she has a medical problem, she will be seen by an obstetrician. The patient receives the remainder of her prenatal care at the hospital. Hospital delivery of normal patients is performed by the midwife. The services of an obstetrician are available for patients with complications.

The hospitals have special-care baby units, based on a formula of 6 cots per 1,000 total beds for high-risk newborn infants (*4*).

The local health authorities operate child welfare centers. In 1965, 76 percent of all infants born in England and Wales were brought to the centers, as were 69.6 percent of children aged 1–2 years, and 20.7 percent of those aged 2–5 years.

A higher proportion of children of the three lowest social classes attend the child welfare centers. One of the emphases in the child welfare centers has been early identification of handicapped children (*5*).

The pattern of surveillance of the school health program in the United Kingdom is as follows: (*a*) medical examination on entering school, (*b*) followup visits to the schools by the physician and nurse, (*c*) subsequent medical examinations on referral, (*d*) periodic questionnaire for parents, and (*e*) periodic screening of vision, hearing, height, and weight (*6*). The school health program is looked upon as the first step of an occupational health program.

Family planning was originally the province of the Family Planning Association which provided the service and trained the personnel. Gradually, general practitioners are playing a larger role in providing patient care. On April 1, 1974, the responsibility for family planning was turned over to the general practitioner and the local health authority, to be incorporated into general health care. An interesting facet of the program are visits to the homes of poorly motivated women by a health visitor and a nurse or a general practitioner, who give advice and contraceptive services.

In 1972, it was estimated that 150,000 abortions were performed in the United Kingdom; two-thirds were estimated to have been performed on women from the United Kingdom; of the group, one-half were done in a NHS hospital under the care of an obstetrician in the NHS.

In 1948, legislation in the United Kingdom was enacted to make day care potentially available for all children. During World War II this had increased considerably from prewar levels and then declined. It is about to increase again due to expansion of preschool education. It is estimated that 12 percent of preschool children receive some form of day care. The imminent expansion of day care will be planned by each local authority, and it is expected that there will be concentration of services in districts of special need (*7*).

Regional Planning

There is evidence that MCH leaders in the United Kingdom and Sweden are taking steps to implement the principle of regionalization and to do regional planning.

United Kingdom. For example, in the United Kingdom at least one assessment center for handicapped children for each of eight regions of the country has been projected. Seven already exist, and an additional 13 will be set up as needed. Each would serve a population of about 3 million. Within each region, it has been recommended that there be district assessment centers for handicapped children, based in district general hospitals, each serving a population of 200,000–400,000 (*8*).

In the United Kingdom, regional planning is beginning for special-care units in hospitals for the newborn of high risk.

Sweden. A major central pediatric clinic or center for handicapped children is planned for each of Sweden's seven geographic regions. Each center is to provide diagnostic, treatment, and rehabilitation services for both inpatients and outpatients; these would include physical therapy, social work services, training in activities of daily living, and special education.

Because of the organization of maternal health services in Sweden, it has been possible to implement to some extent the concept of regional perinatal care. For example, the fact that a maternity patient with a complication can be placed under the care of an obstetrician means that potentially she can be delivered in a hospital with special services for her and her baby. In addition, intensive care units for the newborn with special transport services have been developed in some regions.

Special Surveillance and Monitoring

United Kingdom. The United Kingdom has had a program of voluntary notification of congenital malformations for some years (*9*). Reports are sent by hospital newborn services on a special form to local medical officers of health, and the data are transmitted to the Office of Population Censuses and Surveys for analysis and surveillance. This surveillance system in 1970 yielded reports on 14,019 babies who had a total of 17,293 malformations, a rate of 15.7 per 1,000 live births.

Two types of registers of handicapped children have been kept by local health authorities, a register of handicapped children and a risk register of high-risk infants. The risk register was judged to be of less value, and it was recommended for termination in 1970.

Sweden. The National Board of Health and Welfare keeps a register of all infants born with congenital malformations. Maternity services with a pediatrician send monthly data on such infants to the National Board. The purpose of the register is surveillance, not followup.

A register of handicapped children is just being started in Sweden. There is already a separate register for mentally retarded children; special physicians follow these children.

Standards, Recommendations, Guidelines

MCH leaders in both the U.K. and Sweden have been active in formulating standards, recommendations, and guidelines. These have been used in a variety of ways to upgrade the delivery of health care to mothers and children in the two countries.

Sweden. Three documents issued by the National Board of Health and Welfare are noteworthy. In 1969 the Board developed "Model Regulations for Maternal and Child Health Service" (*2*). The regulations detail the responsibilities of the county and classify the MCH centers into type 1 or type 2. The regulations describe the content of prenatal and postnatal care, including family planning, and of child health care and mention the new special examination of 4-year-olds.

The second document, "Essentials of the Swedish National Program for Preventive Child Care," describes the plan and content of health care for children (*10*). The third document, "Health Screening for Four-Year-Olds," describes the purpose and content of the special evaluation (*11*).

United Kingdom. The U.K. has had a tradition of setting up special government committees and working parties to study and make recommendations concerning special problems of MCH care. In the past, this strategy was used to draw attention to babies with hemolytic disease of the newborn (*12*) and babies with congenital malformations (*9*). More recently, special committees considered child welfare centers (*5*), care of the child with spina bifida (*13*), human genetics (*14*), screening for the detection of congenital dislocation of the hip in infants (*15*), deafness in early childhood (*16*), domiciliary midwifery and maternity bed needs (*17*), and special care for babies at high risk (*4*).

Each of these reports in intended to represent the consensus of scientific, technical, and administrative personnel, of facts, thinking, application to patient care, and planning for the future. Each then becomes a reference source for those seeking to improve the quality of care.

Special Studies

In addition to the activities cited prevously, the U.K.'s Department of Health and Social Security has used the approach of studying and reporting on special problems, with the assistance of nongovernmental experts. The resulting departmental reports have dealt with sudden death in infancy (*18*), postneonatal deaths (*19*), maternal deaths (*20*), risk registers of handicapped children (*21*), and battered children (*22*). Sweden has also used the study report approach to consider sex education, contraception, abortion, sexual activity, illegitimacy, and venereal disease (*23*).

Use of Funds for Current Emphases

Both the U.K. and Sweden have applied the tactic of using special funds to re-orient and redirect the emphasis in the delivery of health care to meet current needs.

For example, U.K. physicians in general practice have been given financial incentives to form medical groups. Special funds are available to help them establish and equip physical facilities. Local health authorities are providing special physical facilities to bring together the general practitioners' services and the overall general community health services. The purpose is coordination of preventive and treatment services. Health visitors employed by local health authorities are being attached to general practitioners for the same purpose.

The British Government is using special funds to hire "community pediatricians," a new full-time position. These well-trained young pediatricians with a concern for community or social pediatrics are being appointed full-time to hospital pediatrics departments or departments of child health in medical schools. Their mission is to extend hospital services into the community, to bring community MCH services and hospital care together, to upgrade community MCH services, and to attempt to integrate preventive and curative medical care of mothers and children.

Special funds have also been used to pay British general practitioners extra money on a fee-for-service basis for immunization of infants and children, for antenatal care, and for family planning. All of these examples illustrate the use of funds to increase emphasis on certain aspects of patient care. Still another example is paying the general practitioner on the obstetric list a higher fee for his participation in maternity care than the general practitioner not on the list. (To be on the obstetric list, a general practitioner is required to take a short-term course in obstetrics.)

Professional and Voluntary Organizations

In both the U.K. and Sweden, there is evidence that MCH leaders in government and those in related professional organizations and voluntary agencies cooperate closely. The governmental special committee and work-party reports reflect this working relationship.

In both countries voluntary agencies concerned with handicapped children, in particular, have made important contributions in the improvement of services. Two examples are special reports on the mentally retarded and the blind in Sweden (*24,25*).

Another example is the recent report (*8*) by Court and Jackson from the British Pediatric Association, "Pediatrics in the Seventies," reviewing the present status of child health services and manpower in the U.K. Some of the report's recommendations follow:

1. Development of a new type of pediatrician, the community pediatrician.
2. Substantial increase in the number of full-time pediatric faculty members in medical schools and university hospitals.
3. Further development of hospital services for children, at district and regional levels, and the increased use of day-hospital care.
4. Provision of additional pediatric specialists in perinatology, handicapped children, malignant disease, cardiology, neurology, nephrology, endocrinology, and hematology.
5. Expansion of assessment and treatment centers for handicapped children at regional and district levels.
6. Provision of hospital services for adolescents.

As a result of the issuance of this report, the Department of Health and Social Security has appointed a new working group, to be chaired by Court, to consider and make recommendations about child health services for the future.

The enormous role played by the Family Planning Association in providing services and in training physicians, nurses, teachers, and others in family planning (*26*) and the efforts of the National Council of Unmarried Mothers (*27*) in focusing attention on out-of-wedlock pregnancy are noteworthy contributions by two British voluntary agencies.

Special Care for Those at High Risk

Regardless of the sources of funds and methods of paying for health and medical care of any population, there will always be certain groups of the population at higher risk and in greater need of more extensive and specialized services. Within the MCH field, responsibilities include the identification of high-risk groups; the development, provision, and supervision of special services for these groups; and the evaluation of such services. Some examples of high-risk groups are families with a history of reproductive loss, youth in trouble, low birth weight infants, abused children, handicapped children and their families, and families with serious social, financial, health, or marital difficulties. In both Sweden and the U.K., there is evidence that high-risk mothers and children do have special needs and require special care.

The Question of Special Funds

Frequently, when a national health service or a national health insurance program is discussed, the statement is made that separate special funds will no longer be needed. The evidence from the United Kingdom and Sweden clearly indicates that certain specific services will continue to need special support. These include:

1. Basic preventive services of prenatal and and postnatal care, infant and preschool health supervision, school health services, and contraception. These should emphasize health assessment, screening, teaching, and care.
2. Special diagnostic, treatment, and rehabilitation services for handicapped children and their families.
3. Special services for high-risk mothers and infants, through the development of regional perinatal centers.
4. Special health and social services for mothers, children, youth, and families in trouble.

Special health and social services for mothers and children have not been disbanded or terminated in Sweden and the United Kingdom. To the contrary, it is clear that as scientific knowledge has increased, it has been translated into specific services for the community. Examples of such outcomes are mass immunization of populations as new vaccines become available, the prevention of deaths and brain damage associated with isoimmunization caused by the Rh factor, and the incorporation of discoveries in genetics into MCH care. Knowledge of genetics has led to taking genetic histories, making special diagnostic studies, and improving counseling, family planning, and abortion services.

Table 1. Age-specific mortality, 1965

Age (years)	Deaths per 1,000 population		
	U.S.A.	Sweden	England
Under 1	24.1	13.3	20.5
1–4	.9	.7	.8
5–14	.4	.4	.4
15–24	1.1	.7	.8
25–34	1.5	1.0	.9
35–44	3.1	1.9	2.1
45–54	7.4	4.4	5.8
55–64	16.9	11.3	15.1
65–74	37.9	32.3	32.0
75 and over	101.7	110.9	111.1
Overall	9.4	10.1	11.1

SOURCE: Reference 28, p. 151, table 27.

Table 2. Age-specific death rates, Sweden, Utah, and Minnesota

Age (years)	Rate per 1,000 population		
	Sweden 1968	Utah 1969	Minnesota 1969
Under 1	12.9	16.6	19.8
1–4	3.2	4.1	4.1
5–19	.5	.5	.6
20–44	1.2	1.6	1.6
45–64	7.4	9.0	9.6
65 and over	57.6	55.4	56.3
All ages	10.1	6.4	9.2

SOURCE: Reference 28, p. 158, table 30.

Tables 1 and 2 from Anderson (*28*) would tend to confirm his statement that "the system in the U.S.A. concentrates on care for the elderly relative to children, while British and Swedish systems do the reverse."

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National Resource Requirements for Abortion Services

ABORTION HAS BEEN USED to limit population since ancient times (*1*). Although the practice is not generally approved by some societies, abortion remains a widespread method of fertility control throughout the world (*2*). On January 22, 1973, the U.S. Supreme Court removed most restrictions on the practice of abortion, a decision that closely followed a dramatic, favorable shift in public attitudes (*3*). As a result of the Court's decision, nationwide demands on the health care delivery system for abortion-related services are expected to increase.

Although the exact number of abortions that may be requested and the subsequent demands for health resources are difficult to determine, we have attempted to estimate both the number of U.S. women who might seek an abortion and the resources that will be needed from the health care system in response to this demand. Our efforts are presented here in response to the recommendations of the Presidential Commission on Population Growth and the American Future, which called for "a substantially greater effort focusing on policy-oriented research and analysis of population in the United States" (*4*).

Methods, Facilities, and Technology

Technological advances have radically affected the provision of abortion services. During the early and middle sixties, the most frequent method for first-trimester abortion was dilatation and curettage of the uterus; hysterotomy and hysterectomy were usually reserved for more advanced pregnancies. With the recent increase in the use of vacuum aspiration and transabdominal intra-amniotic injection of hypertonic saline solution, however, the use of dilatation and curettage and hysterotomy has declined. Furthermore, the use of vacuum aspiration has resulted in a substantial increase in the use of hospital outpatient facilities and of freestanding clinics apart from hospitals (*5*).

As the number of abortions has increased, resulting from technological advances and changes in public attitudes, increasingly extensive information has been collected from epidemiologic studies (*6–9*) that is useful for estimating the number of women who might seek an abortion in a nonrestrictive environment.

Based on abortion studies conducted during the early and middle sixties, legal abortions performed in hospitals were estimated to be about 8,000 per year—a rate of 2 abortions to 1,000 live births. Of these abortions, about 40 percent were performed on the basis of psychiatric indications and 25 percent because of maternal rubella (*2*). That abortion services during these years were not equally accessible to all women seeking them (*10*) is indicated by (*a*) the higher incidence of abortions in proprietary hospitals, more often used by women who can pay for service, than in municipal hospitals that are often used by indigent women (*11*) and (*b*) the higher percentage of all maternal deaths attributed to the con-

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sequences of induced abortion among nonwhite women, who more frequently sought illegal abortions.

Reports of recent studies (*8,12*), conducted after changes in the laws of several States, particularly New York, reveal vastly increased numbers of legal abortions. The national surveillance activities of the Center for Disease Control (CDC) indicate that 180,000 legal abortions were performed throughout the United States and reported to CDC in 1970. CDC further estimates that approximately 197,000 to 236,000 abortions were actually performed during that year (*12*). For 1971, CDC reported that 480,259 legal abortions were reported throughout the country (*8*). Although the number of abortions performed in 1972 has not yet been reported by CDC, it is expected to exceed the number reported for 1971.

While some of the increase in number of abortions may be attributed to the expansion of the reporting network, it is unlikely that this is the major factor. Thus, application of the rates of abortions performed on women aged 15–49 in four States during 1971 (*8*) to Census Bureau projections of the number of women aged 15–49 for 1973 and 1975 (*13*) yields an estimate of

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Table 1. Estimates of potential numbers of abortions in the United States for 1973 and 1975, based on the number of abortions nationwide and in 4 States in 1971 [1]

Location	Number of abortions, 1971 [2]	Number of women aged 15–49, 1970 [3]	Rate of abortions per 100,000 women aged 15–49, 1970	Number of estimated and projected abortions for 1973 and 1975 [4]	
				1973	1975
Nationwide	480,259	48,701,499	986	507,425	524,434
Oregon	6,984	496,727	1,406	723,570	747,823
California	103,678	4,923,738	2,106	1,083,810	1,120,139
Hawaii	4,121	193,752	2,127	1,094,618	1,131,308
New York	105,635	4,429,267	2,385	1,227,392	1,268,534

[1] The latest year for which nationwide data have been reported by the Center for Disease Control.

[2] State residents only; reference 8, table 3, 1971 abortions as reported to CDC.

[3] Source: General Population Characteristics, United States Summary, U.S. Bureau of the Census.

[4] Estimates and projections computed as follows: for each State, the ratio of 1971 abortions to number of women aged 15–49 was multiplied by the 1973 and 1975 projections of the nationwide number of women aged 15–49; reference 13, table 2.

the expected number of abortions, if we assume that nationwide behavior is reflected in the activity of the four States—Oregon, California, Hawaii, and New York—as shown in table 1.

The number of abortions which might be performed annually, based on the Supreme Court's nonrestrictive guidelines, can therefore be estimated by applying the abortion rates in States where abortion services were readily available to national population projections. Limitations to this approach include (*a*) the lack of national homogeneity, (*b*) a variety of issues related to the availability of medical services, (*c*) changing patterns of contraceptive use, and (*d*) attitudes toward abortion.

Of the States with nonrestrictive abortion laws before the Court's ruling (California, New York, and Hawaii), the rate for New York was selected for projection. New York reported the highest rate of abortions of any State; presumably, this reflects the highly nonrestrictive conditions, wide availability of services, and considerable public awareness in New York. Oregon's and the 1971 nationwide abortion rates, which are somewhat lower, were used to develop alternative projections. According to CDC (*8*), few women in Oregon and New York sought abortions outside their State of residence.

Requirements for Medical Services

Translation of the estimates and projections of table 1 into requirements for medical services was achieved through the application of a quantitative health planning framework (*14*). This computer-based model of the abortion services system permitted the projection—based on specified descriptive variables—of mortality, morbidity, costs, physician man-hours, and hospital patient-bed day requirements. The same framework was applied to an analysis of the effects on resource requirements of an educational program resulting in an increased percentage of women seeking abortion in their first trimester when vacuum aspiration can be performed. Finally, the economic efficiencies of outpatient abortion were examined through the framework.

The selection of appropriate epidemiologic data for use in projecting is complicated by a lack of uniform reporting, incomplete followup of patients after abortion, and the use of nonuniform criteria for defining complications. Planning must therefore be somewhat subjective. As a result, the considerable data required to formulate the projections were selected from many sources. Some of these data follow, and the remainder may be requested from us.

The data used for this study included information from (*a*) the national surveillance efforts of the Center for Disease Control (*12*), discussed earlier, (*b*) the Joint Program for the Study of Abortion (JPSA) of the Population Council, which monitored abortions and complications in participating facilities (*15,16*), and (*c*) records of the New York City Health Department (*9*).

The JPSA reports (*6*) indicated that among participating hospitals, about 63 percent of the vacuum aspiration and 55 percent of the sharp curettage procedures were performed on an outpatient basis. Of the hysterotomy patients in the JPSA study group, 85 percent underwent concurrent tubal ligation. Other sterilization procedures were excluded from this study.

In selecting morbidity and mortality data for use in the projections, we used the following criteria: (*a*) series with followup were the most preferable and (*b*) when more than one series of data were available to provide the same information, the series with higher complication rates were selected so that the projections would allow for a wider range of potential complications under nationwide conditions.

Since morbidity reports vary somewhat because of different definitions of complications, the definitions included here are based primarily on the rationale that complications that require further medical treatment, and thus additional resources, are of interest in planning. In addition to morbidity that can be medically treated, re-operation may be required as a result of complications. Although limited information on rates of re-operation is available (*16*), complete procedure-specific reporting of re-operations is lacking.

Family planning and medical followup data also were required. Although the JPSA study indicated that 63 percent of the abortion patients who lived within the vicinity of the participating hospitals received some form of followup care, various hospitals reported that 70 to 80 percent of the patients were also provided with family planning assistance at the time of the first postpartum visit. Of course, this figure can vary considerably depending on the type of facility, its location, and the patients who use its services.

Finally, medical resource requirements were measured by estimating physician man-hours, hospital patient-bed days, and fiscal requirements (based on information that we collected from facility administrators and gynecologists in clinical practice during 1971 and 1972). Physician man-hours reflect only the time required to actually perform the procedure. Although actual time with the patient may be considerably greater, especially for physicians in private practice, under the efficient conditions which exist in most outpatient abortion clinics these man-hour allocations probably approximate the physician's time with a patient. Hospital days were estimated according to average number of days in the hospital. Finally, cost estimates were based on the estimated cost of providing the services rather than actual charges to the patient.

Resource Projections

Application of the projections of estimated numbers of abortions in the United States for selected States (table 1) to the available data yields estimates of needed medical care resources (table 2). At recent nationwide levels of 480,259

Table 2. Projections of the number of abortions in 1973 and 1975 and estimates of the costs of services, hospital patient-bed days, and physician man-hour requirements, based on 1971 abortion rates nationwide and in Oregon and New York State[1]

Condition for projections and estimates [2]	Total costs for services (millions)[3]	Hospital patient-bed days (thousands)	Physician man-hours (thousands)
Based on nationwide:			
1973: 507,425 abortions	$134.688	432.102	304.794
1975: 524,434 abortions	139.108	446.282	313.822
Based on Oregon:			
1973: 723,570 abortions	192.888	618.818	436.499
1975: 747,823 abortions	198.485	636.773	449.163
Based on New York:			
1973: 1,227,392 abortions	325.572	1,044.490	736.755
1975: 1,268,534 abortions	336.429	1,079.320	761.324

[1] The assumptions upon which these projections and estimates and those of tables 3–5 are based are contained in the text and in the supplementary tables available upon request from the authors.

[2] Number of abortions from table 1.

[3] 1972 dollars; based on the costs of providing services, not patient charges.

abortions each year, about 1,140 hospital beds and 148 gynecologists allocated solely to abortion services for 1 year would be required. Since there are approximately 20,000 gynecologists in the United States, each gynecologist need allocate only about 14 hours a year to providing abortion services. Even if only half the gynecologists were willing to perform abortions and assuming 50 percent efficiency, each of the willing gynecologists would have to allocate only slightly more than 1 week each year to abortion services.

At the level of about 730,000 abortions each year, 1,760 hospital beds and 225 full-time gynecologists would be required. And to perform about 1.2 million abortions each year, slightly fewer than 3,000 hospital beds and 400 full-time gynecologists are needed. Alternatively, each U.S. gynecologist could perform 40 hours per year of abortion-related work, or half the gynecologists at 80 hours per year. At 50 percent efficiency and assuming no other physicians performing abortions, this implies about 5 weeks of abortion services each year.

Although fiscal requirements range up to $336 million annually for 1.2 million abortions, maternity costs for these pregnancies—if permitted to continue to term—could easily be twice the total projected abortion costs. Based on our analysis, the average cost in 1973 for all abortion services was about $265, including screening, followup, and family planning services through the first postpartum visit. The average cost for vacuum aspiration abortion, including allowance for complications, was $205. Other projections for vacuum aspiration abortions are presented in table 3.

Effects of Early Abortion

Educational efforts to encourage first-trimester abortions are especially appropriate, since second-trimester abortions are associated with considerably increased morbidity and mortality (*16*). If we assume that such efforts are successful in increasing the percentage of abortions performed in the first trimester, we can expect considerable reductions in resource requirements.

When the percentage of vacuum aspiration abortions increases, substantial decreases appear in costs and other resource requirements (table 4). When the percentage of vacuum aspiration abortions is doubled from 45 to 90 percent, the cost of providing services drops by $68 million, or about one-third, because of the much lower cost of vacuum aspiration compared with saline infusion abortion. Even greater decreases occur in hospital patient-bed days because of the use of outpatient facilities for some vacuum aspiration procedures and because of the fewer number of hospital inpatient days needed compared with saline infusion procedures. Additionally, fewer physician man-hours are required to perform vacuum aspirations than to perform saline infusion. Finally, mortality is also decreased when more vacuum aspiration than saline infusion abortions are performed (*6*).

Concerning facilities for providing abortion services, a significant cost differential exists between inpatient and outpatient facilities. The feasibility of providing outpatient abortion services for early first-trimester abortion has been demonstrated (*5*). The significant cost and resource differential between inpatient and outpatient abortion by vacuum aspiration is shown

Table 3. Projections and estimates of the annual number of inpatient and outptaient abortions by vacuum aspiration and costs for services (including screening, followup, and family planning)

Condition for projections and estimates [1]	Number of outpatient abortions (thousands)	Number of inpatient abortions (thousands)	Costs of services (millions)[2]
Based on nationwide:			
1973: 507,425 abortions	213.873	125.608	$69.678
1975: 524,434 abortions	221.034	129.814	72.011
Based on Oregon:			
1973: 723,570 abortions	305.003	179.129	99.368
1975: 747,823 abortions	315.182	185.106	102.683
Based on New York:			
1973: 1,227,392 abortions	668.709	303.819	168.537
1975: 1,268,534 abortions	691.010	313.951	174.158

[1] Number of abortions from table 1. [2] 1972 dollars; based on costs of providing services, not charges to patients.

Table 4. Effects of early abortion by vacuum aspiration procedures compared with other procedures on costs for services, hospital patient-bed days, and physician man-hours for 480,259 abortions annually nationwide[1]

Procedure	Percent of abortions	Costs for services (millions)[2]	Hospital patient-bed days (thousands)	Physician man-hours (thousands)
Vacuum aspiration	45	$182.368	841.657	377.091
Curettage	8			
Amniocentesis	45			
Vacuum aspiration	67	127.389	408.687	288.277
Curettage	18			
Amniocentesis	13			
Vacuum aspiration	90	114.680	319.310	275.011
Curettage	3			
Amniocentesis	5			

[1] Recent nationwide number of abortions from table 1; assumes 1 percent of procedures are performed by hysterectomy or hysterotomy.

[2] 1972 dollars; based on the costs of providing services, not patient charges.

in table 5. With vacuum aspiration abortion, the cost drops from $85 million to $56 million when outpatient procedures increase from 10 to 90 percent. For all abortion patients, total hospital patient-bed days drop dramatically—from 579,000 to 322,000. Based on cost and resource requirements, substantial economies result from outpatient procedures. However, the use of freestanding clinics, rather than hospital-based clinics, may be associated with increased risk (*17*).

The trimester of pregnancy and the facilities in which abortions are performed vitally affect the resources required to respond to requests for abortion services. Early first-trimester abortion on an outpatient basis offers substantial economies from the perspective of costs, facilities required, and more efficient use of physician time.

Conclusions

The projection of resource requirements that depend on human behavior is sometimes difficult. Even when accurate and current information is available, many factors fail to remain as constant as the simplified assumptions required in the projection would assume. During the next few years, however, the provision of abortion services probably will not change as much in mode as in magnitude. For the long term, it would be difficult to predict the form in which these services will be provided, no less the magnitude of demand for such services.

The medical resources required for the levels of demand for abortion services that are projected here are not excessive. Further, increased efficiency in providing services, including more use of outpatient facilities, will reduce these requirements (table 5). Additional reductions are possible if more abortions are performed in the first trimester than in the second trimester. Finally, increased skill of physicians may result in lower morbidity rates and thus further reduce the total costs of abortion services.

Our projections reflect only one aspect of policy analysis related to abortion. Many other issues must be considered, including the potential long-term sequelae of induced abortion. Perhaps the most important unanswered question is the extent to which women might rely on abortion as

Table 5. Cost and resource differential between inpatient and outpatient abortions by vacuum aspiration procedures, based on 480,259 abortions annually nationwide

Facility	Percent of vacuum aspiration abortions	Costs for services (millions)[1]	Hospital patient-bed days (thousands)[2]
Clinics	10	$85.468	578.814
Hospitals	90		
Clinics	63	65.945	408.687
Hospitals	37		
Clinics	90	56.000	321.967
Hospitals	10		

[1] For vacuum aspiration patients only; in 1972 dollars and based on the costs of providing services, not patient charges.

[2] Includes all patients, not only vacuum aspiration patients.

a primary method of limiting fertility rather than as a backup method to contraceptive failure. It is hoped that women will realize the advantages of relying on contraception rather than abortion because the cost of providing contraceptive services is substantially less than that for abortion services, even including an allowance for abortion when contraception fails (*18*).

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WILLIAMS, STEPHEN J. (Harvard University School of Public Health), and McINTOSH, E. NOEL: ***National resource requirements for abortion services. Public Health Reports, Vol 89, September–October 1974, pp. 440–446.***

The potential resource requirements of physician time, hospital patient-bed days, and costs for providing abortion services were estimated, based on projections of the number of women who might seek abortions in 1973 and 1975. Estimates of the number of such women were computed from the 1971 abortion rates of States which had nonrestrictive laws before the Supreme Court's 1973 decision that removed most restrictions on the practice of abortion.

Based on the experience in New York State, about 1.2 million women might be expected to seek abortions nationwide. This level of demand would require about 400 full-time gynecologists, 3,000 hospital beds, and $330 million a year. The abortion rate for Oregon, which was lower than that for New York, yielded a projected demand of 730,000 abortions a year that would require about 225 full-time gynecologists, 1,760 hospital beds, and $195 million. Based on the 1971 nationwide abortion rates, which were lower than those of both New York and Oregon, about 515,000 abortions would be performed, and the abortions would require about 150 full-time gynecologists, 1,140 hospital beds, and $137 million a year.

Some substantial reductions in resource requirements could be achieved by educational efforts aimed at increasing the number of abortions performed in the first trimester. Additionally, substantial economies occur when abortions are performed, when appropriate, on an outpatient basis.

Incidence of Vasectomies Refused and Reasons for Refusal

Survey of clinics and physicians

GERALD E. UHLMAN, PHD

BECAUSE VASECTOMY IS GROWING in popularity, a substantial body of literature on the subject has accumulated over the past few years. However, there has been only limited empirical investigation of the incidence of vasectomies refused and of the reasons care givers (private physicians and vasectomy clinics) cite for refusing this operation to patients.

A review of the literature reveals a diverse range of contraindications to vasectomy; usually these have evolved through the personal experience, intuition, and professional judgment of the care giver. Contraindications may include an applicant's failure to meet eligibility criteria (specific requirements of age, parity, marital status, and so forth, the counselor's or agency's evaluative criteria (presence of observable psychiatric or marital-sexual problems and so forth), or any combination of reasons from the two categories with which the care giver feels comfortable.

It would be unfair to omit the entire processes of eligibility determination and evaluation of individual researchers and single out their peculiarities; the reader interested in contrasting styles of evaluative criteria is directed to articles by Carlson, Stokes, Parker, Schmidt, and Dodds (*1–5*).

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The Survey

In an attempt to discern the extent of refusals to perform vasectomies and the common reasons for contraindication, 108 private physicians and 77 vasectomy clinics throughout the United States were surveyed. These care givers acknowledged performing vasectomies in the routine provision of medical services by voluntarily registering with the Association for Voluntary Sterilization. The 108 private physicians were a subsample obtained from among several thousand by means of the random sampling technique.

A questionnaire was mailed in early 1972 and, although both clinics and private physicians were self-selected, the survey population appeared to be essentially representative of vasectomists throughout the health care system. Of those surveyed, roughly 80 percent of the clinics and 60 percent of the private physicians responded, despite a rather lengthy questionnaire.

Respondents were asked to give the number of vasectomies performed and refused for the years 1969, 1970, and 1971; in addition, they were asked to list their most common reasons for refusing to perform a vasectomy.

Results

Table 1 shows the vasectomies performed and refused by those surveyed, according to type of care giver service.

For the private physician group, the number of vasectomies performed more than doubled over the 3 years, while the number of physicians doing the surgical procedure rose only moderately, from 93 to 108. In 1971, these physicians performed more than 19,000 vasectomies, with the mean (X) being 193, the mode—the most frequently reported number—150, and a range of 3,000–5,000. More than 13,000 were performed in 1970, with a X of 121, mode of 100, and a range of 0–1,200. In 1969, more than 8,600 vasectomies were performed, with a X of 78, mode of 50, and range of 0–990.

For the clinic services, the number of vasectomies increased nearly eight times over the period, while the number of clinics more than doubled, from 30 to 77. In 1971, more than 18,000 vasectomies were performed, with a X of 249, mode of 100, and a range of 4 to 1,720. Roughly 6,500 were performed in 1970, with a X of 115, mode of 50, and range of 0 to 573. In 1969, the clinics performed only about 2,300 operations, with the X being 58 and a range of 0 to 320. Reflecting the spectacular rise over the 3-year period, the mode for 1969 was zero.

Private physicians tended to report more refusals to perform vasectomies than the clinics. For 1971, about 1,500 refusals (X = 13) were reported by physicians, while the clinics tallied roughly 500 (X = 7). For 1970, physicians reported nearly 850 refusals (X = 8) and clinics, 130 (X = 3); for 1969, physicians totaled nearly 420 (X = 4) and the clinics 127 (X = 4).

Interestingly, although the numbers of vasectomies performed in 1971 by both services were similar, the private physicians refused three times as many applicants. In 1970, when the physicians performed twice as many vasectomies as the clinics, the physicians refused six times as many applicants as the clinics. In 1969, the physicians performed four times as many vasectomies as the clinics and refused six times as many applicants for this procedure.

Ratios of performed to refused vasectomies highlight group differences. For 1971, the private physicians' ratio was 13:1; for clinics it was 36:1. In 1970, ratios were 15:1 and 49:1, respectively; in 1969 they were nearly equal—20:1 and 18:1.

Table 1. Vasectomies performed and refused, by type of service, 1969–71

Year	Private practitioners			Clinics		
	Number of physicians	Number of vasectomies	Mean	Number of clinics	Number of vasectomies	Mean
Vasectomies performed		41,320			27,026	
1971	108	19,637	193	77	18,275	249
1970	105	13,046	121	53	6,470	115
1969	93	8,637	78	30	2,281	58
Vasectomies refused		2,741			755	
1971	86	1,478	13	62	498	7
1970	83	844	8	33	130	3
1969	67	419	4	19	127	4

Data from the survey tend to suggest that an applicant may have been more successful in obtaining a vasectomy through a clinical service. A trend possibly suggested by the data is that clinics have tended to refuse fewer applicants in proportion, as the demand for vasectomy has risen over the past 3 years.

Discrepancies between the number of care givers reporting vasectomies performed and vasectomies refused cannot be adequately accounted for. Such a discrepancy merely reflects the phenomenon that some which reported performing vasectomies also failed to report refusing vasectomies. Additional survey data, not reported here, cause one to speculate that (*a*) some care givers perform vasectomies and refuse no one and (*b*) care givers who had just begun to perform vasectomies had not yet encountered instances in which refusal was warranted.

When reasons most frequently given for refusing to perform a vasectomy were assessed, little difference emerged between private physicians and clinics (table 2).

For private physicians, eligibility-related responses (that is, age, parity, marital status, and nonconsent of spouse) represented nearly 49 percent of the reasons for refusal; reasons that would normally emerge during counseling (that is, psychological problems, immaturity, coercion by spouse, and so forth) comprised nearly 45 percent of the total. Comparable figures for clinics were 47 and 41 percent respectively.

Two responses were elicited from both groups and in nearly equal proportions with much greater frequency than other reasons. The most frequent reason was that the applicant was "too young" (19.6 percent of the physicians' reasons and 19.4 percent of the clinics' total). The second most frequent contraindication, psychological problems, comprised roughly 18 percent of the reasons given by both types of service.

Discussion

For the entire 3 years, the care providers had performed more than 68,000 vasectomies and refused 3,500 applicants. Over the period from 1969 to 1971, the private physicians doubled the number they performed, but the clinics increased the number of procedures eight times. The number of private practitioners performing vasectomies rose only slightly, but the clinics doubled in number.

Private physicians reported that they refused more applicants than the clinics. Most reasons given for refusal tended to be clustered around either eligibility or counseling evaluation criteria; group differences were virtually nonexistent.

There was an interesting and unexplainable inconsistency in the respondents' refusals of vasectomy applicants. On the whole, the survey data, of which this article is an abstract, tended to suggest (*a*) essentially no differences between physicians and clinics in eligibility criteria, (*b*) very little variation between the two types of service regarding counseling practices, and (*c*) virtually no difference in reasons stated for refusing a vasectomy. Yet, private physicians consistently reported refusing more vasectomies between 1969 and 1971 than the clinics.

The fact that slightly more private physicians than clinics were surveyed does not seem to explain this phenomenon satisfactorily. Refusing a vasectomy, then, appears to be more often a decision of the private practitioner. The implica-

Table 2. Reasons given for refusing to perform a vasectomy, by type of service, 1969–71

Reason[1]	Private practitioners		Clinics	
	Number	Percent	Number	Percent
Too young	34	19.6	22	19.4
Psychological problems	31	17.7	20	17.7
Undecided couple or man	16	9.0	7	6.2
Too young and too few children	15	8.6	9	7.9
Marital problems	11	6.2	4	3.5
Applicant unmarried	10	5.7	6	5.3
Too few children	9	5.2	2	1.7
Consent form not signed by spouse	9	5.2	4	3.5
Immaturity	8	4.6	9	7.9
Unmarried and too young	8	4.6	10	8.8
Coercion of spouse	6	3.4	2	1.7
Lack of understanding	4	2.2	2	1.7
Concern over psychological or physical side effects	2	1.2	2	1.7
Religious conflicts	1	.6	1	.9
Other[2]	9	5.2	13	11.5
Total	173	99.0	113	99.4

[1] Respondents often gave more than 1 reason.

[2] Reasons given by physicians were lack of money, appointment not kept, no referral, and applicant intoxicated; reasons given by clinics were patient's physical contraindication, desire for reversibility, income too high, not married long enough, and need for general anesthesia.

tion is clear—a vasectomy applicant is more likely to obtain an operation from a clinic.

In view of the data from this survey, the demand for vasectomies seems to be increasing dramatically. In addition, clinics seem to be the health system resource where vasectomies are readily available. If this trend is maintained, it can be anticipated that planning for manpower and funding will need to be greatly accelerated to keep pace with the rising number of vasectomy applicants.

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To determine the extent of vasectomy refusals and reasons for refusing applicants for this procedure, data were collected via questionnaires sent to registrants with the Association for Voluntary Sterilization. A total of 108 private physicians and 77 clinics provided information on the number of vasectomies performed and refused and the commonest reasons for refusing applicants from 1969 through 1971.

The number of vasectomies performed increased over the 3 years. Physicians performed 8,637 in 1969 and 19,637 in 1971; the clinics, 2,281 in 1969 and 18,275 in 1971. The number of clinics doing this procedure more than doubled—from 30 to 77 during this period—but the number of physicians increased only from 93 to 108.

Refusal to perform vasectomies was reported more frequently by physicians, who refused about 1,500 applicants in 1971, while the clinics turned down only about 500. Ratios of performed to refused vasectomies in 1971 were 13:1 for the physicians and 36:1 for the clinics. The greater chance of successfully obtaining a vasectomy from a clinic rather than from a private physician was not explained by the survey data.

Most common reasons for refusal by both physicians and clinics were that the applicant was "too young" and the psychological problems of the applicants. Forty-nine percent of the physicians' refusals related to the applicants' failure to meet eligibility requirements (age, parity, marital status, consent of spouse, for example) and 45 percent to evaluation of the applicant during counseling (psychological problems, immaturity, coercion of spouse, for example). Comparable figures for the clinics were 47 percent and 41 percent.

The Potential of Podiatric Medicine in Comprehensive Health Care

LEONARD A. LEVY, DPM, MPH

MORE THAN 520,000 patient visits were made weekly in 1970 to the 7,045 podiatrists in active practice in this country, according to a survey by the National Center for Health Statistics (*1*). Of these podiatrists, 6,340 or 90 percent were engaged in full-time practice and more than half spent 40 or more hours each week in patient care. The 1970 survey revealed a ratio of 3.5 active podiatrists per 100,000 population (*1*), a decrease from the figure of 4.2 reported for 1950 (*2*).

This decrease in ratio of podiatrists to population occurred despite a more than 250 percent increase in the number of graduates from the five existing colleges of podiatric medicine. In a report of a Public Health Service study, Pennell (*3*) concluded that by 1980 the ratio will increase to 4.2 per 100,000 population—the same as it was 30 years earlier.

Since 1950, however, certain changes have drastically increased the demand for podiatric medical services. These changes include the following:

1. The advent of Medicare and Medicaid and the inclusion of podiatric services in these programs.
2. Inclusion of podiatric medical services in Blue Shield and other private health insurance plans and in Workmen's Compensation coverage.
3. Initiation and implementation of provisions which allow clinical privileges for podiatrists on the staffs of hospitals approved by the Joint Commission on Accreditation of Hospitals.
4. Inclusion of podiatric medical schools in the Federal Comprehensive Health Manpower Acts of the 1960s and 1970s.
5. Increase in the number of podiatrists commissioned in the Armed Forces and the recent provision by the Armed Forces of scholarships for podiatry students.
6. Increase in the proportion of older people in the U.S. population. By January 1970, 19.6 million people—nearly 10 percent of the civilian population—were over age 65. In 1900, only 4 percent were in this age group. Census Bureau projections are for 25 million people in this age group by 1985 (*4*). Persons over age 65 seek the services of podiatrists more frequently than do persons in other age groups (*5*).
7. A disproportionate increase in the total U.S. population compared to the population of actively practicing podiatrists. Although the population has increased by 34 percent since 1950, the number of actively practicing podiatrists has increased by only about 10 percent during the same period (*1,2*).
8. Increase in the number of people who become afflicted with chronic diseases and disorders. Many chronic conditions, such as the arthritides, diabetes, or post-cardiovascular accident paralysis, have primary or secondary manifestations in the feet.
9. Increase in public interest and knowledge about health matters.

In addition, within the next few years it appears certain that the increased costs of health care, combined with a host of other factors, will result in the adoption of some form of national health insurance. To date, each plan considered includes provisions for podiatric medical care. Therefore, it is anticipated that any form of na-

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This paper is based on one presented by Dr. Levy to the Podiatric Health Section of the American Public Health Association's annual meeting in San Francisco, November 6, 1973.

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tional health insurance will increase the demand for podiatric medical services from people who were previously unable to afford such care.

In spite of the changes which have dramatically increased the demand for podiatric medical care and the changes which are rapidly developing (involving new mechanisms of financing and delivering health services), 92 percent of the nation's podiatrists are engaged in single-discipline solo or partnership practice. In 1970 only 1.9 percent (130) of the podiatrists were engaged in group practice, and only 1 percent were employed by an organization or institution other than government (*1*). It is believed that less than 10 percent of the nation's doctors of podiatric medicine are part of a major prepaid group today.

Health manpower estimates of requirements for podiatrists vary from a high of approximately 24,000 to a low of 15,000 by 1980 (*3,6,7*). The projection of 9,900 podiatrists who will be in practice by 1980, based on data from the Public Health Service, falls far short of achieving even the lowest of the estimated figures.

As an increasing number of people seek podiatric medical care, it appears certain that podiatrists will be incapable of meeting such demands under the present manner of delivery of care. This crisis, which is rapidly becoming more acute, can be alleviated or perhaps even averted if serious consideration is given to the role of the podiatrist and if his relationship to the so-called health care team is changed to permit more efficient use of his knowledge and skills.

The Podiatrist's Present Role

The podiatrist today functions in a manner somewhat analogous to that of a physician specialist—he makes diagnoses, gives medical and surgical care, and makes independent judgments. In effect, he is a physician who is limited by license to his specialty. Like other medical specialties, the profession of podiatric medicine has a dynamic role, one which is constantly changing as new scientific and technical advances become available and incorporated in the education and training of podiatrists.

In the earlier days of podiatry, practice was generally limited to the palliative care of superficial skin lesions (commonly referred to as corns and calluses), paring of nails, and the dispensing of various types of arch supports. During the past two decades and particularly in the 1960s, recognition of the natural history of many foot disorders and the demand by patients for comprehensive podiatric care have led to a redefinition of the role of the podiatrist.

Ulcer with localized gangrene on great toe of patient with occlusive vascular disease of the foot

This redefinition incorporates the palliative functions of the podiatrist with the concept that he must be concerned and kowledgeable about the relationship of his specialty to the total patient. Although palliation is an integral part of the practice of any branch of medicine, diagnostic, therapeutic, and preventive measures should be taken whenever appropriate to eliminate or reduce morbidity or, if possible, to prevent the occurrence or eliminate the presence of a disease or disorder.

The present practice of podiatric medicine requires thorough education and training in the medical and surgical components of the specialty, as well as a strong baseline of knowledge in general medicine and surgery. Because many people who visit a podiatrist either do not have a primary physician or may not have visited one for some time, the podiatrist must be able to obtain and interpret a medical history and perform a screening physical examination. This helps him to assess the relationship of possible systemic disorders to the podiatric problem presented by the patient.

The podiatric medical student now receives extensive training in physical diagnosis and general medicine and surgery. During the second year of the 4 academic years of study at the California College of Podiatric Medicine, for example, students learn to obtain a complete medical history and to perform a routine physical examination including the use of the stethescope, ophthalmoscope, sphygmomanometer and neurological hammer. Instruction is given during the third and fourth years in internal medicine, neurology, anesthesiology, dermatology, pediatrics, and radiology, as well as in general, vascular, orthopedic, and plastic surgery.

In the clinical years, students perform physical examinations on new patients admitted to the hospital or outpatient department of the college. The classroom instruction and clinical supervision are provided by physicians who are board certified or eligible in their specialty and who, for the most part, also hold faculty appointments at the University of California San Francisco Medical Center or the Stanford University School of Medicine.

In a broader sense, the podiatrist, like other medical and surgical specialists, often performs an important public health function by identifying previously undetected systemic diseases and disorders, with or without lower extremity involvement. His training provides him with the knowledge and skills to refer such patients to appropriate health specialists for concurrent care. The ability to function in this manner is advocated in the 1967 report of the National Commission on Health Manpower, which stipulated that the podiatrist should be trained to suspect and recognize systemic disease (*8*).

As pointed out previously, the need for podiatrists has increased and will continue to increase with the growing number and proportion of aging and aged citizens. Older persons suffer many chronic diseases and disorders, including those that are receiving much attention today as major causes of death and disability—heart disease, cancer, and stroke. Each of these broad categories of disease may present the following direct or indirect manifestations in the feet:

Heart disease
Ankle edema
Occlusive vascular disease of small and large vessels of the lower extremity resulting in pain, infection, ulceration, gangrene, and amputation
Clubbing of the toes
Dry skin
Decubitus ulcers due to long periods of bed rest

Cancer
Malignant melanoma
Kaposi's sarcoma
Lymphomas
Junctional nevi (pre-malignant)
X-ray burns (pre-malignant)
Bone tumors

Stroke
Deformity of the foot
Decubitus ulcers
Ulcers due to the pressure of braces or shoes
Atrophy of foot and leg muscles due to disuse

Obviously, unless major breakthroughs in research occur, the number of people with problems such as vascular disease, degenerative joint disorders, and diabetes mellitus, will grow in proportion to the increase in the population of older Americans. Persons with such conditions often develop lower extremity disorders which may include problems such as mild to severe pain, difficulty or inability to ambulate, and severe foot infection or gangrene with eventual amputation of all or part of the lower extremity. To varying degrees, each of these sequelae can result in disability and may also cause social as well as economic dependency on families and the community (*9,10*). In addition, the inability to ambulate, especially in older persons, often results in rapid deterioration and premature death.

What is most important, however, is that these complications frequently may be prevented or successfully treated. Among the possible solutions are programs to educate persons who have conditions such as peripheral vascular disease or diabetes mellitus about the importance of foot care,

Patient with necrobiosis lipoidica diabeticorum, a condition which may precede the clinical expression of diabetes mellitus and which typically affects the lower legs and feet

Second toe overlaps the great toe as a result of a severe form of rheumatoid arthritis, a painful and sometimes disabling condition

as well as periodic screening examinations of such patients. Prompt medical or surgical (and rehabilitative) treatment provided by the podiatrist can prevent further damage to the feet and improve basic foot function.

Specific Podiatric Medical Programs

Among the best-documented and most extensive podiatric programs in a large metropolitan public health department was the one reported by the District of Columbia (*11*). This program grew from 1,377 patient visits in 1965 to about 5,500 in 1968 (*12*). A remarkably broad range of foot conditions was encountered during that period. These included podiatric problems associated with such chronic disorders as diabetes, osteoarthritis, rheumatoid arthritis, and occlusive vascular disease of the lower extremities, as well as neurological diseases such as cerebral vascular accidents, poliomyelitis, Parkinson's disease, and birth defects. Interestingly, 20 percent of the new patients in 1968 were 5 to 19 years old.

The District of Columbia Department of Public Health also reported the results of a podiatric screening program for almost 9,000 elementary school children (*13*). Of these children, 997 were referred for treatment and another 838 for further study. It was concluded that in addition to the long-range benefits of preventing foot ills in adults, treatment of minor foot abnormalities early in life means more comfort for youngsters during the active years of childhood.

In cooperation with the Philadelphia Department of Public Health, a foot health program called "Keep Them Walking" (*14*), evaluated 1,366 chronically ill and aged persons. The study revealed that each patient presented an average of 7.8 clinical conditions of which 4.8 needed immediate attention in order to avoid complications. These conditions included clinical symptoms of peripheral vascular diseases, infections and ulcerations, dryness of skin highly susceptible to fissuring and secondary infection, as well as a number of other dermatological, musculoskeletal, neurological, and vascular conditions. A very significant finding of the study was that approximately 95 percent of all patients presented some podiatric condition or pedal manifestation of systemic disease which required treatment.

During the past 4 years, the California College of Podiatric Medicine used a fully equipped mobile clinic to provide foot health care to migrant Mexican farm families in the rural Watsonville, Calif., area. Such services, never previously available to these people, were provided during the summer for 2- to 3-week periods by clinical faculty and students. Children were examined and treated during the day, and parents were cared for in the late afternoon or early evening when they returned from the fields. Each year, an average of 200 people in several migrant farm camps received foot care for conditions ranging in severity from routine skin and nail problems to the discovery and subsequent removal of an osseous neoplasm in a child.

Because of the many interrelationships between the podiatric and general medical status of patients, the California College of Podiatric Medicine has initiated several programs for its students. For example, in their clinical years podiatric medical students rotate through the Department of Dermatology at the Stanford University School of Medicine (*15*) and the University of California San Francisco Medical Center outpatient clinic in such departments and services as orthopedic surgery, radiology, rheumatology, thyroid diseases, diabetes, vascular surgery, pediatrics, and ambulatory and community medicine. In these settings, the students attend clinical conferences and observe patient care situations in a manner similar to that of medical students. In addition to the obvious benefit of improving the clinical competence of podiatric medical students, students from sev [illegible] health disciplines become more familiar with the capabilities as well as the limitations of each profession.

Suggested Future Role

With predictions of a grossly inadequate number of doctors of podiatric medicine and no apparent significant increases for the near future, podiatry practice in a solo or single-discipline environment is the most inefficient use of this valuable health resource.

It is imperative that podiatrists become more involved in existing prepaid group practices, as well as in the development of newly emerging health maintenance organizations. Podiatrists must become better acquainted with the advantages of group practice for themselves and for their patients. Well-planned HMOs which serve defined populations and which are staffed with an adequate number of trained nonprofessional and technical personnel could increase enormously the professional capacity of a podiatrist.

For example, many of the technical tasks now being performed by the podiatrist could be taught to less-trained personnel who could function under professional supervision. The podiatrist could also be relieved from many purely administrative functions and related tasks by assigning these to other personnel. Furthermore, much of the time now required to obtain a patient's complete medical background could be saved, since most of this information would be available from the patient's record.

Health manpower is a valuable and expensive resource, and no health professional should function at a level which is lower than that for which he is qualified by education, training, and licensure. The need for podiatrists is great enough that podiatric medical doctors should be able to function effectively in a multidisciplinary group practice without wasting their knowledge and skills. Underutilization of any health professional today is an inefficiency that can no longer be permitted, and every effort to avoid such situations must be made.

Conclusion

The undersupply of podiatrists which exists today is anticipated to continue in the immediate future. As a result of factors such as legislation, the reduction of economic barriers to health care, and a better-informed public, podiatric medical services are in great demand. In addition, an increase in the number of aged citizens, who have a high incidence of chronic diseases and disorders with foot manifestations, has created more patients for podiatrists.

The podiatrist of today functions in a manner which is similar to that of a physician specialist; he is trained to diagnose and treat by every available method as well as to relate his specialty to the total health needs of the patient. Because of their small number, podiatrists should provide their services in the most efficient, time-saving environment possible, such as a well-administered multidisciplinary group practice. Furthermore, they should delegate many of the technical tasks they now perform to less-trained personnel.

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Successful Enforcement of an Immunization Law

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IN NOVEMBER 1973, Shelby County became the first county in Tennessee to comply fully with a State-enacted immunization law (act), passed 6 years earlier, which required children who are entering nursery school, kindergarten, or the first grade to show proof of immunization against diphtheria, whooping cough, tetanus, poliomyelitis, measles, and rubella. One-fifth of Tennessee's population resides in Shelby County which encompasses Memphis (the largest city in the State, with the 10th largest public school system in the United States) and five other incorporated municipalities.

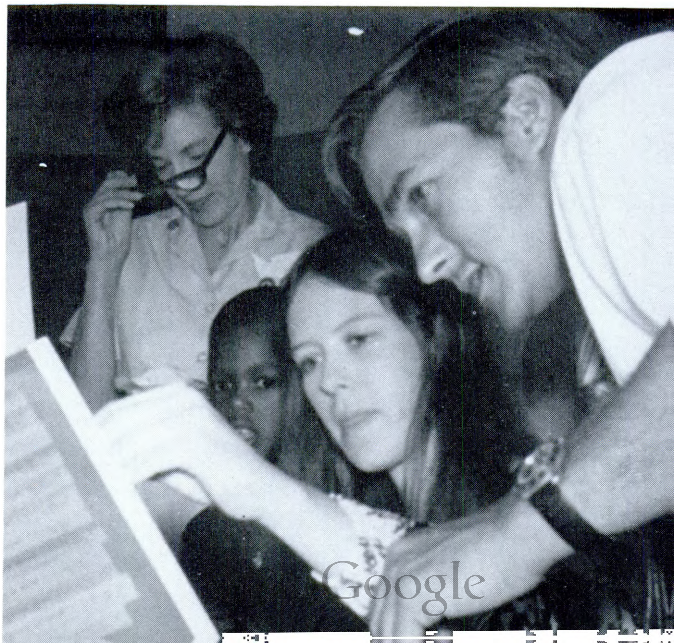
Compliance was achieved by the following actions:

1. Passage of unanimous resolutions by the Memphis Board of Education, the Shelby County Board of Education, and the Memphis and Shelby Board of Health to abide by the law beginning in 1973 and thereafter.
2. Naming elementary school principals as the responsible authorities to exclude unimmunized children and those without proof of immunization from school.
3. Identifying unimmunized children attending schools in violation of the act.
4. Applying pressure and warning school principals that court action would be taken against them if they failed to comply with the act.

Summer Immunization Campaign

Although the schools are legally responsible for enforcing the act, the Memphis and Shelby County Health Department assumed this responsibility with the full backing of the boards of education and health.

In May 1973, a plan was drawn by the director of the health department and a public health adviser from the Center for Disease Control, Atlanta, Ga., who was assigned to the department through the Tennessee Department of Public Health. The plan called for obtaining board of education and board of health resolutions of intent to enforce the act; convening a community advisory panel to obtain suggestions of all possible ways to get children immunized; and conducting an intensive summer-long immunization campaign. The public would be fully warned that children without proof of immunization would be refused admission to school, and school principals would be directed not to admit such children to school.



After the schools opened in the fall, a survey would be conducted and school principals would be advised to expel any children attending in violation of the act.

Traditionally, the health department has conducted summer immunization campaigns. A preliminary random survey of 2-year-olds in 1972 had indicated a good general level of immunization (85 percent) with low levels in certain geographic areas, some children completely unimmunized, and the greatest number of partially immunized children in need of immunization against measles and rubella. Also in 1972, a sample survey of 2,211 kindergarten and first-grade children at 22 schools had revealed 350 children without immunization records. Many children had incomplete records; the greatest deficiency being 129 without rubella and 90 without measles immunizations.

The 1973 summer immunization campaign was the most intensive ever undertaken by the department. More than 50,000 immunization notices were sent to parents from the schools. The news media cooperated fully during the campaign, and several suggestions made by the advisory panel which met in May were implemented, including one for a mobile clinic to visit housing projects. This effort received enthusiastic response. Flyers announcing the mobile units half-day visit were distributed in advance at each housing project, and the schedule was announced by the news media. The unit cruised through the project area with a loudspeaker inviting all to come to the parking lot for free school immunizations. Bubble gum, balloons, immunizations, and immunization records were given to those attending. Three special Sunday clinics were arranged for August, the final one to be held on the day before school opened, so that all immunizations could be completed.

