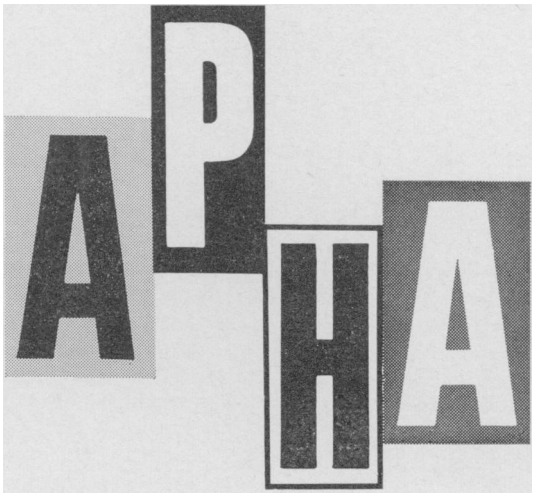


Summaries of Selected Papers from the 96th Annual Meeting of the American Public Health Association and related organizations— Detroit, Mich., November 11–15, 1968

WINDS OF CHANGE in the nation and in public health were reflected in the topics of papers and in conversations among the 5,281 persons attending the 96th annual meeting of the American Public Health Association. Clearly, public health practitioners as well as a great many other Americans were preoccupied with poverty, the plight of cities, alienated youth, effects of malnutrition, shortages of health manpower, and the intricacies and pitfalls of comprehensive, coordinated planning.

NEW MISSIONS for the public health disciplines and techniques of accomplishment were explored in sessions entitled "Medicaid in New York: Utopianism and Bare Knuckles in Public Health," "Drug Abuse Among Youth and Preventive Approaches," "The Need for Nutrition Education: Are We Failing the Community?" "Too Many People: the Diminishing Lebensraum," "Opportunities, Challenges, and Problems in Consumer Participation," and "The Urban Crisis and Public Health."

THE ASSOCIATION itself moved strongly into new concerns. Evidence of this were the resolutions approved at the 1968 meeting. The Association took positions on the following subjects: health and poverty; abortion; health, welfare, and hunger; health affairs and the Congress; endorsement of the Kerner report; neighborhood health centers; and credentials for health occupations.

IN THIS 17th annual special report on the annual APHA meeting are summaries of 146 papers. Since more than 500 papers were given in Detroit, necessarily we have been selective. Copies of some papers were not available, some papers defy summarization, and some authors were planning early publication of their papers in scientific journals. Nevertheless, the following pages contain a representative sampling of the concerns of public health on the brink of the 1970's.

Public Health in the Future

"Mini-World" Creators Shut Out Complexities

We are in a worldwide confrontation of the haves and the have-nots, declared L. J. Duhl, professor of public health and urban social policies, University of California, Berkeley. In the process, he said, the definition of have-nots has been changing from "those who do not have the economic wherewithal" to "those who do not have the ability to command events affecting their lives"—implying a change in concept. It is becoming increasingly clear that individual competence is one proof of having "made it" in our society.

The new dichotomy is between those who want to retain their world as they have perceived and run it, avowed Duhl, and those who are concerned with and demand basic changes now—in the worlds of finance, business, education, and health.

Our society is becoming more and more preoccupied with immediate surroundings, Duhl said. People are concerned with the requirements that make daily life more habitable, safe, and comfortable; they are concerned with rapid response to an expressed need. We are seeing a vast increase in "mini-worlds" in which people live—worlds created around people's homes and work or other functional areas where they are involved. Because of their primary concern with these mini-worlds, they approach the large complexities of social policy not with understanding but with a view to facilitating their personal requirements.

Since supraordinate rules, like the Constitution of the United States, require the parts (that is, the States) to cede autonomy, negotiations will be difficult, Duhl averred. We are not dealing with well-defined, unchangeable groups, and no one can negotiate for uncreated groups. Since few really respect anything other than their immediate worlds—the mini-worlds they have created—their ability to identify with broader interest groups remains undeveloped.

Demands for Equity

In health, as in everything else, Duhl said, I see the pressure for increased rationalization of a system as yet nonexistent. The demand for equity comes from inside and outside our professions. The well-to-do have found that money alone cannot buy truly adequate care. The poor have exposed the inequities of the system—its denegation of people who were considered useful only if they were "good" charity cases for medical study. To join the medical students in attacking this "health nonsystem" is to attack not medicine per se but only some of its past values and methods.

Only a few years ago insurance carriers emerged as key figures in our medical care system, said Duhl. Business and labor have asked for service in new forms. Society is slowly redefining medical care, rationalizing the system, and encouraging equity; in short, redefining the function and providence of the health professional and institution.

The possibility of tuition grants for education, guaranteed incomes for the poor, and block grants to local, functional, and geographic communities should lead in a competitive market economy to increased "consumer ability to buy" services, declared Duhl. Heretofore the market mechanism has not worked in the field of health because little choice has existed; now, however, the consumer who expresses his desires through economic choice makes himself felt and stimulates the appropriate health institutions.

Nonmedical Controls

More regulatory agencies will develop increasing control over the operations of the new health market, Duhl maintained. Hopefully these agencies will not be controlled by prime business interests. In the years to come, the consumer and his advocates will play an increasingly important role in the regulatory apparatus. Ralph Nader is a case in point—and a hint of what may follow.

If the number of physicians practicing today remains unchanged, said Duhl, in 10 years an additional 3 to 15 million associated health personnel will be required to perform auxiliary services. Medical costs will spiral, but new, supplemental, or alternative measures are possible to stem rising costs.

The modern hospital need not perform all the functions that it has assumed, Duhl said. New institutions have been developed: hospital-oriented motel chains, day hospitals, night hospitals; these are but a few of the existing institutions created to lower total medical costs. When payments by insurance carriers can fund more services that are not restricted to hospitals, we will be assisted in reassigning hospital costs to less expensive institutions. Costs will not go down until a vast number of new institutions are created, he said.

The cost of research on the delivery of care and its relationship to the broader society must be given high priority in our budgets, declared Duhl. Assessment and feedback will be less concerned with morbidity and mortality and more with quality control, comprehensiveness, equity, and evaluation of the results of services rendered.

Geographic communities will continue to be the concern of those who need a power base. Politicians of all kinds require them, said Duhl. They permit blacks and whites to negotiate as equals. The effectiveness of the confrontation by the have-nots, who are increasingly supplemented by those who act as if they were have-nots, will depend on the political power generated from geographic or functional community bases. The black person, the teacher, the nurse, and the student are just a few of those now building this form of political strength. Their potential political power, Duhl said, unlike power based on money, depends not on what they have but on what they potentially can do to the system.

Schools of Public Health Must Relate to Society

If schools of public health are to do their basic job, some arrangement with other teaching institutions is required, said Dr. George James, president of Mount Sinai Medical Center, New York City. Only the most ultraconservative observer, looking over our total health establishment, said James, could conclude that it is working so well no change is needed. There is overwhelming evidence, he said, that unless we improve the system organizationally and make better use of our human and material resources, we will be unable to bring high-quality care to to those who need it. There is real pressure to teach professionals to fit into the situation "like it is" and "like it will be."

I would like to see a further integration of schools of public health into the day-to-day teaching in universities and medical schools, James said. The schools of public health are a kind of bridge between the scientist—or at least the physician—and laymen. This is not so much because so many laymen actually are to be found in these schools, he continued, but because the schools have reached a sort of conceptual fusing point between lay and professional ideas. Many of the health problems of today and tomorrow will require the cooperation and effort of laymen, said James. Laymen in Congress, on hospital boards, and elsewhere make basic medical decisions. It is impossible to give them "instant education" every time a new subject comes up, he continued. Therefore, we need to give new attention to training lay leaders in the health fields, and the schools of public health in the university setting, said James, have the prime role to play in this training.

The school of public health must welcome the opportunity to be relevant to society, declared James. As it accepts the challenge, it must remember to develop its image by taking the following actions.

1. Drawing upon all required disciplines.

2. Highlighting research in a broad front.

3. Searching for true health needs instead of being diverted solely by citizen demands.

4. Accepting the challenge of continuing education for the citizen, especially the community leader, as well as for the professional.

5. Being the active conscience of society in the steady pursuit of quality.

6. Acting as ombudsmen for as yet unborn generations by insuring that a significant portion of today's resources are allocated to research.

7. Expressing concern for the human problems related to the march of science and stating the ethical principles by which we should be guided.

8. Insuring that accurate scientific medical content accompany all politically inspired medical care programs and insisting that these have skilled medical guidance and evaluation.

9. Joining with a host of other units of the university in supporting the efforts for health.

10. Risking and living through the inevitable defeats in the pursuit of what we believe to be right.

If we can develop these, said James, the school of public health will have a brilliant future. If, on the other hand, he warned, the school of public health seeks only to teach the facts of medical care, the disciplines of epidemiology and statistics, the principles of administration, the present truths of maternal and child health, then it must beware. Many another unit of the university can and will learn to do these—at least well, he said. Moreover, a major and essential personality will then have been lost to the American scene. America needs this personality, James declared.

Togetherness: What Can Be Done About It?

From dwelling units and numerous other sources in urban areas, solid wastes are being produced at the rate of about 5 pounds a day per person, reported Dr. Richard A. Prindle, Assistant Surgeon General, Public Health Service—presently on leave as Federal Executive Fellow, the Brookings Institution, Washington, D.C. The volume will increase, he said; even simple arithmetic shows this. Another 100 million persons in the last third of this century will increase the production of solid wastes by 50 percent, or to more than 91 million tons per year.

The Public Health Service has estimated that the production of solid wastes will be 8 pounds a day per person by 1980. On this basis, the annual total would be 146 million tons, or almost double our present load. As if this were not enough, said Prindle, the Service's Bureau of Solid Wastes Management has pointed out that the per capita production of urban solid wastes is increasing geometrically—and hence these projections may be too low.

Industry, agriculture, mining, and government also produce solid wastes—about 115 million tons annually, Prindle reported. Currently, the production is about 96.2 pounds per person, or 3.5 billion tons annually, costing us about $3 billion for what, he said, one must admit is a very inadequate system of disposal.

Too many wastes from municipalities, industry, and mining operations, Prindle said, are left as unsightly piles strewn across the landscape, and generally add to the deterioration of surface, ground water, and air. Estimates indicate that 4,570 pounds of contaminants are discharged daily by incineration in urban areas for every 100,000 persons; 50,400 pounds if burning dumps are the means of disposal. The total load from these sources may be anywhere from 7 to 32 percent of the community's total pollution, said Prindle, depending on the "mix" of sources in a metropolitan area.

Prindle also discussed a planned society. As the population increases, he said, as more and more people move into our already over-crowded cities and "slurbs," as the attendant pollution rises, and as the environment deteriorates, evidence seems to require increased planning and careful thinking to avoid more mistakes and their dire consequences.

But what are we to plan for? asked Prindle. This question is rarely faced, he said. It's a hard question, and certainly one that we cannot

answer immediately. In the many articles and discussions urging comprehensive and ecologically oriented planning, rarely has the human side been addressed. What kind and size of population are we planning for? Is continued growth necessary? desirable? inevitable? Should we seek an optimum?

We are faced with increasing controls on the size and location of our residential lots, Prindle continued, our use of recreational areas, with increased traffic and commuter times, and with rising costs from control and taxes in attempting to regulate and ameliorate our problems. Yet with a continuing deterioration of our environment and quality of life, said Prindle, isn't it about time that we looked deeper into causes and solutions?

The increasing technological development, and to some extent the "progress at all costs" philosophy that too many pursue, may well present causes, he declared. We need to ask ourselves if the rising gross national product is always a good thing—especially when this rise is accounted for by increased sales of alcohol, tranquilizers, and cigarettes.

Unless we wish to live in a completely ordered State of the most restrictive type, Prindle said, we must begin to discuss and plan the optimum population and a national policy designed to achieve it. Our responsibility to ourselves, future generations, and the total biosphere that is our world requires it.

The Diminishing Lebensraum

In his paper on the effects of diminishing living space, Dr. Hale H. Cook, assistant professor of community medicine, Temple University Medical School, Philadelphia, made the following observations, which are pertinent to the questions of what happens to freedom as "lebensraum" decreases.

Human beings, given a choice, declared Cook, tend to congregate in communities to live—even though they may go off into uncrowded fields to work.

Concentrations as high as 30,000 persons per square mile can occur in agrarian economies, he said. Industrialization makes possible concentrations as high as 90,000 persons per square mile—and this, he said, probably is not the ultimate limit.

In such density ranges one sees correlations which suggest that the internally developed changes in social and sexual behavior, and the increases in infant mortality seen in rat colonies where other limiting factors (lack of food, presence of disease, or predators) are controlled, may be expected to increase among human beings at population densities significantly greater than these.

The desire for individual freedom tends to be submerged by the demands for group conformity and the security of group conformity in populations of moderate to great density. That this is a universal tendency, said Cook, or even a very strong one at these levels, is belied by the observation that eccentrics are just as common in cities as in rural areas.

Industrialization not only makes possible but requires urban concentrations of people, Cook said.

Certain freedoms (attending the best theaters, hearing the best symphony orchestras, visiting the best art museums) are only practical in urban settings; other freedoms, perhaps more basic, such as the freedom to remain healthy, require a rather high degree of industrialization. Discovery and manufacture of many of the most important tools to produce and maintain health (for example, the poliomyelitis vaccine) require such settings.

Physical privacy is much more difficult to obtain as population densities increase, when it tends to become the prerogative of the wealthy, continued Cook, but adaptable humanity develops social psychological techniques for retaining the sense of privacy even under physically difficult conditions.

A freedom that becomes intolerable in large agglomerations of people, Cook said, is the freedom to act out one's aggressive feelings violently. The demand for "law and order" comes most often from urban-suburban people.

We do not know, said Cook, at what point restraints on the freedom to reproduce—noted in all other species of animals studied under conditions where sufficient food is available and control of predators and disease obtains—will develop for human populations. Historians a century from now may be able to point out that current research in the field of contraception is man's reaction to this biological built-in control.

Social restraints are the inevitable consequence of "herd" living, Cook maintained. To find the optimum levels of population density, the size of area in which such densities are desirable, and the architectural and physical environment that is best suited to such densities is an urgent necessity if we are to blend the best freedoms of the past with the new freedoms possible only in the future.

Cook listed the population density (persons per square mile) in the following urban areas:

City	*Density*
Cook County (Chicago)	5,377
Washington, D.C	12,442
Suffolk County (Boston)	14,131
Philadelphia	15,768
San Francisco	16,451
New York:	
Bronx	34,751
Brooklyn	37,533
Manhattan	73,836
Bombay	22,323
Calcutta	86,073

Health Services for the Poor

Coordinated Efforts Needed To Break Poverty Cycle

There is no "poverty problem" in the singular, but rather a constellation of problems, stated Mayor Jerome P. Cavanagh of Detroit. Health problems have to be treated in their social context, he emphasized. Medicine cannot be practiced in a sociological vacuum—to treat the disease but not the human patient.

A mother receiving aid for de-

pendent children might have to overcome her fear or reluctance to seek help, her transportation problem, and her babysitting problem before she can take her ill child to the physician. Moreover, she can look forward to hours of waiting in a dingy, overcrowded, reception room at a public hospital or clinic and to impersonal and even degrading treatment by overworked clerks, nurses, and physicians.

Difficulties in Employment

Job training and employment programs administered by the Mayor's Committee for Human Resources Development have discovered that many young applicants have defects which hinder their training potential or their chances for employment. In the Neighborhood Youth Corps, for example, significant defects were found in about 20 percent of the 16- to 21-year-olds. In the manpower programs, the figure was approximately 40 percent. Although not all of the defects are job disabling, about 10 percent of those examined would be rejected on employment physicals.

Cavanagh stated that the most common defect was dental decay. The most frequent cause of rejection was hypertension, followed by difficulties with vision, and back complaints. At least one-third of that 10 percent of those rejected could be made medically fit at comparatively little cost.

Job openings vary from day to day. Few employers could commit themselves to hire a medically rejected applicant at some indeterminate time in the future. In the month it might take to stabilize a diabetic, the company might be laying off rather than hiring.

Unless the rejected applicant is provided the treatment he needs, Cavanagh stated, he will remain permanently unemployable, and his experience with the poverty program will be an exercise in disillusionment.

Communications Gap

Better ways of disseminating information about available services to the potential recipients must be discovered. Cavanagh stated that the Detroit health department had operated a maternity and infant care project since 1964, financed by a grant from the Federal Children's Bureau. Its goal is to provide comprehensive maternity and infant care services for high-risk medically indigent families.

The project has served about 3,000 patients in the past 4 years; but only one-half the eligible mothers were taking advantage of it. They did not know that these services were available.

Health aides and paraprofessionals have been employed in target areas to bridge the gap between the middle-class language, values, and habits of the professional worker and the culture of the poor, Cavanagh said. The people themselves are encouraged to share in policy making by having the poor elect their own representatives to the governing board of a service agency. The philosophy is to develop responsibility rather than allowing the people to continue to play the traditional role of humble, passive receivers of largesse.

The process of citizen participation gives officials a sensitive channel for feedback as well as a source of fresh, unconventional ideas. An incidental but important byproduct of citizen participation has been the cadre of genuine grassroots leaders, able and articulate, who have emerged from the previously apathetic. This idea, which originated in the poverty program, is now working with similar results in the Model Cities Program.

In Detroit, Cavanagh explained, the area where the poor live contains no suitable facilities for modern health centers. Instead of planning new buildings for the remote future or establishing clinics farther out where the desirable buildings could be found, the policy makers, including the citizen representatives, decided to make do with the best available structures in the inner city.

There is a desperate need for outpatient facilities, he declared. For persons to have to go to the emergency ward of a hospital to secure services which should be available outside of hospitals is tragically wasteful. Although children are provided preventive care in the public schools—vaccinations, chest X-rays—they do not get medical treatment there, although there may be no other place to go.

Cavanagh emphasized that the vicious cycle of poverty cannot be broken by spending more money for schools, improving housing, ending racial discrimination, or supplying better services—all these things and more must be done simultaneously.

Services for Poor in Cities Far From "Model"

The urban community is in such jeopardy that mere housekeeping or first aid is not enough, stated Chris A. Hansen, Assistant Surgeon General and Commissioner, Environmental Control Administration, Public Health Service.

Hansen called the Model Cities Program a chance to set up a pilot plant in a limited area but on a comprehensive basis to learn how, to get tooled up for a concerted attack on health problems. He declared that single-purpose planning is not enough. Rats, malnutrition, air pollution, radiation, automobile accidents—these are symptoms of a larger evil. The educators, the welfare people, the OEO, the civil rights agency, local government, and private agencies should all participate. When different agencies and different area jurisdictions work at cross-purposes, it's like treating a case of measles by trying to paint mercurochrome on every pimple.

Traditionally the health mission has been relatively self-contained, concerned with order and sanitation, safety of air and water, protection against hazards arising from injury, threats of communicable disease, and disposal of wastes, he stated. He declared that health departments have been the master housekeepers of the community.

Disease prevention may now begin, not with a person sick with a communicable disease, but with public policy about land, housing, industrial development, transportation, and comprehensive provision of patient services. Today, he emphasized, we are challenged to become,

jointly with other professions, environmental designers, counselors, and advisers to architects, managers, and policy makers.

Borrowing a concept from medical care, Hansen proposed an environmental resources delivery system. He offered four principles that might describe such a system. The principles, suggested by Leonard C. Staisey, chairman of county commissioners, Allegheny County, Pa., were (*a*) people must participate, (*b*) people want to see things happen quickly, (*c*) the health department is the key to prompt action, and (*d*) the demonstration model is a pilot plant for good government.

The Model Cities Program is an open invitation to experiment, to learn, to formulate pilot projects, and to design and test new ways to meet the challenge of the cities, Hansen declared. The health department, if it accepts this invitation, must improve its performance internally and develop influential relationships with other agencies. The goal is a tested working model.

New Role of Social Workers Lies in Community Medicine

The development of community medicine can be seen as a slow, but sure, response to the significant and rapid social changes of our times, said Neil F. Bracht, School of Social Work, Michigan State University.

Social Workers as Teachers

New opportunities for social work teaching in the social, behavioral, and community aspects of health care in medical school programs and demonstrations have increased. Some 20 medical schools now have departments of community medicine, several medical schools are active in community health development and demonstrations, and 10 schools sponsor neighborhood OEO centers, Bracht stated. One example Bracht described is the participation of the public health social worker in the department of community medicine at the University of Kentucky Medical School, where the medical students live and work in communities for an extended period of time.

All the faculty, including the faculty social worker, travel to the student to provide him with consultation and help, not only on clinical problems, but also on community health surveys and family projects as well, Bracht said.

The student finds social work teaching more relevant as he experiences the total ecology of health in an Appalachian community or in an urban ghetto in Louisville.

The appointments of social workers to administrative posts in medical schools is another way in which they contribute to community medicine. This participation by social workers as faculty members not only at Michigan State University, where a social worker serves as the assistant dean for extramural and community programs, but also in several other schools, such as Mt. Sinai, where a social worker serves in a major curriculum development capacity, is an important development.

Bracht cited the contributions made to research by studies written by social workers on health care delivery and behavioral aspects of patient care which have resulted in better understanding of these fields. Participation by social workers in health and patient care studies, although not new, does provide rich opportunities to influence current thinking in optimal patterns of health care.

Demonstration Projects

The functions of social workers within the OEO neighborhood health demonstration centers are to educate, to act as consultants, and to train indigenous personnel, Bracht stated. Aides have demonstrated "know how" in getting things done that professionals often find difficult to accomplish. Bracht believes, however, that persistent problems such as nonprofessionalism and inability to carry through on the kinds of assignments given have made some social workers cautious of all-out support for these efforts. He believes that there is need for greater study of appropriate roles and job specificity for these aides.

Another major practice activity for social workers in OEO projects is in the area of prevention. Bracht stated that knowledge and ability to apply public health and preventive models to social work practice are increasingly being called for within these settings.

Social workers have been delegated more administrative responsibility in organizing and planning health services at OEO centers. Again, Bracht pointed out, implications for specialized or advanced training of social workers in the skills and knowledge of medical care organization, administration, and delivery systems for health care are evident.

The neighborhood health center offers many unusual opportunities for integration of social work skills in casework, group work, and community organizations. Only recently, however, have schools begun training students in multipurpose methods and, as Federal programs turn more and more to the participation of the consumer in health care planning, the social worker could be a most effective agent in assisting the lay person or consumer to become more knowledgeable about health and welfare issues, according to Bracht.

Bicephalic Management Hurts NYC's Medicaid

Two agencies with different philosophies and priorities cannot jointly run a program, declared Raymond Alexander, assistant commissioner, New York City Department of Health, commenting on the tangles experienced in the city's Medicaid program.

Organizational Problems

Before Medicaid, the city's welfare department, through the bureau of medical care, ran a medical program for recipients of public assistance, he said. The welfare department did not create a new entity to cope with Medicaid but merely added to existing staffs and expanded traditional functions, Alexander said. Consequently, health objectives were consistently blunted by differences in the philosophy of the health department and the newly named welfare department of social services.

The recent reorganization of the

city's health services into the health services administration placed Medicaid by executive order organizationally in the health department. The department absorbed the old bureau of medical care, thereby coordinating all standard setting and evaluation personnel under health department control. Top-level health professionals were hired to assume direct operational responsibility, Alexander stated. All personnel and functions of the bureau were centralized for ease of supervision and communication. At present, the bureau of health care services is responsible for all standard setting and evaluation activities of Medicaid. The staff consists of 45 health department employees and 291 department of social service employees.

Although persons in the health department as well as consultants suggested setting up a single unit outside of both health and welfare to run Medicaid, the recommendation was not accepted. Alexander stated that this unit would have been similar to the organization of an insurance company, with a subscriber section to handle enrollment, a claims processing section to handle payment, and a provider relations section to handle standards and evaluation. A systems and statistical group would serve on a staff level to work on problems across the board.

Staff in the welfare department contend that Medicaid could not be separated from other welfare activities. Therein lies a basic conceptual disagreement that will need to be resolved by the Department of Health, Education, and Welfare and from the experience of other States in structuring their Medicaid programs, Alexander declared.

The social services department, although still part of the welfare department, has difficulty coping with the demands of a welfare system in crises, and Medicaid is not given the attention it deserves, Alexander stated.

The Computer—A Vital Link

The Medicaid computer is controlled by the staff in social services. Indeed, Alexander said, social services justified its need for a computer upon the projected impact of Medicaid. Medicaid, however, has received low priority in scheduling computer time. The computer has not resolved Medicaid problems but has created additional ones. Providers complain about unreadable statements, mistakes in payment, kickouts, and other computer-related situations. Health department staff are still greeted at medical society meetings with the question, "Why can't Medicaid be like Medicare and pay on time?"

The inability of the health department to obtain meaningful data on utilization of services is an example of a basic need not met. Claim forms were primarily designed to give fiscal information rather than health information. Although there is information on the claims tapes which would give data on how many patients used how many services, the health department has yet to receive this information. The computer, just as the executive, has a limited amount of time and energy available—unfortunately needs other than Medicaid's, as determined by the department of social services, are more pressing.

Administrative Goals

The administration of Medicaid could be improved by following these suggestions, Alexander said.

1. The principles of management and organization should be recognized as being as appropriate to health care as they are to industry.

2. Health departments ought to pay providers of service. With payment comes identification, with identification comes control, and with control comes program direction.

3. Health departments must set up bureaus or offices of medical care administration specifically to handle such areas as standard setting and evaluation of public programs and broad medical care programs. New persons with new talents need to be recruited for these jobs. The rapid entry of health departments into medical care programs dictates the need for this.

4. Health departments should control data processing—both input and output.

5. Medicaid should be separated from traditional welfare activities.

6. Probably the best administrative model for an effective organization of Medicaid can be found in the insurance industry.

Alexander believes that it is not too late for public health professionals to act; it is clear that Medicaid will be modified by legislation in the near future.

Use Tactics of Realpolitik In Setting Standards

An innovation in administering Medicaid was assigning to the health department the tasks of standard setting, surveillance, and enforcement of quality in every aspect and place of publicly funded, personal health care, stated Dr. Lowell E. Bellin, Medical Assistance Program, New York City.

Two committees have been organized to set fiscal and quality standards for Medicaid reimbursable services, Bellin said. A negotiating committee handles questions of reimbursement, and a quality committee sets standards. The Medicaid Advisory Committee on Quality Care helps the Medicaid administration promulgate health care standards in four categories: (*a*) ingredients of service, (*b*) time per service, (*c*) administration, and (*d*) qualifications of professionals. The standards incorporate the recommendations of prominent practicing and academic professionals in the community, and the staff of the health department writes these standards in bulletins which become work manuals for all providers of health care reimbursed by Medicaid.

Hearing Aids, A Case History

Bellin cited the following case history as the way administrators sometime modify standards set by professionals to serve patients better.

Originally New York City Medicaid adopted the standards of the Handicapped Children's Program in dispensing hearing aids to Medicaid enrollees, according to Bellin. A patient with a hearing problem that might be responsive to a hearing aid was obliged to receive (*a*) first a medical evaluation from a board-qualified or certified otolaryngolo-

gist, (*b*) then consultation with an audiologist and possibly a clinical psychologist and other personnel at an approved speech and hearing center, and (*c*) then the fitting of a hearing aid by an approved dealer.

Thereafter, the patient revisits the speech and hearing center and the otolaryngologist to verify that the hearing aid was as prescribed and therapeutically satisfactory.

As Medicaid enrollment grew, the number of speech and hearing centers in New York City became inadequate. The backlog was particularly bad in the Bronx, a high-poverty area, where the borough's sole speech and hearing center had a waiting period of at least 14 months, he asserted. The absence of an approved speech and hearing center in the Borough of Richmond compelled residents to travel to Manhattan and to other boroughs.

To overcome the hardships for patients the following decision on standards was made: patients age 21 and under would still be required to follow the old route from otolaryngologist to speech and hearing center to hearing aid dealer; patients above age 21 would proceed either to a speech and hearing center or directly to a hearing aid dealer at the discretion of the otolaryngologist, whose professional decision would be supported by the health department, Bellin declared.

The impact of this decision was predictable. The number of hearing aids sold in New York City increased almost immediately, although the average cost per hearing aid did not change appreciably, Bellin said. Accusations of expediency rather than appropriate concern for health care standards are still being made and will probably persist until sufficient speech and hearing centers are established so that the old rules may safely be reconstituted.

Setting Standards

Our experience verified the following generalizations on setting standards, Bellin stated.

1. Medicaid can refuse payment if standards are not met.

2. Professionals and institutions will accept the health department as the ultimate decision-making authority if they are allowed to participate in the deliberations.

3. The health department identifies and coordinates, within the health care world, the diverse and often isolated forces who favor establishing and elevating health care quality. To be effective, the health department must skillfully tap the conflicts smouldering within this world.

4. Participants in standard setting should not be categorized as "good" or "bad" but should be considered as persons and institutions with differing perceptions of wherein lies their self-interest.

5. It is the routine article of faith of each participating professional or institutional provider of care that the provider's legitimate self-interest is necessarily identical to the best interests of the recipients of health services.

6. Pragmatism and perceived self-interest generally prevail over abstract ideology in determining how professionals react to any proposed standards. Each category of professionals zealously resists what is deemed to be unwarranted encroachment by functionally contiguous groups and will favor or oppose specific standards accordingly.

7. Adversaries may use whatever levers of power are available to them to frustrate their opponents in setting inimical standards.

8. To set standards the administrator must comprehend all the hidden agendas inside and outside the department.

9. Standard setting in health care must always be a compromise of settling for the immediately achievable rather than resolutely holding out for the theoretical ideal.

High Volume Practitioners Serve Medicaid Patients

In New York City, onsite inspections are now made to assess the quality of publicly funded care, stated Dr. Florence Kavaler, of the city's Medical Assistance Program. Peer auditors visited 126 general medical practitioners and 326 dentists. Despite previously expressed fears of violation of physician-patient relationships, the auditors were treated with courtesy and respect by the physicians and dentists, she declared.

Auditor's visits are indispensable not only to gather information on the quality of care rendered, but also to identify and solve specific problems of professionals working with Medicaid recipients. Some specific details given by Kavaler on the 126 physicians in general practice, most of whom are located in the Negro and Puerto Rican section's of the city, were as follows:

- 18 of these practices were in Manhattan, 26 in the Bronx, 66 in Brooklyn, and two in Queens.
- These physicians represented 5 percent of all Medicaid medical practitioners and were paid $2.7 million, or 25 percent of the city's payments to private physicians in a 10-month period.
- 9 percent were board eligible in a specialty such as internal medicine, pediatrics, or psychiatry.
- 90 percent practiced alone.
- 25 percent had no clerical or paraprofessional assistants.
- More than half of the offices were established at least 20 years ago; only 5 percent were established during the past 5 years.
- 30 percent of the physicians' practice were almost exclusively devoted to Medicaid patients.
- 40 percent provided services for more than 60 hours per week.
- 60 percent had some facilities for X-ray and fluoroscopy and small laboratories capable of performing routine tests.
- 20 percent made house calls despite personal physical dangers.
- 30 percent were members of the American Academy of General Practice, and almost all belonged to their local medical society.
- 42 percent were affiliated with proprietary hospitals and have admission privileges.
- 35 percent had no access whatsoever to hospital beds.

There were adequate waiting rooms and frequently more than one examining room, Kavaler said. Recordkeeping is unsatisfactory, even for the routine recording of the chief complaint, physical findings, and therapy.

Onsite visits suggest that the phy-

sicians are not discriminating professionally against Medicaid patients, she asserted. Episodic care is predominant, however, and the patient's symptoms receive primary attention. Little consideration is paid to screening procedures and preventive medicine.

Physicians have difficulty in finding consultant specialists to accept their Medicaid patients and in finding hospitals and nursing homes to admit them. In this respect there is discrimination, but the discrimination is not the fault of the original general practitioner, Kavaler stated.

Although the Medicaid administration ultimately can suspend the poorest and most recalcitrant practitioners from the program, she emphasized, the only realistic way to deliver high-quality care to the medically indigent patient through the ghetto practitioner is to reeducate the practitioner and restructure the health care complex to give him the necessary professional and institutional support.

Dentists

The following data, Kavaler reported, were gathered by auditors visiting the offices of 109 dentists where 326 dentists serve Medicaid patients.

- 21 offices were in Manhattan, 41 in the Bronx, 45 in Brooklyn, and two in Queens.
- The dentists represented 5 percent of all Medicaid dental practitioners and were paid $13.8 million, or 38 percent of the city's payments to private dentists in the 10-month period.
- 34 percent or $4.7 million of the Medicaid money was paid to these large offices.
- 20 percent of the offices have four or more operatories and employ 50 percent of the full-time practitioners.
- More than 30 percent of the offices had been established within the past 5 years.
- 80 percent of the primary dentists (the dentist who established the practice and employs other dentists) have been in practice more than 20 years.
- 35 percent of the primary dentists have participated in continuing education since licensure; many of the younger dentists in general practice have had postgraduate training.
- The major proportion of patients in more than 70 percent of group dental offices were Medicaid enrollees.
- 45 percent of the offices operate more than 50 hours per week; most had evening and Saturday hours.
- 75 percent of the offices were staffed by one or two full-time dentists. Larger offices generally had a staff of professionals which equaled four to eight full-time dentists. A few had 12 full-time dentists.
- 75 percent had translators to aid Spanish-speaking patients.
- 97 percent of the offices had high-speed dental operatories and had enough units to accommodate their professionals.
- 8 percent used the panographic X-ray device.
- Most generalists referred surgery and prosthodontic cases to specialists when necessary.

Kavaler stated that most offices were located in the marginal and depressed areas of the city, and there seems to be a trend toward store-front locations in the newer practices. The paraprofessional staff varies from one to two persons in small offices to 10 or more persons in larger practices. The staffs perform multipurpose activities associated with dental assisting, including clerical and chairside responsibilities. Some offices have as many as 10 to 16 functional units, exhibiting amazing efficiency and productivity.

More Needy Receive Care Under MAP in Baltimore

During the last year of the old Baltimore City Medical Care Program, an average of 9 percent of the population of the city was eligible to participate in the program. The following year, under the Medical Assistance Program (MAP), the average eligible population expanded to 16 percent through the inclusion of medically indigent persons under 65 years, said Marian E. Gornick and co-workers, Baltimore City Health Department. MAP, which functioned through the State under Medicaid provisions, continued the same fee-for-service system for physician's services used by the old medical care system. Eligible persons are free to choose any provider willing to accept them under the new program.

Survey Made

A household survey was made 9 months after MAP was instituted to measure the extent of enrollment in economically deprived areas of the city, to assess population characteristics, to measure pertinent factors relative to utilization of medical services, and to delineate emerging trends that differ from expected patterns, the authors said.

A questionnaire was designed to obtain information about all members of a selected household relating to illness, physician or clinic visits, dental and eye care, family health needs, and participation in medical care, according to the authors.

A report ranking the 168 census tracts of the city for nine indices was used to determine the survey area, the authors stated. The indices were the poverty rate, unemployment rate, age dependency rate, educational achievement rate, low-skilled occupation rate, property rental rate, financial dependency rate, adult crime rate, and juvenile delinquency rate.

Ten census tracts, ranking in the highest quartile according to each of the indices, became the target area for the survey. The tracts contained an aggregate population of about 50,000 persons in 250 square blocks. The authors stated that 1,000 households were selected by a procedure of cluster sampling of four households in each of the 250 blocks.

Population Characteristics

In the sample there were 4,379 persons, or an average of 4.4 persons per household, compared with an average of 3.3 persons per household in the city, the authors reported. The families in 113 households were white, in 883 they were Negro, and four households were of other nonwhite races. Both husband and wife were living in 49 percent of the households where interviews were conducted.

The authors pointed out that 52

percent of the households reported some or all members on MAP. The age dependency rate was 56 percent in the sample contrasted to a 45 percent rate for the city as a whole.

Data from the survey showed that only 41 percent of the visits made by MAP recipients for medical care were to private physicians while 59 percent of the visits were to clinics. These observations were the first indication of a shift in place of visit among needy persons in Baltimore, the authors said. This decline in proportion of private care to the total physician care rendered was confirmed by program performance for the first year under MAP. The survey data and data collected from actual program performance indicate, however, that there is a decline in the availability of private physicians' services for MAP patients, especially in the inner city areas.

During the 2-week preinterview period, 11.4 percent of persons on MAP reported being ill. This percentage of illness was significantly higher than the 8.7 percent of persons not on MAP. That MAP recipients were ill more often than non-MAP patients was not unexpected, the authors emphasized. MAP was intended to reach persons who needed medical assistance, such as welfare recipients, persons with incomes just above subsistence levels, and low-income persons who have had high medical expenses.

In the non-MAP group, illness rates were highest in the oldest age group, 65 years and over, whereas in the MAP group illness rates were highest in the age group 45 to 64 years. The authors said that the results were similar for utilization rates. For those not on MAP the oldest age group, 65 years and over, had the highest physician utilization rates; for persons on MAP the 45- to 64-year age group had the highest utilization rates.

Data on illness and physician utilization by sex showed that women had a higher proportion of visits to a personal physician than did men for nearly all age categories. Women under 40 had a higher proportion of clinic visits also, although after age 40, men had a higher proportion of clinic visits than women.

The authors emphasized that the intention of Public Law 89–97, title 19, is to give economically deprived persons medical care services in quantity and quality comparable to that private patients receive.

The authors believe that in order to overcome the shortage of physicians, ways must be found to enlist the support of more physicians in the area. Also, young physicians with special interests and skills in comprehensive medical care, must be recruited and given incentives to practice in understaffed areas with high concentrations of medical assistance patients.

Medical Care

Are Young People's Ills Clues to Community Ills?

A primary source of medical attention for adolescents is the local hospital emergency room. Service records in this 24-hour walk-in facility provide provocative perspectives on the medical difficulties and social behavior of adolescents, both as individuals and as a group. Thus, asked pediatrician Dr. S. Harvey Sklar of Cliffside Park, N.J., and Dr. Elinor F. Downs of the Columbia University School of Public Health and Administrative Medicine, might service records also be used to identify new or unrecognized community situations which are hazardous to the health and safety of young people?

To explore this possibility, a retrospective record review was carried out in the emergency rooms of two community hospitals, one in Bergen County, N.J., and the other in New York City. Data extracted from the daily logs provided information on more than 2,700 suburban and 1,100 urban 13- to 20-year-old adolescents who sought emergency care during 1963. The authors pointed out that identical data-gathering techniques were used in both hospitals.

The hospital-based observations were combined with pertinent community information from existing official and research sources, and sociomedical profiles of the two samples of adolescents were drawn and compared. The immediate objectives were (*a*) to determine the major similarities and differences in the two samples in terms of emergency room use patterns, medical problems seen, and factors precipitating visits, (*b*) to relate the hospital-based observations to pertinent community information, and (*c*) to identify clues to specific local conditions which appeared to affect the health and safety of adolescents.

Among patients of all ages who used the emergency services, the adolescents constituted 10 percent in the urban unit and 16 percent in the suburban. These proportions were equal to or slightly greater than the representation of the same age groups (13–20 years) in their respective communities, the authors reported. The suburban youth tended to use emergency room services at least as often as, or possibly more than, their urban counterparts. The age spread of the adolescents treated was similar for the two hospitals; each year of age was almost equally represented.

In both hospitals the majority of adolescents required prompt medical attention, but a delay of up to 24 hours would not have endangered them or caused unusual physical distress or hardship. The seasonal and diurnal patterns of emergency room visits were almost identical for the two groups.

Parallels in urban and suburban experiences were also seen in the principal kinds of emergency services required. Heading the list of services required in both hospitals were surgical (lacerations, abrasions, burns, concussion) and orthopedic (sprains, parajoint injuries, fractures); together they accounted for more than 70 percent of the cases in the city facility and more than 80 percent in the suburban unit. The younger adolescents in both emergency units needed less surgical-orthopedic attention than those aged 17–20 years.

As revealed by the records, the most important clues to community problems affecting young people

were (*a*) the ratio of traumatic to nontraumatic cases treated and (*b*) the nature and course of events which lead to an emergency room visit.

Most of the traumatic cases resulted from accidents caused by some external object or force. However, the authors pointed out, a small but disturbing number of injuries were associated with deliberate acts of violence perpetrated by others (assault) or by the patient (suicide attempt) and poisoning by drugs and other toxic substances without clear indication of intent to inflict harm. The percentage of urban patients treated for injury by violence was more than twice that of the suburban group, and the 15- to 16-year-olds seemed to be particularly vulnerable. Boys in both groups were assaulted far more frequently than girls, but more girls attempted suicide.

Accidental injuries due to school athletics, motor vehicles, and job situations headed the list of identified problems in the suburban community, the authors reported. In the urban community, the basis of much of the illness and trauma in the middle-low income group seemed to reflect a breakdown in delivery of preventive and ongoing health services, a value system that accepts episodic care and a less than satisfactory socioenvironmental climate for teenage living.

To truly serve a given population, a hospital must know its community. Periodic reviews of emergency room records might well provide helpful clues to unmet needs and their solutions, in the authors' opinion. To improve the usefulness of this monitoring process, they recommended that at least a minimum of pertinent, easy-to-obtain socioenvironmental facts be included with the clinical data on all emergency room records. Simple coding and retrieval systems would facilitate recovery of desired information.

Continuity of Care For Urban Infants

From the data obtained in a study of infants' first year of medical experiences, Dr. Rowland L. Mindlin, Albert Einstein College of Medicine, Bronx, and Dr. Paul M. Densen, Harvard Center for Community Health and Medical Care, Boston, concluded that continuity of medical care for infants does not exist for at least 40 percent of the white middle class, 75 percent of the minority group middle class, and 90 percent of the minority group lower class in New York City. Further, they continued, elimination of the dichotomy between preventive and curative services, of itself, will not necessarily result in continuity for large numbers of infants. More mothers will want to have it and more physicians will have to be prepared to offer it actively before continuity of care can be provided for infants in large cities.

For this study, an infant was considered to have received medical care with continuity if he had a single source of medical care during the year, or, if he had more than one, he received care from subsequent sources only by referral from other sources. Conversely, an infant who received care from subsequent sources without referral was considered not to have continuity of care. An infant who attended several hospitals or health stations was not considered "referred" because of the acknowledged lacks in communication between these sources, the authors explained.

Two samples of mothers of newborn infants in New York City were selected randomly from birth registrations during a stated period in each season of the year. One sample was drawn from a slum neighborhood and the other from a middle-class neighborhood. The mothers were interviewed in their homes, first when the infant was 1 month old and then monthly for 1 year. Structured questionnaires and trained lay interviewers, who were matched ethnically with the respondents, were used. A total of 242 completed cases were available for study from each district. The slum sample consisted of 11 white, 69 Negro, and 162 Spanish-speaking mothers. The middle-class sample consisted of 192 white, 16 Negro, and 34 Spanish-speaking mothers.

Of the 484 infants, 99 percent had seen a physician, but only 29 percent had continuity of care by the definition used. The separation of preventive and curative services, where mothers had no alternative to seeing a different physician, accounted only for 23 to 30 percent of the reasons given by the Negro and Spanish populations without continuity and even less among the white population without continuity. A small percentage could have used the same source for well care as for sick care but preferred a different source for well care, according to the authors.

Turning to continuity of care from the mothers' point of view, the authors reported that at the end of the year's interviews the mothers were asked if they had a "doctor or place that you think of as your regular doctor for the baby." A hospital clinic or a child health station was named by 172 mothers as a "regular doctor." These mothers were then asked if they would rather see a private physician or go to the clinic if cost were not a factor. Half of them said they would prefer a private physician. Asked why, only 17 mothers said "to see the same doctor each time." On the other hand, when the same 172 women were asked directly how important it was that their babies see the same doctor each time, 134, or 78 percent, said that it was important. These findings indicate that continuity of care is not salient in the minds of most mothers who consider their babies to be regular patients of clinics, the authors stated.