Response to these efforts was only moderate, and a count of immunizations given during the summer indicated that the immunization level remained unchanged. There was no evidence, however, that large numbers of incompletely immunized children were refused admission to school.

After school opened, the public health adviser began a survey of elementary schools. By October 4, he had checked 39 schools and found 31 with various violations. Announcement of a nationwide preschool "Immunization Action Month" in October reinforced the determination to follow through on excluding unimmunized children from the schools. To accomplish this, a definite enforcement policy and additional staff to complete the job of checking the schools were needed.

Enforcement

At this point, a four-step enforcement program was designed, and it was approved by the boards of education and health. Briefly, the four steps to be followed were:

1. Employ a team to survey the immunization records of children in the kindergartens and first grades of all public, private, and church-related schools.

Microfiche equipment helped in retrieval of immunization records and identification of unimmunized children. James Giandelia (right) public health adviser, demonstrated use of the equipment.

At housing projects, bubble gum, balloons, and immunization were given from a mobile unit

2. Send letters to principals of schools in violation, instructing them to comply with the law.

3. Upon recheck of the records, send citation letters to principals of schools still in violation, ordering them to expel unimmunized children and stating that failure to comply with the law may be followed by court action.

4. Upon second recheck, have principals of schools still not in compliance served with a court summons.

On October 16, four registered nurses, temporarily employed, began the school survey. Within a 3-week period, 236 schools were visited and more than 18,000 records were checked. Each nurse averaged 8 to 13 schools per day and found violations at half of the county schools and one-fourth of the city schools. Many of the violations could be corrected immediately. At the 78 schools still in violation, the average percentage of children with incomplete records was 13.4. Principals of these schools were sent letters which named the children in violation, stressed the importance of complying with the law, and promised a recheck of the records within 10 days. The letters were signed by the public health adviser.

During the time the records were being checked, the nurses and public health adviser met with teachers, principals, and parents to explain immunization requirements. They spent a great deal of time assisting schools and parents in their efforts to meet requirements.

A volunteer organization examined records of all the children in one elementary school and found immunizations so incomplete that they requested and were provided a special immunization clinic for the school. More than 1,000 immunizations were given to children in grades 1 through 6 in 1 day. Conceivably, the school could have been the scene of an outbreak of measles or rubella.

It was gratifying upon rechecking the schools to find that the proportion of children without complete records had dropped to 5 percent. Children without measles and rubella immunizations had dropped from 7 to less than 1 percent.

In spite of these good results, in early November 28 citation letters were sent from the health department to principals of schools where violations still existed. The letters quoted the State act, directed principals to expel children in violation, named the children to be expelled, and warned, "This department will recheck the school's records within a short time, and if children are found to be attending in violation of the above State Act, court action may be instituted."

These letters, signed by the director of the department, brought prompt compliance in all but three schools. Exertion of additional effort and pressure, but not court action, brought the last three schools into compliance. On November 17, every known public, private, and church-related school in Memphis and Shelby County was in full compliance with the Tennessee preschool immunization law.

A final clinic was held on Sunday, the day before school opened. Gladys Amis, LPN (left), and Rose Hill, PHN (standing), assisted at one of the health centers

The Characteristics of Volunteers in Crisis Intervention Centers

RUTH C. ENGS, RN, EdD, and ROBERT H. KIRK, HSD

AN INTEGRAL PART of community health care is the increasingly common use of nonprofessional volunteer workers in a variety of organizations. For years, agencies such as the Planned Parenthood Federation of America, Inc., have staffed local clinics with volunteers who serve as intake counselors or lecturers on family planning in the community. Many nonprofessional volunteers staff the street clinics and the crisis intervention telephone and drop-in centers that have sprung up recently to aid youths who are reluctant to take their increased problems related to venereal disease, unwanted pregnancies, and contraceptives to "establishment" agencies (*1–3*). Many crisis intervention services, originally established to deal with suicide prevention or emotional crises, receive requests for help or referral concerning health areas that have traditionally been regarded as the realm of public clinics and private practitioners (*2–4*).

The special usefulness of the crisis intervention service is its ability to provide emotional support and factual information across a broad range of human problems. The flexibility of these agencies, enabling them to adapt from day to day in response to social changes, and their independence from the rules and regulations, governing boards, and funding agencies, which so greatly restrict the issuance of immediate help in many establishment clinics, place the crisis intervention services in the unique position they occupy in our society. Thus their staffs, whether professionals or volunteers, must continually be aware of and well informed about the diverse problems people in their communities are facing.

According to Toffler in "Future Shock" (*5*), as our society becomes more complex, many institutions in our communities will depend more on voluntary assistance. Very little, however, is known about the volunteers, particularly those working for organizations dealing with mental health and general health care crises. It has been found that volunteers for community agencies tend to be white, upper middle-class, and more socially

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oriented than nonvolunteers (*6*). College students who volunteered to be companions for the mentally ill were found to be more morally concerned, introverted, nurturing, and less economic-minded than nonvolunteers (*7*). Another study revealed that college students were volunteering primarily to help someone or to gain experience (*8*). Hersch and co-workers (*9*) reported that male college students volunteering to work with the mentally ill were less socially oriented, had more self-control, were more intent on giving a good impression, had a need for achievement through independence, and were more flexible and nurturing than nonvolunteers. Female volunteers in the same study had significantly more self-control, tolerance, and flexibility, and were more psychologically minded than nonvolunteers.

The majority of people staffing these centers were found to be nonprofessionals (in the fields related to health or the helping professions), are in their early twenties, and usually indicate they are volunteering to help other people. They are recruited by word-of-mouth, through the mass media, or from notices on bulletin boards at churches, colleges, and industries.

Screening procedures usually involve inquiries as to current and past emotional and physical health, reason for volunteering, and attitudes toward youth and its problems. Sometimes psychological tests, such as the Minnesota Multiphasic Personality Test, are used. Personal interviews with the director or the clinic psychologist are commonly part of the screening procedure. The training programs for these volunteers usually consist of about 30 hours of role playing, lectures on health problems by community members, group discussions, and on-the-job training (*2*).

If volunteers continue to be an important cog in community health care, especially in crisis intervention functions in which they often dispense health information as well as provide emotional support for troubled persons, some further questions need to be answered. First, why do people volunteer for this type of community service and do their reasons for volunteering have any bearing upon their length of service to the agency? How adequate is the general level of health knowledge of nonprofessional volunteers compared with the volunteer with a background in the helping or health professions? Is there a difference between the personality characteristics of professional and nonprofessional volunteers? It is essential to determine these factors so that training and screening procedures can be better planned and administered.

The purpose of this investigation was to determine the personality characteristics and health knowledge of volunteers working in crisis intervention services to determine some possible answers to these questions.

Procedures

To carry out this investigation, all crisis intervention centers manned by volunteers in the State of Tennessee were contacted. Of seven existing centers, five agreed to participate in the study. All volunteers who had worked for at least a month were asked to complete the California Psychological Inventory (CPI) and the Kilander-Leach Health Knowledge Test (KLHKT) (*10, 11*). They were asked their reasons for volunteering, sex, age, months of volunteer service, and occupation. Seventy-four volunteers completed all questionnaires. The directors of the agencies were asked about the type and length of procedures for training and screening. Standard procedures for administration of both the CPI and the KLHKT were used. Statistical analysis of the data involved percentage computation, *t* tests, analysis of variance, and the Duncan Multiple Range Test to determine where differences occurred in the analysis of variance. The 0.05 level of confidence was selected as the level of significance upon which to base interpretations.

Findings

The demographic information indicated that 55 percent of all volunteers were females and 45 percent were males. The percentages of volunteers seemed to peak at two age groups—the 20- to 24-year group had 24.3 percent and the 40 and over group had 36.5 percent, with the mean age being 34.7. Seventy-two percent of all volunteers gave "to help others" as their reason for volunteering, while the remaining 28 percent indicated "self-growth," "experience," or "course credit" as reasons. It was found that 14.9 percent of the volunteers were professionals (practicing physicians, nurses, clergy, social workers, psychologists, and students in these disciplines, while 85.1 percent were nonprofessionals.

The 74 volunteers served a mean of 19.51 months. Those indicating they were volunteering to help others had a mean of 22.13 months of service, while those volunteering for reasons of self-growth, experience, or course credit had a mean of 13.14 months. Volunteers with professional backgrounds had volunteered for a mean of 20.55 months and nonprofessionals, for 19.14 months.

Agency directors indicated that they used role playing, lectures from community experts, and large and small group discussions for both their pre- and inservice training programs. The mean hours per month of preservice training for all agencies was 28 and for inservice training, 5. The screening procedures for all five agencies consisted of completion of a personal data form, a statement of the reason for volunteering, and a personal interview with the agency director or a committee consisting of both professionals and volunteers associated with the organization.

The mean score for all volunteers on the total health knowledge test was 73.55. The national norms for college students on this test was 70. There was a significant difference between professionals and nonprofessionals in total health knowledge (table 1) but no significant difference between volunteers by reason for volunteering, although volunteers who worked to help others scored significantly lower than those who volunteered for other reasons in the content area of drugs (table 2). Table 3 shows there were few significant differences on CPI scores among women by reason for volunteering; this was also true for the men. There was little significant difference in CPI scores of male and female professional and nonprofessional volunteers (table 4) (*12*).

Table 1. Mean scores on the Kilander-Leach Health Knowledge Test of professional and nonprofessional volunteers

Content area	Professional		Nonprofessional		t-value	Probability
	Mean	S. D.	Mean	S. D.		
Nutrition	10.36	1.69	9.32	2.05	1.60	.11
Personal health	28.00	6.34	25.78	6.12	1.11	.27
Consumer health	8.09	1.76	7.44	3.30	.63	.53
Safety and first aid	6.55	.82	6.19	1.59	.72	.47
Family life	5.36	.92	5.94	1.27	1.07	.29
Community health	11.82	1.08	9.16	2.35	6.05	[1].001
Mental health	3.91	1.04	3.56	1.43	.78	.44
Drugs	6.55	1.21	5.95	1.60	1.17	.25
Total health score	80.64	9.03	72.34	11.81	2.22	[1].03

[1] Significant at $P<.05$.
NOTE: S. D.—standard deviation.

Table 2. Volunteers' mean scores on the Kilander-Leach Health Knowledge Test, by reason for volunteering

Content area	To help others		Other reasons		t-value	Probability
	Mean	S. D.	Mean	S. D.		
Nutrition	9.51	2.09	9.38	1.88	.24	.81
Personal health	26.17	6.67	25.95	4.78	.14	.89
Consumer health	7.74	3.51	7.05	1.75	.85	.40
Safety and first aid	6.17	1.59	6.43	1.25	−.67	.51
Family life	5.04	1.28	4.90	1.09	.42	.68
Community health	9.59	2.44	9.52	2.36	.07	.95
Mental health	3.62	1.48	3.57	1.12	.14	.89
Drugs	5.72	1.64	6.81	.98	−3.45	[1].001
Total health score	73.56	12.91	73.61	8.49	−0.03	.98

[1] Significant at $P<.001$.
NOTE: S. D.—standard deviation

Discussion and Recommendations

The results of this investigation corroborated some findings of other studies. The majority of volunteers were youthful female nonprofessionals who were volunteering to help other people. The volunteers were screened through personal data sheets and interviews. Their training consisted of lectures, role playing, and discussion.

The results indicate that there were more similarities than differences between the professional and the nonprofessional volunteer. However, since the nonprofessional volunteers greatly outnumbered the professionals, the statistical tests of difference must be viewed with caution.

Both professional and nonprofessional volunteers had worked almost the same amount of time. Professionals had significantly higher health knowledge than nonprofessionals. The CPI scores were very similar for both groups with the exception of the flexibility score, which consistently yields a trend. Both male and female professionals were significantly higher on this scale than nonprofessionals. Females indicating they were volunteering to help others were significantly higher on the flexibility scale. However, men who volunteered for this purpose were significantly lower on this scale than men who volunteered for self-growth, course credit, or experience. This difference might be explained by the fact that virtually

Table 3. Volunteers' mean scores on the California Psychological Inventory (CPI), by reason for volunteering

CPI scales	To help others		Other reasons		*t*-value	Prob ability
	Mean	S. D.	Mean	S. D.		
Men						
Dominance	29.32	4.88	29.17	4.61	.09	.93
Capacity for status	20.05	4.77	20.75	3.25	−.46	.65
Sociability	25.45	4.18	24.58	5.25	.53	.60
Social presence	36.27	6.48	37.00	8.01	−.29	.77
Self-acceptance	22.18	3.00	23.00	3.74	−.70	.49
Sense of well-being	36.18	4.77	36.58	4.94	−.23	.82
Responsibility	31.41	4.95	28.08	5.53	1.80	.08
Socialization	33.05	5.08	31.33	5.20	.66	.51
Self-control	28.27	7.92	29.58	6.27	−.49	.62
Tolerance	22.41	5.84	22.75	4.43	−.18	.86
Good impression	17.32	5.71	18.00	4.07	−.37	.72
Communality	24.82	4.19	25.08	2.06	−.20	.84
Achievement via conformance	27.77	5.01	27.00	4.04	.46	.65
Achievement via independence	21.18	4.67	22.25	3.79	−.68	.50
Intellectual efficiency	38.32	4.49	38.92	5.87	.33	.74
Psychological mindedness	12.05	2.72	12.17	2.41	−.13	.90
Flexibility	10.14	3.14	13.50	4.34	−2.61	[1] .01
Femininity	18.00	2.62	17.75	2.86	.26	.80
Women						
Dominance	28.81	6.71	32.11	4.88	−1.37	.18
Capacity for status	21.26	2.84	20.78	2.86	.43	.67
Sociability	24.65	4.96	26.22	3.35	−.89	.38
Social presence	34.87	5.94	40.44	4.25	−2.62	[1].01
Self-acceptance	21.32	3.51	24.89	3.55	−2.68	[1].01
Sense of well-being	35.45	5.95	35.89	3.10	−.21	.83
Responsibility	33.55	4.44	29.44	3.74	2.52	[1].02
Socialization	35.03	6.57	34.11	4.31	.39	.69
Self-control	30.42	8.83	25.11	6.21	1.68	.10
Tolerance	24.10	4.90	23.89	3.98	.12	.9
Good impression	17.29	5.83	13.56	3.13	1.83	.07
Communality	24.90	4.96	26.44	1.01	−.92	.36
Achievement via conformance	27.55	5.00	28.56	5.43	−.52	.60
Achievement via independence	21.68	3.55	23.11	4.46	−1.01	.32
Intellectual efficiency	38.58	5.10	41.78	4.74	−1.68	.10
Psychological mindedness	12.61	2.19	14.11	3.37	−1.59	.12
Flexibility	19.81	3.90	14.00	3.97	−2.93	[1].01
Femininity	23.45	3.34	21.56	3.13	1.52	.14

[1] Significant at $P<.05$,
NOTE: S. D.—Standard deviation.

all of the men working for self-growth and experience were university students in the helping professions and may be exhibiting a personal profile similar to that of the professionals. Many of the women working for self-growth or experience were students, but not in the helping professions.

In view of the results, it is recommended that nonprofessional volunteers be afforded more intensive training in health knowledge so they can be more knowledgeable in answering general questions pertaining to health. Since the nonprofessionals were significantly lower on the CPI's flexibility scale, it is recommended that more intensive training be afforded nonprofessional volunteers to help them gain more insight and become more adaptable to a variety of client situations.

The results indicated that volunteers working to help others worked almost twice as many months as volunteers working for course credit, self-growth, or experience. It would appear that the group volunteering to help others was more dedicated to the organization and more enthusiastic than volunteers attempting to meet their own needs. It is recommended that, to help prevent staff attrition, persons volunteering for self-growth, credit, or training experience be interviewed in depth as to the possible length of their commitment to the organization before they begin their service.

Table 4. Mean scores on the California Psychological Inventory (CPI) of professional and nonprofessional volunteers

CPI scales	Professional		Nonprofessional		*t*-value	Probability
	Mean	S. D.	Mean	S. D.		
Men						
Dominance	32.00	4.36	28.79	4.69	1.43	.16
Capacity for status	22.00	2.00	20.00	4.49	.97	.34
Sociability	25.80	3.83	25.03	4.69	.34	.73
Social presence	38.60	5.37	36.17	7.20	.72	.48
Self-acceptance	23.80	2.28	22.24	3.37	.99	.33
Sense of well-being	38.40	.89	35.97	5.07	2.36	[1].02
Responsibility	31.80	5.97	29.97	5.28	.71	.49
Socialization	32.60	6.11	32.62	5.01	−.01	.99
Self-control	34.60	4.61	27.72	7.26	2.03	[1].50
Tolerance	25.20	4.21	22.07	5.41	1.23	.23
Good impression	20.00	4.80	17.14	5.15	1.16	.26
Communality	26.00	1.23	24.72	3.80	.74	.47
Achievement via conformance	31.20	3.96	26.86	4.51	2.02	[1].05
Achievement via independence	24.60	2.79	21.03	5.39	1.74	.09
Intellectual efficiency	41.20	4.15	38.07	4.98	1.32	.1
Psychological mindedness	13.80	2.39	11.79	2.53	1.65	.11
Flexibility	14.20	1.30	10.83	3.99	3.58	[1].002
Femininity	19.20	2.39	17.69	2.69	1.19	.25
Women						
Dominance	29.83	5.04	29.50	6.72	.12	.91
Capacity for status	22.00	2.76	21.00	2.93	.78	.44
Sociability	25.67	3.39	24.88	4.88	.38	.71
Social presence	39.33	5.99	35.56	5.94	1.43	.16
Self-acceptance	23.33	4.72	21.91	3.64	.85	.40
Sense of well-being	35.17	3.92	35.62	5.67	−.19	.85
Responsibility	29.50	5.58	33.18	4.25	−1.87	.07
Socialization	34.50	5.39	34.88	6.28	−.14	.89
Self-control	25.50	6.56	29.88	8.76	−1.16	.25
Tolerance	24.33	2.81	24.00	4.95	.16	.87
Good impression	14.00	2.45	16.88	5.83	− 1.18	.24
Communality	25.67	1.51	25.18	4.76	.25	.81
Achievement via conformance	28.50	2.43	27.65	5.39	.38	.71
Achievement via independence	24.33	2.87	21.59	3.78	1.69	.10
Intellectual efficiency	42.67	3.27	38.71	5.22	1.79	.08
Psychological mindedness	15.17	2.64	12.56	2.34	2.47	[1].02
Flexibility	13.83	5.60	10.21	3.82	2.04	[1].05
Femininity	21.83	3.97	23.99	3.26	−.94	.35

[1] Significant at $P<.05$.

NOTE: S. D.—standard deviation.

Conclusions

For this sample of crisis intervention volunteers in the State of Tennessee, it was concluded that there were more similarities than differences between volunteers with backgrounds in the helping professions and nonprofessionals. Both groups had similar personality traits as measured by the CPI. Both appeared equally dedicated, as measured by the amount of time they had volunteered at their respective agencies. The professional volunteers, however, had greater general health knowledge than nonprofessional volunteers.

It was found that most volunteers in this sample worked to help others and that these volunteers had worked about twice as long as those working for course credit, self-growth, or experience. There was little difference in the health knowledge or personality characteristics between these two groups.

It was concluded that training and screening procedures of the five participating agencies were similar to those employed by crisis intervention agencies in other areas.

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Nonprofessional volunteers staffing community health agencies have become more prevalent. However, little is known about these persons. Volunteers staffing five crisis intervention agencies in the State of Tennessee were surveyed in the winter of 1972–73.

Of 74 volunteers, 55 percent were female. About 15 percent had had professional training in the health or helping professions. Seventy-two percent gave "to help others" as their reason for volunteering. The mean age of the volunteers was 34.7 years, with the majority being between the ages of 20 and 24 or over 40. The mean score (73.6) for all volunteers on the Kilander-Leach Health Knowledge Test was slightly higher than the national norm (70.0) for college students.

The volunteers with professional backgrounds scored significantly higher than the nonprofessionals on the total health knowledge test. However, in general, there were more similarities than differences between these types of volunteers, as indicated by such factors as personality characteristics, measured by the California Psychological Inventory, and length of service to their agency. Volunteers working to help others had worked about twice as long for their agency compared with volunteers working for self-growth or experience. However, there was little difference in personality traits or health knowledge according to reason for volunteering.

It is recommended that prospective volunteers be asked the reason for volunteering to help eliminate volunteer attrition and that volunteers without backgrounds in the helping professions be afforded more intensive training in general health knowledge.

A Technique for Standardizing the Jet Injector and Mantoux Tuberculin Skin Tests

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and HARRY B. GREENBERG, MD

CRITICS of the jet-injector gun method of tuberculin skin testing have emphasized the method's lack of sensitivity. Feigenbaum and coworkers (*1*) cited a high percentage of false negative responses to jet-injected tuberculin among South Vietnamese mental patients. In a study of Georgia school children, Luby (*2*) and Dull and associates (*3*) also noted a significant number of false negative responses to jet-injected tuberculin. They reported that on the average, only 53 percent of the tuberculin ejected by the jet gun penetrated skin.

When the U.S. Armed Forces' jet-injector gun was adapted for intradermal injection, the nurses at the New Orleans Tuberculosis Clinic began to use it for skin testing (*A*). They found, as had others (*1,2*) who questioned its reliability, that tuberculin testing with the jet gun was fast. (An experienced nurse can give tuberculin tests to about 400 children per hour with the jet-injector gun.) They also found that a jet-ejected dose of 0.1 ml of tuberculin made a smaller intradermal wheal than the same dose of tuberculin injected by syringe and needle (Mantoux test). As a result, we increased the dosage of tuberculin ejected by the jet gun to 0.14 ml, which produced intradermal wheals comparable in diameter with those of the Mantoux test. Then we studied the reliability of jet-ejected tuberculin in dosages of 0.14 ml in provoking responses as compared with syringe and needle injected tuberculin (Mantoux test) in dosages of 0.1 ml.

Study Methods

The study population comprised 522 pregnant women (ages 15–40 years chosen seriatim during a 3-month period) whose need for tuberculosis

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control measures was being studied (*4*) while they attended the Family Planning Clinic in New Orleans.

Two experienced nurses from the New Orleans Health Department gave the tuberculin tests and kept records on each woman and her responses. The nurses were assisted by a public health adviser, who was familiar with jet-injector apparatus, and personnel from the Family Planning Clinic.

The Tuberculosis Program, Center for Disease Control in Atlanta, Ga., supplied the purified protein derivative tuberculin (PPD-T) in a concentration of 5 TU (0.0001) per ml. The nurses used a B-D Plastipak disposable tuberculin syringe with needle for each Mantoux test. For each jet-injected test, they used a commercially available, portable jet-injector gun fitted with an intradermal nozzle.

We tested the jet-injector gun to find the dosage of tuberculin needed to produce an intradermal wheal of 8 mm in longest diameter. (The 8-mm diameter was chosen because it corresponded with that of the Mantoux test.) We found that our jet-injector gun consistently produced satisfactory wheals without further adjustments when set to dispense 0.14 ml of tuberculin at each firing.

With the jet gun set to dispense 0.14 ml of tuberculin at each firing, the nurses injected each woman on the flexor surface of her right forearm. At this time, they also used a disposable tuberculin syringe with needle to inject 0.1 ml of tuberculin into the most superficial layer of the skin of the woman's left forearm (Mantoux test). If the intradermal wheal produced by the jet gun or by the syringe and needle did not approximate 8 mm (7–9 mm) in longest diameter, the test was repeated at a distal site. (Jet-injected tuberculin tests had to be repeated less frequently than syringe and needle-injected tuberculin tests). Two to 4 days later, the nurses examined the test sites and used dividers and a ruler to measure responses to the nearest millimeters of induration.

Results

Thirty of the 522 women tested had responses that could be measured. The following tabulation shows that with syringe and needle (Mantoux) responses of 10 mm or more as the standard for a positive tuberculin skin test and responses of 5–9 mm as the standard for a doubtful tuberculin test, the responses to jet-injected tuberculin were correct negative in 3 women, correct doubtful in 2, correct positive in 21, and false positive in 4. These four women with false positive responses to jet-injected tuberculin had syringe and needle (Mantoux) test responses in the doubtful, 5–9 mm, range.

	Syringe and needle		
Jet injector gun	*Negative 1–4 mm*	*Doubtful 5–9 mm*	*Positive 10 mm*
1–4 mm	3	0	0
5–9 mm	0	2	0
≥10 mm	0	4	21
Total women ..	3	6	21

The jet-injector technique frequently produced the larger response (fig. 1). The sample median for the jet-injected tuberculin test was 11.5 mm range P (10 mm$<$M$<$16 mm) $=$ 0.9726, and for the syringe and needle injected tuberculin test, it was 11 mm range P (10 mm$<$M$<$14 mm) $=$ 0.9762 (*5*).

Figure 2, a scatter diagram in which each woman's responses are plotted, shows that a significantly larger response to jet-injected tuberculin resulted in false positive jet-injector tests ($\geq$ 10 mm) in four women whose Mantoux

Figure 1. Frequency distribution of reactions to PPD-tuberculin

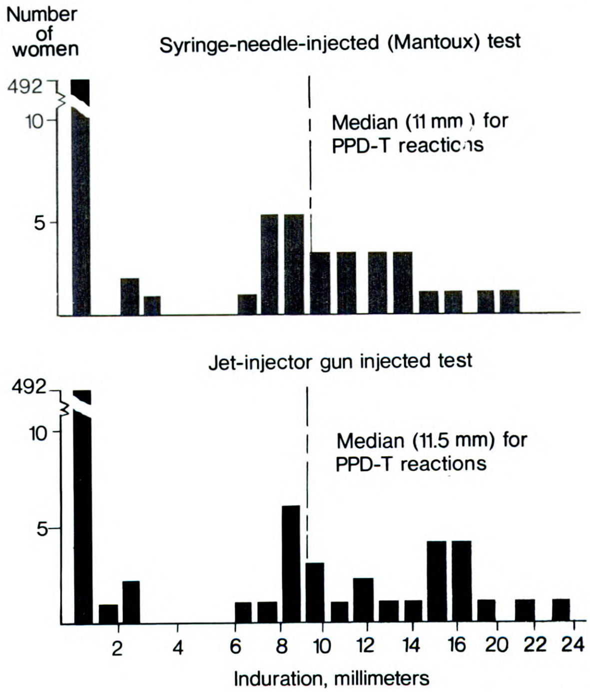
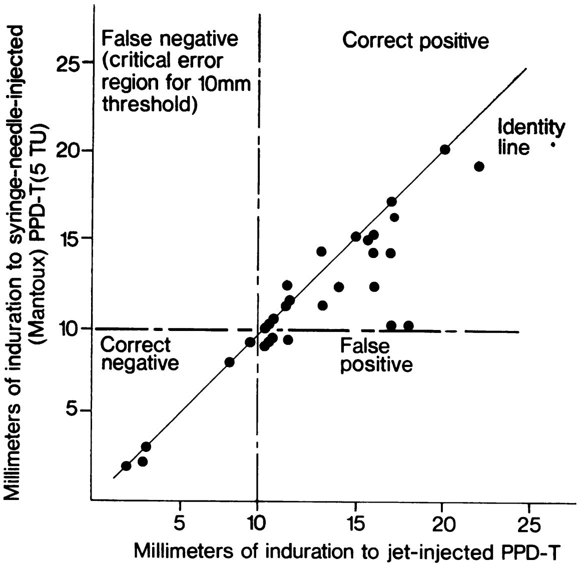


Figure 2. Reactions to jet-injected and syringe-needle-injected (Mantoux) tuberculin PPD-T in 30 pregnant women



tests were in doubtful (5–9 mm) range. According to present recommendations, these women should be queried about possible tuberculous contacts and, if necessary, retested to determine their tuberculin status. Figure 2 also shows that the standardized jet-injected technique of tuberculin skin testing did not lack sensitivity as compared with the Mantoux technique. There were no false negative responses to jet-injected tuberculin.

Discussion

The data seem to indicate that our method of standardizing the jet-injector gun method of tuberculin skin testing is practicable. Standardizing the jet injector test so that each test produced an intradermal wheal comparable in diameter with that of the Mantoux technique was not difficult. Once the jet-injector gun had been calibrated to dispense 0.14 ml of tuberculin at each firing, it consistently produced satisfactory wheals without further adjustments.

We also found that the standardized jet-injected tuberculin test did not lack sensitivity as compared with the Mantoux test. There were no false negative responses to jet-injected tuberculin in a sample population of 522 women who were tested with syringe and needle (Mantoux) and jet-injector techniques. Generally, the test results correlated well. On occasion, however, the jet-injected tuberculin produced a significantly larger response. As a result, about one-sixth of the women with positive reactions (indurations of 10 mm or more) to jet-injected tuberculin had Mantoux responses in the doubtful range—5–9 mm. We concluded therefore that the standardized jet-injected tuberculin test had been reliable in detecting tuberculin sensitivity in the sample population, but it had not been reliable in differentiating between the women with doubtful and positive Mantoux reactions.

Summary

A technique was devised for standardizing the jet-injector gun method of tuberculin skin testing so that each jet-injected test produced an intradermal wheal comparable in diameter with that of the syringe and needle (Mantoux) tuberculin test. It was not difficult to standardize the jet-injected test. Once the jet-injector gun had been calibrated to dispense 0.14 ml of tuberculin at each firing, it consistently produced satisfactory wheals without further adjustments.

The standardized jet-injector gun method of tuberculin skin testing was as reliable as the Mantoux test in detecting tuberculin sensitivity in a sample population of 522 women. But the standardized jet-injected test was not reliable in differentiating between the women with doubtful and positive Mantoux reactions.

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A Salmonellosis Outbreak in New York City Attributed to a Catering Establishment

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INVESTIGATION AND REPORTING of foodborne outbreaks have long been recognized as the basic tools of food control. Despite this, food poisoning in the United States is grossly underreported (*1*). If reporting in this country were on a par with that of England and Wales, the United States should have had 15,000 episodes instead of 181 recorded in 1968 (*2*), and a recent large *Salmonella enteritidis* outbreak in New York City need not have happened.

Salmonella has been described properly as ubiquitous. More than 1,200 serotypes have been isolated in diverse environments. They have been found in many important constituents of the American diet, in 25.7 percent of chickens, 27.2 percent of turkeys, 10.9 percent of cattle, and 10.4 percent of swine (*3*). The extent of food infection caused by *Salmonella* serotypes precludes prevention of their entry into food service establishments.

Although salmonellosis is primarily a disease of animals, the number of temporary human carriers may be a significant contributor to the problem. Data from 14 hospitals in New York City which examined stool specimens of prospective employees disclosed a *Salmonella*-positive rate of 4.1 per 1,000 (*4*). Presumably these applicants were asymptomatic. Cherubin (*5*) reported that the human reservoir may be 13.8 persons per 1,000. As a symptom-causing disease, salmonellosis appears to be a greater problem nationally than in New York City. In 1969, 14.4 percent of all outbreaks were caused by salmonellae, whereas in New York City only 4.4 percent of such occurrences could be traced to these organisms (*6*).

The prevalence of *Salmonella* organisms is so widespread that eliminating them from our environment has been compared to the fighting of

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windmills (*7*). Apparently the control of salmonellosis consists of breaking the animal-to-animal, animal-to-man, and occasional man-to-man transmission routes. Until this can be accomplished, proliferation and growth of the organisms must be prevented. McCullough and Eisele (*8*) have demonstrated that large numbers of salmonellae are required before symptomatic illness occurs. Mishandling of food and inadequate temperatures are prerequisites in any outbreak of salmonellosis. A food processor who routinely permits these shortcomings is playing Russian roulette with *Salmonella*—sooner or later the odds are that his products will be implicated in an outbreak of foodborne illness.

The New York City Health Department recently had occasion to investigate an outbreak of salmonellosis that stemmed from a catering establishment which outwardly appeared to be a sanitary premise with a responsible management. A total of 205 persons were affected; 180 victims had eaten at a banquet prepared by the caterers, and the remainder were a partner, employees, and patrons of the establishment's restaurant.

The Investigation

The initial report that something was amiss was received by the health department on Wednesday, May 9, 1973, when a physician reported that he and others had become ill after attending a catered banquet for approximately 300 persons on the previous Sunday, May 6. The physician's illness had started at 4 pm Monday; he experienced chills, fever (102° F), and diarrhea.

Health department sanitarians went to the banquet site shortly after receiving the physician's complaint. They learned that the food—corned beef, pastrami, tongue, cole slaw, potato salad, and plain cake—had been delivered at 6:30 pm Sunday and placed directly on the tables. None of these foods had been refrigerated or heated at the banquet site, and no additional foods had been prepared on the premises. The food was consumed between 9 and 11 pm. No leftovers were available for analysis. The sanitarians obtained a list of the guests so that arrangements could be made to interview them.

The catering establishment. On the same day, the sanitarians visited the caterers who supplied the food for the banquet. Meals are served on the premises of their establishment, and they employ four foodhandlers and nine other persons. When the restaurant is busy or when food is being prepared for a large affair, all the employees assist with food preparation.

Interviews with the staff disclosed that one of the owners had been ill with fever, chills, and malaise on May 2, 4 days before the banquet, and he had been treated by a physician. The physician had made no definitive diagnosis and allowed the patient to return to work. The sanitarians also learned that a dishwasher was home because he was suffering gastrointestinal illness.

Inspection of the premises revealed that many cold meats were being stored at temperatures up to 62° F, instead of the required 45° F. Examples are tongue at 60° F, rolled beef at 62° F, and stuffed derma at 50° F. Hot meats in the steamer were under the required 145° F. Also, countermen were handling each slice of meat during slicing operations. Other violations observed included mouse, roach, and other insect infestations.

Since none of the foods prepared at the same time as those served at the banquet were available for sampling, the sanitarians took seven checkup food samples for bacterial analysis. They also gave the staff broad instructions for proper foodhandling.

On the following day, personnel from the health department's food processing unit visited the establishment. They found hot meats at temperatures of 90° and 110° F. Corned beef and pastrami were being placed directly from the refrigerator into the steamer, a slow and inefficient method of heating which allows a long time for incubation temperatures.

An important feature of foodhandling procedures that was well illustrated during this investigation is the persistence of habit. Despite their shock and concern when they learned of the outbreak and despite the instructions given them by the sanitarians the previous day, the foodhandlers were still manually handling cooked meats during preparation, storage, slicing, and serving. No attempt at sanitization was seen, and cross-contamination possibilities existed at multiple times and sites. Presumably, these same poor practices existed when the food was being prepared for the banquet.

The personnel from the health department's food processing unit learned that 48 pounds of corned beef and 48 pounds of tongue were cooked the day before the banquet. The meats were allowed to cool for an extended time at room temperature before they were refrigerated. On the day of the banquet, the corned beef, tongue, and a precooked 20-pound piece of pastrami were sliced by machine at 11 am and placed on trays. Each slice was hand caught by the person who was doing the slicing. Several persons sliced the meats, and other persons arranged the slices on the trays, using their hands. According to the caterers, the slicing and arranging of the meats took 3 hours. However, the staff did not work exclusively on the banquet food during this time; they also attended to luncheon and other activities. Thus, the meats were allowed to remain at room temperature for 10 to 12 hours before they were consumed.

Because the establishment stores salads in large vats and uses them for the restaurant, as well as for catering, it was not possible to determine when those served at the banquet had been prepared.

The health department investigators gave the caterers detailed instructions regarding proper food preparation and handling. These instructions included the following:

1. Sanitization of all work surfaces, utensils, equipment, and slicing machines.
2. Ready-to-eat cold meats and salads to be stored at temperatures below 45° F.
3. Hot meats to be maintained at temperatures above 145° F.
4. Steam box temperature to be above 200° F before meat is placed in it.
5. Meat to be heated to an internal temperature of 145° F or higher before it is placed in the steamer.
6. Minimum handling of ready-to-eat foods with bare hands, and frequent and thorough washing of hands.
7. Refrigerated display shelf (cold plate) to be maintained at temperatures below 45° F.

Preliminary evaluation based on interviews with banquet guests and observations of foodhandling techniques at the catering establishment convinced the health department's deputy commissioner of environmental health services and his staff that continued operation of the establishment constituted a threat to the health of patrons and employees. Reports coming in of illness from patrons who had not attended the banquet reinforced this belief. Also, the potential danger precluded waiting for laboratory results for the food samples and the stool specimens taken from the foodhandlers and victims. An order to close the establishment forthwith was issued on May 11. The foodhandlers were forbidden to work in any food establishment until they were proved to be free of *Salmonella* organisms. The catering establishment was kept under daily surveillance to insure that it remained closed.

Other reported cases. News of the outbreak spread rapidly through the neighborhood of the catering establishment. Reports of illness to the health department by persons who had eaten at the restaurant included one of a woman who had eaten tongue and pastrami on May 2—the same day that one of the establishment's owners was ill—and became ill early the next morning. Twenty-one victims reported having eaten at the restaurant on May 6, the day of the banquet. Among these victims was a woman who had eaten turkey and became ill the following afternoon with symptoms that were typical of salmonellosis. She was hospitalized, and the hospital reported that her stool specimen was positive for *Salmonella* group D and she had a titer of 1:64. Another victim had eaten at the restaurant as late as May 10. Obviously, the outbreak was not confined to the catered affair.

Results of analysis of food samples taken from refrigerator of catering establishment on May 9, 1973

Food	Total plate count	Coliforms	Staphlyococci[1]	Streptococci	Salmonellae
Cole slaw	6,300	<10	1,600	(2)	None
Potato salad	180,000	140	18,000	210	None
Corned beef	78,000	110	40,000	100	*S. enteritidis*
Pastrami	1,800	<10	9,500	40	*S. enteritidis*
Tongue	30,000	8,000	9,500	3,000	*S. enteritidis*
Corned beef	7,200	1,400	800	(2)	None
Tongue	77,000	1,400	48,000	430	None

[1] All negative. [2] No growth.

If reporting foodborne illness were the custom, the health department would have been notified of the first illness on May 3. Remedial measures would have been taken, and a large number of persons would have been spared from becoming ill.

Laboratory analyses of foods and water. Seven samples of foods, five meats and two salads, were taken from the restaurant for analysis by the Food Microbiological Laboratory of the health department. The findings are shown in the table. No *Clostridium perfringens* or *Shigella* organisms were recovered from any of the samples. The presence of *Salmonella* organisms in three meat samples indicated that extensive contamination existed in the restaurant; these meats were of the same types served at the banquet. The two other meat samples did not contain *Salmonella* organisms, although they presumably were prepared in the same way as the other meats. It was not possible to determine which foodhandler had prepared which food because all had participated. This disparity of results vividly illustrates the difficulties encountered in food poisoning investigations and the need for epidemiologic direction. If fewer samples had been taken, there may not have been any laboratory corroboration of the causative agent.

Ten water samples were taken at various water fixtures at the establishment. They were all satisfactory bacteriologically.

Employees, patrons, and banquet guests. Stool specimens from 12 employees and a partner were examined for enteric organisms. *S. enteritidis* was isolated from six of these persons—the partner, two kitchen helpers, two countermen, and a cook. Only the partner had been ill. No stool specimens were available from the dishwasher whose gastrointestinal symptoms began on May 7.

S. enteritidis was also recovered from six patrons. The finding of this same serotype in the foods, foodhandlers, and patrons indicated a strong cause and effect relationship.

Interviews with 230 banquet guests failed to provide a definitive clue; however, corned beef, tongue, and pastrami seemed to be implicated. Almost everyone had eaten meat and salad. The meats had been arranged so that the different types overlapped on the trays, and thus it was difficult to select only one kind. Only one person reported not having eaten any meat; he did not become ill. The attack rate, by sex, was as follows.

	Ill		*Not ill*	
Sex	*Number*	*Percent*	*Number*	*Percent*
Men	92	78	25	22
Women	88	78	25	22
Total	180	78	50	22

The following symptoms were mentioned by 170 banquet victims:

Symptom	*Percent with symptom*
Diarrhea	93
Cramps	87
Nausea	68
Vomiting	23
Fever	64
Chills	15
Headache	6

The victims' illness lasted from 1 to 10 days, with a mean of 5.8 days. Five of these persons had been hospitalized, and *S. enteritidis* had been recovered from all of them.

There was little age difference between the ill and not ill banquet guests: the average was 61.8 years. The average age of those who were ill was 62.1 years and for those who did not become ill, it was 60.8 years. Although the guests' ages ranged from 21 months to 86 years, more than 95 percent were 60 to 63 years old.

The incubation periods of illness ranged from 6 to 41 hours. Based on interviews with 71 persons who definitely knew the time of the onset of their illness, the mean incubation period was 18 hours. The presence of gastrointestinal disorders and fever, as well as a median onset of 18 hours, is typical of salmonellosis.

Discussion and Conclusions

The illness of the partner on May 2, subsequently determined to be salmonellosis, is significant in view of the illness of a patron who had eaten at the restaurant on the same day. The partner's role in the outbreak, however, can only be conjectured. Edwards (*9*) stated that the presence of *Salmonella* in the foods and carcasses with which the foodhandler is in constant contact predisposes him to become an asymptomatic carrier. And, according to McCroan (*10*), it is impossible to distinguish between contact carrier, culprit, and victim.

S. enteritidis is being ever more commonly recovered from patients, Cherubin (*11*) reported that this was the most common serotype isolated in New York City in 1971. Before 1937, *S. enteri-*

tidis was not ranked among the 12 most common serotypes in man; by 1963, it was among the top 5 (*12*). In 1971, it was number two nationally, and it accounted for 8.8 percent of all human isolates (*13*). The attack rate of 78 percent in the outbreak reported here is exceptionally high.

As related earlier, the catering establishment was summarily closed on May 11. When the owners had fully complied with the rules and recommendations of the health department, they were allowed to reopen on May 26. A sanitarian was on the premises for an entire week after the reopening to insure proper foodhandling. The infected foodhandlers were allowed to return to work after they were certified by the department's Bureau of Infectious Disease Control that they were free of infectious disease. Food samples were taken from the establishment periodically, and laboratory analyses revealed that they were satisfactory.

From the information available, it appears that all the conditions which lead to outbreaks of foodborne illness were present at the restaurant for a long time; the exception was a causative agent. It was only when *Salmonella* was introduced into the environment that illness occurred. *S. enteritidis* may have been a contaminant of raw fowl that by cross contamination affected other foods, or a foodhandler may have become infected and infectious.

The illness of the 25 persons who had not attended the banquet confirms the basic deficiencies in the establishment's foodhandling procedures. Thus, it was not a one-shot incident—the large catered banquet. When the missing link—the causative pathogenic organism—was introduced, illness spread to banquet guests as well as to patrons of the restaurant.

The attack rate of 78 percent is extremely high, as mentioned earlier. Mere introduction of an organism is not sufficient to cause illness; large quantities of the organism must be ingested. For such a large attack rate, the organism needed adequate inoculation and time at incubating temperatures to reproduce.

Physicians who treat foodhandlers for symptoms indicative of salmonellosis should identify the illness and refer the worker to an appropriate health agency for surveillance. Additionally, food control agencies should place stronger emphasis on proper foodhandling. Clean walls, floors, and ceilings do not prevent foodborne illness.

According to the official records of the Food Poisoning Investigation Unit of the New York City Health Department, there were 190 reported food poisoning outbreaks with 428 victims in 1972 and 108 outbreaks with 465 victims in the first 10 months of 1973 that were attributed to food processing establishments in the city. Because of the continuing large numbers of foodborne outbreaks being traced to retail food processing establishments, as well as the lessons gained from the outbreak reported here, the health department now requires all supervisory personnel in such establishments to take a food protection course given by or acceptable to the department.

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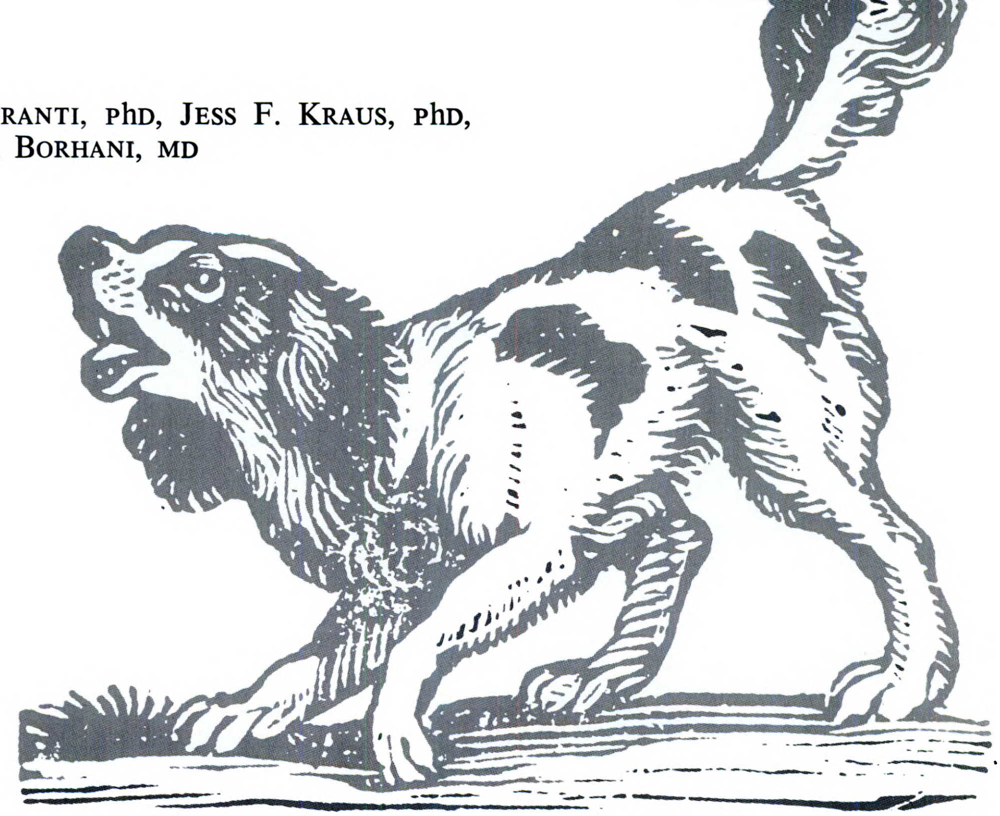

Pet Ownership in a Suburban-Rural Area of California, 1970

Socioeconomic, medical, and demographic aspects

HISTORICALLY, animals and man have shared many diseases and parasites. Dogs and cats, in particular, have been intimately involved and associated with human behavior and health. Zoonosis control is facilitated only through collection and analysis of relevant epidemiologic data on animal populations; a classic example is rabies control which has been successful only because data on the susceptible animals were available. In addition, the relationship between pet ownership and psychosocial aspects of medicine is well known (*1–4*).

Szasz observed, "to understand our present relationship to our pet animals and the intense preoccupation with animals in general that has, in the last decade or two, achieved the proportions of a social phenomenon, we have to study not so much the animals as ourselves . . ."(*5*). Demographic correlates of pet ownership in Alameda County, an urban-suburban area of California, have been reported by other researchers (*6*). For these reasons it was decided at the time of the Yolo County Health Survey (*7,8*) to inquire about pet ownership in connection with other relevant information on health and disease in this area of central California. Such information was collected during the survey, and the data were analyzed to determine demographic, economic, and medical associations with pet ownership in the county. This report describes the findings of

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a portion of the survey; namely, the description and characterization of households and pet ownership.

Methods and Materials

The study population consisted of persons normally living in private households located within the boundaries of Yolo Country (see chart) at the time of the survey, June 1970. A two-stage stratified random sample of these households was selected.

The county had been divided by the California State Department of Finance for its special censuses into 304 enumeration districts (ED). Each ED was a small, relatively homogeneous area. The districts varied in area and in the number of households. Consequently, the primary sampling units were selected with probability proportional to the number of households in the ED. The households within the chosen ED were selected randomly in the second stage of the sampling scheme.

The 304 districts were divided into four strata commensurate with certain characteristics of portions of the county (see chart). The first stratum was Davis, a university-oriented city with a population of 23,488 persons who have relatively high incomes. Woodland, the second stratum, is the county seat, had a population of 20,677, and is the agricultural center of the county. The third stratum, East Yolo, is composed of the unincorporated areas of Bryte, Broderick, West Sacramento, and Clarksburg. East Yolo had a population of 28,777 and is the industrial center of the county. The proportion of low-income minority groups is highest in this stratum. The fourth stratum, with a population of 18,846, is agricultural in character. Hereafter it is referred to as rural county; it comprises the balance of the county and is composed of farms and very small communities.

The 4 strata in the Yolo County Health Survey—1. Davis, 2. Woodland, 3. East Yolo, and 4. rural

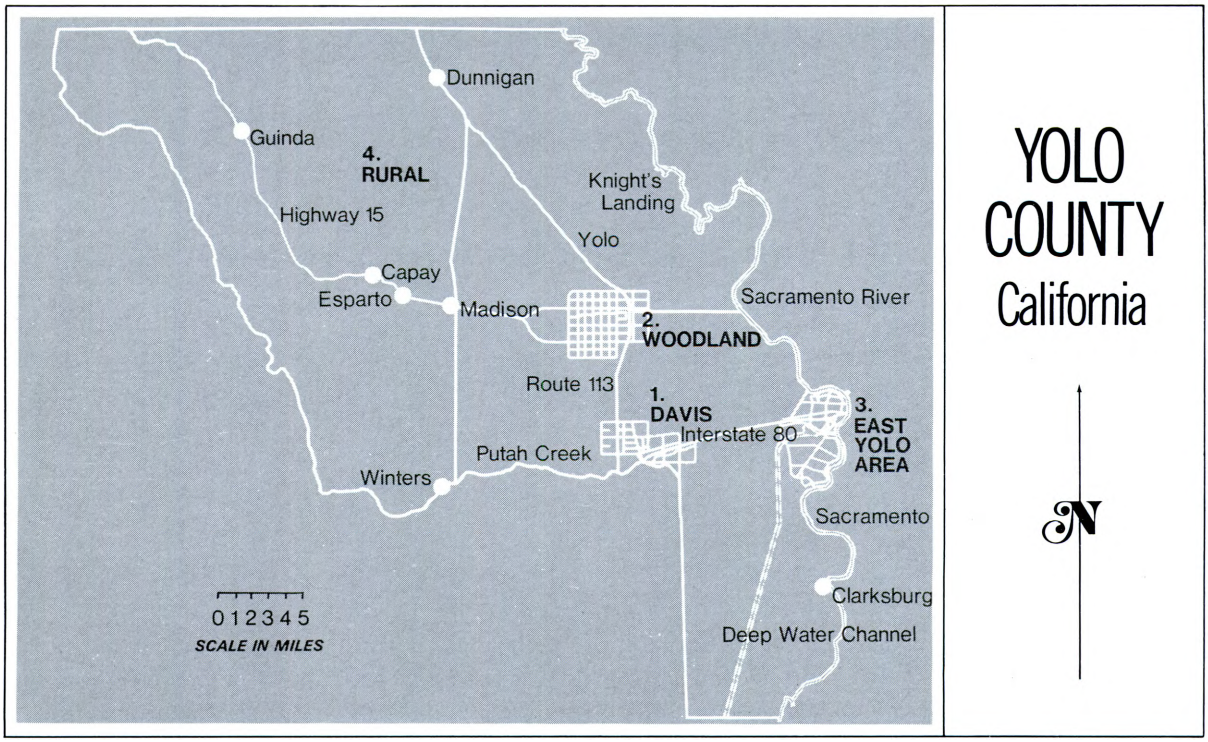

Table 1. Distribution of householders reporting pet ownership, Yolo County Health Survey, California, 1970

Stratum	Pet owner				Total households
	Yes		No		
	Number	Percent	Number	Percent	
Davis	139	61.2	88	38.8	227
Woodland	83	58.9	58	41.1	141
East Yolo	314	66.2	160	33.8	474
Rural	192	77.1	57	22.9	249
Total	728	66.7	363	33.3	1,091

NOTE: $X^2_3 = 19.1 > 16.3$; $P < 0.001$. Not all families answered all questions; therefore, the number of households differs in some tables.

Approximately 4 percent of the households in the county were to be sampled. Allowances were made for an expected vacancy rate of 10 percent and a 10 percent nonresponse to the questionnaire. Enumeration preceded the survey by about 2 months and its purposes were fourfold.

1. To identify, by address, those households to be included in the sample
2. To collect pertinent minimum information identifying households so that basic characteristics of the sample of housing units would be available
3. To inform the household members of the purpose of the health survey
4. To train field interviewers in the peculiarities of surveying rural households and to develop a quick sociodemographic data profile for comparison with data from the 1969 California census and the 1970 U.S. decennial census.

In addition to socioeconomic and demographic data collected by households, information was obtained concerning their individual members. These data included such items as medical complaints, health service expenditures, utilization of medical services, and needs. Prevalence data were obtained on such categorical health issues as family planning and nutrition. Information concerning pet populations included numbers of pets by species and breeds and the animal health problems, if any, within their households. Pets owned by the households surveyed were characterized and described in another report (*9*).

Results and Discussion

A response was obtained from 1,091 of 1,343 occupied housing units contacted during the interview phase of the study, resulting in a response rate of 81.2 percent. The rate of refusal to cooperate was 11.9 percent and, after five followup visits, 6.9 percent of the household occupants could not be reached at home. The response rates varied among strata: 93.8 percent in Davis, 83.4 percent in Woodland, 75.1 percent in East Yolo, and 82.7 percent in the rural area.

Data were collected from the 1,091 households representing a total of 3,638 persons, an average of 3.3 persons per household. This sample included 3.8 percent of all households in the county. Information was provided by the head of the household or the spouse in 98.8 percent of the households interviewed. All but 2.5 percent of the interviews were completed in June, the remainder being completed early in July at the request of the interviewee.

Pet ownership. All animals listed during the interview were considered to be owned by that household. Of the 1,091 households, 67 percent reported owning one or more pets, primarily dogs or cats (table 1). Of the 728 pet owners in the survey 551 householders owned dogs, 330 owned cats, and only 50 had a pet that was neither a dog nor cat. Among pets other than dogs and cats, the most popular were fish (89 households), birds (66), horses (37), rodents (35), rabbits (28), and turtles (20). In the context of this paper, "pet owner" may be inferred to be a dog or cat owner. Residents of the rural stratum reported the highest proportion of pet ownership (77 percent), about 59 to 61 percent of households in Woodland and Davis reported

Table 2. Distribution of pet ownership, by number of rooms in living quarters, Yolo County, Calif., 1970

Stratum and pet owner	Number of rooms: 1–2	3	4	5	6	7–8	9 or more	Total households
Davis	12	30	48	36	54	38	7	225
No	9	20	21	13	16	7	1	87
Yes	3	10	27	23	38	31	6	138
Woodland		18	28	40	31	17	7	141
No		14	15	15	9	4	1	58
Yes		4	13	25	22	13	6	83
East Yolo	18	57	112	175	82	27	3	474
No	13	35	43	47	15	7		160
Yes	5	22	69	128	67	20	3	314
Rural	18	12	51	74	50	35	9	249
No	16	3	15	9	7	6	1	57
Yes	2	9	36	65	43	29	8	192
Total	48	117	239	325	217	117	26	[1] 1,089
No	38	72	94	84	47	24	3	362
Yes	10	45	145	241	170	93	23	727

[1] No information on 2 households.

pet ownership, and the proportion of households in the East Yolo area owning one or more pets was 66 percent.

In a study of urban-suburban Alameda County, 33 percent of 4,337 households enumerated owned either a dog or cat (*6*). In Yolo County, 62 percent owned a dog or cat. Results of these two studies indicate a significant difference in pet ownership practices in urban-suburban and suburban-rural areas in California. Comparing suburban Alameda County with suburban Yolo County, the reported percentages for dog and cat ownership are about 44 percent for south county, the suburban stratum in the Alameda study, and 55–56 percent for the Woodland and Davis strata in the Yolo study.

Housing. The earlier Alameda County study indicated a relationship between type of dwelling and pet ownership (*6*). Those living in dwellings consisting of only one unit had a higher proportion of pets than those residing in multiple dwelling units. A similar relationship was found in Yolo County. For example, families or persons living in one-family nonfarm dwellings more frequently had pets than those living in 2- to 4-unit family nonfarm dwellings. It should be noted that one-family dwellings, including mobile homes, were most common (84–86 percent) in the Woodland and rural strata and that about 81 percent of residences in East Yolo were one-family dwellings. Davis, as may be expected in a university-oriented city, had the highest proportion of multiple-family dwellings, but nevertheless, 75 percent of the interviewees lived in single-family dwellings. Multifamily farm dwellings and migrant camps, found only in the East Yolo and rural strata, constituted only 3 percent of our sample in these two strata. Only one-third of the households in multifamily farm dwellings and migrant camps reported owning a pet.

Similarly, pet ownership was relatively infrequent among households living in three or fewer rooms (table 2). Among households with four or five rooms, pet owners outnumbered nonowners about 2 to 1, approximating the ratio of ownership in the countywide sample. The highest ratio of pet ownership to nonownership occurred in households having the greatest numbers of rooms. The distributions of household size differed significantly ($P < .01$) among strata, Davis and East Yolo having less than the expected number of households with six or more rooms and the Woodland and rural strata having an excess with six or more rooms. East Yolo also had an excess of four- or five-room houses, and the rural stratum had many fewer than the expected number of houses with three or less rooms. The significant differences observed in this preliminary test prompted further testing within strata. The data for size of living quarters were tested using three categories: three rooms or less, four or five rooms, and six or more rooms. All four chi-square tests (one for each stratum) indicated that status regarding pet ownership was not independent of number of rooms in living quarters ($P < .01$). Apparently, the greater the number of rooms, the greater likelihood that there also would be a pet in that household. Most multifamily housing such as apartments have fewer rooms or have restrictions on pets and, therefore, may account for the observed association between number of rooms and pet ownership.

A slightly larger proportion of the county's households was in good repair among pet owners than for nonpet owners (82 percent compared with 81 percent). However, among residents of the city of Woodland, the reverse was true; proportionately more nonowners had housing in good repair. As shown in table 3, the quality of housing was lowest in the rural county (62 percent in good repair), improved successively in east Yolo (82 percent) and Woodland (84 percent), and was highest in Davis (90 percent in good repair).

Household size. The median number of persons in households without pets was about two, and in households owning pets it was about three (table 4). Thus, it appeared that, measured by number of persons, as the size of the household increased, the proportion of households with pets also increased. For example, two-thirds of the one-person households did not report owning a pet, whereas only 18 percent of households with five members were without pets. This finding was consistent among all four strata, and it is similar to findings reported for Alameda County (*6*). Average, as compared with median, numbers of persons per household were as follows:

Status	*Average*
Pet owners:	
Davis	3.6
Woodland	3.8
East Yolo	3.6
Rural	3.7
Nonowners:	
Davis	2.3
Woodland	3.1
East Yolo	2.1
Rural	3.0

Table 3. Quality of housing among pet owners and nonowners, Yolo County, Calif., 1970

Stratum and pet owner	Percent in poor repair or dilapidated[1]	Percent in good repair[1]	Total number of households
Davis	10	90	227
No	16	84	88
Yes	6	94	139
Woodland	16	84	141
No	14	86	58
Yes	17	83	83
East Yolo	18	82	474
No	19	81	160
Yes	17	83	314
Rural	38	62	249
No	41	59	57
Yes	36	63	192
Total	18	82	1,091
No	19	81	363
Yes	18	82	728

[1] Percentage of row total.

Table 4. Pet ownership by size of household, Yolo County, Calif., 1970

Stratum and pet owner	Number of persons per household 1	2	3	4	5	6–7	8–11	Total households
Davis:								
No	[1]29	[2]36	11	20	3	1	....	88
Yes	8	26	[2]18	22	14	9	3	139
Woodland:								
No	23	[2]37	12	7	4	14	4	58
Yes	6	22	18	[2]23	14	15	1	83
East Yolo:								
No	23	[2]40	10	11	7	8	1	160
Yes	6	27	[2]18	22	11	14	2	314
Rural:								
No	25	[2]33	8	11	8	11	3	57
Yes	8	26	[2]18	20	13	12	4	192
Total	13	30	[2]15	19	10	11	2	1,091
No	25	[2]37	11	12	5	8	2	363
Yes	7	26	[2]18	22	13	13	3	728

[1] Distribution expressed as percentage of row total. [2] Median class.

Age. Obviously, the size of household and type of dwelling is related to the presence of children. Analysis of these data, by stratum and by age of household occupants, showed that the median age in pet-owning households did not exceed the median age in households without pets, although the respective median ages varied among strata (table 5). Consequently, one can infer that pet ownership in Yolo County is indeed related to the presence of children. In particular, pet-owning households had an "excess" number of persons 5 to 14 years of age when compared with households without pets.

Sex. The distribution of pet ownership by sex of household occupants (table 6) indicated that 51.4 percent of the occupants were male, and 48.6 percent were female in the total sample. However, Davis differed from the other strata in that females outnumbered males. Furthermore, except in Davis, the proportion of males among households without pets exceeded the proportion of males in pet-owning households. Interestingly, an examination of age, sex, and number of occupants (table 4) does not show the stereotype of the little-old-lady pet owner who emerged from Alameda County data (*6*). Perhaps the difference in age distribution of the populations in the two counties or a difference in pet ownership practices in urban Alameda and rural Yolo areas of California is responsible.

Employment. Employment status also appeared to be a characteristic related to pet ownership (table 7). For the entire county sample, about 55 percent of retired and unemployed householders owned pets. However, in Woodland, retired householders tended to not own pets (15 of 22 sampled), but in rural Yolo, retired householders were likely to own pets (31 of 45). In the Alameda County study, among retired and unemployed householders, only about 21 to 33 percent owned pet dogs or cats (*6*). In Yolo County, the majority of householders worked for someone else, that is, were wage- or salary-earners, ranging from about 52 percent in the rural stratum to 70 percent in Davis. Interestingly, the proportion of householders self-employed was greater among pet owners than nonowners in all four strata. In Alameda County (*6*), about 40 percent of employed householders owned pets, but in Yolo County, about 67 percent reported pet ownership. Countywide, the ratio of owners to nonowners was about 4 to 1 (105 to 24) for those self-employed and about 2 to 1 (459 to 214) for householders who worked for others. The proportion of self-employed householders was lowest in Davis and highest in rural Yolo County.

Among broad occupational categories (professional-managerial; clerical-sales-postmen; service occupations; military; farm-fishery-forestry; processing occupations; machine trades, benchwork occupations; structural occupations; and miscellaneous) the number of pet owners exceed nonowners. This finding was consistent for all

Table 5. Distribution of household occupants, by age and pet ownership, Yolo County, Calif., 1970

Stratum and pet owner	Age groups (years) of household occupants									Total occupants
	0–4	5–9	10–14	15–24	25–34	35–44	45–64	65+	Unknown	
Davis	60	58	82	[1] 180	144	63	92	20	1	700
No	20	12	8	58	[1] 49	13	28	13	1	202
Yes	40	46	74	[1] 122	95	50	64	7	0	498
Woodland	47	61	57	[1] 93	52	56	90	37	0	493
No	23	18	14	[1] 36	17	13	31	25	0	177
Yes	24	43	43	[1] 57	35	43	59	12	0	316
East Yolo	144	197	156	[1] 291	202	173	315	92	2	1,572
No	51	52	23	78	[1] 60	32	86	46	0	428
Yes	93	145	133	[1] 213	142	141	229	46	2	1,144
Rural	57	97	94	162	[1] 95	87	202	76	3	873
No	15	11	14	28	[1] 19	17	50	17	1	172
Yes	42	86	80	134	[1] 76	70	152	59	2	701
Total	308	413	389	[1] 726	493	379	699	225	6	3,638
No	109	93	59	200	[1] 145	75	195	101	2	979
Yes	199	320	330	[1] 526	348	304	504	124	4	2,659

[1] Median age class.

strata except Davis, where the number of nonowners exceeded owners for heads of household with service-related occupations. Almost 30 percent of heads of households in Yolo County reported professional or managerial occupations, ranging from a high of about 60 percent in Davis to slightly more than 10 percent in the rural part of the county, and more than 60 percent in this occupational category reported pet ownership. About 10 to 16 percent (by strata) of householders in the county reported clerical and sales occupations. Of these, 65 percent reported pet ownership.

Educational achievement. The lowest median level of educational achievement (some high school education) was among nonowners in the rural stratum. Completion of high school was the median level of achievement among pet owners in the East Yolo and Woodland strata

Table 6. Distribution of household occupants, by sex, and pet ownership, Yolo County, Calif., 1970

Stratum and pet owner	Male		Female		Total occupants
	Number	Percent [1]	Number	Percent	
Davis	339	48.4	361	51.6	700
No	94	46.5	108	53.5	202
Yes	245	49.2	253	50.8	498
Woodland	252	51.1	241	48.9	493
No	99	55.9	78	44.1	177
Yes	153	48.4	163	51.6	316
East Yolo	816	51.9	756	48.1	1,572
No	224	52.3	204	47.7	428
Yes	592	51.7	552	48.3	1,114
Rural	463	53.1	409	46.9	872
No	97	56.4	75	43.6	172
Yes	366	52.3	334	47.7	700
Total	1,870	51.4	1,767	48.6	[2] 3,637
No	514	52.5	465	47.5	979
Yes	1,356	51.0	1,302	49.0	2,658

[1] Percent of row total. [2] No information on 1 person.

Table 7. Distribution of pet ownership by employment status of head of household, Yolo County, Calif., 1970

Stratum and pet owner	Not employed		Retired		Self-employed		Self-employed and work for another		Work for someone else		Total households
	Number	Percent [1]	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Davis	33	15	12	5	14	6	8	4	159	70	226
No	16	18	6	7	4	5	2	2	59	68	87
Yes	17	12	6	4	10	7	6	4	100	72	139
Woodland	10	7	22	16	19	13	3	2	87	62	141
No	3	5	15	26	4	7	1	2	35	60	58
Yes	7	8	7	8	15	18	2	2	56	63	83
East Yolo	54	11	63	13	47	10	12	3	298	63	474
No	27	17	31	19	9	6	5	3	88	55	160
Yes	27	9	32	10	38	12	7	2	210	67	314
Rural	18	7	45	18	49	19	8	3	129	52	249
No	3	5	14	25	7	12	1	2	32	56	57
Yes	15	8	31	16	42	22	7	4	97	51	192
Total	115	11	142	13	129	12	31	3	673	62	[2] 1,090
No	49	14	66	18	24	7	9	2	214	59	362
Yes	66	9	76	10	105	14	22	3	459	63	728

[1] Percent of row total. [2] No information on 1 household.

(table 8). The highest median levels of educational achievement, completion of some college training, were reported for pet owners and nonowners in the Davis stratum.

Income. Median 1969 household income was about $8,000 among pet owners in Yolo County and about $6,000 among nonowners (table 9). In all income intervals except for those households with earnings less than $3,000, the number of households with a pet exceeded the number of households without a pet. Clearly, income level partially influences the ability of a household to afford single-family dwellings and other characteristics which appear to be associated with pet ownership. In Davis, pet owners had a median income of just under $12,000, and nonowners had a median income of about $7,000. In rural Yolo, the median income of pet owners was $7,000 and of nonowners, $4,500.

Table 8. Educational achievement of household occupants 16 years of age and older, by pet ownership of households, Yolo County, Calif., 1970

Stratum and pet owner	Elementary school		High school		Vocational training	College		Graduate school	Unknown (unstated)	Total occupants
	None or did not complete	Completed	Some	Completed		Some	Completed			
Davis:										
No	1	2	5	30	9	[1] 49	25	36	4	161
Yes	2	6	24	38	11	[1] 95	50	92	8	326
Woodland:										
No	6	21	19	[1] 26	5	18	9	5	9	118
Yes	5	17	34	[1] 72	9	32	12	6	7	194
East Yolo:										
No	25	41	46	[1] 87	18	58	6	11	8	300
Yes	30	64	151	[1] 267	41	122	31	16	24	746
Rural:										
No	33	29	[1] 28	25	3	5	3	2	2	130
Yes	39	74	99	[1] 135	15	63	20	8	18	471
Total	141	254	406	690	111	442	156	176	80	2,446
No	65	93	98	178	38	130	43	54	23	709
Yes	76	161	308	512	76	312	113	122	57	1,737

[1] Median class, excluding unknown (unstated).

Table 9. Distribution of pet ownership by household income, Yolo County, Calif., 1970

Stratum and pet owner	Household income (dollars)								Total households[1]
	<3,000	3,000–4,999	5,000–7,499	7,500–9,999	10,000–11,999	12,000–14,999	15,000–19,999	>20,000	
Davis	22	21	28	25	32	27	42	20	217
No	14	14	**16**	8	7	6	13	5	83
Yes	8	7	12	17	**25**	21	29	15	134
Woodland	21	9	24	25	18	12	13	13	135
No	14	5	**14**	6	5	4	5	2	55
Yes	7	4	10	**19**	**13**	8	8	11	80
East Yolo	67	45	84	68	55	84	26	22	451
No	32	19	**26**	19	19	17	6	11	149
Yes	35	26	58	**49**	36	67	20	11	302
Rural	40	**44**	39	20	27	21	17	16	224
No	16	**13**	6	6	3	5	2	2	53
Yes	24	31	**33**	14	24	16	15	14	171
Total	150	119	175	138	132	144	98	71	1,027
No	76	51	**62**	39	34	32	26	20	340
Yes	74	68	113	**99**	98	112	72	51	687

[1] 10 households in Davis, 6 in Woodland, 23 in East Yolo, and 25 in the rural stratum did not report income.

NOTE: The median class for the row is set in boldface; in the Woodland stratum the median lies between the 2 classes indicated.

Table 10. Responses to query, "In your opinion, is there an air pollution problem in Yolo County?" by pet ownership of respondent, Yolo County, Calif., 1970

Stratum and pet owner	No		Yes		No opinion	Total households
	Number	Percent[1]	Number	Percent		
Davis	73	33	145	66	1	219
No	42	50	42	50	0	84
Yes	31	23	103	76	1	135
Woodland	55	43	73	57	1	129
No	28	49	28	49	1	57
Yes	27	38	45	62	0	72
East Yolo	158	36	275	63	1	434
No	59	39	91	61	0	150
Yes	99	35	184	65	1	284
Rural	105	46	121	53	2	228
No	28	57	21	43	0	49
Yes	77	43	100	56	2	179
Total	391	39	614	61	5	[2] 1,010
No	157	46	182	54	1	340
Yes	234	35	432	65	4	670

[1] Percent of row total. [2] No response to question from 81 households.

Other aspects. The distribution of place of birth of the head of household indicated clearly that most residents of Yolo County are U.S.-born and that the proportion of U.S.-born is higher among pet owners than among nonowners.

The number of meals served per week is an interesting socioeconomic variable, and may be indicative of "style of living." About 60 percent of all households reported serving 20 to 29 meals per week, slightly more than 30 percent served 10 to 19 meals, and about 10 percent served less than 10 meals per week. Among pet owners, about 65 percent served 20 to 29 meals per week, and 7 percent served less than 10 meals per week. About 55 percent of nonowners served 20 to 29 meals, and 13 percent served less than 10 meals per week.

Pet owners appeared to be more sensitive to air pollution, judging from replies to the query, "In your opinion, is there an air pollution problem in Yolo County?'" (table 10). The proportions of affirmative replies differed significantly by strata ($P < .02$), but only in the Davis stratum did the proportion of affirmative replies among pet owners differ significantly ($P < .01$) from replies among nonowners. Within each of the four strata, the proportion of "yes" replies was higher among pet owners than among nonowners and, overall, the proportions of affirmative replies ranged from 43 percent among nonowners in the rural stratum to 76 percent among owners in Davis.

Pet ownership, per se, did not seem to be related to the "pet problem," because 23 to 24 percent of owners and nonowners alike reported illness (mainly allergies and bites) or discomfort (fear of attack, annoyance at barking dogs or yowling cats, and annoyance at feces litter) due to unleashed pets. Interestingly, there were differences in sensitivity among householders in the different strata: 16 to 18 percent in the rural stratum, 23 percent in East Yolo, 21 to 24 percent in Woodland, and 27 to 30 percent in Davis reported illness or discomfort due to stray or straying pets (table 11).

Medical services. Reported use of medical services by pet owners and nonowners differed widely among strata (table 12). In Davis, 40 percent of pet owners and 29 percent of nonowners reported using only a private ("family doctor") physician, but in the rural stratum, 58 percent of nonowners and 46 percent of pet owners used a family physician. In Woodland and East Yolo, both pet owners and nonowners used a family physician, but the percentages were about 52 percent for Woodland and 67 percent for East Yolo. Except in Davis, medical services were sought exclusively in a public clinic more frequently among nonowners than among pet owners. In Woodland and the rural part of the county, about one-sixth of nonowners sought medical services in a public clinic. This segment

Table 11. Sensitivity to the "pet problem", Yolo County, Calif., 1970

Stratum and pet owner	None		Illness [1]	Discomfort [2]		No reply	Total households
	Number	Percent		Number	Percent		
Davis:							
No	59	68	2	26	30	0	87
Yes	100	72	1	37	27	1	139
Woodland:							
No	45	78	1	12	21	0	58
Yes	61	73	1	20	24	1	83
East Yolo:							
No	122	76	1	37	23	0	160
Yes	238	76	3	70	22	4	315
Rural:							
No	48	84	0	9	16	0	57
Yes	157	82	1	34	18	0	192
Total	830	76	10	245	22	6	1,091
No	274	76	4	84	23	0	362
Yes	556	76	6	161	22	6	729

[1] Bites, allergies.

[2] Fear of attack, annoyance at barking dogs or yowling cats, annoyance at feces litter.

Table 12. Pet ownership by medical services normally used (in percentages), Yolo County, Calif., 1970

Stratum and pet owner	Private or family physician *a*	Private clinic *b*	*a*+*b*	Public clinic *c*	*a*+*c*	*b*+*c*	*a*+*b*+*c*	Other [2] *d*	Number of households
Davis:									
No	[1] 29	18	5	1	4	1	0	41	88
Yes	40	25	4	3	3	3	1	20	139
Woodland:									
No	52	18	9	16	6	0	0	0	58
Yes	52	24	5	7	5	2	2	3	83
East Yolo:									
No	68	11	1	6	4	1	0	9	160
Yes	67	11	3	4	4	0	0	11	314
Rural:									
No	58	4	8	17	4	0	0	8	57
Yes	46	23	6	12	5	1	1	7	192
Total	52	18	4	7	4	1	<1	13	1,091
No	51	15	5	8	5	1	0	16	363
Yes	53	19	4	6	4	1	1	11	728

[1] Distribution expressed as percentage of row total.

[2] Includes columns *a* + *d*, *b* + *d*, and other combinations of *a*,*b*,*c*, and *d*.

of the population may be largely field laborers and migrant farmworkers.

Family planning. Ninety-one percent of the pet owners favored family planning compared with 83 percent of the householders without pets. However, this difference is due mainly to the comparatively low proportion (61 percent) of nonowners in the rural stratum who favored family planning (table 13). "Ideal family size" did not differ by pet ownership. Owners and nonowners alike reported 2.7 children as the average number of children desired (table 14). Rural householders differed slightly from the other strata in number of children in the ideal family.

Conclusions

The results of the Yolo County survey indicate that several discernable differences exist between households with pets and those without pets.

Economically, income among pet owners is higher than among nonowners. Gainful employment also tends to imply pet ownership in Yolo County. Sociologically, rural residence indicates a greater likelihood to own a pet than does either suburban or urban residence. The presence of children in a household also increases the likelihood that pets will be part of that household. Demographically, the sex of household members does not appear to be related to pet ownership in that household (in Yolo County), but type of housing is related.

Pet ownership appears to be related more closely to economic factors than to purely medical factors, at least as measured by use of medical services. Levinson (*1–4*) has already described the utility of pets among patients who have sought medical aid for psychosocial problems, among the aged, and among children and adolescents in residential schools. The psychiatric preventive potential of pets within family units seems not to have been studied; perhaps it should be examined. General psychosocial aspects of pet ownership certainly deserve further study.

Table 13. Responses to query, "Do you believe in family planning?" by pet ownership of respondent, Yolo County, Calif., 1970

Stratum and pet owner	No		Yes		No opinion		Total households
	Number	Percent	Number	Percent	Number	Percent	
Davis:							
No	4	5	81	93	2	2	87
Yes	3	2	128	92	8	6	139
Woodland:							
No	3	5	52	90	3	5	58
Yes	4	5	78	94	1	1	83
East Yolo:							
No	14	9	134	84	12	7	160
Yes	21	7	284	90	10	3	315
Rural:							
No	12	21	35	61	10	18	57
Yes	10	5	173	90	9	5	192
Total	71	6.5	965	88.5	55	5.0	1,091
No	33	9.1	302	83.4	27	7.5	362
Yes	38	5.2	663	90.9	28	3.8	729

Table 14. Number of children in the ideal family, by pet ownership of respondent, Yolo County, Calif., 1970

Stratum and pet owner	0	1	2	3	4	5	6 or more	No answer	Total
Davis:									
No	2	4	[1] **50**	16	4	1	....	10	87
Yes	4	6	**74**	23	7	2	....	23	139
Woodland:									
No	1	....	**25**	**13**	6	4	3	6	58
Yes	1	....	36	**25**	10	3	....	8	83
East Yolo:									
No	1	3	**67**	39	24	1	5	20	160
Yes	4	3	**136**	79	47	3	2	41	315
Rural:									
No	1	....	13	6	**16**	3	4	14	57
Yes	2	2	61	**57**	34	5	5	26	192
Total	16	18	462	258	148	22	19	148	1,091
No	5	7	**155**	74	50	9	12	50	362
Yes	11	11	**307**	184	98	13	7	98	729

[1] The boldface number in each line is the median; in the Woodland stratum the median lies between the two boldface numbers.

As noted by other authors, the social phenomenon of pet ownership deserves further study. That pet ownership is indeed a social phenomenon is exemplified by the fact that pet ownership in Alameda County occurred in about one-third of the households in 1965, but had increased to about one-half of the households in 1970 (personal communication from R. Schneider, Alameda-Contra Costa Animal Neoplasm Registry, 1974). It is surprising that the U.S. Bureau of the Census has not routinely collected data on pet ownership. Such data, collected regularly on at least a sample of the population, would do much to characterize this social phenomenon and answer questions which have been raised by the present and other studies.

The "pet problem" alluded to earlier is, of course, a series of problems, including annoyance at barking and feces litter, fear of attack by straying pets, and illness (zoonotic diseases, bites, and allergies). Furthermore, the pet problem is not unique to urban or suburban areas; rural pet problems include economic losses suffered by sheep and cattle owners whose animals are destroyed by roving packs of dogs. Although solution of the pet problem per se was not a central point of the Yolo County survey, the survey results suggest the problem is not unsolvable. Since pet owners tend to be at least as well educated, have higher incomes, and are more sensitive to environmental problems than nonowners, increased awareness of the various pet problems by pet owners and nonowners alike should do much to alleviate those problems.

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FRANTI, CHARLES E. (University of California School of Veterinary Medicine, Davis), KRAUS, JESS F., and BORHANI, NEMAT O.: ***Pet ownership in a suburban-rural area of California, 1970. Socioeconomic, demographic, and medical aspects. Public Health Reports, Vol. 89, September–October 1974, pp. 473-484.***

Socioeconomic, demographic, and medical aspects of pet ownership were studied in a suburban-rural area, Yolo County, Calif. The study area was divided into four strata; one was strictly rural, and the others were suburban or semi-urban. A two-stage stratified random sample of households was selected. Data were collected from 1,091 households (3,638 persons) or 3.8 percent of the county's households.

Pet owners (67 percent of the households) were found to have higher average incomes than nonowners, were likely to live in larger households or apartments, to belong to larger households, and were likely to think there was an air pollution problem in Yolo County. Pet ownership also appeared to be related to the presence of children 5–14 years of age in the household. Self-employed persons were more likely to own pets than those who worked for others, but pet ownership did not appear to be related to educational achievement or sex of the adult members of the household.

Pet owners were more likely to use private physicians or private clinics for medical care than were householders without pets. Reported number of children in the ideal family was about 2.7 for nonowners as well as owners. About 83 percent of nonowners and 91 percent of pet owners favored family planning, but the percentages varied widely by strata. Demographic and economic characteristics are compared with results from a study of an urban-suburban area, Alameda County, Calif.

A Note on the Adjustment of Rates

ISIDORE ALTMAN, PhD

IN ADJUSTING RATES or standardizing them to remove the effect of certain variables, usually age and sex, a simple procedure is customarily followed. As a consequence, no doubt, little is to be found on the subject in the literature, at least on the elementary aspects.

At present I am engaged in a study that requires considerable adjustment for age, sex, and county of residence (seven counties in New York State), and despite the availability of a computer, much of the arithmetic for the study has to be done with a desk calculator. In laying out the process, I discovered that use of a single standard population permitted several shortcuts.

If an adjusted rate was desired for both sexes combined after an adjustment for age had been made for each sex, one could simply add the two age-adjusted rates and divide by 2. As a corollary, if one wanted to adjust for sex within a specific age group—for example, to make certain that the difference in hospital days between two populations of persons aged 65–69 was not due to the presence of more males in one of them—one simply added the two crude rates for males and females and divided by 2. The reason the crude rates can be used in this way is that it is assumed that there are the same number of people of each sex.

In the actual study, data on utilization are being collected over a period of 4 years, 1969 through 1972, for a study population and a control population of elderly persons on Medicare. There are close to 50,000 persons in each population. The two populations will change a little from year to year as persons die or move away and new persons meeting the criteria for the study reach 65 years of age. The 1969 population is being used as the standard for adjusting the data for each of the 4 years of the study. Otherwise, the data for individual years could not be compared.

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The sex and age distribution of the populations to be compared was as follows for 1969:

Sex and age groups	*Population A*	*Population B*
Total	47,665	47,138
Males		
65–69	9,743	7,119
70–74	7,197	5,737
75–79	4,056	3,827
80–84	1,676	1,938
85 and over	454	842
Females		
65–69	9,821	8,988
70–74	8,240	8,167
75–79	4,454	5,709
80–84	1,584	3,247
85 and over	440	1,564

These numbers were combined into one age distribution for both sexes, and to save many later calculations, this numerical distribution was converted into proportions adding to 1, following the notion of the standard 1 million.

Age groups	*Persons*	*Proportion*
Total	94,803	1.0000
65–69	35,671	0.3763
70–74	29,341	.3095
75–79	18,046	.1903
80–84	8,445	.0891
85 and over	3,300	.0348

Observed and expected rates for males

Age group	Observed rates		Standard population	Adjusted rates	
	Population A	Population B		Population A	Population B
65–69	273.4	420.6	0.3763	102.9	158.3
70–74	358.3	384.7	.3095	110.9	119.1
75–79	458.9	473.0	.1903	87.3	90.0
80–84	522.4	523.2	.0891	46.5	46.6
85 and over	604.9	541.2	.0348	21.1	18.8
All ages	362.1	436.4	1.0000	368.7	432.8

The direct method of adjusting rates was followed. Proper use of the calculator eliminates the need to write anything down but the adjusted rate. For those who may not have used the procedure since they were introduced to the subject in an elementary biostatistics course, an illustration has been worked out—based on days in the hospital per 1,000 population (see table).

The crude rates for males were 362.1 and 436.4 and the adjusted rates, 368.7 and 432.8. Similarly, the crude rates for females were 268.4 and 347.3 and the adjusted rates, 274.6 and 334.0 (computations not shown). By our method, the adjusted rates for males and females combined were 321.6 and 383.4 ((368.7 + 274.6) ÷ 2 and (432.8 + 334.0) ÷ 2)).

Algebraically, we can represent the procedure this way (which we might have done in the first place):

If $w_1 \ldots w_5$ represent the five weights, m_1 the observed rates for males 65–69, and so forth, the standard calculation (but using one set of weights instead of two) can be displayed thus:

$$\frac{w_1m_1 + w_2m_2 + \ldots + w_5m_5 + w_1f_1 + \ldots + w_5f_5}{w_1 + w_2 + w_3 + w_4 + w_5 + w_1 + w_2 + w_3 + w_4 + w_5}$$

$$= \frac{\sum_{i=1}^{5} w_i m_i + \sum_{i=1}^{5} w_i f_i}{2\sum_{i=1}^{5} w_i}$$

$$= \frac{1}{2}\left[\frac{\sum_{i=1}^{5} w_i m_i}{\sum_{i=1}^{5} w_i} + \frac{\sum_{i=1}^{5} w_i f_i}{\sum_{i=1}^{5} w_i}\right]$$

Because the same sets of weights was used for males and females, the adjusted rate for the two sexes combined is the sum of the rates for each sex divided by 2.

A similar procedure was used for the county adjustment. There were seven counties in our study so that a question arose as to how we could be sure that a difference in the rate for hospital days, say, between population A and population B, was not due to the distribution of these populations by county—a difference that would influence the effect of differences between counties in rates. We asked what the rates in A and B would look like if each population had the same distribution by age, sex, and county. (Crude rates will be published along with the adjusted rates.)

Our first approach was to use a different standard population in each county, calculate the expected days (or whatever the variable) for each county for A and B, sum the subpopulations and the expected days, and divide the latter result by the former:

Total expected days (sum for 7 counties) ÷
standard population (sum for 7 counties).

Now if we use the same standard population (SP) throughout, then each county rate—which we want—is the total expected days in the county (EDC) divided by SP (say $EDC_1 \div SP$, the expected rate for county 1). For the total study area, we then have (as in the case of the adjustment for sex):

$$\frac{EDC_1 + EDC_2 + \ldots + EDC_7}{7\,SP}$$

$$= \frac{1}{7}\left[\frac{EDC_1}{SP} + \frac{EDC_2}{SP} + \ldots + \frac{EDC_7}{SP}\right]$$

That is to say, we add the adjusted county rates and divide by 7.

Because this procedure, elementary as it is, saved us considerable effort, it seems worth a note—or footnote.

PROGRAMS □ PRACTICES □ PEOPLE

The 102d Annual APHA Meeting Will Focus on the Health of Poor and Nonwhite Americans

■ With a solid emphasis on the health status of nonwhite and poor Americans, the 102d annual meeting of the American Public Health Association will get under way in New Orleans, La., on October 20, 1974.

Heavily weighted with meetings, symposia, roundtables, scientific papers, and special sessions devoted to the needs of the poor, the meeting will be in part designed to investigate ways of bringing the poor and disadvantaged into the mainstream of health care and careers. Partial funding ($80,935) for the conference came from three agencies of the Department of Health, Education, and Welfare—the Health Resources Administration, the Health Services Administration, and the Alcohol, Drug Abuse, and Mental Health Administration. Assistant Secretary for Health Dr. Charles E. Edwards has heartily endorsed the theme of the meeting.

The opening general session on October 21 will take the form of a retrospective view of the health of nonwhite and poor Americans in the last decade. The keynote speaker will be Cesar E. Chavez, president of the United Farm Workers of America. The meeting will also be addressed by Sargent Shriver, former director of the Office of Economic Opportunity and of the Peace Corps.

Other sessions will focus on the many concerns of disadvantaged Americans seeking to gain access to health care. There will be discussions of the mental health of nonwhite and poor Americans, migrant health, health education in rural areas, and minority health manpower. A special session, "Establishment vs. Minorities," will deal with the resolution of intercultural group conflicts. The vision care and dental health of medically underserved populations will be the subjects of other special sessions, as well as their nutritional status and problems of alcohol use.

These sessions will be added to scores of other meetings of more traditional interest to APHA members.

In an editorial in this issue of *Public Health Reports,* Dr. Kenneth M. Endicott, Administrator of Health Resources Administration, takes note of the meeting and wishes the participants much wisdom in their deliberations. Says Endicott, "If the needs of the disadvantaged people of America are to be met—as I believe they must be—we are going to have to apply to the problem all the concentrated wisdom and good will we can find."

For more information on the APHA meeting, contact the American Public Health Association, 1015 Eighteenth Street, N.W., Washington, D.C. 20036 —telephone (202) 467-5050.

NIH Will Implement Research on Aging Act

■ The National Institutes of Health, as the lead agency, is developing a plan to implement the Research on Aging Act of 1974 (Public Law 93–296) at the request of Dr. Charles C. Edwards, Assistant Secretary for Health, Department of Health, Education, and Welfare.

The major objective of the new legislation is the establishment at the NIH of a National Institute on Aging. The new Institute will conduct and support biomedical and behavioral research and research training on the aging process and on the diseases and other special problems and needs of the aged. The language of P.L. 93-296, which was enacted into law May 21, 1974, and its legislative history clearly indicate Congressional intent to expand the health-related research on aging and the aged currently being performed at NIH and, particularly, at the National Institute of Child Health and Human Development.

In addition to establishing the National Institute of Aging with full Institute status and responsibilities, the new law contains two other objectives which, while somewhat broader in scope, relate to the expansion of health research activities in aging. These are (*a*) development within 1 year of a research plan designed to coordinate and promote research into the biological, medical, and psychological, social, educational, and economic aspects of aging and (*b*) conducting scientific studies to measure the impact on the biological, medical, and psychological aspects of aging of all departmental programs. Less closely related is a third provision—assuring the education and training of adequate numbers of allied health, nursing, and paramedical personnel to work in the field of aging.

In drawing up the implementation plan, the National Institutes of Health will work with the Administration on Aging, which clearly has a key role in the aging area; the Alcohol, Drug Abuse, and Mental Health Administration; the Health Resources Administration; the Social Security Administration; and other departmental components which would have responsibilities to one degree or another under the new law. Coordination by the National Institutes of Health is particularly suitable given the fact that the major purpose of the Research on Aging Act is to expand biomedical and behavioral research in aging and that the law is only tangentially related to the provision of services to the aged, an activity with which many other agencies of the Department are concerned.

The National Institutes of Health is preparing an annotated time table describing the specific steps to be taken to implement the law. This initial plan will detail how the National Institute on Aging will be organized, how overlapping authorities of other agencies will be dealt with, and how the National Institutes of Health will proceed in the coordination of research planning activities in the field of aging.

NCHS and NCHSR Given Statutory Authority

■ The National Center for Health Statistics (NCHS) and the National Center for Health Services Research (NCHSR) were statutorily created as centers with the enactment of Public Law 93–353 on July 23, 1974. The law also provides that the directors of the two centers are to be appointed by the Secretary of Health, Education, and Welfare.

P.L. 93–353, the Health Services Research, Health Statistics and Medical Libraries Act of 1974, also contains a number of provisions governing the activities of the National Center for Health Services Research. For example, it requires that at least 25 percent of the health services research appropriations be used for health services research undertaken directly by the Secretary.

The statute also requires, to the extent practicable, that the NCHSR fund six new multidisciplinary centers devoted to health services research. Two of the centers will be specialized; one will focus on the application of technology to health care delivery and the other will concentrate on improving the management and organization of health care delivery.

Under the new law, all grants and contract applications in excess of $35,000 and for assistance under the authority establishing the NCHSR must be reviewed by a panel of nongovernmental experts chosen by the Secretary. The act restricts to 20 the number of grants and contracts and to $5 million the aggregate funds devoted to any particular means or aspect of health services research.

The law continues the authority for the various activities of the NCHS; for example, the Health Interview Survey, the Health and Nutrition Examination Survey, vital statistics, the Family Growth Survey; the Master Facility Inventory Program; and the Cooperative Federal - State - Local Health Statistics System.

Other provisions of the law concern the dissemination of health information. Periodic publication of public health information and weekly publication of the status of foreign and domestic health conditions are required, as is the prompt, broad dissemination of the results of health services research, evaluations, and demonstration and of the data developed in these activities.

P.L. 93–353 establishes, in the Office of the Secretary, a National Committee on Vital and Health Statistics. The 15 members, appointed by the Secretary, will advise and assist him in the following activities:

- Delineate and stimulate studies of national or international health statistical problems
- Determine and approve methods for assessing health status and health costs for all departmentally administered or funded programs and, where applicable, for the Veterans Administration, Department of Defense, and other Federal agencies
- Design and approve health statistical and information systems
- Cooperate with national committees of other countries and the World Health Organization on studies of mutual interest
- Issue an annual report on the state of the nation's health services, distribution, and costs.

Appropriations authorized for NCHSR were $65.2 million for FY 1975 and $80 million for FY 1976. For NCHS, the appropriations totaled $30 million for FY 1975 and the same amount for FY 1976. These appropriations would be automatically extended at the 1976 level through FY 1977 unless Congress acts to amend or repeal the authority.

The Medical Library Assistance Programs were also extended through 1977 unless Congress acts to amend or repeal the authority. The appropriation for these programs was $17.5 million for FY 1975 and $20 million for FY 1976.

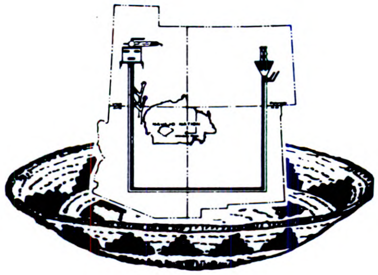
Further, the act requires the Secretary to convene an annual conference of State health authorities and officials of other appropriate State, local, public, or private organizations. State mental health officials must be included when mental health concerns are discussed at these conferences.

Navajo Health Authority Is Planning Pan Indian Medical School

■ The first medical school for American Indians, a center for health professional education including Alaska Natives and other minority group members such as Blacks and Chicanos, is now being organized. It is hoped that the first class of 25 medical students can be enrolled by 1977. To be located within the 25,000 square miles of the Navajo Nation, the school will be fully accredited and the curriculum will include both modern medical teaching and education and research in native healing practices and remedies.

Eventually, in addition to training physicians, the school will prepare students for careers in the health professions, for example as dentists, veterinarians, nurses, technicians, laboratory assistants, and record keepers.

Dr. Taylor McKenzie, executive director of the Navajo Health Authority, with advisory assistance from a 25-member board of commissioners, is guiding the planning for the school. Functions of the Authority, created in June 1972, are to establish the pan-Indian medical school and to lead in the planning, operation, and evaluation of a health service system for the Navajos. The system may also serve as a model for other Indian communities, where isolation frequently creates special health problems.



Funding plans have been set in motion to obtain the estimated $38 million necessary to establish the school. It is expected that the school will be funded with a combination of Federal support, tribal support, private gifts, and foundation grants.

Health areas of special concern to Indians which will be encompassed in the curriculum, are emergency medical services, preventive medicine, family and community medicine, native healing sciences, public health education, training of veterinary assistants, and development of medical libraries.

One reason for establishing the school is the lack of Indian health professionals—only 50 Indians have been identified among the 340,000 U.S. physicians. A second reason is the health status of American Indians. Indians presently have a life expectancy of 65 years compared with 71 years for the total U.S. population, Indian infant mortality is 1.1 times the national average, and the incidence of upper respiratory disease is four times the national average.

Physicians Will "See" Patients Via Satellite

■ The National Library of Medicine (NLM) will use the National Aeronautics and Space Administration's newest communications satellite, the ATS-6, in experiments to extend physician services and medical education in Alaska and the State of Washington. NLM's Lister Hill National Center for Biomedical Communications, working with the Health Services Administration and the Health Resources Administration, will coordinate the experiments.

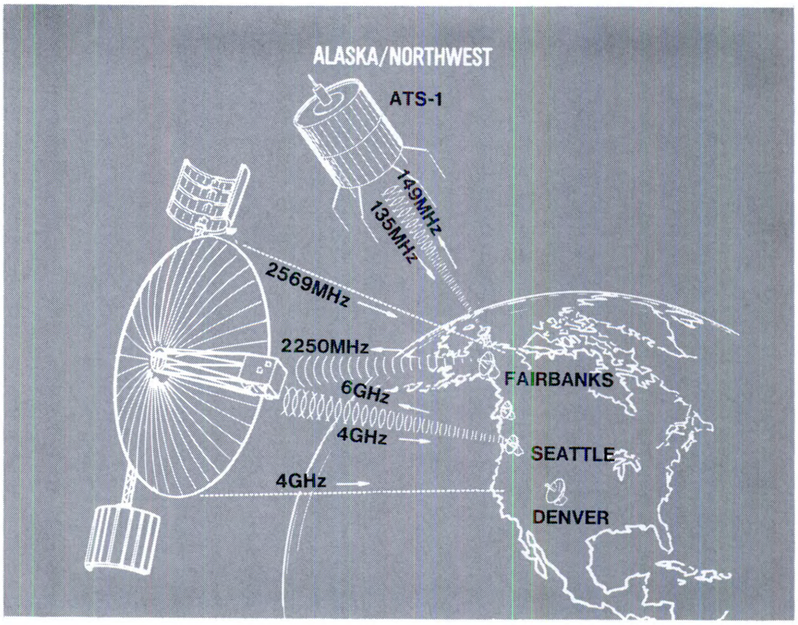
The satellite, with its capability for transmitting high-quality television, will allow physicians at the Indian Health Service Hospital in Tanana, Alaska, and medical specialists in Anchorage, Alaska, to "see" for the first time patients at the remote Alaskan villages of Galena (population 425) and Fort Yukon (population 630) and to prescribe treatment and follow the patients' progress.

The Center for Biomedical Communications is having a direct effect on the lives of New Englanders and elderly residents of a public housing project in New York's East Harlem, as well as Alaskan Natives. In each case, the key to the Center's involvement is the application of modern technology to improve biomedical communication.

Working with and coordinating the efforts of the Health Services Administration and the Health Resources Administration, the Center set up a reliable voice communications link via ATS-1 satellite in the summer of 1971, which connected physicians at the hospital in Tanana with health aides in 26 outlying Native villages. The experience gained with this network has provided a solid basis for the expanded experiments to be tried via ATS-6.

The existing audio network has been credited with saving lives in several medical emergencies—severe burns from a stove explosion and serious complications during childbirth. The satellite communications network was able to make step-by-step first aid instructions available to the village health aide, followed by prompt air evacuation of the patient.

"More important in the long run than these spectacular successes," said Martin M. Cummings, MD, director of NLM, "is the dramatic increase in the number of patients who have been treated with the advice of a physician in those villages where the satellite radio has been installed. This consultation will be even more effective when the physician can actually see the patient via high-quality television transmitted by the ATS-6 satellite."



Alcohol Misuse Costs U.S. $25 Billion a Year

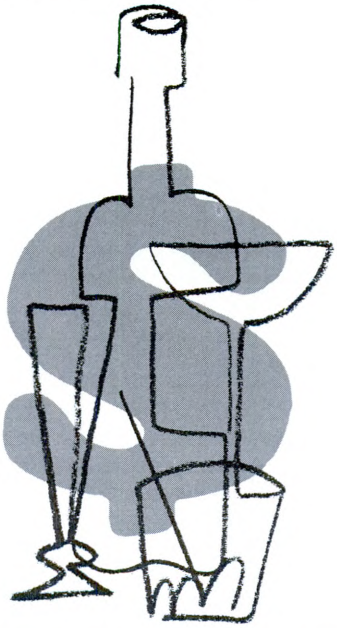
■ Caspar W. Weinberger, Secretary of Health, Education, and Welfare, cited the "Second Special Report to the U.S. Congress on Alcohol and Health" as a significant step forward in our understanding of the use and misuse of alcohol. The Secretary called alcohol misuse and alcoholism an epidemic health and social problem in the United States which, the report estimates, costs the nation $25 billion annually. Previous estimates had placed the economic drain on the country from alcohol problems at $15 billion a year.

The Secretary said he was "concerned by the extensive use of alcohol by youngsters," cited in the report, but added that he was reassured that the majority of Americans consume alcohol with no adverse effects.

The 219-page report, which was sent to Congress last July, was prepared by a 38-member task force chaired by Morris E. Chafetz, MD, director of the National Institute on Alcohol Abuse and Alcoholism, part of the Department's Alcohol, Drug Abuse, and Mental Health Administration.

Following are some major findings in the report:

- Moderate consumption of alcohol by nonalcoholic persons is generally not harmful. In some cases, such as among the elderly, it may have beneficial physical, social, or psychological effects.
- The proportion of American youth who drink has been increasing so that currently it is almost universal. The highest scores on an index of possible problem-drinking behaviors were recorded in the youngest age group for which data are available, the 18- to 20-year olds.
- Excessive use of alcohol, especially when combined with tobacco, has been implicated in the development of certain cancers, with nonwhite males appearing to be especially susceptible.
- Heavy drinking during pregnancy can adversely affect the offspring of alcoholic mothers, but the significance of heredity on alcoholism is as yet unresolved.
- The public suffers from much ignorance concerning alcohol and ambivalent feelings toward it. Heavier drinkers apparently know less about alcohol than do lighter drinkers or abstainers.



- The nonexcessive use of alcohol does not appear to affect adversely the overall mortality rate or the mortality from a specific major cause of death, coronary heart disease. There is some evidence that the mortality of drinkers from this cause is lower than that of abstainers and ex-drinkers, but this is not conclusive by any means.

Alcoholism is a treatable illness, but different treatments are required by different persons. Increasingly, individual treatment needs can be determined on the basis of valid studies or clinical experience.

Among the recommendations made in the report are the following:

- Develop new and revised national policies and guidelines governing the distribution and sale of alcoholic beverages.
- Extend quality and comprehensive care to alcoholic people through coverage under health and disability benefits and the establishment of standards for care.
- Demonstrate the values of early identification and treatment programs in business and industry on a national scale.
- Redouble efforts to decriminalize alcoholism and public intoxication.

Outpatient Departments As Primary Care Providers

■ A major problem in urban health care delivery is the increased dependence on the hospital outpatient department as a primary care provider. The problem rises from population growth of the economically deprived and a concurrent decrease in practicing primary care physicians. Outpatient departments and emergency rooms of urban hospitals have not been structured or staffed to meet this demand for primary care. The result has been fragmented care, with specialty rather than primary orientation, overcrowded facilities, long waits, no doctor-patient relationships, and high staff and patient disatisfaction.

A report recently released by the Health Resources Administration, documents how eight urban hospitals reorganized their outpatient departments to provide more appropriate, efficient, and comprehensive primary health services. "A Study of Selected Innovative Hospital Programs in Ambulatory Care," prepared by Bio-Dynamics, Inc., of Cambridge, Mass., cites changes initiated by the eight study hospitals that resulted in better delivery of primary care services:

1. Their outpatient departments were established as distinct organizational units within the hospital, which resulted in greater authority, independence, recognition, and prestige for the units.

2. House staff members were assigned on a long-term basis, full-time physicians were hired, and supporting health professionals were used.

3. Coordinated systems of primary care were established, usually including team practices and integrated medical records.

4. One of the most significant changes was in finances; a reduction, and in some cases almost an elimination of losses, was achieved through careful accounting and billing practices.
The hospitals vigorously pursued third-party reimbursements and in a few instances adopted prepaid plans.

Such changes and innovations have enabled the hospital outpatient departments in the study to extend their contribution to the community and to help meet the pressing problems of delivering high-quality primary health care to those in need. They might be duplicated by many other institutions in part, in total, and even in enriched forms.

The full report may be obtained from the National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 22151. Please order by Accession No. PB-233 921/AS. Price for the 324-page report is $7.50 per copy.

20-Minute Treatment Aids Smoking Cessation

■ Getting cigarette smokers to "kick the habit" is no easy matter, but a physician in Portland, Oreg., has announced successful results with his program.

Breathing tests and a questionnaire asking about respiratory symptoms, plus a person-to-person discussion of the smoking problem with visitors to a lung disease screening center have resulted in a 20 percent quitting rate among smokers. This cessation rate of one in five compares favorably with results of most programs that require considerably more time and personnel. Dr. James F. Morris, chief, Pulmonary and Infectious Diseases Section at the Veterans Administration hospital in Portland, reported these results at the joint annual meeting of the American Lung Association and its medical section, the American Thoracic Society, held in Cincinnati, Ohio, in May 1974. The rate is typical of most intensive 5-day or longer programs, he said.

The test results for current smokers were in sharp contrast with those for participants who had never smoked regularly, said Morris. In the study, which was supported by Christmas Seal funds, each of four spirometric tests of lung capacity showed a progressive decline in lung function among smokers, accompanied by an increasing severity of various symptoms as revealed by the participants on their questionnaires. These included morning cough or throat-clearing, the bringing up of mucus or phlegm during the day, shortness of breath, and wheezing. All test results were closer to normal in nonsmokers.

Followup evaluation after 18 to 36 months revealed that 20 percent of the smokers had quit smoking as a direct result of their visit to the screening center. Morris said that the use of the questionnaire and spirometry provided an effective program for smoking cessation.

Morris' report was based on records of 1,652 participants at the Emphysema Screening and Research Center organized by the Oregon Lung Association and the Oregon Thoracic Society. Forty percent of the participants were referred by private physicians and 10 percent by various governmental agencies; 50 percent came in response to advertisements; 41 percent had a prior diagnosis of emphysema, chronic bronchitis, asthma, or hay fever.

There were 958 men and 694 women between the ages of 18 and 90, with an average age of 50 years. Forty-three percent were cigarette smokers, 25 percent had never smoked regularly, and 32 percent were excluded from the study because they were exsmokers or were pipe and cigar smokers.

Each participant completed the questionnaire about symptoms and took the breathing capacity tests. Immediately after the testing, a technician, in a one-to-one educational presentation, showed the participant how his results compared with those of an average healthy nonsmoker of similar age, height, and sex and stressed the significance of the symptoms. The entire testing and discussion process took about 10 to 20 minutes per screenee.

AMA Committee Seeks Better Day Care For Children

■ Parental care for children is better than day care in a center away from home, but if day care becomes necessary, it should be good care. This is the view expressed in a recent statement of the American Medical Association's Committee on Maternal and Child Care.

Today, says the statement, great numbers of children are receiving day care of widely variable quality, whether the programs are locally licensed or not. The Committee on Maternal and Child Care, "concerned with the physical and mental health and development of all children, is supportive of well-qualified, critically licensed and regularly monitored Day Care centers." Although "convinced that parental care is generally to be preferred for optimal performance as adults," the committee recognizes that children require nurturing, security, and supervision not always available in the home, especially when both parents work outside the home.

Consequently, when it is desirable to assist parental care during childhood development, physicians have a responsibility to encourage parents to seek out services, such as quality day care programs. A physician having the opportunity to influence the organization of day care facilities or programs in his or her area is urged to consider the recommendations drawn up by the Committee on Maternal and Child Care.

Mere custodial care is unacceptable, the statement emphasizes. Competence at every level, maintained by ongoing education and training for staff members, can offer children enrolled in day care an opportunity for optimal achievement. The staffing standards recommended by the American Academy of Pediatrics and the Office of Child Development, Department of Health, Education, and Welfare, should be adopted.

The centers should be readily accessible, properly staffed, be able to handle individual needs of children, and have activity programs of good quality.

Charges for day care services should be set according to a family's ability to pay, and in certain cases the cost should be subsidized by a third-party payer. The centers must involve parents if they are to supplement the child's home experiences effectively. The "curriculum" should permit each child to advance at his own pace.

The facility, whether large or small, must be safe, adequate in living space, and appropriately equipped to serve the interests and needs of children of variable ages. Care should be available for children from the newborn period through adolescence.

Experts Recommend Ending Lifetime Followup Of Ex-TB Patients

■ Because modern drugs can cure rather than merely arrest tuberculosis, Federal and other medical experts are recommending abandonment of traditional lifetime followup for those ex-tuberculosis patients who successfully complete their drug therapy.

For patients, the new recommendations mean they will no longer need to check periodically with their physicians to make certain their disease has not reactivated. For physicians, discontinuing lifetime followup means releasing medical personnel and clinic funds to provide better care for the 30,000 Americans discovered with new active tuberculosis each year and for other needed TB services.

In February 1974, the Center for Disease Control (CDC), Public Health Service, recommended discharging from medical care TB patients who complete adequate drug therapy. The recommendation was explained and discussed at the annual meeting of the American Lung Association held May 12-15, 1974, in Cincinnati, Ohio. Among the participants in the discussion panel were Lee B. Reichman, MD, chief of pulmonary medicine at Martland Medical Center and associate professor of medicine at the College of Medicine and Dentistry of New Jersey, John Edsall, MD, physician in charge of the Harlem Hospital Chest Clinic, and William C. Bailey, MD, assistant professor of medicine, University of Alabama School of Medicine.

Edsall cited a study indicating that routine followup of 13,000 patients in New York City identified only 80 patients with reactivated tuberculosis in 1970. Further investigation revealed that more than half of these had not received adequate chemotherapy. Of the remaining patients, all but three had other serious medical problems which could have interfered with treatment for tuberculosis. These patients should be under continuing medical supervision, although not necessarily in a chest clinic, Edsall said.

Reichman, formerly assistant commissioner of the New York City Health Department, said that the department in 1972 evaluated, then discharged 7,491 patients who had successfully completed antituberculosis drug therapy. Assuming 1.5 patient visits each year for this group, at $26.35 a visit, the discharge from followup resulted in a savings of $296,082, he stated.

A 7-year study by the New Orleans Health Department indicated a similar experience, according to Bailey, who formerly directed the New Orleans Chest Clinic. Only 4 percent, or 63 of 1,585 patients, had reactivated TB. Because only 7 of the 63 had completed 2 years of treatment with drugs, he concluded that the cost of following adequately treated patients was unjustified.

Approximately 176,000 recovered TB patients are followed in the United States. If nationwide experience is similar to that in New York City, evaluation will indicate that two-thirds, or 120,000 of these can be listed as cured and discharged, according to Reichman. At an average of $26 for annual followup, this savings would mean more than $3 million could be diverted to high priority TB services.

The CDC recommendation comes at the end of the 20-year steady decline in the tuberculosis case rate. Health departments have been finding it difficult to obtain funds for TB control in the face of increasing competition from other medical problems.

NLM Is Funding Collection Of Bioethics Information

■ As research advances the frontiers of medical science, health professionals are increasingly faced with moral dilemmas. Is the physician obligated to save the life of a severely deformed child? Should brain surgery be used as a method for controlling violent behavior? What are the ethical implications of trying to produce human life in the laboratory?

To help assemble and disseminate a store of information about these and other questions dealing with the ethics of biomedicine (termed bioethics by those working in the new field), the National Library of Medicine has awarded a 3-year grant totaling $280,000 to the Joseph and Rose Kennedy Institute for the Study of Human Reproduction and Bioethics at Georgetown University in Washington, D.C.

Under the grant, the Kennedy Institute will publish three annual bibliographies on bioethics. The first bibliography is scheduled for publication in early 1975. By the third year of the project all entries will be stored on computer tape, and automated demand searches on any bioethical topic will become possible. In addition, the institute staff will seek to collaborate with major academic libraries and research centers in developing a worldwide information network in the field of bioethics.

Potential users of the network's services are governmental bodies involved in drafting legislation, scholars working on specific problems in bioethics, and committees engaged in drafting guidelines to protect human subjects in biomedical research.

Microscopic Diagnosis Of Malaria

■ The fourth edition of the "Manual for the Microscopic Diagnosis of Malaria" has been published by the Pan American Health Organization. Spanish and Portuguese versions are in preparation. Dr. J. F. J. Lopéz Antuñano, PAHO/WHO parasitologist, has extensively updated the third edition, which was issued in 1968.

The manual's purpose is to establish simplicity and uniformity in the laboratory techniques used for microscopic diagnosis of malaria in programs for eradication of this disease. It is also intended as a teaching aid in malaria eradication training centers. Moreover, it is designed to facilitate the laboratory technician's performance of routine examinations of blood specimens, particularly of those that turn out to be negative—a result that may be expected to be seen in the majority of examinations once the first stages of an eradication program have been completed.