New Directions Seen In Home Health Care

In a discussion of past, present, and future activities of home care in the United States, Dr. Claire F. Ryder and co-authors from the Public Health Service's Division of Health Resources pointed out that programs of home health services are moving in two directions—improved services for specific disease entities already on the caseload and development of services for new groups of patients not generally accepted for care at present. They presented several examples of these directions.

Parkland Memorial Hospital in

Dallas has a program for the management of rheumatoid arthritis in the hospital and at home which has clearly indicated a need to modify conventional techniques of care within the home, the authors reported. Because of the remittent nature and profound psychological effect of rheumatoid arthritis, the Parkland program supplements traditional methods of care in the home with patient and family education and counseling to provide both physical and psychological support.

The terminal cancer patient is generally not readily accepted in home care programs. The use of home care in terminal illness calls for appraisal and reappraisal of the patient, his family, and his home to determine whether such care is suitable and for how long, according to the authors.

In one community, program evaluation revealed that not one patient with terminal cancer had received home care, although many cancer patients had remained in hospitals until death. In the following year a concerted effort by hospital and home care staffs resulted in home care for selected patients with terminal cancer. The patient and family response was encouraging. The patients were more at ease and required fewer sedatives and drugs for pain, and their families were better able to cope with grief, the authors stated.

The restricted number of patients who can receive intermittent renal dialysis in hospitals suggests the need for dialysis at home. Blue Cross of Michigan is exploring potential coverage of such care for its members. A 1-year project will pay for members' outpatient and home dialysis under the direction of six Michigan hospitals.

Prepartum or post partum home care programs are not general in the United States, according to the authors. However, Boston City Hospital recently provided a combined program of home care and outpatient care for pregnant cardiac patients. A public health nurse provided home services for these women so that their total prenatal care was enhanced, and the problems of traveling to the outpatient department or being rehospitalized because of the cardiac condition were minimized.

Recognition of the need to provide comprehensive medical care for the social as well as the medical problems of maternity patients in low-income minority groups led to a home care program at the Lincoln Hospital in the Bronx in 1965. Among the benefits of the program was that 95 percent of the mothers returned to the hospital for postpartum care, in contrast to 50 percent of the general post partum caseload.

Other population groups being reached by home care programs are premature infants, alcoholics, and outpatients with heart disease. Further, in Michigan's Saginaw Hospital home care is combined with day care. Bedbound patients are brought to the hospital's rehabilitation department where they receive social, rehabilitative, and dental services during the day. They also receive skilled nursing and home health aide services in their homes.

The authors suggested that the role of home care in mental health programs be explored. Although some mental health programs, with the help of public health nurses from community agencies, have established services for individuals discharged from mental institutions who need followup care, the authors believe that there is further need for home health agencies and mental health centers to identify common needs and common goals for their respective patients. An exchange of personnel between these two agencies might improve the care of patients both serve. Further, they continued, there is need for programs in which intensive care of the mentally ill can be provided at home by visiting psychiatrists, psychiatric social workers, or psychiatric nurses.

Medicare's Impact Varies With Group Health Plans

After reviewing the experiences of group practice prepayment plans since Medicare was started, Dr. Harold F. Newman, director of the Group Health Cooperative of Puget Sound, concluded that generally these plans have lost few subscribers because of the Federal program. In fact, he added, some have been able to capitalize on a more sound fiscal situation to expand their enrollment of the elderly.

Before Medicare, the aged were considered to be a high-risk group with limited financial resources, and thus few plans could offer people over age 65 enrollment on an individual basis. Under Medicare, the risk in cost of underwriting was substantially modified, and many plans were enabled to underwrite the marginal cost of deductibles and co-insurance, plus services not covered by Medicare, for a modest added premium, Newman reported.

About 7½ percent of the Puget Sound's 110,000 members are Medicare beneficiaries. This plan has not attempted to enroll additional Medicare subscribers, Newman said. In this consumer-owned, nonprofit group practice prepayment plan, all members are entitled to lifetime coverage. The percentage of the plan's population over age 65 has remained relatively constant; few of the elderly have terminated their coverage because of Medicare.

Although medical and hospital costs in general have risen sharply since Medicare, because of increased use and higher wage costs, the principal effect on group practice prepayment plans has been the necessity to provide much higher salaries for physicians and paramedical personnel in order to keep present staff and attract new staff, Newman stated.

Before Medicare, the Puget Sound members who were over age 65 saw a physician about 1.6 times as much as the average subscriber. This figure has not changed significantly under Medicare. However, Newman pointed out, both the average member and the person over 65 are seeing a physician more often than they did several years ago. Despite the increased number of physician visits, the percentage of total physician use by people over 65 compared with people under 65 has remained constant in the Puget Sound plan, Newman reported.

Interestingly, use of hospital beds for acute illnesses by Puget Sound

members over age 65 has decreased. Before Medicare, such members were using 30 percent of the plan's total hospital beds or about 2,000 hospital days per 1,000 persons covered. During the first 6 months of Medicare, the figure dropped to 28 percent of the total beds, or 1,900 days per 1,000 persons. At present, people over age 65 are using between 24 and 25 percent of the hospital beds, or roughly 1,800 days per 1,000 persons. Newman attributed the reduction in use of hospital beds to the extended care benefit under Medicare. This type of benefit was not previously available to the plan's over 65 population.

The Puget Sound plan is one of many plans which deal directly with the Social Security Administration for reimbursement, rather than through a fiscal intermediary. In Newman's opinion, the present methods of reimbursement from Social Security are extremely cumbersome. Group practice prepayment plans which normally received level capitation payments to meet their costs are now forced to bill on a per diem basis for hospital care, and they are also subject to retroactive adjustment for interim capitation payments under part B of the Medicare program.

Although Newman is not aware of any plans which have been denied adequate payments to meet their costs, he said that the cumbersome fiscal procedures result in higher administrative operating costs and they provide no incentive to the plans to give service in the most efficient and economical way possible. He believes that all plans could show cost savings if they were permitted to offer services based on a single capitation payment for both part A (hospital insurance benefits) and part B (supplementary medical insurance benefits). This method of payment, he added, would be the same as the arrangement which the Government has for employees under the Federal Employees Health Benefits Program.

Newman believes that Medicare will stimulate creation of more group practice prepayment plans, particularly hospital-based plans. He concluded that establishment of group practice in hospitals will permit them to offer broader and more comprehensive health services to defined populations.

Why do Patients Choose Certain Hospitals?

Recent studies have revealed two sets of systematic relationships—one between the patterns of hospital use and the socioeconomic characteristics of patients and the other between hospital use and hospital characteristics. Partly as an attempt to explain these relationships and partly as a separate theoretical development, two distinct theories of economics of consumption of hospital services have emerged, said Dr. Kong-kyun Ro of the National Bureau of Economic Research, New York City.

One theory postulates that hospital use is determined through the interaction between patients and physicians. A physician is described as treating a person, not a disease. Accordingly, personal and situational factors, in addition to medical conditions, are taken into consideration by physicians. The other theory proposes that the economics of consumption has no role in explaining hospital use. Production of hospital services is envisioned as largely determined by technological imperatives and productive facilities available and institutional characteristics of individual hospitals.

What is required is an integration of the two theories, said Ro. For this purpose, he proposed a new model in which consumption of hospital services is hypothesized as a composite effect of the joint interaction among physicians, patients, and hospital.

The population studied consisted of 22 hospitals in the Pittsburgh area and 9,000 patients admitted to to these hospitals during 1963. The data were collected by Blue Cross of Western Pennsylvania. The principal method of analysis was the least-square single regression in various forms and its variants, such as the two-stage estimation procedure.

The differences in patient and hospital characteristics combined explain variations in hospital use better than variations in either patient or hospital characteristics alone, according to Ro. However, he said, the improvement in the explaining power is unimpressive—much less than the sum of the two. This indicates that patients with certain socioeconomic backgrounds enter hospitals which have certain institutional characteristics. Ro pointed out that this observation was supported by a statistical test which showed a significant association between some of the patient characteristics and the hospital where the patient is treated. Based on this finding, interaction terms were formed between variables representing patient characteristics and those representing hospital characteristics, and their influences on hospital use were examined. The results revealed that the overall explaining power of independent variables increases when interaction terms are formed and the nature of the impact of some of the variables on hospital use is clarified.

Nursing Agency Audits Quality of its Care

Health care is often provided with discrimination based on ethnicity, color, age, nature of the illness, or life style of the recipients. Nurses are not fully agreed on the importance and influence of nursing as a major component in health care systems. The principle of accountability is not easily accepted, as illustrated by resistance to accreditation and certification of institutions and agencies. Some nurses say that quality of nursing care is an intangible and therefore not subject to measurement. After expressing these beliefs, Maria C. Phaneuf, Wayne State University College of Nursing, Detroit, stated that fortunately large numbers of nurses have become interested in appraising the quality of nursing care by use of the audit method, and she described such an audit undertaken by a large public health nursing agency.

At a 2-day workshop in April 1968, a consultant presented the audit method to the agency's executive director, supervisors, administrative staff, consultants, and certain staff

members. The workshop was focused primarily on three major questions: What is the audit? What are the standards against which quality of care is judged? Who does the audit?

The nursing audit is a method for systematic written appraisal of the process of nursing care, which is made after discharge of the patient through examination of the patient care records. The records are used because complex modern care cannot be given to complex human beings without use of the record as a service instrument—as a means to service, Phaneuf explained. The method was designed for use in hospitals, public health nursing agencies, and nursing homes.

One dependent and six independent functions of nursing are used as standards against which quality of care is judged: application and execution of the physician's legal orders, observation of symptoms and reactions, supervision of the patient, supervision of those participating in care, reporting and recording, application of nursing procedures and techniques, and promotion of health by direction and teaching.

The agency's audit was performed by a committee of 11 nurses appointed by the executive director. The committee audited a total of 60 cases; 30 in which a cerebral vascular incident was the primary condition and 30 in which heart disease was the primary condition. Apart from the workshop time, the committee work from orientation through auditing of the 30 cases required seven conferences which lasted 2½ to 3 hours. Time required for the average case review by individual members was initially an hour or more; however, with experience it was reduced to 15 or 20 minutes.

Results

The overall findings for the 30 cerebral vascular incident cases were that one patient received excellent care; six, good care; eight, incomplete care; 11, poor care; and four, unsafe care.

In the 30 cases where heart disease was the primary condition, none of the patients received excellent care; three, good care; five, incomplete care; 16, poor care; and six, unsafe care.

The analysis indicated that the best-executed function was the carrying out of the physician's orders—the dependent nursing function. However, Phaneuf reported, weaknesses were also found in the execution of this function. The major ones were lack of evidence of understanding of the pathophysiological processes and failure to take the patient's health history into account in assessing needs and planning nursing intervention. Observations of symptoms and reactions were found to be fragmentary, partly as a result of these weaknesses. A major problem was that significant secondary diseases were ignored—nearly half of the patients had such diseases.

Weaknesses evident in execution of the other nursing functions were judged to be related to two major points. Because the observations of symptoms and reactions were fragmentary, other responsibilities and opportunities were not perceived, Phaneuf noted.

Where care was judged to be good or excellent, it was obviously personalized—clearly individualized according to the patient and his situation. On the whole, Phaneuf stated, care seemed to be inadequately personalized.

Recommendations

The committee's recommendations for the agency included the following:

- Use of the International Classification of Diseases in obtaining and recording primary and secondary diagnoses.
- Increasing emphasis on obtaining orders regarding all medications used by the patient, whether or not they were administered by the nurse.
- Exploration of reasons why nurse-to-physician communications are incomplete and nursing judgments are seldom conveyed.
- Increasing attention to assessment of vital signs, with recording and use of findings.
- Establishment of the policy of requiring nursing assessment of the patient's physical and emotional condition at the time of admission and at the time of discharge.
- Development of standards for charting, using the nursing audit schedule as a process guide.

Indices of Performance In Ambulatory Clinics

In response to the need for reliable comparative data on the functioning of ambulatory clinics, an exploratory study was initiated to obtain information that could be used to experiment with the construction of indices of clinic performance. Wide variations on a number of indices were demonstrated, and some are directly relevant to assessment of adequacy of care and of amenities in providing care, according to Dr. Walter L. Johnson and Dr. Leonard S. Rosenfeld, Health and Hospital Planning Council of Southern New York, Inc.

Data for the study were obtained in eight New York City hospitals from 1-day observations of patient visits at clinic sessions and from concurrent surveys of the staffing patterns of observed clinic sessions. The types of data collected included time of patient's arrival at the clinic, patient's status (new or revisit), time in and out of examination rooms, and certain items regarding physicians and ancillary personnel in contact with the patient in the examination room. A combination of the time information with the staffing and patient load data produced composite indices of performance which revealed important variations between hospitals and clinic sessions on significant parameters, the authors reported.

An outstanding example of the variations, the authors pointed out, is the range in waiting time in general medical clinics which varied between 24 and 124 minutes. Another example is in the number of patients per available physician-hour in general medical clinics which ranged from 14.5 to 2.4. Such indicators can be useful to administrators in recommending changes in service programs. However, the authors believe the indicators can be even more useful when more com-

plex forms of analysis involving the interrelationships of several indices are used, and they cited the following examples to illustrate their potential.

Coordination of patient arrival with physician arrival. The study data revealed a definite and measurable difference between the formal beginning of clinic sessions and the beginning of physician sessions. In six of 10 general medical clinic sessions, the first physician began seeing patients an hour or more after the patients arrived and were admitted or registered. Moreover, the authors said, a complicating factor in coordination is the pattern of arrival and departure of individual physicians. In all instances, the average time spent by individual physicians in clinic sessions was noticeably less than the length of time scheduled for the physician session. Thus, not only were the physician sessions in the sample measurably shorter than the formal sessions, but few physicians participated in direct patient care over the entire span of the physician session.

New patients and revisit patients. In most of the prenatal clinics observed, the first-visit patients received at least twice as much time as the revisit patients. In the general medical clinics, however, only one hospital had average times for new patients which were about twice those for revisit patients, and in two instances the new patients actually averaged less time with the physician than the revisit patients. From the implications of these contrasting observations, the authors concluded that new patients often do not receive the attention from physicians that accepted standards indicate to be desirable.

Performance by type of clinic. With respect to patient load and staff resources, the pediatric clinics in the sample showed a better balance between both patient load and available physician-hours and patient load and ancillary personnel than the other clinics. Also, the authors noted that a generally longer average time was spent by the physicians with pediatric patients.

By contrast, the prenatal clinics showed certain distinctive features which reflect in part their different standards and requirements, the authors stated. A larger number of patients per available physician-hour is indicative of the lesser amount of physician time required for revisit prenatal patients than for general medical revisit patients. Waiting time in the prenatal clinics is comparatively high—patients are requested to come long before the physicians arrive, often as much as 90 or more minutes.

However, the authors explained, in many prenatal clinics this time is not spent entirely in waiting. Preliminary work pertaining to collecting information, to patient education, or to obtaining laboratory specimens may be done before the patients see the physicians. Some clinics use waiting time to conduct maternity classes. No attempt was made to assess this factor in the study, but, the authors recommended, standards relating to waiting time should be flexible enough to take such requirements into account.

There was far less variation in the ratio of ancillary staff to patients in the prenatal clinics than in the other clinics. The authors suggested that this may reflect a broader base of widely accepted standards in prenatal care.

Family Planning

Two States Computerize Family Planning Data

Maryland

Because of the many administrative problems that arose in attempts to evaluate Maryland's family planning program, a new method of evaluation was devised in 1967. The greatest need was to determine the number of patients actively participating in the program in local health department clinics at any given time, according to Dr. Gary Richard Snyder, a Public Health Service Epidemic Intelligence Service officer in family planning evaluation, and co-authors from the Maryland State Department of Public Health. The number and rate of change of the number of active patients would be a gross index of how effective a local program is in recruiting new patients, of whether patients continue to return for service, and of the effectiveness of the program's followup efforts, the authors pointed out.

New definitions were created for active, delinquent, inactive, and terminated patients. Medical and statistical record forms previously used were discarded, and a precoded form was designed in two parts—one for initial visits and one for revisit records. The new form meets the need for computerized statistical as well as medical data. The authors noted that both types of information can be recorded far more rapidly than previously—an individual record for a new patient can be completed in about 7 minutes at present, as opposed to 15 minutes with the old system. Another benefit, they said, is the readily available statistical information.

The computer program is designed to maintain a continuously updated master file for each patient. When the records from the clinics are received in the central office, they are checked for completeness. Each week all records received within the preceding week are punched on IBM cards and verified; every item on the initial visit record is punched. For the revisit records, only the items in which a change has been noted are punched. The data are then checked for completeness and validity in a card-to-tape editing process.

The data are updated, and at this point an updated master file has been created on tape for each patient. The appropriate report tapes—new revisit records to be printed and monthly, quarterly, and yearly reports—are generated from the master file.

Currently, each clinic receives a monthly report consisting of (*a*) alphabetical listings and status codes, according to the new defini-

tions, of all patients on its rolls (name, family planning number, address, telephone number, date of next appointment), as well as for all delinquent, inactive, and terminated patients, (*b*) summary tables showing for the current month and year to date the number of new patients, carryover patients, revisit patients, how many patient visits these represent, and how many patients are active, delinquent, inactive, or terminated as of the date of the report, (*c*) a return rate showing the percentage of patients who were delinquent, inactive, or terminated and became active again, and (*d*) the average interval for patients to return.

The authors reported that as of September 1, 1968, the cost of developing and operating the computerized system was approximately $8,000, plus about 70 percent of the time of an Epidemic Intelligence Service officer.

Georgia

Development of a computerized data processing system, similar to that of Maryland's, has refocused attention on care of individuals in Georgia's statewide family planning program, reported Dr. Ronald W. O'Connor, a Public Health Service Epidemic Intelligence Service officer in family planning evaluation, and co-authors from various Georgia agencies. The availability of accurate, current data has accelerated evolution of service goals to the point that reliance on traditional program indices—visits, admissions, patients served—and attention to establishment of geographic coverage have been superseded by concern for the continuity of effective family planning service provided for each individual, they added.

Previous hand-tabulated counts of new patients served, with cumulative yearly carryover, produced a total of 41,707 patients contacted since 1966. However, the computer master file of all individual family planning records for the same period revealed that only 42 percent, or 17,708, of the patients were actually continuing to attend the clinics as of October 1968. This and several other observations made possible by the accurate data provided by the computer system pointed up the fact that evaluation must now focus on the prevalence of patients who are continuing clinic-based contraception and discard reliance on body counts and packages of pills dispensed, the authors stressed.

Citing the effects of the system on the agencies concerned with the program, the authors said that it meets the following needs of local health clinics, which have limited budgets and personnel and a primary interest in patient care: (*a*) they can depend on regular, relevant reports about their own patients and reports concerning how their programs measure up to local need as well as to other programs throughout the State, and (*b*) they have been relieved of all other reporting and statistical analysis, a major decrease in paperwork that allows more time to serve the patients. Monthly tabulations of services provided have been eliminated, appointment scheduling is simplified, and searching of files for patients who need followup is done automatically.

For State-level agencies, the data processing system provided current, concise information on the directions of the total program at a reasonable price, according to the authors. The total initial investment was $4,500—about 3 months of consultant time at $3,000 and programing expenses of $1,500. Monthly operation by the State health department data processing and biostatistics division, at a total cost of $600 for the present load of 3,000 records per month, includes 1 hour of computer time, coding, key punching, and verification. This operation averages 5 cents per active patient per month. No estimate had been made of the time saved at every local clinic as a result of the elimination of clerical and statistical tabulations as well as random home visits.

The authors concluded that the opportunity to take advantage of inexpensive patient-relevant information for evaluation and action fostered resolution of agency differences and directed attention to their primary roles in the provision of quality family planning service as follows:

- Local health departments to patient service.
- Welfare to referral and education for a needy population.
- Planned Parenthood to motivation, enlightenment, and general prodding of both the public and private communities.
- The State health department to provision of consultation, supplies, and evaluation through the data processing service.

Risk of Thromboembolism From Use of the Pill

The use of oral contraceptives seems to be associated with an increase in mortality from diseases of the veins, of which pulmonary embolism is the largest single component, but not from cerebral or coronary thrombosis, according to the results of a study of underlying cause mortality trends for these diseases in the United States by two epidemiologists at the National Institutes of Health.

Using published U.S. mortality data, Dr. Robert E. Markush, National Institute of Neurological Diseases and Blindness, and Dr. Daniel G. Seigel, National Institute of Child Health and Human Development, calculated slopes for mortality trends within three time periods, 1951–56, 1957–61, and 1962–66, for each 5-year age group between 15 and 65, for men and women, for white and nonwhite persons, and for each of the following three categories of the seventh revision of the International Classification of Diseases: 332, cerebral embolism and thrombosis; 420, arteriosclerotic heart disease, including coronary disease; and 460–468, diseases of veins and other diseases of the circulatory system. They then divided each slope by the mean mortality rate for the given age, sex, color, diagnosis, and time period to obtain an estimate of annual percent change in mortality.

They calculated four different "expected" values for each of the estimated percent changes in mortality for women during 1962–66. The expected values were based on mortality rates for (*a*) men in the same time period, (*b*) women during

1957–61, the 5 years before oral contraceptives were introduced, (*c*) an adjustment of *b* for changes between 1951–56 and 1957–61, and (*d*) an adjustment of *b* for changes in rates for men between 1957–61 and 1962–66. These differences were analyzed to determine whether mortality for women in the reproductive ages has been increasing in recent years relative to what might have been expected.

The results indicated that appreciable relative increases have occurred in the death rates for cerebral embolism and thrombosis for women in only four of the 20 five-year age groups examined. All but one of the increases are based on relatively small numbers of deaths.

Although death rates for coronary disease show some relative increase for women in most 5-year age groups between 15 and 45, most of the increases are either small or also based on small numbers of deaths.

Death rates for diseases of the veins and other diseases of the circulatory system, on the other hand, have increased relatively for all age groups of women between 20 and 44. Apart from these ages, the only comparable increases are for the white women aged 50–54 years and for the nonwhite women aged 45–49 years.

Markush and Seigel pointed out that these results are compatible, except for the negative findings for cerebral thrombosis, with three recent case-control studies in England which suggested that women who use oral contraceptives have an increased risk from superficial phlebitis, pulmonary embolism, deep vein and possibly cerebral thrombosis, but not from coronary heart disease. Furthermore, the conclusions for diseases of the veins agree with those of a similar study of mortality trends for venous thromboembolism in England and Wales.

Family Planning Program For American Indians

The results of an evaluation of family planning activities in the comprehensive health care program of the Public Health Service for about 400,000 American Indian and Alaska Native beneficiaries were reported by Dr. Erwin S. Rabeau and Dr. Angel Reaud of the Division of Indian Health. Approximately 75,450 of the beneficiaries are women aged 15–44 years.

The evaluation, covering fiscal years 1965–68, included measurement of the program objectives, health objectives, and cost of the program. Program objectives were measured by acceptance of contraceptive services, continuation of use of contraceptives, and reduction in the number of births of Indian and Alaska Natives in Public Health Service Hospitals. For the appraisal of the impact of the program on the health of the beneficiaries, trends of abortions, prematurity, pediatric morbidity, and infant mortality were analyzed. Costs were estimated and expenditures for each woman who was provided service were calculated.

Rabeau and Reaud summed up the major findings of the evaluation as follows.

Of the 75,450 female beneficiaries aged 15–44 years, 21,447 or 28.5 percent received services for various periods of use of contraceptives since July 1964. Since that time also, new acceptors of contraceptive services averaged 5,370 per year. Among the women who were hospitalized for delivery or abortion, 39 percent accepted contraceptive services before or within 2 months after discharge from the hospital.

Concerning dropout rates during the first year of use of contraceptives, expulsion, removal, and unintended pregnancies were estimated for about 25 percent of the women who used intrauterine devices. However, 42 percent of the women who used oral contraceptives discontinued use during the first year.

A definite decrease was seen in the number of births after the program was started. Downward trends were observed in abortions, prematurity, and pediatric morbidity. During the years analyzed, family planning was the only program started which was capable of affecting the trend of these indicators, the authors pointed out. Substantial reduction in infant mortality rates had already occurred before the program; these rates stabilized afterward with no decrease coincident with contraceptive activities.

In fiscal year 1967, 12,506 women (new and previous acceptors) were given birth control services. With a total cost of $268,180, the cost per woman was $21. In fiscal year 1968, 11,236 acceptors were provided services at a total cost of $275,000 or $24 per woman. If the expenditures estimated by the Division of Indian Health for public health nurses, health educators, and social workers were excluded from the total to permit comparison with other programs, the cost per woman was $14 in 1967 and $15 in 1968.

Measure Need-Use Rates For Family Planning Clinic

A 1967 survey undertaken to determine the effectiveness of a family planning program for low-income women in Charlotte, N.C., disclosed that one-half to one-third of such women 15 to 44 years of age were in need of family planning services but that only 40 percent were receiving these services at the time of the survey.

Reporting selected data from the survey, Dr. Earl Siegel, department of maternal and child health, University of North Carolina School of Public Health, Chapel Hill, and coauthors concluded that a continuous major effort is required for an adequate family planning service, especially where in-migration and outmigration are sufficient to result in a high turnover rate in the target group.

Interviews were conducted with women 15–44 years of age in a random sample of 7.5 percent of the households in the 23 lowest socioeconomic census tracts in Charlotte. The population in actual need of services was obtained by subtracting from the financially eligible group all women classified as either permanently or temporarily not in need of family planning services.

Of 800 women interviewed, 508 (442 nonwhite and 66 white) were determined to be financially eligible for clinic services. Of the 508, 52.9 percent were classified as currently in need of services—13.8 percent were

already receiving services and 39.1 percent were not. The remaining 292 women were determined to be "not poor," as defined later, and thus they were financially ineligible.

Among those not receiving services were 8.7 percent who were never married-never pregnant but sexually active, 9 percent who regularly used condoms or diaphragms, and 21.4 percent who were ever married, ever pregnant, or sexually active women who were not using contraceptives. Significantly fewer white women (40.9 percent) than nonwhite (54.7 percent) were classified as currently in need ($P=0.02$). The difference in need was explained by the high sterilization rate for white women. There was no evidence of difference related to race in the never married-never pregnant sexually active group or among those who were regularly using condoms or diaphragms.

Almost a fifth (18.7 percent) of the financially eligible women were classified as permanently not in need of family planning services because of infertility or sterilization. A higher proportion of white women (27.3 percent) than nonwhite women (17.4) were in this group. More than two-thirds of these women were sterile as a result of tubal ligation and about a fifth had had a hysterectomy. None of the partners of the total group of women had had a vasectomy.

Slightly more than one-fourth (28.4 percent) of the women were classified as temporarily not in need of family planning services. Relatively small proportions were pregnant (5.7 percent) or trying to become pregnant (1 percent). Only 7.5 percent were using oral contraceptives or intrauterine devices which were prescribed at sources other than the public health clinic. Almost 15 percent of the women were sexually inactive, and 40 percent of these were never married-never pregnant girls under 18 years old. No significant differences were seen between the white and nonwhite women for each of the subcategories in this group.

Siegel and co-authors pointed out that the inadequacy of a single method of defining a target population that would be appropriate for all purposes prompted them to present different criteria of need. This approach, they added, directs attention to several special groups whose needs should be considered. Three such groups are (*a*) women living in low-income census tracts but with sufficient income to be classified as "not poor" and "financially ineligible," although most of them could be considered "almost low income," (*b*) the never married-never pregnant sexually active group, and (*c*) low-income women who rely on diaphragms or condoms for contraception.

The proportion of unmet need for contraception was higher among the 292 "not poor" interviewees than among the 508 low-income respondents. This was true for all suggested ways of defining need, the authors stated. The fact that this difference disappears if those attending the clinic and those reporting tubal ligation are omitted suggests that the difference may be due to the availability of services to low-income women that are not available to "not poor" women.

As for the group classified as never married-never pregnant but sexually active, about 30 percent of the women in the survey aged 20–29 years reported having had sexual intercourse before they were 16 years old and about 75 percent had their first such experience at 17 or younger. Based on these reports, the authors concluded that a substantial proportion of these girls over the age of 15 should be considered to be in need.

Whether couples who regularly use diaphragms or condoms should be considered in need of family planning services is less certain, since these methods are effective when used consistently. Nine percent of the survey's low-income couples reported use of these methods regularly during the month before interview. On the other hand, Siegel and co-authors stated, virtually all these couples used condoms and therefore were not receiving the health supervision provided through a family planning program with a medically prescribed method.

Epidemiology

Skin May Be Equal to URT In Pathogenesis of AGN

Under certain conditions the skin may be equally if not more important than the upper respiratory tract (URT) as the source of the preceding streptococcal infection in patients with acute glomerulonephritis (AGN), observed Dr. Edward L. Kaplan and associates, University of Minnesota, Minneapolis.

They discussed cutaneous infection in relation to the spread of group A streptococcus and the epidemiology of acute nephritis.

Since group A streptococci are often recovered from both the upper respiratory tract and skin lesions in patients with pyoderma at the onset of acute glomerulonephritis, the authors explained, the relative importance of these two sites of infection in the epidemiology and pathogenesis of AGN has been difficult to assess. An opportunity to investigate this question was provided in 1966 at the Red Lake Indian Reservation by the reintroduction of a known nephritogenic strain (type 49) and the concomitant epidemic of acute nephritis on the reservation.

The Study

More than 100 children, 3 to 5 years old, in an Operation Head Start program were followed with weekly urinalyses and cultures of the nose, throat, and skin lesions.

Colonies of beta-hemolytic streptococci on blood agar plates were quantitated and serologically grouped by Lancefield's method. Group A strains were typed by the precipitation method for M antigen and by the agglutination method for T antigen. Serums were obtained for streptococcal antibodies.

The authors reported that the initial visit to the Head Start program to obtain cultures was during the first week of July 1966. The cultures obtained during this visit yielded six

isolations of type 49 streptococci, the first documented isolation of this serotype at Red Lake in at least 10 years.

The majority of the 25 cases of nephritis occurred during July and August when the skin and not the URT appeared to be the most frequent site of first acquisition of the epidemic strain, the authors said. During the summer and fall most acquisitions of type 49 streptococci in the upper respiratory tract were transient, and only small numbers of streptococci were isolated from the upper respiratory tract. During the winter, when skin infections were uncommon, the URT appeared to be more important in the spread of the type 49 streptococcus.

The data suggest that while type 49 streptococci rarely spreads from the upper respiratory tract to skin lesions, it not infrequently spreads from skin lesions to the URT. Colonization and infection of the URT with group A streptococci appear to be less important than streptococcal skin infection in the epidemiology and pathogenesis of acute nephritis under some conditions.

Human Origin Globulin Potent Antirabies Serum

The first supply of human origin rabies immune globulin (HRIG) that is as potent as equine origin antirabies serum (ARS) has been developed at the National Communicable Disease Center, Public Health Service. Dr. R. Keith Sikes, chief of the Center's Rabies Research and Control Unit, reported 4 years of progress in the development, testing, and plans for use of HRIG. This HRIG contains 165 international units of rabies antibody per ml., exceeding the minimum 100 international units per ml. now required of ARS.

To determine the feasibility of developing human origin rabies immune globulin, Sikes explained, donors who had received post- or pre-exposure rabies immunization were given a booster injection of duck embryo rabies vaccine. Blood specimens were taken between 1 week and 1 month later.

The globulin was fractionated by the Cohn ethanol fractionation technique, he continued. Pyrogen, sterility, and potency tests were conducted as prescribed by the Division of Biological Standards, National Institutes of Health, Public Health Service.

Earlier tests of 3 lots of HRIG with a lower potency clearly demonstrated that HRIG was as effective as ARS in protecting animals that had been challenged with lethal doses of rabies virus.

Sikes said that serum neutralizing antibody titers of animals receiving homologous antirabies globulin persisted five times longer than those given heterologous globulin. Interference from passive immunization was overcome by increasing the potency of the vaccine used for active immunization or by using a fivefold decrease in the titer of the globulin.

The recent lot of 2,500 ml. of highly potent, purified HRIG has passed all laboratory tests required for its use in man, he continued. At least two studies of HRIG in man are planned for 1969. Following these studies, commercial development of HRIG under standards set by the NCDC Rabies Research Unit will be expected.

C. diphtheriae Infections Most Hazardous in Skin

Skin lesion carriers of *Corynebacterium diphtheriae* infections are infected longer, disseminate organisms into the environment more efficiently, and probably constitute a far greater public health threat than respiratory tract carriers. This conclusion was among those reached by Dr. Mark A. Belsey and associates at the Tulane University School of Medicine, New Orleans, La. They discussed the relative roles of respiratory infection, skin infection, and the environment in relation to the reservoir and transmission of *C. diphtheriae* infections.

C. diphtheriae infections of skin lesions have recently been noted in several areas of the South, with prevalence rates ranging from 0.7 percent in an area free of diphtheria to 7.3 percent among patients or carrier contacts. The seasonal pattern of diphtheria in the South is consistent with a significant role for skin to respiratory tract transmission, the authors reported. However, direct evidence that *C. diphtheriae* skin infections are important in the epidemiology of diphtheria has not been noted previously.

The Studies

The importance of the respiratory tract and the skin as sources of household infection and as potential human reservoirs was observed in 85 persons in 14 households. Six carrier households were in a neighborhood where diphtheria cases were occurring, the authors recounted, and eight households were unassociated with known diphtheria cases. The eight households were identified during C. *diphtheriae* carrier surveys in two parishes in southeast Louisiana. Cultures were taken from each of these 14 households every 10–14 days.

Cultures were taken only once from 19 other households associated with cases of diphtheria.

Air sampling and surface sampling in four households with skin infection carriers and one household with respiratory carriers were also undertaken, the authors recalled. Swabs from the patient or from surfaces in the household were streaked onto fresh moist Pai's egg medium, incubated at 35°C. for 12–16 hours, and transferred to Tinsdale's medium. Colonies suspected of being *C. diphtheriae* were transferred back to Pai's medium and typing and toxigenicity determinations were done at the National Communicable Disease Center, Public Health Service.

Conclusion

Secondary attacks were more common in households with *C. diphtheria* skin infections, the authors said, and in such households *C. diphtheriae* infection persisted longer than respiratory tract infections, provided household members had still had skin lesions.

The authors noted that skin transmission of *C. diphtheriae* appears to be constant throughout different epidemiologic circumstances. Respiratory tract transmission and infection is about equally as important as skin infection in case-associated incidents, whereas it is of minor importance in noncase-associated incidents. Indirect transmission by fomites does occur although its relative role in comparison with other modes of transmission is unknown.

Dermatophilosis Found In Man and Animals

Diagnoses of dermatophilosis in various lower animals in the United States and demonstration of the disease's transmissibility from animals to man are recent significant developments in zoonotic mycoses, according to Dr. William Kaplan, of the National Communicable Disease Center, Public Health Service. Since instances of such direct transmissions of dermatophilosis to man have been reported, the disease is of potential public health importance.

Dermatophilosis and Ringworm

Dermatophilosis should be differentiated from dermatophytosis, or ringworm, another skin disease caused by different agents, he explained. Dermatophilosis is caused by an actinomycete, *Dermatophilus congolensis*, so named by Van Saceghem in 1915 after finding the disease in cattle in the Belgian Congo.

Dermatophilosis has been reported in domestic and wild animals and is economically significant in some countries where livestock raising is an important industry. Losses result mainly from damage to hides, skins, and wool of infected animals.

Dermatophilosis, Kaplan said, was first recognized in the United States in 1961. The number of known cases is still relatively small, but he believes the disease is being overlooked and is more prevalent than it appears to be.

Kaplan urged increased use of laboratory procedures in differential diagnoses of skin disorders. The simplest and perhaps most practical method for diagnosing these diseases, he said, is demonstration of the etiologic agent by microscopic examination of stained smears of exudates, scabs, or crusts. Cultural studies are also useful in diagnosing dermatophilosis, he said.

Another significant development in the zoonotic mycoses, Kaplan continued, is control of ringworm in animals. In urban areas *Microsporum canis*, the common cause of ringworm in cats and dogs, may account for more than 30 percent of the ringworm on exposed parts of the human body, and in rural areas 70 to 80 percent of the ringworm on man's exposed body surfaces is of animal origin. Consequently, he emphasized, control of ringworm in animals is of public health interest.

Kaplan said that griseofulvin, an antibiotic, when given orally, is highly effective for treatment and control of ringworm in animals and man. By administering griseofulvin orally to treat infected animals and protect those which were susceptible, clipping and dipping infected animals, and instituting general sanitation measures, Kaplan said he eradicated ringworm from three catteries in the Atlanta, Ga., area.

Systemic Mycoses

Noting that nearly all systemic mycoses in man have their counterparts in lower animals, Kaplan said that systemic mycoses are, however, not known to be transmittable between lower animals and man. Nevertheless, recent developments suggest that animals play an indirect role in the epidemiology of histoplasmosis and crytococcosis.

Histoplasma capsulatum, the agent of histoplasmosis, is more likely to occur in soil contaminated with chicken and other bird droppings than in other soils, he observed. Recent studies have shown a similar association between *H. capsulatum* and soil from bat habitats, and other studies have shown that bats, unlike chickens and other birds, are naturally infected with the organism.

These findings, Kaplan reported, have led to speculation that bats may play an active role in establishing new sources of infection and may be involved in transmitting histoplasmosis to other hosts. The consensus, however, is that bats—like other lower animals and man—are merely susceptible to infection with *H. capsulatum* and that their excreta, like that of birds, provide favorable soil conditions for growth of the organism.

Concerning *Cryptococcus neoformans*, the agent of cryptococcosis, Kaplan said recent studies have shown that the organism is more likely to be found in sites contaminated with pigeon and to a lesser extent other bird droppings. But, he concluded, since birds have not been found to be naturally infected with *C. neoformans*, they apparently play an indirect role in the epidemiology of cryptococcosis.

EVB Antibody Indicates Immunity to Mononucleosis

Lack of Epstein-Barr virus (EBV) antibody indicates susceptibility to infectious mononucleosis (IM), according to Dr. James C. Neiderman, Dr. Robert W. McCollum, and Dr. Alfred S. Evans, Yale University School of Medicine. These investigators described EBV antibody studies to elicit an epidemiologic pattern and clinical spectrum of IM.

Connecticut has had a 25-fold increase in reported morbidity of IM in the past 20 years. The 1966 rate was about 50 per 100,000. Similar upward trends have been reported in Wisconsin, Sweden, and Czechoslovakia.

Although the incidence of infectious mononucleosis has increased, particularly among young adults, epidemiologic studies have been limited by lack of an identifiable etiologic agent and a specific serologic test of immunity. Development of heterophile antibodies during active illness is a nonspecific response. The transient nature of heterophile response and its absence in patients with illnesses resembling IM has limited its usefulness in epidemiologic studies, the authors explained.

Since 1937, 91 volunteer trials to determine the etiology of IM have been reported. Of these, 69 yielded negative results, findings in 21 were equivocal, and in only one instance was transmission successful, the authors recalled.

The recent EBV antibody studies in infectious mononucleosis have utilized immunofluorescent techniques. Relationships of EBV antibody to heterophile positive patients were demonstrated, and the occurrence of EBV antibody in heterophile negative patients was established.

The Yale Studies

For 6 years serum specimens and histories of infectious mononucleosis were obtained from all students entering Yale University. When illness developed (see chart), serial serum samples were collected from the patient during the acute and convalescent periods and in some instances several years later. EBV antibodies appeared early in the disease and reached peak levels in 4 or 5 weeks. Antibody levels were still demonstrable in serums obtained years later.

The prevalence and distribution of EBV antibody titers in serums obtained from 29 patients with IM showed that 100 percent of these heterophile positive patients had EBV antibodies at a level of 1:80 or higher during illness. In a group of 50 healthy controls of the same age, only 24 percent were antibody positive and had antibody titers over 1:80, presumably indicating past infection.

Paired serums from more than 100 patients with acute infectious diseases also were tested. In no instance did EBV antibody develop during illness nor was a rise in antibody noted when it was present in serum taken during the acute phase.

Six students who had illnesses fulfilling clinical and hematologic criteria for infectious mononucleosis were studied. Their serums lacked heterophile antibodies, but the development of EBV antibodies was demonstrated. In each patient the total of lymphocyte-monocyte percentage exceeded 60 percent during illness. These patients had high EBV titers, and titers were comparable to those of the heterophile positive group. Serums obtained from two of these patients before illness were negative for EBV antibody.

To correlate the incidence of infectious mononucleosis in relation to EBV antibody, 362 freshmen were followed for 4 years. A blood specimen was obtained from all these persons on entry into college, and previous histories of IM were recorded.

Of 94 freshmen whose serums contained antibody, 6 percent had had infectious mononucleosis. None of these freshmen acquired IM during the next 4 years. Of 268 who were EBV negative, none had a history of IM, but 40 subsequently developed the disease—an attack rate of nearly 15 percent.

To study the extent of inapparent infection, matched serum samples were obtained from 150 university students 4–8 years after the first specimen had been collected. In this group, two had had IM before entering college and both were EBV antibody positive. During the next 4–8 years, their EBV antibody status was unchanged, and they did not acquire IM. Fifty-one students whose serums contained EBV antibody when they were admitted had no history of IM; on followup their antibody pattern was unchanged, and none had IM in the interim.

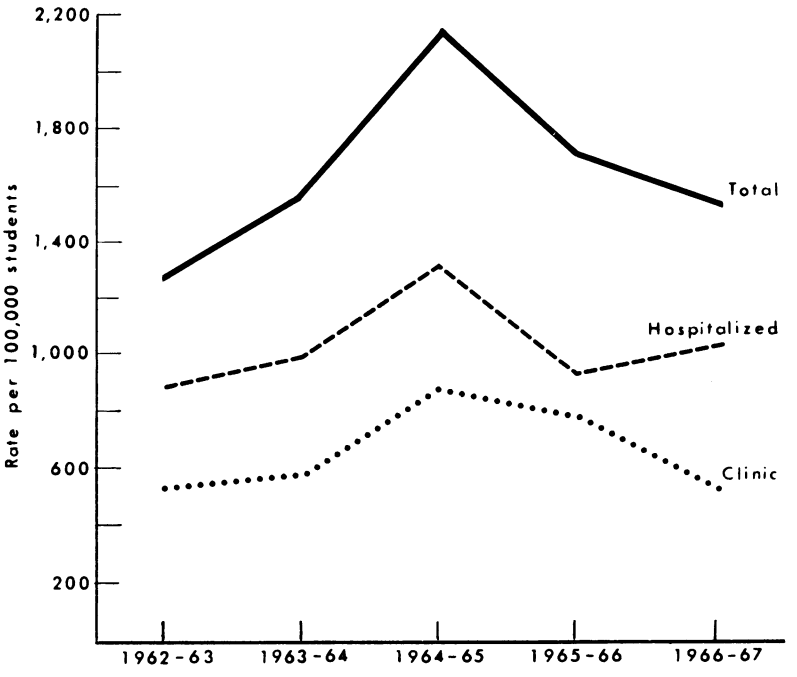
Of 97 students who were initially EBV antibody negative, 43 (44 percent) become EBV antibody positive during the next 4–8 years. Of these, 28 experienced clinically recognizable IM, and 15 had no symptoms suggestive of IM.

At 17–18 years of age, 53 of these 150 students (35 percent) were EBV antibody positive; several years later, at 21–26 years of age, 96 of 150 (64 percent) had demonstrable antibodies. This high attack rate suggested that these students from presumably higher socioeconomic groups remained susceptible as young adults and thus were able to acquire the infection.