In the fourth edition, the contents have been arranged under four major headings: the malaria parasite, the preparation of thick blood films, microscopic examination, and laboratory services. The techniques recommended are simple and refer only to the examination of thick blood films, since examination of thin smears is no longer routine practice in malaria eradication programs. The use of these techniques should result not only in rapid and high-quality diagnosis but also in an increase in the microscopist's daily output.

"Manual for the Microscopic Diagnosis of Malaria," fourth edition, Scientific Publication No. 276, 1973, can be obtained from the Pan American Health Organization, 525 23rd St., NW, Washington, D.C. 20037, price $2.50.

The Pelvic Examination Is Theme of New Film

■ To encourage adolescent girls to establish the habit of an annual pelvic examination, the publishing arm of Mothers' Aid of Chicago Lying-In-Hospital (called "Our Baby's First Seven Years") has published a new booklet, "The Gynecologic Examination," by Dr. James L. Burks and Marilyn Moore, and a filmstrip with the same title.

Intended for classroom use in junior and senior high schools and distribution to teenage girls, the new items are offered in a package of 1 filmstrip and 30 books or singly.

The 14-minute and 25-mm sound-filmstrip presents a discussion between a 21-year-old and her 14-year-old sister in which the older sister describes what happens in a pelvic examination.

Further information is available from Our Baby's First Seven Years, 5841 South Maryland Ave., Chicago, Ill. 60637.

Ninety-Five VA Hospitals Computerize Surgical Data

■ A Surgical Procedures Reporting System (SPRS) has recently been developed cooperatively by the Department of Medicine and Surgery and the Department of Data Management of the Veterans Administration. Surgical data from 95 VA hospitals are now computerized at VA data processing centers in St. Paul, Minn.; Austin, Tex.; Hines, Ill.; Los Angeles; Philadelphia; and Washington, D.C.

Before surgery, a code sheet is prepared for the patient, which accompanies him to the operating room. There the name of the surgeon and other personnel, times, methods, and other data are added. Surgery Office personnel code part of this information and send the code sheet to the Medical Information Section. Upon receipt of the code sheet and the surgeon's report of the operation, medical record personnel review for accuracy, completeness, and consistency of data and code the diagnoses and operation performed. Cards are then keypunched to contain all data on the completed code sheet and are transmitted to the appropriate data processing center.

The SPRS system uses this computer input to produce a daily operating room log, the surgical segment for the patient treatment file (another computerized system), statistics for evaluation and review reports, information for anesthesiology, and statistics for the agency's "Annual Report of Surgical Procedures." Preparation of the annual report, which had previously required months of manual effort, now takes approximately 2 hours of computer processing time. Moreover, because the review and essential coding is done by the Medical Administration Service, the quality of surgical information supplied by the hospitals has improved, and the way in which it is provided is more efficient.

Without duplication of information, the SPRS program consolidates a variety of data to serve a multitude of purposes. The physician's role in insuring accurate and timely reports is critical to the entire system.

Five Spinal Cord Centers Work to Diminish Effects Of Injuries

■ Five Acute Spinal Cord Injury Clinical Research Centers, supported through grants from the National Institute of Neurological Diseases and Stroke, are analyzing the causes, complications, and treatment of spinal cord injuries in an effort to find ways to minimize or reverse the physical damage they cause. Some 5,000 to 10,000 new cases of spinal cord injury occur annually in the United States as the result of accidents and trauma; young adults particularly are victims.

In the past, treatment of spinal cord injuries offered the patient little hope of improvement. Recent studies, however, have indicated that it may be possible by certain procedures to diminish the progressive neural damage which begins soon after a severe spinal injury. For example, hypothermia as well as steroids appear to have promise for inhibiting the pathological process which destroys the spinal cord tissue after injury.

Participating in the research program of the clinical research center are St. Joseph's Hospital and Medical Center, Phoenix, Ariz.; the Medical University of South Carolina at Charleston; New York University, New York City; Ohio State University, Columbus; and Yale University, New Haven, Conn.

At New York University School of Medicine Spinal Cord Center, Eugene Flam, MD (left) and Joseph Ransohoff, MD (center) record the evoked potential of the spinal cord following impaction injury to an animal model. Dr. Flam, assistant professor of neurosurgery and chairman of the department of neurosurgery, are assisted by research scientist John Tonasula.—NIH photo

U.S. Mortality Trends: Leading Causes of Death

■ A 1974 report of the National Center for Health Statistics, Health Resources Administration, provides information on mortality trends for the 20-year period 1950–69 for conditions that were the leading causes of death in 1969. These leading causes accounted for 89 percent of the 1.9 million deaths that year. Mortality rates, which were adjusted for age differences, increased for six of the leading causes and decreased for nine in the period 1950–69 while the rate for all causes combined decreased by 13.1 percent.

The effects that changes made during the 20-year period in the International Classification of Diseases (Adapted) had on the continuity of mortality rates are noted in terms of the change in the crude rate at the time a new ICDA revision was adopted. It was not feasible, however, to incorporate that information into a percentage change in the age-adjusted rates.

Percentage increases in mortality rates were greatest for bronchitis, emphysema, and asthma, for cirrhosis of the liver, and for homicide. Percentage decreases in mortality rates were greatest for nephritis-nephrosis, followed in descending order by arteriosclerosis, peptic ulcer, cerebrovascular diseases, and diseases of the heart.

Mortality rates for accidents, suicide, and homicide declined throughout the late 1950s but began a steady upturn thereafter. Mortality rates for malignant neoplasms of all sites have increased slightly. For all causes of death combined and for most leading causes, rates are higher for males than females and for persons of races other than white. Also, in most cases, the mortality sex and color ratios have widened during the 20-year period.

Mortality Trends for Leading Causes of Death: United States—1950–69. DHEW Publication No. (HRA) 74–1853, Series 20, No. 16; March 1974; 74 pages; $1.15.

"Health Education Theory and Practice In Cancer Control"

■ This collection of 12 original papers on cancer control and health education is intended to meet the need for a document that reviews the theory of educating the public and gives practical advice on conducting it. The book has been assembled and published by the International Union Against Cancer and may be of interest to health educators and to faculties of schools and universities. The authors include psychologists, physicians, health administrators, health educators, and publicists. Most of them have spent years working in cancer control.

Papers in the collection are—

Introduction: objectives and scope by Clifton R. Read

The role of the doctor in public health education by E. C. Easson

Conduct of a public education programme by Walter James

Working with groups by M. L. J. Abercrombie

Anti-smoking programmes for school children by F. R. Wake

Cancer education in schools by Gisela Gästrin

Measurement and evaluation by John Wakefield

Special considerations in cancer education programmes by R. L. Davison

Understanding and changing attitudes by A. W. Clark

Public speaking and audio-visual aids in cancer education by Alan G. MacLaine

Mass communications: newspapers, magazines, broadcasting by Charles Dahle

Cancer education for business and industry by Aaron Spitzer

Individual copies of "Health Education Theory and Practice in Cancer Control," UICC Technical Report Series, Vol. 10, are free. Bulk orders for five or more copies cost 3 Swiss francs to cover handling charges. Address orders to Managing Editor, International Union Against Cancer, 3 rue du Conseil Général, 1205 Geneva, Switzerland.

Health Manpower Licensure

■ "Developments in Health Manpower Licensure" by Harris S. Cohen and Lawrence H. Miike, an interim followup to a 1971 "Report on Licensure and Related Health Personnel Credentialing," demonstrates the firm commitment of the Department of Health, Education, and Welfare to establish an information clearinghouse on professional licensure.

In Part One of the publication, Cohen and Miike (who, when the report was prepared, were with the Health Resources Administration) assess a previously recommended moratorium on the licensure of new categories of health manpower that are not presently licensed by the States and recommend that the moratorium be extended through 1975. In Part Two, the authors consider recent developments in the licensure of health manpower. In separate chapters, they examine (*a*) State studies of licensed health manpower, (*b*) expanding the role of State licensing boards, (*c*) licensure and the interstate mobility of health manpower, (*d*) proficiency and equivalency testing, (*e*) continuing education and its relationship to quality of care, (*f*) developments in institutional licensure, and (*g*) the foreign medical graduate.

"Developments in Health Manpower Licensure" by Harris S. Cohen and Lawrence H. Miike. DHEW Publication No. (HRA) 74-3101; June 1973; 69 pages; $3.75. The report may be purchased from the National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 22151, specifying Accession No. PB 227 544. Also, while the limited supply lasts, single copies may be obtained gratis from the Bureau of Health Services Research, Health Resources Administration, Rm 15-75, Parklawn Bldg., 5600 Fishers Lane, Rockville, Md. 20852.

HEALTH RESOURCES ADMINISTRATION

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publications

Clinical Toxicology Fellowships. The Institute of Clinical Toxicology has announced clinical toxicology fellowships of $12,000 each for 1 year starting July 1, 1974, or later. The qualifications are an MD degree with 2 years postgraduate clinical training in internal medicine, anesthesiology, pediatrics, emergency medicine, psychiatry, or the equivalent in relevant experience; the person must also be licensable to practice medicine in Texas. For further information, contact Eric G. Comstock, MD, Director, Institute of Clinical Toxicology, P.O. Box 2565, Houston, Tex. 77001 or telephone (713) 525-4683 (collect calls accepted).

New Master's Program in Environmental Acoustics. A new master's level program to train specialists to cope with the health problems caused by noise is underway at the University of Pittsburgh Graduate School of Public Health. It is designed to complement an existing doctoral program in environmental acoustics and to train specialists to cope with health problems generated by the impact of noise on industry, housing, transportation, schools, hospitals, and the community at large.

Applications are being accepted for the term beginning in January 1975. For admission requirements and additional information, write Kenneth C. Stewart, Department of Occupational Health, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pa. 15261.

Symposium on Advances in Analytical Toxicology. The second annual Symposium on Advances in Analytical Toxicology will be held December 9–11 in Houston, Tex. Major emphasis will be on analytical toxicological procedures that are directly applicable to drug overdose and abuse. Major themes of the meeting will be analytical toxicology for the emergency room, intramural and extramural quality control and proficiency surveillance of toxicology service laboratories, and recent developments in the analysis of street drugs. Original publications within this broad spectrum of subject matter are invited for consideration.

For further information write Eric G. Comstock, MD, Director, Institute of Clinical Toxicology, P.O. Box 2565, Houston, Tex. 77001. Registration of $100 is payable to the Institute.

Announcements for publication should be forwarded to Public Health Reports *6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.*

education notes

FEDERAL

Chronic Obstructive Lung Diseases: Emphysema and chronic bronchitis. *DHEW Publication No. (NIH) 74-674; 1974; 16 pages; 40 cents.*

Dust Allergy. *DHEW Publication No. (NIH) 74-490; May 1974; 12 pages; 30 cents.*

Cost Analysis and Rate Setting Manual for Animal Resource Facilities. *Animal Resources Branch, Division of Research Resources. 1974; 109 pages.*

Cancer of the Cervix. Proceedings of a Conference of the Working Party on Radionuclides and Afterloading Techniques in the Treatment of Cancer of the Uterus in Developing Areas. Edited by Norman Simon, MD. *DHEW Publication No. (FDA) 74-8021; March 1974; 428 pages; $4.15. (GPO Stock No. 1715-00070.).*

Recreation for Autistic and Emotionally Disturbed Children. *DHEW-73-9096; 19 pages; 55 cents. (GPO Stock No. 1724-00308.)*

Statistical Reference Book of International Activities. Fiscal year 1973 funds. *Prepared by International Cooperation and Geographic Studies Branch, Fogarty International Center. DHEW Publication No. (NIH) 74-64; February 1974; 52 pages.*

National Center for Health Statistics

National Ambulatory Medical Care Survey: Background and methodology. *DHEW Publication No. (HRA) 74-1335, Series 2, No. 61; April 1974; 76 pages; $1.25.*

Health Characteristics by Geographic Region, Large Metropolitan Areas, and Other Places of Residence, United States, 1969–70. *DHEW Publication No. (HRA) 74-1513, Series 10, No. 86; January 1974; 56 pages; 90 cents.*

The Goodenough-Harris Drawing Test as a Measure of Intellectual Maturity of Youths 12–17 Years, United States. *DHEW Publication No. (HRA) 74-1620, Series 11, No. 138; May 1974; 47 pages; 90 cents.*

continued

Measures of Chronic Illness Among Residents of Nursing and Personal Care Homes, United States. *DHEW Publication No. (HRA) 74-1709, Series 12, No. 24; March 1974; 65 pages; $1.10.*

Podiatry Manpower: Characteristics of Clinical Practice, United States, 1970. *DHEW Publication No. (HRA) 74-1806, Series 14, No. 11; March 1974; 72 pages; $1.15.*

The Maternal and Child Health Service Reports on Promoting the Health of Mothers and Children, FY 1973. *DHEW Publication No. (HSA) 74-5002. 1973; 87 pages.*

The Education of Physicians for Primary Care. *By Joel J. Alpert, MD, and Evan Charney, MD. DHEW Publication No. (HRA) 74-3113; Autumn 1973; 63 pages.*

Federal publications listed are obtainable from the Superintendent of Documents, U.S. Government Printing ing Office, Washington, D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Single copies are available from the agency.

WORLD HEALTH ORGANIZATION

World Directory of Schools for Animal Health Assistants, 1971. *1974; 195 pages; Geneva.*

The Selection of Teaching/Learning Materials in Health Sciences Education. Report of a WHO Study Group. *WHO Technical Report Series No. 538; 1974; 27 pages; Geneva.*

Maturation of Fetal Body Systems. Report of a WHO Scientific Group. *WHO Technical Report Series No. 540; 1974; 33 pages; Geneva.*

Disposal of Community Wastewater. Report of a WHO Expert Committee. *WHO Technical Report Series No. 541; 1974; 72 pages; Geneva.*

WHO Expert Committee on Filariasis. *Third report. 1974; 54 pages; Geneva.*

Basic Documents. Twenty-fourth edition. *1974; 164 pages; Geneva.*

Therapeutic Effectiveness of Methadone Maintenance Programs in the Management of Drug Dependence of Morphine Type in the USA. *By Stephen S. Wilmarth and Avram Goldstein. 1974; 53 pages; Geneva.*

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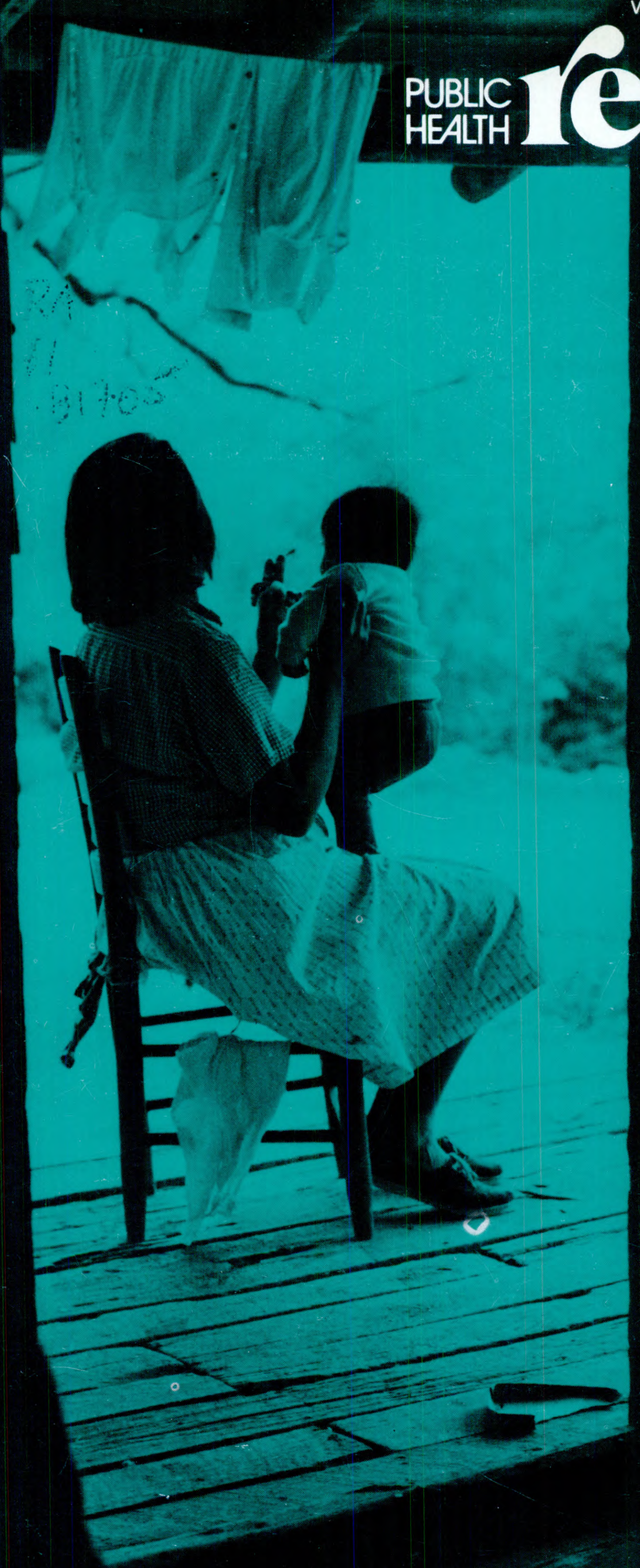
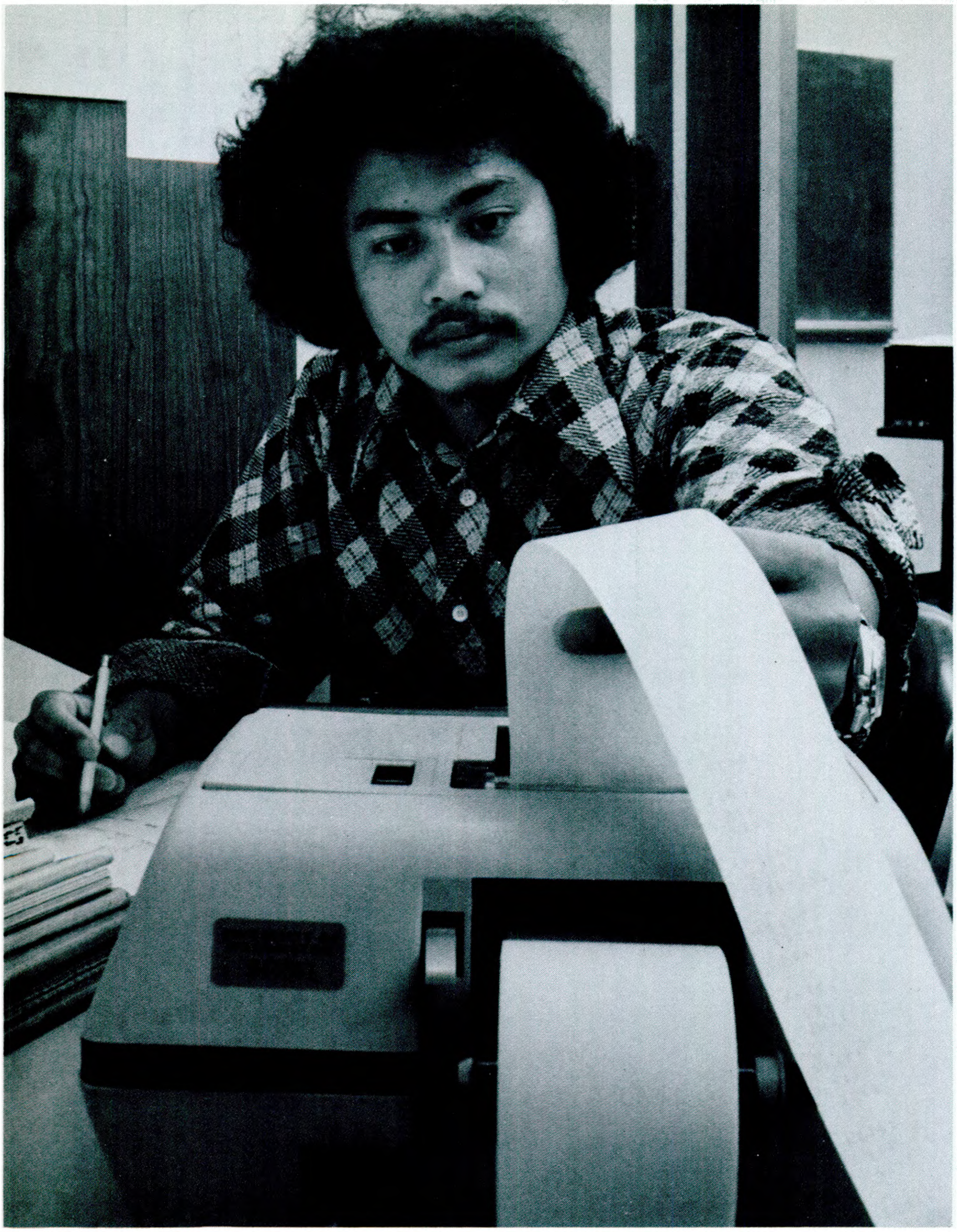


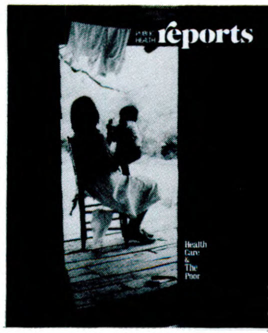
special section

Health Care & The Poor



As part of a new program in health administration for minority undergraduates at the University of Washington, Seattle, 14 students spent the summer of 1974 working in hospitals and health agencies in the Seattle area. They were aided by stipends from the Washington/Alaska Regional Medical Program. One of these students, Manolo Rivera, whose summer practicum was done in the Office of Fiscal Planning and Control of University Hospital, Seattle, is shown in that office, accumulating statistics for a financial report on hospital administration. For more information about the program, see pages 584–585.

COVER—Articles in this issue are largely concerned with the health care of the poor or disadvantaged (pages 499–575). A new attack on this "old problem" is followed by reports on a U.S. health profile by socioeconomic status, some ethnic health practices, lay midwives, Indian health care, free clinics, treatment of inner city addicts, and prison health care.



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Health Care and the Poor • *SPECIAL SECTION*

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THE HEALTH OF THE DISADVANTAGED

a new attack on an old problem

CLIFFORD ALLEN

PERHAPS THE MOST IMPORTANT single point to remember in any discussion of health care for the disadvantaged is that they are a remarkably varied group. Many disadvantaged live in areas that are traditionally underserved—the crowded inner city, the Indian reservation, and the remote, depressed rural area. However, it is difficult if not impossible to pin them down to a racial, ethnic, geographic, or even economic

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identity. For example, women—by no means a generally poverty-stricken group—are often disadvantaged in access to health careers, if not to health care.

Health Care and Career Problems

Data from the National Center for Health Statistics show that disadvantage, as it applies to health care, is frequently a function of low income. A 1971 survey of total days of bed disability (days per year in which a person is confined to bed by illness or injury) shows a national average of 6.1 days per year. Persons from families with incomes of less than $3,000 per year had 12.6 days of bed disability per year—more than double the national rate—and persons from families in the $3,000–$5,000 income range had 8.4 days (*1*).

Disadvantage, then, as used in this discussion, refers to factors or combinations of factors which tend to make access to health care or to careers in the health care field difficult. It is an oversimplification to stamp nonwhites, as by definition, disadvantaged. While geographic or economic conditions may be a powerful impetus toward disadvantage, these factors are not so for all persons. There are many reliable statistics which show that nonwhite people as a group tend to be disadvantaged, but it is clear that poor whites in Appalachia and elsewhere are medically underserved and, by any objective standard, badly disadvantaged.

In the two decades between 1950 and 1969, according to the National Vital Statistics Survey conducted by NCHS, some reduction occurred in excess mortality for nonwhite people in the United States. But for most age groups large mortality differentials still persisted for 1969. In fact, nonwhite males actually lost ground; in 1969 they had greater excess mortality over white males than they did in 1960 (*2*).

The National Health Survey reported that while 38.9 percent of the black parents surveyed described the health of their 6- to 11-year-old children as very good, 53.8 percent of the white parents so described their children's health (*3*).

Frequently, the health status of nonwhites shows improvement over time, but fails to equal the still greater improvement registered by whites. For example, the infant mortality rate for nonwhites dipped from 83.7 per 1,000 births in 1935 to 29.0 in 1972. But during the same years, the white infant mortality rate decreased from 51.9 to 16.3 per 1,000. A 40-year-old white man in 1971 could expect to live another 32.1 years. A nonwhite man of the same age could expect to die nearly 4 years sooner (*4*).

Similarly, nonwhites have more debilitating diseases, higher maternal death rates, and less protection through immunization from infectious diseases than whites. Yet, when we look beyond racial division, we may only conclude that—as studies of rural-urban disadvantage have shown—the city dweller of whatever race is often better off than his rural counterpart.

Infant mortality is higher among the rural poor than among the least-privileged urban group. Rural residents, especially the elderly, are more likely than urban dwellers to have disabling chronic ailments. Compared with urbanites, rural residents are more likely to have higher rates of injury and more workdays lost as a result of illness or injury. Also, relatively more rural than urban residents have never seen a physician. Access to health care for rural Americans is limited by a multiplicity of factors: lower income levels, a higher percentage of elderly people, lower education levels, and general shortage of medical manpower (*5*). The American Medical Association has estimated that rural residents have only about half the access to health resources as is available to the rest of the country's population (*6*).

The picture shown by the number of disadvantaged persons in professional and paraprofessional health careers is no more reassuring, as the following statistics derived from the 1970 census illustrate. Although 11 percent of the population was black in 1970, only 2.2 percent of the nation's physicians were black. Of the approximately 12 million persons of Spanish heritage in the United States, about 10,300 or 3.7 percent were physicians (*7a*). Of the more than 800,000 Native Americans, about 50 were physicians, according to the American Association of Indian Physicians. Women also are notably underrepresented in the health professions, with the exception of nursing. In 1970, only 3.4 percent of the U.S. dentists and 9.2 percent of the physicians were women (*7b*).

Although considerable progress has been made in recent years in opening up opportunities in the health fields to minority groups and to women, much still remains to be done before these groups reach roughly the same proportion in health professions and occupations as they are in the general population of the United States. In medical schools, the first-year enrollment of black students rose from 2.7 percent in academic year 1968–69 to 7.2 percent of the total in 1973–74 (*7c*). First-year enrollment of women in health-profession schools also increased in recent years, indicating the progress that has been made in attracting more women into the health professions. In medical schools, first-year enrollment of women rose from 9.0 percent of total first-year enrollment in academic year 1968–69 to 19.7 percent of the total in 1973–74 (*7d*).

There are other problems which affect adversely the ability of the health care industry to render care to certain groups of people. It is notable, for example, that the American Medical Association in 1972 identified no less than 140 counties in 26 States, with a combined population of nearly a half million people, in which no resident physician was active in patient care. These counties are centered mainly in the southern and western States, and include 14 counties in Georgia and Nebraska, 16 in Missouri, 15 in South Dakota, and 25 in Texas (*8*).

Thanks to the Southern Regional Council, we can look closer still at this problem of maldistribution to discover what it can mean to the poor people who are so frequently its victims. In Tennessee, for example, in 1971 there was an average of 1,055 people per physician. In metropolitan counties, there were 712 people per physician, and in rural counties of the State there were 2,471 persons per physician. Yet, even in urban areas extreme shortages cropped up. In Chattanooga, before the opening of an inner-city neighborhood health center only 2 physicians out of a total of 300 in the city were residing within and serving the eventual target area of the center—an area populated by more than 30,000 people (*6*).

In some areas of New York, there is but 1 private physician for every 12,000 residents. Many black ghettos show ratios of 1 physician for every 3,000 to 10,000 residents. One medical office building in an upper middle class section of Chicago has more physicians than has the entire west side ghetto, with a population of 300,000. Few physicians or allied health personnel are available to Chicanos living in urban barrios in such places as East Los Angeles, Calif., and Albuquerque, N.Mex. (*9*).

With all these factors in mind, it becomes possible to define the disadvantaged. They can be seen as all those people who, because of race, sex, age, economic status, formal education, or geographic location, experience inequities in access to optimal health career opportunities.

The single factors of race or sex or income group are not in themselves seen as causing a person to be disadvantaged. But a combination of such factors can greatly predispose people in the direction of disadvantage, and it also can greatly affect the capability of this nation to furnish high-quality medical care to a considerable number of its people. Yet, Chairman Paul Rogers of the House of Representatives Subcommittee on Health has accurately stated, "The achievement of equal access to quality health care at a reasonable cost is a priority of the Federal Government" (*10*).

Steps Toward Alleviation

To even begin to address that priority, we face at least a threefold job in the alleviation of the health problems of disadvantaged people.

- We must collect and develop data, much of which exist, if at all, in widely scattered locations. After a decade of emphasis on the needs of disadvantaged groups, large gaps remain in the information we must have if we are to sustain a broad attack on those needs. In addition, we must have evaluative instruments so that we can measure with confidence the impact of innovative programs on disadvantaged populations.

- We need to pioneer new models, plans, and ideas which may lead to the improvement of health status in our target groups, including the testing of new models of innovative health care and of manpower programs which can be shown to aid disadvantaged people in relation to health problems.
- We must furnish a focal point within the health industry for efforts to extend the scope, quality, and effectiveness of programs to serve the disadvantaged. This function includes assisting other Government and private groups in improvement of their programs.

There is also a continuing need to enhance the disadvantaged consumer's understanding of when and how to use the health care system. And we must deal with extremely delicate problems involving personal pride and human dignity, which may be as crucial to obtaining care as the more mundane issue of how to purchase it.

OHRO grants and contracts. To address these problems at the Federal level, the Office of Health Resources Opportunity (OHRO) has been established in the Health Resources Administration. Currently, OHRO has two financial tools at hand with which to address itself to the health care and career problems of the disadvantaged. In fiscal year 1974 we awarded 22 contracts and, through the 10 DHEW Regional Offices, some 65 Special Health Career Opportunity Grants (SHCOG) amounting to more than $12.5 million. These awards are being used to demonstrate ways in which to encourage disadvantaged persons to move into training and jobs in the health care field and to improve the access of the disadvantaged to health care.

Under one contract, we supported efforts of the American Public Health Association to attract more minority group members and poor people to its October 1974 meeting in New Orleans, where problems of the disadvantaged were high on the agenda.

In the mountains of eastern Kentucky, the Kentucky Youth Research Center, Inc., is attempting to furnish a model for the utilization of different techniques and manpower to bring greatly needed dental care to poverty-stricken children. Fourth- and fifth-year dental students are working as dental manpower extenders, and the project is training dental assistants for service in the general area. Community based treatment of communications disorders will be made available, and the project will train speech and hearing aides to provide therapy and screening in speech, vision, hearing, and dental needs. In addition, health education and disease prevention materials will be distributed to needy families.

Still another contract is focusing on the problems of women in the health care industry. Being carried out by the Radcliffe Institute in Boston, the project is collecting all existing employment information on women in the health care system. Coming out of the study will be a document, "An Analysis of Women in the Health Care Industry in the U.S.," and recommendations for constructive programs to support the employment of women.

A number of contractors are working with children of minority group background seeking to identify, inform, motivate, and counsel such youngsters about the advantages of health careers. These programs affect Native American children in Oklahoma, Florida, and California and black children in Louisiana.

The contract program will be extended to a point when, by the end of this decade, OHRO will be supporting as many as 80 contract projects —both new and continuation—all seeking to provide models of techniques useful in improving the access to health care for the disadvantaged. Several additional important contract projects in these areas are currently being administered by other Federal health programs.

The SHCOG program is a continuing effort to bring the disadvantaged population into contact with health careers. SHCOG supports projects designed to recruit into the health professions and other related fields disadvantaged students—especially members of minority groups—women, and students likely to practice in disadvantaged areas. The health professions included are medicine, osteopathy, dentistry, optometry, pharmacy, podiatry, and veterinary medicine.

Grants are awarded for projects which will identify and enroll in health-profession schools persons whose backgrounds and interests make it likely that they will practice in disadvantaged areas. Grants are awarded also for projects which will identify disadvantaged students with potential for health training, enroll them in health schools, and assist them in completing training.

By themselves these grant and contract programs are a hopeful start, and their scheduled expansion in the years ahead will be a long stride forward. But of themselves they are not enough to attain the goal projected by the Student National Medical Association of 12 percent minority representation in the medical schools of the nation by 1975.

Future goals. During the remainder of this decade, we have an ambitious agenda. If we can complete the following goals, we will be in a far more solid position from which to bring about the equity we seek.

- We must determine through studies and surveys, as appropriate, whether health professionals from disadvantaged groups do in fact provide more, less, or the same medical services to disadvantaged people than do health professionals from nondisadvantaged groups, and we have to document those facts statistically.
- We will have to identify and promote those factors which have the greatest effect in motivating people to enter the health manpower pool.
- Similarly, we need to know what special retention efforts may be needed to retain a disadvantaged person after he has entered the pool.
- We need to identify the manpower, facilities, supplies, and support services necessary to provide primary medical care to the disadvantaged.
- With the increasing likelihood of equalized financing mechanisms through some sort of a national health insurance system, we still do not know enough about what these will do to improve access to and use of health care for the disadvantaged. We have to find out in order to protect the obvious interest of the disadvantaged.

The foregoing goals cannot be attained independently. We are establishing working relationships both in and out of Government with agencies equipped with the resources to assist in carrying them out.

The problems of the disadvantaged seeking equitable health care are stubborn and difficult, but we do not believe that they are intractable. It is our hope that we are in the kind of catalytic position needed to move on these problems and find solutions for some of them. At the very least, it is a job worth trying.

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Profile of American Health, 1973

Based on data collected in
the Health Interview Survey

The statistics mentioned here and shown in the accompanying tables were collected during the 1973 Health Interview Survey—a continuing nationwide survey conducted by household interview. Each week a probability sample of households is interviewed by trained personnel of the U.S. Bureau of the Census to obtain information about the health and other characteristics of each member of the household. Specifications for the interview are established by the National Center for Health Statistics (NCHS), part of the Health Resources Administration. The data are coded, edited, and tabulated by NCHS, which releases a series of statistical reports on the health status of the American public.

During the 52 weeks of 1973, the sample was composed of approximately 44,000 households containing about 134,000 persons living at the time of the interview and selected to represent the civilian noninstitutional population of the United States. The tables reproduced here show rates only and do not give frequency statistics.

THE AVERAGE AMERICAN visited a physician five times, a dentist 1.6 times, lost 5.4 days of work (for those 17 years and older), and youngsters 6 to 16 years old missed 5.1 days of school during 1973.

Of course, the "average" American is a statistical myth, a composite of figures which apply to all ages, races, income levels, and to men and women. For example, the National Health Survey figures paint the average "poor" American (those with incomes below $5,000) as having visited a physician 5.7 times, a dentist 1.1 times, and losing 6.8 days of work and 7.3 days of school. If the "poor" American is nonwhite,

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statistics for those same categories are 5.1 physician visits, 0.7 dental visit, 8.9 work-loss days, and 6.4 school-loss days.

These statistics merely indicate that certain conditions exist and that these conditions may vary dramatically by income level, by race, by age, or by sex. But, the answer to why these conditions exist must come from interpretation of the data by other sources.

For convenience, highlights of the tables are presented under these major groups: Acute Conditions, Disability, and Utilization of Medical Services.

Acute Conditions

During 1973, the estimated incidence rate per 100 persons per year for acute conditions was 175.1 (table 1). Acute conditions are those short-term illnesses and injuries for which the person either sought medical attention or experienced one or more days of restricted activity. The number of reported "acute conditions" decreased by age, with 254.0 reported by those under 17 years compared with 88.2 for those 65 years and older. Whites reported a higher incidence (180.9) than nonwhites (135.1).

On the average for all Americans, the higher the family income, the greater the number of acute conditions reported—163.8 by those earning under $5,000 and 183.4 by those earning $10,000 and over. However, this average did not hold for nonwhites, who reported the highest number of acute conditions (143.5) for the lowest family income and the lowest acute condition rate (124.4) for mid-level family income.

Disability

Disability refers to any temporary or long-term reduction of a person's activity due to acute or chronic conditions. Restricted activity, bed disability, work-loss days, and school-loss days are reported in the health interview in association with specific acute and chronic conditions. A day of restricted activity is one in which a person substantially reduces his normal activity for the whole day due to an illness or injury. Each day spent in bed for all or most of the day is also counted as a day of restricted activity, as are days lost from work or school.

There were an estimated 16.5 days of restricted activity per person in 1973 as a result of chronic and acute illness or injuries (table 2). The number of restricted activity days per person ranged from 10.7 days for children under 17 years of age to 33.5 days for persons 65 years and over. Not only did the number of restricted activity days increase with age, they usually increased with lower family income; the families with less than $5,000 income averaged 28.8 days of restricted activity in contrast to 12.6 days for families with incomes of $10,000 or more. Whites averaged 2.7 fewer days of restricted activity than nonwhites,

and men averaged 3.4 fewer days than women. The number of bed disability days per person in 1973 was 6.4; whites averaged 1.9 fewer days than nonwhites, and men averaged 2.0 fewer days than women (table 3).

Days lost from work as a result of illness or injury amounted to 5.4 days per currently employed person 17 years and over (table 4). In the age group 17-44 years, men lost 4.6 work days and women lost 5.8. However, the survey does not count days "lost" when a mother takes leave to care for a sick child, nor does it count routine maternity leave as an illness. Lower income family members averaged more work-loss days (6.8) than the upper income levels (5.0). In general, nonwhites averaged more work-loss days (6.7) than did their white counterparts (5.3).

Children 6–16 years old lost 5.1 school days per person (table 5). In the number of school-loss days, income again had an effect; the higher the family income, the fewer days lost from school. Children from the poorest families lost 7.3 days compared with 4.6 days for children from families with incomes of $10,000 or more.

Limitation of activity is a measure of long-term reduction in activity resulting from chronic disease or impairment and is defined as (*a*) inability to carry on the usual activity for one's age-sex group—such as working, keeping house, or going to school, (*b*) restriction in the amount or kind of usual activity, or (*c*) restriction in other activities, such as civic, church, or recreation. Approximately 13.5 percent of the population report some extent of limitation (table 6). Three-quarters of those with a limitation are limited in their major activity (working, keeping house, or going to school), while more than 20 percent of those with a limitation are unable to carry on their major activities (tables 7 and 8).

Age is the single most important determinant in degree of reduction of activity, but income levels also have a significant impact. About 3.4 percent of the persons under 17 years of age report limitation of activity, while about 44.1 percent of persons 65 years and over are limited in their activities by one or more chronic conditions. The average statistics for all ages show that 27.6 percent of the "poor" (incomes under $5,000) report some degree of limitation, compared with 8.6 percent of those with income in the $10,000 plus bracket (table 6). In the limitation of major activity, 22.9 percent of the poor versus 5.6 percent of the highest income category are affected (table 7). The income disparity is even more marked in the area of those unable to carry on their major activity: 8.9 percent of the poor compared with only 1.2 percent of those making over $10,000 (table 8).

Utilization of Medical Services

There were an estimated 13.9 discharges from short-stay hospitals per 100 population in 1973, not including persons discharged dead (table 9). As could be expected, the number of discharges increase for the older population (a rate of 23.8 for those 65 years and over) compared with younger persons (a rate of 7.0 for those under 17 years of age).

The average length of stay per hospital discharge was 8.1 days (table 10). Children under 17 stayed an average of 5.7 days compared with 12.2 days for persons 65 and older. In the 17–44 age bracket, women experienced more hospital discharges (21.2) than men (9.5) but averaged shorter stays (5.5 days compared with 7.6 for men); these differences are primarily due to hospitalization for delivery. On the average, whites had more hospital discharges (14.1) than nonwhites (13.2) and stayed fewer days (7.9 compared with 9.2 for nonwhites).

Approximately 10.7 percent of the population was hospitalized at least once during 1973 (table 11). There is no marked difference for race—whites averaged 10.8 and nonwhites 10.2. However, age and sex differences are notable; persons under 17 years averaged 5.6 percent hospitalization rate while those over 65 years averaged 16.8 percent hospitalization rate. Males averaged 8.8 percent and females 12.5 percent hospitalization rates. Lower income nonwhites had lower hospitalization rates than low income whites (12.1 percent for nonwhites compared with 14.7 percent for whites). With higher income, the percentage difference between the races became much smaller: 9.2 percent for nonwhites and 9.3 percent for whites in the $10,000 plus income bracket.

In 1973, there were 1.6 visits to the dentist per person per year; however, race and income seem to be prime determinants in the number of visits (table 12). Whites visited the dentist almost twice as many times as nonwhites (1.7 to 0.9). Young, low-income nonwhites had the lowest recorded number of visits (0.5 dental visit), while whites in this same category had 1.1 visits.

Less than half, 48.9 percent, of the American population saw a dentist in 1973 (table 13). This translates into 51.1 percent of the white population and 33.7 percent of the nonwhite population. The elderly fared badly too, with only 27.3 percent of those 65 years and over seeing a dentist during the past year.

The picture improves on physician visits (table 14). During 1973, about 75 percent of all Americans consulted a physician (the survey counts either an office visit or a telephone consultation as a physician-patient encounter). The averages are 75.1 percent for whites and 70.7 percent for nonwhites. Women 17–44 years old had the highest percentage of physician visits, 83.6 percent as opposed to 68.3 percent for men in the same age group. The lowest percentage was for nonwhites under 17 years of age with a rate of 65.1 percent.

The three-quarters of the population who did contact a physician averaged enough visits so that the number of physician visits per person averaged 5.0 in 1973 (table 15). Nonwhites averaged 4.5 visits and whites 5.1 visits per person.

Tables 16–18 show the population, in thousands, used in computing the rates for the preceding tables. More specific and detailed reports on the 1973 Health Interview Survey will become available from the National Center for Health Statistics.

Table 1. Number of acute conditions per 100 persons by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	175.1	180.9	135.1	171.3	177.6	126.8	178.7	184.1	142.4
Under $5,000	163.8	170.6	143.5	160.9	171.8	128.8	165.9	169.8	154.1
$5,000–9,999	177.7	186.7	124.4	178.7	190.7	109.0	176.8	183.0	139.3
$10,000 and over	183.4	187.1	134.1	175.5	178.4	136.4	191.6	196.0	131.7
Under 17 years									
All family incomes [1]	254.0	269.7	168.6	257.4	274.6	162.1	250.4	264.6	175.2
Under $5,000	234.3	301.1	158.6	242.1	314.4	137.1	237.6	286.2	178.6
$5,000–9,999	247.9	266.7	162.5	254.7	280.8	139.4	240.8	252.4	187.2
$10,000 and over	261.6	269.1	163.6	264.1	270.3	182.6	259.0	267.8	143.7
17–44 years									
All family incomes [1]	172.8	178.4	134.2	158.1	163.3	119.3	186.5	192.7	146.6
Under $5,000	209.0	218.9	179.9	186.7	188.4	180.7	225.5	243.4	179.4
$5,000–9,999	177.1	187.9	115.5	170.9	183.5	96.8	182.6	191.9	131.5
$10,000 and over	169.5	172.9	130.4	153.1	156.0	118.1	185.4	189.0	142.7
45–64 years									
All family incomes [1]	102.3	104.7	80.5	92.9	95.4	69.4	110.7	113.1	89.8
Under $5,000	101.1	105.0	86.9	70.8	91.3	(2)	108.2	112.0	94.0
$5,000–9,999	109.3	115.7	62.1	92.6	106.4	(2)	118.1	123.2	(2)
$10,000 and over	104.6	105.7	86.1	91.7	97.1	(2)	113.2	115.1	(2)
65 years and over									
All family incomes [1]	88.2	89.0	80.3	85.8	85.9	(2)	89.9	93.5	77.2
Under $5,000	90.1	91.6	78.9	70.9	81.8	(2)	97.5	97.2	(2)
$5,000–9,999	90.7	90.7	(2)	90.1	96.3	(2)	82.2	85.8	(2)
$10,000 and over	92.8	91.4	(2)	73.1	76.7	(2)	103.7	104.4	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 2. Number of restricted activity days per person per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	16.5	16.1	18.8	14.7	14.6	15.5	18.1	17.6	21.7
Under $5,000	28.8	29.0	28.2	26.5	27.6	23.3	30.4	30.0	31.8
$5,000–9,999	16.5	16.6	15.5	15.8	16.3	13.0	17.1	17.0	17.8
$10,000 and over	12.6	12.6	12.0	11.5	11.5	11.1	13.7	13.8	13.0
Under 17 years									
All family incomes	10.7	11.0	8.8	10.5	10.9	8.2	10.8	11.1	9.4
Under $5,000	13.4	15.6	11.3	13.6	16.4	9.5	13.9	14.7	12.9
$5,000–9,999	9.8	10.6	6.5	9.6	10.3	6.5	10.0	10.8	6.5
$10,000 and over	10.4	10.6	7.3	10.4	10.6	7.5	10.3	10.6	7.1
17–44 years									
All family incomes [1]	13.6	13.0	17.2	11.4	11.2	12.5	15.6	14.8	21.1
Under $5,000	21.1	19.4	25.8	17.3	16.5	20.1	23.8	21.7	29.1
$5,000–9,999	14.6	14.5	15.6	13.3	14.0	9.1	15.9	14.9	21.0
$10,000 and over	11.7	11.6	12.9	9.8	9.6	11.1	13.6	13.5	14.8
45–64 years									
All family incomes [1]	22.6	21.5	32.2	21.4	20.6	28.9	23.6	22.4	35.0
Under $5,000	45.7	44.2	51.0	53.5	54.8	49.1	41.6	38.8	52.0
$5,000–9,999	25.1	24.5	29.3	27.0	26.3	31.8	23.5	23.1	26.8
$10,000 and over	15.3	15.2	16.3	14.2	14.2	13.8	16.5	16.3	19.3
65 years and over									
All family incomes [1]	33.5	31.7	52.1	29.9	28.1	47.6	36.0	35.0	55.5
Under $5,000	39.2	36.5	59.9	36.9	34.4	52.9	40.6	37.6	65.0
$5,000–9,999	28.0	26.8	46.6	25.8	24.8	39.3	30.1	28.6	54.2
$10,000 and over	28.2	28.0	31.0	25.6	24.6	45.2	30.5	31.1	19.1

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

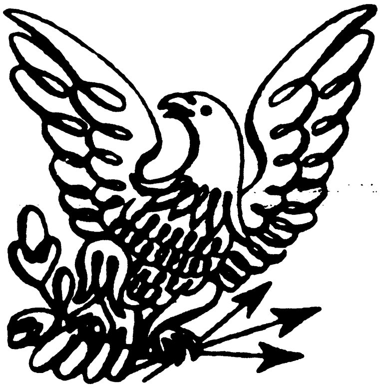

Table 3. Number of bed disability days per person per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes Total	Both sexes White	Both sexes Other	Male Total	Male White	Male Other	Female Total	Female White	Female Other
All ages									
All family incomes[1]	6.4	6.1	8.0	5.3	5.2	6.1	7.3	7.0	9.6
Under $5,000	10.7	10.5	11.4	9.7	10.2	8.5	11.4	10.7	13.5
$5,000–9,999	6.5	6.3	7.5	5.8	5.8	5.8	7.2	6.8	9.2
$10,000 and over	4.8	4.8	4.8	4.0	3.9	4.4	5.7	5.8	5.3
Under 17 years									
All family incomes [1]	4.5	4.6	3.8	4.3	4.4	3.5	4.8	4.9	4.2
Under $5,000	6.1	7.4	4.7	6.2	8.3	3.3	6.3	6.5	6.0
$5,000–9,999	4.5	4.9	3.1	4.3	4.7	2.8	4.8	5.0	3.5
$10,000 and over	4.1	4.1	3.4	3.8	3.8	3.8	4.4	4.6	2.9
17–44 years									
All family incomes [1]	5.4	5.1	7.6	3.9	3.7	4.8	6.8	6.3	9.9
Under $5,000	8.3	7.5	10.4	5.1	4.6	6.6	10.7	9.9	12.7
$5,000–9,999	5.7	5.5	7.3	4.6	4.8	3.5	6.7	6.0	10.6
$10,000 and over	4.6	4.5	5.5	3.3	3.2	4.6	5.8	5.8	6.4
45–64 years									
All family incomes [1]	7.8	7.3	12.2	7.1	6.9	9.6	8.3	7.6	14.5
Under $5,000	15.5	14.6	18.6	18.6	19.6	15.2	13.9	12.1	20.5
$5,000–9,999	8.7	8.1	13.0	8.9	8.2	13.0	8.5	7.9	13.0
$10,000 and over	5.1	5.1	5.7	4.5	4.5	4.4	5.8	5.7	7.3
65 years and over									
All family incomes [1]	13.1	12.1	23.1	11.7	10.7	21.8	14.1	13.5	24.1
Under $5,000	14.1	12.5	25.9	14.3	12.8	24.3	14.0	12.4	27.2
$5,000–9,999	11.5	10.3	29.9	9.5	8.2	28.3	13.2	12.1	31.5
$10,000 and over	13.2	13.6	(2)	10.5	10.7	(2)	15.5	16.2	(2)

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[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 4. Number of work-loss days per currently employed person per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages 17 years and over									
All family incomes [1]	5.4	5.3	6.7	5.2	5.1	6.0	5.8	5.6	7.4
Under $5,000	6.8	6.3	8.9	6.8	6.2	9.4	6.8	6.4	8.4
$5,000–9,999	6.3	6.3	6.3	6.3	6.5	5.1	6.3	6.0	8.0
$10,000 and over	5.0	4.8	6.7	4.7	4.6	6.0	5.4	5.2	7.7
17–44 years									
All family incomes [1]	5.1	4.8	7.0	4.6	4.5	5.8	5.8	5.4	8.5
Under $5,000	6.5	5.9	8.5	5.6	5.2	7.5	7.5	6.9	9.5
$5,000–9,999	5.9	5.7	6.7	5.6	5.7	4.6	6.4	5.8	9.4
$10,000 and over	4.7	4.4	7.4	4.3	4.1	6.7	5.3	5.0	8.3
45–64 years									
All family incomes [1]	5.9	6.0	5.7	6.0	6.0	6.4	5.8	5.9	4.8
Under $5,000	7.5	6.8	9.7	9.8	8.2	14.4	5.8	5.7	6.1
$5,000–9,999	7.3	7.7	5.0	8.1	8.4	6.0	6.3	6.7	(2)
$10,000 and over	5.4	5.4	4.6	5.3	5.4	3.5	5.5	5.5	6.2
65 years and over									
All family incomes [1]	6.2	6.0	8.3	6.8	6.7	(2)	5.2	4.6	(2)
Under $5,000	7.0	6.8	8.2	7.9	7.9	(2)	6.3	5.7	(2)
$5,000–9,999	4.8	4.3	(2)	5.6	5.0	(2)	(2)	(2)	(2)
$10,000 and over	6.8	6.6	(2)	7.5	6.7	(2)	(2)	(2)	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 5. Number of school-loss days per person aged 6–16 years per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages 6–16 years									
All family incomes [1]	5.1	5.1	4.9	4.7	4.8	4.1	5.5	5.5	5.7
Under $5,000	7.3	8.0	6.4	6.6	8.5	4.1	8.0	7.5	8.6
$5,000–9,999	5.0	5.4	3.5	4.6	5.0	3.0	5.4	5.7	3.9
$10,000 and over	4.6	4.7	3.8	4.3	4.3	4.3	4.9	5.0	3.2

[1] Includes unknown income.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 6. Percent of persons with limitation of activity due to chronic conditions by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	13.5	13.4	13.8	13.5	13.6	13.2	13.4	13.3	14.3
Under $5,000	27.6	29.4	22.2	29.0	31.5	21.5	26.6	27.9	22.7
$5,000–9,999	13.8	14.3	10.5	14.4	15.0	10.9	13.2	13.7	10.1
$10,000 and over	8.6	8.7	7.6	9.0	9.1	8.1	8.1	8.2	7.1
Under 17 years									
All family incomes [1]	3.4	3.4	3.3	3.8	3.8	3.8	2.9	3.0	2.7
Under $5,000	4.2	4.6	4.0	5.3	5.6	4.8	3.4	3.5	3.2
$5,000–9,999	3.6	3.6	3.8	4.0	3.9	4.3	3.2	3.2	3.2
$10,000 and over	3.0	3.1	2.1	3.2	3.5	(2)	2.6	2.7	(2)
17–44 years									
All family incomes [1]	8.5	8.3	10.1	9.0	8.9	9.5	8.1	7.7	10.7
Under $5,000	14.3	13.5	16.6	15.1	15.2	14.6	13.7	12.1	17.7
$5,000–9,999	9.2	9.2	8.9	10.1	10.3	8.4	8.3	8.2	9.3
$10,000 and over	6.9	7.0	6.3	7.4	7.4	7.4	6.4	6.6	5.1
45–64 years									
All family incomes [1]	23.3	22.6	29.7	24.3	23.8	28.8	22.5	21.6	30.4
Under $5,000	46.1	45.3	48.9	57.2	58.1	54.0	40.3	38.8	46.2
$5,000–9,999	25.7	26.3	21.7	28.0	28.7	23.3	23.8	24.3	20.1
$10,000 and over	16.1	16.1	16.6	17.2	17.2	16.1	15.0	14.9	17.2
65 years and over									
All family incomes [1]	44.1	42.9	56.0	46.3	45.1	57.3	42.6	42.5	54.9
Under $5,000	50.1	48.7	60.7	57.2	56.3	62.5	45.9	44.2	59.4
$5,000–9,999	40.9	40.5	47.2	41.5	40.9	49.7	40.4	40.1	44.7
$10,000 and over	35.2	34.4	49.4	30.5	32.0	47.5	37.4	36.6	51.0

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 7. Percent of persons with limitation in major activity due to chronic conditions by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	10.2	10.0	11.2	10.2	10.1	11.0	10.1	9.9	11.5
Under $5,000	22.9	24.2	18.8	25.5	27.5	19.6	21.0	21.9	18.2
$5,000–9,999	10.7	11.1	8.4	11.3	11.7	8.7	10.2	10.5	8.2
$10,000 and over	5.6	5.6	5.4	5.6	5.6	5.3	5.7	5.7	5.5
Under 17 years									
All family incomes [1]	1.9	1.8	2.2	2.0	1.9	2.5	1.7	1.7	1.8
Under $5,000	2.6	2.6	2.8	3.2	3.0	3.4	2.2	2.2	2.2
$5,000–9,999	2.2	2.1	2.4	2.3	2.2	2.0	2.1	2.0	(2)
$10,000 and over	1.5	1.6	(2)	1.7	1.7	(2)	1.4	1.4	(2)
17–44 years									
All family incomes [1]	5.4	5.1	7.2	5.6	5.4	6.6	5.3	4.9	7.8
Under $5,000	10.1	9.3	12.5	11.4	11.0	12.9	9.1	7.8	12.3
$5,000–9,999	6.1	6.0	6.6	6.6	6.7	6.0	5.5	5.2	7.1
$10,000 and over	4.0	4.0	3.6	3.9	3.9	3.5	4.1	4.1	3.7
45–64 years									
All family incomes [1]	18.4	17.6	25.9	19.1	18.3	26.1	17.8	16.9	25.8
Under $5,000	40.4	39.4	44.2	53.8	54.2	52.4	33.5	31.8	39.8
$5,000–9,999	21.1	21.4	18.7	23.4	23.9	20.1	19.1	19.3	17.3
$10,000 and over	11.2	11.1	12.9	11.3	11.2	12.7	11.2	11.1	13.1
65 years and over									
All family incomes [1]	37.7	36.5	49.8	41.8	40.6	53.8	34.8	34.6	46.8
Under $5,000	42.7	41.3	53.1	52.2	51.3	58.0	37.0	35.5	49.5
$5,000–9,999	35.9	35.3	43.7	37.4	36.8	47.1	34.4	34.1	40.8
$10,000 and over	29.7	28.8	48.3	28.3	27.4	45.0	31.0	29.9	51.0