EBV Antibody in Other Groups

A recent study of the prevalence of EBV antibodies among 1,700 children in western Connecticut showed a gradual increase in acquisition of antibodies during childhood, so that by the age of 12 years approximately 50 percent of the children were antibody positive. Conversely, only 33 percent of 14 to 16-year-old boys entering a large preparatory school in 1968 had EBV antibodies, and approximately 50 percent of the serums obtained from 17-year-old college students were antibody positive. Among these students, attack rates of IM would be expected to be high, the authors predicted.

Morbidity rates of clinical infectious mononucleosis, Yale University, 1962–67



Of 164 Peace Corps volunteers serving in Colombia during 1 year, 76 percent were found to be antibody positive on induction, and 11 of 30, who originally lacked antibody, converted to positive during the next 12 months. This conversion rate of 37 percent compared closely with the 44 percent rate observed among Yale students.

In contrast to prevalence rates ranging from 24 to 50 percent among freshmen college groups in the United States, EBV antibodies were found in more than 90 percent of persons the same age in the Philippines and Colombia, among whom clinical cases of IM are rarely recorded.

Bovine Epizootics Caused By Careless Laborers

Bovine cysticercosis, a parasitic disease, can only be detected by meat inspection at the time of slaughter. Data from federally inspected abattoirs during 1959–67 show that 12,000 to 16,000 cases are detected annually, reported Dr. Myron G. Schultz and Dr. John A. Hermos, National Communicable Disease Center, Atlanta. The percentage of infected cattle detected during this period gradually declined (0.08 percent to 0.04 percent) until 1967, when the detected number of cases and the percentage infected increased over 1966. Most cases of cysticercosis were detected in federally inspected abattoirs in California (72.8 percent in 1967).

Although the life cycle of the causative organism, *Taenia saginata*, has been well known for many years, epidemiologic data on its incidence and patterns of transmission in man and cattle in the United States have been limited. The interest of epidemiologists at the Communicable Disease Center in this zoonosis was stimulated by their recent investigation of a large epizootic of bovine cysticercosis in northern Texas. This investigation showed that 743 cattle in one feedlot were infected by a laborer infected with tapeworm who defecated in silage used for cattle food, and 170 cattle in another feedlot were infected by a laborer who was also a *Taenia* carrier and defecated in the cattle pens. To assess the effect of the epizootic on human taeniasis and to determine recent epidemiologic trends, Shultz and Hermos compiled data on the past and present incidence of cysticercosis and taeniasis in the United States.

Estimating the incidence and prevalence of human taeniasis is more difficult since it is not a reportable disease and the infection is frequently indolent. Schultz and Hermos surveyed State health departments, hospitals, and parasitologists to collect data on *T. saginata* diagnoses made during the past 5 years; 429 cases were diagnosed in 43 State laboratories in a 5-year period and a far greater number of cases were diagnosed in hospital and private medical facilities. Epidemiologic data on 1968 cases indicate that approximately one-third of the cases are acquired within the United States. Analysis of their data revealed regional and annual differences in the distribution and incidence of taeniasis that are similar to those of cysticercosis.

Reduction in the transmission of this zoonosis, they said, will depend on further delineation of where the infected cattle originate, removal of *Taenia* carriers from cattle-raising establishments, continued vigilance in meat inspection, and the proper cooking of meat.

African Green Monkeys Source of Virulent Virus

The tissues of vervets, African green monkeys, should be handled with care, and direct contact with the tissues should be avoided by wearing protective gloves and clothing. So concluded Dr. Robert E. Kissling and Dr. Roslyn Q. Robinson, National Communicable Disease Center, Public Health Service. They reported on the Marburg virus.

The Outbreaks and the Organism

During August and September 1967, 28 persons in Germany became ill following exposure to tissues of African green monkeys or to the blood of patients with a disease caused by what has since become known as the Marburg virus. The agent was so named because 20 of the primary cases occurred in Marburg, Germany. One additonal case occurred in a laboratory worker in Yugoslavia, and a late case occurred in the wife of a patient. Seven patients died 8 to 17 days after the onset of illness.

Standard virological and electron microscopic techniques were used to determine the host spectrum, physiochemical properties, and morphology of the agent. Serologic studies were performed using complement fixing antigens prepared from infected guinea pig tissues.

The authors said that the characteristics of the organism's RNA genetic material, heat and ether lability, and apparent helical symmetry with cross striations on a cylindrical structure suggest that Marburg virus may be a member of the *Stomatoviridae*. They noted, however, that it is slightly wider and much more variable in length than other viruses in the group.

The Vervets

The monkeys associated with the outbreak consisted of two groups of *Cerocopithecus* species flown to London from Entebbe, Uganda, July 21 and 28, 1967. They were housed overnight at the airport's animal hostel, shipped to Germany, and used within 7 days of their receipt by German laboratories.

The initial infection may have been established during the stopover in the animal hostel where the monkeys had indirect contact with various birds and animals, or, the authors speculated, the monkeys may have acquired the infection in their natural habitat.

The authors stated that although confirmatory neutralization tests are necessary, other types of serological evidence suggest that vervets are exposed to Marburg virus in their natural habitat. However, if this is true, it is difficult to explain why problems have not arisen before. As possible explanations, the authors conjectured that perhaps the infection is very rare or that the usual conditioning period after capture has furnished adequate time for any infected monkeys to recover and become noninfectious.

Using the monkeys before they had been suitably quarantined or conditioned created an unnecessary risk for the laboratory workers. Kissling and Robinson observed. At any rate, they advised handling the tissues of green monkeys with care and avoiding contact with the tissues by wearing protective gloves and clothing.

Nutrition

External Stimuli Trigger Hunger in the Obese

Obese subjects really do not know when they are hungry. When the food and circumstances of eating are uninteresting, they eat little. This result has led to the hypothesis that the eating of the overweight person may be triggered more by external than internal stimuli.

Dr. Irwin M. Rosenstock, professor of public health administration, University of Michigan School of Public Health, touched on some of the recent work of the psychologist Stanley Schacter in support of this hypothesis. Rosenstock believes that this work, which Schacter describes in an August 1968 issue of *Science*, has important implications for nutrition education and the effective control of obesity.

Self-reports of hunger coincide with gastric motility 71 percent of the time for normal subjects, in contrast to 48 percent for obese persons. In Schacter's experiment, normal subjects who were physiologically hungry ate far more than those whose stomachs were full. Obese subjects ate the same amount whether their stomachs were empty or full at the beginning of the experiment.

In support of the hypothesis that overweight persons may be more stimulated to eat by external stimuli of taste, smell, and sight than by internal physiological stimuli, Schacter cites a variety of research results, said Rosenstock. For example, the more time the religious obese Jew spends in the synagogue, the less of an ordeal does he find the fasting for Yom Kippur. For a religious Jew of normal weight, however, the number of hours in the synagogue has little to do with the difficulty of fasting; hunger is hunger.

If subsequent research continues to confirm the hypothesis that Schacter has been testing, Rosenstock believes that we will need to consider ways of training people in internal (self-) control in the face of external stimuli. In one such attempt that has proved effective with obese patients desiring help, the patient learns to control a series of components of his eating behavior. He starts with such simple things as interrupting a meal for a predetermined period. The learning situations progressively increase in scope and difficulty. Also certain barriers to eating are introduced. For example, a patient is instructed to remove food from all places in the house except the kitchen and, other than salad, to keep only food which requires preparation. Thus, he has certain barriers involving some work which must be overcome before he can eat.

Underlying all the specifics in this training plan is the principle that patients acquire self-control by experiencing immediate and continued success in their progressive efforts to manage their behavior. A fascinating challenge, said Rosenstock, would be for nutrition education to find ways of teaching children the progressive management of their own behavior and the means of rewarding them for self-control when it occurs. We would begin, he said, with behavior that is relatively easy to control, for example, gradually reducing the candy eaten in any given day.

Health workers have the right—and indeed, the obligation—to present information that will help their clients make rational decisions, Rosenstock believes. It is highly desirable to communicate information about the association between overeating and longevity and between overeating and disease. It further seems appropriate to communicate information on the availability of effective methods of control if such technology is developed. Nevertheless, there will be persons who possess all pertinent information, but whose motives and values require continued overeating. We have neither the right nor the obligation, Rosenstock declared, to attempt to change their view.

Can U.S. Food Industry Tailor Foods for Health?

What difficulties would be encountered if, to improve the populace's health, a food industry were to alter the caloric or fat content of our foods? Dr. E. E. Rice and Dr. H. B. Lockhart, Research and Development Center of Swift and Company, Oak Brook, Ill., discussed some of the economic and other effects that might be expected if, for example, skim milk—made more palatable by the addition of nonfat milk solids—were to replace entirely whole milk as a beverage, if vegetable oils—in some instances the polyunsaturated ones—were substituted for animal fats in certain products such as frozen desserts and Danish pastries, and if less fatty meats were used in sausage-type products.

Use of Less Butterfat

About 50 years ago, the average annual per capita consumption of table spreads in the United States was about 15 pounds—all butter. Today, Rice and Lockhart said, it is still 15 pounds, but now about two-thirds is margarine. This shift from butter to margarine has created surpluses in butter, despite some decreases in butter production.

If the same amount of fluid milk with butterfat removed and nonfat milk solids added were consumed as formerly of fluid whole milk, the dairy farms would have to produce more whole milk than before. Two billion more pounds of butter would be added to our annual production and thus to our butter surplus. The value of this butter undoubtedly would be less than its present support price, the authors pointed out. Producer, consumer, or both, would have to take a loss. Any reduction in farm prices would undoubtedly result in a decreased supply of milk.

Therefore the consumer would probably ultimately have to absorb the loss through a higher price for the low-fat fluid milk, they said, or else we all would have to pay taxes to support a butter subsidy price.

Changes of this kind are difficult, Rice and Lockhart commented, not only because of the desire to protect established economic patterns but also because they demand a change in personal attitudes. To the dairy farmer, value in milk has been synonymous with fat; now he is asked to consider fat a nonentity or even a negative attribute.

While the dairy farm was losing a market for 2 billion pounds of butter, the soybean, corn, and cotton farmers were gaining this market. Instead of producing milk, farmers began producing beans from which the processing industry manufactured margarine. The farmer can produce more fat per acre as beans than as milk and with less labor and a smaller investment in equipment and animals. As a result, the cost of soybean oil is appreciably less than the cost of butterfat, and margarine costs less than butter.

Recently, several companies have marketed margarine with a high proportion of polyunsaturated fat, the authors reported. The raw material is essentially the same as for conventional margarines, but formulation and manufacture are different, special packages and new packaging equipment are needed, and promotional programs must be mounted. The farmer, however, gets the same price for his farm produce. The processing industry entails additional expense and charges for it. The consumer gets a modified product which he desires and for which he is willing to pay.

Polyunsaturated Sausages

Similarly, if naturally lean meat were trimmed and used for many sausage-type meat products, the lean-meat product would cost more than the kind currently on the market. On an equal protein basis, however, the costs of the two types of products would be about the same. In essence, the cost of the polyunsaturated products would be increased by an amount equal to the cost of the vegetable oil, plus costs for extra handling in operations, distribution, promotion, and so forth.

There is ample evidence, Rice and Lockhart concluded, that most of the processed foods can be tailored to desired specifications, thanks primarily to the advanced knowledge of food scientists. If there is a demand for new foods, they said, they will be produced.

Comprehensive Health Care Includes Nutrition Help

Clients of Denver's neighborhood health program are bussed twice monthly, after welfare checks arrive, to a discount-type store outside their neighborhood to shop for groceries. A home economist and nutrition aide accompany them to help in food buying, meal planning, and babysitting. The buses are loaned by various community agencies, and the drivers are provided by the welfare department.

Explaining this service, Carol M. Watson, director of the nutrition section of the Denver Department of Health and Hospitals, commented as follows: Our families too often have but one choice to make. They have a small neighborhood store with fairly poor quality of fresh produce, a limited selection of canned goods, and not a large selection of meat cuts. To get the mothers to come on trips to the discount store, we encourage them to bring their children.

Nutrition services, Watson said, are provided in all of the medical care facilities participating in Denver's neighborhood health program. The nutritionist also makes home visits at the convenience of the patient.

The neighborhood health program consists of two large neighborhood health centers, 12 neighborhood health stations (smaller facilities in defined neighborhoods), and three backup hospitals. It is designed, Watson explained, to go beyond the hospital and to provide care through organized health care groups. The staff, assigned on the basis of geography, is paid from several sources of funds. Early in the program's development, a public health nutritionist was hired to integrate nutrition services into the total operation. A nutritionist, a home economist, a dietitian, and nutrition aides are assigned to each neighborhood center.

Role of Nutritionist

The goals of the nutrition section, according to the author, are to promote the best possible health for citizens by helping them learn how to have an adequate diet and how to meet—within their individual preferences and economic abilities—any special dietary needs related to a medical problem. To provide these services, she reported, we nutritionists take a complete diet history on every patient we see to find out his attitudes, what he eats, what he feels he can afford, and what he has to work with. Although this kind of approach takes time, Watson expressed the belief that the knowledge gained prepares the nutrition staff to really help a patient at his level of understanding. We encourage the patient, she said, to continue his good practices as we slowly try to modify those which may not be so good.

Home Economists and Aides

In addition to setting up bimonthly grocery shopping trips for the patients, the home economists have followed up on individual referrals from the nutritionists and have provided detailed counseling on budgeting and food-money management. They have also organized group classes on food preparation and budgeting, Watson reported, and have conducted demonstrations such as one at a community health fair in the summer of 1968 showing how to prepare simple foods.

The nutrition aides are women from the neighborhoods who are trained for specific job needs. They learn, for example, how to do food demonstrations under guidance. We have asked, said Watson, that they be mature homemakers who have had children and have managed a home reasonably well. Watson goes into the homes to interview the applicants. The three nutrition aides presently employed were trained by the home economist in total home management and child care.

Our neighborhood health program, the author concluded, provides an ideal framework for nutrition services to be given in a meaningful and worthwhile way. Nutrition is not a separate part of family life, she said, and in the family-centered health-care program we have an ideal opportunity to provide our services.

How Safe Is Canned Cured Meat?

Canned cured meats receive about one-tenth the thermal processing of other low-acid foods. Yet, according to Hilliard Pivnick and F. S. Thatcher of the Food and Drug Laboratories of the Canadian Department of National Health and Welfare, these meats have, with rare exceptions, an excellent safety record with respect to *Clostridium botulinum.*

One may ask, said the authors, how cured meat differs from other low-acid foods so that it remains safe with a thermal process which is much less than that used for other low-acid foods. (A cured meat, they said, contains sodium chloride and usually also nitrite, nitrate, or both, although there is no requirement for a specific amount of any of these components.) To answer the question about safety, the authors presented the results of their studies of the interrelationships of sodium chloride, sodium nitrite, spore concentration, and the thermal process in preventing formation of *C. botulinum* toxin.

Pork luncheon meat containing various concentrations of sodium chloride, sodium nitrites, and spores of *C. botulinum* was canned and processed to Fo-0.6. (In canning, the authors explained, all time-temperatures are equated to the destructive activity obtained in 1 minute at 250° F. One minute at 250° F. is used as a reference point, and the heat lethality obtained is said to be Fo-1.0.)

Meat devoid of curing salts became toxic, reported Pivnick and Thatcher, if inoculated with only 1 spore per gram. However, meat containing 1 million spores per gram remained nontoxic during 18 months at 30° C. if it contained more than 6.2 percent brine (percent of NaCl in the aqueous phase of the meat), but became toxic if less salt was added. Toxinogenesis could be prevented within limits when the salt was decreased if, concomitantly, the concentration of nitrite was increased. Even 300 ppm of nitrite failed, however, to prevent toxinogenesis when the brine was less than 4.5 percent. Many commercial meats contain less than 4.5 percent brine, the authors said, and most manufacturers add no more than 156 ppm of sodium nitrite.

Pivnick and Thatcher therefore concluded that canned cured meats do not have the same standards of safety as other low-acid foods. Their safety depends, the authors said, on a low population of spores in raw meat, the prevention through the addition of salt of outgrowth of heat-damaged spores, and a still unexplained activity of nitrite. The threat of botulism will remain, they declared, as long as there are no firm guidelines on the concentration of curing salts and the amount of thermal processing. They therefore suggested that perhaps it may be time for representatives of those industries, foundations, and government agencies most concerned to convene a meeting to establish such guidelines.

Dietary Habits of Girls Pregnant at 16 or Under

Comprehensive medical care and supportive services, including nutrition counseling, apparently improve the outcome of pregnancy in girls who conceive at age 16 or younger. Florence Smith, assistant director of the nutrition section of the Chicago Board of Health, and co-authors supported this conclusion by citing results of a comparison of pregnancy outcome in two groups of girls of this age level.

The first group received care as high-risk patients under a special maternity and infant care project of the board. The second was composed of all girls of this age level in Chicago who delivered during the period of review, January 1965 to June 1967. All deliveries of project patients were performed at cooperating hospitals with residency programs in obstetrics. The nonproject patients received prenatal care from private physicians or hospital clinics, or had not received care. Negro patients comprised 92.9 percent of the project patients and 79 percent of the total group.

Differences in pregnancy outcome between patients who were in the project and those not in it were more pronounced among the Negro girls than in the total group. Nonproject Negroes had a prematurity rate of 19.2 as compared with 13.5 for project Negroes. Hebdomadal death rates among the Negro girls were 125 percent higher in the nonproject group than in the project patients.

In Chicago, the rate of births to girls under 16 has risen from 12.0 per 10,000 live births in 1950 to 51.3 per 10,000 in 1966, reported the authors. Pregnancy in the young girl, they said, is of major concern to the health team since increased obstetrical complications are likely in girls in the early teens.

Despite the significance of age in pregnancy outcome, the authors emphasized that the contribution of nutrition to the outcome should not be overlooked. If the girl's diet fails to supply the nutrient needs of adolescence and her intake continues at the same level during pregnancy, the girl and the infant may suffer ill effects.

To obtain objective data on the food habits of these pregnant young girls, a questionnaire on the foods consumed was supplied for each patient interviewed by a nutritionist during the review period. A total of 996 completed and reviewed records thus became available. A rating of "good" for food habits was achieved by 30 percent of the pregnant teenagers, "fair" by 26.4 percent, and "poor" by 43.6 percent. The majority, Smith and co-authors reported, apparently had a fair consumption of proteins of animal origin. A number, however, were following "less than desirable diets." The small amounts of milk and dairy products that some consumed probably indicate low levels of dietary calcium, according to the authors. Ascorbic acid and vitamin A levels appeared to be at

a minimal level in a good many as a result of limited use of fruits and vegetables. This limited use of fruits and vegetables also contributes to the lack of iron in the girls' diets. And lack of iron, the authors pointed out, is of special concern during pregnancy when the need for this element increases.

New Meat Inspection Laws For Consumer Protection

The 1967 Federal Wholesome Meat Act and the 1968 Federal Wholesome Poultry Products Act are steps toward a new nationally uniform meat and poultry inspection program. Dr. R. K. Somers, deputy administrator of the Consumer Protection Program, U.S. Department of Agriculture, expressed this view in discussing the impact of the new meat inspection act on the Federal meat inspection program.

The speaker who followed Somers, Dr. L. R. Crowell, director of the division of meat inspection, New York State Department of Agriculture and Markets, described the impact of the Wholesome Meat Act on his State. Objecting to some of the present provisions for State-Federal cooperation, he pointed out features which he believes a "truly cooperative" Federal-State meat inspection program should include unless we are to have "virtually a complete Federal inspection system."

Impact at Federal Level

Somers said that the two new acts provide the Department of Agriculture with detention and seizure authority so that it can control meat and poultry food products which are moving illegally or have become adulterated or misbranded outside official premises. As of August 15, 1968, nearly 150 detentions involving approximately 1 million pounds of products had been made under the Wholesome Meat Act [as of December 15, 1968, 228 detentions involving 2 million pounds.—R. K. S.]

Preventive sanitation is an important part of the nationally uniform meat and poultry inspection program, according to Somers. Since meat and poultry processing plants are in essence large kitchens, they must be clean, he said, inside and out. Regular sanitation checks and reports are essential. We are also very concerned, he added, that waste disposal does not create a nuisance.

The two new acts, Somers pointed out, provide for full intrastate consumer protection by giving authority for Federal assistance to the States for improvement of their meat and poultry inspection programs to an acceptable level. A significant provision, he stated, is the authority for establishing cooperative inspection programs. This measure provides for Federal financial, advisory, laboratory, and training aid to the States to enable them to meet Federal standards within the required time. For example, said Somers, in calendar year 1968, we expected to provide training in slaughter operations to 600 State inspectors, as well as to 850 Federal inspection personnel.

As of August 15, 1968, the Department of Agriculture had cooperative agreements with 23 States and had completed much of the preliminary work necessary for signing about six more. We believe, said Somers, that we are reaching our objective of a truly cooperative relationship in implementing the new meat inspection law. Progress toward the same objective in a cooperative poultry inspection program should be faster since the procedures have already been formulated. [As of December 15, 1968, the Department had signed cooperative agreements with 29 States. It had approved 39 State meat inspection laws as satisfactory for entering into cooperative inspection agreements; this action, however, does not mean final approval of the laws as being "at least equal to Federal inspection standards." As of December 15, no State had qualified for "equal to" certification."—R. K. S.]

Impact at State Level

Crowell, on the other hand, expressed the belief that changes at both the Federal and State level will be necessary before a "truly cooperative" Federal-State inspection program can be achieved. New York, he reported, was the first State to sign a cooperative agreement with the Department of Agriculture to receive reimbursement of up to 50 percent of the cost of developing and maintaining its meat inspection program at a level at least equal to Federal standards. Yet, he commented, a cooperative inspection program in the true sense of the word still needs to be developed in the State.

A truly cooperative meat (or food) inspection program, Crowell stated, should provide eligibility for all establishments that are operating under equal requirements to participate in interstate commerce. There should also be an interchange of Federal and State inspection personnel, particularly in remote areas where both Federal and State agencies are presently forced to adopt less efficient staffing procedures to maintain separate inspection programs.

Crowell reported that when the Wholesome Meat Act was passed, New York State had 495 plants under inspection. As of October 1, 1968, there were 397. Of these, 42 were granted Federal inspection, 59 discontinued operations requiring Federal inspection, and a small number were brought under inspection for the first time.

But the State inspection program is expanding in another area. Legislative hearings to investigate alleged differences between the meat inspection programs of New York City and New York State resulted in the transfer of responsibility for meat inspection in the city to the State's department of agriculture and markets effective January 1, 1969. A survey indicated that 175 meat inspectors plus supervisory and management personnel will be needed to extend the State program to New York City.

To teach meat inspector trainees procedures and requirements in processed meat inspection, said Crowell, we have contracted with a private firm for programed instruction material. We hope thereby, he commented, to shorten the training time and increase its effectiveness. Federal training centers have been used in training new inspectors in slaughter inspection techniques.

School Health

Avoid Failure Syndrome By Early Intervention

If a child is to be retained in a school grade, apparently the lower the grade—even kindergarten—the better. Children retained in first grade tend to show better achievement than children retained in the second or third grade, according to research conducted by Dr. Carol Lee Griffin, director of pupil personnel services, Quincy (Mass.) Public Schools, and Dr. Helen Reinherz, director of research, Simmons College of Social Work, Boston.

Early Identification

The authors undertook a study of 60 first- to third-grade boys who failed and were repeating a grade. Previous research had shown, they pointed out, that approximately one-half of the general achievement level at grade 12 has been reached by the end of the third grade. Thus, failure to develop positive learning patterns during the first three grades is likely to result in continued failure throughout a child's entire school career.

A large proportion of the boys in the study who had been characterized as "immature" showed "satisfactory" achievement during the retained year, as opposed to children with less evidence of immaturity. Both parents and teachers reported that a number of "immature" children had "matured" after an additional year in the same grade. Most of the parents of failed children had been aware earlier that their children were having problems in school. As the failing child became older, attitudes of parents, teachers, and principals became more negative. An alarming observation, also, said Griffin and Reinherz, was that poor academic progress in the children studied was negatively associated with any contact with guidance counselors or special remedial programs.

Analysis of the reasons why failing children were not referred earlier for special help revealed that they tended not to be referred until the failure syndrome had consolidated—and was difficult or impossible to cure. It became increasingly clear, the authors said, that mental health and other remedial manpower can be deployed effectively only when help is offered at the earliest time possible. A yearly screening or testing program, they suggested, is needed to identify the emotional and educational assets and deficiencies of each child. A youngster with an evolving failure syndrome may then receive remedial help when intervention is most effective.

Study's Impact on Schools

The results of the study provided a vehicle for meaningful dialog with elementary teachers, Griffin and Reinherz pointed out. The teachers became more sensitive to different rates of maturation among children and came to recognize the close relationship between learning and maturation. They therefore began to seek alternatives to the traditional rigidly graded system and began to support more enlightened promotional policies.

The study led teachers and administrators to set up "transition" classes to bridge the gap between one grade and the next. Transition classes are attempts to allow children to proceed at their own rates and to experience success. Such programs help prevent the development of failure syndromes in children who require a longer maturation period than others. Differences in maturation rates can also be handled through innovative and flexible classroom groupings, said the authors. In schools having two or more classes at each grade level, children can be regrouped in accordance with their individual needs in a variety of ways. Each child can thus be provided with an environment for learning that allows him a greater opportunity to develop a sense of mastery and proficiency as a learner.

These methods, however, break down when in the following year the child still has not caught up with his peers and does not meet the requirements of the next grade. These problems, the authors pointed out, suggest the need for an individualized curriculum in which each child moves at his own rate and is not compared with others or judged by a predetermined standard.

Identifying Pupil at Risk of Future Learning Problem

If, instead of a single etiological factor such as a brain damage syndrome, we assume that a constellation of behavioral characteristics affects learning to different degrees and in different ways, perhaps, said Dr. John M. Lampe, we can go ahead and achieve some pragmatic solutions to learning and behavioral problems. The author, who is a school physician of the public schools of Denver, Colo., pointed out, "at the risk of generalizing and oversimplifying," that some investigators have concluded that neurological, electroencephalographic, psychometric, behavioral, and psychophysiologic factors do not always correlate. One investigator even has gone as far as to say there is no such thing as a brain damage syndrome.

Method

Therefore, in search of pragmatic solutions, the staff of the Public Health Services Department of the Denver Public Schools undertook a study of early identification of the child considered to be at risk of neurogenic learning disorders. Specifically, said Lampe, we hoped to determine whether a relationship existed between identifications made by a nurse using techniques familiar to her and identifications made by a classroom teacher based upon her observations and experience.

The study, carried out in 1967–68, involved 585 pupils in the kindergartens of six elementary schools. In two schools, the school nurses conducted a personal interview with the parents of each enrolling kindergarten pupil. This interview was structured around a questionnaire designed to elicit information considered pertinent in identifying children deemed to be at risk in regard to future learning. In two of the

four other schools, nurses asked the parents to fill out the questionnaire but did not interview them or further communicate with them about the matter. The remaining two schools served as controls, and parents were given the enrollment forms ordinarily used.

Each nurse made a determination for each kindergarten pupil in her school as to whether or not he would encounter learning difficulty. After the first semester, the kindergarten teachers were asked to make the same dichotomous judgments for each pupil in their classes. At the close of the school year, the teachers again were asked to make a judgment, this time indicating (on a scale from 1 to 5, with 1 meaning "severe" and 5 "no difficulty") the degree of difficulty each child might be expected to encounter in the future.

With the teachers' judgments as the criterion, the correlations between their judgments and those of the nurses for each set of two schools were calculated (see table). The significance of the difference between these three sets of correlation coefficients was then calculated in order to determine which of the three judging methods best predicted future educational difficulties.

Results

The highest correlations obtained were between the teachers' first and second ratings. The correlations between the nurses' and the teachers' judgments were highest among the interview group when the teachers' second rating on the 5-point scale was used as the criterion. The correlation coefficient between the nurses' judgments and the teachers' second judgments (0.09) for the control group and for the interviewed group (0.32) were found to be significantly different at the 0.05 level. No significant differences were found for the corresponding coefficients among the questionnaire and control groups or among the questionnaire and interview groups. Thus, the interview method determined potential pupil educational difficulties better than the enrollment forms presently in use.

Legislators Try to Meet Health Education Needs

Critical health legislation which passed the New York State Senate and Assembly on May 2, 1967, is based on a recognition that the study of health extends to the study of man as he interacts with his environment. Epidemiology is to be used in studying health problems such as smoking and addiction to drugs.

New York State Senator Edward J. Speno of Mineola, L.I., who sponsored the legislation, described the measure and its origin. Implementation, he said, requires the cooperative effort of every major health organization in the State which supports the school health education program. Yet, he noted, the average educator may well ask, "How come legislators are getting involved in curriculum planning?"

In explanation, Speno narrated the history of the new legislation. Smoking and abuse of drugs and alcohol, he said, have reached such epidemic proportions among America's youth that legislators are obliged to provide laws and funds to cope with these health hazards. First, however, they need to know what is already being done to ameliorate the problems. An investigation of curricular offerings in health education revealed a void too serious and too glaring to perpetuate, according to Speno. The legislators found, he said, that attention to health education in the schools is too often cursory, token, scattered and, in some cases, even reluctant. In introducing legislation to fight illness and disease among young people, said the senator, the legislators are serving as catalysts, not intruders.

Specifically, the author stated, the New York State legislation provides $250,000 yearly to underwrite a 5-year program concerned with such critical health problems of young people as cigarette smoking, illicit use of drugs and narcotics, and excessive use of alcohol. The thrust of the legislation is threefold—teacher training, curriculum change, and adult and community information.

The bill will ask colleges to expand their curricular commitments to health education by enlarging existing departments in this field and developing new ones. It calls for the establishment of statewide on-the-job training programs for teachers. Such programs will enable school districts in the State to establish local health training programs for their teachers leading to certification by the State department of education as health education teachers.

For the junior and senior high schools in the State literally 2,500 highly trained health education teachers are needed at the very outset. Yet, last year only 200 health education teachers were graduated from New York colleges and universities, Speno pointed out. In the elementary schools, he said, the average teacher is no better prepared to teach about health than the average

Correlation coefficients between judgments of teachers and nurses in respect to 585 children

Study groups by persons making judgments	Nurse	Teacher (1st rating)	Teacher (2d rating)
Interview group (211 children):			
Nurse	1.00	0.18	0.32
Teacher (1st rating)		1.00	.55
Teacher (2d rating)			1.00
Questionnaire group (163 children):			
Nurse	1.00	.28	.19
Teacher (1st rating)		1.00	.48
Teacher (2d rating)			1.00
Control group (211 children):			
Nurse	1.00	.11	.09
Teacher (1st rating)		1.00	.34
Teacher (2d rating)			1.00

housewife. To close this information gap, 21 video tapes dealing with sociological health problems, environmental and public health, and physical health have been produced. No college credit is given to the elementary teachers, but salary increments are offered.

In response to the new legislation, said the author, a State regulation on health education has been revised to require a one-semester course at the junior and senior high school levels, in addition to health instruction at the elementary level. The theory, concluded the senator, is that education to prevent the development of critical health hazards is more successful than rehabilitation.

Show Students Better Ways To Enrich Life Than Drugs

What we need to do in the schools, declared Marvin R. Levy, director of the drug abuse education project of the American Association for Health, Physical Education, and Recreation, National Education Association, is to provide students with alternatives to drug use by which they can attain satisfaction. Instead of being pompously critical of student drug abuse, he said, we should demonstrate that there are better and less dangerous ways to experience the richness of living than ingesting chemicals.

If, continued the author, we are truly to educate students in the fullest sense, we must help them to find these other ways. The school must strive to help the student become a human being capable of making rational decisions since, in the final analysis, the decision about drugs still rests with him as an individual.

Levy expressed the belief that every effort must be made to create an honest, free, and open setting—a milieu in which a student may examine alternatives and make decisions that will result in the actions that will be best for him and those he affects. Any urgency that we may feel must be redirected, Levy stated, toward restructuring the school environment with a view to making each student's experience relevant for him in terms of his own needs, interests, and aspirations. It would be a calamity, the author declared, if we were to allow the urgency we feel to result in school policies which punish rather than support, alienate rather than enlist, frustrate rather than hearten, injure rather than pardon and which sow hatred rather than love, doubt rather than hope, and darkness rather than light.

In teaching about drugs, encounters can be planned, said Levy, with resource persons from the fields of sociology, psychology, psychiatry, and treatment and rehabilitation. Schools should provide teachers time in the school day for discussion with students of topics of mutual concern. No agenda, no curriculum is necessary, he pointed out—just the time for free exchange of ideas. Starter questions can be used to get discussions rolling and to serve as a springboard for meaningful encounters. Schools might well provide a setting, he concluded, where students can come to talk to each other and to adults regarding matters of concern to them.

At Least One Child in Ten Has Learning Disability

At least 11 percent of the more than 18,000 elementary pupils in Berkshire County, Mass., are working below their potential or have possible learning disabilities, according to a recent survey of their teachers. Moreover, Dr. Eugene Talbot, senior psychologist at Austen Riggs Center, Inc., Stockbridge, Mass., expressed the belief that this percentage might have been twice as high had the teachers understood that they were to list pupils already receiving remedial help as well as those in need of it.

The survey was part of a pilot study to determine the number and characteristics of elementary school children who, though of average intelligence or above, are regarded as being in difficulty educationally and to learn what their teachers consider important influences or explanations. The survey, conducted on a limited budget of $1,000, was sponsored by a local united community service organization cooperating with a multidiscipline advisory group.

The teacher was asked to identify the condition or difficulty and its degree that made her suspect a learning disability. Then, for each of 15 problem areas, the teacher was asked to check the degree of difficulty (for example, motor coordination). She was also urged to comment. With followup calls and "mild coercion" in a few instances, a remarkable 100 percent return of questionnaires was achieved, Talbot reported, from the 30 distinct school organizations and 73 different elementary schools in the county.

Results

Approximately equal numbers of pupils in each of the six elementary grades were listed as working below potential or having possible learning disabilities. This result may indicate, said Talbot, that current remedial approaches are relatively ineffective. Boys listed outnumbered girls 2½ to 1. Reading was the most frequent area of disability—81 percent of the children listed by the teachers were said to have trouble with reading. Arithmetic was not far behind—76 percent of the listed pupils, followed by spelling—69 percent. Eighty-four percent of the children listed were described as having difficulties in attention span and concentration. About 50 percent were judged to be hyperactive and nervous, and 50 percent were considered slightly to significantly immature. Thirty percent were reported to have from some to significant difficulty in motor coordination.

Teachers wrote comments about approximately 950 of the 1,989 children they listed as having educational problems. A frequent observation was that a child was not learning because he was "poorly motivated" or a "poor worker" or "lazy or slow." Teachers who wrote such a comment tended to express little hope that the child could be helped. Physical difficulties, particularly poor eyesight, were often noted. "Immature" was a favorite adjective. The teachers related the school difficulties of more than one-third of the 1,989 children in part to home problems. The poor self-image of some of the children troubled a number of teachers.

Based on this survey, concluded Talbot, the prevalence of educational disabilities is dangerously high. All of us whose professions bear upon the growth, development, and learning of children, he said, must pool our knowledge and efforts in a search for social and educational inventions that will give each child an optimal opportunity to learn and to grow.

Ounce of Cure Is Worth Pound of Prevention

The key principle in effectiveness, Dr. Allan Y. Cohen, assistant professor of psychology, John F. Kennedy University, Martinez, Calif., told a panel on preventive approaches to drug abuse, is not in preventing drug experimentation—which may be inevitable. It is rather in preventing drug abuse—which is preventable. This result can be achieved, he said, by shifting the educative focus to decision making about one's use of drugs, a shift which implies concentration on the criteria for analyzing drug effects.

Latest 1968 estimates suggest that up to 70 to 75 percent of graduating high school seniors in metropolitan urban areas, especially on the east and west coasts, have tried illicit drugs ranging from barbiturates and stimulants to mild and strong hallucinogens. These figures do not mean, Cohen cautioned, that the majority of our young people are drug users, but that they have experimented with these popular substances.

To prevent experimentation, the author stated, seems close to sheer fantasy. Almost everyone uses one kind of drug or another, he pointed out. People cannot be effectively frightened away. Attitudes about drugs are an individual matter. Effective drug education should make their abuse less desirable, said the author. Young people should be taught about drugs in such a way that they can rationalize their discontinuance of harmful ones at any stage of drug experimentation.

Emphasis should be centered, Cohen believes, on such topics as "How to decide when you are using too much." This approach, he said, will make the potential marihuana user, for example, "super-alert" to side effects which he now ignores because he is so busy defending marihuana's nonexistence as a narcotic. Such an orientation, Cohen stated, can be as effective with users as pre-users. It gives people a chance to cut down or stop on their own volition instead of laughing inwardly at the horrors of drug use that are put forth in the all-or-nothing approach. Students respond amazingly well, the author reported, when approached with the general line, "Obviously you can take drugs if you decide to and we are in no position to tell you that you shouldn't. However, here are some things to keep in mind. . ."

Congruent with this decision-making model, Cohen added, is emphasis on the reasons why people take drugs and whether or not drugs help them to get what they really want.

Term "Drug Abuse" Applies To All Kinds of Drugs

The most publicized incidents of drug abuse are those involving young people, while the more complex aspects of the problem receive little attention. This is the belief of Jack E. Gross, director of Project RFD (Respect for Drugs) and of student and community relations at the College of Pharmaceutical Sciences, Columbia University, New York City. Project RFD is sponsored by the Department of Justice, Bureau of Narcotics and Dangerous Drugs (contract J-68-28).

We must be equally if not more concerned, Gross stated, about the abuse of legally prescribed and proprietary medications. He cited the following example. Upon the suggestion of her physician, a young woman had been taking a medication for several years at the onset of a cold. One evening she gave a friend some of the tablets because she recognized symptoms similar to her own. Within a half hour, the friend was wheezing and having difficulty breathing. Before an ambulance could be summoned, the friend had died. The drug used was penicillin; the girl had experienced anaphylactic shock. This is an example of intentional drug abuse, declared the author. By definition, intentional drug abuse implies a willingness to take the drug, a lack of knowledge regarding the drug's full range of effects, and the absence of a properly diagnosed disease.

Gross suggested that pharmacists and physicians, who have a wealth of knowledge on drugs, should serve as resource speakers for educators who must arrange programs on drugs. Teachers who have a background in the biological sciences, he also suggested, could easily strengthen their command of pharmacology, and become drug-education specialists in their schools.

Youngsters should be informed that many commonly used drugs can be far more dangerous physiologically than narcotics, stimulants, and depressants, said the author. Nicotine and alcohol are both more toxic than heroin when used over long periods. In fact, deaths caused by the abuse of drugs are rarely brought about by the drugs themselves, said Gross, but by related factors. Addicts may become ill as the result of using unsterile equipment for administering drugs. LSD and methamphetamine are two drugs commonly manufactured in home laboratories without the sophisticated equipment necessary to purify and test the end product.

Because young people usually take drugs in order to "feel good," when we tell them not to use drugs for this purpose, we are asking them to change their behavior, Gross commented. But it is unreasonable, he said, to ask people to make difficult changes without providing a new way to deal with "bad feelings." Perhaps, he suggested, educators should spend time working in groups with one another, trying to change some of their own negative behavior and attitudes. People who have become stagnant and closed to change have probably forgotten what frustrations and hurts are entailed in changing oneself. The person who is willing to share emotional experiences and feelings with young people, said Gross, is the person who will be able to communicate.

Gross reported that the College of Pharmaceutical Sciences is training community pharmacists to serve as resource speakers to aid in commu-

nity and school education programs on drugs. The college's Project RFD also stresses the importance of having all pharmacists maintain records on medications of families to assist in the detection and prevention of the abuse of drugs in general. Pharmacists are also being asked, he said, to post information about narcotic control agencies and to use their pharmacies as community drug information centers.

Distribution of Absences Among School Children

A scientific base for current school nursing practices appears to be generally lacking, stated nurse consultant Dolores Basco, Division of Nursing, Bureau of Health Manpower, National Institutes of Health. She presented a report by Dr. Doris E. Roberts, chief of the Community Nursing Branch of the division, and four co-authors (including Basco). It described the first phase of the division's longitudinal study of absences and health problems of school children.

The study was undertaken in 1967 with the cooperation of the Delaware State Department of Public Instruction and the Delaware State Board of Health. Its purposes, Basco explained, are to help establish a scientific base for nursing practices by identifying the characteristics of groups in the school population who are at high risk of absence and illness and to design and test new patterns of nursing service for these groups. The results are expected to contribute to the prevention, detection, treatment, and correction of health defects in school populations.

For the first phase of this undertaking, data were abstracted from 1966–67 and 1967–68 school health records and school cumulative and attendance records for a random stratified sample of 2,080 pupils in grades 1, 4, 7, and 10 of Delaware schools.

These data were related to 23 selected variables pertaining to the pupil's age, sex, race, ordinal position, mobility, grade point average, height and weight, immunization status, and reported health conditions; also, to the size of household and to the occupation, marital status, education, and religion of his parents; and to the characteristics of the participating schools, that is, their size, urban or rural location, and their proportion of white and nonwhite students.

Preliminary analysis of the data suggests high absence is associated with having a low grade point average, being overage for grade, having low socioeconomic status, coming from a broken home, attending school in a large urban area, being in the 10th grade, and being nonwhite. Thus, liability to absence from school was found to be a highly complex phenomenon stemming from interacting social, educational, and demographic conditions.

Attendance patterns of the study population were remarkably consistent over a 2-year period, reported Basco, and these data made it possible to prepare a statistical model which can be used to predict the liability to absence of an individual pupil. Thus, commented the author, we have a measure to use in evaluating the possible effects of a changed pattern of nursing practice.

Another point Basco brought out is that, among young men unqualified for military service, many were found to have health defects which had gone uncorrected during their school years. According to the National Health Survey, the 6–16 year age groups had almost 330 million days of restricted activity associated with acute illness and 60 million days associated with injury from June 1966 to July 1967. Also, a review of the pertinent literature for characteristics to be included in the study revealed that information about the kinds of pupils who are most vulnerable to ill health is sparse.

Reporting of Child Abuse By School Personnel

Mandatory reporting by school personnel of suspected cases of child abuse has been very productive in identifying these children, according to Dr. C. George Murdock, director of the school health service of Syracuse, N.Y.

The New York State law on child abuse, which became effective July 1, 1964, makes the reporting of any suspected case mandatory for physicians, dentists, osteopaths or the superintendent, manager, or person in charge of any hospital, sanitarium, or other institution where such a child is being treated. Legal immunity is granted for such reporting. Local and State legal counsel, said Murdock, have interpreted the phrase "other institution" to include schools.

The school program has been the greatest single source of uncovering child abuse in Syracuse, Murdock reported. It has been invaluable, he said, in identifying abused children of school age since, in most cases, the injuries are not severe enough to necessitate care by a physician.

Methods and Results

Two full-time social workers from the children's division of the county department of social welfare were assigned to investigate suspected cases of child abuse in Syracuse. The workers subsequently referred cases to the local family court if punitive action was deemed necessary. A central registry was established to provide for other reports from different sources, such as physicians and hospitals. This cumulative file, said Murdock, often revealed repeated abuse of the same child or other siblings and strengthened the position of the children's division when court action was deemed necessary. The author expressed the belief that central registers at State and national levels should be established because of the extreme mobility of the families involved in child abuse.

In the school year 1964–65, 18 cases of suspected child abuse were reported through the Syracuse school system; in 1965–66, 20 cases; in 1966–67, 24 cases; and in 1967–68, 18 cases. The cases involved children from 5 to 12 years, but the younger age groups were predominant, probably, suggested the author, because younger children have a predilection to involvement in provocative situations.

The injuries sustained consisted mainly of ecchymosis and welts inflicted in whippings, but there were also lacerations caused by knives or

other sharp objects. The perpetrators were frequently found to be emotionally disturbed, mentally handicapped, or were chronic alcoholics. When a stepparent was involved, his relationship to the real parent often was by common law only and impermanent. Almost all cases came from the lower socioeconomic group, contrary to what other investigators have found.

The children's division returns a copy of each report on the disposition of the case to the person who made the initial referral. This procedure helps maintain interest in the program and gives the person referring the case a sense of accomplishment, Murdock commented.

Possible Problems

Among the difficulties that may be encountered in carrying out the child protection program, the author cited the reluctance of school personnel to report suspected cases for fear of legal involvement and court appearances as well as inadequate cooperation between the school system and the investigating agency. The reluctance to report can be overcome, he noted, by a proper presentation of the problem, especially in a State in which reporting is mandatory. Frequent exchange of information between the school system and the investigation agency should be encouraged, he said, not only in the initial reporting but also in the continued observation of cases of child abuse.

Murdock pointed out that the recommendations of the Committee on Infant and Pre-School Child of the American Academy of Pediatrics regarding child abuse are excellent. He would only add "and school personnel and school systems" to "physicians and hospitals" in the statements.

Radiological Health

Stress Need for Control Of X-ray Beam Sizes

The projected increase in the genetically significant radiation dose to the U.S. population within 10 years may be two to four times greater than the estimated 1964 levels and three to eight times greater by 1990 unless improvements are made in controlling X-ray beam sizes, reported Norman S. Kessner and Morton L. Brown of the Public Health Service's Bureau of Radiological Health.

The rise in the genetically significant dose is projected on the basis of anticipated yearly increases in the use of X-rays for medical diagnosis in the United States. The biological consequences of the projected genetically significant dose rise are not assessable on the basis of present knowledge, according to the authors.

The genetically significant dose is derived from a formula used by the United Nations Scientific Committee on Effects of Atomic Radiation to estimate the radiation exposure of genetic import for persons of childbearing age. A Bureau study of population exposure to X-rays during 1964 placed the annual genetic dose per person from medical X-ray examinations at 55 millirads, or 55 thousandths of a rad, the unit of radiation dose. The authors pointed out that the average genetically significant dose from background radiation is estimated to be 125 millirads.

The projections also indicate that if complete control of X-ray beam sizes can be achieved by 1975, the genetically significant dose for that year will be lower than that estimated for 1964 despite continued growth in the application of X-rays in medical diagnosis.

In more than half of the X-ray examinations performed in 1964, X-ray beams were larger than necessary to expose the film. Bureau estimates show that the genetically significant dose in 1964 might have been 60 percent lower if all examinations had been made with X-ray beams restricted to minimum required sizes, the authors stated.

The Department of Health, Education, and Welfare has applied for a patent on an automatic collimator developed by the Bureau for automatically narrowing X-ray beams to film size or smaller. X-ray equipment manufacturers are also developing similar devices.

Effects of Radiation On Urban Wastewaters

In highly urbanized areas, increasing population densities and industrial activities are sorely pressing the present capabilities of biological treatment of wastewater effluents. Satisfactory water quality can be maintained in such areas only if more efficient and advanced wastewater treatment methods are used to supplement existing capabilities. Thus, research was undertaken to evaluate the potential benefits of treating municipal and industrial wastes with ionizing radiation. Part of that evaluation was reported by Dr. C. J. Touhill and co-authors from the Pacific Northwest Laboratory, Battelle Memorial Institute, Richland, Wash.

Two major objectives of the research were (*a*) to investigate the effects of radiation on industrial effluents containing cyanides, phenols, and petroleum-related wastes and (*b*) to investigate the effects of radiation on bacteria and viruses commonly found in municipal wastewater streams. The experiments were conducted in static and dynamic environments, according to the authors. The parameters studied were pressure, temperature, catalysts, gaseous environment, concentration, radiation dose rate, and total radiation exposure. The effectiveness of radiation in treating wastewater was assessed by determination of noxious chemical degradation and mirco-organism kill.

The results of the experiments showed that both cyanides and phenols could be readily degraded to innocuous end products under certain conditions. On the other hand, the degradation of petroleum-related wastes was quite limited at total radiation exposures of less than 10^6 roentgens. Cyanide degradation is highly dose-rate dependent, while phenol destruction is enhanced by aeration during irradiation, the authors reported.

The experimental results also led

to the conclusion that the effect of radiation dose rate does not significantly influence the degree of either bacterial or viral kill. Rather, the authors pointed out, organism kill is principally a function of total radiation exposure.

Organism kill curves were developed for total counts, coliforms, *Escherichia coli* phage plaques, enterococci, and spores as a function of radiation dose rate and total exposure. At a total dose of 2.5×10^5 rads, the following approximate percentages were obtained: total counts, 99.9 percent; coliforms, 100 percent; enterococci, 100 percent; spores, 92 percent; and *E. coli* phages, 100 percent.

The authors noted that the results of the research have been used as a basis for a conceptual design of the nation's first full-scale wastewater irradiation facility.

Dose Reduction by Using Electronic Radiographs

To achieve for future populations a distinct reduction in the contribution of medical X-ray exposures to the genetically significant dose, new concepts of diagnostic X-ray visualization and utilization must be generated, developed, and clinically evaluated. For example, recent developments in single-frame television X-ray image storage provide a basis for "electronic radiography" systems which would permit a marked reduction in radiation exposure to both patients and personnel, according to William B. Miller, Jr., who is conducting contract studies at Emory University School of Medicine for the Public Health Service's Bureau of Radiological Health.

By combining the image integration capability of the television camera tube with a synchronized electronic memory, a continuously displayed television image from a conventional fluoroscopic image intensifier can be produced with a single low-intensity X-ray exposure of one-sixtieth to one-tenth second. These images may be presented individually or at a predetermined sequence rate.

Electronic radiographic systems may be designed for both fluoroscopic and radiographic techniques. In many situations, continuous fluoroscopy can be replaced by single or sequence instantaneous electronic radiographs with one-hundredth to one five-hundredth the normal fluoroscopic radiation exposure. In certain radiographic procedures, acceptable images may be obtained with 1 to 2 milliroentgens per exposure or about one five-hundredth that required for a film radiograph.

Holds M.D.'s Responsible For Wise Use of X-rays

Presenting some of the concepts that define judgment in the use of diagnostic radiology in medicine, Dr. William S. Cole, Bureau of Radiological Health, Public Health Service, said that such use is the responsibility of the physician. Ideally, he continued, radiology should be a consultative procedure in which the referring practitioner discusses with the radiologist the indications for an examination of his patient. However, the scarcity of radiologists, by number as well as location, prevents this highly desirable procedure from being a fact in medical communities. As a result of this scarcity, the indications for applying ionizing radiation and the frequency of reexamination must be determined by the referring physician. Therefore, Cole said, this physician's judgment should be influenced by a thorough knowledge of the benefits to be gained by the procedure versus the potential risk to his patient.

A radiological examination must not be used as a substitute for proper history and physical examination, Cole stressed. It should be considered a means of substantiating a diagnosis rather than a means of determining a diagnosis by exclusion. A physician must not deny radiological examination when it is indicated; however, Cole recommended, he should discourage the occasional patient who demands an X-ray without some relation to possible pathology.

Obviously, education in the correct use of ionizing radiation should begin in medical school, Cole stated. Only through a continuing process of education is the practicing physician able to appreciate and apply the information available from modern sophisticated radiological procedures. Transfer of this kind of knowledge from the academic institutions to the practitioner is one of the most difficult problems in the continuing education field.

Research into the productivity of specific examinations such as fluoroscopy, diagnostic procedures during pregnancy, chest X-rays, and preemployment examinations is necessary to determine which should be requested and which should not be requested in a given medical situation, Cole proposed. An example, he pointed out, is determination of the productivity of preemployment X-rays of the lower back. Radiographic examination of the lumbar spine and the bony pelvis should not be a routine procedure. It should be limited to persons with a definite history and physical findings of lower back instability. When X-ray examination is indicated, Cole recommended that it be performed with precise collimation, proper selection of film size, and careful gonadal shielding.

A physician's reason for requesting a radiographic examination may appear to be intuitive, but it actually reflects a breadth of knowledge and experience in medicine. This process, Cole concluded, may well define clinical judgment.

Try Computer Methods in Hospital X-ray Department

A detailed study of diagnostic radiology functions in a hospital identified two major problems—reporting of X-ray findings and locating X-ray films—which appeared amenable to the application of computer techniques. Thus, said Dr. Stanley I. Margulies of Johns Hopkins Hospital and Joseph N. Gitlin of the Public Health Service's Bureau of Radiological Health, a Bureau-supported pilot study was conducted at the hospital to determine the feasibility of using computer techniques in the X-ray department.

A system was designed to "automate" the reporting of X-ray findings and to provide information on the location of X-ray films within the

hospital. A coded radiology lexicon containing pathological terms and related anatomical sites was developed and programed for the immediate printing of an X-ray report and for future retrieval. The remote terminal used in the pilot study consisted of a card-reader to record basic patient and examination data, a matrix keyboard to transmit the pathological and anatomical statements by the radiologist, and a printer to produce copies of the report. To facilitate film library control, a random access file was prepared which contains patient identification and examination data including the type of X-ray procedure, the date of examination, and the file location of portfolios for each patient examined since July 1965 at Johns Hopkins Hospital.

The design of the demonstration project, which is now underway, is based on the experience gained in the pilot study conducted during the first 6 months of 1968. Efforts are being directed at the collection of data to measure the efficiency and effectiveness of the system, as well as recording subjective impressions of the hardware and software used in the design.

A major objective of the project, the authors reported, is to determine the adaptability of such a system for use at other hospital centers which have similar operational problems. This adaptation would permit the establishment of a data bank for research in diagnostic radiology and for the production of current information on X-ray practice and trends in patient exposure for public health control programs. It is also anticipated that the protocol developed in the demonstration project for utilizing data generated by the system will be useful for improving professional and technical training and clerical management within radiology departments.

Analytical X-ray Equipment: Safety Recommendations

Recent studies show that a significant number of reported radiation injuries have resulted from accidents involving X-ray diffraction and spectographic equipment. For a further evaluation of the potential hazards associated with this equipment, the Public Health Service's Bureau of Radiological Health and the Pennsylvania Department of Health conducted a joint survey of 42 analytical X-ray units. The recommendations and results of the survey were presented by Thomas M. Moore of the Bureau and Donald J. McDonald of the health department.

The recommendations deal with administrative responsibilities, operating procedures, personnel and area monitoring, safety engineering, and special requirements for research installations. The primary proposals in the recommendations are (*a*) a radiation protection supervisor be designated, (*b*) the equipment be made safer either by complete enclosure of the primary X-ray beam or a system of interlocks to prevent radiation exposure of employees, and (*c*) the machines be monitored with appropriate survey instruments to detect radiation leakage.

Nuclear Medicine Strives For ^{131}I Dose Reduction

From the beginning, the nuclear medicine field has been commendably "dose conscious" in its use of radionuclides. Minimal doses necessary to obtain valid information are used, stated Dr. Henry N. Wellman, Bureau of Radiological Health, Public Health Service. The high-dose radionuclides, such as mercury-203, that were formerly used have been abandoned in favor of the use of lower dose radionuclides such as mercury-197 or, more recently, technetium-99m. The use of short-lived radionuclides plus advanced instrumentation has reduced considerably absorbed doses and markedly improved resulting information.

The majority of procedures, and thus the bulk of the absorbed dose, in nuclear medicine still involves the use of iodine-131, especially for thyroid studies, Wellman reported. The Bureau has actively pursued a research and development program to make production and use of iodine-123 practicable and economical, he continued.

Iodine-123 is probably the most ideal radioisotope of iodine with an optimum half-life and with a pure gamma photon emission. The Bureau has developed a generator system that uses cyclotron-produced xenon-123, for subsequent decay to iodine-123, according to Wellman. The system promises to be a means of making iodine-123 readily available. Use of iodine-123 instead of iodine-131 will reduce the dose by a factor of 100. In addition, iodine-123 used with a special thyroid uptake system developed by the Bureau can result in a dose reduction by a factor of 10,000.

Dose assessment also has been of continuing concern to nuclear medicine. The Society of Nuclear Medicine, under a contract with the Bureau of Radiological Health, has formed the Medical Internal Radiation Dose Committee to provide the best data on absorbed doses from radiopharmaceuticals. The Bureau is conducting further programs, especially long term profile-scan-whole-body counting, to assess the biological behavior of radiopharmaceuticals, Wellman reported.

Standards for Control of Public Radiation Exposure

The identification of health protection criteria, based on observed dose effects relationships, continues to be one of the most pressing problems in developing meaningful guidelines and standards for the control of the public's radiation exposure, stated Donald L. Snow, Bureau of Radiological Health, Public Health Service. In the absence of such criteria, experience-based standards, directed toward the control of equipment, techniques, and required levels of radiation workers' technological training have traditionally supplied these deficiencies.

Advances in nuclear, other ionizing, and nonionizing radiation technologies as they are being applied and projected to a variety of consumer products are forcing radiation protection personnel to review their present standards' guidance for adequacy in resolving problems arising from existing and emerging sources of radiation exposure.

Standards must be unambiguous, and a reproducible means of meas-

urement must be available to insure that each standard is being met, Snow said. If ionizing radiation is involved, emission standards for electronic products must be developed with knowledge of the probabilities of cumulative radiation risks to individuals or a population group from a variety of radiation sources.

Four broad categories of needs for present standards for controlling radiation exposure of the public are, according to Snow: (*a*) new or more exact risk criteria in order to define or more precisely establish somatic or genetic damage relationships, (*b*) further guidance on setting regulatory standards for ionizing radiation, (*c*) additional instrumentation, data collection methodology, and procedures to assess radiation emissions from electronic products, and (*d*) performance standards for electronic and other consumer products.

Mental Health

Intolerant Society Blamed For Alienation of Youth

Why are children in the suburbs growing up alienated from the American way of life? Dr. Victor Eisner said that the fault is not in the children, nor for the most part in their struggling and bewildered parents. The fault is in our intolerant society.

The intolerance now centers in the all-white suburbs in which the population is homogeneous. The intolerance is not only racial but extends to almost any deviation from the norm. The boundaries of the American way of life have become so narrow that we have excluded our own children, Eisner maintained.

The barrier we have set up between adults and adolescents has three component parts: segregation by age, institutionalized social life, and a lack of alternate pathways to success.

The barrier to participation in adult life is the major cause of alienation of middle-class youth, he declared. Like the lower-class Negro adolescents, the middle-class white adolescent is isolated from the adult role models whom our culture considers most appropriate. The Negro, who is allowed more freedom, finds his role models in the pool halls and streets. The suburban white boy may find his in literature, on television, in his school, or elsewhere, but (again like the Negro) his role model cannot be a man at work because the boy is not allowed to enter the world of work. Both Negro and white adolescents try out various roles among their contemporaries, said Eisner, but the suburban white boy's isolation from adults makes him especially prone to develop his own culture rather than to conform to the culture around him as the Negro can.

Thus, both Negroes and suburban adolescents, excluded from a world they want to enter and isolated from appropriate role models, become alienated and eventually reject the very world they had tried to enter. The Negro rejects the white world, and the suburban adolescent rejects the adult world. The economic and social consequences differ, but the psychological situation is similar.

Our restrictions on adolescents are seen not only in delinquency statistics but in the development of "youth cultures," he pointed out. The best answer is not to punish rebellious youth but to find a place for them in the conventional world where they can achieve a measure of self-fulfillment. We must devise mechanisms whereby youth can make its options known to adults, allow adolescents the opportunity to make their own decisions on matters that affect them, even allow them the option of making decisions which we do not like, Eisner urged. We need mechanisms for entering adult life (similar to an apprenticeship system) which can serve as alternatives to conventional education.

Alienation of middle-class youth would not disappear if we allowed teenagers to participate in adult activities and if we provided an alternative pathway to a working life. But these steps would remove much of the pressure which is driving our children into nonconformity, he predicted.

We must start the task of devising new patterns of life which will bring adolescents, as well as Negroes and other excluded groups, into the mainstream of American culture, said Eisner.

Nurses Provide Counseling Without Traditional Team

By using the principle of parsimony—"the best care for the most with the least by the fewest"—Dr. Leonard T. Maholick and Josephine Graham, registered nurse, of the Bradley Center, Inc., Columbus, Ga., reported that a broad spectrum of helping services can be delivered to troubled people without the full-time presence of the traditional mental health team. Services are given by an on-the-scene nurse counselor at the local health department and an outside consultant.

A group of six public health nurses have been doing this systematically since 1964, they reported. In 1967, devoting one-fourth of their time to mental health work, they conducted 7,800 counseling interviews with patients and their families plus 1,000 patient contacts in 175 group counseling sessions. The nurses handled 245 new and reopened cases in 1967 and maintained an average monthly caseload of 303. Less than $24 per patient was spent for the services of consulting psychiatrists 3 days a month and a psychologist 2 days a month.

The authors gave the case history of a 28-year-old beautician who attempted suicide because of family troubles. She lives in a rural community 100 miles from any psychiatric resources. The small general hospital did not admit psychiatric cases, the family could not afford a private hospital, and the husband opposed commitment to a State institution. A compromise was reached: home care and a trial of counseling at the personal problem center of the local health department.

Over 14 weeks, the treatment included: an intake interview; four 30-minute interviews with the nurse;

1 hour with the psychiatrist for evaluation; six individual counseling sessions with the nurse; another psychiatrist appointment for half an hour; 6 hours of group counseling weekly; a 20-minute appointment with the psychiatrist; 6 hours of group activities weekly; and then a 30-minute interview with the psychiatrist for possible termination and aftercare. The patient was much improved and began to resume her work as a beautician.

Nine months after the suicide attempt, the patient returned for a short visit with the nurse. The level of improvement was being maintained without medication. The nurse scheduled a 10-minute appointment with the psychiatrist for reevaluation. His recommendation was discharge to care of general practitioner, condition improved, and further care not indicated.

Psychiatric Consultation For Local Welfare Center

The collaborative development of a psychiatric consultation and mental health education program for a local welfare center with a staff of 250 in New York City was described by Dr. Florence Liben of the Division of Community and Social Psychiatry and the Department of Psychiatry, Columbia University.

Cooperating agencies included the New York City Community Mental Health Board, the city welfare department, the New York State Psychiatric Institute, and Columbia's Division of Community and Social Psychiatry. The program, begun in 1965, was under the supervision of Liben.

Monthly institutes were held to provide inservice training for welfare department caseworkers, many of whom were recent college graduates. Through case presentations, they were helped to gain understanding and skill in dealing with welfare clients, she said. The program also provided training experience in consultation for residents in psychiatry and for fellows in a training program in community and social psychiatry.

Liben also described how the consultation program was started, the techniques used to deal with initial hostility and resistance of the caseworkers, and how the value of other than traditional approaches to mental health education and consultation was demonstrated.

The welfare agency has requested that the program be continued and expanded, she said.

Psychiatric Day Hospital Or Outpatient Clinic?

Long-range effects of treatment of mental patients at outpatient clinics and at psychiatric day hospitals were compared by Gerard E. Hogarty, Friends of Psychiatric Research, Inc., Baltimore, and coworkers.

The study compared outcomes of programs at two community facilities employing different treatments: drugs alone, prescribed at the Springfield Hospital Outpatient Clinic, and drugs plus social psychiatric (milieu) therapy provided at the Baltimore Psychiatric Day Center.

One hundred and thirty-seven patients accepted for treatment at the day hospital, and judged to be otherwise in need of inpatient care, were randomly assigned to treatment in either the day hospital or the outpatient clinic. Patients were evaluated at intake, at termination of treatment, at 2 months, and at 12 months following treatment by a team of independent assessors; psychiatrists, psychologists, and social workers. Thirty-three patients were dropped as early terminators, the authors reported. For the 104 patients finishing a period of treatment, 72 sets of social work evaluations were collected at 2 months and 80 sets of data at 12 months.

One trend observed was that nonschizophrenics, regardless of treatment facility, seemed not only to be more improved at the 2-month and 12-month followups, but also showed increments of improvement over time, the authors said. Schizophrenic patients, particularly those treated at the day hospital who do not continue in aftercare, show marked deterioration. However, the specific type of improvement among day hospital schizophrenics observed earlier at termination is maintained and enhanced when the schizophrenic patient continues in aftercare.

The data showed that community mental health facilities must deal with the "chronicity" of their own psychotic populations; otherwise the strategy and success of community-based treatment becomes effectively undone without a provision for aftercare. The authors believe that the investment made in treating the schizophrenic patient in the State hospital or in the community is best protected by providing aftercare.

Nonschizophrenics responded immediately to treatment in the community and showed improvement in behavior and adjustment over time. No specific advantage for the more elaborate day hospital treatment or its intensive aftercare can be identified for the nonschizophrenic. If anything, aftercare in the day hospital might impede progress for the nonschizophrenic. A judicious use of outpatient chemotherapy appears to be less expensive and equally advantageous, according to the authors.

The level of social restoration achieved by a large number of patients treated in the community Hogarty and co-workers saw as impressive, appearing equal to if not superior to the adjustment achieved by patients following traditional inpatient hospitalization.

30 Vermont Nurses Trained As Crisis Counselors

Thirty nurses in Addison and Rutland Counties, Vt., have been recruited and trained as community crisis counselors and are functioning as auxiliary part-time staff of their county mental health services. They make case referrals, collect information, make home visits, and help bridge the gap between the mental health service and the individual client.

The project was described by Dr. Hans Huessy, department of psychiatry, University of Vermont College of Medicine, Burlington, and coworkers. They reported on the project's first year of operation. It will be continued for 2 more years and will include Bennington County.

A basic hypothesis is that in rural Vermont certain community mem-

bers—usually physicians, clergymen, and nurses—are understood to be crisis interveners. Friends and neighbors turn to them in a crisis. Thus an approach to obtaining auxiliary mental health workers would be to use this natural community crisis-handling process, and to identify, recruit, educate, and train some of the indigenous crisis handlers.

The project was designed to identify registered nurses who were already functioning as crisis interveners in their communities and to increase their skills and functioning through additional education, training, and resources for their use, the authors explained.

The 30 nurses were identified through letters to clergymen, hospital administrators, overseers of the poor, social welfare workers, lawyers, and physicians. All nurses invited expressed interest in participating, and there have been no dropouts.

Weekly seminars were held from January through June. The curriculum was focused on the realistic practical level of how to help a person in a crisis or with a mental or emotional disturbance. There was no effort to make the nurse a "junior psychiatrist," the authors stated. Half of the time at each seminar was devoted to supportive discussions with the nurses about cases they were currently carrying.

The training stressed active involvement with people, at the same time developing an ability to recognize the limitations of the crisis counselor role, including awareness of individual needs to act as a natural intervener, and the importance of waiting for a crisis to develop. Discussions during the seminars made it clear the nurses were dealing with problems involving family counseling, child behavior, overt psychosis, and a small number of suicidal crises.

Education and training is continuing for nurses functioning as crisis counselors, said Huessy and co-workers. Each group meets monthly for consultation with staff of the project and the local community mental health service. Each nurse maintains a case record of problems and crises handled, action taken, and type of resolution of the crisis. The records are used in evaluation of the project.

Preliminary results indicate that the 30 nurses are enthusiastic, that they have learned something about mental disorders, and that they receive a large number of telephone calls. The feasibility of using nurses as crisis interveners appears to be demonstrated, the authors concluded.

Mental Health Center Lacks Advantages of Hospital

Is the community mental health center concept realistic or emotional?

Dr. William Blyth, director of psychiatric training and research and clinical director of the Mental Health Institute, Cherokee, Iowa, answered that the mental health center is uneconomical, catering to only superficial or supportive therapy, uncertain in continuum, and excessively liable to disruptive influences.

He said the hospital status of a mental health institute program has advantages seldom attained in a mental health clinic. It has a high ratio of psychiatrists to patients. It has more extensive facilities—psychological, sociological, nursing, and laboratory. Consultative advice is always available. Disruptive influences are minimized. Composite and consultative opinions are insured, and the isolation of a single opinion is obviated.

Blyth based his statements on a statistical analysis of the psychiatric needs of six rural counties in northwestern Iowa adjacent to the Mental Health Clinic in Spencer as compared with the needs of six rural counties adjacent to the Mental Health Institute in Cherokee and having no mental health facilities within their boundaries.

He concluded that a mental health institute has many therapeutic and economic advantages over all other forms of psychiatric facilities, provided that the structuring and staffing are at adequate levels. There is an increased uniformity of continuing services as contrasted with wide variations shown by other forms of mental health services.

Establishment of a mental health center creates an increased demand for psychiatric services (present but not sufficiently recognized), and a part of this increased demand is passed on to the mental health institute and not dealt with at the local level. The center cannot deal as adequately as the institute with patients requiring hospitalization, long term patients, and patients with acute social problems.

Blyth mentioned certain paradoxes in the community mental health concept that emerged from the study. He suggested that attention therefore should be directed to the need for reevaluating State mental hospital programs either for expansion or for inclusion in community mental health planning. Hospital programs should not be rejected from further consideration until there is more certainty than now exists that what will replace the State hospital programs will be superior to what is being discarded.

Need Sophisticated Controls To Detect Suicidal Drivers

Suicide prevention centers and alcoholic detoxification programs should become the interest and province of highway and judicial departments as well as public health departments, according to Dr. Robert C. Eelkema, University of North Dakota School of Medicine, and co-authors.

They recommended that accident control programs designed to reduce death and disability on the highways discontinue use of shotgun measures or across-the-board measures. Sophisticated programs must be developed, not only punitive in nature for those who are sensitive to punitive measures, but therapeutic and also preventive measures for persons who are immune to punishment.

Starting in 1965, Eelkema and co-authors analyzed the accident and violation rates of 238 persons who had been discharged from Jamestown Mental Hospital in North Dakota in 1960. The dischargees were matched by age, sex, and county with 290 comparison subjects from records chosen at random by the Safety Responsibility Division of the North Dakota State Highway Department. Data for each person were put on

punchcards, and the driving records of the two groups were analyzed and compared for periods before and after 1960.

Major conclusions from the study follow:

- Mental hospital dischargees as a group have a higher accident and violation rate per 100 driver-years than the control group.
- Psychotics and psychoneurotics tend to have better records than their matched comparison group after discharge.
- Alcoholics show some improvement in accident and violation rates after discharge in relation to their matched comparison group.
- Repeated punitive measures for alcoholics and those with personality disorders have little effect on accidents or violations or both. These drivers are "punitive immune."
- Single-car accidents were almost all among those who had been hospitalized. A significant number of persons involved in single-car accidents are suicidal, compared to persons not involved in single-car accidents who have been hospitalized in mental hospitals. The survivor of the single-car accident may be trying to tell us something, but we are not listening.
- Violations related to alcohol and single-car accidents could better be used as early detection mechanisms to identify the mentally disturbed, high-risk driver.

Cancer

Risk of Leukemia Greater In Some Ethnic Groups

Adult Jews and adults born in Russia had significantly elevated risks of leukemia, according to a study by Dr. Saxon Graham, departments of sociology and preventive medicine, State University of New York at Buffalo, and co-workers.

The researchers examined data on all leukemia patients reported from 1959 to 1962 in New York State (exclusive of New York City) and patients in special registries in Maryland and Minnesota. The controls consisted of a random sample of the same populations from which the patients were drawn.

Trained interviewers visited the homes of both patients and controls to ascertain medical history and other data. Previous radiation experience was obtained from records of physicians, dentists, and hospitals. The records showed about twice as great a radiation experience as that reported by the subjects, the authors said.

Graham and co-workers found no differences by ethnic or religious background of patients or their parents in the occurrence of leukemia between 319 children under 15 years and the 884 control children.

Data on 1,258 adults with leukemia were compared with data for 1,223 controls in the same age groups. The risk among Jews was 2.4 times that of non-Jews, and the risk among foreign born was 1.4 times that of the native born.

Investigation of differences between the case and control groups by individual European country of birth showed differences only for the Russian born. The Russian born had 2.93 times the risk of other foreign born and 3.81 times that of native-born persons. Russian Jews had a risk 5.29 times that of United States born non-Jews whose parents were born in countries other than those of Eastern Europe.

The researchers also found that Jews born in the United States had a higher risk of leukemia than those of other religious groups. The distribution of leukemia by histologic type did not differ among Jews compared with non-Jews, nor was there any great difference in histologic type among the various foreign-born ethnic groups. Moreover, there was no evidence that the high Russian-Jewish risk was related to more irradiation in the histories of this ethnic group. Indeed, there appeared to be an excess Russian-Jewish risk among persons with no irradiation in their histories.

The authors found no convincing evidence that Jews of non-Eastern European background had higher risks than other populations. It was also apparent, they said, that non-Jews of Russian background had no excess risk. However, it was rather clear that Russian Jews had a risk even higher than those of Russians in general or of Jews in general. The Russian-Jewish risk was 5.3 times that of U.S. born non-Jews of non-Eastern European parentage, but only 3.9 times that of foreign-born non-Jews.

Rates Differ By Religions In Lung Cancer Mortality

Their cigarette smoking habits accounted for the low death rate for lung cancer among Jewish males compared with rates for other males among residents of one sector of Montreal, concluded Dr. Isadore Horowitz, McGill University Faculty of Medicine, and Dr. Philip E. Enterline, University of Pittsburgh Graduate School of Public Health.

However, they also concluded that the high rate of lung cancer deaths among Jewish women and among men of British descent from the same sector could not be explained by cigarette smoking habits.

Horowitz and Enterline traced the hospital and pathological records for all 1956–66 death certificates listing lung cancer as the underlying cause for residents of an economically homogenous area (28 census tracts) in the city. The population was approximately one-third Jewish, one-third Catholic, and one-third other religions. Certificates were classified by cell type of cancer and religion and ethnic origin of the deceased. The 1961 census of Canada provided the population denominators for computing death rates.

Data on the smoking habits of residents of the 28-tract area came from household interviews of a 2 percent random sample of the dwelling units (approximately 1,660 persons), the authors explained.

The relatively low rate for Jewish men and the relatively high rate for Jewish women compared with their Protestant and Catholic counterparts were striking, the authors said (see table). Comparison of the rates for lung cancer deaths among ethnic groups showed an unusually low ratio of male-to-female deaths among the Jewish.

Lung cancer death rates per 100,000 population among religious and ethnic groups, Montreal, 1956–66

Group	Males		Females		Ratio of male-to-female age-adjusted death rates
	Number of lung cancer deaths	Mean annual age-adjusted death rates [1]	Number of lung cancer deaths	Mean annual age-adjusted death rates [1]	
Religious	285		76		
Catholic	109	36. 0	18	5. 0	7. 2
Protestant	73	32. 4	18	6. 6	5. 1
Jewish	93	21. 5	40	9. 2	2. 3
Other	10	13. 9	0		
Ethnic	285		76		
French	46	27. 8	11	5. 5	5. 1
British	101	41. 1	19	5. 5	7. 5
Jewish	79	22. 0	35	9. 7	2. 3
Other	59	26. 4	11	5. 8	4. 6

[1] Adjusted to the 1961 census population of the City of Montreal.

Among males of British descent the rate was highest, 41.1 per 100,000 (see table). Comparison of mortality by religious and ethnic groups suggests that this high rate may be the result of an extremely high rate among Catholic males of British descent.

Because the relationship between epidermoid lung cancer and cigarette smoking is much stronger than between glandular or terminal bronchiolar lung cancer and smoking, the authors examined histological types of cancer among the religious and ethnic groups.

The proportion of epidermoid and anaplastic carcinomas was low for Jewish men relative to other men, suggesting that the low lung cancer death rate among the Jewish men might be due to a low rate of cigarette smoking. Data on those who died of lung cancer and data from the household survey in the area support this statement.

More Jewish men in both groups were nonsmokers, and the smokers among them smoked fewer cigarettes per day than men of the other religious and ethnic groups.

The study also showed, said the authors, that among Jewish women who died of lung cancer, the proportion who had epidermoid and anaplastic carcinomas and the proportion who smoked was not in excess of that found for other females. This information suggests, they said, that cigarette smoking may not be the reason for the high death rate of Jewish women. The authors also noted that among the general population in this area of Montreal, the proportion of nonsmokers was highest and the proportion of current smokers was lowest among Jewish women, relative to women of other religious and ethnic groups.

As with Jewish women, the evidence for the histological types of lung cancer seen in men of British descent and their smoking habits in the population suggests that cigarette smoking may not be the reason for the high rate of deaths from lung cancer in this group, the authors postulated.

Sunlight, Sex, and Site—Factors in Melanoma?

An association of malignant melanoma, specific for some sites, with reproductive life was postulated by Dr. John A. H. Lee, department of preventive medicine, University of Washington, who presented data on death rates from this cause in England and Wales for the 1958–66 period.

Death rates from melanomas of the lower limb were high in women: the female-to-male ratio rose with age to a maximum of 3.67 at ages 40–44, reaching a peak of 82.7 per 10 million per year at ages 40–44, then declining to 53.1 at ages 60–64 before rising progressively into old age. At ages 40–44, the ratio of female-to-male death rates was 3.32.

Exposure to sunlight cannot alone account for the change, since hemlines do not drop much with increasing age, and short skirts have been fashionable for so long that a cohort effect is unlikely, he declared. If there is an association with reproductive life, it must be site specific, he suggested, since rates for melanomas of the face in women are not high in premenopausal age groups.

Lee also found evidence in the British data that sunlight can cause melanomas of exposed skin. The rates for the exposed ears of men were much higher than the usually covered ears of women, and the death rates rose much more with age for melanomas of exposed than unexposed sites.

He noted that high incidence and death rates for melanomas were found among white populations in tropical Queensland, but there was no concentration among sites exposed to sunlight. The Australian workers, he said, had postulated an hormonal effect.

Value of Oral Cytology In Diagnosis Confirmed

The value of oral cytology as an adjunct to cancer diagnosis was first reported in 1949 by Dr. Lewis F. Morrison. Dr. Richard L. Hayes, Gordon W. Berg, and Dr. William L. Ross, Cancer Control Program, Health Services and Mental Health Administration, Public Health Service, examined research findings since 1949 to determine how well Morrison's conclusions have withstood the test of time and what corrections, if any, are required.

The seven points in Morrison's summary of his findings, set in italic type, are followed by the comments of Hayes and co-workers.

1. *The results obtained by the smear technique are excellent.* Data show that the use of oral cytology will result in the diagnosis of a significant number of oral cancers in lesions for which cancer is not suspected and that oral cytology will be positive in a significant number of

suspected cancers for which the initial biopsy was falsely negative.

2. *It is not a substitute for biopsy.* The data indicate that, for confirmed cancers, cytology will not always be positive.

3. *It is an excellent adjunct to the diagnosis of exfoliating neoplasms and has shown itself to be so reliable that a positive smear demands the finding of the source of malignant cells.* The data of Sandler, Umiker, and Hutter confirm this statement.

4. *A knowledge of the normal cytology of the area is a prerequisite that cannot be evaded.*

5. *It is a time-consuming procedure that demands meticulous attention to detail. That is one reason why it will not become a routine laboratory procedure on a level with blood counts and urinalysis.*

6. *Accurate diagnosis can only be made by a cytologist familiar with the area. A well-trained technician can be used to screen out unquestionably negative slides.*

7. *The method has nothing to offer the casual observer.*

Hayes and co-authors found support for Morrison's points 4 through 7, in general, in the recent Joint Position Statement on Oral Cytology issued by a group of experts.

According to the statement, "Oral cytology has been shown to be an accurate diagnostic adjunct that can be of significant value for early detection of oral cancer when used in an oral care program which includes a thorough oral examination, other appropriate diagnostic procedures, and patient follow up."

The statement also listed these cautions for practitioners.

"1. Since most early oral cancers appear innocuous, the trivial appearance of an abnormal area should not cause one to hesitate to use cytology. A positive smear should be followed by a biopsy. An inconclusive or suspicious smear should lead to careful reevaluation of the lesion.

"2. It is necessary to select a laboratory in which the personnel have competence in oral cytology.

"3. The cytologic material must be adequate, promptly transferred to a slide, fixed immediately, and properly identified. For guidance, consult the expert in the laboratory.

"4. Cytology is not a substitute for biopsy. Lesions clinically suspicious of cancer should be biopsied."

Hayes and co-authors reviewed the many publications on oral cytology as a cancer detection technique issued since Morrison's 1949 report. Some studies examined only the problem of false negatives in suspected or confirmed cases of oral cancer; other investigators included data from cases in which cancer was not suspected as well as data from suspected cancer cases. A few investigators reported either no information or incomplete information on clinical impressions. Case reports have been made on cancers which were clinically unsuspected and detected only because cytology was used, and several reports have been issued on the value of cytology for followup of treated cancer patients. One investigator reported on a mouthwash technique for collecting cytologic specimens from high-risk patients.

The authors also reported on their examination of these studies from several points of view: oral cytology as a technique in detection and diagnosis of cancer, its usefulness in followup of treated cancer patients, its use in experiments with laboratory animals, and as an adjunct to the diagnosis of nonmalignant mouth diseases and of dermatological diseases which often have oral manifestations.

They concluded that the potential value of oral cytology is not limited to cancer detection; it may also be valuable in a variety of other diseases.

Health Manpower

Study of Nurses' Interest In Career Advancement

Intensified and aggressive recruitment of student nurses from the highest and lowest social classes is a possible medium for developing nurse leaders, according to Dr. Eleanor Gray Knudson, associate dean, University of California School of Nursing, San Francisco. She described a study intended to ascertain which factors might be useful in identifying nurses most interested in assuming administrative responsibilities.

In California, Knudson reported, approximately 8.5 to 13 percent of the administrative positions for nurses in local health agencies and visiting nurse associations either were vacant or had just been filled. The vacancy periods extended from 5 months to more than 2 years during 1963–64. A survey in the seven most western States showed that by 1972 about 35 percent of the public health nurses employed above staff level would retire because of age.

Disinterest in promotion must be overcome within the ranks of nursing, she reflected, since 98 percent of the potential recruits for administrative positions are women. Most professions prefer to recruit administrative personnel for their specialty from their own ranks. The problem in the nursing profession, however, is recruitment from a pool of members reluctant to become administrators.

Nevertheless, she said, the fact that administrative positions are finally filled from within the ranks indicates that nurses who can be interested in advancing occupationally must be identified earlier and more easily.

Continued evaluation of studies pertaining to women's occupational aspirations led to consideration of social class origins as a significant factor in forming attitudes and values leading to interest in professional advancement.

Design of the Study

The 40 percent sample included 217 nurses in 13 local official public health agencies representative of all such agencies in a greater metropolitan area and adjacent hard-to-recruit areas in northern California. Situational realities chosen for study related to women's role as homemaker-worker and included responsibility for the physical care of other persons outside work when physical care entailed housekeeping

duties, financial responsibility for others, and willingness to relocate to secure a promotion. Marital status was included also because another investigator had found that the great majority of the relatively few advanced positions were held by single women.

Education was considered an important variable inasmuch as other studies had shown that educational attainment strongly influenced job opportunities and possibilities of advancement for women. Age was included because amount of experience and number of years remaining for work were assumed to be important conditioning factors in developing interest in occupational advancement. Finally, availability of opportunity was found to be a prominent factor affecting level of aspiration.

Findings

The profile of nurses interested in occupational advancement contains indicators which might be used in screening interviews for admission to schools of nursing and public health or in employment interviews, Knudson reported.

Typically, ambitious nurses came from homes where mothers emphasized higher education and where the mothers expected long term career orientation. The mothers' expectations were more highly motivating for nurses from the lowest social class.

Contrary to expectations, proportionately as many nurses from the lowest social class registered interest in becoming supervisors and administrators as did those from the highest class. Among nurses in the intervening three classes, interest declined by class level.

The lowest class group has the least financial opportunity for higher education and probably the least exposure to persons outside the family who would encourage them to seek higher education, Knudson stated. If they have higher education, they appear to be a highly motivated group.

The single nurse is regarded by many as a better risk for "career material," Knudson said. Nurses interested in advancement usually had a bachelor's degree, were married, between 30 and 49 years old, focused on career expectancies, viewed promotional chances in nearby agencies as favorable, and judged their financial responsibilities as light.

Implications for Practice

More emphasis might well be placed on recruiting and training nurses with home responsibilities and those in their middle years of worklife.

She observed that little has been developed to meet the educational needs of the worker who is interested in advancement but must maintain her marriage. Employing agencies frequently grant time off for course work but no corresponding cut in workload.

Among nurses not interested in advancing, more than four-fifths disliked supervisory or administrative functions. Do the job functions require redefinition, Knudson asked, or is the image as perceived by nurses in subordinate positions based on lack of knowledge or misconceptions?

Methods for reaching girls in the lowest class group, influencing them, and assisting them financially to obtain higher education need to be developed. Girls and their parents from the highest social class should be informed that nursing is changing and no longer akin to domestic servitude, Knudson suggested.

Urban Poor Get Toehold On Health Careers Ladder

The "new careers" approach to the critical shortage of health manpower focuses on the reassignment of functions within specific health occupations, introduction of new services, increased emphasis on existing functions, and restructuring the health careers ladder hierarchy in the interest of career mobility.

Dr. Sheldon S. Steinberg, director of the New Careers Training Program at Howard University, and coauthors presented the following hypotheses of the new careers training model: (*a*) a realistic pattern of upward career mobility, which is linked to entry-level jobs, can be created in health and health-related occupations, (*b*) people with different social, economic, and educational backgrounds can be recruited for these jobs and helped to stay in them, (*c*) this involvement will improve the social, personal, and psychological behavior of the trainees, (*d*) career ladders can be developed from entry level to professional level, and (*e*) with continuing training, education, and support, entry-level workers can use the career ladder for upward and diagonal mobility.

A critical facet of career mobility is attracting untapped health manpower, particularly the disadvantaged in urban ghettoes, and training these people for entry-level jobs, according to the authors. They believe that cores of information and work experience should be provided in advance to enable the poor to achieve easy linkage with the lower rungs of the ladder.

The training model provides the linkage between the poor who have not graduated from high school and the traditional entry-level requirement of a high school diploma. Heretofore, the authors pointed out, this linkage was provided only in on-the-job training of aides and orderlies in hospitals.

Job development is the foundation of any program to prepare workers at any level, and trainees must have assurance from the beginning that their training is related to specific and concrete employment, the authors stated. The training process for entry-level linkage positions should be a combination of didactic material and immediate on-the-job training. During this process, the authors went on, the recruited trainees should be made aware of options for both horizontal and vertical career mobility after their training period.

A health careers ladder is feasible if well-planned training and educational models are developed in logical sequences to enable people to move from the lowest rung through the various levels of increasing responsibility and training. Provision must be made by educational and health service institutions to apply academic credit or experience equiv-

alence to requirements for the next level of the ladder, the authors stated.

The authors cited several examples of how the new careers approach has been used in health service agencies. In California, home health aides from public and private nonprofit agencies provide direct services for chronically ill, geriatric, and handicapped patients. In the District of Columbia, a variety of "human service aides" have been trained in health work, including mental health, and assigned to public agencies. Pittsburgh and New York City also have neighborhood or community health aides who have been trained in carefully planned and supervised programs. These aides receive comprehensive on-the-job experience. In most cases, the authors stated, remedial education parallels the training program. The early experiences reported by the agencies employing new careerists have demonstrated that this concept is viable and realistic.

Health Aides Need Training In Communications Skills

Although communication is an important skill for health aides, many aides reported problems in communicating and relating to both staff and clients, and only three of 12 projects in a nationwide study trained aides in interpersonal, human relations and communications skills.