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 8. Percent of persons unable to carry on major activity due to chronic conditions by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	3.1	3.0	4.1	4.7	4.5	6.0	1.6	1.5	2.5
Under $5,000	8.9	9.4	7.5	16.6	17.9	12.7	3.5	3.4	3.7
$5,000–9,999	3.1	3.1	2.6	4.8	5.0	3.5	1.4	1.4	1.7
$10,000 and over	1.2	1.1	1.9	1.4	1.3	2.2	.9	.9	1.6
Under 17 years									
All family incomes [1]	.2	.2	.4	.2	.2	(2)	0.2	.2	(2)
Under $5,000	.5	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
$5,000–9,999	.3	.3	(2)	(2)	(2)	(2)	(2)	(2)	(2)
$10,000 and over	.1	.1	(2)	(2)	(2)	(2)	(2)	(2)	(2)
17–44 years									
All family incomes [1]	1.0	.9	1.7	1.4	1.3	2.6	.6	.5	1.0
Under $5,000	2.9	2.8	3.4	5.1	4.7	6.3	1.3	1.2	(2)
$5,000–9,999	1.0	.9	1.3	1.6	1.6	(2)	.4	(2)	(2)
$10,000 and over	.5	.5	(2)	.6	.6	(2)	.4	.4	(2)
45–64 years									
All family incomes [1]	5.2	4.8	9.1	8.6	8.0	14.1	2.2	1.9	4.9
Under $5,000	16.2	16.0	17.2	37.1	38.3	32.9	5.4	4.5	8.6
$5,000–9,999	5.8	5.7	6.0	10.5	10.6	9.7	1.8	1.7	(2)
$10,000 and over	2.1	1.9	4.7	2.8	2.6	5.9	1.3	1.2	(2)
65 years and over									
All family incomes [1]	16.1	15.0	26.7	27.5	26.1	41.2	8.0	7.4	15.6
Under $5,000	17.9	16.7	27.3	37.2	35.6	47.4	6.5	5.7	12.5
$5,000–9,999	14.6	14.1	23.6	22.4	22.0	27.4	7.7	7.0	(2)
$10,000 and over	13.7	12.9	30.1	15.4	14.7	(2)	12.2	11.3	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 9. Number of short-stay hospital discharges per 100 persons per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	13.9	14.1	13.2	11.6	11.8	10.3	16.1	16.2	15.7
Under $5,000	19.3	20.6	15.6	17.2	18.6	13.0	20.9	22.0	17.5
$5,000–9,999	15.1	15.6	12.2	12.3	12.9	9.0	17.7	18.1	15.2
$10,000 and over	11.7	11.7	11.7	10.0	10.1	9.0	13.5	13.4	14.5
Under 17 years									
All family incomes [1]	7.0	7.0	7.0	7.4	7.6	6.2	6.7	6.5	7.8
Under $5,000	9.5	10.8	8.3	9.9	11.2	7.9	9.6	10.3	8.7
$5,000–9,999	7.1	7.4	5.8	7.4	7.9	5.2	6.7	6.8	6.3
$10,000 and over	6.2	6.2	6.4	6.7	6.8	5.6	5.7	5.5	7.1
17–44 years									
All family incomes [1]	15.6	15.3	17.4	9.5	9.4	10.4	21.2	20.9	23.2
Under $5,000	19.8	18.4	23.6	11.7	10.6	15.6	25.7	24.7	28.2
$5,000–9,999	18.2	18.7	15.6	10.2	10.8	6.9	25.5	26.0	23.1
$10,000 and over	13.6	13.5	14.8	9.0	8.9	10.2	18.2	18.1	19.4
45–64 years									
All family incomes [1]	16.6	16.8	14.9	17.1	17.3	15.3	16.2	16.4	14.7
Under $5,000	22.5	24.2	16.6	28.5	31.2	19.3	19.5	20.6	15.1
$5,000–9,999	17.9	18.2	15.7	18.5	18.7	17.4	17.4	17.8	14.0
$10,000 and over	14.5	14.6	12.7	14.9	15.1	10.7	14.1	14.1	15.2
65 years and over									
All family incomes [1]	23.8	24.2	19.6	24.6	24.7	23.5	23.2	24.4	16.6
Under $5,000	25.0	25.9	18.6	25.7	26.6	19.5	24.6	25.4	17.9
$5,000–9,999	22.8	22.5	26.2	25.5	24.9	(2)	20.3	20.4	(2)
$10,000 and over	24.4	24.7	(2)	23.2	23.4	(2)	25.4	25.8	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 10. Average length of stay for discharges from short-stay hospitals by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	8.1	7.9	9.2	9.1	8.7	12.1	7.4	7.4	7.5
Under $5,000	9.8	9.9	9.5	11.3	11.1	11.9	9.0	9.2	8.2
$5,000–9,999	8.3	8.1	10.2	10.4	9.9	15.1	7.0	6.9	7.4
$10,000 and over	6.9	6.8	8.0	7.3	7.1	10.1	6.6	6.6	6.6
Under 17 years									
All family incomes [1]	5.7	5.4	7.6	5.3	5.0	7.8	6.2	5.9	7.5
Under $5,000	6.4	5.5	7.9	5.8	4.9	(2)	7.0	6.2	8.1
$5,000–9,999	5.9	5.6	7.8	6.1	5.6	(2)	5.7	5.5	(2)
$10,000 and over	5.1	5.0	(2)	4.4	4.3	(2)	5.9	5.8	(2)
17–44 years									
All family incomes [1]	6.1	6.0	7.2	7.6	7.0	11.0	5.5	5.5	5.8
Under $5,000	6.3	6.0	6.8	6.5	6.4	(2)	6.2	5.9	6.8
$5,000–9,999	6.4	6.2	7.6	9.7	8.7	19.1	5.2	5.3	4.7
$10,000 and over	5.9	5.7	7.1	6.6	6.3	9.7	5.5	5.5	5.7
45–64 years									
All family incomes [1]	10.2	9.8	13.5	11.5	11.1	16.4	8.9	8.6	11.0
Under $5,000	12.6	12.0	15.9	16.2	15.3	21.1	9.9	9.4	12.2
$5,000–9,999	11.4	10.9	15.1	13.2	12.8	16.1	9.7	9.3	(2)
$10,000 and over	8.6	8.5	10.4	9.3	9.2	(2)	7.8	7.8	(2)
65 years and over									
All family incomes [1]	12.2	12.0	14.1	12.2	11.9	15.2	12.2	12.1	12.9
Under $5,000	12.4	12.4	12.8	13.0	12.6	16.8	12.0	12.2	(2)
$5,000–9,999	12.1	11.6	19.0	12.1	11.9	(2)	12.3	11.4	(2)
$10,000 and over	11.7	11.6	(2)	10.5	10.1	(2)	12.6	12.7	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 11. Percent of persons with 1 or more short-stay hospital episodes in the past 12 months by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	10.7	10.8	10.2	8.8	8.7	7.7	12.5	12.6	12.4
Under $5,000	14.1	14.7	12.1	12.4	13.4	9.3	15.3	15.6	14.2
$5,000–9,999	11.5	11.9	9.2	9.1	9.6	6.8	13.8	14.1	11.6
$10,000 and over	9.3	9.3	9.2	7.7	7.8	7.0	10.9	10.8	11.5
Under 17 years									
All family incomes [1]	5.6	5.6	5.1	5.8	6.0	4.8	5.3	5.3	5.3
Under $5,000	7.0	8.0	5.9	7.4	8.8	5.3	6.8	7.2	6.5
$5,000–9,999	5.4	5.7	4.2	5.7	6.0	4.5	5.1	5.4	3.9
$10,000 and over	5.2	5.2	4.8	5.5	5.5	4.7	4.8	4.9	4.7
17–44 years									
All family incomes [1]	12.5	12.2	14.1	7.6	7.5	7.8	17.0	16.7	19.3
Under $5,000	15.5	14.3	18.7	9.4	9.0	10.5	20.0	18.6	23.5
$5,000–9,999	14.5	14.8	12.8	8.3	8.7	6.2	20.0	20.3	18.4
$10,000 and over	11.0	10.9	12.1	7.0	7.0	7.5	15.0	14.8	16.8
45–64 years									
All family incomes [1]	12.3	12.4	11.5	12.1	12.2	11.4	12.5	12.6	11.5
Under $5,000	15.3	15.9	13.2	17.6	18.4	14.8	14.1	14.6	12.3
$5,000–9,999	13.2	13.5	11.3	12.9	13.2	11.2	13.5	13.7	11.2
$10,000 and over	11.1	11.1	9.8	11.0	11.1	9.1	11.1	11.1	10.6
65 years and over									
All family incomes [1]	16.8	17.1	14.0	17.6	17.7	16.0	16.3	17.1	12.4
Under $5,000	17.7	18.1	15.1	18.8	19.2	15.9	17.0	17.4	14.4
$5,000–9,999	16.2	16.3	14.6	17.0	17.0	(2)	15.4	15.7	(2)
$10,000 and over	16.4	16.6	(2)	16.3	16.4	(2)	16.4	16.8	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 12. Number of dental visits per person per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	1.6	1.7	0.9	1.4	1.5	0.9	1.8	1.9	1.0
Under $5,000	1.1	1.3	.7	1.0	1.1	.5	1.3	1.4	.8
$5,000–9,999	1.3	1.3	.8	1.0	1.1	.8	1.5	1.6	.8
$10,000 and over	2.0	2.0	1.4	1.8	1.8	1.4	2.2	2.2	1.4
Under 17 years									
All family incomes [1]	1.6	1.8	.7	1.5	1.6	.6	1.7	1.9	.7
Under $5,000	.8	1.1	.5	.7	.9	(2)	.9	1.3	(2)
$5,000–9,999	1.0	1.1	.5	.8	.9	(2)	1.2	1.3	(2)
$10,000 and over	2.1	2.2	1.0	2.0	2.1	0.9	2.2	2.3	1.0
17–44 years									
All family incomes [1]	1.7	1.8	1.1	1.4	1.5	1.0	1.9	2.0	1.3
Under $5,000	1.5	1.7	1.1	1.4	1.5	(2)	1.6	1.8	1.2
$5,000–9,999	1.4	1.5	1.1	1.2	1.2	1.1	1.6	1.7	1.1
$10,000 and over	1.9	1.9	1.4	1.5	1.6	1.2	2.2	2.2	1.7
45–64 years									
All family incomes [1]	1.7	1.8	1.2	1.5	1.6	1.4	1.9	2.0	1.1
Under $5,000	1.2	1.3	.9	.9	1.0	(2)	1.4	1.5	(2)
$5,000–9,999	1.4	1.5	.8	1.0	1.1	(2)	1.7	1.8	(2)
$10,000 and over	2.1	2.1	2.3	1.9	1.8	2.9	2.3	2.4	(2)
65 years and over									
All family incomes [1]	1.1	1.2	(2)	1.0	1.1	(2)	1.2	1.3	(2)
Under $5,000	0.9	1.0	(2)	.7	.8	(2)	1.0	1.1	(2)
$5,000–9,999	1.2	1.2	(2)	1.1	1.1	(2)	1.3	1.3	(2)
$10,000 and over	1.7	1.7	(2)	1.6	1.6	(2)	1.7	1.8	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 13. Percent of persons with dental visit in past 12 months by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	48.9	51.1	33.7	47.0	49.2	31.9	50.6	52.9	35.2
Under $5,000	32.8	34.2	28.8	31.3	32.8	26.8	34.0	35.2	30.3
$5,000–9,999	40.8	42.1	33.5	38.0	39.1	31.5	43.4	44.8	35.5
$10,000 and over	59.0	60.3	41.6	56.4	57.7	39.3	61.6	62.9	44.1
Under 17 years									
All family incomes [1]	49.2	52.7	30.7	48.3	51.7	29.8	50.2	53.7	31.6
Under $5,000	31.3	35.5	27.4	30.9	34.7	25.4	33.2	36.4	29.3
$5,000–9,999	37.6	39.4	29.9	37.0	38.8	29.3	38.3	40.0	30.5
$10,000 and over	59.7	61.3	37.8	58.8	60.4	37.2	60.6	62.3	38.5
17–44 years									
All family incomes [1]	55.2	57.2	41.0	51.4	53.4	36.5	58.7	60.8	44.6
Under $5,000	48.3	51.1	39.9	46.5	49.6	35.5	49.6	52.3	42.5
$5,000–9,999	47.4	48.8	39.4	43.2	44.6	35.1	51.2	52.7	43.0
$10,000 and over	61.1	62.4	45.7	56.8	58.1	40.9	65.4	66.6	50.5
45–64 years									
All family incomes [1]	46.9	48.6	31.1	45.4	46.7	32.4	48.3	50.4	30.0
Under $5,000	28.4	29.9	23.0	24.7	25.0	24.4	30.2	32.3	22.1
$5,000–9,999	38.1	38.9	32.5	33.9	34.0	32.7	41.7	42.9	32.3
$10,000 and over	56.4	57.3	40.6	54.1	54.9	39.8	59.0	60.0	41.5
65 years and over									
All family incomes [1]	27.3	28.4	15.7	26.2	27.0	17.9	28.0	30.1	14.0
Under $5,000	19.7	20.4	14.4	16.5	16.6	16.1	21.5	22.6	13.1
$5,000–9,999	30.4	31.3	15.5	28.8	29.6	16.6	31.8	32.8	14.5
$10,000 and over	42.8	43.8	23.3	43.5	44.0	32.5	42.2	43.6	16.7

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[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

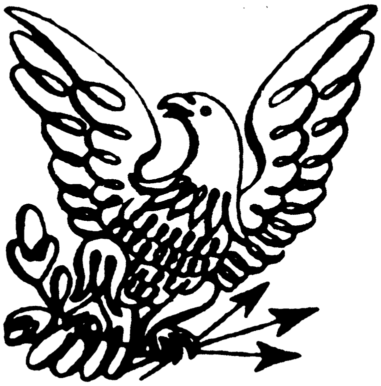

Table 14. Percent of persons with physician visits in past 12 months by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	74.5	75.1	70.7	70.4	71.0	66.1	78.3	78.8	74.8
Under $5,000	73.8	75.1	70.2	69.8	71.2	65.5	76.7	77.8	73.6
$5,000–9,999	72.9	73.5	69.3	68.3	68.9	64.7	77.1	77.7	73.7
$10,000 and over	76.4	76.5	75.1	72.5	72.6	70.2	80.4	80.5	80.1
Under 17 years									
All family incomes [1]	73.0	74.5	65.1	73.7	75.2	65.1	72.3	73.7	65.1
Under $5,000	65.6	71.0	62.1	68.8	72.7	63.2	65.5	69.2	61.1
$5,000–9,999	70.0	71.3	63.9	69.9	71.5	62.6	70.1	71.1	65.3
$10,000 and over	76.5	76.8	71.4	77.4	77.8	71.2	75.5	75.8	71.6
17–44 years									
All family incomes [1]	76.2	76.4	74.6	68.3	68.7	65.3	83.6	83.8	82.3
Under $5,000	78.9	79.5	77.3	70.9	72.6	65.1	84.8	85.0	84.2
$5,000–9,999	75.3	75.6	73.5	67.0	67.2	65.5	82.8	83.3	80.2
$10,000 and over	76.9	76.9	76.5	69.3	69.4	67.8	84.4	84.4	85.1
45–64 years									
All family incomes [1]	72.6	72.6	72.8	68.3	68.2	68.8	76.5	76.6	76.1
Under $5,000	71.3	70.7	73.5	67.5	66.2	71.7	73.3	73.0	74.5
$5,000–9,999	70.5	70.5	70.2	65.6	65.6	65.9	74.6	74.6	74.8
$10,000 and over	74.7	74.6	77.0	70.4	70.3	72.9	79.4	79.3	81.5
65 years and over									
All family incomes [1]	76.5	76.7	75.3	72.5	72.7	70.6	79.4	81.4	78.9
Under $5,000	75.7	75.8	75.1	70.8	71.3	67.9	78.7	78.5	80.4
$5,000–9,999	77.0	77.2	74.8	71.3	73.1	72.0	80.6	80.8	77.6
$10,000 and over	80.4	80.1	86.9	76.7	76.4	83.8	83.7	83.4	89.6

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 15. Number of physician visits per person per year by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	5.0	5.1	4.5	4.3	4.4	3.6	5.6	5.7	5.3
Under $5,000	5.7	5.9	5.1	4.9	5.2	4.0	6.3	6.4	5.9
$5,000-9,999	4.8	5.0	4.1	4.2	4.4	3.3	5.4	5.5	4.9
$10,000 and over	5.0	5.0	4.6	4.3	4.4	3.9	5.7	5.7	5.4
Under 17 years									
All family incomes [1]	4.2	4.4	3.1	4.4	4.7	3.1	4.0	4.1	3.1
Under $5,000	3.8	4.5	3.1	4.3	5.1	3.2	3.5	4.0	3.0
$5,000-9,999	3.8	4.0	2.9	3.8	4.1	2.6	3.7	3.8	3.2
$10,000 and over	4.5	4.6	3.1	4.7	4.8	3.1	4.2	4.3	3.0
17–44 years									
All family incomes [1]	5.0	5.1	4.9	3.6	3.7	3.0	6.4	6.4	6.4
Under $5,000	5.9	5.9	5.8	3.9	4.3	2.4	7.3	7.2	7.8
$5,000-9,999	4.8	4.9	4.4	3.5	3.6	3.1	6.0	6.1	5.5
$10,000 and over	5.1	5.1	5.1	3.7	3.7	3.8	6.5	6.5	6.4
45–64 years									
All family incomes [1]	5.5	5.4	6.0	4.8	4.8	4.7	6.0	5.9	7.1
Under $5,000	6.5	6.3	7.6	6.1	6.1	5.9	6.8	6.3	8.5
$5,000-9,999	5.6	5.7	5.0	5.4	5.6	4.0	5.8	5.8	6.1
$10,000 and over	5.3	5.3	5.5	4.6	4.6	4.6	6.1	6.0	6.5
65 years and over									
All family incomes [1]	6.5	6.5	7.0	6.1	5.9	8.0	6.9	7.1	6.2
Under $5,000	6.6	6.5	6.9	6.1	5.8	8.3	6.9	7.0	5.9
$5,000-9,999	6.5	6.4	8.1	6.0	5.8	8.4	7.0	7.0	7.8
$10,000 and over	7.1	7.0	9.3	6.6	6.5	(2)	7.4	7.4	(2)

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[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 16. Population, in thousands, used in computing rates shown in this publication, by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes [1]	205,799	179,808	25,991	99,241	87,012	12,229	106,558	92,796	13,763
Under $5,000	34,909	26,121	8,788	14,501	10,819	3,682	20,408	15,302	5,106
$5,000–9,999	51,622	44,141	7,481	24,863	21,199	3,663	26,760	22,942	3,818
$10,000 and over	104,467	97,265	7,202	52,867	49,194	3,673	51,601	48,072	3,529
Under 17 years									
All family incomes [1]	63,997	54,010	9,987	32,599	27,594	5,006	31,397	26,416	4,981
Under $5,000	8,554	4,765	3,589	4,243	2,514	1,729	4,111	2,251	1,860
$5,000–9,999	16,310	13,359	2,951	8,289	6,763	1,526	8,021	6,596	1,425
$10,000 and over	34,655	32,206	2,449	17,645	16,397	1,248	17,011	15,809	1,202
17–44 years									
All family incomes [1]	79,016	69,002	10,015	38,092	33,559	4,532	40,925	35,442	5,482
Under $5,000	10,530	7,847	2,683	4,477	3,494	983	6,053	4,353	1,700
$5,000–9,999	20,158	17,139	3,019	9,571	8,186	1,385	10,588	8,953	1,634
$10,000 and over	43,651	40,249	3,391	21,756	20,056	1,700	21,896	20,203	1,692
45–64 years									
All family incomes [1]	42,534	38,333	4,201	20,164	18,248	1,916	22,370	20,085	2,285
Under $5,000	6,343	4,968	1,375	2,170	1,684	487	4,172	3,284	888
$5,000–9,999	10,054	8,851	1,203	4,582	3,986	596	5,472	4,865	607
$10,000 and over	22,546	21,361	1,185	11,775	11,129	646	10,771	10,231	540
65 years and over									
All family incomes [1]	20,253	18,464	1,789	8,386	7,611	775	11,867	10,583	1,014
Under $5,000	9,682	8,541	1,141	3,611	3,128	483	6,072	5,413	658
$5,000–9,999	5,099	4,791	309	2,420	2,264	157	2,679	2,527	152
$10,000 and over	3,615	3,439	176	1,691	1,611	80	1,924	1,828	96

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 17. Population, in thousands, used in computing rates shown in this publication, for the currently employed by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages 17 years and over									
All family incomes [1]	83,441	74,212	9,228	51,193	46,082	5,111	32,248	28,131	4,117
Under $5,000	9,219	7,217	2,002	4,584	3,635	949	4,635	3,582	1,053
$5,000–9,999	20,543	17,703	2,839	12,453	10,850	1,603	8,090	6,854	1,236
$10,000 and over	48,443	44,894	3,549	30,875	28,817	2,058	17,569	16,078	1,491
17–44 years									
All family incomes [1]	53,087	46,878	6,209	32,353	28,919	3,434	20,734	17,959	2,775
Under $5,000	5,552	4,352	1,200	2,952	2,370	583	2,599	1,982	617
$5,000–9,999	13,483	11,555	1,928	8,226	7,156	1,071	5,256	4,399	857
$10,000 and over	31,213	28,657	2,556	19,382	17,932	1,450	11,831	10,725	1,106
45–64 years									
All family incomes [1]	27,260	24,585	2,675	16,852	15,366	1,487	10,408	9,220	1,188
Under $5,000	2,510	1,898	613	1,052	784	268	1,458	1,113	344
$5,000–9,999	6,235	5,399	837	3,644	3,159	485	2,591	2,239	352
$10,000 and over	16,371	15,429	942	10,823	10,246	577	5,548	5,183	365
65 years and over									
All family incomes [1]	3,094	2,749	345	1,988	1,797	191	1,106	952	154
Under $5,000	1,157	967	190	571	481	98	578	487	91
$5,000–9,999	824	749	75	534	534	(2)	243	216	(2)
$10,000 and over	859	808	51	639	639	(2)	190	170	(2)

[1] Includes unknown income.

[2] Figure does not meet standards of reliability or precision.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Table 18. Population, in thousands, used in computing rates shown in this publication for school age 6–16 years by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages 6–16 years									
All family incomes [1]	43,605	36,987	6,618	22,060	18,762	3,298	21,545	18,226	3,320
Under $5,000	5,345	2,933	2,412	2,705	1,538	1,167	2,640	1,395	1,246
$5,000–9,999	10,261	8,235	2,026	5,186	4,135	1,051	5,075	4,100	975
$10,000 and over	24,814	23,244	1,570	12,551	11,760	791	12,263	11,484	780

[1] Includes unknown income.

NOTE: Data are based on household interviews of the civilian, noninstitutional population.

Health and Healing Practices Among Five Ethnic Groups in Miami, Florida

CLARISSA S. SCOTT, MA

ETHNIC GROUPS from the Bahamas, the West Indies, and Central and South America converge in large numbers in Miami, Fla., and most of these peoples retain their vigorous, indigenous health cultures. The term health culture is used here to refer to "all of the phenomena associated with the maintenance of well-being and problems of sickness with which people cope in traditional ways, in their own social networks" (*1*). Evaluating the importance of this concept, Weidman and Egeland (*1*) note that use of this definition sets out the sphere of health belief and behavior as "one of the basic social institutions of a society" and raises it to the same order of classification as the economic or political system.

The Health Ecology Project

Preliminary findings of the Health Ecology Project, which is conducting comparative research on the health cultures of the five largest ethnic groups in the inner-city area of Miami, reveal that many members of these groups are not moving resolutely away from traditional health beliefs and practices toward scientific (orthodox) medicine. Rather, they are holding fast to numerous prescriptive health beliefs and practices, combining the two systems (orthodox and traditional) in different ways and to different extents. The five groups being studied are Bahamian, Cuban, Haitian, Puerto Rican, and southern U.S. black.

The project is concerned with illness of both physical and psychological origin. It has two important goals within the context of this paper. The immediate goal is to describe the beliefs and practices relating to health, illness, and healing among the ethnic groups. The second goal is to determine the patterns of use of both the orthodox and traditional healing systems among these populations. Ultimately, the hope is to develop models for more appropriate health care delivery.

Ms. Scott is an instructor in social anthropology at the University of Miami School of Medicine and field coordinator of the Health Ecology Project in the Department of Psychiatry. The project is supported by a grant from the Commonwealth Fund of New York. Its principal investigators are James N. Sussex, MD, professor and chairman of the Department of Psychiatry, and Hazel H. Weidman, PhD; its primary consultant is Janice A. Egeland, PhD.

This paper is based on one presented at the 32d annual meeting of the Society for Applied Anthropology in Tucson, Ariz., April 12–14, 1973.

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The project is using a combined sociological-anthropological methodology. Our six field assistants, who collect the majority of the data, are women who are members of the ethnic communities in which they work. Each community has one full-time fieldworker, except the Puerto Ricans; in this population, two women share one full-time position. The fieldworkers include a Bahamian who uses the services of faith healers and sorcerers, a Haitian whose aunt was a prominent voodoo priestess, and a Cuban who was a practicing attorney in Havana before coming to Miami as a political refugee. Thus, training of these women has been highly individualized, based on both the weaknesses and strengths of each as well as her background.

As part of the research protocol, each field assistant administers a sociological-type questionnaire to 100 families in her ethnic group, and then she selects 30 to 40 families from the 100 to work with on a long-term basis. The families selected are asked to keep a health calendar for 4 consecutive weeks, and the mother (or whoever cares for the family members) records any symptoms of illness or conditions which appear in family members and the precise action taken in response. In this way, we are obtaining a description of health problems as seen by members of each ethnic group, rather than according to scientific medical terminology. During the long period of contact, the assistants attempt to gain more understanding (from the mother's point of view) of the etiology of the problems and the family's reasons for engaging in certain health behaviors in place of or before others.

Much of the data in this article are based on the techniques that are closely associated with anthropological fieldwork—participant observation and in-depth interviewing over a long period of contact. The bulk of the fieldwork was done by the indigenous assistants and by me in company with them. We are fortunate in also being able to share field data and observations with five behavioral scientists, each of whom acts as a "culture broker" for his or her respective ethnic group and who, in turn, has a team of indigenous workers under her or him. A culture broker, as defined by Weidman (*2*) in general terms, is a "bridging" person between two health cultural systems confronting each other. More specifically, within the setting of the University of Miami School of Medicine, this person is a medical anthropologist or behavioral scientist with specialized knowledge of a local ethnic group who works to establish linkages between that ethnic community and in-house psychiatric services.

Although the broad overview and statistical data which derive from the questionnaire and other sociological types of field instruments are invaluable in telling us *what* is happening, it is the months and years of daily contact in the communities which provide us with the insight and data to interpret the *whys* and *hows* of the statistical picture.

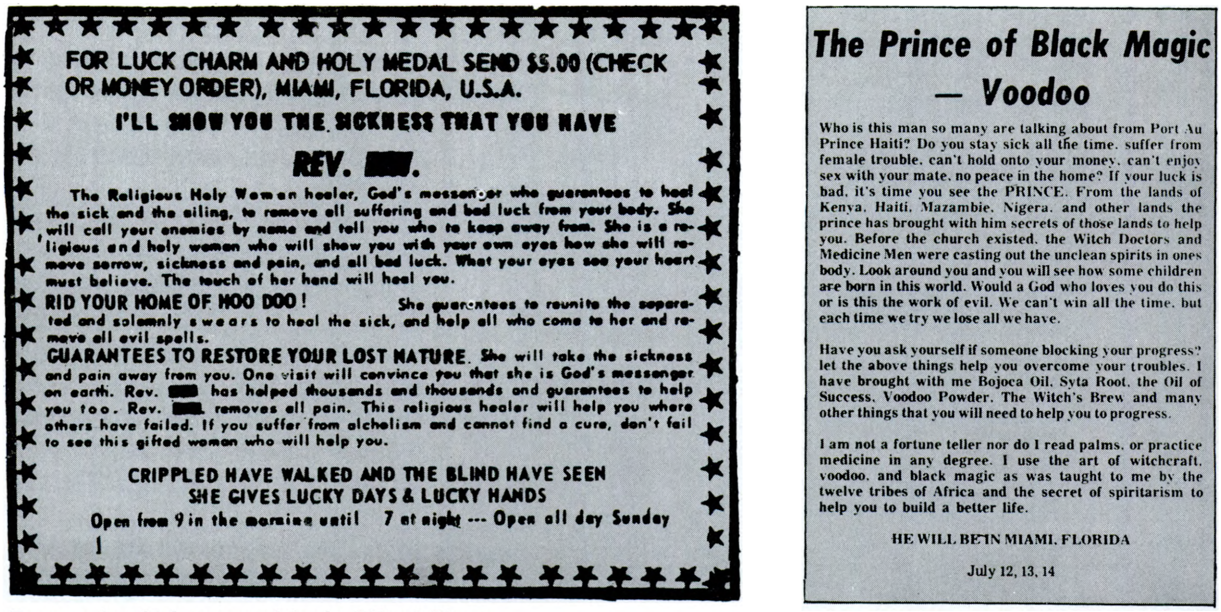
For further clues and insight into health beliefs and practices, we use behavioral-science literature pertaining to the ethnic groups' country of origin as well as to counterpart ethnic enclaves in other U.S. cities. This must be done with great circumspection because each local ethnic community is unique in some ways while sharing certain commonalities with their opposite ethnic number elsewhere. Unfortunately, virtually no literature describing Miami's ethnic communities has yet appeared in scientific journals.

Patterns of Health Care

Each of the five populations (Bahamian, Cuban, Haitian, Puerto Rican, and southern U.S. black) tends to use available health systems somewhat differently. The following descriptions of health care patterns were obtained in a pilot study within the overall Health Ecology Project.

Bahamians. Folk remedies and healing techniques thrive among the Bahamians. There is constant traffic between Miami and Nassau (only 30 minutes by plane) and numerous Bahamian herbs and concoctions are brought in by friends and relatives. Many Miami residents retain close relationships with their relatives in the Bahamas by returning for visits, telephoning, and so on. There are several Obeah men in Miami, and at least one commutes between Miami and Nassau to see patients in both countries. Bahamians sometimes "cross the water" (return to Nassau) which automatically removes any effects of Obeah from them. Many use the services of southern black root doctors and spiritual doctors, as well as southern black faith healers.

In anthropology, there is a technical distinction between witchcraft and sorcery. Wittkower and Weidman (*3*) define witchcraft as involving ". . . innate and extraordinary power which is



FOR LUCK CHARM AND HOLY MEDAL SEND $5.00 (CHECK OR MONEY ORDER), MIAMI, FLORIDA, U.S.A.

I'LL SHOW YOU THE SICKNESS THAT YOU HAVE

REV. [redacted].

The Religious Holy Woman healer, God's messenger who guarantees to heal the sick and the ailing, to remove all suffering and bad luck from yout body. She will call your enemies by name and tell you who to keep away from. She is a religious and holy woman who will show you with your own eyes how she will remove sorrow, sickness and pain, and all bad luck. What your eyes see your heart must believe. The touch of her hand will heal you.

RID YOUR HOME OF HOO DOO! She guarantees to reunite the separated and solemnly swears to heal the sick, and help all who come to her and remove all evil spells.

GUARANTEES TO RESTORE YOUR LOST NATURE. She will take the sickness and pain away from you. One visit will convince you that she is God's messenger on earth. Rev. [redacted] has helped thousands and thousands and guarantees to help you too. Rev. [redacted] removes all pain. This religious healer will help you where others have failed. If you suffer from alchelism and cannot find a cure, don't fail to see this gifted woman who will help you.

CRIPPLED HAVE WALKED AND THE BLIND HAVE SEEN
SHE GIVES LUCKY DAYS & LUCKY HANDS

Open from 9 in the morning until 7 at night --- Open all day Sunday

The Prince of Black Magic — Voodoo

Who is this man so many are talking about from Port Au Prince Haiti? Do you stay sick all the time. suffer from female trouble. can't hold onto your money. can't enjoy sex with your mate. no peace in the home? If your luck is bad. it's time you see the PRINCE. From the lands of Kenya. Haiti. Mazambie. Nigera. and other lands the prince has brought with him secrets of those lands to help you. Before the church existed. the Witch Doctors and Medicine Men were casting out the unclean spirits in ones body. Look around you and you will see how some children are born in this world. Would a God who loves you do this or is this the work of evil. We can't win all the time. but each time we try we lose all we have.

Have you ask yourself if someone blocking your progress? let the above things help you overcome your troubles. I have brought with me Bojoca Oil. Syta Root. the Oil of Success. Voodoo Powder. The Witch's Brew and many other things that you will need to help you to progress.

I am not a fortune teller nor do I read palms. or practice medicine in any degree. I use the art of witchcraft. voodoo. and black magic as was taught to me by the twelve tribes of Africa and the secret of spiritarism to help you to build a better life.

HE WILL BE IN MIAMI. FLORIDA

July 12, 13, 14

Recent ads which appeared in the Miami Times

inherited and is exercised as a psychic act," and sorcery as being "learned" and involving " . . . the use of power which resides in resources outside the individual." Obeah is the term used by Bahamians to indicate sorcery; the southern black term for sorcery is rootwork, and those who practice it are root doctors.

The health calendars of our Bahamian sample indicate chronically poor health. They frequently use the orthodox health system only for crises or in conjunction with folk therapy, for obvious reasons such as language barriers, transportation problems, and "social distance"—the distance between ethnic "consumers" and health "providers" who subscribe to a different set of values. In addition to these manifest reasons there is lack of cultural "fit," which probably also pertains to the four other ethnic groups. This lack occurs when two or more health cultures are dissimilar in crucial ways that make it impossible for a member of one health cultural tradition to accept certain beliefs and behaviors of another. The result is dissatisfaction by both the health care provider and the consumer.

Furthermore, all the ethnic groups in our study attribute certain symptoms and conditions to social and interpersonal conflict and supernatural activity. Their feeling is that "everybody knows" that these are health problems which medical doctors are incapable of curing, therefore it is useless to expect remedial treatment from an orthodox medical practitioner. Among the Bahamians particularly, a person seeks an Obeah man or crosses ethnic lines to use the services of a southern black counterpart, a root doctor. Finally, the intensity with which the Bahamians in the study group practice folk therapy may be related to the closeness of the Bahama Islands to Miami. Visiting and communication can be maintained easily, and there are ample opportunities to replenish home remedies and to reinforce Bahamian health beliefs and practices.

Cubans. Cubans have come to Miami in such numbers that they have been able to duplicate their entire former health care system, including the manufacture of patent medicines previously produced in Cuba. Only a few families in our sample had used a hospital emergency room during the previous 12 months—a significant difference between this group and the others. One possible reason is that a majority of our study families attend 1 of the 23 or more private Cuban clinics, which are operated like a health maintenance organization and are open around-the-clock. Also, according to our data, Cubans seem to be highly motivated toward preventive medicine.

Some Cuban druggists guardedly continue the Latin American practice of selling prescription drugs without prescriptions. Simultaneously, they sell traditional medical plants to their customers. Small churches which include faith healers are found throughout "Little Havana." Large numbers of espiritistas and santeros ply their trade.

An espiritista is a practitioner of Espiritismo—a religious cult of European origin based on an ethical code—which is concerned with communication with spirits and the purification of the soul through moral behavior (*4*). A santero is a practitioner of Santeria, a syncretic product of African beliefs and Catholic practices. The santero takes no moral position, as does the espiritista; he works solely in behalf of his client. His activity can be beneficial, of no import, or harmful to others (*4*).

The Cuban business district has many botanicas; these religious-article stores sell herbs, lotions, sprays, and other items prescribed by espiritistas and santeros. Home remedies, such as punches, teas, and salves, are used in most of the households in our study.

According to our questionnaire and health calendar data, the Cubans seem to be making full use of the medical resources available to them. Also, at this point in our research, their calendars indicate that they experience less illness than do the other groups. The Cubans who came to Miami on refugee flights are eligible for free care at the Refugee Center, which is staffed by Cuban health personnel; however, the center is being terminated because the Cuban Airlift of refugees has ended. The Refugee Center is not as conveniently located as are other facilities. Families often use it in conjunction with private clinics and physicians, according to their financial status and time available. Cuban health professionals and paraprofessionals have entered the United States orthodox health system in such great numbers that even when a Cuban goes to the public health clinics or to Jackson Memorial Hospital, the university teaching hospital, he is often cared for by Cuban nurses, physicians, technicians, or social workers.

Haitians. The Haitians are relatively recent arrivals to Miami; our pilot study respondents have been here an average of 2.2 years. Medicinal preparations and elements of the traditional Haitian health care system are limited in Miami, possibly because their population is not yet large enough to support more than a handful of indigenous healers.

We know of two priests (Houngan) and one priestess (Mambo) of the Vodun cult in Miami. Herskovits (*5*) defines Vodun, or voodoo, as "a complex of African belief and ritual governing in large measure the religious life of the Haitian peasantry. . . ." In addition to these, two men represent themselves as spiritual doctors. They use the title "Reverend" and use the power of the holy spirit to cure. Finally, we have knowledge of five "Readers" or "Diviners" (men and women who read cards and hands) who predict and cure. They cure by means of being possessed by a spirit (mystére) which sometimes touches the patient and gives directions for cure.

The Haitian pattern of health care which emerges from our preliminary data is to treat first with herbs and home remedies. When Haitians move into the orthodox system, three characteristics dominate their use of it: (*a*) frequent use of the emergency room, (*b*) the names of the same few private physicians and one private clinic appear again and again, and (*c*) the types of facilities used are more limited in range than those used by the other four groups. These characteristics indicate that the Haitians do not know the territory and thus rely on each other for recommendations of health facilities. Their economic status is generally low on arrival in the United States. The emergency room at Jackson Memorial Hospital (the only public hospital in Miami) does not demand immediate payment, and therefore it accommodates the needs of the Haitians who lack money.

Catholic Haitians tend to be Catholics in name only and still retain their Vodun beliefs. They are likely to attribute certain illnesses to supernatural causes and, in such cases, many seek out those few native healers who are available in Miami. Baptist Haitians who believe that illness is not responding as it should to either home remedies or the orthodox system are likely to pray (either alone or with their pastors) for God's help in effecting a cure. They have been converted to a belief in a protective God who is powerful enough to conquer evil with good and to help the doctors cure both natural and supernatural illnesses.

When home remedies and techniques fail, alone or in conjunction with the orthodox system, Haitians sometimes return to Haiti at great expense to use the services of the types of healers who are not yet available in Miami.

Puerto Ricans. Of the five groups, the Puerto Ricans have consistently shown the least use of the orthodox health care system. Compared with the other ethnic groups, a significantly smaller percentage used the services of an emergency room or saw a private physician during the previous 12 months. Checkups were rare. This infrequent use of the orthodox system and the health calendar data indicating extensive poor health lead us to hypothesize that this group may be isolated from its own healing system as well as from the orthodox system and for the following reasons specific to the Puerto Ricans:

- Their lifestyle is such that many wives and mothers remain close to their homes and neighborhoods and rarely feel comfortable venturing outside these boundaries. Submissive and protected, the Puerto Rican woman in Miami takes direction from her husband. The father in one of our study families forbids his wife to leave home during the day, even for a brief time to have a cup of coffee with the next-door neighbor.
- When Puerto Ricans do reach a hospital or clinic, they are usually assigned to Cuban staff because they are Spanish-speaking. There is considerable antagonism between Cubans and Puerto Ricans in Miami, and the Puerto Ricans believe that Cubans treat them in an offensive manner, without respect (respeto). To treat and be treated with respect is a fervently held value. Seda, a Puerto Rican anthropologist, has said that a Puerto Rican possesses "an almost fanatical conviction of his self-value" (*6*). While Puerto Ricans are especially sensitive to lack of respect by Cubans, this may also be a negative factor in their contact with health care personnel from any ethnic or cultural group.
- Puerto Ricans in Miami do not have as diverse and powerful a folk healing system as they do in New York or Puerto Rico. Although there are several espiritistas in Miami, our information indictates that their following is not large. Puerto Rican and Cuban espiritistas are similar in that they are both practitioners of Espiritismo. However, Garrison (*7*) characterizes Puerto Rican Espiritismo as a folk-healing cult of the spirit-medium type rather than as a religious cult, as Sandoval (*4*) describes the Cuban counterpart.

Cuban santeros and esspiritistas are thought to be more powerful than the Puerto Rican healers in Miami. When Puerto Ricans believe that "a thing" (hechizo) has been done to them, they often believe that it has been effected by a Cuban santero. They fear that there is little chance of "taking it off" because (*a*) if they go to a santero, he probably will not work anything against a fellow Cuban and (*b*) if they go to a Puerto Rican espiritista, he will not have sufficient force for the task. Thus, they often do nothing about this situation.

Puerto Ricans in Miami rely heavily on herbs and folk remedies, which they grow in their yards or purchase from Cuban groceries. Our health calendar data from the pilot study indicate that Puerto Ricans are less likely than any group but the Haitians to take action in response to a symptom. Our preliminary findings concerning Puerto Ricans support those reported by Suchman (*8*) for New York City: they are the most socially isolated as a group and the most deviant from a standard response to illness.

Southern black. In Miami, the southern blacks show a greater range of variation in their traditional healing system than do either the Haitians or the Puerto Ricans. Home remedies lean more to materials such as vinegar and rubbing alcohol than to herbs. Faith healers appear on radio, television, in revival tents, in churches devoted in large measure to healing, and in "galas" attended by thousands and directed by nationally known figures. There are many spiritualists—those who engage in spiritual healing—who operate out of "temples," "churches," and "candle shops." Root doctors, sometimes known as Hoodoo men or Hoodoo ladies, are numerous. These therapists advertise openly in the local newspaper published by and for blacks; one even focuses attention on his ad with a large drawing of the roots of a plant. If Miami folk therapists are not powerful enough to bring about a cure, southern blacks may travel to Georgia or South Carolina where the reputation of the local root doctors is legendary.

In their use of the orthodox health care system, southern blacks appear to have numerous, but superficial, contacts. Approximately 50 percent of our sample attended public clinics during the previous 12 months and 23 percent were seen in an emergency room. Nevertheless, the health calendars kept by the families and the accompanying interviews indicate that symptoms and conditions continue week after week, month after month, and are rarely cured. A characteristic of the southern blacks' use of the orthodox system is that private physicians and public clinics are often used within the same family, sometimes at the same time.

Use of Multiple Resources

Preliminary data suggest that the five ethnic groups have unique patterns for using their own health systems as well as the orthodox system.

However, the use of multiple resources—that is the use of different therapies or healers serially or concurrently—is one overall feature that cuts across the five individual patterns. Evident in our study are four types of usage within and among systems. In each of these types, the remedies or healers, or both, are used one after the other or at the same time, as illustrated in the following examples:

Healers and therapies in the orthodox system. A Puerto Rican mother takes her baby who has symptoms of a cold to a public health clinic, and the physician prescribes cough medicine and pills. The mother is not satisfied because she believes that an injection is necessary for a cure. She takes the baby to a succession of private physicians until one finally gives the child the anticipated injection.

Among the local black populations, many families report seeing a private physician when they can afford to ("because they treat you better") but relying on emergency room treatment when they lack money for private care.

Healers and therapies within a folk system. A 9-year-old Puerto Rican girl had a red and swollen eye, and within 2 days it began to droop. Her mother diagnosed this condition as pasmo, a condition of paralysis linked to the hot-cold theory of disease. (Harwood (*9*) recently discussed this theory.) She began treating the condition by placing a compress soaked in camphor oil on the eye and giving the girl azufre powder sprinkled on fried eggs. When this treatment failed, she took her daughter to Puerto Rico to find the proper curative plants.

A second example concerns a young southern black woman with general weakness and skin ulcers. She visited a faith healer who gave her home remedies. No change occurred, and she sought the services of a second faith healer. Results were poor after two visits, and she then saw a third faith healer four times. She now states that she is satisfied with the treatment and is improving.

Healers and therapies in two different folk systems. One way in which an unorthodox healer validates his ability in the eyes of his patients is to tell a patient what is bothering him and what his interpersonal problems and worries are. This presents a problem for sick persons who are members of the still relatively small and tightly clustered Haitian community—they fear that the Haitian healer has heard gossip or rumors about the patient's life and problems rather than having clairvoyant ability. One of our Haitian mothers had just this concern after going to a Haitian reader. She is now seeing a southern black healer in whom she has greater confidence.

In exception to the general pattern, a Puerto Rican espiritista with whom one of our fieldworkers has established a relationship of trust has had Cuban clients come to her to take off spells after they had consulted (unsuccessfully) Cuban espiritistas to do this job. One of the competing Cuban espiritistas even came to her for a reading, masquerading as a client, to find out how she operates.

Botanicas are shops where items used in the practice of Santeria and Espiritismo are sold; articles include lotions, amulets, shells, images, and herbs

Items sold in the botanicas for use by santeros and espiritistas

Healers and therapies in a folk system and in the orthodox system. In addition to the folk and orthodox systems, the following example illustrates the second type of behavior mentioned, the use of healers and therapies within one folk system.

A southern black woman from South Carolina, Mrs. F, drank her Geritol as usual one morning and began to have stomach pains ½ hour later. The pains continued, and 2 days later she suspected that she had been "fixed," probably by a substance added to the Geritol. She took olive oil and a few drops of turpentine on sugar cubes. Later that week she went to see a root woman, who gave her some "bush" to "work it out."

Believing that the poison was "dead," but fearful that it might have rotted away her stomach, Mrs. F went to the emergency room of a local hospital. X-rays showed that although the stomach appeared normal, "something was down there." Mrs. F again went to the root woman who then gave her a new potion to drink, which contained garlic, white onions, and mercury in addition to other ingredients. She next sought the services of a root doctor who operates a candle shop. This healer gave her powder to sprinkle in her house and candles to burn in the corners of the house; he also laid his hands on her and prayed.

After hearing from a neighbor about a sanctified woman in a farming area 20 miles south of Miami, Mrs. F began making two or three trips a week to be treated by her. The woman rubbed Mrs. F's abdomen with a red substance and prayed over her. Mrs. F subsequently reported that she felt much better. However, she continued to keep candles lighted according to her root doctor's advice, to take the garlic and mercury potion from the root woman, and to be massaged by the sanctified woman. Recently, Mrs. F went to Jackson Memorial Hospital for gastrointestinal tests to "find out what is down there." (Interestingly, Mrs. F's contacts with the orthodox system were not for curative purposes, rather they were to check the effectiveness of the folk therapy.) Our worker first interviewed this woman approximately 8 months after the onset of her symptoms and maintained contact with her until her death a year later.

Another example concerns a Bahamian in our study who complained of abdominal and vaginal pain for months but refused to go for medical care, even if accompanied by the fieldworker and me (to insure prompt, courteous attention). She said it would be useless because her illness was caused by witchcraft, something no medical doctor could cure; the only source of help, she believed, was a root woman who she had seen several times. Ten days before her death—from an organic disease—she did visit the emergency room for treatment of a sore throat, which she defined as amenable to orthodox medical treatment, rather than for treatment of her major illness.

Discussion and Conclusion

Given the wide variety of healers and therapists in Miami, not only practical or obvious factors influence the choice of one over the other. Those factors which motivate an individual to accept or reject the orthodox health system, such as poor transportation or a poor "fit" between specific health beliefs and practices, provide us with only partial answers to the problem of selection. Elements which are specific to each group's health behavior add to but do not complete the picture either. We must search for deeper, more compelling motives which underlie the selection of a particular therapy or healer.

Anthropologists have proposed many hypotheses concerning motivation. Erasmas, quoted by Schwartz (*10*), stated that "where medical treatment is quickly effective, dramatic and evident, it will prevail over others." Schwartz suggests that "alternative modes of curing are arranged in hierarchies of resort, with different alternatives being used as the illness progresses without cure, and according to the individual's or group's acculturative process." Another hypothesis, by Bryce-Laporte (*11*), is that "when subordinate groups are only partially assimilated within a dominant culture," they tend to be bicultural in their choice of alternative beliefs and behaviors (for example, health beliefs and behaviors). Our data often indicate this simultaneous or serial use of the orthodox and traditional systems.

Still another explanation relates to etiology. Describing his health research among Mestizo communities in Peru and Chile, Simmons (*12*) proposes that those maladies which are assigned to "the etiological categories of severe emotional upset, ritual uncleanness, and bad air" necessitate treatment with at least one magical therapeutic technique, and a modern therapy with demonstrated value may be used in tandem.

From her study of health beliefs and practices in three Guatemalan cultures, Gonzalez (*13*) concluded that patients often seek relief from symptoms from a medical doctor while expecting the folk therapist to eliminate the cause of the disease. And, Egeland (*14*) concluded from her study of the Amish people that in the particularly crucial area of life and death, reliance on only one therapist or therapy or system of health care may be too precarious and more than one are sought.

The findings of our pilot study indicate that the scientific health care system is not sufficiently relevant to multi-ethnic populations in urban U.S. areas. Many persons in the ethnic groups we are studying are completely alienated from the orthodox system, and others use it serially or in tandem with folk health care systems. While we cannot disregard such considerations as language and transportation problems or the lack of cultural fit between health consumers and providers, we must be able to understand the underlying reasons for the selection of therapies and therapists. Only when we have such understanding will we be able to develop models for more appropriate health care delivery for ethnic minorities.

In the meantime, the following are some very practical measures which health personnel might find immediately helpful in providing better health care to ethnic populations:

- Gain knowledge of the health beliefs and practices of local ethnic groups.
- Respect the fact that these beliefs and therapies, although perhaps running counter to the scientific medical systems, have survived in these populations for generations and may indeed be measurably effective. To try to change a deeply rooted health belief either by ridicule or by treating it as unscientific may not only fail but may also alienate the patient.
- Use a treatment plan which shows understanding and respect for the patient's beliefs and which builds on these in a positive way.

Two examples illustrate the preceding points. A physician may assume that a patient from a low-income ethnic group has probably tried home remedies before coming to the orthodox system. "It is important that [he] know what the patient has been using to combat the illness—if it is harmless, it might be left in the treatment plan and the physician's own suggestions added. A harmful practice might be more readily eliminated if the physician simply suggests that since it has *not* seemed to have worked something else might be tried" (*15*). In developing a new treatment regimen, a physician might well integrate into it the numbers 3 and 9, for example, which are important in the folklore of Puerto Ricans and Mexican-Americans (*15*).

The second example concerns the many Puerto Ricans and Haitians who subscribe to the "hot-cold" theory. This is a belief system in which illnesses are classified as hot or cold and food and medicine, also classified this way, are used to restore the natural balance in the body; a "cold" medicine would be used to counteract a "hot" disease. A Puerto Rican woman who is pregnant (considered to be a "hot" condition) will avoid iron supplements and vitamins because they are also considered to be "hot," and it is believed that they will upset the body's natural balance. The wise physician will advise the patient to take her iron supplements and vitamins with fruit juice which, because it is classified as "cool," helps to maintain the proper balance of hot and cold in the body (*9*).

Another practical measure to be considered is to be able to recognize when a patient suspects that he has been hexed. He rarely will volunteer this information, but the physician should be aware that symptoms of "feeling bad," loss of weight, depression, lack of appetite, and abdominal complaints indicate possible rootwork. Often, the patient is relieved to share his fears when a concerned physician or nurse asks, Do you think something has been done to you? or Do you think you've been rooted? It is extremely important that the physician assure the patient that his symptoms are not due to rootwork and are curable with orthodox medicine, if this is true. If the physician determines that the symptoms are psychogenic, he should instigate palliative, supportive therapy and also accept, without ridicule, tandem treatment by rootworkers whose job it is to neutralize or remove the spell (*16*).

Many low-income ethnic groups in urban areas do not receive adequate medical care now, nor will they for many years to come. Obviously, there is no "payoff" for them to give up a health culture which has been supportive for generations in order to subscribe to the beliefs and practices of a system to which they have little access. Therefore, we can expect unorthodox health therapies to continue. Those who would try to make the scientific medical system relevant to these urban ethnic groups must first recognize the existence of other health systems and then be willing to respect and work with them. The trust and rapport thus established can form the base for a greater acceptance of the orthodox system in the future.

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Use of Contraceptive Services in Periods Of Receipt and Nonreceipt of AFDC

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FAMILY PLANNING legislation enacted by Congress in 1962 permitted the States to use Federal funds in providing family planning services to recipients of AFDC (Aid to Families with Dependent Children). Additional legislation enacted in 1967 required the States to provide such services and offered generous Federal matching funds to encourage their development (*1*). Supporters of the family planning legislation expected it to (*a*) improve family planning services to AFDC recipients, (*b*) increase the practice of contraception among them, and (*c*) lower fertility, thus reducing the burden of welfare dependency. Are those expectations being fulfilled?

The answer to that question has implications for a more general question currently being debated: Is the principal obstacle to further reductions of the number of births in populations of high fertility a lack of supply of contraceptive services or a lack of demand for them? Those who answer "lack of demand" argue that the present high levels of fertility result from social structures that give greater social rewards to mothers than to women in other roles. Unless and until those social structures are altered, these people say, increases in the supply of contraceptive services will have little effect on the prevalence of contraception (*2,3*).

Those who answer "lack of supply" argue that substantial motivation for reducing fertility already exists; if contraceptive services are made easily accessible to women, they will use them effectively to limit births (*4,5*).

Study of Effects of Legislation

The Government's effort to reduce the fertility of AFDC recipients is an important test of these alternative views. It can be argued on the one hand that the demand for family planning is low among AFDC recipients because the alternatives to childbearing as a means of social accomplishment are especially restricted for these women, and governmental efforts might be expected to fall far short of the mark. On the other hand, it can also be argued that the burdens of unwanted childbearing are especially heavy for AFDC recipients, and only the short supply of convenient, inexpensive contraceptive services prevents these women from voluntarily reducing their fertility; therefore governmental efforts might be expected to enjoy a large measure of success.

We discuss some empirical evidence bearing on these issues. More specifically, we address three questions: Are women when on welfare more likely (*a*) to receive information and advice about family planning from health and welfare professionals than when they are not on welfare? (*b*) to practice some form of contraception? (*c*) to limit childbearing? Our answers, based on analysis of the evidence from one city, are all affirmative. The welfare mothers studied did get better contraceptive service during periods when they were on welfare than in periods when they were not.

Study Methods and Subjects

The locale for our study was Metropolitan Nashville-Davidson County, Tenn. The Davidson

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County Department of Public Health, with the support of Federal funds, began providing family planning clinic services to low-income women in 1964. Under procedures instituted by cooperative agreement between the department and the Davidson County Department of Public Welfare, social workers were to identify AFDC recipients in need of family planning services and refer them to a public health clinic offering such services (*6,7*). Both public health and welfare professionals were given special training on the needs and resources for family planning services among welfare recipients. Thus, before our study began, a number of steps consistent with the intention of the Federal legislation on family planning for AFDC recipients had been taken by health and welfare agencies in Nashville.

The data for the study were obtained from standardized home interviews with a sample of 300 mentally competent women aged 15 through 44, randomly drawn from the April 1972 list of AFDC payees for Metropolitan Nashville-Davidson County. One-hour interviews were held with each woman by the Evaluation, Survey, and Health Research Corporation of Nashville during June and July of 1972. These interviews focussed on potentially sensitive subjects, but the interviewers reported getting good rapport and apparently trustworthy responses.

Part of the interview schedule consisted of questions, modeled after those used in the 1965 National Fertility Survey (*8*), that elicited information about the circumstances and events during each of a woman's pregnancy intervals. Although the information on the pregnancy intervals included other subjects, those significant for our study concerned welfare status and family planning.