This revelation was among the findings of Dr Wilbur Hoff, Institute for Research, Oakland, Calif., who conducted a 1-year study on a contract from the Migrant Health Branch, Public Health Service. Its objective was to document and assess the experiences of local migrant health projects using health aides and to develop guidelines to increase the aides' effectiveness.

Method of Study

Health aides were employed in migrant programs and performed activities in community health education, nursing, sanitation, family planning, tuberculosis, and venereal disease control. The basic sample for the study was drawn from all migrant health projects which had employed aides 3 years or longer. These projects were in North Carolina, Virginia, Florida, Ohio, Minnesota, Kansas, Texas, Oregon, and California.

Of the 84 aides in the survey, 10 nursing or clinic aides, nine sanitation aides, and 47 community health education aides were interviewed. Also interviewed were 57 professional personnel: each aide's supervisor and the project director, nurse, sanitarian, health educator, social worker, or any two or more of these personnel.

In addition to the basic sample group, interviews were held with professionals in Arizona, Michigan, and New York. Although these States had active migrant health projects, they either had not employed health aides in their statewide programs or had begun to do so only within the study year.

Behavioral data regarding the aides were obtained from aides' records of exactly what they did on 3 representative days, comparing the aides' and the professionals' perceptions of the aides' jobs, and having each aide rated by the supervisor. The rating form consisted of 10 items and attitudes which could be marked on a 4-point scale of below average, average, above average, or excellent.

Findings

All of the aides were rated as average, above average, or excellent in performance despite significant differences between what they were actually doing and what the professionals perceived them as doing. The overall effect of the aides on the health agencies was perceived as favorable in all the projects.

Staff felt that health services to migrants could be extended and improved and that aides could do case-finding, educate migrants in better health practices, work in clinics, and interpret. The duties entailed overcoming sociocultural barriers between the staff and migrants, and motivating hard-to-reach migrants, Hoff observed.

Twenty (24 percent) of the 84 aides were nursing-clinic aides who assisted in the office, clinic, or home; 10 (12 percent) were sanitation aides who assisted with environmental health duties in labor camps, housing units, and fields; and 54 (64 percent) were community health aides who participated in educational activities with individuals, families, or groups. Only 12 were men; nine were sanitation aides, and three were community health aides.

Hoff saw the scarcity of men as community health aides as a serious deficiency if health services are to be provided more effectively to males. Low salaries, the part-time or temporary nature of the positions, and the unwillingness or inability of professionals to see these positions as a legitimate endeavor for men are among the reasons more men are not used.

The ethnic backgrounds of the aides generally matched the people with whom they worked, he noted. Sixty-one percent were of Mexican descent, 21 percent were Negroes, 17 percent were Anglo-Americans, and one was Filipino. With one exception, all the aides spoke the language of the group with whom they worked.

Twenty-one (32 percent) of the aides had less than high school educations, Hoff commented, and most of these were working in the western projects. The western projects hired more indigenous aides whose educational backgrounds were closer to the migrants. Eastern projects employed more college students.

Organized training varied from none to 12 weeks, and the training period did not appear related to the educational level of the aides or their jobs. Only six projects supplied a written statement of objectives, and, Hoff revealed, these objectives did not comply with the standard criteria. Of the seven projects which had evaluated aides' training, four had documented the results. Five projects had staff with formal education or training in planning, conducting, and evaluating training programs. Hoff recalled that the two most effective training programs were conducted by health educators.

Health agencies do not regard aides as full-fledged members of the health team, Hoff stated. Many aides have temporary or part-time jobs, receive low pay, and get no social

security, paid vacation, sick leave, health insurance, or other benefits.

Aides pay ranged from $1.25 to $3.05 per hour, and at the time of the study there were no opportunities for advancement in a health career. Most aides interviewed expressed great satisfaction with the work they were doing, but many resented not having the same job rights as professionals. As long as substandard employment conditions exist for health aides, Hoff warned, health professionals will continue to train aides and auxiliaries who accept better-paid employment elsewhere.

Two-Year Program Increases Professional Sanitarians

The 2-year associate degree is an excellent recruitment tool for professional sanitarians because a majority of the students eventually complete the baccalaureate program, according to John R. Fleming, of Ferris State (Mich.) College. The two best sources of recruitment for the associate degree program for sanitarians, he explained, are the local health department worker and fellow students. Ten of 27 students in the environmental health orientation class identify members in the public health team as a principal source of recruitment, Fleming said, and students in the program encounter other students seeking a vocational goal which will complement their science-oriented interests.

The 2-Year Program

In searching for a college-based solution to the shortage of sanitation personnel about 14 years ago, Fleming recalled, a group of nonpublic health educators challenged the concept that 4 years of college training was required to develop a capable sanitarian. The educators proposed training a skilled technician who, after 2 years of academic preparation, could work competently under the direction of a professional sanitarian and relieve him of the technical duties which frustrate and retard his professional aspirations and effectiveness. On this concept, Ferris' environmental sanitarian assistant program was launched.

Students in the 2-year educational program study general environmental techniques and practices, food and milk sanitation, food preservation and meat technology, water supply and sewage disposal, parasitology and entomology, microbiology, drafting and plan reading, basic sciences, social sciences, communications courses, and political sciences. They also spend a 6-week internship with a local health department. In 105 quarter hours of study, the students are prepared to be general environmental health assistants to professional sanitarians.

Students' Prospects

The major market for Ferris' sanitarian technicians, Fleming continued, has been local health departments in Michigan. The State's water resources commission, urban renewal and air pollution programs, and the food processing industry have absorbed a few. While it appears that associate degree students possess great potential for employment in the quality control programs of private industry and governmental nonhealth agency programs, Ferris State College has been unable to satisfy the manpower demands of local health departments, despite graduating classes of 25 or more.

The majority of students who had short term college goals before their field training experiences return directly to the campus for completion of the baccalaureate degree environmental health program, Fleming said. Others work a few years and then return. Only seven of 70 Ferris graduates employed in environmental health programs have not completed their B.S. degree requirements.

Having both levels of sanitarians' training on the campus must have some influence on Ferris' sanitarian assistant graduates, Fleming said. Also, the draft situation probably accounts for the high percentage who return directly to the baccalaureate program following completion of their associate degree work.

Program's Pros and Cons

Fleming identified a number of advantages and weaknesses in using environmental technicians. The benefits include (*a*) greater employee satisfaction where job responsibilities and skill levels correlate, (*b*) accelerating the development of skilled environmental health manpower, (*c*) a more business-like expenditure of salaries for environmental health, and (*d*) in recruiting, the attractiveness of short term goals.

The major disadvantages are (*a*) over-use of the sanitarian technician in the field due to failure to recognize the technician's limitations and abilities and (*b*) the lack of guidance and support of the profession in developing training programs and the certification of the sanitarian technician.

Versatile Volunteers Exceed Expectations

If there are other things the Cincinnati Health Department volunteers can do, the health department has not thought of them yet, declared the volunteers' president, Mrs. Eugene Sterne, Jr.

Sterne, a registered nurse, recalled that the volunteers' official objectives were to (*a*) aid the health department by releasing nurses for professional duties, and (*b*) provide supplementary health and educational equipment to expand the volunteer program, and (*c*) interpret to the community the work of the department. Actually, she said, volunteers try to do almost anything they are asked.

Services in Clinics

The Cincinnati Health Department conducts 14 clinics, and volunteers work in 20 to 27 sessions of the infant welfare, prenatal and postnatal, general medical, hearing, and plastic surgery clinics. Volunteers weigh and measure patients, take temperatures, make records, help nurses and physicians, and do some interviewing.

The volunteers say they preceded Head Start. The first volunteer play-corner supervisor discovered that the children did not know colors, shapes, or other simple things usually taken for granted in volunteers' youngsters. Volunteers listed suggestions for play-corner supervisors which encouraged teaching some of this type of information.

Projectors and filmstrips were bought by volunteers, Sterne continued, and they began an educational program in the waiting rooms, a project which requires steel nerves and endless patience amidst crying or noisy children, shushing mothers, and an audience which departs one by one. In some clinics where limited space precludes using a projector, a seated volunteer talks to from one to five people. She may have a flip chart or a folder as a prop.

For about 2 years the volunteers visited handicapped children. At the beginning, Sterne reminisced, about 179 names of patients who were not receiving medical care were on the handicapped registry. Volunteers visited parents to persuade them to bring youngsters to the clinic, made appointments, transported children and parents to clinics, waited with their charges, and saw that many families' problems were taken care of, frequently by interesting other agencies.

Operations Doorstep

At least four activities entailed "getting out the people by going door to door and asking them to participate." Volunteers carried babies, hung on to preschoolers, helped the aged, and literally led people by the hand to get them to take advantage of services brought to their doors.

The tuberculosis testing program was planned to cover a 5-block slum area in 3 days. The X-ray unit was moved to different locations as testing was completed in each area. The medical skin-testing team for children worked in a tent pitched adjacent to the tuberculosis unit just off the sidewalk or on it, if no other space was available. More than 200 volunteers worked in this program, and 1,274 persons (70 percent of those contacted) participated.

The second operation was an attempt to get a chest X-ray and general physical examination of all the residents of a 2-block area in 2 days. The X-ray unit was parked outside a vacant store which had been converted to a clinic. Sixty volunteers were involved in examinations of 255 residents.

For the operation which combined immunization with tuberculosis screening, the volunteers abandoned tents and borrowed a transit company bus, Sterne said. More than 600 volunteers helped to get 4,372 persons X-rayed and 560 children immunized.

During the antimeasles campaign half-day clinics were scheduled at 33 schools during a 10-day period. Door-to-door solicitation was done in each school area 3 or 4 days before the clinic session. Information was collected on all children, and a notice of the clinic and a permit slip were given to the parent. Exclusive of PTA workers, there were 232 volunteers; 5,293 children were immunized.

Working in Slums

The schools were most cooperative. Ministers of store-front churches were difficult to reach except at odd hours or by telephone. However, they distributed publicity. Contacting the businesses included visiting bars which Sterne said were well populated at 9 a.m. and appeared never to close. The day before the drive began, two boys' clubs from the community center distributed folders.

Prizes were incentives to participation in the screening, Sterne noted. Because one volunteer was related to a toy manufacturer, the group received many toys which did not sell at Christmas. Another donor, owner of an interstate trucking business, contributed damaged goods not claimed by insurance companies. Plastic dishpans, cooking oil, imported sardines, soap powder, and candy served as lottery prizes. Everyone who was X-rayed or immunized got a ticket. Just before the unit closed, the lucky numbers were drawn.

Subsequent Operations

The volunteers have conducted surveys on the level of immunization of 1-year olds and to determine what kind of health education programs clinic patients felt they needed. In the fall of 1967 they conducted a workshop on health planning, based on the report of the President's health planning commission.

In the summer of 1968 about a dozen volunteers began a visiting program for the elderly living in two high-rise housing projects. Their objective, Sterne said, is to determine the health needs of the residents and establish a regular visiting program for those with health problems. The volunteers were responsible also for doing audiometries on 880 children in the Head Start program, and they checked the children's vision and took histories when needed.

In the fall of 1968 the volunteers shared responsibility for a hearing testing program with the speech and hearing department of the University of Cincinnati. All of the kindergarten children in the city were tested.

The Cincinnati Health Department volunteers expect to continue their involvement in new health programs.

Health Education Aides Learn Marketable Skills

Aides can do more things and are more capable than we dreamed possible, declared Dr. M. M. Young, director, and Genevieve P. Hamlin, health educator, Chattanooga-Hamilton County (Tenn.) Health Department. They described a project staffed by 23 female aides and 23 professional and clerical personnel.

Training

In a minimum of 6 weeks' training the health education aides became well grounded in the programs of the health department as well as in those of other public and voluntary agencies. They received instruction in the use of audiovisual aids, interviewing techniques, and nutrition, Young and Hamlin said. At first the aides struggled for positions of leadership, but a spirit of cooperation soon developed and the aides began teaching each other various skills.

Types of Activities

A community survey to determine what the residents considered were their health problems was one of the aides' first activities. Three points were emphasized to the aides.

1. If trouble or unpleasantness is evident, terminate the interview or leave the area.

2. The aide is never to attempt to diagnose.

3. The aide is never to recommend treatment.

The aides became expert projectionists, and they frequently used projection equipment in their community activities. With a background of correct information, they were able to talk on specialized topics at almost any level from that of Head Start children to parents, PTA members, and others. The aides have not hesitated to engage in research necessary to find needed answers.

Some accounts of the experiences of some health education aides indicates how they have functioned. One young woman with only a sixth grade education became one of the best organizers for community health activities in the entire group. After she organized a Halloween party for youngsters in her housing project, there was practically no vandalism in the project that night. She subsequently organized a Thanksgiving party and dinner for elderly tenants and a Christmas party with refreshments and small gifts for adults and children.

From such activities carryover into organization for health education would be easy, she thought. When only eight friends came to her first living room meeting to learn about family planning, she was not so sure. However, this first meeting mushroomed into others on cancer, dental care, and more on family planning. Professional staff from the health department, including physicians, served as resource persons at some meetings.

Opportunities for Advancement

Real opportunities for advancement were provided for the health education aides: three are off welfare, three have moved from public housing, one purchased a home, two have married and one of these is far above the poverty income level, and one is employed as a laboratory aide in the State health department branch laboratory.

All the women originally employed in the program have become economically independent, contributing members of society and have also found job satisfaction which they had not previously enjoyed.

Because many aides have struggled for years with the conditions they seek to alleviate, their approaches are often quite different and no less effective than those of the so-called professionals. Gradually, Young and Hamlin said, the aides have sold themselves and their services to the professionals in the department.

Is health education at the nonprofessional level a marketable skill? Young and Hamlin asked. Not necessarily, although some people trained in this skill can advance into other types of employment.

Maternal and Child Health

New Haven's Special School Serves Pregnant Teenagers

Integrated school and medical services for pregnant school girls at New Haven's Polly T. McCabe Center were described by Mary E. Holmes, Medical Foundation, Boston, Dr. Lorraine V. Klerman, Yale University Department of Epidemiology and Public Health, and Dr. Ira W. Gabrielson, University of California School of Public Health, Berkeley.

Before the center opened in 1966, pregnant students received only 7 hours a week of instruction in the school system's homebound program. The center holds classes 15 hours a week, with instruction paralleling the girls' regular classroom work under the supervision of the board of education. One result has been that the majority of the girls continue in regular schools after delivery and several have gone to college.

The local antipoverty organization supplies a director who assists with nonacademic problems. A nurse from the Visiting Nurse Association gives health counseling. Medical and social services are supplied by a special obstetrically-centered comprehensive health program of Yale-New Haven Hospital.

The center has reduced the student load in the board of education's homebound program. In 1965–66, 64 girls applied for homebound instruction during pregnancy, in 1966–67, 98 girls applied. During the 1967–68 school year, the average cost per pupil at the center was $338, approximately the same sum spent for other students in the New Haven system.

In both school years, two census tracts, one a poverty area and one a moderate income area, had the largest percentage of applicants to the homebound program.

Special schools should be only an intermediate stage in educating pregnant students, Holmes and coauthors emphasized. As arguments for keeping them in regular schools, they cited the greater flexibility and economy of the regular school over the special school. Also, keeping the girls in regular schools would indicate a reduction in the social condemnation of out-of-wedlock pregnancy and would be a realistic step for the educational systems, they declared.

Does a Chronically Ill Child Limit the Family's Size?

Parents of chronically ill children continue to produce offspring at the same rate as parents of normal children, according to a study in Buffalo, N.Y., conducted by Dr. Harry A. Sultz, State University of New York at Buffalo, and co-workers. They investigated the effect of such a child on family size among 291 families matched with control mothers according to the age of the sample mother at the birth of the ill child and the child's birth order in the family.

Several questions prompted Sulz and co-workers to make the investigation. Is the handicapped child included as part of the family's size goal or do families replace the child? Does the burden of care the child requires or the fear of producing additional unhealthy children cause families to limit further pregnancies?

Twenty-five sample families had obtained family or personal counseling services. Ten mothers in the group were given counseling on birth

control. Fertility rates did decline, the authors found, for those receiving family counseling services and among the 42 families with more than one child with the same chronic condition as the study child.

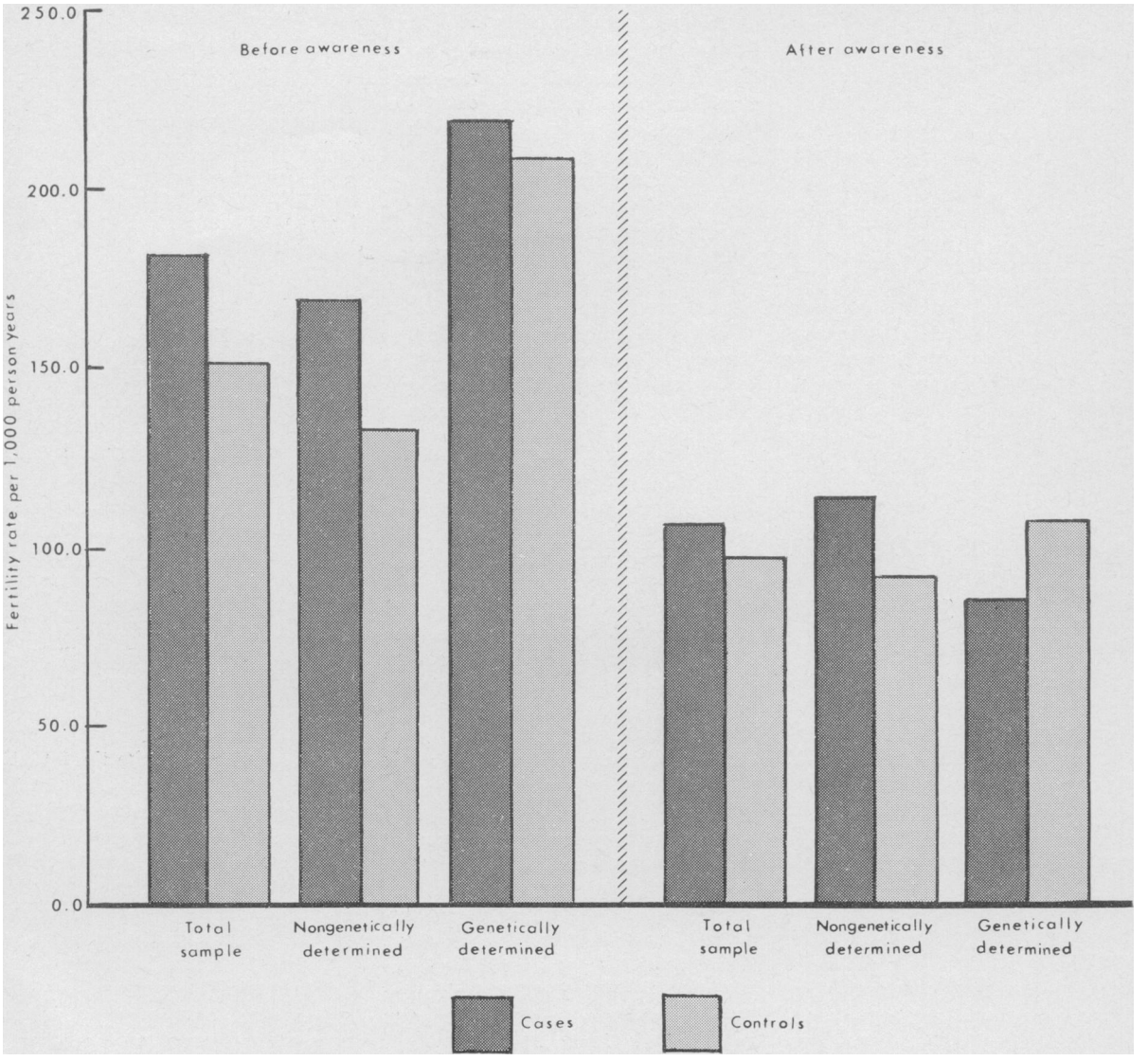
However, only 6 percent of the 85 families having children with genetically determined conditions sought counseling compared with 9.7 percent of the 206 families in which the child had a nongenetically determined condition. The authors cautioned that their classification of diagnoses as genetically determined and nongenetically determined was arbitrary, and many genetic counselors might disagree with their classification.

While not all families in the sample continued to have children regardless of the presence of a chronically ill child, as a group the change in their fertility rates after awareness of the child's condition differed little from that of control families. Fertility rates of sample mothers declined 41 percent; among the control mothers, the rate declined by 37 percent.

Fertility rates of mothers of children with genetically determined conditions declined more than rates of other mothers in the sample group (see chart). The ratio of births declined from 1.06 to 0.79; among mothers of children with nongenetically determined conditions, the ratio dropped from 1.27 to 1.24 after awareness of the child's condition, the authors reported.

Many parents of chronically ill children who did not receive genetic counseling might have benefited from it, Sultz and co-workers stated. No genetic counseling services were available in Erie County at the time

Fertility rates per 1,000 person years of exposure before and after awareness among 206 families of child's nongenetically determined condition and among 85 families of child's genetically determined condition.



of the study. A program for children with chronic conditions is not complete without genetic counseling, they declared.

Ghetto Center Is the Place To Give MCH Services

Maternal and child health services given in a neighborhood store-front facility resulted in more adopters of birth control than prenatal services given in the traditional pattern of the Visiting Nurse Association. Nancy Milio, registered nurse, of the Detroit VNA, described two approaches in an admittedly incomplete evaluation made 10 to 20 months after the study period.

Half of the sample, 51 women, attended the Mom and Tots Center in a ghetto area. The center is staffed by neighborhood residents and has child day care, birth control services, transportation for patients, and group activities for women and children as well as a satellite prenatal clinic. Patients received no prenatal home visits, but were given monthly examinations at the center where group discussions on birth control as well as other subjects were part of the clinic sessions. They received at least one home visit within 1 week post partum, another visit or phone call at 2 months, and a third at 7 months post partum, Milio stated.

Another 51 women were given care in the traditional hospital-prenatal-postnatal home visit pattern carried on according to customary procedure through the VNA district offices. Birth control was discussed with only 55 percent of the group, according to VNA records, said Milio.

The two groups were matched by age, marital status, gravidity, and trimester in which prenatal care was begun. All 102 were medically indigent residents of the same 1½-square-mile area and had received their first obstetrical examination at the same hospital outpatient service; none had a chronic medical or obstetrical disease.

In the VNA-served group only 30 of the 51 women could be located 10-20 months post partum. Of these, 57 percent said their infant was immunized and 73 percent stated that they were using a birth control method. In the Mom and Tots group, 95 percent were practicing birth control.

Milio concluded that a public health nurse uses her time more effectively when she works through neighborhood workers in a neighborhood facility to help low-income women with child spacing and well-baby care.

She also mentioned the following criticisms the public health nurses made of the evaluation: the time the nurse spends with the patient in the outpatient department of the hospital was not included; nurses have too many patients to see them all on home visits; the VNA nurses do not emphasize child spacing and lack a center to supply family planning materials and patient transportation; and the evaluation could not include intangibles given on a home visit.

Special Care for High Risks Cuts Prematurity Rate

A 29 percent reduction in prematurity incidence occurred between two time periods of the total maternal and infant care program for super-high-risk patients conducted by New York Medical College.

Comparisons of data on a 13-month period (1966) with that for an 18-month period (1967–68) were presented by Dr. Edwin M. Gold, University of California San Francisco Medical Center, and Dr. M. L. Stone and Dr. Herbert Rich of the medical college. (Gold was formerly professor of obstetrics and gynecology at the college.)

Patients average 1.6 high-risk factors on admission. Following are the number of major factors patients had in each time period:

Factor	*1966*	*1967–68*
Pregnancy wastage	283	370
Underweight	190	124
Under 17 years	156	239
Overweight	107	242
Grand multipara	87	164
Previous operative delivery	70	107
Hypertensive disease	74	91
Cardiovascular disease	22	52
Toxemia	21	22

Patients in the project receive hospital-based, integrated multidisciplinary services. Each one (781 in 1966, 1,160 in 1967–68) had her own obstetrician and public health nurse through prenatal, postpartum, and family planning and interconceptional phases of care. Each infant also had his own pediatrician and public health nurse through the first year of life. Continuous patient education stressed health care for wellness rather than sickness, the authors emphasized.

Volume of services rose from 5,430 visits in 1966 to 15,721 in 1967–68. More than 80 percent of the patients were admitted before the seventh month of pregnancy. However, Gold and co-workers could not account for an increase, 17 percent compared with 11 percent in the earlier period, of those admitted in the third trimester of pregnancy. During the 18-month period, there were 159 antepartum hospitalizations. One-half of these were for bleeding, elevated blood pressure, and diabetes, they said.

Total perinatal mortality, deaths of infants under 7 days of age, and fetal deaths all decreased when data for the two periods were compared (see table). The authors attributed the 43 percent reduction in total perinatal mortality to a 29 percent

Perinatal mortality, New York Medical College maternal and infant care program, by percentages

Deaths	1966	1967–68	Change
28 weeks gestation or more	28. 5	17. 5	−39
Under 7 days	54. 1	30. 6	−43
Total	80. 3	47. 3	−41

reduction in the percent of infants born prematurely and reductions of 14 percent in deaths of infants weighing less than 2,000 gm. and of 52 percent in deaths of those weighing 2,001–2,500 gms.

Gold and co-workers saw a need for greater efforts to enroll super-high-risk patients in the first trimester and to cut down on the number of appointments broken (36 percent of postpartum and interconceptional visits, 38 percent of family planning visits, and 43 percent of child health visits).

Mothers Under 17 Likely To Repeat Within 3 Years

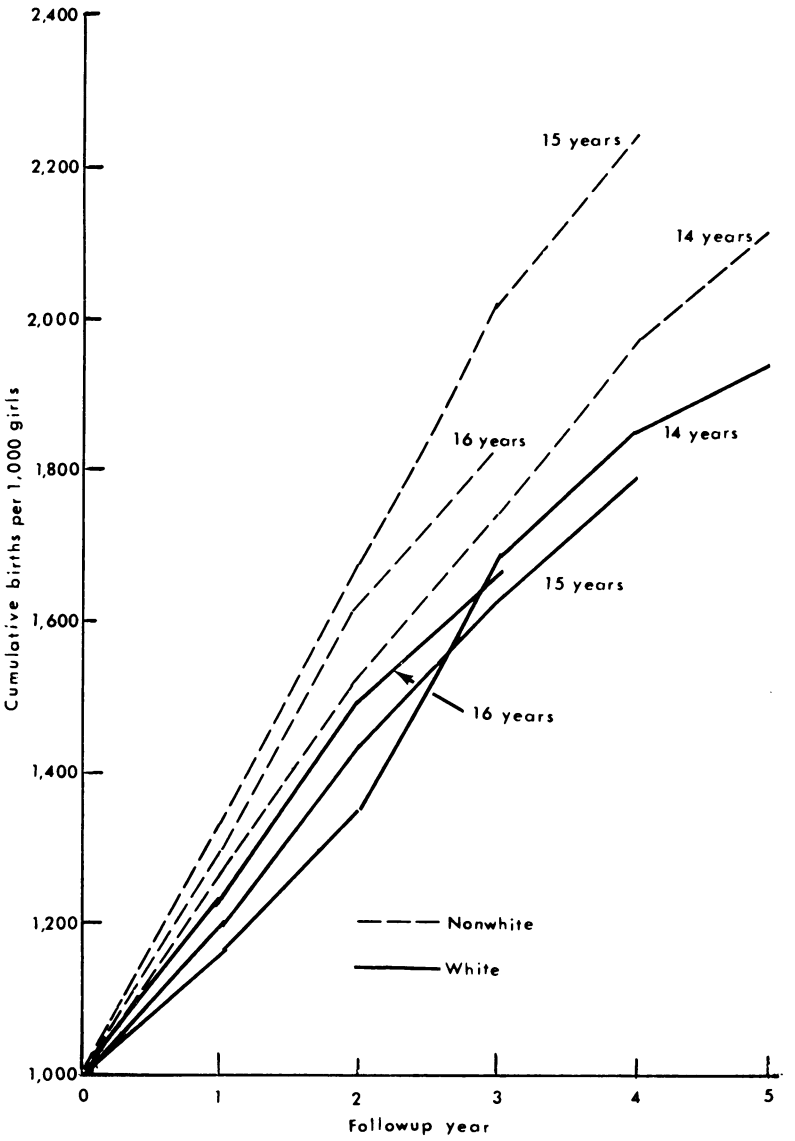
Early pregnancy, even more than race or socioeconomic status, was the most potent predictor of future reproductive behavior, said Dr. J. Philip Keeve and co-workers of the University of Pittsburgh Graduate School of Public Health. They reported a followup study of girls under 17 who bore children in Allegheny County, Pa.

The 12- to 16-year-old primiparas were followed for at least 3 years to derive fertility rates. Of 308,658 live births recorded in the county 1958–67, a total of 3,662 occurred to girls under 17. Sixty percent of the girls had second pregnancies. They were followed to age 19 to obtain cohort rates and birth probabilities by age, race, and residence. Annual single-year-of-age populations of girls 12 to 19 years were obtained by applying race and age-specific survival rates to 1960 census data, which were then projected throughout the study period using the cohort iteration method.

Total fertility rates for 12- to 16-year-olds declined during the study period at the rate of 3 percent per year, but mostly because the rate for 16-year-olds dropped from 21.2 in 1958 to 15.8 per 1,000 in 1967. Rates for the younger age groups went up, however.

Tracking cohorts for 3 years, 62 percent of the 929 nonwhite girls produced 799 additional babies and 52 percent of 1,195 white girls delivered 791 babies. The chart shows rates of accumulation of births within age and race cohorts. Similarity of the rate curves for both racial groups suggests that some other universal factors were operating.

Cumulative birth rates by age of primiparity and race, followed to age 19



Socioeconomic status was reflected by residence, with higher rates for both white and nonwhite girls in the city of Pittsburgh compared with those who lived in the county outside the city. The authors also noted that these socioeconomic factors asserted themselves as early as 13 years among the nonwhite group and by age 15 among the white group.

They found that age patterns were far more similar than race patterns. By age 19, both 15- and 16-year-old white cohorts exceeded a rate of 1,600 births per 1,000 females; nonwhite 16-year-olds had reached 1,800, and the nonwhite 15-year-olds, 2,300.

Specific birth-order probabilities for the entire group revealed that 9 percent of the mothers with third-order births had had a fourth child 3 years after their initial pregnancy; if the trend of increasing fertility within age is held constant, the younger a girl becomes a mother, the

greater the chance she will have repeated pregnancies.

The authors declared that the study results provide benchmarks to gauge past and future changes of the juvenile fertility pattern and give a basis for evaluating attempts to reduce juvenile pregnancies in the community.

They cautioned, however, that despite the anticipated decline in total fertility, the acceptance of contraception, growth of family planning services, and liberalization of abortion laws, substantial numbers of the 12- to 16-year-old mothers will have repeated pregnancies by the time they reach 19, the national mean age of primiparity. The situation is not restricted to specific ethnic or socioeconomic groups.

Rendering services to teenage mothers may meet an important community need, but preventing their initial pregnancies may be the most urgent course of action, they surmised. The road to this goal must be charted by the entire community; juvenile pregnancies are not solely health problems. The helping professions must engage in debate over the soft questions of value commitments for both youths and their parents, they urged.

Child-Rearing Attitudes of Negro Teenage Girls

Answers to 12 questions about child-rearing practices given by 80 unmarried primiparous Negro girls 15 to 19 years old were analyzed by Dr. Margaret Gutelius, director, Child Health Center, Children's Hospital of Washington, D.C.

She described the girls as of normal intelligence, without chronic physical disease or major mental pathology. All had started junior high school, and 20 percent finished high school. Eighty-five percent identified well with their own mothers; 90 percent were pleased or at least accepting of the pregnancy. Twenty percent lived with both parents, and their mothers were heads of the households of 50 percent. All girls expected to work outside the home. In short, Gutelius said, the girls did not come from the hard-core families at the lowest end of the poverty continuum.

The questionnaire was designed to investigate attitudes toward these child-rearing practices other researchers have found typical of low-income families: harsh physical methods of disciplining children; inconsistent discipline according to the parent's mood; lack of verbal communication with a child; inhibition of a child's curiosity; and no commitment to the slow development of a child or his need for gradually increasing independence.

The girls' responses to a child's behavior in various situations are shown in the table. The positive answers are considered good responses, namely, those recommended generally by pediatricians and psychiatrists and those commonly practiced in middle-class families.

The answers to questions 1, 2, 3, and 7 indicated, for the majority of girls, a pattern of punitiveness in handling immature behavior, Gutelius said. Questions 4, 8, and 10 involving sensitivity to the needs of a young child were well answered, she declared. The girls' responses to question 6 showed inconsistent discipline in their own upbringing.

Answering a question (not in the table) as to what age child they enjoy most, half the girls liked children of all ages, a fourth preferred the older ages, and a fourth preferred infants. These answers, Gutelius pointed out, did not bear out the dictum that ghetto mothers love infants but lose interest when the child is about 2 and difficult to control and that, by school age, these parents feel estranged from their children.

Gutelius found disappointing the responses to question 9 (most would praise a child seldom) and question 5 (only a fourth would encourage a child to talk with adults). Also disappointing were replies to question 11 (what the girls could do in the early years to help the child do well later in school). They emphasized obedience, manners, and rote memory learning of such things as the A, B, C's.

The questionnaire will serve as a baseline for comparison with later changes in attitude and the actual practices the girls follow. The girls and their children are in a research program of well-baby care from birth to 3 years. A pediatrician and a nurse will use a mobile coach to make home visits. The study group will receive not only preventive health measures but advice on child rearing and assistance in providing appropriate stimulation for the infant, especially in developing language skills.

Responses of 80 primiparous Negro teenage girls to questions about child rearing

Number and question	Answers (percent)		
	Positive	Negative	Neutral
1. Kicks and hits mother	40. 0	60. 0	0. 0
2. Toilet training accident	30. 0	61. 2	8. 7
3. Refuses to eat vegetables	5. 0	91. 2	3. 7
4. Pick up crying infant	41. 2	45. 0	13. 7
5. Encourage talk	25. 0	60. 0	15. 0
6. Consistency of mother's discipline	23. 7	72. 5	3. 7
7. Child naughty all day	35. 0	52. 5	12. 5
8. Child busy with blocks	46. 8	39. 2	13. 9
9. Frequency of praising child	21. 2	76. 2	2. 5
10. Child's fear of dark	72. 5	17. 5	10. 0
11. Helps for later school success	48. 7	51. 2	0. 0

Infant Mortality Decreased By Multiservice Project

Chicago's infant and neonatal mortality rates have dropped in the 3 years that a maternity and infant care project funded by the Children's Bureau has been in effect, stated Dr. Morgan J. O'Connell, acting commissioner, and Dr. Jack Zackler, director of maternal and

child health, Chicago Board of Health.

Between 1964 and 1967 the infant mortality rate for Chicago dropped from 30.40 to 29.37 per 1,000 live births. Over the same period neonatal mortality decreased from 21.25 to 20.20 per 1,000 live births, they reported. For nonwhite infants (90 percent of the patients the board's 18 clinics serve are Negroes from low-income areas) the mortality rate went from 43.06 to 37.22 and the neonatal mortality rate from 29.00 to 25.31 per 1,000 live births over the 3 years.

The outcome of pregnancy was reviewed for all patients 15 years or younger at the time of conception. This study showed that for infants delivered of Negro mothers cared for in the project, the hebdomadal (under 7 days) mortality rate was 15.0 and for deaths of infants less than 28 days old, the rate was 18.2 per 1,000 live births. For Negro patients receiving care elsewhere, or receiving no care, the hebdomadal rate was 33.7 and for deaths under 28 days, 42.9, according to O'Connell and Zackler.

The project enabled the board of health to employ physicians full time, dentists, social workers, clinic nurses, health educators, and others who have served more than 78,000 pregnant women between July 1964 and June 1968 (see table). Clinics are open all day and screening tests performed included 134,517 hemoglobin electrophoresis determinations, 89,963 Papanicolaou smears, and 43,492 blood sugar determinations.

The authors listed other services instituted under the project. Prenatal patients receive care at 10 dental units located throughout the city. High-risk maternity patients are registered with associated hospitals for prenatal care after the seventh month of pregnancy and for delivery. Hospitals either are associated with a medical school or have an accredited residency training in obstetrics. The project pays the hospitals for this care. Family planning clinics have been set up at 17 maternal clinics. Five infant high-risk clinics provide care for infants born of high-risk mothers or any infants who have conditions leading to poor growth and development. Total care for about 500 teenage mothers annually is provided through a contract with the Crittenton Comprehensive Care Center, and in another program, the Chicago Foundlings Home gives rehabilitative and medical services to unmarried pregnant women.

Patients registered in maternity and infant care clinics, Chicago Board of Health, through June 30, 1968

Service	Date begun	Number of patients
Maternity	June 1964	78,491
High-risk maternity	do	8,956
Family planning	March 1965	27,496
Dental	February 1968	11,735
High-risk infant	June 1964	13,177

Occupational Health

Dose-Response Experience Basis for Exposure Limits

Industrial hygienists too often accept uncritically a threshold value or other guide for the exposure of workers to hazardous agents without taking the time to establish that no adverse physiological response occurs at a particular exposure level. Such values are useful tools, but it is imperative, stated John A. Pendergrass, manager of industrial hygiene, 3M Company, St. Paul, Minn., that these limits be scientifically sound and viable.

Exposure limits, the author explained, depend upon the principle of the dose-response relationship (the magnitude of exposure to a hazardous agent and the degree of response in the person exposed). The dose-response experience, Pendergrass said, represents the only valid data for defining and refining exposure limits. But we have to determine what constitutes a response. Professionals in occupational health, stated the author, must insist that the controlling factor in deciding acceptable levels of stress be the hazard, not the toxicity.

Pendergrass sees the need for an independent body—a national council—made up of competent specialists of unquestionable integrity who will establish guides for exposure. This body would only recommend guides of good practice rather than draft model laws, since the advisability of a legal standard is questionable, he said.

Another need mentioned by the author was for a central place where data from toxicity studies, analytical methods, stress measurement techniques, and human experience could be collected for continual review and analysis. These data could then serve as a basis for the exposure guides. But such data are not easily obtained, Pendergrass emphasized. Among the reasons that such data are lacking or sparse is that physicians in industry have not emphasized group health and its correlation with industrial exposure to hazardous substances or conditions. Industrial physicians and hygienists have not worked together. If health specialists in industry do not exert pressure from within to bring about needed changes so that data will become available on which to base exposure guides, the pressure will come from outside. The Occupational Safety and Health Act of 1968, Pendergrass said, is one example of outside pressure.

Industry-oriented groups, such as the American Petroleum Institute, have directed a few specific studies among their members on hazards, but many more should be conducted. Information is needed on the physiological effect of exposure to specific chemicals, the author pointed out.

As an example, isocyanates are widely used, and it is known that overexposure can lead to acute symptoms as well as a unique type of sensitization. There is no bioassay for isocyanates, no way to predict which person will be most likely to develop symptoms or become sensitized.

As to silicosis, said the author, the advantages of electronic dust counting are just now beginning to be compared with microscopic methods of screening the environment for dust concentrations. Earlier work that sought to correlate dust concentration in the environment with pneumoconiosis should be renewed with modern techniques.

Guides for exposure should not be restricted to the inplant environment, said Pendergrass. While inplant exposure limits, unlike ambient air quality standards, are based primarily on health, general air contamination must be considered in recommending guides for occupational health purposes. Occupational health specialists, he concluded, need to be dedicated to people, not to compliance with static legal requirements.

Lasers, X-ray Radiography Present Potential Hazards

Mass production and lower costs of laser devices permit their use not only in industry but in schools and colleges and even by teenage experimenters. The availability of this major scientific discovery makes the potential health implications appear substantial.

After making these comments, Verdun Randolph, assistant chief sanitary engineer, division of sanitary engineering, Illinois Department of Public Health, cited potential hazards in using lasers and X-ray radiography and outlined the steps that have been taken in his State to avoid them.

Laser Systems

Besides eye injury, other potential health hazards associated with use of lasers may be electrical shock, toxic metal fumes, oxygen depletion, nitrous oxide production, ignition of combustibles, and contamination of food—to name a few. However, no major injuries to human beings have been reported to date, Randolph stated.

Illinois' Laser System Registration Law, the first of its kind in the country, the author said, went into effect January 1, 1968. It requires registration of laser systems, allows the Illinois health department to inspect them, and requires reporting of accidental injuries. Responsibility for administration of the law has been placed in the State health department's bureau of radiological health, under the division of sanitary engineering.

Under the new law, 48 installations have registered 184 laser systems, according to Randolph. They represent 30 industries, 14 schools, and four medical facilities. Most of the registered systems are used in pure research.

We have begun observational type inspections of lasers, gathering basic data about the operation and characteristics of the 48 registered facilities, said the author. At some facilities, he reported, we found a lack of safety precautions, no preemployment or periodic ophthalmologic examinations of employees and, in some instances, an almost apathetic attitude toward safety.

One inspector was invited to look into the laser beam. The user indicated that after looking into the beam he was blinded for only a short time. An optometrist in registering a laser explained that he used it for therapy on the eyes of patients. The licensing agency subsequently ordered him to discontinue use of the laser in his practice; such use fell in the broad sense under "surgery," which an optometrist is not allowed to practice in Illinois.

Because of the lack of suitable instrumentation, the most effective means of preventing injury from lasers appears to be through education, concluded the author.

Industrial Radiography

Various Illinois laws and regulations apply to the use of industrial radiography. The users are inspected, and enforcement is in accordance with these laws. Regulations include mandatory film badge monitoring and reporting, the author pointed out. The rules for enclosed radiographic units require that they be provided with interlocks, proper door fastening mechanisms, and adquate alarms. Open radiographic facilities, defined as those capable of being moved about within a plant or transported to different job sites, are not covered by specific rules. The user is required to supply the health department with a detailed description of the location and the normal and maximum operating conditions under which the machines are used. Open facilities also are given inspection priority.

As with lasers, some users of X-ray radiography have not received adequate training; nor have written operating instructions been prepared. Consequently, the operator contributes to unnecessary exposure of personnel to radiation. When untrained persons use X-rays, declared Randolph, they present a potential health hazard to themselves and to others in the area.

We have never had to call a hearing for an industrial X-ray radiographic facility because of its failure to meet requirements, Randolph noted, in contrast to the medical X-ray regulatory program in which it is necessary to call a hearing occasionally. We find, said the author, that correcting existing health hazards is mainly a matter of education rather than regulation.

Few Medical Rejections Among "Special Hires"

Of 257 "special hire" applicants examined for jobs with the New Jersey Bell Telephone Company in Newark, only 15 of a total of 23 men not offered jobs were rejected for medical reasons. According to Dr. George P. Bisgeier, medical director of the company, only one man of the 257 was considered medically unsuited for any kind of employment with the company, because he was debilitated following infectious hepatitis and had severe congenital skeletal abnormalities. A total of 173 men were hired.

The jobs included handling material in the supply house, driving

light trucks, coin box collections, business machine operation, office assistance, and crafts or technical work of a limited nature.

Bisgeier's report covered examinations given in the first 6 months of the program, from January to July 1968. Examinations consisted of a self-administered history, physical examination, chest X-ray, urinalysis, and audiometric and visual testing. An uncorrectable medical condition that would be a safety hazard to the employee or others was the only criterion used to disqualify an applicant.

Ninety-nine men were found to have minor correctable defects or to be in a need of further medical investigation. These conditions included dental caries, overweight, hearing and vision defects, orthopedic defects, rheumatic heart disease, epilepsy, and narcotics use. Fifty-one of the 99 were hired.

Twelve of the 257 men originally examined were suspected of using narcotics. Five were not hired, four were on the payroll for a period of weeks or months, and three remained on the payroll. One of the three was proved never to have used narcotics, and the other two are former addicts who are under the regular supervision of the medical department.

Bisgeier said the question of whether an addict can be kept on the payroll and rehabilitated by outpatient treatment is still unresolved. Industrial physicians must learn to recognize an addict, establish a relationship with a laboratory equipped to detect narcotics in specimens, and learn about treatment facilities available.

He believes that in hiring the hard core unemployed some of the usual hiring procedures can easily be changed to take care of certain problems. For example, an applicant who needed surgery was placed on the payroll and immediately referred for surgery. He sees great opportunities for service, because industrial physicians can motivate some of the applicants to obtain treatment and reach satisfactory medical levels.

The loss rate of special applicants was 24 percent, while for regular male applicants during the same period the loss rate was 43 percent. According to Bisgeier, this ratio was entirely unexpected and caused some "soul searching" among the company's staff.

Phone Company's Nurses Examine Job Applicants

All initial health reviews of applicants seeking jobs with the telephone company in Canada are now carried out by the company's nurses except in small places where Bell Canada does not have health services available. Referrals are made to physicians for medical opinion, when appropriate.

Dr. D. C. Bews, medical director, and Dr. J. H. Baillie, associate medical director of Bell Canada, Montreal, said they had found that this screening role can be delegated to nurses if they have the training and interest and if the health service has a continuing program of health supervision.

The present policy was put into effect in January 1968. In the 4 previous years, it was in effect only for female applicants. Earlier, from 1953 to 1963, examinations by nurses largely replaced the use of physicians in the health assessment of female applicants, but final review and categorization of applicants remained a responsibility of the medical man.

Experience has shown that nurses are able to complete nearly all the examinations. Ninety-five percent of the 12,733 examinations given to women in 1965 and 1966 were completed by nurses. In only 696 cases was the physician's advice required to complete the examination.

In 1966, the saving of expenses to the medical department by using nurses amounted to $22,000, and in 1967 it was nearly $21,000. Dollar savings for the 2 years do not reflect the release of 2,600 hours of physician time in the company's nine major health centers for services which only fully trained physicians can perform, the authors pointed out.

When the decision was made to use nurses for the initial health reviews of men as well as women, there were several problems to be faced: the acceptability of the plan by both management and applicants, the extent and scope of the health review, and the nurses' ability to adequately assess the musculoskeletal system of male applicants, particularly in regard to backs and knees.

In the latter aspect, however, the company was in a fortunate position because in 1950 it had introduced a system of assessing the musculoskeletal system. The authors believe that when this system of exercises is properly carried out a trained observer can adequately assess the range of movements of all the important joints in the body. If deviations from normal are found, the nurse refers the applicant to a member of the medical staff for further assessment.

Dental Health

Differences in Use Persist Despite Dental Prepayment

In a prepaid dental plan with members having no direct cost, high socioeconomic status, and high readiness, people still give regular periodic dental care low priority, stated Dr. Mata K. Nikias, School of Public Health and Administrative Medicine, Columbia University. Even in the group with the most favorable conditions present, less than one out of two sought prepaid dental services at least once a year over a period of 3 years.

Two population groups entitled to prepaid dental care through membership in Group Health Dental Insurance, Inc. (GHDI) of New York City, a communitywide prepayment plan, were compared to see if the method of obtaining and paying for dental care coverage was associated with differential patterns of use of the services, Nikias said.

Extractions per 100 visits in GHDI cross-section sample and voluntary groups in first year in plan, by age and sex

Sex and age group	Cross-section sample	Voluntary groups
14 years or under: [1]		
Male	12. 0	6. 1
Female	11. 3	7. 9
15 years or over: [2]		
Male	17. 1	15. 2
Female	15. 3	11. 7

[1] 376 persons, cross-section sample; 214 persons, voluntary groups.
[2] 1,262 persons, cross-section sample; 515 persons, voluntary groups.

Members of the one group, representing the majority of GHDI voluntary groups, had dental prepayment as a fringe benefit of employment with premiums contributed by employers or union; members of the other group, the GHDI voluntary groups, elected to participate in the plan and paid the entire premium themselves. Employees in both groups and their families were entitled to fairly comprehensive dental services at the private offices of dentists of their choice.

Such comparisons were undertaken, Nikias asserted, because of the implications that variance of use patterns between these two types of prepayment populations may have for understanding use of dental service, planning of dental services, assessment of their cost, and future growth of prepayment.

The study was based entirely on analysis of the GHDI plan's records, according to Nikias. The GHDI membership was represented by a 10 percent stratified systematic sample constituting a cross section of subscribers with their dependents.

Members in voluntary groups were considerably more likely to use prepaid dental services than the general GHDI membership. Patterns of care among only those persons who received some prepaid dental care indicated that the two prepayment groups did not differ in amount and type of care received per patient and in the proportion of heavy, moderate, and light users. Such evidence, she stated, suggested that it was not the greater amount of unmet need for care that induced voluntary group members to join the prepayment plan and to use its benefits to a greater extent than members in the average plan.

Does voluntary dental prepayment appeal most to persons requiring a great amount of dental care and who are aware of it? Nikias stated that evidence from the study suggested that if "high dental needs" induced voluntary group members to join GHDI and then to utilize its benefits to a greater extent than the general GHDI membership, their needs were perceived rather than biologic or objective needs.

Nikias based this conclusion on the similarity of treatment patterns and on evidence from the study which suggested that GHDI members under voluntary enrollment, who presumably were sensitized to having dental needs and who were also oriented toward doing something about them, had better dental health than regular GHDI members when both populations joined the plan. An index used of advanced dental disease and of past dental neglect was the proportion of visits devoted to extractions (see table).

Members of voluntary groups were distinctly more likely to seek dental care annually compared with the rest of GHDI membership. Such preventive dental practices by voluntary group members were consistent with the explanation of their greater than average dental health concern and willingness to act accordingly. Nikias said that social class and joining a voluntary dental prepayment plan were independently related to preventive dental practices. Both factors together were more strongly related to annual care.

She concluded that persons who join prepayment plans voluntarily are more likely to use dental care than persons who obtained coverage as a fringe benefit of their work group membership. The data from the study of the present plan do not support the view that voluntary dental prepayment appeals to those "persons requiring more than average amount of dental care."

Medicaid Dental Services Fall Short of Goals

Only one-fourth of persons eligible for dental care under Medicaid in Erie County, N.Y., actually received any care during a 2-year period, declared Dr. Robert M. O'Shea and Dr. G. Donald Bissell, Erie County Department of Health and the School of Dentistry, State University of New York, Buffalo.

New York State's Medicaid program removed the financial impediment to dental care for an estimated one-third of its population, or 6 million persons, from May 1, 1966, until cutbacks of eligibility levels made in April 1968. By early 1968, 3½ million had actually enrolled, with 1 million of these on welfare, the authors stated.

A study of dental services under Medicaid was made of the computerized fiscal records in Erie County, N.Y., by the authors, and a 5 percent random sample of monthly payments from November 1967 to April 1968 was studied. Analysis of data on 1,612 patients included welfare category, age of patient, and cost of dental care.

In addition to persons already qualifying for public assistance (old age, aid to the blind, dependent children, or the disabled), the medically indigent were included, the authors said. Federal reimbursement was possible for dental services to "medically indigent" minor children whose families were not on public assistance and for those over 65 under a title XIX clause allowing "optional" services. Care of those between 21 and 65 was paid for by the State.

New York set its basic eligibility requirement at $6,000 (after taxes

and health insurance premiums) for a family of four to meet the requirement for expanding any existing programs. The quality and adequacy of these services under the optional services program, stated the authors, were to be within responsible limits of those services available to most other persons in the community.

Cost of Dental Care

In 1965, the year immediately preceding Medicaid, Erie County spent $130,000 to pay approximately 5,800 vouchers. The county spent more than $4 million for dental services for more than 54,000 Medicaid recipients from early 1966 until April 1968. The bills of approximately 6,000 persons per month were being paid by the time the program was 2 years old.

The authors noted that in a care program serving all ages, there was a great range in the amount of the dental bills. Fifteen percent of the bills were for $10 or less, 11 percent for more than $300, and the bills of some few patients exceeded $500. The estimated median bill, however, was about $39; almost two-thirds of all bills were under $50.

There is a clear relationship between age and cost, asserted the authors. More than 50 percent of the youngest patients (5 years and under) had dental bills of less than $20, and the bills of almost all the young children were less than $50. The majority in all age groups under age 25 had total bills under $50. Only 36 percent of those 56–65, and 39 percent of those 66 and over, had bills less than $50.

The number of bills of more than $200 did not rise sharply until 26 or older, emphasized the authors. They believe that the criticism that Medicaid would be deluged by unreasonable requests for costly prosthetics are unfounded, because the group of elderly patients was small relative to the rest of the Medicaid sample.

Dental Care Services

In the sample, each person received an average of approximately seven services for a total of more than 11,334 separate services. The services offered are listed in the following table.

Type of services	*Percent of services*
Charting, history, oral examination	10
Recall examination	1
Radiographs	20
Prophylaxes	8
Topical fluoride treatment	1
Periodontal	(1)
Routine extraction	16
Surgical extraction or exposure	1
Alveolectomy	(1)
Pulpcapping, pulpotomy	1
Other endodontics, such as root canal	(1)
One-surface amalgam	17
Two-surface amalgam	10
Three-surface amalgam	2
Other operative procedures, such as silicates	6
Crown and bridge	(1)
Full upper denture	1
Full lower denture	1
Immediate denture	(1)
Partial denture	1
Additional clasps	1
Denture repair or rebase	1
Palliative treatment	1
General anesthesia	(1)
Consultation	0
Miscellaneous surgical procedures	(1)
Total	100

[1] Less than ½ percent.

Only a handful, about one in 20, got topical fluoride treatments. (Erie County has had fluoridated water for several years.) About one-third received one or more simple extractions, the authors noted. The majority of people who had simple extractions had only one or two teeth removed. More than half received one or more single-surface restorations; a little less than one-half got two-surface fillings; about one in eight received three-surface fillings. Full dentures were given to a small number; 10 percent got uppers, 7 percent lowers.

To date, Medicaid has not provided the lower socioeconomic group the dental care as originally hoped, as is shown by the distribution of services according to welfare status of the patients.

Medically indigent patients	*Frequency of visits*	*Percent*
On public assistance	259	16
Not on public assistance	1,353	84
Total	1,612	100

In the whole Medicaid population the "medically indigent only" outnumbered those on welfare by a ratio of about 2:1, but for dental services, the ratio was more than 5:1. The authors believe that if legislation providing dental care is going to work, it is imperative to build in a comprehensive, well-structured plan for innovative educational methods drastically to alter dental attitudes and the low priority that dentistry has on the scale of patient values. A large segment of the population did not receive adequate dental care before Medicaid and is not taking advantage of its provisions now.

Dental Health Services Have Bright Future

Growing Federal support to dental health programs, coupled with the vigorous leadership of the dental and allied professions, assures a bright and substantial future for the nation's dental health, stated Dr. Viron L. Diefenbach, Assistant Surgeon General, and Director, Division of Dental Health, Public Health Service.

Medicare and Medicaid

Large amounts can and are being spent on dental health, Diefenbach said, but dentists should make sure the public gets full value for every dollar spent. Although Medicare provides some limited benefits, dentists must see to it that patients who qualify actually benefit to the full extent of their entitlement. That Medicare has a weak dental insurance program is traceable, at least in part, to the failure of dentists to fight for dental coverage, emphasized Diefenbach.

Title XIX permits States to de-

velop health programs for certain beneficiaries, and it authorizes, but does not yet make mandatory, a significant range of benefits. Not all States include dental care, but those which have done so get an energetic response. Diefenbach believes that dental services that are now optional will become mandatory for all Medicaid programs by 1975.

The amount of future interest, however, which States show in dental services may very well be determined by the extent to which the dental profession insists upon the inclusion of dental care and the guidance it provides in structuring State programs, he emphasized.

Services for Children

The Division of Dental Health has been the professional dental adviser to Office of Economic Opportunity programs for nearly 3 years.

Parents of children in Head Start programs now say that dental care is near the top of their list of wanted services—a fact which suggests that in Head Start, dental programs are now a solid success, according to Diefenbach.

The Office of Education supports dental health services for deprived children, and because there is a logical connection between this program and a preschool program like Head Start, better planning and administration could multiply many times over the dental services received by these children, according to the author.

The Children's Bureau also is increasing emphasis on dental treatment in their long-established programs of health coverages for children and pregnant women. During the past 5 years the Children's Bureau dental expenditures have risen from $1.7 million to $7.7 million, Diefenbach stated.

A nationwide pilot care project for children was recommended by the American Dental Association, urged by President Johnson, and authorized by Congress under the Child Health Act of 1968. Money for support of its programs was not authorized in 1968, but in this act, Congress added a new requirement for approval of State plans for formula grants under title V. State plans must now provide for the development of demonstration programs in needy areas and among groups in special need "with special attention to dental care for children. . . ."

Other Federal Programs

Diefenbach mentioned briefly other federally supported programs—education and manpower programs to provide more dentists and auxiliaries, applied research to increase the practitioner's skill and productivity, preventive programs like community fluoridation, screening for oral cancer and periodontal disease, oral science research and technology, and continuing education for practitioners, teachers, and dental researchers.

Occlusal Relations Differ In White, Negro Children

The occlusal relations of 10- to 12-year old white and Negro children who grow up in a fluoridated community differ, stated Dr. Herschel S. Horowitz and Joe Doyle, Division of Dental Health, Public Health Service.

Occlusal variables were measured for 718 school children, 321 white and 397 Negro, in Chattanooga, Tenn., which, at the time of the survey, had fluoridated its water supply for more than 14 years at a level of 0.8 ppm. The findings on the 10 variables were reported by Horowitz and Doyle as follows.

Dental age. (The children's dental age, was classified according to the status of eruption of each child's permanent teeth.) Negro children were of a more advanced dental age than the white children and, within each race, girls were more advanced than boys, the authors stated. Generally, Negro boys tended to be at the same state of dental development as white girls.

Molar relation. (The anteroposterior occlusal relation of maxillary and mandibular first permanent molars was classified by assessing the interdigitation of the upper and lower first permanent molars on each side of the mouth while the children's jaws were in centric relation.) A greater percentage of Negro children had bilaterally normal molar relations than did white children. Considerably more white children had unilateral or bilateral Angle class II molar relations than Negroes; nearly 34 percent of the white children had either unilateral or bilateral class II molar relations, compared with only 11 percent of the Negroes.

Buccal and lingual crossbite. No appreciable differences were found between the white and Negro children or between the sexes with regard to crossbite.

Overjet. Negro children tended to have lower overjet scores than whites; nearly 18 percent of the Negroes had scores of 1 or 2 mm. of overjet whereas only 9 percent of the white children had comparable scores.

Overbite. White children tended to have greater overbite scores than Negroes. About 10 percent of Negro children had negative or O overbite scores contrasted to less than 2 percent of the white children. Nearly half the white children had overbite scores of 5 mm. or greater as opposed to only 16 percent of Negro children.

Maxillary midline diastema. Negro children had maxillary midline diastemas more often than white children; 19 percent of Negroes and 8 percent of whites had diastemas of 2 mm. or greater.

Midline deviation. White children had more and greater interarch midline deviations than Negroes. Forty-two percent of the white children had no midline deviations, whereas more than half (54 percent) of the Negroes had none. Relatively twice as many white children as Negroes had midline deviations of 2 mm. or greater.

Frenum attachment. The distance from the point of attachment of the upper labial frenum on the alveolar ridge to the tip of the gingival papilla between the central incisors was greater in Negro children than whites. For about 29 percent of the Negro children, this distance was 7 mm. or greater, whereas only 7 percent of the whites had measurements this large.

Tooth displacement. Negro chil-

dren had fewer anterior displaced teeth than white children; nearly one-half of the Negroes were free of anterior tooth displacements compared with only about one-third of the whites. Almost 43 percent of white children had two or more anterior teeth displaced; the corresponding figure for Negroes was 30 percent.

Anterior spacing. Negroes tended to have more spacing between their upper anterior teeth than whites. More than three-fourths of the white children and only about three-fifths of the Negro children had no upper anterior spaces. Only 10 percent of the white children had two or more upper anterior spaces whereas 26 percent of the Negroes had as many.

In summary, Negro children had a better interarch relation between their first permanent molars and more available space in each arch for their permanent teeth, Horowitz and Doyle stated.

Data on standardized, objective measurements of occlusal relations are needed for children of all age groups living in both fluoridated and non-fluoridated communities to allow a better understanding of the problems of malocclusions, the authors said. Such data may eventually prove valuable in planning public programs of orthodontic care.

Dental Care for Patients Missing in RMP Projects

Dentists could make a real contribution to their patients under the Regional Medical Programs, according to Dr. Sherman L. Cox, Division of Dental Health, Public Health Service.

Under the Heart Disease, Cancer, and Stroke Amendments of 1965, each program is required to have a regional advisory group to advise in the establishment and operation of the program. The advisory groups, by law, consist of practicing physicians, medical center officials, hospital administrators, representatives of other agencies, organizations, and members of the public. Only about 60 dentists are among the more than 2,000 members of the 54 advisory groups, Cox said.

Although there has been little formal inclusion of dentists in the programs and little project development by dental agencies, Cox believes that dental care should be included. Regional centers where treatment techniques are developed for patients who have received surgery or radiation therapy for the control of cancer of the head and neck need clinical research in the area of maxillofacial rehabilitation. He stated that the closely allied problems of cleft lip and palate and oral and speech rehabilitation could be included in these research projects.

State Programs

Some States, however, do have dental components included in their Regional Medical Programs, Cox asserted. For example, the University of North Carolina Dental School, in cooperation with the State's three medical schools, has the first dental program in the country to receive money from the program. This program began July 1, 1968. The Federal share will be $230,000 for the first 3 years.

He stated that efforts to expand and improve participation of the State's dental profession in patient care in community hospitals include continuing education activities and a study of dental facilities in community hospitals. Ten such hospitals will be selected for a pilot program in continuing education for dentists and physicians. Emphasis will be placed on the dentist's role in comprehensive care of patients with various serious medical problems.

An RMP program in Texas, Cox reported, has a dental project to provide cooperative arrangements among the various dental, educational, and patient care institutions in the State. It will expand maxillofacial prosthetic services and develop continuing education courses for dentists, particularly those practicing in rural areas.

The Michigan Regional Medical Program has a project to assist the practicing dentist in oral cancer detection and to manage patients whose cancer or cancer treatment affects their oral health. Cox said this program will provide information on oral diagnosis for practicing physicians, and it stresses the importance of early consultation concerning oral lesions.

A region in Connecticut is planning continuing education courses for physicians and dentists. This project will develop a "university environment" in the community hospital for planning and coordinating activities such as continuing education, medical information centers, and a regional television network.

Other Opportunities in RMP's

Cox said Regional Medical Programs provide an opportunity to establish dental care demonstration projects in a hospital environment as part of the goal of delivering health care by the most effective methods. In such projects dental school faculty members can work more closely with their medical colleagues in providing patient care. Cox emphasized that State dental directors have a responsibility to participate in these programs to insure that adequate dental projects are included for the patients in their jurisdiction. Dentists in private practice could also participate by providing treatment, by serving on advisory committees, and by attending refresher courses. He also asserted that dentists in the service of the Federal Government have an obligation to insure that various dental programs are coordinated with the regional programs.

Cox believes that in creating an initial program, no region, before seeking an operational grant, can possibly determine all program objectives and design appropriate projects to meet them. A few well-designed projects are sufficient to begin a program with supplemental proposals submitted as appropriate. This concept is important for dental programs. Dentistry can be included in a supplemental program even if it is not included originally.

Dentists to Alert Patients Who Smoke to Cancer Risk

Smoking is a deep-rooted, highly personal habit that has become a social institution, and there are no simple solutions and no single educational manipulation that will sig-

nificantly reduce the problem declared John A. Weir, director, Smoking and Health Project, American Dental Association.

The data from two prospective mortality studies show that cigarette smokers have a higher relative risk for cancer of the buccal cavity than for cancer of the pharynx. The smoker's risk for cancer of the tongue is greater than indicated by combined figures for the buccal cavity, Weir noted. Although research attempts to delineate the exact nature of smoking's relationship to oral cancer must continue, there is enough evidence to warrant reducing cigarette smoking to reduce oral cancer and other conditions.

In 1964, Weir said, ADA contracted with the National Clearinghouse for Smoking and Health of the Public Health Service to study current preventive education and to find more effective ways for professional authorities to educate their patients. A program of patient education will be developed for use by the dentist in private practice, he stated.

The most effective way, Weir declared, for the dentist to educate and alert the patient is in the dental office. He believes that the dental visit is conducive to effective education because the patient is usually relatively healthy and, therefore, most psychologically receptive to information and suggestions rendered by a professional health figure.

The dentist will be better qualified to initiate discussion, according to Weir, if he is well informed on the subject. To achieve this, the smoking and health project office of ADA has subcontracted with two dental schools, the University of Pittsburgh and the University of Nebraska, for the development, evaluation, and local distribution of education materials.

Information is placed in professional publications, and undergraduate, postgraduate, and continuing education programs at the participating schools have been developed. A newsletter featuring abstracts of smoking research is published and circulated to all dentists in the experimental areas of Nebraska and southwestern Pennsylvania, he said.

Weir listed patient education materials and techniques as follows: an appropriately worded sign for dental reception areas requesting patients to refrain from smoking, educational pamphlets, filmstrips, and educational slides. All the aids are designed to be used within the dental office, he said.

The concerned dentist should not expect that all, or even many, of his patients will quit smoking because of his educational activity. Last year, Weir emphasized, more than 1 million Americans quit smoking. If each dentist helped only one of his patients to make a similar decision during the coming year, the number who quit smoking would be more than 10 percent greater than it was this year.

Is Child's Oral Self-Image Important?

The preference of children for various facial appearances associated with different types of occlusion may serve as a subjective frame of reference for the dental patient and thereby influence his motivation to seek or cooperate with orthodontic treatment, stated Dr. Lois Cohen and Dr. Herschel S. Horowitz, Division of Dental Health, Public Health Service.

In January 1967, 759 school children in Chattanooga, Tenn., were studied to determine how children perceive occlusal relations in others and in themselves. Most children were between 10 and 12 years old and in grades 5, 6, and 7. Stanford-Binet intelligence scores, taken 5 months before the study, resembled the shape of a normal distribution with not much variation between language and nonlanguage components, the authors stated.

Each child was shown nine drawings (11 by 14½ inches) of heads of children about his age and of the same sex. The drawings were used to overcome any literacy or language barriers, and the half-tone technique was used because more than half the children were Negro, Cohen and Horowitz said. The heads of boys and girls were identical, except for the oral area and the hair style which differentiated sex.

Preferential Ranking

The numbered pictures of nine occlusal conditions were placed in random order, and the child was asked to select the picture that looked the best. After he ranked the pictures, the child was asked to choose the one which looked most like himself (or herself), so that a measure of self-perception could be obtained.

Cohen and Horowitz noted that regardless of race, sex, age, and intelligence, there was a general uniformity in the hierarchy of preferences in the following order: ideal occlusion, open bite, mandibular protrusion, midline deviation, maxillary protrusion, excess spacing, bimaxillary protrusion, crowding, and finally repaired cleft lip.

Cohen and Horowitz stated that contrary to expectation, the boys ranked a protruding lower jaw lower than did the girls. Those children with average intelligence scores of less than 70 ranked mandibular protrusion higher than did any other subgroup.

Girls ranked maxillary protrusion two steps higher than did boys, the authors said. Ten-year-old children, whose permanent teeth had not yet erupted, and who may have missing primary teeth, ranked excess spacing higher than did older children. Bimaxillary protrusion, thought to be more common among Negroes than among whites, was ranked higher by the whites. There was a three-step difference by sex in ranking bimaxillary protrusion; boys ranked this condition in fifth position whereas girls placed it in eighth position. Crowding was almost always placed near the bottom in ranking.

Self-Image

The largest proportion of children said that they themselves had ideal occlusion, explained the authors.

More girls than boys, more Negroes than whites, and the lesser intelligent more than those of higher intelligence chose mandibular protrusion as their self-image. As for midline deviation, more boys, more whites, and slightly more children of higher intelligence chose this condition than did their contrasting subgroups, noted Cohen and Horowitz. More boys than girls, more

younger children than older, and more of lower intelligence than of higher intelligence chose excess spacing as their self-image.

More Research Needed

The authors believe that by combining a subjective frame of reference with objective occlusal measurements it is possible that a feasible public health tool or index can be developed for screening children for orthodontic treatment programs. They emphasized, however, that a workable index will need considerable additional research, and the method used in this study should be replicated on other representative cross sections of children.

The reliability and validity of the pictures need to be determined, possibly by data from accumulated interviews and reviews by panels of experts. Because attitudes of the mother seem to be related to obtaining orthodontic treatment for the child, parental attitudes, particularly those of mothers, need to be related to attitudes of their children, Cohen and Horowitz stated.

Emergency Health Services

Health Commissioner Tells Story of Hurricane Beulah

Only 18 lives were lost during the 15 days Hurricane Beulah raged over Texas in September 1967, although the storm was the worst natural disaster ever recorded in the State. Beulah was the third most destructive hurricane in history.

More than 8,000 persons were injured, 542 homes were destroyed, 23,000 homes were damaged, and 513 small businesses were destroyed. Damage to public facilities amounted to $1 million, and other property loss totaled $1 billion. Practically all of south Texas below San Antonio was flooded.

Dr. James E. Peavy, commissioner of the Texas State Department of Health, said that the small number of deaths proved the value of a good warning system, preplanning, and the dedication, will, and resolution of all people involved in emergency activities when the public welfare is at stake.

Preparations for disaster relief were begun when Beulah was still distant. The Governor ordered all agencies to emergency standby. Agency representatives staffed the emergency operations center, a deep underground installation in Austin. The Governor moved into the center and took personal charge.

Routine activities of 17 divisions of the State health department were completely redirected. Staff members were on duty at the center around the clock, receiving and relaying information and requests for aid to Peavy and other personnel, and coordinating health activities with those of other agencies.

Eleven packaged disaster hospitals were pressed into use. The State health department's division of disaster health and medical services marshaled its district organization for disaster medical care, and the district director for the area struck by the storm directed medical treatment activities throughout the Rio Grande Valley.

Volunteer physicians and nurses were flown into the area by the National Guard. Personnel and facilities of local health departments and migrant labor projects performed valuable service, not only for Texas residents but also for Mexicans who were forced to flee across the river to higher ground. Public health nurses, physicians, veterinarians, and laboratory specialists from the State health department joined in relief activities.

Water analyses were performed on nearly 1,800 water samples by regional laboratory personnel in Brownsville, Corpus Christi, and Houston. Typhoid vaccine, which the State health department produces, was rushed to the area by public safety department and Air Force planes.

Food inspectors removed 15 million pounds of food from the market because of flood damage or contamination, and salvaged 3½ million pounds for use. Sanitary engineering personnel sanitized highway department trucks quickly so that drinking water could be transported to the flooded area. The marine resources division maintained surveillance of the storage and distribution of seafood that was in danger of contamination.

From past experience, health department personnel knew that mosquitoes would be a major problem. Entomological investigators recorded as many as 100 mosquito lightings per minute at the height of the infestation. Cattle died when mosquitoes clogged their noses and bronchial tubes. Air Force spray planes were asked to stand by. As soon as the rains stopped, four large transport planes, each capable of spraying 25,000 acres a day, began operations. Malathion was applied at the rate of 3 ounces per acre in a spray mist or fog. Altogether, almost 75,000 gallons of insecticide were used to cover 3,250,000 acres of land in 15 counties. A commercial air service was contracted to supplement the work of the Air Force.

The final cost of the Texas State Department of Health's response to health and medical problems created by the storm exceeded $800,000.

Among the lessons learned from dealing with Beulah, Peavy mentioned learning to mesh activities with other agencies more efficiently, to identify and eliminate bottlenecks in logistics, and to make firm decisions quickly, based on cool-headed analysis of options. He praised the cooperation of the Air Force, the Navy, the Office of Emergency Planning, the Public Health Service, and the united cohesive effort of health departments on both sides of the Rio Grande.

Health Department Role In Civil Disturbances

Drawing on Detroit's experiences during the 1967 civil disturbances, Dr. John J. Hanlon, former city commissioner of health, offered suggestions to health departments that may face such emergencies.

Hanlon, now Assistant Surgeon General and Deputy Administrator, Consumer Protection and Environ-

mental Health Service, pointed out that of three priorities when riots occur—assurance of the public safety and security, provision of prompt, effective medical care, and assurance of sanitary conditions in the community—the health agency is responsible for two. He emphasized the importance of setting up immediately a 24-hour intelligence and communications network connecting police, fire, health, social service, and related departments.

Medical Facilities

He outlined factors to be considered in establishing primary emergency medical treatment centers. These should be in major hospitals with full-time medical staffs. Plans for reception and treatment of the injured should include, in addition to an efficient triage system, provision for isolating injured prisoners in one section of the hospital.

To expedite functioning of the emergency facility, the existing patient load should be reviewed to see if some patients can be discharged or transferred to other hospitals, and backup hospitals should be designated to receive the overflow at the emergency facilities and to care for the less seriously injured.

Physicians, surgeons, and nurses from unaffected hospitals and from private practice can be recruited to staff the emergency centers, Hanlon said. In Detroit in 1967 they volunteered in such numbers that it was never necessary to solicit professional help. Extra laboratory and X-ray technicians and other auxiliary personnel are also needed in the emergency center hospitals. In Detroit, since health department activities were curtailed during the disturbance, public health nurses worked as hospital nurses, and sanitarians performed a variety of services. He reminded emergency planners that staffing should also be flexible since peak activity seems to come at certain times, such as during the early evening.

Admissions and medical records offices also should be adequately staffed, he stated, so that careful records are kept. During the 3 months following the Detroit disturbances the medical records were consulted by the local police, the Federal Bureau of Investigation, the McClellan committee, the Civil Rights Commission, the Public Health Service, and lawyers whose clients were treated at emergency centers.

It may be necessary to post guards to protect external hospital facilities (oxygen system, powerhouse, heating plant, generators, and storehouses). Guards may also be needed to prevent unauthorized persons from entering the medical treatment center.

Also in the emergency blueprint should be adequate stockpiles of medical supplies and arrangements to replenish the stockpiles. Chance can place a great burden on a small hospital isolated in the middle of the riot action area, and plans should take into account arrangements for delivering personnel and supplies if this situation occurs.

Other Responsibilities

During the disturbance the Detroit health department was called upon to make medical inspections and to care for minor injuries of large numbers of persons detained in jails, prisons, and temporary places of detention. The department was also responsible for inspection of sanitary conditions in such facilities.

Refuse and garbage accumulates when regular collections are curtailed; sanitary hazards may result. Food spoilage may ensue when stores are looted or when there are power failures, Hanson declared. In Detroit sanitarians and inspectors entered the riot area as soon as it was safe to inspect food stores and to prevent the sale or consumption of spoiled foods.

The health department worked with the food industries to restock looted but undamaged food stores and, when an area's stores were destroyed, arranged to send in large trucks stocked with a variety of supplies. When price gouging was reported, the health commissioner was given power by the city council to set prices on food and necessary household items.

Detroit's sanitarians not only condemned stocks of spoiled food, drugs, and chemicals but inventoried destroyed or damaged buildings; emergency housing situations such as overcrowding; dangerous conditions such as freestanding walls, broken glass, and exposed cellars; water and sewage problems; and situations conducive to growth of rodent, vermin and fly populations.

Emergency Health Services Need Coordinated System

The emergency department of a hospital should be the front door, not the back door, for those in need of services, according to Dr. Joseph K. Owen, chief of the Hospital and Ambulance Services Branch, Division of Emergency Health Services, Public Health Service.

In some places, Owen said, the emergency department is the weakest point in the hospital, although the number of patients is enormous. Many authorities believe emergency service should be a full-fledged department for all hospitals. Much effort is being given to triage or sorting procedures to move patients quickly to the kind of care they need. The Public Health Service is planning programs to upgrade patient care.

Physical makeup and equipment of many hospital emergency departments are not the best. State health officers and hospital planners might act now to seek public support for better emergency health care facilities in the future, Owen suggested.

Many ambulances in use today were not built to provide the kind of emergency care needed. Work has been started to design a vehicle that will be an extension of the emergency department—an emergency room on wheels, capable of supplying resuscitation and other lifesaving measures at the scene of an accident and enroute to the hospital. At the request of the Public Health Service, the National Academy of Sciences-National Research Council is making an extensive study of the medical criteria of ambulance equipment and design. [The Academy's findings were published in January 1969 in "Medical Requirements for Ambulance Design and Equipment," which supplements the previous "Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport."

Both documents can be used in the development of training programs.]

A central dispatch service is essential in the community, and all calls for emergency care should be dispatched to this center to minimize delay. The center should maintain contact with hospitals, police, firemen, civil defense groups, and others. Everyone in the community should be aware of this service and where it is located. The phone number should be listed in schools, public places, and homes.

One universal phone number for all emergency calls in all communities is a desirable goal; several European countries have adopted this idea. All ambulances should have equipment to communicate with hospitals, police, and the communications center. Television equipment in the ambulance could be used to have hospital-based physicians advise ambulance personnel how to handle critical situations; several pilot projects of this kind have been initiated.

The Hospital and Ambulance Services Branch is part of the new Public Health Service Division of Emergency Health Services. Current program activities are geared to handle disaster needs and day-to-day emergency medical needs. The basic objective, Owen said, is to insure that every community in the United States evaluates, upgrades, and expands its emergency services to form a coordinated system that will provide every injured or sudden-illness patient adequate and timely care. The incentive lies in the thousands of persons who can be saved from death or disability.

Statistics

Priorities for Advances In Health Statistics

Priorities in health statistics must be based upon the nation's priorities in health, emphasized Theodore D. Woolsey, director, and Philip S. Lawrence, associate director, National Center for Health Statistics, Public Health Service, in presenting an agenda for action. Public health administrators and planners need relevant data to quantify problems and to aid them in setting priorities and program goals, estimating costs, and measuring progress.

Discussing major national health problems as a framework for determining emphasis in health statistics, Woolsey and Lawrence pointed out that the health statistics field is ready to move against some of these problems, given the will and the resources. Unresolved methodological blocks stand in the way of moving against others.

Data on Domestic Problems

Planning, mounting, and evaluating sustained attacks on the cluster of problems centered around poverty, the cities, and the Negro demand a mass of detailed information. Yet the basic kinds of data—counts of the people, measures of their health, the health services they receive, the resources available, and the state of the environment in which they live—are not available for most cities, much less for subcommunities within those cities.

With the exception of the vital statistics systems and the census, the nationwide data systems are not capable of providing the needed detail, Woolsey and Lawrence said. Exploiting the capability of the vital statistics system to provide much useful information bearing on these problems will be costly.

Similarly, we will need new statistical data if we are to meet the challenge of improving the efficiency and quality of health services, the authors said. Such data must afford answers to the questions of who goes where, for what services, at what cost, and with what satisfaction. Some of this information is becoming available from the national health interview survey and hospital discharge survey of the National Center for Health Statistics. However, the data must be more sharply pointed if they are to be truly relevant for current developments in medical care.

Additional sources of information must be tapped if we are to learn the extent of the time gap between the discovery and the application of health knowledge. Even the simplest questions about the treatment patients actually receive in the ordinary course of medical care have not been answered. Information is particularly lacking about treatment given in homes, offices, and outpatient clinics. Some means must be found for obtaining the data from the persons and organizations that provide care.

Woolsey and Lawrence suggested that unresolved methodological problems bar the way particularly to the development of statistics relevant to other high-priority health problems such as data on the worsening state of the environment and on the behavioral problems related to health—smoking and misuse of drugs. Indices are needed by which to measure progress against such problems as air pollution. Concepts of behavioral problems, wherever agreed upon, the authors stated, must be translated into practical operational terms that can be applied in field surveys.

In contrast, against the problem of rapid population growth in the United States, methods for gathering the needed statistics are at hand. What must be done, Woolsey and Lawrence commented, is to move from the single study to the continuing collection of national data.

Statistical Problems

The authors pointed out a number of issues of statistical methodology which cut across many of the national health problems. One is the matter of modernizing the vital registration system, which provides much basic data about health and population growth, so that it will serve modern needs better. Another is the development of the means for gathering needed data about subjects of great sensitivity without infringing on a person's privacy. A third issue is how to estimate health care needs. The process of determining the resources of manpower, services, and facilities that will be required to meet the health care needs of a given population is exceedingly complicated, said Woolsey

and Lawrence. Any agenda for health statistics must include research on methods of determining needs, as well as practical demonstrations of the utility of the methods.

The timelag of statisticians in supplying data is inevitably great, Woolsey and Lawrence emphasized. If, however, statistics are to be relevant to our health problems, if they are to make a difference in tomorrow's world, the time to start on the agenda is now.

Effect of ICDA Revision On Cause-of-Death Data

Classification of the underlying causes of death and the supporting procedures used to assign them have been changed in the Eighth Revision of the International Classification of Diseases Adapted, which came into use in the United States in 1968.

These changes between the eighth and earlier classifications make interpretation of variations in mortality patterns by cause of death difficult or even impossible, said Robert A. Israel and A. Joan Klebba, Division of Vital Statistics, National Center for Health Statistics, Public Health Service. But, said the authors, comparability ratios may be applied to the mortality data classified under the seventh revision to compensate for any distortion in trends in mortality for specific causes of death that arise from differnces between the eighth and earlier revisions.

Comparability ratios are computed by dividing the number of deaths assigned to a particular cause or group of causes under the eighth revision by the number of deaths assigned to the equivalent cause or group of causes under the seventh revision. The denominators of the ratios were obtained from all deaths in the United States in 1966; the numerators were obtained by recoding according to the new revision of a stratified random sample of 1966 deaths.

The table compares death rates per 100,000 for specific causes for the period January–June 1968 and the corresponding rates for the period January–June 1967 as reported and as revised by application of comparability ratios. Comparability ratios for more detailed causes of death by age, color, and sex are in preparation, the authors stated.

Infant Mortality And Birth Weight

Mortality in the first year of life varies much more widely by birth weight than by color or sex, Dr. Helen C. Chase, Office of Health Statistics Analysis, National Center for Health Statistics, reported. She presented preliminary data from a nationwide study of mortality among infants born in the United States in 1960.

For this study, the birth and death records were linked for all infants born in 1960 who died under 1 year of age in 1960 and 1961. Linkage was possible for 107,038 infant deaths. Although this report focuses on birth weight, linkage of vital records permitted analysis of a number of other characteristics reported on the birth record, including the mother's age at time of birth, the birth order, and period of gestation.

The study showed an overall infant mortality rate for the 1960 cohort of 25.1 per 1,000 live births, Chase said. Rates for males were about 30 percent higher than for females regardless of color; rates for nonwhite infants were about 90 percent higher than for white infants regardless of sex. Although the rates differed, these relationships agree with those routinely derived from unlinked records.

Variations by Weight

The range of infant mortality by birth weight is very great, said the author. By birth weight, infant mortality was highest for infants weighing 1,000 gm. or less at birth; these children have little chance of survival. Infant mortality decreased to its lowest level among infants weighing 3,501 to 4,000 gm. at birth, after which it again increased. The rate for infants weighing 1,000 gm. or less at birth was more than 100 times the rate in the optimum group.

Variations by Color

The relative position of the infant mortality rates for white and nonwhite infants was not uniform, however, over the entire birth weight,

Death rates for January–June 1968 as reported and rates for January–June 1967 as reported and as revised by application of comparability ratio

Title in eighth revision	Comparability ratio	Eighth revision (1968)	Seventh revision (1967)	
			Reported	Revised by comparability ratio
Syphilis and its sequelae (090–097)	0. 322	0. 5	1. 3	0. 4
Hypertensive heart disease with or without renal disease (402, 404)	. 398	9. 7	26. 6	10. 6
Active rheumatic fever and chronic rheumatic heart disease (390–398)	1. 138	8. 7	7. 6	8. 6
Asthma (493)	. 696	1. 4	2. 0	1. 4
Hernia and intestinal obstruction (550–553, 560)	. 757	3. 7	5. 1	3. 9
Cholelithiasis, cholecystitis, and cholangitis (574, 575)	. 982	2. 4	1. 9	1. 9
Hyperplasia of prostate (600)	. 904	1. 5	1. 5	1. 4
Motor vehicle accidents (E810–E823)	. 974	25. 1	23. 8	23. 2
All other accidents (E800–E807, E825–E949)	. 884	29. 0	28. 7	25. 4
Suicide (E950–E959)	. 939	10. 5	10. 5	9. 9

Chase pointed out. In the weight groups of 2,000 gm. or less, the mortality rates for white infants were higher than for nonwhite; in the remaining groups (more than 2,000 gm.), the reverse was true—rates for white infants were lower than those for nonwhite infants.

When the infant period was divided into neonatal and postneonatal periods, neonatal mortality rates for white infants exceeded those for nonwhite infants in all weight groups up through 3,000 gm. Neonatal mortality rates for nonwhite infants were higher than those for white infants for the remainder of the birth weight range and, for postneonatal mortality, throughout the entire birth weight range. At the same time, there were higher proportions of live births in the lower birth weight groups among nonwhite than among white infants. This concentration was noted up through 3,000 gm.

Similar observations were reported in a study of a cohort of infants born alive in the United States during the period January–March 1950. Comparison of data from the two studies for the neonatal period showed an increase in the proportion of nonwhite infants weighing 2,500 gm. or less at birth—from 9.7 percent in 1950 to 12.9 percent in 1960. Over the same period, the proportion of white infants in this vulnerable age group declined slightly, from 7.0 to 6.8 percent. However, this disadvantageous birth weight distribution among nonwhite infants was offset by more favorable neonatal mortality in each birth weight group up through 3,000 gm.

As a result, when the neonatal mortality rates were adjusted for differences in birth weight, a marked change in the relationship for white and nonwhite infants was revealed. While the adjusted rates were higher for nonwhite infants than for white in 1950, in 1960 weight-adjusted rates were lower for nonwhite infants than for white, both for males and females.

Chase concluded that this relationship is not due to statistical artifacts associated with more complete recording of birth weight information. It suggests, she said, that nonwhite infants weighing 2,500 gm. or less at birth may be more mature in gestation than white infants of the same weight and therefore have a better chance of survival. The results emphasize the need for more extensive examination of the study data according to period of gestation.

New Proxy Measure For Health Status

An assessment of the health status of approximately 2,000 persons was desired as part of a study to quantify the determinants of the demand for health care. Dr. Arnold I. Kisch, assistant professor of preventive medicine, School of Medicine, University of California, Los Angeles, and coauthors from the School of Public Health described a new proxy measure that was developed to meet this need and reported results of two pretests of the procedure.

Need for New Measure

The need is very real, the authors commented, for a proxy measure of health status whose score will correlate as closely as possible with the assessment a physician might make on the basis of a thorough history and physical examination. The measure we have developed, they said, is for use as a research tool in assessing the health status of large populations for whom physical examination is impractical.

The proxy contains four questions whose scoring is cumulative. The proxy score should relate inversely to the respondent's health status, Kisch and associates pointed out. Two questions relate primarily to acute illnesses and two to chronic illnesses. The period of recall in the original study was a year, and this period was also set as the interval in the proxy questions.