Pregnancy intervals for the respondents were analyzed. (The first pregnancy interval is the period ending with the termination of the first pregnancy. The second pregnancy interval is the period from the termination of the first pregnancy to the termination of the second, and so on.) The respondent's welfare status during each pregnancy interval was determined by asking her to identify all sources of her income at that time from a printed list of sources which included "welfare." If "welfare" was mentioned as a source, the woman was classified as having received public assistance payments during the pregnancy interval. For each pregnancy interval, information was also obtained about the frequency of the respondent's discussion of family planning with social workers, physicians, or nurses. In addition, the women were asked to identify from a printed list all the methods they had used during the interval "to delay or prevent having a baby." If a woman named any method, she was classified as having practiced contraception in that interval. Finally, the period following each pregnancy interval was examined to determine whether or not the woman had experienced another pregnancy.

Our procedure in analyzing these data was to consider the intervals of each order separately, comparing the women when they were and were not on welfare as to discussions of family planning with health and welfare professionals, the practice of contraception, and the avoidance of subsequent pregnancies. For example, in the examination of

Table 1. Distribution of respondents' pregnancy intervals by welfare status and order of pregnancy interval

Welfare status during interval	Order of pregnancy interval							
	All orders	1st	2d	3d	4th	5th	6th	7th–15th
Number of intervals	1,141	297	245	191	134	108	66	100
Not on welfare	915	283	201	146	106	78	41	60
On welfare	226	14	44	45	28	30	25	40
Percentage by order of interval[1]	100	26	21	17	12	9	6	9
Not on welfare	100	31	22	16	12	9	4	7
On welfare	100	6	19	20	12	13	11	18
Percentage by welfare status[1]	100	100	100	100	100	100	100	100
Not on welfare	80	95	82	76	79	72	62	60
On welfare	20	5	18	24	21	28	38	40

[1] All percentages are rounded.

Table 2. Unadjusted percentages of pregnancy intervals in which respondents took any of five specified family planning steps, by welfare status and order of pregnancy interval

Family planning steps and welfare status	Order of pregnancy interval							
	All orders	1st	2d	3d	4th	5th	6th	7th–15th
Discussed family planning with a social worker	12	6	11	10	13	19	25	21
Not on welfare	4	4	4	4	2	8	10	3
On welfare	43	36	45	29	54	48	50	45
Discussed family planning with a nurse	22	11	17	22	26	32	40	41
Not on welfare	17	9	11	19	21	26	37	37
On welfare	45	57	48	33	46	48	46	48
Discussed family planning with a physician	26	9	25	30	32	34	36	51
Not on welfare	21	7	21	26	24	28	34	47
On welfare	47	36	41	44	61	48	38	57
Used contraception during this interval	46	36	42	42	53	50	58	69
Not on welfare	42	35	39	40	47	46	54	64
On welfare	62	57	55	47	75	61	65	76
Avoided pregnancy in a subsequent interval	24	14	20	26	19	38	25	44
Not on welfare	18	16	22	16	15	33	15	37
On welfare	49	21	57	58	32	48	42	55

NOTE: All percentages are rounded.

pregnancy intervals of the first order, we compared intervals of mothers who were on welfare with intervals of mothers who were not on welfare to see which subgroup was more likely to have used contraception during their first pregnancy interval. Similar comparisons were made for all pregnancy intervals except the one between the woman's last pregnancy and the interview, a period when all the women studied were receiving AFDC.

Results

The results of our statistical analyses are presented in tables 1–3. Table 1 indicates the distribution of pregnancy intervals by the order of the pregnancy and the welfare status of the mother, both in numbers and percentages. The first panel of table 1 shows the numbers of intervals on which the percentages in all the tables are based. In table 2, the family planning activities of welfare recipients are compared with those of nonrecipients for each order of pregnancy. Table 3 is identical to table 2 except that a statistical adjustment is introduced within each interval to control for differences between welfare recipients and nonrecipients as to race, age at pregnancy termination, and date of termination. This adjustment was done by means of Multiple Classification Analysis (*9*). The differences between the data in tables 2 and 3 are usually small and only rarely result in reversals of the differences between welfare recipients and others. Apparently race, age, and the date of pregnancy termination are not important independent determinants of whether a woman will take certain family planning steps during a pregnancy interval.

The top three panels of table 2 show that for all pregnancy intervals combined, women on welfare during the interval were considerably more likely than other women to have talked about family planning to social workers (43 versus 4 percent), to nurses (45 versus 17 percent), and to physicians (47 versus 21 percent). Furthermore, differences of the same sign and order of magnitude appear for the intervals of each order when these are considered separately. Although the differences are somewhat reduced and occasionally reversed by the controls used in table 3, the general conclusion is the same: Women who are on welfare during a pregnancy interval are considerably more likely than other women to receive information and advice about family planning from a health or welfare professional.

The fourth panel of table 2 shows that women on welfare during a pregnancy interval were also more likely than others to have practiced contra-

Table 3. Adjusted percentages of pregnancy intervals in which respondents took any of five specified family planning steps, by welfare status and order of pregnancy interval

Family planning steps and welfare status	Order of pregnancy interval: All orders	1st	2d	3d	4th	5th	6th	7th–15th
Discussed family planning with a social worker	12	6	11	10	13	19	25	21
Not on welfare	5	4	5	5	2	8	12	4
On welfare	41	37	40	25	54	48	47	45
Discussed family planning with a nurse	22	11	17	22	26	32	40	41
Not on welfare	19	9	13	22	22	28	38	43
On welfare	38	55	38	25	43	43	43	38
Discussed family planning with a physician	26	9	25	30	32	34	36	51
Not on welfare	23	7	25	29	25	30	37	51
On welfare	39	36	23	33	56	45	34	51
Used contraception during this interval	46	36	42	42	53	50	58	69
Not on welfare	44	36	42	41	47	46	56	69
On welfare	53	49	42	45	73	63	64	70
Avoided pregnancy in a subsequent interval	24	14	20	26	19	38	25	44
Not on welfare	22	17	16	20	18	38	18	42
On welfare	34	0	41	47	21	38	37	48

NOTE: These percentages are rounded and adjusted for race of mothers, year pregnancy ended, and age of mother when pregnancy ended.

ception; this greater likelihood was found for all intervals combined (62 versus 42 percent) and in the pregnancy intervals of each order. The differences are smaller in table 3, but they are consistently in the same direction.

Finally, the last panel in table 2 shows that women on welfare during a pregnancy interval were more likely than others to have avoided a subsequent pregnancy; this greater likelihood was found for all intervals combined (49 versus 18 percent) and in the pregnancy intervals of each order. The differences are much smaller in table 3, and there is one reversal (1st order), but the general pattern is clear and unchanged.

Conclusion

Although other explanations are not ruled out by these data, the data can certainly be interpreted as indicating that in Nashville, Federal legislation, implemented by State and local governments, is succeeding in the attempt to improve family planning services for AFDC recipients, to increase the prevalence of contraception among them, and to reduce the fertility of these women. This interpretation is consistent with the view that motivation for reducing fertility already exists in high-fertility populations and that additions to the short supply of family planning services will have significant effects on contraceptive practices and childbearing—even in such "hard-to-reach" target populations as AFDC recipients.

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Role of Lay Midwifery in Maternity Care in a Large Metropolitan Area

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MATERNAL AND CHILD HEALTH has traditionally occupied a central role in the delivery of medical care. It is not surprising therefore that it has also been in the vortex of our societal concern for the adequacy and availability of medical services. A basic ingredient of maternal and child health is, of course, adequate maternity care. The proliferation of social programs—Medicaid and neighborhood health centers, to cite but two examples—illustrates the cumbersome public fiscal insurance and piecemeal delivery programs that have appeared on the medical care horizon and which directly affect maternal services. Problem areas in these services have been defined both by the providers and consumers (*1–3*). The unmet needs in U.S. maternity care are documented by the unattended home deliveries reported in recent newspaper articles, the lack of prenatal care of an estimated 20 percent of expectant mothers, and the fact that the United States does not have an enviable infant mortality rate (*4–7*).

The debate about the future of medical care delivery has grown louder and more pervasive. The issues of the cost, quality, and continuity of care—including maternity care—are being described in terms of access, manpower, consumer attitudes, and the reorganization of systems (*8–15*).

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Our purpose is to view one aspect of medical care delivery, the use of midwife services. In many developed countries both the midwife and home delivery are formally built into the care system (*16*). In the United States, the practice of midwifery is usually regarded as a curious anachronism, although the nurse midwife has been accepted on a limited basis as a junior member of the maternity team (*17–18*). The lay midwife, on the other hand, is largely unrecognized by, and has little contact with, members of the medical community (*19*). Few articles or studies document the characteristics, or even the existence, of lay midwifery and its clientele despite the possible influence such practice may have on maternal and child health.

We have collected data on the characteristics of the lay midwife, her practice, and her clientele in a multicultural setting, Houston and Harris County, Tex. We specifically sought to discover why expectant mothers in this setting had midwife home delivery — whether out of ignorance or choice. The extent of midwife practice in this urban area, its needs, rationale, and content, led us to question some widely held assumptions about maternity care services and midwives. Specifically it raised questions about (*a*) the necessity of routine hospital delivery, (*b*) the autonomy of the U.S. physician in the provision of maternity care, and (*c*) the concept that lay midwives and home delivery are used only by the underprivileged, women lacking adequate finances, sufficient knowledge, or conventional maternity care resources.

Background

A 1956 court decision (*State* v. *Banti*) ruled that the midwife (Banti), who had been charged with the practice of medicine, was not guilty under Texas laws, and therefore she might legally practice midwifery. A provision of the Texas public health laws requires midwives to register, and in 1970, 1,500 were registered in the State; they were credited as being attendant at 2.3 percent of the total live births reported in the State that year, according to a U.S. Public Health Service report (*20*), "Vital Statistics for Texas, 1970" (*21*), and raw data for 1970 from the State health department. (We assume that most of the birth attendants who were classified as "midwife and others" were midwives.) The percentage of recorded deliveries by lay midwives in Texas in 1970 ranged from none in some counties to more than 20 percent of total live births in others (table 1).

Table 1. Deliveries by lay midwives in Texas counties in 1970 in relation to total live births

Percentage of midwives deliveries	Total counties	Total live births	Total midwife deliveries
Less than 1 ...	120	143,959	405
1–9	114	72,608	2,221
10–19	15	8,642	1,121
20 or more	5	5,415	1,562
Total	254	230,624	5,309

SOURCE: Reference 21.

In the Houston-Harris County area, where maternity care services are offered by both the public and private sector of medicine, the 9 lay midwives registered at the local health department during 1970 were reported as having attended 122, or less than 1 percent, of the 34,543 reported live births that year (*21*). These nine midwives apparently did not solicit business; nor were their names available to expectant mothers through the health departments of Houston or of Harris County.

The only formal contact between the area's lay midwives and the medical community was apparently an annual visit scheduled—but not necessarily completed—by public health nurses to the homes of the midwives. Some members of the medical community were apparently unaware of the existence of the local lay midwife practice, while the lack of contact of other members of the medical community with the lay midwives was apparently strategically planned "with an eye to elimination [of the practice of midwifery] in the future" (*22*).

Methods

Our methods consisted of casefinding and intensive interviewing of lay midwives and of mothers who had used their services. Health department personnel aided in the compilation of a list of 12 such midwives, which was finally expanded to 13. With the help of these 13 midwives and the mothers interviewed, a list of 52 mothers in the area who had used midwife services was also compiled. We believe that all the area's lay midwives were thus identified. Through pretested questionnaires and informal discussion, information was obtained from 46 mothers and 11 lay midwives. One interview with a midwife was incomplete. When needed, an interpreter assisted with the interviewing.

The majority of the residences of the 13 lay midwives and the 46 mothers studied were in Houston, the largest city in the area. Otherwise, there did not appear to be a particular pattern in the distribution of the women by census tract. Although the lay midwives and the mothers using midwife services in some instances lived in close proximity, the nearby midwife was not necessarily the one used. Possible explanations for this were volunteered by the mothers when they were interviewed. Some stated that they contacted several lay midwives one by one as they learned of them before selecting their own midwife. Other mothers apparently used the services of the first lay midwife they found.

Midwives Studied

Social and personal. All the lay midwives we identified were either Mexican-American or Negro women. Those interviewed, however, served all the major racial groups of Houston and Harris County—blacks, Caucasians, and Mexican-Americans. Table 2 summarizes the social and personal characteristics of the 11 lay midwives in the study area. All the midwives interviewed either were or had been married, and all except two had children of their own. The median number of children was four. The majority of these midwives were housewives who had owned and lived in their present homes for a median period of 16 years. These homes ranged from small unpainted houses in need of repair to apparently well-maintained two- to three-bedroom frame houses. A physician was the midwife's usual source of medical care. All the midwives interviewed were considered to be literate, as evidenced by copies of their birth certificates which they themselves had completed and signed.

Table 2. Social and personal characteristics of the 11 midwives and 46 mothers interviewed

Characteristic	Midwives	Mothers
Median age range	56–65 years	30–34 years
Median educational attainment	9th grade	10th grade
Median monthly gross income	Less than $300	$300–$450
Median period in present residence	16 years	5–9 years
Own their home	11 midwives	28 mothers
Married or has been	11 midwives	38 mothers
Race		
Negro	4 midwives	20 mothers
Mexican American	7 midwives	18 mothers
Caucasian	0 midwives	8 mothers

Training. The 10 lay midwives with whom interviews were completed reported that they had been trained informally: 4 had been trained by a physician, 4 had been trained by another lay midwife, and 2 had "learned by doing." After practicing midwifery, three of the women had attended classes for lay midwives. All said, however, that they had not attended refresher classes and that classes had not been available to them within the preceding 5 years. The majority reported that no one in the medical community had discussed pregnancy, labor, or delivery with them within the past 12 months. Exceptions included two practicing lay midwives who stated they had consulted with a physician. Awareness on the part of the lay midwives of their limitations is demonstrated by the fact that a majority said they would be interested in attending refresher classes.

Current practice. The median period of practice of the lay midwives interviewed was 34 years. Seven women actively practiced in 1970, the study year; six were actively practicing in mid-1971. The small number of lay midwives practicing, coupled with the difficulty the mothers reported in finding a lay midwife apparently resulted in delayed prenatal care. All the lay midwives reported that they routinely referred clients to a physician. Several Negro and Mexican-American mothers not included in this study reportedly had had deliveries at home "unattended." The median number of deliveries during 1970 attended by the midwives interviewed who were actively practicing that year was seven. The lay midwives, as well as assisting with delivery, had prenatal and postnatal contact with a majority of the mothers using their services. We learned from the mothers and the midwives that the extent and scope of that contact was tailored to meet the mother's individual needs.

Mothers Using Midwifery

Social and personal characteristics. The social and personal characteristics of the 46 mothers interviewed are summarized in table 2. These mothers were Negro, Mexican-American, or Caucasian. The majority were housewives who owned their own homes, in which they had lived for a median of 5 to 9 years. These homes ranged from small unpainted houses in need of repair located in crowded, noisy, unkempt neighborhoods to ones apparently worth 15 to 20 thousand dollars located in newer housing developments. From the appearance of the mothers and the responses elicited by the questionnaire, we judged that they were of average intelligence and comprised a conventional study population. Their regular median gross family income per month was $300 to $450; the majority of their husbands had been employed at their jobs for more than 5 years. Four mothers said that their monthly income was much above $450; only five reported that they received welfare or social security checks. The mothers' educational levels ranged from second grade to college graduation; the median educational attainment was completion of the 10th grade. Their usual source of medical care was a particular physician.

Table 3. Use and planned use of maternity care by 46 mothers who had used midwife services for home deliveries

Use of services	Number of mothers
Prenatal services used	
Public health clinic	10
Saw physician for any reason	31
Received referral to physician by midwife	20
Time midwife was contacted:[1]	
1st trimester	20
2d trimester	11
3d trimester	10
While mother was in labor	5
Postnatal services used	
Visited by public health nurse	29
Found visit helpful	16
Visited by midwife	37
Visit was on day of delivery or day after	31
Visited physician within 1 week of delivery	4
Visit was related to delivery	2
Delivery services used	
For all children born:	
Only midwife	12
Hospital and midwife	32
Other[2]	2
For first born:[3]	
Midwife	25
Hospital	21
For last born:[3]	
Midwife	36
Hospital	10
Future or ideal use of services	
Delivery of next baby:	
At home by midwife	26
Not at home by midwife	4
Would decide site and attendant at the time	6
Question not applicable[4]	10
Delivery of babies in general:	
Should be at home with midwife	17
Should be at hospital with physician	6
Either site and either attendant suitable if certain criteria met[5]	23
Family planning:[6]	
Would use	28
Would not use	8
Question not applicable[4]	10

[1] Median number of midwife visits in prenatal period was 4.

[2] 1 had experienced only home deliveries, attended by either a physician or midwife; the other had experienced both home and hospital deliveries. The home deliveries were attended by either a physician or a midwife.

[3] Each of the 2 categories includes 5 mothers who each had only 1 delivery.

[4] These women stated that they were sterile.

[5] Provided that the woman was healthy and physician did not say hospital delivery was advisable.

[6] 12 reported that their last pregnancy had been planned.

Maternity history. The median number of pregnancies of the 46 mothers interviewed was 6. We learned from the maternity history of the mothers that 56 percent of the total 273 deliveries to the mothers to date had been home deliveries by midwives. Twenty-five mothers had used lay midwife home delivery for their first baby, while 36 had used such services for their latest delivery (table 3). In each of these groups, there were five mothers who had experienced only one pregnancy. Twelve mothers had used only midwife home delivery; one mother had experienced only home deliveries, attended either by a physician or a midwife. The majority, 33 mothers, had had both a hospital delivery and a midwife-attended home delivery. Twelve reported that they had planned their last pregnancy; 28 said they would use family planning in the future (table 3).

Prenatal and Postnatal Care

Historically, the function of the lay midwife has been to serve as a birth attendant. In the area studied, however, the practice of lay midwifery also included prenatal and postnatal visits with mothers. The median number of prenatal visits with midwives, based on reports by the mothers interviewed, was four. The midwives, however, said the actual number ranged from none to eight depending on the individual needs of the client and the availability of transportation. The usual number of prenatal and postnatal visits, with the number of midwives reporting each number, was as follows:

Number of visits	*Number of midwives*
Prenatal:	
0–1	4
2–3	3
6–8	2
"As necessary"	1
Postnatal:	
2–3	8
4–5	2

As table 3 shows, 20 mothers contacted the lay midwives early in pregnancy. The 46 mothers reported, however, that they contacted the midwives at all stages of pregnancy up to and including the onset of labor. Of the five mothers who got in touch with midwives after the onset of labor, four said they had planned to have a hospital delivery. Three of these mothers called a midwife when delivery at home seemed imminent; one who had left the hospital to check on her children decided at that time to have her baby delivered at home by a midwife. The one mother who said that she had planned in advance to use the services of a midwife in home delivery stated that she could not contact a midwife earlier since she "didn't have any money." The prenatal care of approximately 15 of the mothers interviewed must be considered inadequate if the criterion is that prenatal care must be provided by a physician, since these 15 used the prenatal services of a midwife but did not see a physician. Despite statements of midwives that they referred mothers to physicians, only 20 mothers reported such a referral (table 3). Some mothers, however, volunteered the information that the midwife knew that they were already seeing a physician.

The mothers commented that their prenatal and postnatal care had been tailored to their specific personal needs. They used a mix of services. Some mothers visited a physician before seeing a lay midwife; some visited a physician only after being referred by a midwife. Ten mothers used the services of a public clinic, but the majority who used physician services saw a private physician. Some used the prenatal and postnatal services of both a physician and a midwife; others used the prenatal services of both but saw only the physician postnatally. Some mothers used a physician's prenatal and postnatal services while keeping in touch with a midwife.

During the postnatal period, 29 of the 46 mothers were visited by another member of the health care team, the public health nurse (table 3). Only 16 of those visited, however, said that the visit was helpful; in contrast, all the midwives said that the nurse's visit was good.

Maternity and Postnatal Care

Deliveries to the 46 mothers studied routinely took place in the home. All the lay midwives interviewed stated that they assisted with the birth only by supporting the baby as it was being delivered. On occasion, they reported, they had successfully manipulated the cord from around the neck of the baby during delivery. The midwives' descriptions of the delivery and of the care given the mother during the immediate postnatal period suggest the need for further instruction in midwifery. Nevertheless, anyone who without ever having observed a delivery by a lay midwife uses the norm—hospital delivery—as a basis for comparison (rather than the perfect delivery) cannot evaluate adequately the quality of the procedures midwives use (*23*,*24*).

After the delivery, most of the midwives stayed with their clients from 1 to 2 hours. It was during this period that all the midwives and most of the mothers said that the midwife's fee was paid, usually in full. This fee ranged from nothing to $125. Six midwives said that the amount depended on the client's ability to pay. The median range of fees paid was $51 to $75; the median fee charged by the midwife was $60.

To assess the adequacy of services, we asked the mothers if either they or their newborn infants had seen a physican or gone to a hospital in the first 7 days after delivery. Four mothers answered affirmatively, but the two visits that were made for causes related to delivery were for minor conditions, which were treated on an outpatient basis. One mother whose baby was dead at birth said the lay midwife was not at fault. Nevertheless, this mother also commented that since the midwife could "only do so much," there "ought to be a doctor she can call if she needs him." We therefore assumed that the death might have been related to the birth process. Whether or not the death would have occurred had the delivery taken place in a hospital cannot of course be determined (*24*).

Hospital Versus Home Delivery

The 33 mothers who had experienced both a midwife home delivery and a hospital delivery were asked to compare the experiences. Three mothers found the experiences comparable, 3 found hospital delivery preferable, and 27 found home delivery preferable. One mother expressed negative feelings about home delivery, stating that it was dangerous if a problem arose during delivery.

Twenty-one mothers had negative feelings about hospital delivery, stating, for example:

> It was cold and indifferent.

Crying of the woman in the next bed was not pleasant.

I didn't have the same doctor I had for prenatal care.

You're not treated like a person.

The doctor usually got there at the last minute—had to hold the baby back until he came.

I did not get the personal attention I got at home.

I was afraid my baby was crying and nobody was paying attention.

When I went to the hospital, they tried to send me away, but my husband and I stayed around the hospital. In about 30 minutes we went back to the doctor, and they had to rush me to the delivery room because I was about to have my baby.

It was hurried and impersonal and you could hear women groaning and carrying on.

I had terrible headaches and nausea and vomiting from the anesthesia and shots.

I was knocked out with drugs and didn't get to see my baby for several hours, and then just for a minute.

I got so lonesome—couldn't speak English—husband couldn't visit—nobody to stay with the kids. It was scary in the hospital.

Husband is sent away just at the time you need him.

They tried to hold me to make me have a spinal anesthesia.

The nurses sometimes were nasty, and when I rang the bell didn't come for quite some time.

They didn't believe me when I told them I was ready, and when they came back, my baby was already born.

The apparently negative feelings and experiences of these mothers about hospital delivery were not, however, the primary reasons they cited for choosing midwife home delivery.

Reasons for Using Lay Midwives

Why did an expectant mother have a home delivery attended by a lay midwife when custom dictated hospital delivery? The reasons could be significant since other expectant mothers both now and in the future might choose home delivery for similar reasons. Following are the principal reasons the mothers in our study gave for having their last child delivered by a lay midwife, with the number citing each reason:

Reason	*Number of mothers*
Just preferred midwife home delivery	14
Had negative feelings about the hospital (and drugs used in it)	8
Was following example of her mother	6
Finances	5
Baby-sitter problems	3
Only because delivery at home seemed imminent	3
Language difficulties	2
Wanted to be with her family	2
Had always had midwife home deliveries	2
Preferred a woman attendant	1

The 20 women who reported that their choice of midwife home delivery was based on just preferring it (14 women) or on the example of their mothers (6 women) were questioned further about their more underlying reasons. The main reasons they then gave for their choice were as follows, listed with the number of women citing each reason:

Reason	*Number of mothers*
Was more relaxed and more comfortable at home with family	5
Had previously been forced to use midwife home delivery and now preferred it	4
Had experienced natural childbirth in the hospital previously and thought it would be better and easier at home	3
Preferred natural childbirth in her home and used midwife because she could not find physician whose fee she could afford or because she knew friends who had uncomplicated midwife deliveries	3
Had considered both hospital delivery and home delivery and decided midwife home delivery was preferable	3
Finances	1
No need to go to the hospital since she was not sick	1

In other studies various reasons have been given for using the lay midwife. Dodge (*25*) said that "Many women are forced by . . . economics or ignorance to accept services of the 'granny women,' " and Osgood said that "they are utliized wherever a community lacks or is deficient in health personnel and faciliites—or even when physicians and nurse midwives are available—due to a variety of economic, social, or cultural factors." Lay midwives in the study area were apparently used for the same reasons as those cited by Dodge and Osgood. The mothers studied were apparently conventional women of average intelligence who, having previously experienced both hospital delivery and midwife home delivery, believed that their individual needs in normal labor and delivery were better met in midwife home delivery. The medical community needs to acknowledge the existence of lay midwifery and to examine the reasons for its utilization, as well as the effects of that utilization.

To assess the true feelings of the 46 mothers about midwife home delivery, we asked them if their next delivery would be a home delivery with a midwife attendant. Twenty-six replied affirmatively (table 3). When, however, the women were asked where in general they thought the delivery of babies should occur (not just as applied to themselves), only 17 said that delivery should be at home; 6 said delivery should be in a hospital; and 23 said that either hospital delivery or midwife home delivery was all right if certain criteria were met. In spelling out these criteria, 5 said the choice of delivery site should be the expectant mother's; 1 said that a first baby should be born in the hospital, but that thereafter the site of birth should be the mother's choice; the other 17 stated that if a mother was healthy, then home delivery was preferable, but if there were complications or the physician thought it advisable, delivery should take place in a hospital. These results appear to demonstrate critical thinking by the study population on the question of hospital delivery versus midwife home delivery.

Conclusions

We have drawn the following conclusions from our study of lay midwifery in Houston and Harris County, Texas:

1. The innovative utilization of lay midwife services, or of a unique mix of midwife and conventional services—a utilization based on the conscious choice by mothers who were of seemingly average intelligence—raises questions about some of our common assumptions and approaches to maternity care services.

2. The dearth of studies of midwifery or comparisons of midwife deliveries with hospital deliveries or with physician home deliveries means that policy and planning related to lay midwifery cannot be adequately or intelligently formulated.

3. More study is needed to establish what the role of the lay midwife should be, both in terms of delivery of services and in terms of the human needs of the consumers of such services. These studies should include a comparison of the practices of the midwife with those of the medical care system in respect to efficacy, efficiency, costs, and comfort of the patient.

4. Referral services need to be established at local health departments to encourage mothers who are going to use lay midwife services to get in touch with the midwives early in pregnancy. Also, records should be kept on the mothers and babies attended by lay midwives so that the results of midwife practice will be available for assessment and comparison with other practices.

5. Should lay midwifery be allowed to atrophy and possibly die because of lack of recognition and lack of referrals, or should the total medical system take a team approach to maternity services and find a place for lay midwives? We believe that this is a question that needs to be reexamined.

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LEE, FLORENCE ELLEN (Mary Hardin-Baylor College), and GLASSER, JAY H.: ***Role of midwifery in maternity care in a large metropolitan area. Public Health Reports, Vol. 89, November–December 1974, pp. 537–544.***

A recent study has delineated some of the characteristics of lay midwives and their clients in Houston and Harris County, Tex., as well as in the main features of midwifery practice there.

Eleven lay midwives and 46 mothers who had had midwife home deliveries were identified and interviewed. The midwives had contact with the mothers both in the prenatal and postnatal periods. They said that they referred mothers to a physician prenatally. The midwives were Negroes or Mexican-Americans whose median age range was 56 to 65 years. The mothers were Negro, Mexican-American, or Caucasian; their median educational level was completion of grade 10.

The mothers told about their difficulties in locating a midwife. They reported using the prenatal and postnatal services of either a physician or a midwife or of using a unique mix of the services of both. Fifteen mothers, however, did not see a physician. Of the 46 mothers interviewed, 33 had had both hospital and home deliveries: of these, 27 said that midwife home delivery was better. Some of the reasons the 46 mothers gave for having had their last deliveries at home by a midwife were negative feelings about hospitals (and the drugs), their finances, the imminence of delivery, a feeling that they would be more comfortable at home with their family, babysitter problems, a preference for midwife home delivery, a choice of midwife home delivery after conscious thought.

The mother's use of a midwife's services or of a mix of a midwife's and conventional services, a use based on reasoned decisions, raises questions about some of our common assumptions about maternity care. More studies are needed to determine what the role of lay midwifery should be. Referral services should be provided to encourage women who are going to have home delivery by lay midwives to contact them early, and records should be kept on the consumers of midwife services. The medical community will have to decide whether to continue to ignore lay midwifery or incorporate it into a team approach to maternity care.

Home Nursing Care Program on an Indian Reservation

BARBARA NOVAK, RN

LONG BEFORE HOSPITALS EXISTED, the sick were cared for in the home. The family assumed the main responsibility for providing the care needed. Not until late in the history of medicine did the hospital take over this role. The sick were transferred from their homes to the hospital because, for one reason or another, this seemed seemed more suitable. Once the patient was moved (to the hospital) the family relinquished its responsibility. It was either one or the other; there was no sharing (*1*).

In recent years the trend has been toward a return to home care, and the American Hospital Association (AHA) has encouraged hospitals to participate in organizing and coordinating such programs (*2*). The modern concept of hospital-based home care began with a program set up in January 1947 by Dr. Michael Bluestone at Montefiore Hospital in New York City. With this program, he hoped to discharge certain patients earlier than would otherwise be expected and to totally eliminate the need for hospitalization of certain other patients.

The number of organized home care programs has grown rapidly, in many respects as a result of the successful Montefiore project. According

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to a 1970 AHA survey (*3*), 263 home care programs were being administered by hospitals; however, this number was only about 10 percent of the total number of home health agencies that were meeting Medicare standards.

Basic to home care programs is the premise that, for certain patients, the familiar surroundings of their homes are more therapeutic than the hospital's regimented atmosphere. Several recognized advantages of home care are (*a*) more appropriate means of care than hospitalization, (*b*) good followup so that gains made by the patient in the hospital will be maintained or exceeded at home, (*c*) freeing of hospital beds for patients in greater need, (*d*) better continuity of care, and (*e*) it is less costly than inpatient care.. Additionally, the patient's care becomes a responsibility shared by the hospital and the family. This shift can prove to be meaningful for the hospital, the family, and the patient.

Home care is not applicable to all patients. Its suitability depends on the limits of the home care program, the patient, his medical condition, his family, and his home situation. Good criteria for the selection of patients are therefore essential to the success of a home care program.

Home care can work for several types of patients: the short-term, convalescent patient; the patient with chronic illness; the terminally ill patient; and the patient temporarily unable to come for outpatient care. Levels of care in the home care program can range from minimal to intensive, depending on the needs of the patient and the limits of the program.

In September 1973, a home nursing care program was organized as a 6-month pilot project at the Public Health Service Indian Hospital in San Carlos, Ariz. One of its main objectives was to study the need for such a program in this particular community. A request by the San Carlos Apache Tribal Health Committee for an increase in the provision of direct nursing services in the home prompted the beginning of the program.

The San Carlos Apache Reservation occupies 2,854 square miles of southwestern Arizona. Its population has been estimated at about 6,000, most of whom live in San Carlos and Bylas, the two major communities. Most of the Apache people are bilingual, and the majority dress in modern attire. Unfortunately, much of the Apache culture has been lost, or at least it is not readily apparent to non-Apaches. Some customs, ceremonies, and old beliefs persist, however, especially among the elderly. For example, Apache families are still predominantly matriarchal.

Many members of the tribe are not self-supporting and must depend heavily on government funds. Employment on the reservation is severely limited by the relative lack of private enterprise. Off-reservation employment is available, but many obstacles exist to prevent the Apache from taking advantage of such opportunities. Although housing has been improved in recent years, many homes still are without plumbing. Most families have their own vehicle or access to one—a necessity, since there is no public transportation. For one reason or another, however, many people must rely on walking as their chief mode of transportation.

Health care is provided by the Public Health Service. A 36-bed hospital in San Carlos offers inpatient and outpatient services; when necessary, patients are referred to the Phoenix Indian Medical Center. In addition to a nursing staff of 27 and a medical staff of 6, the San Carlos hospital has a community health medic, a pediatric nurse associate, a medical social worker, a psychologist, and a part-time physical therapist. Community health nursing is also offered; its staff consists of one licensed practical nurse, two registered nurses, and two community health nurse trainees (RNs), all of whom are employed by the Public Health Service.

Design of the Project

The home nursing care (HNC) project was considered an appropriate means of attempting to improve health services and better meet the needs of the San Carlos Apache for several reasons:

1. Many of the hospital's patients with long-term diseases require extended hospitalization or transfer to a nursing home. Since the only nursing home in the area is approximately 40 miles from the reservation, far from relatives and friends, and long hospitalizations are often psychologically traumatic, nursing care and supervision in the home would be far more suitable for a large portion of these patients.

2. Many patients, especially those with chronic conditions, are hospitalized repeatedly for the same condition. Better followup, with an increase in the supervised involvement of the patient and

his family, might help to prevent rehospitalization.

3. Some outpatients require daily care for a short time—for example, patients in need of special care for a wound. Transportation difficulties sometimes cause patients to miss clinic visits and this could necessitate hospitalization for some of them. This situation could be alleviated by treating these patients at home.

4. Frequently, the hospital's inpatient census is near capacity. Reducing unnecessary hospitalizations would free beds for other patients in need, an important consideration in a small hospital.

5. Continuity of care between hospital and home needs to be improved. The home nursing care project could further this objective, at least among the patients it serves.

As a registered nurse on the staff who was interested in caring for patients in their homes, I was selected to head the HNC project. Guidelines were established to help organize it.

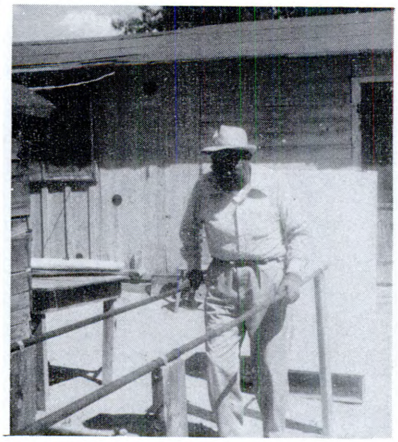
The stated purpose of the HNC program was to "offer professional nursing care in the home of certain individuals as an alternative to hospital or nursing home care, thus recognizing and utilizing the home as a therapeutic agent." Objectives were formulated in relation to the needs mentioned previously. In addition, the program was to strive to deliver "organized and comprehensive health care under the supervision and leadership of a professional nurse." There was to be input from all members of the health team as indicated by the needs of each patient. Therefore, even though the official staff was from the nursing department, the services of other departments, such as the medical social worker, the psychologist, and the physical therapist, were available and utilized. Community health aides, employed by the tribe, were also a part of the HNC's health team; among these aides was a newly organized group of five homemakers.

In selecting patients for the program, several criteria were to be considered. With the resources available, could the care needed be provided in the patient's home? Because of the experimental nature of the program, staff and working time were limited. The staff consisted of the registered nurse coordinator and a licensed practical nurse. Both were assigned to HNC part time—an average of 2 days a week for the coordinator, less time for the practical nurse. Therefore, we had to consider whether we could adapt the hospital service to the home and whether we would be able to visit the patient as often as necessary.

Social eligibility was the most important criterion. The patient's feelings about going home were assessed. How much did it mean to him? As Silver noted (*4*):

> Separated from the warmth of the home, dependent, a patient will tend to worry more about his family, their financial needs, the crumbling of family solidarity. The feeling of belonging, of contributing, begins to disappear. For many patients, particularly long-term patients, hospital sights, smells, sounds, discipline, are not conductive to affection, to allaying fear, or the feeling of helpless despair.


The emotional status of the patient (left) has greatly improved since she has been involved in more activities, such as volunteer work


Stroke patient practices on parallel bars constructed by his son


Physical therapist works with hemiplegic patient at home

The hospital "sights, smells . . ." are even more foreign to the Apache; many patients are anxious to go home as soon as they begin to feel better.

In addition to the patient's emotions, the family's response was taken into account. Were family members able to offer the patient supplementary care? Field and Schless have said that successful home care depends not only on the services the program is able to offer, but "on the capacity of the patient and his family to make constructive use of the services" (*5*). With our staffing limitations, this factor was especially important. If he had no family, the patient had to be responsible for his own supplementary care. We anticipated problems in this area because there were many patients requiring close followup who had no family members to help them and who were unreliable in caring for themselves. All criteria were flexible, however; their application depended on the individual patient and his needs.

Having determined the guidelines, our next step was to identify eligible patients. Referrals were made directly to the registered nurse coordinator, who made the final decision in the selection of patients. After an initial discussion with the referring person, the coordinator began to determine the patient's medical and social suitability for HNC. The home situation was explored first, and the program was then explained to the patient —preferably while he was still in the hospital.

When a patient was accepted for the program, his health needs were discussed with pertinent team members, and a goal-oriented care plan was written. A chart containing his medical and social profiles was set up for day-to-day recording. In keeping with the hospital's system of POMR (problem oriented medical records), a copy of the patient's list of problems was transferred from his hospital file. Periodic summaries of the daily recordings would be added to his hospital chart.

The patient and his family were prepared for the home care program as much as possible while he was still in the hospital. After discharge, the nurse continued to teach them, turning as much of the patient's care over to him and his family as they could handle. The coordinator was responsible for the management and supervision of care, collaborating with the patient's physician and other team members. She acted as liaison between the patient and the hospital by coordinating the services required. Team conferences were held whenever the patient's needs demanded. They were not scheduled regularly, however.

In the project's first 6 months, 17 patients were admitted. Most of these were patients with long-term diseases; they were considered "high risk," because they had been hospitalized several times for the same condition. A few patients were seen for a short period, mostly for care of wounds. They were then discharged with referral to community health nursing, when indicated, for periodic followup. The diagnoses were as follows:

Principal condition	*Number of patients*	*Average age (years)*
Chronic ulcers	2	62
Cardiac disease	1	27
Multiple problems	5	72
Hemiplegia	1	28
Diabetes	1	42
Psychiatric problem	1	36
Rehabilitation after cardiovascular arrest	2	58
Tuberculosis	1	46
Wounds, short-term care	3	61

Although it is too early to draw valid conclusions about the group of patients, it should be noted that only one high-risk patient needed to be rehospitalized. He had expressive aphasia and was unable or unwilling to cooperate with his family or the nurse. Rehospitalization of another patient was prevented on three separate occasions when ulcer breakdown was observed and treated early at home.

Case Studies

The following case studies illustrate how the home nursing care program has helped to improve health care in the community.

Case 1. A 66-year-old woman is being followed in the program because of multiple problems which include renal disease, chronic foot ulcers, and anemia. She left the hospital against medical advice because she "needed to go home." She is highly respected by the community, very independent, and mistrustful of modern medicine. She was known to come to the hospital only when she was seriously ill, after refusing medical help in the early stages of an illness. An 18-year-old granddaughter assumes most of the responsibility for her care. The patient lives in a small shack with 11 other people, including her daughter and son-in-law; all are unemployed.

Through health teaching, visits on the average of three times a week, and careful nurturing of a trusting relationship, several improvements have been achieved. The patient's granddaughter has been providing good daily care of the ulcers, although we have had difficulty with the patient occasionally because she wanted to leave the dressings off. The HNC staff has worked closely with her physician and the laboratory, and blood studies have been performed to help monitor her renal disease status and anemia. Her medication is altered as necessary. Although she refuses to be rehospitalized for a thorough re-evaluation of her problems, she does go to the outpatient clinic for periodic checkups. We have been working also with the medical social worker and various community agencies to improve her social situation. Although management of her health conditions is far from ideal, it is now continuous rather than sporadic.

Case 2. A 27-year-old woman with rheumatic heart disease underwent mitral valve replacement in July 1973, and she was subsequently discharged on a regimen of anticoagulant medication. She did not take the medication as prescribed, and shortly after discharge she was again admitted to the hospital because of a mild cardiovascular accident. After this hospitalization, she experienced episodes of bleeding because of continued poor followup and errors in taking her medication.

The patient was reluctant to come to the outpatient clinic because if she had to be rehospitalized, her son would have no one to care for him. At this point, she was referred to the home nursing care program, and it was stressed that her cooperation was essential. She was given instructions in self-care for her condition, with emphasis on the importance of taking her medication as prescribed. Prothrombin time and hematocrit studies were done weekly, and her habits of medication were supervised. Her condition is now well controlled by the anticoagulant medication, and she is more reliable in self-care.

Case 3. A 79-year-old woman came to the clinic with an infected wound. Hospitalization was not necessary, but the wound required close observation and daily care. The patient had difficulty arranging for transportation and getting a babysitter each day for her grandson, and she was referred to the coordinator of the HNC program. At this time, the program's patient census was such that daily care for her wound was feasible. After a week, her wound was sufficiently healed for her to assume responsibility for the remaining care. She had to come to the clinic only three times. The program saved her considerable inconvenience and demonstrated to her the hospital's interest in her problems.

Achievements and Problems

The HNC program's most notable contribution has been the improvement in the health care of patients with long-term diseases. It has also increased the involvement of both patient and family in the patient's health care. Their understanding of the medical problem and of what they can do to help has decreased the number of crises that occurred because of lack of knowledge. Continuity of care has been greatly improved. In addition, it has been demonstrated to patients that the hospital staff does not merely wish patients to get well so they they can be discharged; they want patients to remain well. Communication and cooperation have increased between the hospital staff and the patient at home.

The lack of time and staff to help all patients who could benefit from the program has been a major concern. It was especially difficult to follow patients living in Bylas, which is 25 miles away. Staffing problems in the nursing department of the hospital have made it difficult for the program to expand, even to the point of designating definite days for home care visits. Also, data on the home care patients were not incorporated into the hospital's system of collecting statistics.

Patient selection was poor at times, resulting in unsuccessful home care. As we expected, these failures were with patients who had no reliable person to give them supplementary care and who would not cooperate with home care staff. Inadequate preparation of the patient and the family before the patient left the hospital also caused some failures.

Answers to questionnaires testing the reponse of both hospital personnel and the community to the program provided further insights, both positive and negative. Staff members were asked whether they were aware of the program and its purpose, what their general feelings were about it, and whether they knew of any instance in which the program had proved beneficial regarding their particular aspect of patient care. Persons engaged in the program—notably the medical, social service, and physical therapy staffs—believed that the program was valuable and had improved health services to the community. All the physicians felt comfortable working through the program, and each knew at least one patient who had benefited from it. The physicians considered the nurse coordinator to be especially effective as a liaison between them and the patient who needed close followup at home. She could keep the physician informed about the patient's status by building on a relationship started in the hospital to communicate with the patient at home. Thus, the physicians felt that they could maintain control even after the patient was discharged.

On the negative side, many hospital staff members did not really understand the HNC program. This reaction was particularly true of the nursing staff; many felt that there was not enough feedback. The following questions were raised. Would the program do as well with another coordinator if the present one should leave? Didn't the HNC program really belong in community health nursing, which is responsible for all services provided outside the hospital?

The patients and their families were also asked how they felt about the HNC program. Did they think it helped them and, if so, how? Did it change their feelings about the hospital personnel? Did they like being involved in their own or in their family member's care? They responded with enthusiasm and appreciation for home nursing care. Significantly, the majority said that the program made it easier for them to communicate with the hospital personnel, especially their physicians. Although they frequently knew when a health problem required attention, they lacked transportation to the hospital. They believed that the hospital cared about what happened to them or "they wouldn't have sent a nurse to check on me." The families enjoyed being involved in the patient's care, and they thought that the program helped them to take better care of the famliy member.

Future Plans

The registered nurse coordinator will continue to be based in the hospital. Even with the unique relationship between the hospital and community health services in the Indian Health Service's service units, it was felt that a HNC program based outside the hospital would not be as effective in coordinating services and providing for continuity of care.

More attention will be given to periodic inservice education of community health nursing and hospital staff concerning the program. The coordinator will work closely with the community health nurses in organizing and delivering care. This coordination will allow for better coverage of Bylas, since a community health nurse is assigned to that area. The community health recordkeeping system will be used for day-to-day charting, allowing for the collection of statistical data on the home care patients. Periodic summaries will be added to the patients' hospital charts, as was done previously. Patient care conferences with the community nursing staff will be held weekly in the hospital. These conferences will serve several purposes: (*a*) keep the coordinator and the staff up to date on the patients' status, (*b*) improve the quality of care by increasing input on the patients' status, (*c*) improve feedback to the hospital personnel, and (*4*) improve the relationship between the hospital staff and the community health nurses. A policy and procedures manual, which emphasizes selection of patients, will be written to improve the structuring of the program.

Most of these measures are being implemented at this time and, as a result, the program is operating more effectively. The part-time status of the HNC program continues to be its major weakness, forcing the exclusion of many patients requiring daily care who would otherwise be excellent candidates for home nursing care.

Home nursing care offers the San Carlos hospital, the community health staff, and the tribal health staff a means of working together to achieve the most appropriate use of health facilities and resources. The possibilities for improvement of comprehensive health care services to the San Carlos Apache are tremendous. What the home nursing care program needs now is recognition of its worth and approval of its reorganization as a full-time program.

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Aspects on Delivery of Ear, Nose, and Throat Care to Montana Indians

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OTITIS MEDIA is one of the most common diseases among Native Americans (Eskimos and Indians). Most of these populations live in areas that are remote from adequate ear, nose, and throat (ENT) services, and the many untreated cases of acute otitis media among them have resulted in a high frequency of chronic ear disease. Recently, however, various measures have been taken to improve ENT care for Eskimos and Indians. In this paper we report 5 years' experience (1970–74) in providing otological and audiological ENT services to Indians in Montana. We attempt to evaluate these services and to suggest improvements for the future. It is our hope that our experiences will benefit similar projects.

Background

The earliest ENT care for the Montana Indians was provided by private physicians in the State and by Public Health Service physicians and nurses in the Indian Health Service hospitals and clinics. The Blackfeet Reservation was somewhat more isolated by geography and weather from ENT care than the other reservations. The nearest practicing ENT surgeon was approximately 250 miles from the reservation.

In 1969 the University of Washington's Department of Otolaryngology began to send senior residents to the Blackfeet Reservation to provide ENT services on an irregular basis. However, because the service was irregular, followup was difficult; sometimes postoperative patients were not seen for months, and all surgical patients had to be transported to the Seattle Public Health Service Hospital.

To improve this situation, the Department of Otolaryngology proposed to the Indian Health

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Service (IHS) that a mobile ENT clinic be used. The unit would be staffed with an audiologist and a Flexner (a physician's assistant who is trained in otolaryngology). In 1971 the IHS received a special Congressional appropriation to provide the initial resources for the mobile unit project, and the IHS then provided a contract to the Department of Otolaryngology for the project. The contract has been renewed annually. After an initial investment in the mobile van and equipment, the yearly contract has amounted to approximately $110,000 for salaries, supplies, transportation, and all other costs directly concerned with the ENT services in Montana.

Thus, the department has been providing otological and audiological services on a regular basis to the people on the reservations in Montana and Wyoming since 1971. Recently, another audiologist, a secretary, and a part-time ENT physician who supervises the project were added to the mobile team. The team has been described in detail in a previous publication (*1*).

The Mobile Ear-Nose-Throat Unit

Services and equipment. The services provided in the mobile unit include excellent facilities for ENT and audiological examinations. The equipment can be transported over long distances and in adverse weather conditions and still operate effectively and reliably. Initially, we feared that the sensitive electronic and optical equipment might be damaged and exposed to a great deal of wear and tear. This fear proved to be unfounded.

The mobile clinic provides a convenient and pleasant work environment. In addition to the usual ENT armamentarium, the van includes an otomicroscope, hot and cold running water, an autoclave, and an electrically adjustable examination chair. The patients can be given complete audiological evaluation including pure tone, Békésy, and impedance testing, as well as hearing aid evaluations, in a controlled-sound field environment. The equipment in the van is ready for immediate use; we do not have to pack and unpack equipment and set it up in makeshift quarters.

Originally, the project was intended for casefinding for referral and treatment of patients in outlying areas who had less-serious disorders. Patients who required more advanced medical treatment or surgical intervention were referred either to the Indian Health Service hospitals or to contract physicians. Although an effort was made to provide every patient with immediate and appropriate treatment, the magnitude of surgical need was greater than the funds available for treatment. A plan was therefore devised to have the ENT team physician or a contract ENT physician perform surgery at the Blackfeet and Crow Service Units. Both hospitals have operating rooms that are well suited for ENT surgery. Services were offered in the summertime for the Blackfeet Reservation because of the severe winters in that area; for the Crow Reservation, services were offered primarily in the wintertime.

Currently, the activities of the mobile unit are coordinated with the surgery program. One month before a surgery program is scheduled, the mobile unit visits nearby service units for screening of school children and casefinding. The mobile team assists with preoperative workups and immediate postoperative care and performs field followups.

The number of private ENT physicians in Montana has grown from 2 when the program began to 11. The Indian Health Service has also made increasing amounts of money available for contract surgical care, thus allowing more referrals to private ENT surgeons. These physicians are also performing surgery more frequently at the service units, and contracts are being negotiated for them to provide both clinical and surgical treatment in the IHS facilities.

In short, the majority of surgical candidates have now been offered treatment. Surgery is being carried out in locations close to or on the individual reservations, making the service convenient and far more attractive. Long, discouraging waits for treatment have been eliminated. Excellent facilities and equipment, as well as highly trained personnel, are available for the patients. Prophylactic measures, early treatment, immediate referrals, and arrangements concerning transportation and finances are arranged at the first visit.

Project personnel. The project has been definitely advantageous for the team members. All have enriched their professional experience from the unusual, frequent, and severe ENT diseases in the Indian population. The close cooperation of the team members has provided excellent opportunities for comparison of physical findings with audiological measurements benefiting the patient. Another definite advantage for the project has been the continuance of the same mobile team members for 3 years. Consequently, they are well aware of the difficulties involved in the project. The regular visits by the same team members to the reservations seem to have increased the patients' confidence in the project.

As expected, there have been difficulties in finding a full-time ENT physician to supervise the mobile ENT project in Montana. So far, the situation has been eased by two part-time ENT physicians from Sweden. However, they have had to divide their time between the Montana project and their research work at the University of Washington in Seattle; this has necessitated considerable travel—an unsatisfactory situation for both the patients and the physicians. The problem of recruiting an ENT physician will probably continue in the immediate future, because most ENT physicians in the Montana area apparently prefer private practice.

The project also necessitates considerable travel each year for the team members living in Billings. One round trip to the various reservations is 2,200 miles. The extensive time spent in traveling is considered by the team members to be a pronounced and increasingly negative experience.

Another disadvantage is the project's vulnerability in having only one person in the Flexner position, because the entire project becomes too dependent upon the health and physical presence of this person. The audiological services, on the other hand, are much less vulnerable, because there are two persons to provide them.

Diseases. The spectrum and frequency of ENT diseases in the Indian population differ in some respects from those in corresponding non-Indian populations. The ENT disease pattern among the

Table 1. Diagnoses of diseases or conditions by mobile ENT team at clinics or during screening of school children, fiscal year 1973–74

Diagnoses	Patients	
	Number (N = 3,043)	Percent
External otitis	94	3.1
Cerumen (wax)	191	6.3
Acute otitis media (serous or purulent)	157	5.2
Chronic suppurating otitis media	140	4.6
Chronic dry otitis media	368	12.1
Chronic or recurrent serous otitis media	325	10.7
Sensorineural hearing loss	310	10.2
Conductive hearing loss, other causes	125	4.1
Dizziness, vertigo, Meniere's disease, and others	3	0.1
Total	1,713	56.4
Acute rhinitis, common cold	164	5.4
Chronic atrophic or dry crusted rhinitis	62	2.0
Allergic or vasomotor rhinitis	24	0.8
Nasal fracture, acute or sequelae	33	1.1
Nasal septal deviation	49	1.6
Sinusitis	10	0.3
Total	342	11.2
Adenoids	81	2.7
Acute pharyngitis, tonsillitis, sore throat	45	1.5
Chronic or recurrent pharyngitis, tonsillitis	34	1.1
Total	160	5.3
Acute or chronic laryngitis, hoarseness	6	0.2
Acute or chronic bronchitis, cough	11	0.4
Total	17	0.6
All other diagnoses	154	5.1
No symptoms, checkup, normal ENT	657	21.6
Total	811	26.6

[1] Total includes 427 school children.

Montana Indians is evident from statistics compiled for fiscal year 1973-74. The number of persons seen by the mobile team in that year and the types of diseases or conditions diagnosed by the team are shown in table 1. Otitis media, both acute and chronic, was the most commonly diagnosed disease, and an unexpectedly high number of relatively young people were found to have sensorineural hearing loss. Acute head trauma and its sequelae, as well as the sequelae of nasal fractures with deviation of the entire nose or of the septum only, were also commonly diagnosed.

The types of surgery and the number of times they were performed from July 1973 through March 1974 by the mobile team's supervisor or by contract surgeons in Indian Health Service hospitals were as follows:

Types of surgery	*Number of times performed*
Myringotomy	6
Cauterization and paper patching of tympanic membrane perforation	5
Mastoidectomy	2
Cleansing of ear, mastoid	2
Myringotomy and insertion of polyethylene tubes	50
Myringoplasty	13
Tympanoplasty	11
Stapedectomy	5
Exploratory tympanotomy	1
Ossicle transpositioning	1
Adenoidectomy	38
Septoplasty	7
Septorhinoplasty	5
Rhinoplasty	2
Sinus wash	3
Removal of foreign body from nose	1
Removal of cyst or polypectomy	2
Tonsillectomy and adenoidectomy	10
Tonsillectomy	4
Vocal cord polypectomy	1
Total performances	169

During the past 5 years, primary emphasis has been on the diagnosis and treatment of chronic otitis media. The number of "new" cases of chronic otitis media has decreased markedly since the project was initiated, and we have reliable information that this decrease is real. Instead, there is now a predominance of children with serous otitis media, which can be interpreted as evidence that chronic middle ear disease is identified in an earlier stage. All children with serous otitis media are offered close followup and necessary treatment, for example, polyethylene tubes or adenoidectomy.

Patients' attitudes toward the project. Although the ENT facilities are readily available, it is regretable that some patients decline to use them. From our experience, many Indians have a poor medical understanding of the hearing organ, its function, and such general aspects as maintaining hygiene, keeping appointments, and taking prescribed medicine.

The previous system in which Public Health Service physicians served in the Indian hospitals as an alternative to military service and the frequent and complete turnover of these physicians every second year created negative attitudes toward PHS physicians among the Indians. The Indians believed that the physicians were not concerned with Indian health care. Many physicians also felt "deported" to remote reservations. Although these arrangements were terminated recently, there is still some lack of confidence in the medical care provided in many of the Indian hospitals.

In addition, some older Indians who still believe in Indian ritual medical care may discourage their relatives from seeking medical and particularly surgical advice in the hospitals. To emphasize their viewpoints, rumors about poor care or unsuccessful results are circulated on the reservations. In the Montana-Wyoming area, there is a noted rivalry between tribes, which makes

Table 2. Patient caseload during mobile ENT unit's clinic and surgery program at Browning Hospital on Blackfeet Reservation, June 25–August 19, 1974

Month	Number of patients			
	Came with appointment	Came without appointment	Failed to come	Canceled
June	41	15	25	1
July	207	66	151	11
2–15[1]	(79)	(30)	(76)	(3)
August	114	22	56	2
Total	362	103	232	14

[1] Included in this period were Fourth of July and Indian Days.

the treatment of a person from one tribe difficult if it must be carried out in what is felt to be a rival tribe's hospital. Even within the same tribe, local and regional rivalries have a negative effect on the attendance of persons from outlying areas at medical clinics held outside their own area.