The four proxy questions were administered to 185 patients at an ambulatory care facility. It took about 2 minutes for a respondent to answer the four questions, said the authors. Each patient's complete medical history was then taken, and he was given a physical examination. Subsequently, the medical records of these patients were examined independently by two physicians, who gave a numerical rating assessing each patient's health. The physicians' ratings were compared with the proxy scores. This comparison cannot be done by regression analysis (least squares estimations) for a variety of reasons related to the characteristics of the proxy, Kisch and co-workers explained. Therefore, contingency table analysis was used.

Results of Pretests

The scores on the short self-administered proxy correlate closely with the physicians' appraisals based on physical examination and medical history (see contingency table, which is based on the first of the two pretests). Yet, said the authors, while the health status proxy is a significant predictor of patient health, in its present state it is not totally unbiased. The proxy appears to overestimate the number of persons in good health. Thirty-three persons rated by the proxy as in good health were rated by the physicians as being in medium or poor health. Fortunately, said the authors, this bias decreases as sicker persons are scored. The proxy also somewhat overestimated the number in medium health. In rating poor

Comparison of ratings of health status, by health score and by physicians

Health score	Physicians		
	Good health	Medium health	Poor health
Low (good health) 0–20	97	28	5
Medium (medium health) 21–60	20	27	4
High (poor health) 61+	0	0	4

NOTE:
$X^2 = 74.3335$ Contingency coefficient = 0.5354
Degrees of freedom = 4 Maximum likelihood ratio = 42.1689
X^2 per degrees of freedom = 18.5834

health, the health score did not appear to exhibit bias, but the category is small.

The proxy measure is easy and quick to administer, Kisch and coauthors commented, and seems to be readily accepted by respondents. It can be administered in a mailed questionnaire form as well as in a structured interview schedule. Thus, the proxy is a new tool for surveys. It cannot be overemphasized, however, they said, that the proxy is only a survey research tool, not intended as a substitute for the physical examination in medical practice.

Most States Follow Closely U.S. Standard Certificates

A large majority of the registration areas which revised their certificates of vital events for use in 1968 followed closely the latest U.S. standard certificates, reported Dr. Robert D. Grove and Mary Frances Bonner of the Division of Vital Statistics, National Center for Health Statistics, Public Health Service. This high degree of cooperation is particularly significant, they said, in view of the considerable changes in content and format of the standard certificates.

The U.S. standard certificates of vital events are revised periodically by the Public Health Service in consultation with representatives of State vital statistics offices. The latest standard certificates were issued in 1967.

Forty-six of the 56 registration areas revised at least one of their five certificates in 1967 or 1968, most of them in the latter year. Live birth and death certificates were revised by 42 registration areas, fetal death certificates by 41 areas, marriage certificates by 20 areas, and divorce certificates by 21 areas.

Live Birth, Fetal Death

The States followed the standard certificates most closely in the revision of their certificates of death, live birth, and fetal death; changes in the contents of the latter two were most numerous and most important. Changes in the live birth and fetal death certificates are intended to provide more information on health in the perinatal period and on factors related to fertility.

One new question on the standard certificates, added by 38 areas, asks the dates of the last live birth and the last fetal death. "Date of last normal menses" has been substituted for "completed weeks of pregnancy" in order to obtain more accurate data on the period of gestation. In 1968, 34 areas adopted it. Four States and three cities had adopted the new form of the question earlier. Forty areas now ask for the month of pregnancy in which prenatal care began and the total number of visits for such care.

On the standard certificates, a question concerning the highest grade of school completed by each parent was substituted for one on the occupation and industry of the father, because education was considered a more accurate and useful indicator of socioeconomic status. The question was adopted by 41 areas. Another deletion was of the question, Is residence on a farm? None of the States revising the certificates retained the question.

Death, Marriage, Divorce

Whether the deceased lived on a farm and whether he served in the Armed Forces were among the questions deleted from the 1968 U.S. standard death certificate and also by most of the areas revising their certificates. A new question, "Were autopsy findings considered in determining the cause of death?" was added by 43 areas, including four which had previously included it.

Grove and Bonner cataloged the several new items added to the standard marriage and divorce certificates. Despite the States' adoption of many of the suggested revisions, there is still considerable variation, they noted, in the content and format of marriage and divorce certificates.

Greater ease of use dictated a number of changes in the format of the U.S. standard certificates. Protection of possibly prejudicial information was another primary consideration. Confidential sections were added to the new marriage and divorce certificates to facilitate the omission from certified copies of certain information—on race, education, and previous marital history. Of the 20 areas revising their marriage certificates, 13 added a confidential section for the first time. Such a section was included by 14 of the 21 areas revising their divorce certificates. On all U.S. standard certificates except the death certificate, race was included in the confidential section.

We Need To Shift Emphasis To Computer Input

All the talent expended on mechanisms for speedy processing and tabulation of data is of little avail unless equivalent talent is expended on determination of content and on control of the recording and collection of the information. This is the conclusion of Dr. Carl L. Erhardt, director of planning for health intelligence, and Jack Kirschenbaum, principal statistician, Department of Health, City of New York. They explored the dangers inherent in being overly impressed with the output capabilities of a computer while ignoring the real problems that exist in obtaining accurate, timely input data.

Limits of Systems Approach

Erhardt and Kirschenbaum pointed out that some management personnel believe that neither present nor forseeable computer technology is in any sense capable of simulating large and complex systems at a biological or social level. Simplification of such problems by use of assumptions does not mean that such models represent real life or that such simulations provide adequate guidance to an understanding of the consequences of possible actions. People who feel uncomfortable with ambiguity, says one executive, may create mathematical models which are not models of the real world, but only a small "knowable" segment of it. The real problem in decision making, according to this executive, is usually not the quantification of data, but determining what factors are relevant and how relevant they are and what basic values, assumptions, and biases are held by the decision maker.

If the day comes when, as predicted, optical reading devices will be able to handle more than a thousand characters a second from several type fonts and when even handprinted material can be read directly into the computer, a question will still need answering. Who, asked the authors, will oversee and control those who prepare the information for the machine to read, especially since this material may originate from a thousand or more different locations and persons?

Example of Input Toil

If it is decided that the New York City Commissioner of Health needs information, for example, on the age distribution of persons receiving public assistance in one small area, pertinent information has to be recorded at the source for every person granted assistance. Facts must be transferred from the record to some input device, such as punched cards—unless a direct input arrangement is provided at each location receiving the necessary information. Provision has to be made to update the information regularly to eliminate people dropped from and added to the rolls. Input must be stored so that facts can readily be recalled. If speed of recovery is demanded, it is possible to assemble the desired information cumulatively and to regularly update it for recall at any time. Someone, however, commented the authors, would have to anticipate the specific question, and the essential computer programs must have already been devised and be in place. How, they asked, can this procedure be efficient when applied to every possible tabulation that might be demanded by any number of consumers?

Ends such as the one in this example are not impossible of accomplishment, Erhardt and Kirschenbaum observed. Emphasis is continually on the output potentials, however, while the lengthy road to their realization and the expense for such a flexible product is conveniently brushed over. The problem of gathering accurate, appropriate, timely data still presents itself in much the same form as in precomputer days, they said. Statisticians must still advise program directors on the data's appropriateness. Checks, possibly computer-aided, have to be built into the system. Personnel turnover and absenteeism, mechanical failures, shortages of program personnel and computer time, and the necessity to analyze data in such a way that the decision maker will be able to comprehend the results are all present problems.

Health Education

Foresees Major Changes For Health Educators

Changes in intellectual technology, the technology of diffusion, international relations, and social-structural changes have been identified by the American Academy of Arts and Sciences' Commission on the Year 2000 as the major sources of change which could accelerate or deter the advancement of health and social development.

Discussing implications of these sources of change for health education practice, Dr. Lowell S. Levin of Yale University's Department of Epidemiology and Public Health foresaw radical changes in the recruitment, training, and function of health educators during the next three decades. He predicted that professionalism will give way to more purely technical activities, consumers will take hold of policy and quality control, and there will be a unified system of recruitment, preparation, and training which will encourage flexibility and continuity of both education and service.

According to Levin, the technical changes which seem crucial for the future of society as a whole as well as for health professionals may not lie in the hardware of science, but, as stated by the commission, ". . . an intellectual technology in which such techniques as simulation, model construction, linear programing, and operations research will be hitched to the computers and will become the new tools of decision-making."

The impact of such technology on the health worker can be expected to be both extensive and particular, Levin said. In the first instance, he went on, the sheer numbers of people concerned with health decision making must include all those who make observations, ranging from exclusively clinical to group or community behavior observers. The goal is to achieve an identity of the service system with the decision-making or planning system. This means that every neighborhood health worker, every nurse, every physician, and every other health or health-related worker will become an ultimate resource of primary data and feedback.

Further, Levin stressed, the recipients of services and the community at large will also be involved as data and validation resources, a mandatory requirement in order to insure the democratization of the decision-making process. Without consumer and social involvement, there is the danger of a professional decision-making apparatus with values and priorities which may not reflect the goals of society.

The most profound advances in the health care system will probably be in the poverty areas where consumer participation and control is emerging, Levin stated. In terms of their requirements for the new technology of decision making, the planner-designer has in the poverty populations a lay resource for data of the highest order of sensitivity (validity) and relevance (integration). The harvesting of this resource can be achieved through community organization which encourages consumer communication. This is considerably more than asking people what they want; it involves a far more generous input of information on "how it is," in Levin's opinion.

The health education specialist already in the profession will have to change his objectives, technical skills, and self-image, Levin pointed out. Regarding his self-image, the health educator will have to relinquish part of his role as teacher and give emphasis to his role as learner. He will have to continue, mechani-

cally at first, to pick up a new range of signals from the population he serves; to retransmit these data with the least amount of professional static, to value what he learns as having essential worth, and to feed back to the consumer in a way which will encourage trust. The health educator's role as a communications link in the decision-making process will have to be complemented with his responsibility as a communications "enabler," according to Levin.

What will be called for is a repositioning of the health educator from a leadership role to one of technical assistant once removed, said Levin. The objective will be to deter consumer dependency, increase consumer control, and reduce the mystique of health services on the one hand and to assist in sensitizing or making psychologically available the health system on the other, he continued. In practice this will probably work out as a cross between ombudsman and consultant. It will also entail a shift from an orientation characterized by general health goals established by professional determination to a problem-centered orientation focusing on emergent, temporal, and often health-related needs defined by consumers and the public at large.

School Dropouts Learn Health Department Tasks

A health department can become a "school" for disadvantaged youth, by involving them in a variety of practical learning situations in the community. By the same token, such youth can contribute many hours of health education service to the department. These conclusions were voiced by Leland R. Kaiser, Tri-County Health Department, Aurora, Colo., and co-authors in describing the department's experimental program for 16 high school dropouts.

Eight boys and eight girls spent 4 weeks at the department, under a grant from the U.S. Office of Education for a Colorado school district's "Dare-to-Care" program. During this time the students were rotated through the various department activities—home visits, clinics, staff conferences, restaurant inspections, clerical routines, neighborhood mothers' groups, field activities in health education, and so on. Emphasis was on their active participation as both learners and providers of service to patients, the authors said. The students spent much time in handing out health education pamphlets, doing clerical tasks, developing film, operating the offset press, and other tasks.

Since the youngsters had never been exposed to a family living unit of instruction and had been misinformed regarding man-woman relationships, a nurse-instructor held informal, coeducational sessions for them on childbirth, growth and development, bathing, teenage morality, and the family planning concept which included a discussion of family planning methods. The students expressed their appreciation for the opportunity to discuss their concerns with an adult, according to the authors. This on-the-job instruction had a ring of reality often absent from the usual classroom presentation.

Throughout the 4-week period, the students and staff met as a group to express their likes and dislikes, and adjustments were made based on these exchanges. The health department staff had ample opportunity to "live" with the students and apply some of their theories of working with the disadvantaged. The Dare-to-Care students also were able to test their "theories" about adults. At the end of the period, a questionnaire was distributed among the staff and the students for an evaluation of their experience.

Staff reaction varied. It ranged from "the boys were unshaven, unkempt, had a bad odor, and showed no initiative" to "responsible, cooperative, and self-reliant." A wide range of opinion and feeling was elicited, the authors reported. The challenge of helping the student to find himself was a prominent staff motivation. A one-to-one relationship between staff member and student was considered most desirable.

The staff's perception of its role was helping the students develop adult roles, providing adult models, clarifying personal ideals, setting educational goals, improving their interaction with adults, giving them a view of the world, exposing them to other people in need, helping them to become interested in themselves, and helping them feel more secure. In other words, the public health personnel saw themselves as change agents, as community educators, the authors said.

The students responded best to staff members who liked them but were firm with them. Their candid responses to the questionnaire revealed that they were quite sensitive to the unspoken staff attitudes toward them. For example, one student did not like two of the staff members "cuz they were very snotty." The authors pointed out that this absence of a diplomatic hypocrisy can be quite shocking to middle-class professionals who are not used to earthy and fundamental expressions of interpersonal opinions.

Asked to itemize their learning experiences, the students listed many which indicated that their view of what they learned was far more concrete and job specific than the staff's view of what they learned. For example, the following were among the numerous experiences mentioned: how to make a home visit, how to test blood and urine, who can receive services from the health department, dangers of radiation, how to type and file records, how to cook hamburger, effects of alcohol and smoking, how to operate a public health clinic, and how to greet people.

Hopefully, the authors remarked, the concrete activities are a vehicle through which more subtle nuances of human behavior are transmitted even though the students failed to identify any of these nuances.

Do M.D.'s Communicate With Their Patients?

To learn which attributes of the physician-patient interaction are related to outcome in terms of patient satisfaction and followthrough on medical advice, Dr. Barbara M. Korsch, University of Southern California School of Medicine, Los Angeles, and co-workers studied 800

patient visits to a pediatric outpatient department by tape recording the verbal communication between the physician and the patient's mother and by followup interviews with the patient's parents.

The sample of patient visits consisted of first encounters between a patient's mother and a particular physician. The setting was a hospital walk-in clinic which handles a variety of common, acute pediatric conditions. The physicians were at various levels of training; all had at least 1 year's experience in pediatrics. All the parents and physicians were aware of the presence of the tape recorder, the authors reported.

The conversation shown in the box illustrates some significant communication gaps which were repeatedly found in the study: (*a*) obvious, excessive use of incomprehensible medical jargon by the physician, (*b*) the few times the parents were able to speak they expressed concern about diagnosis and cause of the illness and about self-blame, an issue which the authors believe is crucial to most of the families of pediatric patients, and (*c*) a few unnecessary statements by the physician which could only heighten parental anxiety.

Regarding patient satisfaction and followthrough on medical advice, the components which can be related statistically to patient response include the patient's perceptions of the "expressive role" of the physician—of the physician's being "more friendly," concerned, having good communication skills, and being reassuring. The authors also pointed out that clear statements of diagno-

Tape-Recorded Conversation in a Pediatric Clinic

FATHER How does his heart sound?

PHYSICIAN Sounds pretty good. He's got a little murmur there . . . I'm not sure what it is. It's . . . it uh . . . could just be a little hole in his heart.

MOTHER Is that very dangerous when you have a hole in your heart?

PHYSICIAN No, because I think it's the upper chamber and if it's the upper chamber then it means nothing.

MOTHER Oh.

PHYSICIAN Otherwise, they just grow up and they repair 'em.

MOTHER What was it that caused the hole in his heart?

PHYSICIAN It's cause . . . uh . . . just developmental, when their uh . . .

MOTHER Mmm.

PHYSICIAN There's a little membrane that comes down and if it's the upper chamber there's a little membrane that comes down, one from each direction And sometimes they don't quite meet and so there's either a hole at the top or a hole at the bottom and then . . . it's really . . . uh . . . almost never causes any trouble.

MOTHER Oh.

PHYSICIAN It's uh . . . one thing that they never get SBE from . . . it's the only heart lesion in which they don't.

MOTHER Uh-uh.

PHYSICIAN An uh . . . they grow up to normal.

MOTHER Oh good.

PHYSICIAN No . . . a heart murmur is by itself.

MOTHER M-hm.

PHYSICIAN It's just developmental.

MOTHER Yeah.

PHYSICIAN At first I thought it might be functional, the way you described it, but a functional murmur is heard down at the bottom of the heart and his is heard more up here at the top. . . .

MOTHER Oh.

PHYSICIAN . . . and along the sides. So I think you can probably . . . but it's without a thrill so it means he probably . . .

MOTHER M-hm.

PHYSICIAN In fact, it may even close off at times.

MOTHER Yeah?

PHYSICIAN 'Cause sometimes the pressure in their hearts aren't enough to make them open.

MOTHER Mmm.

PHYSICIAN And sometimes it's only with pressure and gradient differences. These things open and you can hear a murmur.

MOTHER Oh. I see.

PHYSICIAN So . . . a lot of murmurs are heard at birth that are buried at 6 weeks.

MOTHER Yeah? Well! I didn't know that.

PHYSICIAN Even some of your terminal . . . your blue babies sometimes don't turn blue 'til they're 3 or 4 weeks old.

MOTHER Oh yeah?

PHYSICIAN 'Cause of pressure gradients.

MOTHER M-hm. Oh my gosh.

PHYSICIAN Really no problem with it. They almost never get into trouble so . . .

MOTHER Do you think he might have developed the murmur being that my husband and I both have a murmur?

PHYSICIAN No.

MOTHER No. Oh, it's not hereditary then?

PHYSICIAN No.

MOTHER Oh, I see.
(Someone whistling in room.)

PHYSICIAN It is true that certain people . . . tendency to rheumatic fever, for instance.

MOTHER Mmm.

PHYSICIAN There is a tendency for the abnormal antigen antibodies reactions to be inherited, and therefore they can sometimes be more susceptible.

MOTHER Oh, I see. That wouldn't mean anything if uh . . . I would . . . I'm RH negative and he's positive. It wouldn't mean anything in that line, would it?

PHYSICIAN Huh-uh. (No.)

MOTHER No? Okay.

PHYSICIAN No . . . the only thing you have to worry about is other babies.

MOTHER M-hm.

PHYSICIAN Watch your Coombs and things.

MOTHER Watch my what?

PHYSICIAN Your titres . . . Coombs titres.

MOTHER Oh, yeah.

PHYSICIAN Have you ever had a blood transfusion?

MOTHER No.

PHYSICIAN Oh, you'll probably be all right, I think, for a while.

sis and causation of the illness by the physician are important for successful communication. Attention to the parents' perception of their child's illness and, most important, handling the mother's expectations of the medical visit in word or deed significantly increase satisfaction.

In the total sample, 76 percent of the patients were satisfied and 42 percent were highly compliant with medical advice, the authors reported. Noncompliance was only partly explained by interaction data, but other explanations, such as the strength of the health threat presented by a particular illness, have contributed to noncompliance, they concluded.

Philadelphia Pharmacists Are Health Educators Too

Among the professionals who can contribute significantly to the promotion of public health is the community pharmacist. With his broad and varied education and training, the pharmacist can assume various roles in public health work.

Public health education marks the public health era perhaps more than any other single activity, and this appears to be the means by which the practicing pharmacist can contribute most, in the opinion of Arnold L. Snyder, Pharmacy Health Council of Philadelphia, and William A. Allen, Philadelphia Department of Public Health. The pharmacist occupies a unique position in this regard, they went on, because it is to him as a health adviser who can be understood and who is understanding that many people turn for guidance concerning health problems.

The Pharmacy Health Council of Philadelphia, a federation of local pharmacy organizations and the two pharmacy schools in Philadelphia, was established in 1965 in recognition of the fact that an informed public is an essential factor in the stimulation and maintenance of community health programs and that the primary source of such advisement must be professionals. The council's goal is the active involvement of pharmacists in the mainstream of public health programs at the community level, the authors reported.

The council formed a citywide network of health information and referral centers in neighborhood pharmacies in the interest of more effective person-to-person communication. This system has enabled the pharmacists to participate in many health education activities, some of which are: inform their patrons about available services at the health department and make appropriate referrals; assist in the distribution of health education literature, such as literature on venereal disease aimed at teenagers; advise the public on the increasing hazards of the misuse and abuse of drugs; promote annual tests for cervical cancer; participate in a campaign to stress the importance of early prenatal care in prevention of birth defects; and, during "Poison Prevention Week" advise the public on how to poison proof a house and present fire department rescue squad vehicles with properly labeled syrup of ipecac, which is vital as a first-aid measure in most cases of accidental poisoning.

Plans are underway for a project using pharmacists in chronic disease control and health promotion, which has been endorsed by many of Philadelphia's health agencies, according to the authors. One feature of the project is the use of pharmacy students in community health education tasks.

The authors concluded that the success of the council's continuing community action program is based on a united front, volunteerism, and involvement, particularly with the underprivileged, to more fully utilize the professional manpower of pharmacy in the pharmacist's role as a public health and personal health educator.

Public Health Nursing

Favorable Attitudes Offset By Cultural Influences

Although weight control was emphasized more than other instructions, 73 percent of the control patients and 53 percent of the experimental patients from a sample of 80 Negro primigravidae gained more weight than their physicians recommended, reported Marie L. Lowe, of the University of North Carolina's School of Public Health, Chapel Hill. She described a study of compliance with medical recommendations to women admitted during their first trimester to one clinic.

The patients were blindly and randomly assigned to either group, she explained. The control group received only routine clinic care. The experimental group was referred for public health nursing service in addition to their clinic care.

Increasing demands on public health nursing necessitates assessing results of current practice, and compliance with instructions is a criterion of effective teaching, she said. The patient may learn and comply with instructions, not learn but comply, learn but not comply, or neither learn nor comply, Lowe reflected. If the patient neither learns nor complies, nursing cannot make a difference.

Should instructions given by the physician or nurse be alien to the patient's culture, they may be rejected. One wonders how much practical use is made by public health nurses of the knowledge of cultural differences between social classes.

Compliance may be measured in different ways, she observed. The index used was the change in amount of deviation from physicians' instructions reported between two interviews approximately 5 months apart. The final interview was conducted by Lowe in the ninth month of the pregnancies.

The study design did not permit a quantitative test of reliability. A test-retest would have been contaminated by intervening instructions.

Much of the collected data related to eating habits. The southern diet, she explained, contains excessive starch, ample meat (largely pork) usually fried, and few green leafy vegetables. Usually vegetables are overcooked with fat.

Excessive weight gain was considered bad by both groups. Neverthe-

less, both groups reported low intake of milk, green leafy vegetables, lean meat, and cereals but excessive amounts of pork, fried meat, vegetables cooked in fats, carbohydrates, and carbonated drinks, Lowe revealed.

The 24 patients lost from the study did not differ in social and demographic characteristics from either the control or experimental groups, so they represented no systematic bias. The observed weight gain was consistent with the reported high consumption of fats and carbohydrates.

The discrepancy between attitudes and reported diet may have been due to the difference between rational knowledge and resistance to change from the patients' long-established eating habits, Lowe stated.

Home Visiting Program Benefits Future MD's

If, as physicians, medical students are to grasp their role in providing comprehensive care, they must develop awareness of the patient in his total environment and learn to work with professionals in nonmedical disciplines. These assertions were made by Jocelyn T. Mitchell and Eleanor Krimerman, Louisiana State University Medical Center, New Orleans, who described a home visiting program for medical students.

Premedical education is grossly deficient in behavioral sciences and loaded with physical and biological sciences, they declared, and medical students are more "body oriented" than "people oriented."

The Home Visiting Program

An experimental program was established at Louisiana State University Medical Center to teach use of community facilities by giving medical students an understanding of patients' ecologic situation from the perspective of the patient and his family. Students were taught by and dealt with a public health nurse and a social worker.

Junior students have participated in the program for the last 2 years, the authors recalled. While doing their psychiatry clinic practice, students work with the family of a patient from the psychiatric clinic of Charity Hospital in New Orleans.

The families visited were selected by screening patients the student had seen in Charity Hospital's outpatient clinic, the authors explained. The screening was supervised by staff psychiatrists and the public health nurse faculty member. Specific objectives were established and discussed with the student. Mitchell accompanied students during home visits, but the student was responsible for handling the interview.

When the patient returned to the clinic, the authors continued, information from the interview was given to the psychiatric faculty supervisor, and recommendations were made for therapy and therapeutic goals or appropriate dispositions. Theory and practicum were correlated at post-visit conferences. The students contacted community agencies and implemented referrals.

Evaluation and Evolution

Students apparently had difficulty reorienting from physical diagnosis to making a family diagnosis. Therefore a 2-year comparative study was made of the students' ability to observe and follow through by stating objectives, making observations, then interpretations, and recommending interventions.

The 1966–67 data shows 91 percent of the students observed the patient's housing conditions and in 1967–68, 89.4 percent of the students made the same observations, Mitchell and Krimerman reported. Students' understanding of "descriptive observation without interpretation" did not include description of behavior.

In 1966–67 the students' second place observation was the appearance of the neighborhood, and they attempted to assess its contributory effect on the patient. In 1967–68 the second place category of observations was "interaction with patient and family members," with 81.5 percent followed by 68 percent in the "neighborhood and its description" category.

The first year's teaching, they said, consisted mainly of lectures on community resources. In the second year, class time was increased from 1 to 2 hours a week and a psychiatric social worker added to the teaching staff. She also supervised followup and referral by students. Additional course content included ecologic systems review, an introduction to concepts of human ecology, family psychodynamics, epidemiology of suicide and suicide prevention, and legal aspects of the medicine-nursing function.

The Outlook and Results

More formally organized teaching to sharpen the observational skills of medical students is needed, the authors observed. It is much more difficult to evade the "total human being" if one has seen him in his home, met his relatives, seen him either hungry or broke, or viewed the mental, physical, or social illnesses in his family. Only a few students recognized the importance of political and religious processes.

Students increased their awareness of the functions and capabilities of persons in supportive disciplines by working with nurses, public health workers, and social workers. Being supervised, tested, and taught by persons from other disciplines induced changes in their attitudes.

Nursing has been presented with the challenge of moving from within itself and communicating across disciplinary lines, Mitchell and Krimerman declared.

Pediatricians Would Assign Office Nurses PH Duties

Most of the patient-care tasks which physicians would delegate to their office nurses have been done for many years by public health nurses under circumstances far less favorable than those in private pediatric practice. This observation was made by Dr. Alfred Yankauer, Dr. John P. Connelly, and Dr. Jacob J. Feldman of the Harvard School of Public Health in their discussion of a survey to ascertain practices and opinions pertaining to the use of allied health workers by fellows of the American Academy of Pediatrics.

The response rate was 88 percent. Nonrespondents were not concentrated in any geographic area or

State, but they were older than respondents and less likely to be practicing. One-fifth of the respondents were practicing in a multispecialty group.

Queries concerned 40 specific tasks representative of all tasks in ambulatory patient care. Tasks with highest priorities were giving information, taking histories or making home visits, and counseling.

Delegation of Tasks

If a registered nurse is employed in a practice setting, the authors reported, delegation of patient caretaking is substantially increased. Once the practice employs two or more workers—one of whom is a nurse—delegation frequency does not change.

The more physicians associated in the practice, the more allied health workers were employed in the office. The authors observed that the frequency of physician task delegation increased in direct relationship to the number of workers employed.

Although more nonprofessional personnel became available as the total numbers of employees in the office increased, technical tasks—such as immunizations and parenteral therapy—were apt to be done by professional nurses. The registered nurse was used more frequently than all other health workers combined for taking blood pressure and giving injections.

Registered nurses were used extensively for clerical, laboratory, and technical tasks, the authors reported, but not in preference to other workers when such workers were available. Patient-care tasks were less apt to be delegated to any health worker, but when delegated, these tasks were most likely to be assigned to registered nurses.

The number of health workers employed in the practice affects the delegation of technical, clerical, and laboratory tasks more strongly than the delegation of patient-care tasks, the authors noted. For patient-care tasks, no effect beyond two or more employees could be demonstrated. Patient-care task delegation also depended strongly on the presence of one or more professional nurses.

The authors observed a contrast between the relatively few respondents who delegated patient-care tasks and the two-thirds who said they would do so if capable personnel were available. A large majority of physicians said they would hire ancillary personnel and that their use would increase the volume or improve the quality of pediatric care or do both. These physicians perceived greater use of allied health workers as the most important single change in practice that would lead to greater efficiency.

General Observations

Reported nursing shortages are distorted by maldistribution and misuse of professional nurses and by their high professional dropout rate, the authors stated. Eight percent of the active registered nurses in 1966 were employed in physicians' offices. Of the 254 graduates of advanced programs in 1966–67, only 48 were prepared for maternal and child health nursing practice.

The history of professional nursing has been linked to hospitals. Were all school nurses and all public health nurses considered pediatric nurses, the ratio of such a total nurse group to pediatricians in office practice would be substantially lower than the hospital nurse to physician ratio.

Well-baby care, district home visiting, school health, and other categorically determined handicaps tend to fragment the child, the family, and the community, the authors asserted. Traditional program boundaries inhibit the dialogue between nurse and physician and preclude clinical caretaking by nurses within a comprehensive medical setting.

In Boston, the authors continued, an abbreviated training program has been launched for registered nurses whose work demands an expanded patient-care role. Knowledge, skills, and basic understanding of human development and culture required of a pediatric nurse practitioner are similar whether she is in a suburban middle class practice or delivering comprehensive care to the urban poor. As the program develops, the authors hope that nursing dropouts will be attracted back into practice.

Like hospital and office nurses, the authors declared, the services of the public health nurse have been more closely linked to institutional needs and programs of agencies than to taking care of patients. The stereotype of office nurses as quasi-secretaries should not prejudice the caretaking potential of the pediatric nurse practitioner in office practice.

Communicable Disease

Research Offers New Hope For Control of Meningitis

Knowledge that serum antibodies to meningococci develop in healthy carriers has opened the door for consideration of immunizing agents against meningitis and several related clinical entities. This knowledge is potentially the most important result of recent research on the meningococci, according to Dr. Robert O. Peckinpaugh and co-workers of the Naval Medical Research Unit No. 4, Great Lakes, Ill. The apparent difference in the association of serogroups and clinical cases may assist in selecting an immunizing agent, added the authors.

Two other recent developments that the authors said have given new meaning to the understanding of the meningococci are the identification of new serogroups and the definition of the sensitivity of meningococci to sulfadiazine as an epidemiologic tool. The role that the Boshard group (also called "Y," "E," or "F") plays in the epidemiology of the meningococci at the Great Lakes Naval Training Center has been identified. The roles of other distinct new groups, 29E, Z, X, and 135, are reported by the authors.

Twenty-two percent of the recruits arriving at the training center carry meningococci. Upon graduation 9 weeks later, 57 percent are carriers, Peckinpaugh and co-au-

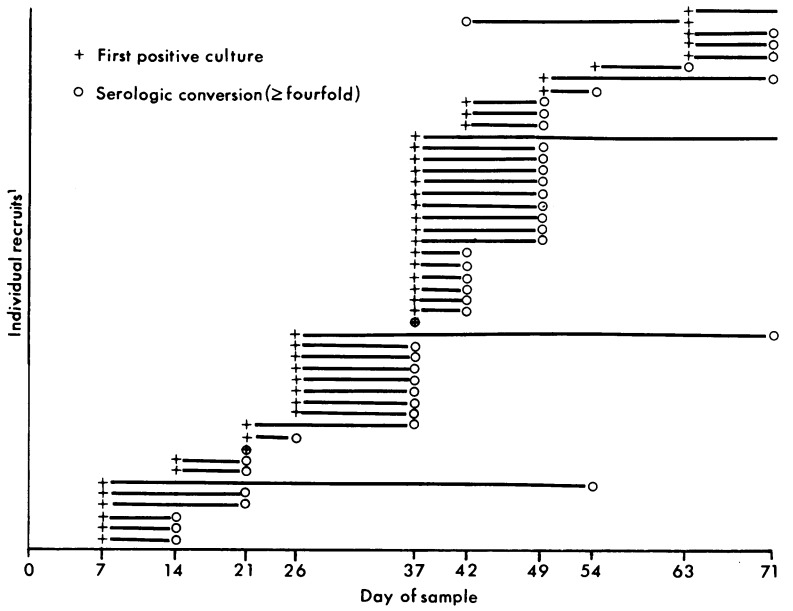
thors stated. Upon arrival, most recruits receive 1 gram of sulfadiazine twice daily for 2 days to eradicate sulfadiazine-sensitive strains. (Sensitive strains are those inhibited by 1 mg. of sulfadiazine per 100 ml. or less of diluent, the authors explained.) When recruits arrive, only 12 percent of the strains are resistant to sulfadiazine (require more than 1 mg. per 100 ml. to inhibit growth). At graduation, 91 percent of the strains are resistant, and the predominant group is Boshard, the carrier state of which is at least associated with clinical cases. This would appear to be a good exchange, the authors commented.

When cases representing disease states are related to the estimated carriers of serogroups, the ratio of Boshard cases to Boshard carriers is 1 to 18,000, according to Peckinpaugh and co-authors. The ratio of cases to carriers for groups B and C is approximately 1 to 2,000.

The authors call the availability of serologic tests "the most exciting development" in recent research on the meningococci. There is a definite relationship, they said, between the acquisition of meningococci by healthy carriers and seroconversions (see figure). Seroconversion follows the first positive culture by an average of 8½ to 10 days. This relationship has been established on a longitudinal basis by both complement fixation and indirect hemagglutination tests. In the disease state, the authors pointed out, seroconversions occur even when the patient is under intensive therapy.

Epidemiologic studies can now be carried out in depth, the authors conclude, with the new hope that more intensive efforts may lead to the control or prevention of the dread disease of meningitis.

Relationship between first positive cultures and complement fixation seroconversions.



Serology \ Culture	+	−
+	[2] 45	0
−	2	5

[1] Of the 52 recruits sampled 11 times during training at Great Lakes, only five recruits consistently had negative cultures and serologies; 47 recruits had positive cultures, and of these 45 showed seroconversions.

[2] In one instance, the complement fixation rise preceded a positive culture.

HPV–77 Rubella Vaccines Prove Highly Effective

Three experimental rubella vaccines derived from the HPV–77 strain showed an efficacy of 93–95 percent in field tests on elementary school boys on the island of Taiwan. (Boys who received vaccine during the incubation period of the natural disease are not included in the percentage base.)

In reporting this result, Dr. J. T. Grayston, department of preventive medicine, University of Washington, Seattle, and co-authors noted that the last rubella epidemic on Taiwan had occurred in 1957–58. Between epidemics, rubella is not endemic, the authors said, and children born after 1958 have been shown to be seronegative for rubella.

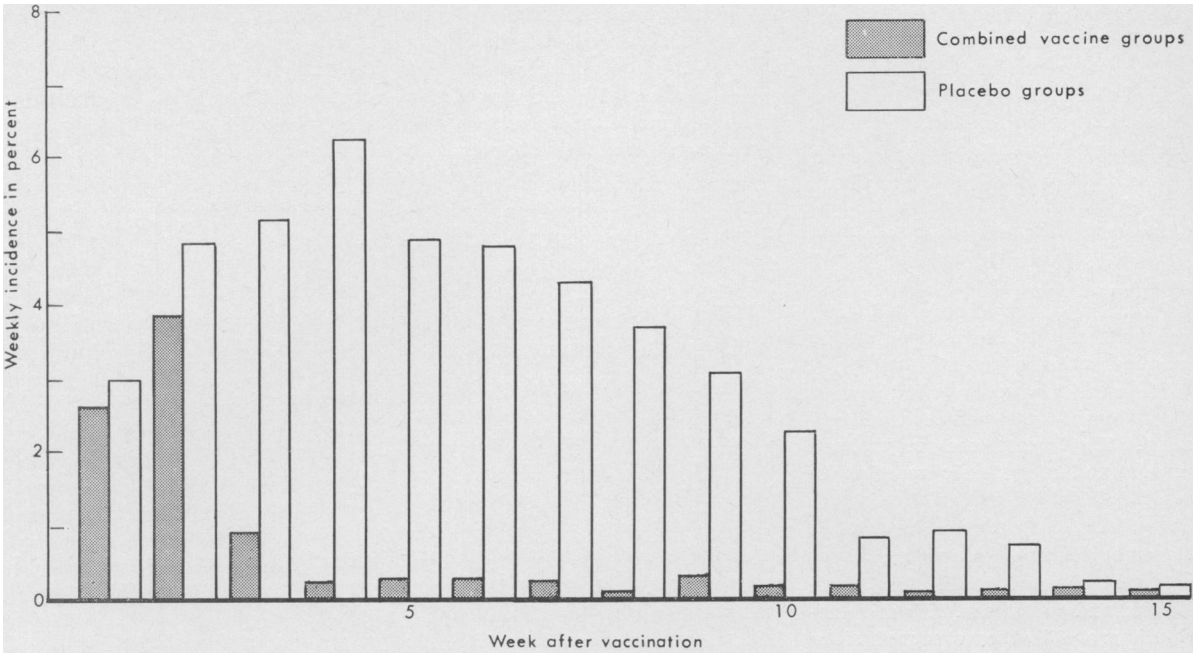
In the 1968 field tests (which were undertaken after rubella cases had already begun to appear), more than 3,000 doses of the vaccines, with 2,000 doses of placebo, were given at random to school boys in grades 1 through 4 in two schools in Taipei and two in Taichung. The combined enrollments in these schools in the four grades was 15,000.

Protection Vaccines Gave

Beginning 3 weeks after immunization, only 50 rubella cases were diagnosed among the 3,269 boys who received one of the three HPV–77 vaccines. Thrice weekly surveillance for rash disease in the placebo and the uninoculated children showed, by the end of June, cumulative attack rates of more than 50 percent in Taipei and 20 percent in Taichung. Among boys receiving vaccine, there was a sharp drop in rash cases between 2 and 3 weeks after inoculation. The figure shows, by week after immunization, the attack rates in the Taipei schools for the combined vaccine groups and for the boys receiving placebo.

The groups given the vaccine grown in duck embryo cells and the one grown in dog kidney cells shed

Weekly incidence of rubella in vaccine and placebo groups in Taipei schools following vaccination



virus as frequently as did the placebo group. However, only 22 percent of the children immunized with the vaccine grown in monkey kidney cells were rubella positive. Under the conditions of the study, only the vaccine grown in monkey kidney cell culture was shown to protect against subclinical infection. The ability of the other two vaccines to protect against subclinical infection will remain in doubt, said Grayston and co-authors, until further study with a longer interval between inoculation and challenge.

Adverse Reactions

Three serious reactions occurred within 5 to 10 minutes of injections of the dog kidney vaccine. All three boys experienced marked pallor, absent peripheral pulses, were cold and clammy to the touch, sweated profusely, and became unconscious. Breathing was depressed, and in one boy wheezing was noted. All three boys, however, responded within 1 to 2 minutes to subcutaneous epinephrine. Three weeks after the reactions, serums from two of the boys failed to show evidence of circulating antibody. The pathogenesis of the reactions remains unknown, said the authors, but appears to be specific to dog kidney vaccine. There were no adverse reactions of any kind following injection of the other two vaccines.

Outbreak of Gastroenteritis Related to Water Pollution

Outbreaks of waterborne disease are a relatively infrequent public health problem despite water pollution, commented Dr. Harvey H. Borden and co-authors. Borden is a medical officer of the Heart Disease and Stroke Control Program, Public Health Service, currently assigned to the School of Medicine, State University of New York at Buffalo, and Erie County Department of Health.

Nevertheless, said the authors, widespread gastroenteritis that was reported to the Erie County Health Department in June 1968 seems to have been caused by polluted water. The outbreak of disease occurred among people living in and around a small village near Buffalo. Preliminary investigation by public health nurses revealed a significant amount of illness in the population. The drinking water of the affected population was found to be unusual in color, taste, and odor.

A survey of a random sample of 622 persons in the area revealed that 184 persons were ill—an attack rate of 30 percent, compared with 8 percent among 157 randomly selected controls residing north of the village, who used water from a different supply system. In general terms, the illness occurred in one of every three persons and in one of every two households in the affected area.

Information on the quality of water, milk, and food, and on the severity, date of onset, duration, and character of the illnesses was obtained by questionnaire from all persons in the surveyed households. The date of onset was determined for 170 of the 184 ill persons. Stool specimens from 32 of the ill patients and samples of water from multiple sources in the supply system were analyzed for bacteriological, virological, and chemical content. Local physicians, hospitals, nursing homes, and public schools were also surveyed to determine the magnitude and severity of the outbreak.

Symptoms of the illness were mainly abdominal pain, nausea, and

diarrhea of 48–72 hours duration. There were no areas of clustering or absence of the disease, and all age groups were affected.

The water for the affected area came from Lake Erie. It was processed at a water treatment plant by rapid sand filtration, sedimentation, and presuperchlorination. This plant was located about a half mile south of a local sewage treatment plant that emptied refuse into a nearby creek. The creek, in turn, flowed into Lake Erie at a point a half-mile north of the intake system of the water treatment plant.

The results of analysis of the stool specimens of 32 ill persons were negative. The symptoms may have represented a systemic reaction to some nonspecific bacterial floral or bacterial toxin not identifiable through routine bacteriological or chemical examination, explained Borden and co-authors. This explanation is probable, they observed, since the chemical analysis of water samples revealed that the water came from a creek which might have been contaminated by the local sewage plant. Icing on Lake Erie allowed water to flow under ice from the creek outlet southward toward the intake system of the water plant. Also, the water treatment plant lacked automatic recording and chlorinating equipment so that sewage-contaminated water possibly was underchlorinated at times.

Orders to boil all water and the shutting off of the suspect water supply caused a rapid end to the illness (see figure), the authors reported.

Preschoolers Hit Hardest In Measles Epidemic

Preschool children accounted for three-fourths of the reported cases of measles in an epidemic that occurred in Chicago during the winter of 1967–68. This unusual age distribution helps explain why an intensive school immunization campaign failed to abort promptly the epidemic, stated Dr. George E. Hardy, Jr., Immunization and Epidemiology Programs, National Communicable Disease Center, Public Health Service, and co-authors.

Measles cases in Chicago, the authors said, are reported by hospitals and physicians—not by schools. Since January 1967, the Chicago Board of Health has attempted to investigate all cases reported. The characterization of the 1967–68 outbreak, they said, rests on data obtained by field investigators for the Chicago Board of Health, medical officers of the U.S. Public Health Service Epidemiologic Intelligence Service, and public health advisers.

Case Distribution by Age

A total of 1,386 cases of measles were recorded in Chicago during the winter of 1967–68; 1,029 of these were officially reported. Of the 1,295 cases in which the patient's age was known, 72 percent occurred in children under 5 years. Among the 367 ill children 5 years or older, 92 percent were between 5 and 10.

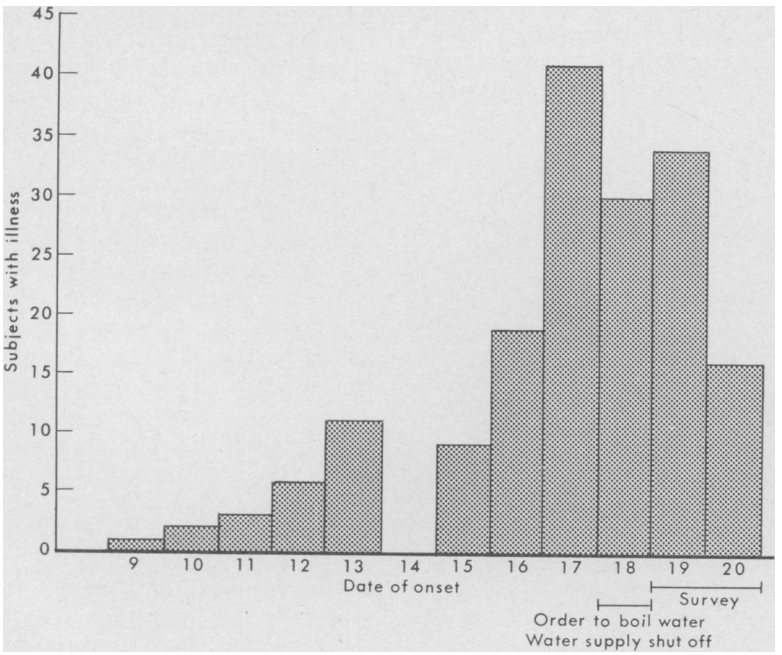
To determine whether the age distribution of the children with reported cases was representative, families of 372 of the ill children were reinterviewed, and 409 unreported cases were discovered. The proportion of the 409 cases in children under 5 was almost identical with that for the children with the reported cases.