It has been difficult to plan clinics and surgeries because of the comparative lack of patients' reliability in keeping appointments. Sometimes all patients scheduled showed up, and sometimes only 25 percent did so. Often the volume of surgical patients has been less than optimal. Table 2 shows our experience during the summer surgery program at the Browning Hospital on the Blackfeet Reservation. Patients must be admitted at least 1 day before surgery so that the ENT team can determine the surgical caseload. It is also exceedingly difficult to call patients from a waiting list on short notice, because most patients do not have telephones and have to be contacted through community health representatives. In sum, although the majority of Indian patients keep appointments, follow prescriptions, and are well acquainted with the common principles of hygiene, a substantial number still appear to show a lack of concern in these matters. Consequently, the efficiency and results of the ENT project are reduced.

Discussion

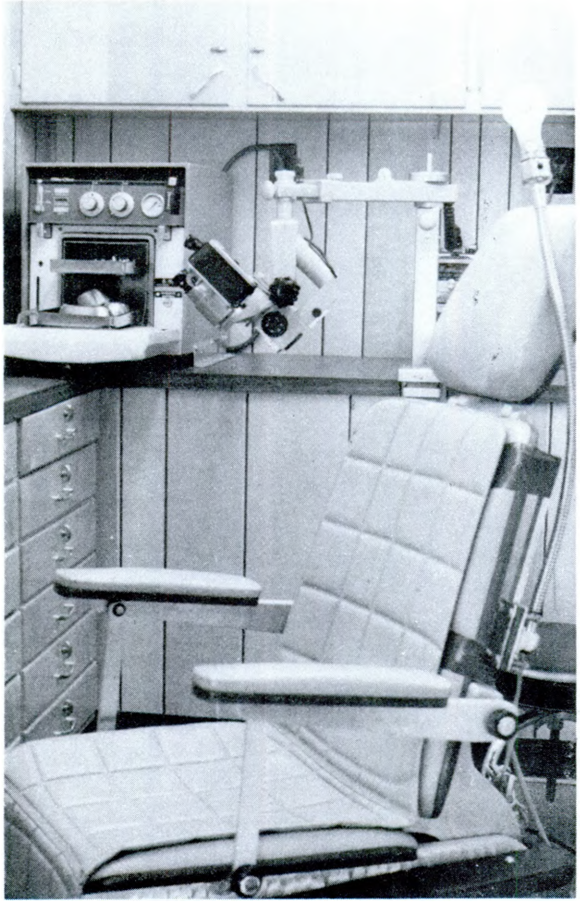
The emphasis of the ENT program is provision of medical care for patients with otitis media. We have found that the disease is seldom seen in its acute stage by the ENT team, possibly because patients do not seek advice or treatment at this stage or because they are treated with antibiotics and nasal or oral decongestants at the Indian Health Service hospitals.

Suppurating ears in children often do not alarm the parents sufficiently to seek medical advice. The

Otologic services are provided on Indian reservations in Montana in this specially built van which includes an ENT examination room, an audiological compartment, and a waiting room incidence of acutely suppurating ears is so high that the condition may almost be considered "normal." If the child does not appear to be in pain and his general health seems to be normal, medical care is not sought. From our experience, it seems that the ENT care provided by the Public Health Service physicians often lacks diagnostic security. Followup and hearing testing also seem to be deficient, and comparatively few patients are referred by the PHS physicians to the available ENT facilities. The consequence of these conditions has been a high frequency of otitis media in its chronic form either in the infectious stage or in its end result, a dry tympanic perforation.

Another disease that engenders similar problems is serous otitis media in children. The most obvious symptom is hearing loss itself, and the impairment is often confused with lack of attention of the child rather than inability to hear. Persons with recurrent serous otitis media consequently have to be followed up more closely and measures taken to prevent further recurrences—adenoidectomy, insertion of polyethylene tubes, and allergy assessment—in order to prevent the unfavorable end result of adhesive or chronic otitis media. Furthermore, measurements of the middle-ear pressure that reveal a pronounced and longstanding negative pressure clearly indicate that the child has an increased risk of serous otitis media and should be followed closely.

Part of the ENT examination room showing the electrically adjustable examination chair, the otomicroscope and the autoclave



A young Indian patient is examined in the soundproof room in the van

The ENT team believes that the high incidences of dry, crusted noses and of longstanding purulent rhinitis (due to climatic conditions?) may contribute to the high frequency of middle-ear disease. The installation of humidifiers to increase the moisture content of the air may improve the indoor climate in such cases.

The aim of most medical care today is early treatment or, if possible, prophylactic measures. Treatment of patients in the chronic stage of a disease or its end result is generally more time consuming, more difficult, less successful, more discomfortable, and more expensive. There appears to be a lack of understanding of this fact and of the importance of seeking treatment early in the course of the disease among many Indians on the reservations.

This lack of understanding is clearly evident with regard to otitis media; in its acute state only two clinic visits may be required, whereas in its chronic stage there is a marked risk of complications that often require time-consuming preoperative evaluation, expensive microsurgical measures in a hospital, and long-term followup. The inconvenience and cost are far greater for the patient with chronic otitis media than for the patient with acute otitis media.

At present, the ENT team gives all patients with acute or chronic otitis media printed information concerning the disease and its treatment and follows up patients with recurrent cases. We also believe that if in the initial stage of the disease the patients get proper and detailed information, encouragement, and treatment, they tend to gain confidence and to return to the mobile clinic when they have subsequent episodes of the disease. Furthermore, to increase the frequency of return visits, we believe that it is of major importance for the patients to see the same mobile ear team on each return visit.

Future Aspects

Future ENT care must therefore emphasize prophylactic measures and early treatment. This goal can be accomplished by intensive and continuous education. Such education should be included in the duties of the mobile ENT team. More information about otitis media, including the hearing organ, its function, and the disease, is needed by both the patients and the Public Health Service physicians.

A most important aspect for the future is to have a full-time otolaryngologist on the ENT project to allow performance of necessary ENT surgery, supervision and education of the Flexner, time for organization and planning of the visits to the reservations, education of the Public Health Service physicians, and elaboration of instruction sheets for the patients. With an increasing number of ENT physicians, it may soon be possible to find an interested physician for this position. If, however, no such physician is found, the Indian Health Service is considering a change to contracting for these services through private ENT physicians in Montana. In addition to the economic disadvantages of such a change, other present advantages are also lost: evaluation of treatment, the professional interaction and discussion of interesting cases among team members, consistency in the supervision of the Flexner, education and consultations for the Public Health Service physicians, and coordination and survey of the ENT care in Montana. Consequently, it is our firm belief that it is of great importance for the Indians' ENT care to have a full-time specialist on the project.

As outlined before, the composition of the ENT team with only one Flexner creates problems of vulnerability. We suggest that the Flexner should also be educated in audiology and, vice versa, the audiologist educated in routine ENT examination, the use of the otomicroscope, and simple therapeutic measures. Such training would not only make the team less vulnerable when someone is sick or leaves the team but would also give the advantage of a more complex and interesting job.

A main disadvantage of the present ENT project is the amount of travel over long distances. The preceding outlined system of doubly educated audiologist-Flexner would permit a division of teams, and each could cover half of the present area. In this way, travel could be reduced considerably. We would also suggest that the addition of some secretaries would permit a further division into three or four teams consisting of an audiologist-Flexner and a secretary. These teams could probably cover such ENT care in Montana as screening of school children, holding clinics for patients with ENT disease, and casefinding more efficiently than at present.

Emphasis would be placed on establishing ENT facilities in Public Health Service clinics on the reservations so that the teams would be more permanent. Screening could be carried out through the use of portable equipment, and persons found to be in need of treatment could be sent to clinic personnel. With such facilities, the expensive mobile van could be eliminated and travel time greatly reduced. Also, patients would gain more confidence in the team members and, in turn, the staff would have more opportunity to provide health care and followup. Finally, and most importantly, such measures would eventually reduce the number of patients needing ENT surgery because their otitis media has reached the chronic stage.

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Survival Potential and Quality of Care Among Free Clinics

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SINCE THE DEVELOPMENT of the pioneer Haight-Ashbury Free Medical Clinic in 1967, free medical clinics have emerged throughout the United States in an attempt to deliver health care to the poor, the socially disenfranchised, and those who seek medical care through untraditional channels (*1–3*). By 1972 more than 200 clinics in more than 30 States had been established to provide a variety of health and health-related services (*1*). In general, the free clinics have evolved in an unplanned, uncoordinated, and underfinanced fashion through the efforts of lay volunteers, students, and a few professional medical personnel. Additionally, the clinics have attracted special-interest groups who sometimes mobilize the clinics into organizations with social, educational, and political as well as treatment motives.

The free clinics are a controversial phenomenon. While proponents laud their need and acceptability within certain populations, others question their quality of health care and viability as a health care model (*3–7*). Some clinics apparently had been nonviable, because they have closed. At the height of the movement, the Los Angeles Council of Free Clinics claimed a membership of more than 30 clinics. By early 1973, however, no more than nine free clinics that offered medical services could be identified in Los Angeles (*4*). Standard reasons given by free clinics for closure have been inability to raise funds and recruit volunteer physicians (*2,3*).

A question is thus raised about the future viability of free clinics and the factors that appear critical for survival. If the free clinics survive, a more important question perhaps is: Can they deliver health care of acceptable quality? In seeking an answer to this question, we analyzed the survival status and quality of health care in five of the identified nine free clinics that deliver medical services in Los Angeles.

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Methods

Between October 1, 1972, and March 1, 1973, Tennant attended the study clinics as a volunteer physician and treated patients at no less than 4 and as many as 10 separate clinic sessions per clinic. Day also made a few visits to clinics. The administrators of each clinic were interviewed, and details of each clinic's organizational structure, budget, type of patients treated, and medical procedures were obtained. Two of the five clinics were judged nonviable by the following criteria: (*a*) indebtedness to the point that staff salaries could not be paid and (*b*) inability to staff and provide medical services for less than one-half of the scheduled medical clinic sessions in the 6 months between October 1, 1972, and March 31, 1973. The status of these five clinics was tracked for survival outcome until July 1974.

To assess quality of health care in each clinic, the following criteria were employed:

1. Examining equipment was available and in working order
2. Medical record was maintained for each patient
3. Blood pressure reading and Papanicolaou smear were obtained before birth control pills were issued
4. *Neisseria gonorrhoeae* culture and serologic test for syphilis were performed for patients with suspected venereal disease
5. Abnormal blood pressure readings and Papanicolaou smears were followed up
6. Positive gonorrhea cultures and serologic tests for syphilis were followed up
7. Drugs were prescribed only by qualified physicians
8. Licensed personnel performed laboratory procedures including venipuncture.

Analysis of Clinics

Clinic 1. Clinic 1 is located in an inner-city, low-income area; about one-half of the patients are Mexican American (table 1). Its name was originally "free" clinic but it was changed to "family" clinic, although no fees were charged, to increase community acceptability. General medical services, including pediatric care, are offered four evenings per week. Approximately 15 to 30 patients are treated per session. Recruitment of medical personnel has not been particularly difficult, and some physicians and other medical personnel have attended once or twice per month for more than 2 years. Patients and other volunteer staff openly show appreciation for the volunteer efforts of physicians, which may assist in recruiting volunteers.

The organizational structure of clinic 1 can be seen in the diagram. A board of directors is active and meets regularly. Board members include medical personnel and community residents. A salaried, female lay administrator is responsible for recruiting volunteer medical and paramedical personnel. Generally, one physician functions as an unpaid consultant to the administrator. Funding for the clinic has come mainly from private donations, which amounted to about $30,000 in fiscal year 1973. (None of the clinics could produce a precise fiscal accounting of income, because many donations were nonmonetary.) Quality of care, as judged by the study criteria, appeared good (table 2). Drugs and treatment were prescribed only by a physician.

By the criteria used in this analysis, clinic 1 was viable, since it was not in debt and could staff and provide medical services for the majority of the scheduled sessions. In July 1974, it continued to thrive and appeared to have survival potential.

Table 1. Major characteristics of five free medical clinicals in Los Angeles

Characteristic	Viable [1]			Nonviable	
	Clinic 1	Clinic 2	Clinic 3	Clinic 4	Clinic 5 [2]
Location	Inner city	Suburb	Inner city	Suburb	Inner city
Primary clientele	Minority, all ages, poor	White, young, middle class	White, young, middle class	White, young middle class	Minority, all ages, poor
Usual medical problems	General medicine	Venereal disease, birth control	Venereal disease, birth control	Venereal disease, birth control	General medicine
Approximate budget in previous 1 year	$30,000	$40,000	$80,000	$80,000	$50,000
Scheduled clinic sessions per week	4	Less than 4	4	4	Less than 4
Salaried, nonmedical administrator	Yes	Yes	Yes	Yes	Nes
Board of directors meets regularly	Yes	Yes	Yes	No	No
Physician-consultant	Yes	Yes	Yes	No	No

[1] Clinic was not in debt and could staff and provide medical services for more than ½ of scheduled clinic sessions between Oct. 1, 1972, and Mar. 1, 1973.

[2] Clinic later became viable when it obtained a physician-consultant.

NOTE: 2 nonviable clinics had neither a board of directors that met regularly nor a physician-consultant.

Table 2. Quality of care assessment in five free medical clinics in Los Angeles

Criteria	Clinic 1[1]	Clinic 2	Clinic 3	Clinic 4	Clinic 5[2]
Examining equipment available and working	Inconsistent, examining tables were dental chairs	Yes	Inconsistent	Inconsistent	No
Medical record for each patient	Yes	Yes	Yes	Yes	Yes
Blood pressure and Papanicolaou smear obtained before birth control pills prescribed		Yes	Yes	Yes	Yes
Gonococcal culture and serologic test for syphilis for patient with suspected venereal disease		Yes	Yes	Yes	....
Followup of abnormal Papanicolaou smears and blood pressure		Poor to nonexistent	Poor to nonexistent	Poor to nonexistent	Good
Followup of positive gonococcal cultures and serologic tests for syphilis		Poor to nonexistent	Poor to nonexistent	Poor to nonexistent	....
Drugs prescribed only by physician	Yes	Yes	No	No	No
Only licensed personnel perform laboratory procedures including venipuncture	Yes	No	No	No	Yes

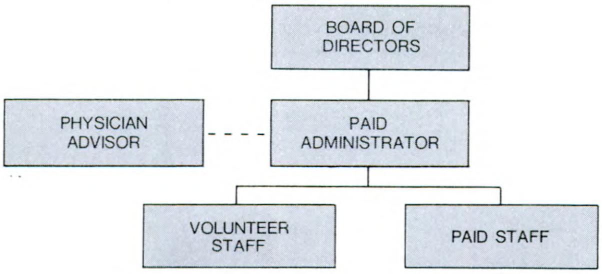
[1] Did not provide family planning and venereal disease services.

[2] Did not provide venereal disease services.

NOTE: there were deficiencies in quality of care at all 5 clinics.

Clinic 2. Located in a middle class suburb, this clinic serves primarily white adolescents (table 1). Medical services are limited to birth control and diagnosis and treatment of venereal disease, which are offered four evenings a week. Birth control services normally consist of pelvic examination, Papanicolaou smear, and issuance of oral contraceptives. Recruitment of volunteer physicians and other medical personnel has been erratic but sufficient to staff the majority of the clinic sessions. Some antagonism toward medical personnel was noted in the clinic; this may have hindered their recruitment. The administrator stated that some medical personnel discountinued volunteer services because they objected to such activities of the clinic as draft counseling, abortion referral, and giving birth control pills to minors without the knowledge of their parents.

Organizational structure of viable free clinics



The organizational structure of this clinic is identical to that of clinic 1 (see diagram). Funding, approximately $40,000 per year, has been obtained primarily by contracts to provide family planning and mental health services.

Quality of medical care was judged to be deficient in some areas (table 2). Followup was poor for patients with abnormal Papanicolaou smears and positive serologic tests for syphilis. Cultures for *N. gonorrhoeae* were processed outside the clinic, and the problems of logistics were such that reports of positive cultures were rarely received, even for specimens from patients with clinical gonococcal disease. Also, untrained volunteers often attempted to perform laboratory procedures, including venipuncture.

By the criteria used in this analysis, clinic 2 was viable. In July 1974, it continued to thrive and appeared to have survival potential.

Clinic 3. Clinic 3, located in the inner city, principally serves white, middle class youth (table 1). It provides primarily venereal disease and birth control services like clinic 2, and its organizational structure was identical to that of clinics 1 and 2. Funding has been provided mainly by a public contract to conduct family planning services and by private donations. The contract amounted to about $80,000 in fiscal year 1973.

The most impressive aspect of clinic 3 was the lack of order during clinic hours. Physical space was far too small for a patient load of 50 or more patients per evening session. No one appeared to be in charge, and the organization of patient flow was left to the volunteer physician.

Quality of care was negligent in some areas. On two occasions nonphysicians were observed to be performing pelvic examinations and prescribing medications. One person was a medical student who wanted practical experience, and the other was an untrained young man who said that he enjoyed examining and treating people. Neither, apparently, had been questioned about his credentials. As in clinic 2, problems of followup on patients with abnormal Papanicolaou smears and positive serologic tests for syphilis were evident. Untrained persons performed laboratory procedures, including venipuncture.

Clinic 3 was viable according to our analysis criteria. In July 1974, it continued to thrive and appeared to have survival potential.

Clinic 4. Clinic 4 was nonviable, since it was in debt and unable to staff and provide medical services for at least one-half of the scheduled sessions. Within a few months after this analysis, the clinic was closed.

Clinic 4 was located in a predominantly white, middle class suburb (table 1). It provided general medical services with an emphasis on venereal disease, birth control, and heroin detoxification. About 75 to 100 patients patronized each of the clinic's four sessions per week. The organizational structure differed slightly from clinics 1, 2, and 3. Although there was a board of directors, it rarely, if ever met. There was a paid, nonmedical administrator but no physician-consultant.

The clinic director and other personnel stated that medical professionals, including physicians, were generally insensitive to patient needs, did not understand the free clinic movement, and had always tried to dictate medical practice. This attitude may have contributed to the agency's difficulty in recruiting volunteer physicians and other medical personnel since the staff reported little success in this effort. The following observations may demonstrate these staff attitudes. A volunteer military physician was chastised by a nonmedical, clinic volunteer because he preferred intramuscular penicillin rather than oral tetracycline for treatment of gonorrhea. The physician left the clinic immediately, stating he did not need to volunteer his time under those conditions. On another occasion, a female volunteer physician was told by two, nonmedical female staff members that her services were not wanted because they preferred male physicians.

Donations and a grant from the local community supported the clinic. Although approximately $80,000 had been raised in the preceding 12 months, the clinic was now in debt. The reason given for indebtedness was that eight nonmedical staff had been hired.

Quality of care deficiencies were similar to those of clinics 2 and 3 in that followup of patients with abnormal Papanicolaou smears and positive tests for venereal disease appeared to be inconsistent. Examining equipment was adequate, and otoscopes and stethoscopes were in working order.

A major deficiency observed was that nonmedical personnel prescribed and dispensed antibiotics and other medications. This practice was especially evident in the heroin detoxification program in which nonprofessional counselors dispensed restricted drugs. Following our initial visits, the clinic continued to show evidence of nonviability. The prescribing and dispensing of drugs by nonphysicians came to the attention of legal authorities, and the local community discontinued grant support.

Clinic 5. Clinic 5 is located in an inner-city, low-income area. It provides general medical services, including pediatric care, to Mexican American families. Approximately 20 to 30 patients are treated during three clinic sessions per week.

The organizational structure was identical to that of clinics 1, 2, and 3, but the agency lost its physician-consultant to the military draft just before our analysis. This loss created considerable difficulties since this physician was the main means of recruiting other volunteer physicians. As a consequence, less than one-half of all clinic sessions were held. Funding amounted to approximately $50,000 in fiscal year 1973; however, indebtedness was incurred by employing paid staff. This clinic was nonviable in terms of the analysis criteria.

Quality of care evaluation revealed that examining equipment was frequently missing at clinic sessions or not in working order. The volunteer physician usually found it necessary to bring examining tools to the clinic to insure proper examination of patients. Donated drugs were stocked in the clinic, and they were occasionally prescribed and dispensed by nonmedical staff.

Shortly after our visits for analysis, the administrator managed to recruit a new physician-consultant who was able to recruit volunteer physicians and oversee medical procedures. In addition, a new public contract to provide family planning services was obtained. In July 1974 this clinic was classified as viable, and its prospects for survival appeared optimistic.

Survival Potential

Although no statistical conclusions can be drawn from a study of only five free clinics, their history indicates that a particular organizational structure is associated with viability and survival potential. This observation is not surprising; a proper organizational structure is now recognized as a crucial determinant of success or failure of health care organizations (*8*). The clinics in this analysis that had a specific organizational structure (see diagram) have survived for 3 to 6 years and appear to be capable of operating in the foreseeable future. Clinic 5, although nonviable at the time of analysis, became viable when it was able to maintain this organizational structure. Clinic 4 did not maintain or desire this organizational structure, and it eventually closed.

The maintenance of the organizational structure appeared to depend, primarily, upon the ability of the paid administrator In these clinics the administrator normally recruited the physician-consultant and most staff, and he or she largely determined the degree of involvement of the physician-consultant and board of directors. The board of directors made decisions relating to medical treatment, administrative procedures, and community acceptance. The physician-consultant may or may not have been on the board of directors. He was used by the administrator principally to recruit volunteer physicians, assist with fundraising, and advise on medical procedures.

Quality of Care

Table 2 summarizes the criteria used to assess quality of care in the clinics. These criteria were used because they are generally accepted practices and procedures for ambulatory care. We are not attempting to establish these criteria as a standard of assessment.

Deficiencies were noted in all five clinics, and our observations tend to support claims that quality of care is lacking in free clinics (*5*). Some deficiencies, such as poor followup of abnormal Papanicolaou smears and the prescribing and dispensing of drugs by nonphysicians, are cause for concern. Deficiencies in quality of care did not appear to be particularly related to viability and survival potential of the clinics, since the viable clinics often exhibited the same deficiencies as clinic 4, which closed.

Discussion and Conclusion

Medical care organizations such as free medical clinics do not lend themselves to the precise studies that can be achieved in clinical research. Consequently, a clear-cut delineation of survival factors and quality of care must necessarily be somewhat subjective. Although no statistical conclusions can be drawn from a study of five clinics, our analysis revealed a simple but specific organizational structure that is associated with the survival of a controversial model of health care. Ambulatory clinics other than free clinics may find this structure useful. Maintenance of the organizational structure appeared to depend on the talents and skills of the clinic administrator.

There were deficiencies in the quality of health care delivered in the clinics. Of particular concern were the poor followup of Papanicolaou smears and the prescribing and dispensing of drugs by nonphysicians. Quality of care deficiencies should be corrected, since some free clinics appear to have good survival potential in the current health care delivery system.

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Outcomes of Methadone Treatment of 300 Innercity Addicts

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ASSESSMENTS OF THE NUMBER of heroin addicts in the United States vary, but even conservative estimates place the number of untreated addicts much higher than the number of treated ones. Methadone treatment currently is the most common form of therapy for heroin addiction in the United States. An estimated 80,000 persons were receiving methadone in treatment facilities during 1971–72 (*1,2*), and an undetermined, but probably large, number of addicts were procuring methadone for self-treatment.

The effectiveness of methadone treatment has been evaluated in a number of studies (*3–10*). In some of these, special selection of patients or unusual therapeutic resources may have influenced outcomes favorably. If methadone treatment programs are to remain the dominant therapy and to be expanded, it would appear important to continue to evaluate their effectiveness—especially under conditions in which patients are not specially selected or elaborate ancillary resources are not available.

Our study evaluated effectiveness of methadone treatment for the first 300 consecutive patients enrolled in a freestanding, innercity methadone program established in 1968 by a general practitioner serving a low-income population. During the period in which these 300 patients were enrolled, only a few applicants were refused treat-

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Dr. Cleveland, Dr. Bowles, and Dr. Hicks were students in the Department of Community Medicine, University of Pittsburgh School of Medicine, at the time of the study, and Dr. Rogers is professor and chairman of the department. Dr. Burks is medical director, Pittsburgh Black Action Drug Abuse Center, Inc., and instructor in public health practice, University of Pittsburgh Graduate School of Public Health.

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ment; almost the sole criterion for admission to the program was a patient's request for help.

The Pittsburgh Black Action Methadone Program was patterned after that of Dole and Nyswander (*11*). During its first year, the program had a total of 28 patients; it was housed in a church basement and supported by local donations of professional services and money. In 1969 the program was expanded, and in 1970 support was obtained from the National Institute of Mental Health (NIMH).

Throughout its existence the program had both medical and social components. During the period covered by the study, a major portion of the medical activities concerned prescription and administration of methadone. Social service aspects included patient counseling about individual problems and referrals to meet social, educational, and vocational rehabilitation needs. Early in the program, social services were provided by former addicts who had no professional preparation. After the NIMH-funded program was initiated in 1970, about half the counselors were formally trained; the others were untrained ex-addicts. It was not until almost the end of the period during which observations in this study were made that the social services given were more than minimal in frequency, duration, and quality.

Methods

Four characteristics of enrolled patients were studied: retention in the program, evidence of continued use of heroin, employment, and arrests. These characteristics were determined for patients before and after admission to the program.

Data pertaining to addicts' histories were obtained from counselors' records of a patient's admission interview. Data pertaining to the patient's experience in the program from June 1, 1969, to September 25, 1972, were obtained from clinic nurses' records and hospital records.

Data on urinalysis results were obtained from copies of reports of the Office of the Chief Toxicologist of Allegheny County, Pa. Frequency of urinalysis changed during the study period. Urinalyses were performed relatively infrequently early in the program, and some patients received no tests. In the technique used for urinalysis at that time, resin strips were placed in urine and then the drugs which had been impregnated on them were dissolved from these strips and analyzed chromatographically.

Records of each addict before and after entry into the program were searched for in the Russell Index, a public record in the district attorney's office of all persons arrested and appearing in court for any crime committed in Allegheny County, where almost all the patients resided.

Some patients began treatment during the period from August 1968 to May 1969. It is not known how many patients entered the program during this period and dropped out before June 1, 1969, when permanent recordkeeping was initiated. The 300 study patients included 90 who began taking methadone before June 1, 1969, and 210 who entered the program between that date and September 26, 1970. The 300 were divided into three successive cohorts of 100 patients in order to identify changes over time in characteristics of the incoming addict population or changes in their response to treatment. Precoded data collection forms were devised so that data processing equipment could be used.

Preprogram Characteristics of Addicts

On admission to the methadone program, the majority of patients, 99, were in the 20- to 24-year age group. The age range was from 18 to 71 years. The second and third cohorts were slightly younger than the first. Following is the distribution of the patients by age:

Age group (years)	*1st cohort*	*2d cohort*	*3d cohort*	*Total*
Under 20	3	10	14	27
20–24	29	35	35	99
25–29	19	21	19	59
30–39	25	25	15	65
40–49	15	8	15	38
50–59	2	0	0	2
60–69	0	0	0	0
70–79	1	0	0	1
No information	6	1	2	9
Total	100	100	100	300

A total of 239 patients, or 79.7 percent, were male; 59, or 20.4 percent, were female; and there was no information about the sex of 2 patients. The ratio of males to females was approximately the same in all three cohorts.

Data on race showed that 228 patients (76.3 percent) were black; 49 (16.3 percent) were white; and 1 was Mexican. There was no information about racial or national origin characteristics of 22 patients. The racial composition was approximately the same in all three cohorts.

The marital status of patients on admission to the methadone program was as follows:

Status	*1st cohort*	*2d cohort*	*3d cohort*	*Total*
Never married	24	36	44	104
Widowed	6	0	3	9
Divorced	6	6	6	18
Separated	10	16	11	37
Married	34	39	30	103
No information	20	3	6	29

There appeared to be more "never married" patients in the second and third cohorts as compared with the first cohort, an observation consistent with the slightly older age of the first cohort.

During their first 12 years of life, 59 percent of the patients had lived in complete households (both parents at home), and 29.6 percent had lived in households with at least one parent missing. No information was available for 39 patients. A larger percentage of patients in the second and third cohorts were reared in complete households. Data on the three cohorts were as follows:

Household status	*1st cohort*	*2d cohort*	*3d cohort*	*Total*
Complete	39	59	56	154
Incomplete	34	35	38	107
No information	27	6	6	39

The duration of addiction at the time of admission ranged from 1 to 30 years. The following data on the average duration of addiction indicated a decrease in the second and third cohorts, which had larger numbers of patients in the 1-to 4-year group.

Duration of addiction	*1st cohort*	*2d cohort*	*3d cohort*	*Total*
1–4 years	28	40	42	110
5–9 years	26	28	29	83
10–19 years	19	20	12	51
20–29 years	12	7	12	31
No information	15	5	5	25

On admission to the program, the patients estimated their daily use of heroin as follows:

Daily use of heroin	*1st cohort*	*2d cohort*	*3d cohort*	*Total*
½–1 spoon	57	60	53	170
More than 1 spoon	22	33	39	94
No information	21	7	8	36

The second and third cohorts gave histories of heavier use than the first cohort.

Information on educational background indicated that 164 patients, or 60.5 percent, had not completed high school. Of the remainder, 81 completed high school, 26 attended college, and 2 completed college. Twenty-eight patients had enrolled in technical training programs but had not completed them; nine others had completed technical training. There appeared to be no marked differences among the educational achievements of the three cohorts.

Experience During and After the Program

The experience of each patient was tabulated after 1 year and after 2 years in the program. These two intervals were selected in order to compare patient activities before and after admission to the program. Because satisfactory records did not exist before June 1, 1969, patients were considered as admitted on that date for evaluation purposes, although the first 90 patients had been admitted and were receiving methadone before June 1, 1969.

Retention. The rate of retention was as follows: after 1 year 230 patients, or 76.6 percent, were active in the program; 70 had dropped out. After 2 years, 175 remained in the program, and

Table 1. Determinants of retention in the Pittsburgh methadone program for 300 heroin addicts

Determinant	Retained in program 1 year or more ($N=230$)		Left program before 1 year ($N=70$)		X^2, 1 df
	Number	Percent	Number	Percent	
Age 25 years or younger	82	35.6	31	44.6	0.92
Male	178	77.4	61	87.3	1.44
Black	177	76.9	51	72.9	.04
Married	87	37.9	13	18.5	[1] 6.61
High school graduate	85	37.0	13	18.5	[1] 5.07
Addicted 10 years or less	154	66.8	50	71.5	.96

[1] P = .05.

NOTE: The number of patients classified by the various determinants differ from those given elsewhere in the paper because information on retention status of some patients was not known, and different age and addiction categories were employed in computing this table.

125 had dropped out. The retention rate did not vary greatly by cohorts. Of those dropping out within the first year after admission, 34 were mandatorily terminated, 14 elected termination, 15 were incarcerated (theft, drug violation, and prostitution charges), and no reason was given for the termination of 7.

Termination was mandatory for poor attendance, continued illegal drug use, and other activities not in keeping with program policies. It was the opinion of the staff that most patients who elected termination returned to drug use.

The association of six characteristics of the patients (age, sex, race, marital status, education, and duration of addiction) with retention in the program was determined (table 1). Married patients and those who were high school graduates had a significantly higher retention rate than those who were not married and who had less than a high school education. Retention was not associated significantly with the other patient characteristics.

Of patients dropping out after 12 months, 15 were mandatorily terminated, 32 elected termination, 3 were incarcerated, and no reason was given for the termination of 5. There was no marked difference in the reasons for termination among the three cohorts.

Continued drug use. During the first year after admission, only 49 patients in the first cohort had urinalyses to detect heroin metabolites, which are evidence of continued drug use. Urinalyses were performed for 76 patients in the second cohort and 86 patients in the third cohort during their first year in the program. During the first year's experience of the three cohorts, 6.4 percent of the 769 urine specimens were positive. During the patients' second year in the program, all patients had specimens tested at least once, and 6.6 percent of 2,695 specimens were positive.

Employment. Weeks of employment in the year before and the year following admission are shown in table 2. Information about employment before admission was lacking for 73 patients and about employment after admission for 7 patients. These 80 patients were excluded from table 2; it was assumed that their experience was similar to that of the patients for whom information was available. Tabulations were also made in which all members of the cohort were used as the denominator. This inclusion had the effect of classifying the "no information" patients as "other than employed." Both methods of calculation indicated no major changes in employment, although the proportion of patients who worked 10 to 29 weeks per year was somewhat greater in the year after, than in the year before, admission to the program.

Table 2. Employment record of 157 patients for 1 year before admission and 223 patients for 1 year after admission to the Pittsburgh methadone program

Work record and cohort	Before admission		After admission	
	Number	Percent	Number	Percent
Did not work	90	57.3	115	51.6
1st cohort	21	47.7	35	40.0
2d cohort	32	57.1	40	52.6
3d cohort	37	64.9	40	51.9
Worked 9 weeks or less	8	5.1	12	5.4
1st cohort	2	4.5	4	5.7
2d cohort	4	7.1	5	6.6
3d cohort	2	3.5	3	3.9
Worked 10 to 29 weeks	16	10.2	50	22.4
1st cohort	8	18.2	14	20.0
2d cohort	3	5.4	19	25.0
3d cohort	5	8.8	17	22.1
Worked 30 to 52 weeks	43	27.4	46	20.6
1st cohort	13	29.5	17	24.3
2d cohort	17	30.7	12	15.8
3d cohort	13	22.8	17	22.1
Total	157	..	223	..

Arrests. Arrest records from the Russell Index are shown in table 3 for the year before and after admission for patients who remained in the program at least 12 months and for those who dropped out before 1 year. Similar calculations were made for the 2 years before and after admission. Average number of arrests per patient was reduced after admission for those who remained in the program, but not for those who dropped out.

Discussion

The Pittsburgh Black Action Methadone Program experience was quite similar with respect to patient characteristics and response to methadone to that reported by others (*3,8*). Multiple observations have established that heroin addiction is a definable disease with a predictable attack pattern and a predictable response to specific therapy. Innercity black males, unemployed or partially employed and with less than a high school education, are at greatest risk of heroin addiction. Response to methadone treatment is relatively uniform. Positive outcomes are a reasonably high rate of retention in programs, some reduction in

Table 3. Police arrests of participants before and after admission to the Pittsburgh methadone program

Status and cohort	Number of patients	Average arrests per patient	
		Before	After
	1 year before and after admission		
Dropped out	70	0.9	0.7
1st	27	.4	.5
2d	22	.9	.9
3d	21	1.4	.8
Retained in program ...	230	.6	.3
1st	73	.5	.2
2d	78	.8	.5
3d	79	.5	.3
	2 years before and after admission		
Dropped out	125	1.0	1.1
1st	49	0	0
2d	38	1.2	1.5
3d	38	.9	.8
Retained in program ...	175	1.3	.7
1st	51	0	0
2d	62	1.3	.9
3d	62	1.3	.5

SOURCE: Russell Index (district attorney's office public record of all persons arrested and appearing in court in Allegheny County).

police arrests (presumably reflecting decrease in antisocial acts), and a marked decrease in heroin use. Employment status usually shows little change.

The outcomes of methadone therapy appear understandable. Retention in the program reflects the effectiveness of methadone as a heroin substitute, as does the decrease in heroin use. The decrease in arrests reflects release from the necessity to acquire large sums of money to purchase heroin. The failure of methadone treatment to influence the employment rate is not surprising. Most heroin addicts have never been employed regularly either before or during the time of their addiction. They largely are unemployable because they lack education, job skills, work habits, and motivation to work. It would be unrealistic to expect the administration of a drug to correct these deficiencies. Likewise, given the length of time patients remain active in programs and the "state of the art," it appears unrealistic to expect the social components of the program to achieve a high rate of full employment and socialization.

In this study the patients were admitted at a time when the program's major service was methadone administration. It appeared that favorable outcomes—retention, diminished heroin use, and decreased police arrests—were achieved in an unselected population of heroin addicts volunteering for treatment. The effectiveness of social components—counseling, job training, and rehabilitation—were not evaluated; however, at the time of study, patients in all three cohorts received varying amounts of these services, but these usually were quite limited and infrequent and thus not likely to be effective. It was the authors' impression that methadone chemotherapy was the major determinant of outcomes and that these outcomes were essentially similar to those achieved in more costly programs with greater amounts of counseling, job training, and rehabilitation services and with criteria for patient admission more favorable to outcome.

In considering the feasibility and cost effectiveness of measures to control heroin addiction, it may well be found that the component of methadone programs most responsible for producing diminished heroin use and decreased police arrests is the administration of methadone itself, a technically simple and low-cost activity. If this is so and if money is limited, careful thought should be given before funding costly program components of undemonstrated effectiveness should such expenditures result in an inability to fund basic chemotherapeutic programs for addicts not currently being treated.

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CLEVELAND, WILLIAM H. (University of Pittsburgh School of Medicine), BOWLES, BRIAN, HICKS, WILLIAM, BURKS, CHARLES, and ROGERS, KENNETH D.: ***Outcomes of methadone treatment of 300 innercity addicts. Public Health Reports, Vol. 89, November–December 1974, pp. 563–568.***

Methadone treatment is currently the most common form of heroin addiction therapy in the United States. Social and rehabilitation services such as counseling, job training, and job placement are usual components and account for a major portion of the costs of methadone treatment programs. A freestanding, innercity program, the Pittsburgh Black Action Methadone Program, was evaluated by measuring heroin use, number of arrests, and employment status of the program's first 300 patients during 1 year before and 1 year after enrollment. During the period when these patients were enrolled (August 1968 to September 26, 1970), few applicants were refused; almost the sole criterion for admission was a patient's request for help.

The program had both medical and social service components. A major portion of the medical activities concerned prescription and administration of methadone; social services included patient counseling and referral for social, educational, and vocational rehabilitation. During approximately the first half of the period covered by the study, social services were provided by former addicts without professional training. Later, academically trained counselors as well as ex-addicts gave services. During the entire period, social services were minimal in duration and frequency and of limited quality.

Favorable outcomes (measured by retention in the program, diminished heroin use, and decreased police arrests) were similar in frequency to those reported in more costly programs with greater amounts of counseling, job training, and rehabilitation services and with criteria for patient admission more favorable to outcome.

It was the impression of the authors that methadone, per se, was the major determinant of therapeutic outcome. As such, this service represents a much simpler and lower cost program than many existing ones. Limiting services to provision of methadone may enable programs to expand within economic constraints to treat addicts not now receiving therapy.

The Status of Prison Health Care

A review of the literature

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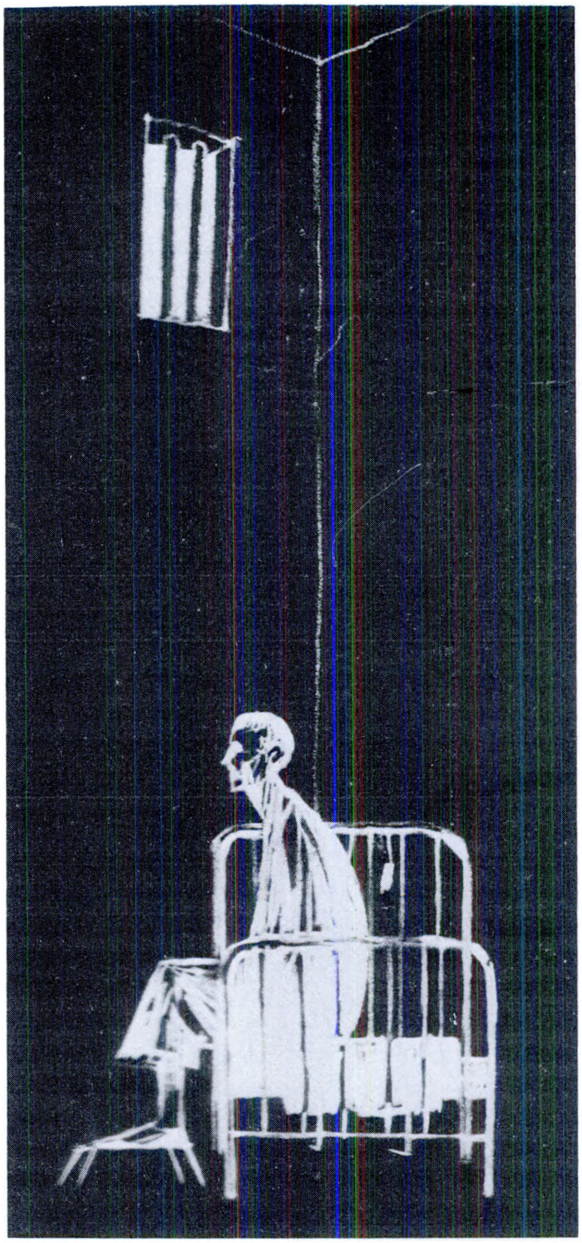
THE TUCKER TELEPHONE not only shocked the penises of the allegedly uncooperative and incorrigible prison-farm inmates of the Arkansas penal system, but it shocked the consciousness of the nation and awakened it to the atrocious conditions within its prisons. As reported by the superintendent of the Tucker Prison Farm, the convict doctor, a person with no medical or nursing training, was responsible for most of the primary care at Tucker, sold medical leaves of absence, ran an illegal drug program, and also functioned as the primary "Tucker Telephone" operator (*1*):



> The telephone . . . consisted of an electric generator taken from a crank type telephone and wired in sequence with dry cell batteries. An undressed inmate was strapped to the treatment table at Tucker Hospital while electrodes were attached to his big toes and penis. The crank was then turned, sending an electrical charge into his body. In "long distance calls" several charges were inflicted—of such a duration designed to stop just short of an inmate's fainting . . . sustained current not only caused an inmate to lose consciousness but resulted in irreparable damage to his testicles.

Describing the physical conditions of the medical department at Tucker, Murton (*2*) noted algae growing on the floor, condemned electrical wiring, poor sanitation, and unreliable flood protection that often resulted in fecal matter floating around and through the surgical and ward areas. Despite these defects and despite the availability of an acceptable medical facility in an adjoining building (but used only for post mortem examinations following State-ordered executions), the medical department was annually licensed by the State "without benefit of an on-site inspection" (*2a*).

National Studies

While what happened in Arkansas in the Prison Medical Department in 1969 was extreme, the literature on prison medical care clearly indicates that the organization and delivery of health services within penal institutions is less than satisfactory and has been so for quite some time.

For example, in 1929 the National Society of Penal Information supported a study, under the direction of Dr. Frank Rector, that looked into the status of personal and public health services in prisons (*3*).

The objective of Rector's 13-month survey was the provision of information on prison health conditions "which might be of material assistance to prison authorities in the improvement of such conditions and possibly bring a standardization of health and hospital practices in penal institutions" (*3*). After more than 100 prison visits and consultations with specialists, Rector delineated standards of medical care that were attainable in 1929, that are attainable today, and that are yet unattained in a large part of the United States. The standards recommended included intake and pre-discharge or parole physical examinations for all inmates to be done by a "competent physician," including "a dental examination, distant and near tests for vision, blood tests for syphilis, urinalysis on all persons over forty years of age, and other laboratory tests as indicated" (*3a*). Other standards (*3b*) suggested by Rector and his group were (*a*) 1 physician per 500 inmates and an additional physician for each extra 1,000 inmates, (*b*) daily sick call to be held by a physician who would also dispense drugs, (*c*) complete dental care, and (*d*) complete optometric care.

What has happened since 1929? Most studies suggest that the prison health situation now is as bad as then. One research report, however, offers contrary findings (*4*). In this study, Aker mailed 110 questionnaires to State correctional department administrators of large State penitentiaries for men (average size was more than 1,000 inmates). Despite a response rate of 74.5 percent, Aker was confident enough about the results to conclude that (*a*) the capabilities of prisons in meeting inmates' needs are greatly improved over those in 1929, (*b*) the supply of medical facilities in prisons exceeds that for the nation as a whole, (*c*) the ratio of physicians and hospital beds to the population is greater for prisons than for the nation, and (*d*) medical care available in State prisons was as adequate as that found in the community hospital (*4a*).

A more recent national study on prison health was a mid-1972 joint undertaking of the American Medical Association and the American Bar Association. Their 4-page, self-administered questionnaire survey of more than 2,000 jails gathered information on available services, inmates' use of health services, staffing patterns, funding, physician reimbursement arrangements, operating procedures, and relationships with local medical societies. The survey revealed that there are general needs for more adequate funding, planning, and public support and specific needs for health services standards, improved facilities, more manpower, personnel to handle mentally disturbed inmates, drug control procedures, and facilities for severely disturbed psychiatric prisoners (*5*).

Unfortunately, the value of the Rector, Aker, and American Medical Association studies is in large part mitigated because of significant and similar methodological limitations. Specifically, both the Aker and American Medical Association studies asked a sample of respondents to fill out questionnaires that were self-rating forms. With such a questionnaire, special precautions should be taken to insure that the data collected are reliable. No such indicators of reliability were apparent in either study.

The Rector study, certainly the most comprehensive of the three, also collected information by using a structured questionnaire but, "The same individual visited all the institutions and secured at first hand the data on which [the] report is based. By this method the influence of the human equation in the estimation of work being done has, it is believed, been reduced to the lowest point possible" (*3c*).

Is a 1-day visit a satisfactory indicator of the consistency and objectivity of data? Probably not. Numerous anthropological and managerial research projects have demonstrated that considerably more than 1 day of observation is necessary to realistically appraise the operations of an organization or a human being. Studies that fail to recognize this reality tend to legitimize data that are less than adequate; in the instance of prison health care, legitimized, but inadequate, data can be more dysfunctional than no data.

State and Local Studies

In the past few years a heightened concern about prison health care has resulted in numerous studies of medical care in county or State prisons. These studies are important because one can see emerging from them an obvious pattern of inadequate facilities and personnel and a probable need for medical services.

For example, a 1967 study of three prison hospitals in California indicated that although the beds were not conducive to rest, all the hospitals did give intake physical examinations, including X-rays, urine analysis, and psychological testing (*6*). The primary recommendation of this study was similar to that of Rector's (some 40 years earlier), that is, an appropriate staffing ratio for the penal institutions would be 1 physician per 500 patients.

Another California study, by Stokes (*7*), was focused on medical care at the San Diego County Jail. Based on a limited review of records, a health history and perception questionnaire, and 40 hours of observation, Stokes suggested that inmates were lacking medical care; for example, she noted that the average time spent by a physician with an inmate on sick call was about 40 seconds. Regarding inmates' health status, Stokes noted that based on the responses of approximately 100 inmates to a history questionnaire, inmates were indeed in poor health. Unfortunately, this information is of limited value because, as Stokes stated, "A correlation was not made between inmate perception of health status at admission and the 54 percent of inmates with mental health, drug and alcohol problems, plus the additional 29 percent of inmates with special health problems" (*7a*). Her conclusion that "the 31 percent who said they were not in good health at the time of their arrest constitute a minimum of the present people who should be seen by health care staff upon admission to jail" (*7a*) is probably reasonable from a crisis-planning perspective, but it does not provide the needed information on the health status of inmates.

Personal communications from Dr. Jules Frank, medical director of the San Diego County Jail, provide another picture of health care at that institution, a picture developed from the responses of 1,788 inmates to intake screening questionnaires. Although 19 percent of the inmates thought they were in need of medical attention, 87 percent said that they were not presently sick. Commenting on the Stokes' study, Frank questioned its statistical significance and relevancy:

> Anyone in medicine who has conducted any clinic, triage in nature, must recognize the fact that it takes very little time to order a liquid diet, to provide a Band-Aid if necessary or treat any number of minor conditions and minor complaints which constitute the majority of complaints found at sick call. In addition, with respect to her report, the San Diego County Jail has an average of 72,000 bookings per year and I hardly think the questionnaires given to one hundred random inmates have any statistical value whatsoever, particularly when the credibility of their answers was not further checked. This could have been done very simply by ascertaining if they had seen physicians outside the jail and simply calling those physicians and obtaining confirmation. It so happens that in the International Penal Digest, a journal written by ex-convicts, it was stated that out of 47 county jails in the United States, San Diego County Jail rated good, with the ratings being excellent, good, fair, bad or lousy. These ratings were done by prisoners themselves who were totally biased in this particular publication.

Washington State's 1972 study of jails (*8*) concluded that "sufficient medical and dental coverage is difficult to obtain in many jails. The problem is acute in some jails because of the doctor shortage in the community." A 1962 Massachusetts study revealed that medical care for sick inmates was adequate and that emergency dental care was available, but "in no institution are all prisoners examined" (*9*). Eleven years later, the proceedings of a conference in and primarily about Massachusetts demonstrated the continued existence of those previously identified problems, the seemingly ever-present difficulties of providing health care in prisons and perhaps most significantly, how slowly change comes about in prison health systems (*10*).

Another addition to the literature, which demonstrates many of the problems of prison medical care, was the inquiry into Pennsylvania's prison health situation (*11*). This investigation began with the traditional unproved assumption that "People confined in prison commonly enter in poor health" (*11a*). The major recommendations stemming from this study are that the State should organize its medical care program for inmates, that standards for medical care be established, that appropriate facilities and staff be provided, and that the system be continuously monitored and evaluated (*11b*). The major contribution of this report is that it provides a good picture of the process of care in Pennsylvania's penal institutions. Unfortunately, little information or insight is provided on the health status of the inmates, the probable effect of intervention, and how one could best organize the system to provide comprehensive quality care. These critical questions are still unanswered.

A 1970 study performed by the Kearney consultant firm for the State of Nebraska Department of Public Institutions (*12*) considered the medical service staffing at the Nebraska Penal Complex by evaluating penitentiary records and interviewing penal staff. Their study indicated that physician availability at the penitentiary (1968 average monthly inmate population was 725) and the reformatory (1968 average monthly inmate population was 228) consisted of sick call 2 hours a day, 4 days a week—a total of 8 hours' medical coverage exclusive of emergency care. Additionally, one full-time dentist, one part-time X-ray technician, and one full-time medical technician (whose job was not defined in the study) were employed in the medical department. Based on their evaluation, the consultants recommended elimination of the medical technician's job and employment of a full-time physician. They noted in their report that "This medical coverage is less than what is suggested by the ACA [American Correctional Association] Manual, but it is sufficient for the needs of the Complex" (*12a*).

What are the needs of the penal and correctional complex? Is a population of more than 1,000 inmates well served by one full-time physician with no technical assistance? The arithmetic of the situation suggests that the Kearney evaluation is indeed reasonable, provided: (*a*) there is an efficient physician practicing full time (35 hours a week)—but in the Nebraska report half-time apparently meant 8 hours per week of scheduled time and availability for emergency care, (*b*) there is a normal population of 1,000 inmates generating between 4,000 and 5,000 physician visits per year, and (*c*) that the 900 annually admitted inmates present the physician with uncomplicated intake histories and have few problems on physical examination.

Clearly there are limits to the logic of this arithmetic. Does a prison population generate the normal number of patient visits? Who does the laboratory work? Who distributes and follows up on drugs? Who is responsible for medical records and medical administration? The Kearney recommendations do not adequately answer these critical questions, and therefore the general applicability of their staffing pattern must be approached with caution.

In another part of the country, New York, a riot in a prison located in a rural community, eventually resulted in death, destruction, and an investigation into the health program at Attica. In this study, it was noted that "medical care was one of the primary inmates' grievances" (*13*). Despite this finding, the report of the special commission noted that the "ratio of doctors to prisoners compares favorably with the norm in rural communities such as Attica" (*13a*). The staff for this 2,200-man prison included two full-time physicians, who were at the prison mornings from Monday through Friday, and were on call for emergencies; four nurses; one pharmacist; one laboratory technician; and one secretary. The process of medical care at Attica was characterized by rapid screening by physicians, few diagnostic tests, and little sympathy. Interestingly, the consultant firm that performed the study offered the hypothesis that despite what passes for unsatisfactory treatment, the inmates are physically healthy and the problems treated at the prison tended to be fairly routine and minor (*13b*). The solution offered by the consultants was that "of some alternate system for the delivery of care in which [the] essential services are provided for the inmates of Attica by a larger well-staffed medical center or inmates in need of care are transferred to some facility with large enough volume to support more comprehensive staffing patterns" (*13c*).

The consultants who reported on Attica also reviewed the prison health situation at the New York State Prison at Clinton and the Manhattan Men's House of Detention (the Tombs). The review of the 2,000-man Clinton Correctional Facility, which has a prison hospital, included 2 days of visiting, interviews, and a review and analysis of medical records. In their study, it was found that hospital usage at Clinton was three times greater than would be expected from a general population and "The number of hospital days per 1,000 inmates was nine times greater than would be expected in an average male population with a median age under 30 years" (*14*). Several explanations are offered for this unexpectedly high usage: pre-existing health of inmates, convenience of medical staff, and need to isolate certain cases. The basic conclusion of the study was that "The present delivery of health care services is minimal, not because of the lack of dedication of the existing personnel, but because of the shortage of qualified personnel, needed technological equipment, and some needed physical renovation" (*14a*).

In the 1973 Tombs study performed by E. D. Rosenfeld Associates, it was noted that the medical component of this 1,000-man institution was somewhat inadequate, not only in terms of physical facilities but also in terms of delivering medical care (*15*). For example, it was found that "insufficient physician time is being spent at the physical examination room and at the medical clinic to adequately examine, diagnose, and treat inmates" and that "sick call procedures do not permit adequate screening of inmates having medical complaints" (*15a*). Indeed, the following statement from the Tombs report rings true not only for the Manhattan House of Detention but for countless other penal institutions (*15a*):

> The overall organization of health care services at the Tombs Prison is weak and fragmented. There is little evidence of effective and imaginative leadership; nor is there any sense of control or accountability. The various programs function in a disconnected manner and have not been drawn together into a coherent and continuous framework.

Before the Rosenfeld report, the Tombs and the other jails in New York City had been investigated by various groups and individuals—all with similar conclusions (*16,17*). One report of such an investigation, by Richard W. Nathan (*17*), documented the medical care deprivation in New York City's correctional institutions and provided data on the massive expenditures required to operate the jails—more than $18 million was budgeted for fiscal year 1971. Nathan noted that:

> These resources currently provide approximately 7.9 physician hours per inmate per year. They permit sick call visits and initial admission inspections averaging two minutes apiece and specialty care when absolutely essential. . . . The mental competency examinations [provided in] inpatient psychiatric ward . . . cost per examination averages $1,770. . . .

Health Status of Inmates

With such massive expenditures as noted by Nathan, how sick are inmates? Some of the previously mentioned reports suggested that many inmates need medical attention, but how much?

In an attempt to quantify the health problems of inmates at the Tombs, Army reservists made three separate visits to the Tombs and performed physical examinations on three groups of inmates. The results of these examinations, which were reported in a memorandum of May 4, 1973 (table 1), indicate that a large percentage of inmates are in need of medical attention. However, even these data must be questioned for a variety of reasons; for example, the inmates volunteered for the examination, and each group was examined by

Table 1. Percentages[1] of health conditions requiring medical care among three groups of inmates, the Tombs Prison, New York City, 1973

Conditions	Group A (N=101)	Group B (N=70)	Group C (N=76)
None	72.2	70.0	71.0
Urinary tract infections	7.9	4.2	0
Chest diseases	4.9	4.2	0
Dermatological conditions	1.0	2.8	1.3
Eyeglasses needed	8.9	7.1	1.3
Ulcers and gastric disorders	1.9	4.2	2.6
Heart disease	2.9	1.4	0
Neurological conditions	0	1.4	0
Ear problems	0	2.8	7.8
Throat infections	0	1.4	1.3
Hypertension	0	0	9.2
Orthopedic conditions	0	0	3.9
Ophthalmologic conditions	0	0	1.3
Elbow infection	0	0	1.3

[1] Percentages do not total 100 because of rounding.

different physicians and technicians. One manifestation of these methodological limitations was the unexplainable inconsistency in the findings of hypertension in 9 percent of group C inmates but not in any of the inmates in groups A and B. Numerous other inconsistencies as well as the methodological weakness of this survey suggest that the validity and reliability of these findings are limited.

Another study (*18*) included a review of the medical problems of a predominantly white group of inmates in the Albany, N.Y., county jail in 1962. This study of 500 inmates found that immediate medical care, including hospitalization, was required for 113 or 22.6 percent, psychiatric hospitalization was required for 14 or 2.8 percent, and immediate medical care for a variety of conditions was required for 68 or 13.6 percent. Other psychiatric evaluations were required for gross personality disorders for another 8 or 1.6 percent of the population. Urine examinations were positive for sugar in 31 inmates; followup tests revealed that 8 were true diabetics and that 3 of these required hospitalization. Tuberculosis testing revealed four previously unreported active cases. Eight inmates were found to have syphilis, and one had gonorrhea.

The Botterell enquiry report from Ontario, Canada, is one of the most comprehensive on a prison health system (*19*). This investigation of jails, adult correctional and training centers, forestry camps, and training schools provides a detailed description of diseases and symptoms found among Canadian inmates in a sample of institutions. This information (table 2), provided from intake examinations and sick call records, indicates that two conditions are common and prevalent in the sampled institutions—the common cold (acute nasopharyngitis) and drug dependence. Other conditions that contributed significantly to medical care in four of the jails were alcoholism, sleep disturbance, and nervousness, which also were prevalent conditions in five adult institutions. Other prevalent conditions in the adult centers were skin rashes and headaches. In the training schools, contusions, lacerations, and abdominal swelling were the third, fourth, and fifth most prevalent conditions. It should be noted that although all these diseases cause discomfort, few are disabling or lead to imminent death, and most are treatable within the context of primary care.

Table 2. Health status of inmates in selected correctional institutions, by percentages of selected conditions, Ontario, Canada, 1972

Condition	4 jails (N=700)	5 adult correctional and training centers (N=640)	3 training schools (N=237)
Alcoholism	9.8	4.0	0
Acute nasopharyngitis	7.8	10.2	11.3
Drug dependence	6.5	4.1	7.9
Disturbance of sleep	5.3	3.0	0
Nervousness and debility	5.3	3.4	0
Rash, skin eruption	2.8	5.4	3.7
Headache, pain in head	2.2	3.4	3.7
Abdominal swelling	0	3.4	4.1
Lacerations and open wounds	2.8	2.9	4.6
Contusions	2.5	3.9	6.6

SOURCE: reference 19.

Finally, brief mention should be made of my report in 1972 of the Orleans Parish Prison, which revealed that neither the quantity or quality of medical care at the jail was adequate (*20*). One aspect of the Orleans study was an epidemiologic screening of 50 inmates, and as previously reported (*20a*):

> In a special study of 50 inmates in December 1971, no major medical problems were found on gross physical examination, although as can be seen in the following table, a large percentage of the 50 inmates complained of a variety of conditions. Basic laboratory workups, moreover, presented information suggesting that 14 percent might have had an active venereal disease and that 14 percent might have had a urinary tract infection. A review of the available medical records of these inmates showed that none had been seen previously for either of these infections. Perhaps of greater significance was the observation that 2 weeks after the abnormal results of tests had been returned to the prison hospital, none of the inmates to whom they pertained had received either followup laboratory work or treatment.

Medical condition	*Percent*
Frequent trouble sleeping	69
Dizziness or fainting spells	57
Nervous trouble of any sort	53
Depression or excessive worry	51
Pain or pressure in chest	45
Frequent or severe headaches	45
Venereal disease—syphillis, gonorrhea, and so forth	45
Leg cramps	41
Head injury	37
Severe tooth or gum trouble	37
Shortness of breath	35
Fractures	35
Eye trouble	31
Chronic or frequent colds	31
Palpitation or pounding heart	29
Recurrent back pain	29

Conclusion

Probably one of the best-known prisoners of the 1960s who has written about prison health conditions is James Hoffa. In a paper prepared for an American Public Health Association meeting (*21*), he noted that prisons are "unbelievably bad for those who enter their gates either with incipient physical or mental health problems, or even for those who have no more than average resistance to physical or mental health problems, or even for those who have no more than average resistance to physical or mental stress."

Are his observations an overstatement? Certainly not! It is obvious from this review of the published literature as well as my personal experience as a consultant to many jails and prisons that a significant number of health facilities and programs are overutilized, obsolete, unsafe—in a word, unsatisfactory. Indeed, they are simply a reflection of a prison system that appears to be in violation of the eighth amendment to the Constitution which forbids cruel and inhuman punishment.

Is the situation changing? Yes, but very slowly. For example, in New Orleans the new system is reportedly a considerable improvement over its forerunner. In New York, the quality of professional and nonprofessional staff and facilities is being upgraded and the quality of medical care is now being continuously evaluated by a group of health care professionals from outside the penal system.

These changes are encouraging, but much more remains to be done in this barren wasteland of medical care.

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The Public Health Conference on Records and Statistics

meeting jointly with

The American Association for Vital Records and Public Health Statistics

HIGHLIGHTS OF THE 15TH NATIONAL MEETING

This report was prepared by Margery Cunningham. Tearsheet requests to Scientific Information Branch, National Center for Health Statistics, Health Resources Administration, Room 8–20, Parklawn Building, 5600 Fishers Lane, Rockville, Md. 20852.

EVERY TWO YEARS the National Center for Health Statistics hosts a meeting of registrars and health statisticians from the official health agencies across the country. These gatherings constitute the biennial meetings of the Public Health Conference on Records and Statistics, which are recognized as the principal national meetings for workers in vital records and health statistics in the United States.

The fifteenth national meeting took place in Washington, D.C., June 16–19, 1974. The theme of this year's conference was the Cooperative Health Statistics System, a developing coalition among Federal, State, and local governments whose aim is to produce comparable and uniform health information and statistics.

This year's meeting, the largest ever, attracted some 700 participants. In addition to people from official health agencies at all levels of government, the group included representatives of such diverse interests as insurance executives, computer program analysts, hospitals, nursing homes, medical record consultants, the faculties of schools of medicine and public health and of departments of biostatistics and sociology, the professional organizations of health-related practitioners, and the legal profession. Also in attendance were 18 foreign participants from six countries.

At the first plenary session, Theodore Cooper, MD, Deputy Assistant Secretary for Health, welcomed the conference on behalf of the Secretary of the Department of Health, Education, and Welfare.

Reaching the goal of maintaining and improving the health status of the people, he said, requires substantial expansion of health data beyond those now available. First, new data "must be comprehensive, reflecting current health problems, utilization of services, availability of resources, and health trends. Second, data must be in sufficient geographic detail to permit planning for and assessment of changes at all geopolitical levels—national, State, and local."

Cooper described the Cooperative Health Statistics System as a data system that can serve as the basis for effective planning at all levels of government and for all areas of the country. He listed Federal health programs and proposed legislation that will create additional demands for health data. In the absence of a program such as this cooperative system, Cooper pointed out, various agencies at different government levels would need to develop their own data bases, and major duplication and waste would result.

Eliminating shortages of the kind of statistical information that is valid and meaningful to policymakers is one of the Department's most important objectives for the coming years, he said.

Next Steps for the Cooperative System

Philip M. Hauser, PhD, professor of sociology and director of the Population Research Center at the University of Chicago, made the opening presentation, "Next Steps in the Development of Vital and Health Statistics."

Hauser listed the seven components of the system: vital statistics; manpower statistics; health facilities statistics; hospital care statistics; health interview statistics; ambulatory care statistics; and long-term care statistics. But missing, he said, is a loom to weave the mountain of uncoordinated, unintegrated, unanalyzed health statistics into a meaningful fabric for purposes of policy and program formulation, an idea that was echoed by other speakers later in the meeting.

Hauser discussed briefly the recommendations of the Committee to Evaluate the National Center for Health Statistics (*1*), of which he was chairman. The first recommendation, he said, calls for development of a health accounts system with the objective of coordinating programmatic and general purpose statistics to provide a comprehensive basis for planning, administering, and evaluating health care in the United States, in both the public and private sectors. A health accounts system is described as consisting of inputs of resources (measured in dollars, manpower, facilities, and service) and outputs of health status (measured by mortality, disability, and ability to function).

Turning to the future development of the cooperative system, Hauser said that as a first step we must set in motion the weaving of the fabric that will put together the multitude of isolated facts that go separately to units of the health industry. Initially this means seeking data integration, as the committee recommended.

Step No. 2, Hauser said, is the recognition of socioeconomic epidemiology. He cited an American Public Health Association monograph, "Differential Mortality in the United States, A Study in Socioeconomic Epidemiology" (*2*). The study described therein, he said, convinces him that future improvements in mortality in the United

Delegates to the Public Health Conference on Records and Statistics attended many sessions such as this one on long-term care statistics

States will depend more on dealing with the socioeconomic factors associated with mortality than on anything the biomedical profession can do.

Major Issues Facing Health Statisticians

The next speaker was Edward B. Perrin, PhD, director of the National Center for Health Statistics, whose subject was "Developing a Coordinated Health Statistics System for the Nation."

Discussing the major issues which face health statisticians, he stressed the importance of accurate and timely publication of baseline information and of the rapid release of the analytical results of surveys and censuses. The Center should continue as a collector of baseline data while at the same time expanding further its analytical activities. He referred particularly to cross data system analysis, which would permit relating health examination data and vital statistics, for example, and to the relationship of those systems to such material as data on hospital discharges and ambulatory care.

A second major issue, Perrin said, is the integration of programmatic and general purpose data, as was stressed by Hauser. It will be necessary, Perrin pointed out, to integrate the data we have traditionally collected with those which will be generated by a national health insurance scheme. He said the Center is working with officials of the Department to effectively harness the tremendous information potential in a national health insurance program.

The third major issue he sees is the need to pay a great deal of attention to the collection of data at the State and local levels.

Perrin reported that the Secretary of Health, Education, and Welfare has appointed an advisory committee on the cooperative system. Composed of representatives from the States and local areas, universities, and a range of professions, it will afford the National Center for Health Statistics a needed input, he said.

He praised the Committee to Evaluate the National Center for Health Statistics and discussed some of the actions that have been taken to implement its recommendations. With regard to its first recommendation, for the setting up of a system of health accounts, Perrin said that the man whose idea it was, Dr. Paul Densen of Harvard, is now working on a definition of health accounts. The Committee's second recommendation, for the creation of an administrative structure providing line authority for data collection, has been put into effect.

The third recommendation called for fixing the primary responsibility for coordinating health statistics activities within the Department of Health, Education, and Welfare. That has been accomplished, Perrin said, by establishing a data policy committee in the office of the Assistant Secretary for Health. This committee is made up of representatives of all the HEW health agencies, the Social Security Administration, and the Social and Rehabilitation Service. It is chaired by the NCHS director.

Vital Statistics

"A Model for the Cooperative System—Revision of Vital Statistics Standard Certificates" was the topic of a presentation by Robert A. Israel, associate director for operations, National Center for Health Statistics.

Israel reviewed the history of the vital statistics system, expressing the belief that the process by which the U.S. standard certificates of vital events are revised represents an important contribution to the thinking in regard to setting up the Cooperative Health Statistics System. He said that the vital statistics system has exhibited several characteristics that typify the development of other components of the cooperative system—the cooperative aspect itself, the need for and establishment of a basic data set and standards, and geographic growth so as to ultimately produce statistics covering the entire nation.

As to the specific mechanisms and procedures used in revision of the standard certificates, he said that first of all consideration needs to be given to a scheduled periodic review of the contents of these basic data sets.

Second, in any revision of the basic items, account must be taken of the needs of a wide range of users of the data. Using the 1968 revision as an example, Israel described the consultations that took place with appropriate individuals and organizations, followed by drafts, more consultations, redrafts, and so forth.

Several aspects of the revision process have relevance to the establishment of the cooperative system, Israel said. First, no data set should be developed without a mechanism for periodic review, evaluation, and necessary revision.

Second, in any component of the system in which there are many different users and producers of the data, it is most advantageous to give those agencies and organizations an opportunity to provide input into the preparation or revision of the minimum basic data set. Divergence of opinion can be expected, but those whose point of view is not accepted should be satisfied that they have had an opportunity to be heard.

Third, Israel stressed the benefits to be gained when a development process proceeds under the guidance of a broad-based public advisory group rather than a single agency. Fourth, he said, the method of making final decisions cannot always be democratic; sometimes administrative necessity rather than a "vote" must govern.

Second Plenary Session

"The Cooperative System—Meeting the User's Needs" was the subject of the second plenary session. The meeting was chaired by Karl D. Yordy, senior program officer of the Institute of Medicine, National Academy of Sciences, Washington, D.C.

Yordy noted that the speakers in this second session were not primarily statisticians but rather included a pediatrician, the medical director of a medical care foundation, a business executive, and the director of the Center for Health Services Research and Development of the American Medical Association.

"In the sense," he said, "of the 'we-they' dynamics of this kind of conference, the 'we'—including myself—are the 'they.' " We and they, he added, are part of a new era of health statistics characterized by changes which lead to new demands and new interests in health statistics on the part of many persons in policy-making positions who previously would have had little interest in them.

In the political context in which health statistics activities exist, there are still many gaps in communication, Yordy noted. Further, the kinds of issues that arise in implementing and further conceptualizing the cooperative system are dimly perceived by most of those who wield influence in the political context.

Among specific issues likely to arise in this political context, Yordy suggested, would be the development of a long-range strategy, which will need political recognition and a constituency. This will probably not be a "first order" constituency —one that views health statistics as of first importance. Rather, it will consist of people whose interests are in other things but who then see that health statistics are necessary to achieving their objectives.

A serious problem, stated Yordy, is the state of the art. Despite the progress in producing data on many aspects of health activity, the translation of those data into guidance for decision making requires additional steps, including analysis. Also, major conceptual problems have not yet been solved, Yordy said, and he mentioned the difficulty of measuring health status and of

John L. Pendleton, chief, Cooperative System's Technical Assistance Branch, NCHS, points out the States participating in the Cooperative Health Statistics System trying to relate the process of care to outcomes.

Under the heading of general political problems, Yordy noted that although the cooperative system will operate in the context of Federal-State-local relationships, those relationships are far from clear. For example, local jurisdictions sometimes want to relate directly to the Federal Government rather than to go through the State.

New Health Manpower Data

Henry S. Mount, chief of the Health Manpower Statistics Branch, Division of Health Manpower and Facilities Statistics, National Center for Health Statistics, made the keynote presentation to a session on health manpower data systems.

Starting this year, he said, data on a variety of topics are to be collected through cooperative arrangements similar to those long established for vital statistics. Among the new areas being covered is health manpower, and initially data will be collected on 13 health-related occupations.

One reason for selecting these 13 occupations is that the people in them require the greatest amount of lead time to produce or train; thus, all levels of government need to have information about them. Also, they are the most accessible, each of them being licensed in 49 or more States. For the most part, information can be collected through a licensure attachment.

The 13 occupations are doctors of medicine and osteopathy; nurses, both registered and licensed practical or vocational; dentists and dental hygienists; chiropractors; podiatrists; pharmacists; physical therapists; veterinarians; and nursing home administrators.

In stage 1 of the health manpower data system, the limited amount of data that now exist for the 13 occupations will be collected and data handling techniques will be devised; in stage 2 a minimum data set will be used as a licensure attachment. Subsequent stages, not yet well defined, could include the expansion of coverage, the collection of specialized data on particular topics or groups, and so forth.

The primary purposes of the minimum data set are standardized content from all the participants in the system, standardized definitions, and data that will be comparable across geographic areas and geographic boundaries and between occupations. Eventually the data will provide time series and changes as they occur, thus showing trends. For States and localities, the data will furnish information for monitoring and planning.

Mount described the development of the basic data set, from the wording of a draft to its distribution and the solicitation of comments from groups and individuals.

The items receiving the greatest number of comments, he said, were six: multiple licensure—expand to include States in which the persons are licensed; name of the school of graduation; race or color; ethnic origin; primary occupation of specialists—expand the list of specialists; and form of employment.

In addition to commenting on the draft, respondents had suggestions for new items to be added. Among those frequently mentioned were board certification or eligibility; income or salary data; more information on training; reasons for inactivity among the inactive population; place of birth; and information about productivity.

Mount noted that there are many factors to weigh before an item can be included, excluded, or modified in the final minimum data set. He said that whatever is decided now is subject to modification later because of operational procedures and the interests of all the people concerned—so that this is only the beginning for the minimum data set on health manpower.

Long-Term Care Data

In the keynote address at a session on long-term statistics, Mrs. Beverlee A. Myers, deputy commissioner of medical assistance, New York State Department of Social Services, discussed "Guidelines and Principles for Long-Term Care Statistics."

More than in other areas, she said, statistics in the area of long-term care need to describe the population base in terms of social, economic, psychological, and behavioral characteristics; the range of environments in which care is given in social-psychological as well as medical terms; and the interaction between patient and environment as a care process, rather than as a cure process.

Long-term care data are needed and used in two dimensions, micro and macro, Myers pointed out. The micro dimension deals with the individual and his interaction with the care environment. It requires data on and derived from assessment of individual patient characteristics and needs; of individual environments in which care might be given; and of the process of care when the patient interacts with the environment. It provides a basis for decisions on individual patient placement and care and for evaluation of the effects of care modalities on patient status.

The Patient Classification System for Long-Term Care (3) [this manual is described on page 585. *Ed.*], based on the work of Paul Densen and associates, affords a uniform way of describing patient characteristics in terms of both socioeconomic and medical elements, Myers stated. The psychosocial factors need to be strengthened, and the system itself extensively field-tested, but it represents a major breakthrough.

The survey forms used to assess compliance with Federal standards for Medicare and Medicaid, she said, provide uniform, standardized ways of describing certain care environments—skilled nursing facilities, intermediate care facilities, and home health agencies. Public Law 92–603 makes these forms publicly available, and they should be evaluated for use in the patient placement process. This suggestion illustrates a basic principle—that any data collected should serve as many purposes as possible.

Uniform language to describe the care process is a requirement which is not now covered. Myers expressed the belief that this is needed for assessing appropriate utilization and the quality and effectiveness of care and for making payments for services. As a basic principle, she said, these descriptors should be uniform and standardized so that data can be aggregated for the macro level.

At the macro level, data are needed for planning services and beds, evaluation of the long-term care system, budget and expenditure planning, regulation of the industry, and research. The aggregated data are essentially programmatic. Baseline data are needed, also, for a denominator. The surveys of health, facilities, and cost conducted by the National Center for Health Statistics are examples of the baseline data required. Obviously, Myers commented, the language used in baseline statistics must conform with or at least be compatible with that used in the programmatic statistics. Both the baseline and the program data should be more timely, and the baseline data should be relevant to smaller geographic areas.

Both the recording and reporting of data are carried out at the point of care, but everything recorded should not be reported, she stressed. As a basic principle, anything required to be reported should be useful to the reporter. Otherwise, he has no incentive for timely, accurate, and reliable reporting.

Reporting formats should be uniform to lessen the impact on the reporter and permit easier organization in the aggregation of the data.

The Cooperative Health Statistics System, Myers pointed out, is the appropriate vehicle for collecting and analyzing the macro and baseline data. Other programs will be concerned with analysis, but efficiency dictates a decentralized vehicle to coordinate the sources of data, to assure uniformity at the micro and macro levels, and to make the data available for the multiple purposes envisioned.

Hospital and Health Data

As chairman of a session on the hospital's role as both a provider and user of data, James P. Cooney, PhD, director of the Health Services Research Center of Chicago, made the point that to obtain valid and reliable information the user must establish a reciprocal relationship with the provider, in this case the hospital.

"Buying data has only a limited potential in achieving comprehensiveness, validity, and reliability," he said. "Internal usability for the provider of the information will do more toward solving your problems of data quality and quantity than most other solutions."

L. J. Danehy, director of the Rochester (N.Y.) Hospital Council, reiterated this idea. He said that hospitals now collect most of the information called for in the uniform hospital discharge data set. These data, in and of themselves, are probably of little help to a hospital, he thought. But the hospital can integrate them with other information, producing something useful to the particular institution.

State and Local Health Interviews

The session on "The Use of a Health Interview as a State or Local Planning Tool" was chaired by Robert B. Pearl, former chief of the

Social Statistics Branch, Office of Management and Budget, Executive Office of the President. He traced the history of health interview surveys and noted some reservations about their use at the local level—the great difficulty of mounting and operating them and the costs involved.

One of the speakers at this session was Jacob J. Feldman, PhD, a professor in the Department of Biostatistics, School of Public Health, Harvard University, who talked about the types of statistical information which can and cannot be measured adequately through health interview surveys.

He mentioned various sources of morbidity and mortality data—deaths or hospital discharges, insurance claims, Medicare data, ambulatory care records. But these data collection methods represent only the tip of the iceberg, he said. The mortality data are complete, but they do not reflect the morbidity situation of the community; and the other measures relate only to the illnesses that are attended.

Health interview surveys, however, report unattended as well as attended morbidity and produce data on unmet needs, he said. Also, they permit one to relate utilization to need on a one person basis and to find out in what segments of the population there is particularly great imbalance between utilization and need; they also facilitate cross-tabulation of personal and social characteristics with morbidity patterns.

Feldman discussed some of the unsolved problems that plague health interview surveys: how to translate morbidity measures into volume of needs for services; the fact that interviews do not produce good diagnostic information; and underreporting—an illness that does not affect the person's life very much too often is not reported.

Nevertheless, health interview surveys are the preferred or only method of obtaining some types of data, Feldman said. Examples are the health insurance that people have; environmental information—to determine the impact of pollution, one needs to know where people spend their time and how much time; health practices, such as smoking, dietary patterns, use of medication, and so forth; accident data; accessibility of medical care—how long a person must wait for an appointment with a doctor and how far he must travel to get there.

Ambulatory Care Statistics

As chairman of the session on "Ambulatory Care Statistics," Robert E. Dedmon, MD, president of the Twin City Clinic, Neenah, Wis., discussed ambulatory care records from a practicing physician's point of view.

First, he said, the diagnostic terminology physicians are used to is often not practical in the ambulatory care setting—but relating to the patient's situation in his own terms can create problems in terminology and classification. Second, abbreviations should be standardized, and there should be a requirement that the records be legible.

Another difficulty concerns the visibility on the patient's chart of all the major diagnoses, especially when the patient goes from one clinic to another. Unless all such diagnoses are reported with sufficient visibility, for example, a patient could receive a drug he would not otherwise be given.

Dedmon mentioned also the appropriate utilization of laboratory evaluation, the proper notation of the patient's disposition, the problem of misdiagnosis, and the proper identification of the patient's allergies to drugs.

Continuity of care is difficult when several physicians see a patient, Dedmon noted. The record must be sufficiently complete for all physicians in the care system to ascertain rapidly the patient's situation. There are also legal considerations. What would the complainant's attorneys or the defense attorneys say if they looked at the chart?

Finally, he said, the solutions to ambulatory care problems must be directed toward the delivery of care at its best, but responsibility for this in the record area rests with the entire team, not just the physician.

Carmault B. Jackson, Jr., MD, San Antonio, Tex., reported on the new uniform minimum data set for ambulatory care, which is the work of a technical consulting panel of the United States National Committee on Vital and Health Statistics.

In the panel's report (*4*), two types of purposes are noted that are served by the maintenance of ambulatory medical care records. One is the improvement of ambulatory care, and the other is a variety of management, planning, education, and research uses which can be served only when data have been abstracted from records and analyzed.

The panel said that ambulatory care records, no matter how simple, will consist of three informational components:

1. Information that identifies and characterizes the patient.
2. Information that identifies and characterizes the provider.
3. Information that identifies and characterizes each "encounter" between patient and provider.

An encounter is a face-to-face contact between a patient and provider who, at the time of the encounter, has the primary responsibility for assessing and treating or managing the condition of the patient and who exercises independent judgment in the care of the patient.

Fortunately, Jackson said, many of the items of information which should be recorded in the interest of facilitating care of the patient are the same items needed for other purposes. This fact gives rise to the concept of the minimum basic data set.

Other Sessions

In a program on "Disease Classifications for What," panel members discussed the use of disease classifications as medical nomenclature, for storage and retrieval, for medical care statistics, and for medical care evaluation.

Speaking to the latter, Robert H. Brook, MD, medical officer in the Bureau of Health Services Research, Health Resources Administration, cited deficiencies in the present system from the point of view of the evaluation of medical care.

For purposes of evaluation, he said, the disease classification system needs to be modified so that it will be uniform across the country; it will contain an auditing mechanism to assure a reasonable level of reliability and validity of information; and it will incorporate within the classification scheme for a few selected diseases the factors by which patients with those diseases may be grouped into a more prognostically homogeneous category.

Additional concurrent sessions focused on the revision of standard certificates of births, deaths, fetal deaths, marriage, and divorce or annulment; the role of data in the assessment of the quality of care; health facilities statistics; the application of interview techniques to issues in health economics; uses of health data in planning; the structural format of standard certificates; research on data collection mechanisms; and the transition to automation in State vital statistics processing (through the Cooperative Health Statistics System).

Meeting of AAVRPHS

As has been customary, the American Association for Vital Records and Public Health Statistics (AAVRPHS) held its national meeting in conjunction with the Public Health Conference on Records and Statistics. The association elected the following slate of officers for 2-year terms:

President, Irvin G. Franzen, Division of Registration and Health Statistics, Kansas State Department of Health; President-Elect, Vito M. Logrillo, director of Health Statistics, New York State; Vice President, John E. Brockert, director of the Bureau of Health Statistics, Utah State Division of Health; Secretary-Treasurer, Frederick L. King, chief of the Section of Administrative Services, Minnesota Department of Health.

Elected to the executive board were Robert T. Bailey, State registrar, Vital Statistics, Arkansas Department of Health, and Raymond D. Nashold, PhD, director of the Bureau of Health Statistics, Wisconsin Department of Health.

Everett H. Williams, Jr., chief of the Bureau of Vital Statistics, Division of Health, Florida Department of Health and Rehabilitative Services, remains on the board as immediate past president.

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PROGRAMS□PRACTICES□PEOPLE

New Opportunities in Health Services Administration for Minority Students

■ Disparities within the systems of health care delivery exist despite significant scientific and technological advances in medicine and health care. One example of such disparities is the paucity of nonwhites in the health care professions.

In 1973, according to an estimate of the American College of Hospital Administration, only 300 of the nation's 17,500 hospital administrators (one-quarter of 1 percent) were nonwhites. The nonwhite group was comprised of 200 blacks, 50 persons of Spanish surname, 30 Asians, and 20 Native Americans (Indians). The small representation of nonwhites is typical of what may be found in other medical, technical, and higher level health occupations in general.

Because nonwhite health professionals may be in a better position to understand and deal with the health care concerns of nonwhite communities, more opportunities need to be created for their education and training. To this end, the Association of University Programs in Health Administration and the National Association of Health Services Executives (NAHSE) launched a national program to recruit nonwhite students into graduate study for health services administration.

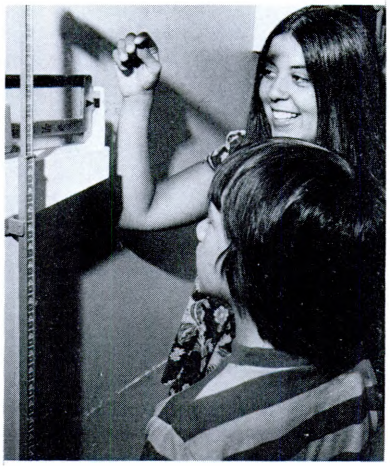
The Washington/Alaska Regional Medical Program (W/ARMP) furthered the effort by sponsoring a small health services survey course for minorities, held in the spring of 1974 at the department of health services, School of Public Health and Community Medicine, University of Washington. From this survey course, a new Health Services Administration Program for Minority Undergraduates evolved, which is now one of the school's major projects. It offers two quarters of class instruction and an 11-week summer field practicum at a variety of health institutions and agencies.

With stipends from the Washington/Alaska Regional Medical Program, field placements in hospitals and health agencies were offered in the summer of 1974 to 14 minority students—five students with Spanish surnames, four Filipinos, three Native Americans, and two blacks.

The young people were placed for the summer in work situations closely matched to their own interests. For example, Roberto Briones, a political science major with a special interest in health politics, surveyed 12 of Seattle's "third world" clinics, gathering information on the funding and administration of these alternative community health centers for the medically underserved. His observations will be included in a "Survival Health Manual" for free clinics to be published by Different Trips, Inc., San Francisco.

The Seattle-King County public health nurses were the preceptors for Nenita Biwit, a prenursing student. She accompanied them on their rounds to see post-partum, mental health, and elderly patients. She also worked on a telephone survey to locate the former patients of a Chicano clinic that had become inactive. The hope was that with her help, these patients might be encouraged to seek care in a new health center projected for the area.

A student intern (Kathleen Allen) weighs in a young client at the Seattle Indian Health Board clinic



A neighborhood health station on Seattle's "skid road" is one of the outreach services studied by this student (Portia Lewis)

Manolo Rivera, a fifth-year undergraduate working toward a degree in microbiology, plans a career in health services administration. By working with the University Hospital's office of financial planning and control in statistical data collection during the summer, he saw the inside workings of the hospital's pharmacy, laundry, medical, social, and environmental services (*photo, inside cover*).

Michael C. Ross, a sophomore in business administration, is interested in hospital management. He spent most of his time working in the business office of Seattle's Children's Orthopedic Hospital. He also served, however, at the hospital's outreach clinic, and he made hospital rounds with physicians because he was interested in observing how they handled patients. At the hospital he also worked in its poison control center, learning to retrieve quickly microfiche directions to use in the treatment of youngsters who had swallowed toxic substances.

Interning for the summer at the Seattle Indian Health Board Clinic, Kathleen Allen weighed and measured children, asking questions about their diet and attempting to detect signs of child neglect, which is often common in families in which someone is afflicted with alcoholism. The mother of two youngsters, Kathleen found she related easily to the small patients. She also acted as the coordinator among the social and health agencies concerned with child abuse. Kathleen is a sophomore psychology major and is considering a career in education or medicine.

Fernando Vega, the only Filipino-American in the university's entering medical school class, worked with the Medex training program and also assisted the W/ARMP Health Manpower Clearinghouse, which recruits physicians and other workers for underserved areas.

Although Portia Lewis is only a freshman, she hopes to become a physician. She got an inside look at medical care while assisting with physical examinations for Neighborhood Youth Corps children and working at a downtown outreach clinic for alcoholics.

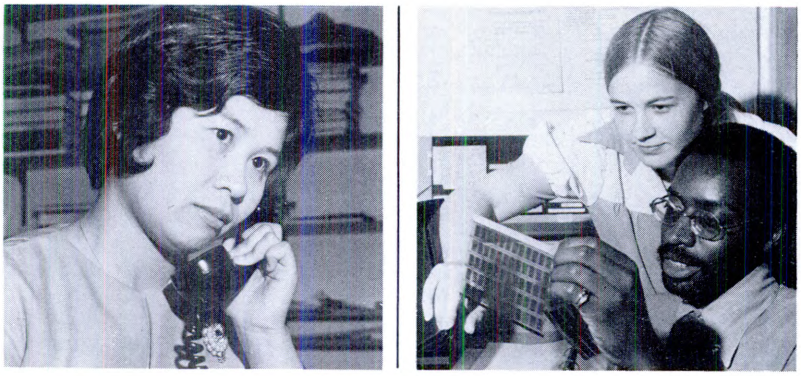
Roberto Estrada is a senior in social work. He interned at the University Hospital's personnel department, served in most areas of the hospital, and even worked briefly as a "candy striper" volunteer assisting patients.

Denis Pineda worked during the summer in the University Hospital pharmacy department, while Clarence Skaw was assigned to the Veterans Administration Hospital. Norma Navarro went to the King County Medical Blue Shield organization, and Augustine Gonzales was placed with the Idaho Migrant Council in Boise.

Teresa Cardenas interned with the Northwest Chicano Health Task Force, and Roberta Sense interned at the Seattle Indian Health Board. Teresa helped organize a 2-day health fair that offered free screening and counseling to Chicanos in Oregon.

The Health Services Administration Program for Minority Undergraduates is directed by Lynn D. French, assistant to the administrator of University Hospital and an instructor in the department of health services, School of Public Health and Community Medicine, University of Washington.—*Communications Office, Washington/Alaska Medical Regional Program.*

Student (Nenita Biwit) conducts survey for county department of social and health services and right, a nurse (Emily Meyer) instructs student (Michael C. Ross) in the use of microfiche information relay at poison control center of Children's Orthopedic Hospital, Seattle



Classification of Patients Receiving Long-Term Care

■ The review, demonstration, and evaluation of nursing homes and alternative methods of caring for the chronically ill and aged is called for under Public Law 92-603, Section 222, but such demonstration and evaluation will depend on the collection of uniform national data. Use of a manual entitled "Patient Classification for Long-Term Care," recently issued by the Bureau of Health Services Research, Health Resources Administration, is expected to generate much of the information needed.

The classification system for long-term patients outlined in the manual has five major components (areas): (*a*) identifying and sociodemographic data, (*b*) functioning status (what the patient can do for himself, (*c*) impairments (what special services and devices the patient needs), (*d*) medical status (measurement of risk factors), and (*e*) medically defined conditions. In each component, simple, well-defined terms are used to evaluate the patient. The results are recorded on a coded classification sheet.

National use of the manual, which will be initiated in the upcoming survey of nursing homes, will permit the batching of data from all sources and provide a consequent broad definition of the nursing home problem in terms of total patients and the medical and supportive services needed. It will permit rational allocation of nursing home manpower and funds and rational, highly individual patient placement. Surprisingly, the present system of funding, in some settings, can encourage over-care and consequent patient vegetation.

Patient Classification for Long-Term Care. DHEW Publication No. (HRA) 74-3107; June 1974; $4. National Technical Information Service (Stock No. PB 233 128), Springfield, Va. 22151.

Male Contraceptive Drug Shows Promising Results in Recent Study

■ First steps toward the development of a male contraceptive drug show that a drug combination can safely and effectively lower the production of sperm. Researchers consider a sperm count of 5 million or less to be associated with infertility. Although this end point has not been validated with certainty, the basis for this viewpoint is derived from years of experience in dealing with infertile men.

A study being conducted by C. Alvin Paulsen, MD, University of Washington, Seattle, under contract with the Center for Population Research, National Institute of Child Health and Human Development, seeks to determine if the sperm count can be effectively and safely lowered. Future studies will try to achieve a total absence of sperm.

Ninety-nine married or single men, primarily students 19 to 35 years old, participated in the study. Only a few complained of some decrease in libido (sex drive) while taking the drugs, and the dropout rate for the study was 10 percent.

The participants were examined thoroughly and monitored for information on their normal state of health over a 3-month period, after which they began 6 months of drug treatment. The drugs consisted of a weak male hormone pill taken daily and a potent male hormone injection given once a month or an oral androgen pill taken daily.

To determine the most effective drug combination, the volunteers were divided into six groups with different dose schedules. The most recent study results show that in the men treated with the most effective drug combinations, 19 of 27 showed sperm counts of 5 million or less per ejaculation. The normal male produces 60 to 200 million sperm per milliliter of ejaculate. Normal ejaculate volume ranges from 2.5 to 6.0 ml.

Another encouraging result was that no undesirable side effects related to drug taking have been observed during careful and continuous medical examinations, including blood chemistry tests. The volunteers were closely monitored for a 5-month recovery period. Each man followed in this fashion achieved a complete return to pretreatment sperm counts.

Medicare and Medicaid Beneficiaries Assured Access to Medical Care

■ A regulation intended to prevent discrimination against Medicare and Medicaid beneficiaries by hospitals and other health care facilities constructed with the aid of Hill-Burton funds has been issued by the Department of Health, Education, and Welfare. It was published in the August 30, 1974, Federal Register. The Division of Facilities Utilization, which administers the Hill-Burton program, is a component of the Health Resources Administration.

The regulation was approved by the Federal Hospital Council, a body comprised of representatives of providers and consumers of health care, which advises the Secretary of Health, Education, and Welfare in the administration of the Hill-Burton Hospital Construction and Consultation program. The measure requires that health care facilities which have been provided assistance by the Hill-Burton Program within the past 20 years must take steps to insure that admission, and services of, the facility will be available to beneficiaries of governmental programs such as Medicare and Medicaid without discrimination or preference because of the person's beneficiary status.

Hospitals will be expected to notify all members of their attending and courtesy staffs that beneficiaries of government programs are eligible for admission to the hospital in accordance with the procedures normally used by each institution.

The regulation applies not only to Federal third-party programs, such as Medicare and Medicaid, which reimburse for "reasonable costs," but also to State, county, and local governmental third-party payment plans that provide for reimbursement for "actual costs." "Reasonable costs" are computed under a formula established in accordance with applicable Federal law.

Planning for a National Center for Health Education

■ The National Health Council is working out detailed plans for the establishment of a national center for health education of the public, under a $259,816 contract with the Department of Health, Education, and Welfare. The proposed center would complement the activities of the Bureau of Health Education of the Center for Disease Control, Public Health Service, at Atlanta, Ga., which will serve as the focal point within the Department of Health, Education, and Welfare for Federal health education activities.

In planning for the design and implementation of a health education center in the private sector, the National Health Council will include short-term and long-range objectives and functions, an organizational structure, sources of funding, and a range of contributors to and users of the center. The council expects to obtain input from its more than 75 member organizations, as well as from other groups and individuals. Among those being contacted are educational institutions; health, education, and other interested professional associations and voluntary organizations; government agencies; public media; private foundations; consumer groups and labor organizations; and insurance carriers, business, and industry. Input will be assured from these groups through a series of conferences, mail surveys and questionnaires, study groups, and consultations.

The completed plan for the establishment of the national center is to be submitted to the Department of Health, Education, and Welfare by May 25, 1975. The director of the project for the National Health Council is Donald J. Merwin, formerly associate executive secretary of the New York State Health Planning Commission.

$2.5 Million NHLI Grant to Baylor College of Medicine For Research on Diseases Of Heart and Blood Vessels

■ The National Heart and Lung Institute will award more than $2.5 million to Baylor College of Medicine in Houston, Tex., for establishment of a National Research and Demonstration Center focused on heart and blood vessel diseases, particularly arteriosclerosis and its complications. The Federal Act under which the center will be established authorizes the establishment and support of up to 30 such centers.

The center at Baylor will work in close cooperation with the National Heart and Lung Institute, which will coordinate the center's activities with other Institute programs. Dr. Michael E. DeBakey, chairman of the department of surgery and president of the medical college, will be the principal investigator.

Basic research. The NHLI grant provides for continuation of basic and clinical investigative projects started in previous years at Baylor and for the initiation of others. The basic research will include studies on:

The morphology of arteriosclerosis; the distribution of arteriosclerotic disease in key vessels of the arterial system; the relationship between blood-lipid profiles and atherosclerosis; the development of arteriosclerotic deposits and their lipid composition.

The physiology of heart muscle; causes and effects of coronary-artery and heart-muscle diseases and their therapy.

The surgical management of heart and blood-vessel disease, including the removal or bypass of arterial obstructions; the development and evaluation of mechanical devices to provide pumping assistance to heavily damaged or failing hearts.

Immunological factors that may operate in the development of arteriosclerosis or that may be activated by the disease process.

Blood resources and the problem of hepatitis, particularly as related to open-heart surgery.

Education. The Baylor center will develop a more effective use of existing informational and educational systems aimed at the prevention and control of cardiovascular diseases by applying a four-pronged approach involving public, university, and continuing education students and the training of young scientists in basic and clinical cardiovascular research.

Demonstration and control. Demonstration and control projects will include:

Application in community clinics and hospitals of preventive, therapeutic, and rehabilitative procedures as practiced in the Baylor Cardiovascular Research and Training Center.

Evaluation in special ambulances of telemetering equipment permitting physicians in participating hospitals to monitor the clinical status of heart-attack patients or victims of other cardiovascular emergencies and to supervise treatment while the patient is en route to the hospital.

Alteration of the risk factors strongly associated with increased susceptibility to coronary heart disease and its complications, such as acute heart attacks. In particular, the program will concentrate on elimination or reduction of cigarette smoking and the modification of habitual dietary patterns (diets high in calories, total fat, and cholesterol) that tend to raise blood lipid levels.

A program to institute standardized procedures to measure blood levels of cholesterol and triglycerides.

Society for Biomaterials Is Seeking Papers For April Symposium

■ The Seventh International Biomaterials Symposium, will be held April 26–30, 1975, at Clemson University, in Clemson, S.C., in conjunction with the first meeting of the recently established Society of Biomaterials.

The biomaterials symposium has broadened its horizons to include a wider range of materials and medical applications. Its aim is to provide a forum in which leading investigators in clinical and basic research can report recent results, promote the transfer of their research results into clinical practice, and seek new directions and approaches in the development of all biomaterials. The symposium's five sessions will be on: (*a*) cranio-facial materials, (*b*) oral-dental materials, (*c*) recent advances in research and applications, *(d)* cardiovascular materials, and (*e*) orthopedic materials.

Abstracts of papers for the third session, Recent Advances in Research and Applications, are due by March 1, 1975. (The deadline for the other sessions was October 1, 1974.) Before submitting abstracts or to obtain more information about the meetings, write Continuing Engineering Education, 116 Riggs Hall, Clemson University, Clemson, S.C. 29631.

VA Approves $25 Million to Assist U.S. Medical Schools

■ The sum of $25,738,000 has been approved for the first year's funding of grants made under the authority of the Veterans Administration Medical School Assistance and Health Manpower Training Act of 1972. The total estimated funding for these grants over the 1- to 7-year periods for which they are approved is $149,881,000.

The grants approved are for activities designed to alleviate shortages in health care personnel and to promote quality health care by expanding and improving educational and training opportunities throughout the United States. Many of the programs will enhance present affiliations between educational institutions and VA medical facilities; others will establish new working relationships and expand the involvement of the Veterans Administration in education for the health professions and health occupations.

Five of the grants will help State universities to establish new State medical schools in areas not now served by academic health centers, schools which will concentrate on the preparation of primary care physicians. Eleven grants have been approved to help present medical schools to expand and improve their educational capabilities by strengthening their present affiliations with VA hospitals. Sixty-one grants have been given to assist in the education

continued

VA APPROVES *continued*

and training of persons in the other health professions and occupations.

The approved programs include those directed at nursing and the traditional allied health professions, as well as those based on such concepts in the field of health delivery as new careers, consortium arrangements to improve health manpower training and utilization, career development and upward mobility, and the interdisciplinary team approach.

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Program on Alcohol Abuse Aimed at School Children

■ A recently launched $270,000 program for the prevention of alcohol abuse is directed at elementary school children. Called the National YMCA Youth Values Project, it is supported by a grant from the National Institute on Alcohol Abuse and Alcoholism to the National Council of YMCAs. The Akron (Ohio) YMCA is administering the program.

This preventive effort encompasses 1,000 boys and girls in the Akron schools in grades 4 through 6. By 1976, it is expected to reach all YMCAs in the country. During the first 3 years, Dr. Glenn Knotts of the McGovern Allergy Clinics, Houston, Tex., will develop and direct the program.

"This project," Knotts explained, "is an experimental effort to test an approach to alcohol abuse through a values clarification process. The heart of the project is to train young adult group leaders in working with groups of children in informal after-school club and summer camp settings. The role of the young adult leaders is to help youngsters think about important value decisions, decisions that are being made at even earlier ages."

"The aim is to get children to participate in activities that help them understand their own value systems," said Jerry Glashagel, director of the YMCA project. "Through a variety of games and discussion, children increase their ability to make decisions, especially those involving conflicting values."

During the 1974–75 school year workshops got underway in 15 major cities in every part of the country. These workshops are training staffs from 300 different Ys in how to use the program.

ABSTRACTERS AND INDEXERS. If you are abstracting or indexing PUBLIC HEALTH REPORTS, please supply the name of your publication so that we can include it in our Information for Contributors to PUBLIC HEALTH REPORTS.

education notes

Fellowships available from Harvard Center for Community Health and Medical Care. The fellowships offered by the Harvard Center for Community Health and Medical Care, School of Public Health and Medical School, provide a 1- or 2-year work-study experience. They are designed to increase the numbers of physicians and other professionals who can combine a substantive knowledge of the health field with the ability to evaluate and guide the processes of change. The fellow has maximum latitude to pursue a nondegree program tailored to his qualifications, interests, and career goals.

The fellowship program has three components: special health-related projects, seminars, and courses offered at the university. The majority of courses taken by fellows in the past have been in biostatistics, epidemiology, health services administration, economics, and health program evaluation.

Applicants should demonstrate recent graduate work or significant experience in the health field. In addition to physicians, dentists, and nurses, the fellowships are open to a wide variety of persons with graduate training (for example, in social sciences, law, or public administration). Stipends of up to $11,000 per year, not to exceed 2 years, are available, as well as a modest allowance for dependents. Address inquiries or applications to Todd M. Frazier, Assistant Director, Harvard Center for Community Health and Medical Care, 643 Huntington Ave., Boston, Mass. 02115 (telephone 617: 734-3300 ext. 2414).

Graduate programs in institutional environmental health. The University of Minnesota School of Public Health is recruiting students for its 1975–76 graduate program in institutional environmental health. Environmental health specialists are offered the opportunity to explore problems of the institutional environment, especially those of health care facilities.

The program combines lectures and laboratory sessions with field practice in solving actual problems. The curriculum, which requires a minimum of 11 months, leads to either a master of public health or a master of science degree in environmental health. It is designed primarily for professionals with undergraduate degrees in engineering or in a physical or biological science who are interested in the health problems unique within institutions.

Detailed information and application forms for the 1975–76 sequence that begins mid-July 1975 are available from Dr. Donald Vesley, Associate Professor, School of Public Health, 1158 Mayo, University of Minnesota, Minneapolis, Minn. 55455.

Program of Continuing Education at Columbia University School of Public Health. In the first half of 1975, the program of Continuing Education at the Columbia University School of Public Health is offering the following courses:

Jan. 12-15—Changing Responsibilities of the New Jersey Local Health Officer. Tuition $120. Registration fee $10.

Jan. 22-25, plus 4 followup days—Utilizing Nursing Knowledge in Health Care. Tuition $280. Registration fee $10.

Feb. 3-5—Basic Communication Skills for Public Health Professionals. Tuition $120. Registration fee $10.

Tuesdays, beginning Feb. 11—Nutrition Education: Current Trends, Innovative Methods and Resources (Responsibility of Grade School Teacher Registration fee $10.

April 9-11—Basic Communication Skills for Long-Term Care Administrators. Tuition $120. Registration fee $10.

May 14-16—Advanced Communication Skills for Long-Term Care Administrators. A workshop. Tuition $120. Registration fee $10.

June 23-27—Executive Development: Power Politics and Health. Tuition $200. Registration fee $10.

The courses meet from 9:00 am to 5:00 pm except for the course in Nutrition Education, which meets from 3:30 to 5:30 pm. A limited number of traineeships to cover tuition and stipends are available. For preliminary application forms and further information, address Continuing Education, Columbia University School of Public Health, 21 Audubon Ave., Room 305, New York, N.Y. 10032 (telephone 212: 568-4334).

Graduate studies in health care organization at Johns Hopkins. The Department of Health Care Organization at the Johns Hopkins University School of Hygiene and Public Health offers individualized programs of graduate education in the organization and administration of health care and in research focusing on the personal health care services. Openings for the 1975–76 academic year will accommodate a limited number of selected scholars at the master's, doctoral, or post-doctoral levels.

The programs are designed to develop the administrative, analytic, and investigative skills that leaders in the health field need to formulate health care policy, improve health care systems, and make personal health care services more efficient and effective. Applicants should have strong academic backgrounds in one or more behavioral, biological, clinical, mathematical, physical, political, or social sciences. Practical experience is desirable. Strong motivation and a capacity for advanced, independent scholarship are required.

For further information and application forms, write Philip D. Bonnet, MD, Chairman, Department of Health Care Organization, School of Hygiene and Public Health, Johns Hopkins University, 615 North Wolfe Street, Baltimore, Md. 21205.

Third International Symposium on Detection and Prevention of Cancer. The Third International Symposium on Detection and Prevention of Cancer is scheduled to be held in New York City, April 26 to May 1, 1976. The symposium is to include 12 conferences on general topics and 18 panels on specific and organ-oriented subjects. Approximately 22 symposia will be arranged by grouping proffered papers. There will be 14 short courses, 20 practical workshops, and daily consultation sessions with experts. Adequate opportunities for discussion are planned, and a closing panel will be devoted to summation of the preceding sessions.

If you wish to be placed on the symposium's mailing list or wish additional information, address H. E. Nieburgs, MD, Secretary General, Third International Symposium on Detection and Prevention of Cancer, Mount Sinai School of Medicine, City University of New York, Fifth Ave. and 100th St., New York, N.Y. 10029 (telephone 212: 534-4991).

Announcements for publication should be forwarded to Public Health Reports 6 months in advance of the deadline date for application for admission or financial aid, whichever is earlier.

publications

FEDERAL

Gaseous Emissions From Municipal Incinerators. *By Arrigio A. Carotti and Russel A. Smith. Publication No. SW-18c;* 1974; 61 pages; 75 cents.

Solving the Abandoned Car Problem in Small Communities. *By William T. Dehn. Publication No. SW-70ts.1; 1974; 23 pages; 65 cents.*

Library Holdings — Nonperiodical, Federal Solid Waste Management Program, November 1972. *Compiled by Ruby Gill and Myrtle Bolly. Publication No. SW-123; 1974; 150 pages.*

Heuristic Routing for Solid Waste Collection Vehicles. *By Kenneth A. Shuster and Dennis A. Schur. Publication No. SW-113; 1974; 45 pages; $1.05.*

Users' Guide to the Solid Waste Information Retrieval System Thesaurus. *Compiled by John A. Connolly, V. Paul Fuschini, and Sandra S. Radinsky. Publication No. SW-104.01; 1974; 56 pages.*

Solid Waste Management Available Information Materials. *Publication No. 58.21; May 1974; 42 pages.*

User's Manual for Colmis. A collection management information system for solid waste management. *Vol. 1. Publication No. SW-57c; 1974; 99 pages.*

Anticancer Agents Recently Developed in the People's Republic of China. *By C. P. Li. 1974; 250 pages; $2. (Published by the Fogarty International Center.)*

The Respiratory Care Service. Functional programing worksheets. *DHEW Publication No. (HRA) 74-4004. 1974; 43 pages; 85 cents.*

Pollen Allergy. *NIH 74-493; 1974; 15 pages; 35 cents.*

National Center for Health Statistics

Vision Test Validation Study for the Health Examination Survey Among Youths 12–17 Years. *DHEW Publication No. (HRA) 74-1333, Series 2, No. 59; December 1973; 36 pages; 65 cents.*

Edentulous Persons, United States, 1971. *DHEW Publication No. (HRA) 74-1516, Series 10, No. 89; June 1974; 31 pages; 70 cents.*

Disability Days, United States, 1971. *DHEW Publication No. (HRA) 74-1517, Series 10, No. 90; June 1974; 64 pages; $1.05.*

Skinfold Thickness of Youths 12–17 Years, United States. *DHEW Publication No. (HRA) 74-1614, Series 11, No. 132; January 1974; 68 pages; $1.05.*

Federal publications listed are obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should be accompanied by check or money order and should fully identify the publication. (Publications listed without prices may be obtained from agency.)

WORLD HEALTH ORGANIZATION

Users of Epidemiology in Housing Programmes and in Human Settlements. Report of a WHO Expert Committee on Housing and Health. *WHO Technical Report Series No. 544; 1974; 64 pages; Geneva.*

Pesticide Residues in Food. Report of the 1973 Joint FAO/WHO Meeting. *WHO Technical Report Series No. 545; 1974; 42 pages; Geneva.*

Assessment of the Carcinogenicity and Mutagenicity of Chemicals. Report of a WHO Scientific Group. *WHO Technical Report Series No. 546; 1974; 19 pages; Geneva.*

The Planning of Medical Education Programmes. Report of a WHO Expert Committee. *WHO Technical Report Series No. 547; 1974; 25 pages; Geneva.*

Planning and Organization of Geriatric Services. Report of a WHO Expert Committee. *WHO Technical Report Series No. 548; 1974; 46 pages; Geneva.*

Guidelines for the Laboratory Diagnosis. of Cholera. *Prepared by the WHO Bacterial Diseases Unit. 1974; 23 pages; Geneva.*

World Health Statistics Report. *Vol. 27, No. 3–4, 1974, pages 110–188; Geneva.*

Plastic Containers for Pharmaceuticals. Testing and control. *By Jack Cooper. WHO Offset Publication No. 4. 1974; 204 pages; Geneva.*

WHO publications may be obtained from Q Corp., 49 Sheridan Ave., Albany, N.Y. 12210.

NON-FEDERAL

Human Ageing and Retirement: Questions Unresolved and Resolved. Some reflections on contemporary gerontology and its relevance to retirement policy. *By H. A. Rhee. 1974; 285 pages. General Secretariat, International Social Security Association, 154 rue de Lausanne, Geneva Switzerland.*

A Chance to Get Ahead. *1974; 56 pages; $3.50. National Committee for Careers in the Medical Laboratory, 9650 Rockville Pike, Bethesda, Md. 20014.*

Health Aide Education and Utilization: A task identification study. Final report. *By Thomas J. Gilligan, and V. Clayton Sherman. Vol. 1. March 1974; 325 pages. V. Clayton Sherman, Director, Human Resources, Homemakers Home and Health Care Services, Inc., Kalamazoo, Mich. 49001.*

Widening Horizons. The teaching aspect of homemaker service. A guide. *1974; 10 copies or less, $4; reduced prices for quantity orders. National Council for Homemaker-Home Health Aide Services, Inc., 67 Irving Place, New York, N.Y. 10003.*

Florida Morbidity Statistics, 1973. *1974; 86 pages. State of Florida Department of Health and Rehabilitative Services, Division of Health, P.O. Box 210, Jacksonville, Fla. 32201.*

Contraception and Fertility Change in the International Postpartum Program. *By Irving Sivin. July 1, 1974; 98 Pages; $3.95. The Population Council, 245 Park Ave., New York, N.Y. 10016.*

To Combat Child Abuse and Neglect. *By Theodore Irwin. Public Affairs Pamphlet No. 508. May 1974; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Voluntary Sterilization. *By Elizabeth Ogg. Public Affairs Pamphlet No. 507. May 1974; 28 pages; 35 cents. Public Affairs Pamphlets, 381 Park Ave. South, New York, N.Y. 10016.*

Manpower Issues and Voluntary Regulation in the Medical Specialty System. *By Herbert J. Lerner. 1974; 200 pages; $5.95. Service Department, Prodist, 156 Fifth Ave., New York, N.Y. 10010.*

Report of the Second National Conference on Research in Maternal and Child Health, May 13–14, 1974, Berkeley, Calif. *1974; 153 pages. University of California School of Public Health, Earl Warren Hall, Berkeley, Calif. 94720.*

Blood Alcohol Testing for Motor Vehicle Deaths, Wisconsin 1973. *1974; 31 pages. Division of Health, Wisconsin Department of Health and Social Services, P.O. Box 309, Madison, Wis. 53701.*

Becoming: The actualization of individual differences in five student health teams. *By Suzanne Finn Eichhorn. Revised 1974; 84 pages; $3. Institute for Health Team Development, Montefiore Hospital and Medical Center, Bronx, N.Y.*

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Key to Classification of Subject Index

(*)	Original signed article
(PR)	Publication review
(CR)	Conference report
(SR)	Short report

THIS INDEX to PUBLIC HEALTH REPORTS (formerly Health Services Reports) is divided into a subject index and an author index. The subject index carries one or more entries for each item published. In addition to the subject headings, categorical headings include ANNOUNCEMENTS, ORGANIZATIONS and PERSONNEL; EDUCATION NOTES; CONFERENCE REPORTS; BIBLIOGRAPHIES; and PUBLICATION REVIEWS.

SUBJECT INDEX

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