By January 1968, the authors said, cases had spread from the city's center to 46 of Chicago's 75 community areas. Seventy percent of the areas reported measles at some time during the epidemic; however, five lower socioeconomic areas recorded 55 percent of the total cases. These areas accounted for only 12 percent of Chicago's 1960 population. These five areas are populated primarily by Negroes from the rural South, whites from Appalachia, and Puerto Rican immigrants. Nonwhite persons accounted for 72 percent of the total cases, the authors pointed out.

Immunization Program

Approximately 25,000 doses of live attenuated measles virus vaccine were distributed by the board of health to many of Chicago's schools between September 1967 and February 1968. In February 1968, an intensive measles immunization program was conducted, in which 34,691 additional doses were administered to kindergarten and first- through third-grade pupils. More

Date of onset of disease in 170 ill subjects for whom date could be determined



than 550 doses were provided for Head Start children, and an additional 3,379 doses were given at 14 special preschool clinics. This immunization program did not immediately halt the epidemic, commented the authors, although there was a gradual decline in cases during February and March 1968.

Among the preschoolers, chains of transmission were documented through three and four generations of cases. This mode of spread was particularly marked, Hardy and co-authors noted, among residents of high-rise urban-renewal dwellings where preschool children were found to congregate with common baby-sitters and at crowded recreational facilities. Such communal habits permitted close enough contact to allow continued spread of measles in this young population. Significant transmission among preschool children, an unusual observation, explains the inability of a school immunization program to terminate the epidemic, explained the authors.

Hardy and co-authors concluded that a complete assessment of the epidemiologic characteristics of an outbreak, including the patterns of its spread, should be undertaken before a decision is reached as to the method of control.

Enterovirus Infections In New York State

Important data on infections induced by the enteroviruses in a large population have been provided by studies in New York State, exclusive of New York City, covering the past 10 years. Dr. Hildegard Plager, Division of Laboratories and Research, New York State Department of Health, presented a cross section of the infections reported in the studies, with special attention to those caused by Coxsackie virus A16.

Coxsackie A16

Illness arising from Coxsackie A16 infection is generally mild, seldom lasting longer than 1 week, according to Plager. Children, especially in the 2- to 9-year age group, are most often affected. The incubation period is approximately 3 to 5 days. The illness starts with low-grade fever. Small vesicles, which have a tendency to ulcerate, develop in the pharynx, soft palate, buccal mucosa, gingivae, and tongue. Vesicles also appear on the dorsa of the hands and feet and occasionally on the palms and soles and, in small children, on the buttock. Severe infections, such as paralytic disease resembling poliomyelitis, have been reported. Coxsackie A16 can be isolated from feces, throat washings, and lesions in newborn mice and in tissue culture.

Percent with serum titers ≥ 32

Coxsackie virus	Patients (N=90)	Controls (N=68)
B1	11	10
B2	14	10
B3	8	0
B4	22	9
B5	17	4

Coxsackie A16 had been occasionally isolated in New York State before 1967, said the author, but in 1967 and 1968 it caused small epidemics of hand, foot, and mouth disease in the State. In some instances, it affected an entire family. In the summer of 1968, she reported, the enterovirus infection season started earlier than usual—at the end of June—and it lasted through August. Mostly younger children were affected, but older children and adults who were in close contact with sick children also became ill. Complications were not reported.

An outbreak caused by ECHO virus type 30 with typical manifestation of abacterial meningitis followed the Coxsackie A16 epidemic very closely. In general, adults were affected.

Cardiopathy and Coxsackie

We are now engaged, commented Plager, in an investigation of cardiopathy associated with the Coxsackie viruses. Specimens from 90 patients with a recent diagnosis of myocarditis or pericarditis have been examined. From 68 asymptomatic persons, 97 serums were examined to serve as controls. Serum titers of 1 to 32 or higher for one or more Coxsackie B antigens were found in 54 percent of the patients with cardiopathy as compared with 28 percent of the controls (see table). Titers to Coxsackie virus B3, B4, and B5 were more frequent in the patients than the controls. Sixty-two of the patients were male and 28 female. The majority were less than 10 years of age; one was under 1 year. Twenty patients were more than 40; the oldest was 65. There was no seasonal preference, although the enterovirus season is sharply restricted to late summer and fall.

Chronic Disease

QRS Axis Deviation May Be Predictor of Heart Disease

The QRS axis measurement and its relationship to clinical disease and various anthropomorphic, physiologic, and social variables may be evaluated by epidemiologic techniques, according to Dr. Harvey H. Borden, medical officer in the Heart Disease and Stroke Control Program, Public Health Service, who is assigned to the School of Medicine, State University of New York at Buffalo.

To add to the understanding of the mechanisms involved, he and Dr. Michel A. Ibrahim, deputy commissioner, Erie County (N.Y.) Department of Health, examined and interpreted the associations between the electrocardiographic axis and various risk factors in coronary heart disease, such as elevated levels of blood pressure and serum cholesterol, body weight, and aging in a "free-living" population.

In 1966 Ibrahim and co-workers studied fathers of 501 white high school students, 36–75 years of age, in a suburban community of Buffalo. Information on this group included age, height, weight, blood pressure, serum cholesterol level, smoking habits, and a 12-lead electrocardiogram. Values of the meas-

urements of the QRS axis in this population ranged from −30° to +120° with a mean of 37°, a standard deviation of ±26°, and a standard error of 1.2. With the apparent bimodality of the QRS axis distribution and on the basis of what appeared to be a "natural" population breakpoint around the median, the QRS axis variable was dichotomized by the researchers into a −30° to +30°, or "left-axis deviation" group (244 subjects or 48.8 percent), and a +45° to +120°, or "right-axis deviation" group (257 subjects or 51.2 percent). The terms "right or left axis deviation" refer only to directional trends indicating a certain electrophysiologic state and not to a specific pathologic state.

The relationship between the QRS axis and six variables—age, systolic blood pressure, diastolic blood pressure, cholesterol level, ponderal index, and weight gain since age 25—was shown. Each variable was subdivided into three levels of magnitude, with approximately equal numbers in each group, and the percent of subjects exhibiting a QRS axis between −30° and +30°, or left-axis deviation, was examined, the researchers said. With increasing levels of magnitude for all variables examined, a statistically significant shift toward left-axis deviation was found.

Since age had an effect, age-specific rates were determined for all other results to control the possible influence of age on each variable's individual effect, the authors said. These calculations showed that the same statistically significant findings existed for all the variables examined regardless of age. Age-adjusted rates were also computed and revealed a negligible numerical difference from the crude rates reported.

Relationships between the QRS axis and smoking habits, quantity of cigarettes smoked, and the number of years of cigarette smoking were examined. Cigar and pipe smokers were excluded from the analysis. Results were shown in terms of the percent of subjects with a QRS axis of +45° to +120°, or right-axis deviation. There were statistically significant differences in the QRS axis between the nonsmokers, previous smokers, and present smokers. The shift was toward right-axis deviation, as shown by a rise from 34.5 percent for the nonsmoking group to 54.3 percent for the present smoking group. There was little difference between previous smokers and present smokers. No statistically significant differences were revealed for the amount or duration of tobacco use, the researchers reported.

Since smoking was found to have an opposite effect on the QRS axis from that of the other variables and since age effect was evaluated in a separate analysis of age-specific rates, only serum cholesterol, diastolic blood pressure, and ponderal index were examined, utilizing a combined variable analysis.

Statistically significant differences in the percent of left-axis deviation were found between those subjects in group 1 who had low diastolic blood pressure, ponderal index, and serum cholesterol (15.1 percent), those in group 2 who had two variables low and one high (52.7 percent), those in group 3 who had two variables high and one low (67.5 percent), and those in group 4 who were high in all three variables (70 percent).

Having further subdivided groups 2 and 3 into six separate populations, the eight subgroups (1; 2 a, b, c; 3 a, b, c; and 4) were examined for their relationship to the QRS axis considering both the number and type of "high-level" variables present. Examination of each of six possible sequences (groups 1, 2a, 3a, 4, and so forth) revealed both individual and additive effects for each of the three variables as indicated by a rising percentage of subjects with left-axis deviation. Also, ponderal index appeared to have the greatest and cholesterol the least quantitative effect in changing the QRS axis toward left-axis deviation when comparing the three variables.

The authors said that significant relationships were shown to exist between obesity, blood pressure, serum cholesterol level, and smoking and the measurement of the QRS axis. They pointed out that the interaction and dependence of this easily obtained measurement on various physiologic, anthropomorphic, and social variables related to coronary heart disease make the QRS axis deviation a possible predictor of this disease or of the presence of coronary risk factors.

"Preventive Effect" Occurs Only After First Diagnosis

Prevalence, incidence, annual mortality, and death caused by coronary artery disease among 14,092 men who had at least two consecutive medical examinations were analyzed by Dr. Johannes Ipsen, University of Pennsylvania School of Medicine.

Retrospective data were collected for the period 1950–64 on managers and executives in large industries and business firms who were examined in eight clinics in the eastern United States, he said. Attention was focused on those with diagnoses of diabetes, hypertension, and coronary artery disease.

A total of 4,806 men acquired one or more of these conditions and 1,055 men had two or three of these conditions. Followup of 98.2 percent of the group was achieved; 663 deaths were recorded by the end of the study period, Ipsen noted.

Co-prevalence for each condition was always twice the single prevalence. Presence of two other conditions increased the prevalence of the third condition four times. Ipsen discussed annual incidence using the terms "nonconditioned" (incidence among men without other diagnosis) and "conditioned" (incidence among men with one or two other conditions).

Conditioned incidence was about twice as high as nonconditioned incidence for each diagnosis, Ipsen reported. The presence of two conditions did not increase the incidence over that of one condition.

Nonconditioned incidence showed no change over the 10 years that the men were given examinations; however conditioned incidence showed a marked decrease among those who had been examined periodically over a longer period of time. This decrease was particularly notable for hypertension and coronary artery disease, he stated.

The mortality ratios (observed-to-

expected deaths) were 3.6 for men with one or two diseases prevalent at first examination and 2.2 for those in whom one or more diseases developed over the period they had been given examinations. Mortality ratios for coronary artery disease were of the order of 7 to 8 among men who had coronary artery disease as a single or multiple diagnosis at first examination and as high as 3.0 for men without coronary artery disease but with diabetes or hypertension. The corresponding ratios were 68 percent lower among men with these diagnoses established at later examinations, Ipsen reported.

A preventive effect of periodic health examinations seems to occur only when a person has acquired a significant disease, Ipsen said. The prevention then appears in the diminished incidence of those diseases with which it is usually coprevalent.

CRD Screening in Industry: Results on 10,000 Workers

Feasibility of a mass method for screening in industry was demonstrated by the breathmobile project in which 10,163 workers in Los Angeles County industries were tested. Findings on the project were reported by Dr. David P. Discher, University of California School of Public Health, Los Angeles, and Helen C. Feinberg, Tuberculosis and Respiratory Disease Association of Los Angeles County.

Methods

The breathmobile is a 40-foot trailer equipped and staffed to administer questionnaires, do electronic spirometry, and process minifilm chest X-rays, the authors said. The interviewer-administered questionnaire consists of identifying data, prescreening questions to determine previous diagnoses of chronic respiratory disease, and seven symptom questions with major and minor levels of severity. The bulk of the data in the spirometry test of three to five expiratory efforts is computer processed. The forced expiratory volume at 1 second ($FEV_{1.0}$) and the forced vital capacity (FVC) are the two measures used in the spirometry. Minifilms are read by both a certified radiologist and a chest specialist.

All data are computer processed, and the notification system is computerized. The spirometry signal is analog-to-digital converted in the breathmobile. Questionnaire answers and minifilm reading pads are precoded for card punching. The software generates three computer punched cards and a high-density digital tape log, Discher and Feinberg explained.

Results

The spirometry test yield was 14.1 percent for those exceeding the screening cutoff. The cutoff was based on the "standard" prediction formulas. "Borderline" was the lower 1–5 percent of the "standard" distribution (—1.645 to —2.326 standard deviations); whereas the "abnormal" category was the lowest 1 percent of this distribution (a volume less than 2.326 standard deviations below the predicted mean).

The yield on the questionnaire was 13.6 percent with one or more major symptoms. Chronic cough was the most prevalent major symptom; 6.3 percent of those not prescreened reported it. Almost 10 percent of the minifilms showed suspicious findings, according to the authors.

The average $FEV_{1.0}$ was 3.61 liters for men and 2.57 liters for women; average FVC was 4.65 liters for men and 3.21 liters for women. The sex-age-specific rates for spirometry yield showed a rise with the fifth and sixth decade. Age-adjusted rates were higher for those in manufacturing and service industries compared with those in the trade and miscellaneous categories.

The authors made regression equation comparisons using subgroups in the population screened. Based on findings from a subgroup of nonsmokers who volunteered no positive responses on the respiratory symptom questionnaire, they questioned the "standard" for both sexes and both the FVC and $FEV_{1.0}$. In any screening program the spirometry and its recording system should be calibrated and frequently recalibrated for accuracy in its measurement of flows and timed volumes, stated Discher and Feinberg. Other more insidious sources of deviation from the "standard" formulas could arise from differences in spirometry technique, characteristics of the "populations," and the data processing system, they added.

Frequency of "borderline" and "abnormal" spirometry categories as a function of the questionnaire categories is shown in the table.

Cirrhosis Deaths Increase Among 25- to 44-Year-Olds

Cirrhosis of the liver was the leading cause of sudden, unexpected, natural deaths in Baltimore in 1964–65 in the 25- to 44-year age group. Dr. Lewis Kuller and Karl Kramer of the Johns Hopkins School of Hygiene and Public Health and Dr. Russell Fisher, Maryland's Chief Medical Examiner, examined mortality from cirrhosis in the city during a 17-year period.

There were 2,817 deaths attributed to cirrhosis between 1951 and 1967; 944 were of persons in the

Spirometry results by questionnaire category for 10,163 industrial workers in Los Angeles County

Questionnaire category	Spirometry results (percent)		
	"Borderline"	"Abnormal"	Total
Normal	6. 9	4. 2	11. 1
Minor	8. 7	5. 5	14. 2
Major	9. 6	9. 4	19. 0
Prescreened:			
Chronic asthma, chronic bronchitis, emphysema, or other CRD	14. 4	12. 5	26. 9
Other "serious" disease	9. 6	8. 2	17. 8

25–44 age group. The authors also presented data on the 45–54 and 55–64 age groups but focused their analysis on deaths in the youngest age group.

They examined all death certificates of Baltimore residents with cirrhosis of the liver listed as the underlying cause during the 17 years. For 1957–58 and 1965–66, however, they also reviewed the medical examiner's reports, hospital records, and autopsy protocols.

Between 1951–52 and 1967 among the 25- to 44-year-olds, there was a 180 percent increase in deaths for white males, a 171 percent increase for white females, a 465 percent increase for nonwhite males and a 442 percent increase for nonwhite females. The increase was attributed primarily to the increase in deaths certified by the medical examiner, Kuller and co-workers said.

Thirty-two percent of the deaths attributed to cirrhosis of those 25–44 were certified by the medical examiner in 1957–58; in 1967 he certified 68 percent of the deaths. The percentage was higher for men than women and for nonwhites. For the 45–54 age group, the change in cirrhosis death rates was similar for deaths certified and not certified by the medical examiner.

The authors compared autopsy findings for 1957 and 1966 on the 25–44 age group. Autopsies had been performed in about 75 percent of all nontraumatic deaths in both years. In 1957 autopsies, diagnoses of cirrhosis or fatty liver were made in 16 percent of 175 deaths; in 1966 of 241 deaths, 39 percent had such diagnoses at autopsy. Increases in the rates for cirrhosis do not seem to be caused by changes in certification practices or diagnostic fashions, Kuller and co-workers said.

They pointed out that, although the cirrhosis death rates for those 25–44, especially nonwhites, increased markedly, the death rate for nonwhites for all causes actually declined in the 1951–67 period. They noted that as the deaths for tuberculosis declined (177 deaths in 1951, 23 in 1966) the rate for cirrhosis increased, although after much of the tuberculosis decline had occurred. Perhaps, they speculated, in earlier years the alcoholic died from tuberculosis.

Describe New Criteria In Pulmonary Function Test

A solution to the difficulties of separating "normal" from "abnormal" results in mass screening for chronic pulmonary obstructive disease was offered by K. W. Grimley, Charles N. Adams, and Dr. Robert A. Walton, all of the Alabama Tuberculosis Association.

Their solution is a pulmonary function score developed from a weighted combination of six parameters: forced vital capacity, the percentage of forced expiratory volume produced in the first half-second, the percent achieved of predicted volume at 1 second, the peak flow rate, the maximum mid-expiratory flow rate, and the instantaneous flow when one-half the forced vital capacity has been expired.

Prediction values based on age, height, and sex are from formulas developed in Veterans' Administration studies. Scores from 0 through 3— are reported as normal, 3+ through 6 as abnormal.

Grimley and co-workers felt their system is better than the single measure of forced expiratory volume during the first second, the measure most screening programs now use. They pointed out that if the common criterion of abnormality, a forced expiratory volume during 1 second of less than 70 percent of the predicted volume, had been applied in one survey of 4,238 men, there would have been a false positive rate of 5.5 percent and a false negative rate of 3.1 percent.

In the Alabama program spirometry tests (two trials of a single breath forced expiratory spirogram) and X-rays are made in a 28-foot converted mobile home. Subjects complete a 1-page questionnaire. Spirometry data are digitalized and recorded on magnetic tape. Punched Hollerith cards, the tape, readings on the photofluorograms, questionnaire summaries, and certain other information are stored in an IBM 7040 computer, they stated.

The computer evaluates the pulmonary function results on the basis of two components of the pulmonary function score—the volume score and the fraction volume, or the flow rates score, or both. The composite pulmonary function score is the sum of the two subscores.

The printout includes a scatter diagram of an approximation of the flow volume loop to aid the reviewing physician in rapid evaluation of the computer results. The printout also indicates by symbol the proper form letter to be sent to the screenee.

Grimley and co-workers noted that not only is pulmonary function screening more complicated and frustrating than simple chest X-rays for tuberculosis, but it is also more expensive, about $2 per screenee as compared with 75 cents per chest X-ray.

Peptic Ulcer Increasing Among Those Under 16

Peptic ulcer among children is being diagnosed with increasing frequency was the conclusion from a study of this condition among those under 16 years of age in Erie County, N.Y., by Dr. Harry A. Sultz, School of Medicine, State University of New York at Buffalo, and co-workers.

A total of 106 cases including five deaths were found in a survey of hospital records for a 16-year period. Records of pediatricians, allergists, and other appropriate specialists were also surveyed. Demographic and social data were obtained in 28 home interviews.

The investigators found an increasing trend in annual incidence rates—the 3-year average annual incidence rate rose from 0.5 per 100,000 children in 1947–49 to 3.9 in 1956–58, then declined slightly to 3.5 for 1959–61.

Incidence of peptic ulcer was 1.2 per 100,000 for infants. Among 1- to 4-year-olds the rate was lowest, 0.5, and increased sharply to 13.7 for 15-year-olds. The overall ratio of boys to girls was 1.6 to 1. Greater incidence in boys did not occur until age 10; more than half the girls were diagnosed before age 10.

Relationship of peptic ulcer to socioeconomic status was assessed by census tract of the child's residence. Boys from the highest social class appear to be at greater risk to peptic ulcer than boys from middle and low classes. Among girls there was no variation in incidence by social class.

The stress factor in the etiology of peptic ulcer was tested in the home interviews, the authors said. Mothers of 25 percent of the children with the diagnosis indicated that their marital relationship had been deteriorating. Parents of 11 children were of different religious backgrounds.

In 18 families there was a history of peptic ulcer; nine on the father's side, five on the mother's side, and four on both sides. Although the familial pattern on this condition has been demonstrated among those over 18, our findings indicate the same pattern exists throughout childhood, said the authors.

Whether the increase of peptic ulcer among children reflects a greater awareness of the condition or is a real increase or a combination of both factors remains unanswered, Sultz and co-workers stated. Our findings seem to support the thesis that increased stress on children in modern urban society may be an ulcer-causing factor, they said.

Alcoholism Problem Moving From Clink to Clinic

I would rather see alcoholics welcome as patients in a variety of health and social facilities than see enough alcoholism treatment units to handle all alcoholics, declared Ralph Daniel, chief of the Michigan Department of Public Health's alcoholism program.

I shudder when I see alcohologists demanding funds to enable them to meet the economic, emotional, physical, vocational, social, spiritual, and legal needs of their alcoholic clients, he said. There are other experts better qualified to do these jobs.

Daniel differentiated between the responsibilities of the State and the local health unit. The major concern of local units must be alcoholics; they make the actual contacts. State and national units must be primarily concerned with alcoholism and relate it to the total social and health milieu. States must weigh the good treatment of one alcoholic today against the good treatment of many tomorrow in allocating financial support and program funds.

Comprehensive health planning for alcoholism, Daniel said, would acknowledge that alcoholism is a public health problem, but not exclusively so. Public health should use its resources to encourage all health and social givers to serve alcoholics. We must promote services and educate people that we do not control. We must stimulate services that we do not operate.

In discussing the financing of treatment, he pointed out that the average alcoholic is not destitute, yet we build programs as if all alcoholics were medically indigent. We should plan treatment programs in which patients who can pay for service do so and we should use welfare, Medicare, and Medicaid sources for those unable to pay, he urged.

Daniel outlined the development of Michigan's alcoholism program which grew from four local programs in 1953 to 25 programs today. These involve eight health departments, 11 hospitals, 10 nonprofit corporations, one university, and one municipality. The State unit is now ready to set standards and is in a period of evaluation and standardization.

He also commented on the U.S. Supreme Court's decision in *Powell v. State of Texas*. In his opinion, the five judges were saying that the disease concept of alcoholism is not mature enough and the health resources are not ready, and until these things change, we cannot justify the abandonment of punishment for alcoholics. We are slightly less than halfway through the task of recognizing alcoholism as a major health and social problem, he opined.

Health Planning

Road to Responsive Planning Is Sometimes Rocky

Some of the very real problems that we have encountered in our sincere efforts to proceed with comprehensive health planning under Public Law 89–749, although of general concern, seem to be particularly related to our agency, said Dr. Ellen Z. Fifer, director of comprehensive health planning, State Planning Agency, St. Paul, Minn.

First, the problem of demands for responsive planning versus comprehensive long range planning. We call the function "responsive planning" for obvious reasons, Fifer continued. The problem is in being comprehensive and long range—on the one hand considering all possible alternatives with their costs, benefits, and feasibility and on the other hand being available, responsive, and problem solving. "It is a puzzlement," Fifer declared. We have attempted to perform both functions, but because this is a legislative year (1969) the responsive function is taking precedence over comprehensive long range planning.

The second problem is that portion of the law which states that 51 percent of the advisory councils, both State and regional, must be so-called consumers of health services. The most immediately available consumer, the hospital trustee, is already involved and somewhat knowledgeable about health affairs and even a little bit knowledgeable about planning. He usually has business experience, believes in corporate planning, and is willing to endorse the concept of hospital planning if it does not interfere with the plans of his hospital.

But how can we involve others who are less experienced in the function of being on boards: the housewife, the low-income worker, and the resident of the inner city? Is the idea

of involving the consumer of services, particularly the consumer of our city hospital services, well-baby clinics, and new health centers a workable idea or is it a political gimmick dreamed up by those who will never have to put it into practice?

Board members of other voluntary organizations, almost always advocates of a particular disability group, are also consumers who have an interest in health planning. If the advocate groups are somewhat balanced and their influence is equalized, they may tend in times of necessity to become involved and interested in other problems. Perhaps we could acquire trade-offs as in other negotiations: "If you will support the request for residential care for the retarded, I will support halfway houses for the alcoholic."

For representation of minorities on State advisory councils, we have included people who have given leadership to minority groups; for example, the Urban League. Further involvement should be sought in the areawide planning councils and in the planning of specific programs, such as community health centers.

I can honestly state, said Fifer, that at the State level we have not included the poor although we have attempted to include representatives of the poor. Whether these representatives would be acceptable to the poor is difficult to say.

The third issue Fifer discussed was Federal-State relationships. Does such a relationship constitute a partnership? Sometimes I have found my Federal "partner" on the opposite side of the issue, and then it appears that the Federal bureaucracy loses its sense of proportion and any concept of partnership, she said. For example, in the 1967 amendments to Public Law 90–174 (concerning areawide planning agencies) the Congress requested that there be "appropriate representation of the interests of local government." This is a reasonable addition and surely a local governmental official could be added to the board of each areawide planning organization.

But interpreting this to mean that a formal resolution of endorsement be obtained from every significant county and municipality within the area that is to be organized is excessively restrictive. The relatively few areawide agencies now operating attest to the difficulty of meeting many of the criteria.

Under provisions relating to civil service, why is the staff of agencies like ours required to be under the merit system while the staff of the regional medical program—established the same year by the same Congress— is entirely outside of its jurisdiction? This requirement has left us at a marked disadvantage in recruiting personnel.

The Federal system is not designed for partnership and can present it only in a conceptual framework rather than work for it in a practical operational way. With an overwhelming financial and staffing advantage, it has developed a dominance in health affairs that it will not relinquish gracefully or otherwise.

I do not present these problems as permanent obstacles, said Fifer, but only as impediments in the way of a new endeavor. They make the job harder and undoubtedly have slowed the achievement of the few objectives that have been established. Many of us have held and still hold high hopes for the comprehensive health planning program, Fifer remarked.

One Sin of Omission Is Exclusion

Twenty-one U.S. communities expressing a desire to conduct a self-study were selected by the National Commission on Community Health Services to receive Commission assistance, reported Dr. Robert N. Wilson, professor and chairman, department of mental health, University of North Carolina School of Public Health.

The single most important participant, said Wilson, was the study coordinator, whose talent, energy, and local institutional background proved to be absolutely critical to a rigorous study. Probably next in significance was the chairman of the steering committee, typically a layman drawn from the business sector. He was influential in recruiting other lay and professional participation and in creating a favorable public image of the health study efforts.

Political leaders were least represented among the categories, Wilson said. Usually the mixture of participants was diverse, and recruitment tended to be early in the life of the project.

The quality of staff participation was exceedingly important, remarked Wilson. Without an energetic study coordinator who had ready access to local leaders and to supporting services, a study just would not "go." The inclusion of economic leaders also seemed critical. Not only were participants from business and industry effective by mere presence, lending their skills in analysis and planning, but they also served as style leaders, as imitable models for broader inclusion of citizens. They made the health study a major local effort in the eyes of others.

The role of staff representatives and consultants from the Commission emphasized to us that the local community does not and cannot stand alone, Wilson said. In our zeal for local autonomy and our faith in voluntary participation of citizens, it is well for us to realize that every community is connected in multiple ways to regional and national systems of action, he remarked. A bustling local participation in health planning is unlikely to emerge without some outside stimulus such as the Commission afforded, and is unlikely to be effective without some form of expert consultation, which often comes from an outside source.

Participation in the studies was heavily qualified by the organizational pattern in which it took place, Wilson said. Sheer involvement was complemented, in our more successful studies, by a shrewd grasp of organization on the part of the study leaders. Timing, communications, the composition of agenda, and goals—all required exquisite managerial talents; otherwise, a great gush of citizen energy and fine feeling could not be harnessed in the service of health action.

We might ask, said Wilson, who did not participate—who was left out of the typical self-study group?

The answer unfortunately is obvious, he remarked: virtually everyone who was not a member of the upper or middle class layers of the local heirarchy. The poor, the black, the blue collar workers, and the modestly ranked white collar employee were almost totally excluded. Such exclusion was not a deliberate slight, declared Wilson. It was a sin of omission, springing directly from the initial concentration of the studies on the structure of established leadership. We cannot estimate what effect this limited participation will have on the long range results, he said, but the effect is not likely to be positive.

Although the National Commission self-studies exhibited some remarkable success, concluded Wilson, they showed the flaw of being grounded on the theory of elite participation.

Why Not Permit Pluralistic Health Planning?

Comprehensive health planning and regional medical programing are processes in which a society decides (*a*) how much of its total resources will be spent for health purposes and (*b*) what priorities will be established to determine how these resources will be spent. These decisions seem too broad to be made by any one profession and therefore require sociopolitical decision making, said Dr. Charles E. Lewis, professor and chairman, department of preventive medicine and community health, University of Kansas Medical Center.

Public Law 89–239, for regional medical programs, is a fascinating and perhaps the coolest—in the McLuhan sense of the word—example of health legislation that has ever been passed, Lewis declared. It is so cool and unstructured that many groups have difficulty in leaving it alone. During the past year, numerous attempts have been made to "hot it up" by earmarking funds for specific diseases and segments of the community. If trends continue, he said, it should be completely "thawed out" by the end of the 91st Congress.

From a purely categorical view of the law, it is hard to imagine how three more difficult diseases than heart, cancer, and stroke could have been selected for attack under this law, Lewis declared. We know little of their etiology or methods for primary prevention and have cause to question the value of early diagnosis and current treatment for some of these diseases. Lewis said that thousands of lives probably could be saved if all available diagnostic techniques were applied on a nonvoluntary basis and if all probably effective treatments were enforced so that the compliance of patients would not be an issue.

Conflicting Interests

There are many different opinions as to how the improved organization and delivery of services that could result from regionalization should be accomplished. These differences are to be expected, Lewis remarked, since all parties involved have vested interests to protect or different value systems for health. Generally the objectives reflect the values of the establishments that defined them, he said.

The fact that controversies are common supports the proposition advanced earlier that while all groups concerned with health care (hospital planning groups, organized medicine, voluntary health agencies, welfare interests, and others) may share the same goals, their objectives, and particularly their immediate objectives, and the means of reaching their goals represent quite different points of view on proper methods. The possibility of several different but equally effective approaches to comprehensive health planning is extremely difficult for certain professionals, particularly physicians, to accept, Lewis asserted.

Lewis' examination of 23 operational regional medical programs revealed the following information: Advisory councils had 12 to 146 members. Of a total of 926 members in several regional advisory groups, 216 (about 23 percent) were classified as nonprofessionals. Of the 216, less than 5 percent could be classified as middle-class citizens without vested interests in the health industry.

Of the membership lists of 20 State councils for comprehensive health planning, only one of 273 consumers was listed as a laborer. Nineteen percent were business executives, 14.8 percent represented some voluntary health agency, 10 percent were professors or executives of universities, and 9 percent were in the legal profession—usually representatives of some governmental judicial system. The consumers could be classified into two types: the professional consumer and the sportsman-amateur.

Pluralistic Planning

In my opinion, Lewis said, the first phase in developing a functional advisory council as required under Public Law 89–239 consists of converting all health consumers into semiprofessionals. Beginners should receive courses in health care jargonese, methods, and values. This on-the-job training is necessary if consumers are to have the right background to participate fully with professionals in the activities of the council. The result, if we are fortunate, Lewis said, is that all vested interests in the group have an equal understanding of the ground rules. When all sides are equipped with equal weaponry, the results are less predictable.

I believe that it will be only a short time before our present "consumers" or both regional medical programs and comprehensive health planning councils will be challenged by less affluent consumers who will demand a chair at the table and the right to be heard, said Lewis.

If multiple interests and value systems are represented on these councils, then why not recognize it and permit pluralistic planning, asked Lewis? Why do we not allow the adversary system of the political process to operate in an overt rather than a covert manner? All of the concerned groups with different orientations might prepare plans clearly stating their immediate and long term objectives and the methods by which these objectives would be achieved. The plans could be presented to a council charged not with developing a unified plan but with preparing the best plan based on all the alternatives presented.

At a time when we are trying to integrate all things, Lewis declared, it might be useful to recognize that their separateness supplies a basis on which to develop a pluralistic approach to unified planning.

A Future-Oriented Society Must Cast Off the Bonds

It is my contention that we are fast coming to the crossroads whereby the choice will be between a planned society and a "planning society," said Mary F. Arnold, lecturer in public health administration, School of Public Health, University of California, Berkeley. In the arena of health, she said, the opportunity is here to develop a new approach to societal planning.

We need to find an alternative to the present models of planning. We recognize that segmental planning which does not consider the larger system has detrimental and sometimes irreversible effects. We also know that man's present capacity for predicting and forecasting the future is inadequate for the task of planning for the larger system.

But most of us cannot imagine ourselves as society's planning agent or ultimate decision maker, Arnold continued; therefore we cannot trust those who believe they might be. A planned society is anathema to our values and beliefs about individual freedom. We do not like the unplanned consequences of our current segmental planning, and we do not want the constraints of a planned society, she said.

Another alternative is open to us, she declared, if we have the innovative capability to achieve it: the development of a political structure and the social capacity to make ourselves into a planning society. A planning society differs in the following ways from a planned society.

- The directions and goals for the future are explicit, but always subject to continual evaluation and revision.
- A concentrated and continued effort is necessary to keep the citizens of the planning society aware of current goal priorities, of potential alternate goals, and of the ways by which each can be achieved.
- At the most general planning level, the primary policy decision should be the relevance of current goals to the future.
- At the more specialized planning levels, control and coordination should be assessed by the role each plays in achieving the general goals to be served.

A planning society, Arnold continued, requires an informed citizenry—a future-oriented society—able to cope with uncertainty and continual change. Major changes in our educational system, revision of the roles of our decentralized political jurisdictions, and recognition of the primary immediate satisfactions of society's values over those of the individual will be needed. We are beginning to see a move toward teaching by self-discovery and by logic rather than by rote prescription, which hopefully, she said, will prepare citizens who are better able to cope with uncertainty and change.

Gulliver, in "Gulliver's Travels," Arnold recalled, awakened to find himself tied down by thousands of little threads with which the Lilliputians had secured him. There he was, a huge giant, struggling to release those tiny bonds. Is this not what we are experiencing in our society today? asked Arnold. There seems to be the random convulsive movements at the end of a sleep, and as we awaken we are finding ourselves tied down with many minuscule threads, each of which can be easily broken but which, in the aggregate, prevent us from getting on with the new day's work. Our Lilliputian bonds, declared Arnold, are past ways of thinking and acting in our social enterprise. The first step, advised Arnold, is to cast off the old ways of thinking about planning that are holding us back.

Planning and Politics Go Hand in Hand

The actions of community planning agencies to get others to accept the changes they seek and the countervailing efforts of those who view things differently is a political struggle in which the power of the planners is weak, said Dr. Basil J. F. Mott, assistant professor of health services administration, Harvard University School of Public Health. Planning agencies must deal with many different and frequently conflicting interests, which makes it exceedingly difficult to reach agreement on what is to be done and to take action that runs contrary to the interests of any of the participating groups.

Successful planning, continued Mott—defining success as the capacity of planning agencies to make decisions that they feel are desirable—rests heavily on the ability of the planners to make the most of what little power they possess and can acquire. In short, planners must be good politicians if they are to achieve much.

Even when a community health planning agency has legal authority or is informally accepted as a legitimate body, said Mott, it seldom has available to it the resources (funds, manpower, and prestige) that most organizations use as inducements to gain compliance with their decisions.

Much lip service is paid to planning, Mott said, but there is little willingness to give authority and other forms of power to planning agencies, and the agencies that are affected by planning decisions do not want to surrender any autonomy because doing so might threaten their survival. Planners therefore can seldom move without adjusting to the preferences of the affected groups whether or not they feel it to be desirable.

Mott said that no matter how much an organization may wish to be cooperative, it will not agree to decisions that sacrifice its vital interests if it has the capacity to resist them. For example, disease-oriented voluntary agencies have a different view of health needs than official health agencies or medical schools and thus cannot be expected to agree to proposals to combine their functions with others. The only way an organization can be influenced to accept a decision contrary to its interests is for another group to make it more costly to resist than to accept a decision.

In providing health planners with an approach that ignores politics,

Mott said, our theories have reinforced existing professional biases that politics should be kept out of health. This action has encouraged unfeasible planning and a degree of self-indulgence that is irresponsible and wasteful of scarce resources. It also has contributed to the failure of feasible plans for lack of political know-how and skill.

Planners should know how the power structure in their community and how their agency's connections to it may be expected to shape and constrain the planning process, Mott declared. They need a basis for determining what the possibilities for effective action may be in different situations and for assessing the prospects for mobilizing the necessary power.

Planners must be helped to acquire skill in employing political strategies. Their knowledge of the political dynamics of planning would contribute to the development of a more realistic theory in guiding practice, to a theory that reconciles the rational elements of the current models with relevant political factors. It is difficult to see how planning can be made more effective, said Mott, regardless of improvements in planning technologies, data collection, and analysis, without explicitly recognizing the functions of power, and thus of politics, in making decisions that involve conflicting interests and values.

Health Planning: The Ideal Versus the Pragmatic

Pragmatism instructs us to look for what works and, intellectually, it sometimes is frowned upon. Yet in the context of health planning, perhaps it also instructs us to look for a more scientific basis, said Richard Sasuly and Paul Ward, coordinators of the California Regional Medical Program. One basis for choice, but far from the only one, they said, is tackling those needs for which we have the best immediate resources.

Planning by blueprint, ideal planning as a two-dimensional scheme involving needs and resources, simply does not consider the real world, its multiplicity of real and sharply posed interests and clashes of interests, and the need to find an equilibrium for those interests in a successful plan, declared Sasuly and Ward.

One of the first gestures toward health planning since World War II, they continued, was an attempt to establish a rule-of-thumb ratio of hospital beds to population. The 5 to 1,000 ratio that evolved in the 1930's was less an organizing device than a guide to future action and control. The goal was to locate new hospitals so as to prevent waste and duplication of services, meet health needs, and promote efficiency. The planners linked their efforts to the Hill-Burton legislation. Their rather meager success during the first 12 years is well documented.

At least one corner was turned in 1960, said Sasuly and Ward, when the American Hospital Association (AHA) and the Public Health Service established a joint committee on areawide health facility planning. By May 1968 the doctrine of planning had taken root so firmly in the hospital field that the AHA could in a major policy statement "urge its members to be active participants—with emphasis on invention, innovation, and adaptation—in planning that will contribute significantly to an adaptive health service system designed to meet community-oriented goals, and that will assure interdependence of all providers of health service." Where the hospital community led, the other providers are only beginning to follow, they remarked.

Two relatively recent pieces of Federal legislation (Public Laws 89–239 and 89–749) enjoin us to seek the participation of all health providers in planning. We are trying to find out how this legislation can be made to work, said Sasuly and Ward. The program planners were told to go forth and plan—plan how to improve the delivery of services, primarily through the achievement of cooperative arrangements on regional lines—before starting any operational projects.

Key Planning Principles

A plan works in situations, they said, where interplay exists among classes, groups, and other special interests, where the parties can find room for agreement on at least some issues.

According to Sasuly and Ward, key principles in a framework for health planning might be the following:

- Recognition that planning is not an abstract process but shares in the qualities of other forms of forecasting and recognition that objectives must be formulated against a shifting background.
- Estimation of needs, with consideration for the great variety of needs and the different priorities that different groups may attach to them
- Marshaling of resources, which includes the achievement of some consensus of the state-of-the-art in coping with each disease
- Understanding the necessity for drafting plans that will enlist and coalesce enough of the critical social forces and groups to achieve a viable result
- Use of every available technique for evaluation, partly to lay a basis for choice where alternate courses open up, and partly to provide a returning flow of information from the operation of the plan, thereby reshaping the other ingredients in planning.

Objectives and Evaluation

Setting objectives makes at least two specific demands on the planner, Sasuly and Ward declared: First, a mechanism is created within the framework of planning that permits flexibility and constant reexamination of goals in the light of shifts in the real world; second, interplay and equilibrium are maintained among the interested parties (a precondition for successful planning at all stages).

We may fear a goal as sweeping as "find a cure for cancer" because such a target permits no timetable, they said. But if we settle for a goal like "test 36 antimetabolites over a 24-month period," our efficiency in biologic engineering may be totally irrelevant.

We need objective standards based on the most nearly impervious data, they maintained. The fact that evaluation is difficult is no reason for running from it. We mean the eval-

uation of results over a span of a few years as distinct, say, from evaluation of mortality data in the very long run or, in the very short run, evaluating proposals when they are offered or evaluating the administrative conduct of projects in progress. This phase of the problem has led many to think of applying cost benefit or cost effectiveness analysis to health planning.

One cost-benefit approach first attempts to count lives saved and then prices out those lives on the basis of earning capacity over the remaining lifetime. Another sets the effective price of a program as the sum of the prices all affected people would be willing to pay to have it.

Despite the difficulties, said Sasuly and Ward, additional research into cost effectiveness seems entirely feasible. Perhaps a partial solution lies in analysis that considers the total social cost of illness, that measures consequences of programs by mortality and morbidity, and that sets dollar amounts for each episode of disability relieved or avoided as a piece of a total social cost of health service.

Professional and Community Should Share Control

When a program is time integrated and the integral is infinitesimal, the community soon recognizes that it is being cheated, said Dr. M. Alfred Haynes, project director, National Medical Association Foundation. Nor is the community satisfied if the change is substantial yet preserves or worsens an unequal social status, he remarked. This condition is not as acute in the health field as in education, Haynes stated, but it could be in only a matter of time.

One might almost wish that the people of Washington, D.C., would get as excited about health as they do about community control of the police, Haynes continued. But health institutions probably are not prepared for this type of concern, he surmised.

The community has always been active in community affairs and in the sharing of power, Haynes declared, but in a more passive sense than now; it has always had some power although it has not realized how much. Some communities are unhappy about the rate of progress achieved by health professionals, he said. They see a great deal of action but very little progress, especially in the inner city. They see a large amount of money being spent on programs but not enough understanding being given to people. Some segments of the community are angry, and the professional could be reduced to impotence, not because he is alone but more likely because the community has demanded full control.

The health professional with even the best of intentions has difficulty identifying what is meant by "the community," Haynes declared. He deals with community leaders and community representatives, but although the term "community representation" has become quite popular, no one seems to know a really satisfactory way of identifying community representatives.

Do you deal with official leaders, asked Haynes, or with natural leaders? Do you negotiate with the staff of community organizations or seek grassroots support? Do you listen to the militant minority or seek out the silent minority? If the health professional listens to everyone, how does he act in the face of extreme and conflicting views? Does he substitute his own judgment and act, or does he decide not to act at all? There are no rigid rules, said Haynes.

The decision to operate a health department clinic from 9 to 5 is a decision in which a community has a vested interest, Haynes believes, but the health professional is concerned that if the consumer is allowed to share in such decisions he may not know where to draw the line. In instances where the community has participated, said Haynes, these fears have seldom been justified. If consumers are given an opportunity to share in decisions, they will often find a new solution or accept old ones with greater grace. When one community realized that lack of personal protection for a clinical staff prevented them from operating an evening clinic, they offered such protection.

In our project in Washington, D.C., Haynes said, we proposed the construction of a 200-bed nursing home. The community criticized us for setting the 200-bed limit and demanded a 500-bed home, but their opposition disappeared when we discussed with them the cost of constructing one bed. When the Federal Housing Administration became involved, the community assumed that the Government was providing the money—when in fact the mortgage was to be provided by the insurance industry and the equity by the physicians.

Money is often the root of a problem, said Haynes. The rising cost of medical care is one issue that will force the community to demand a share in decisions affecting them directly, and with present high costs consumers also will want to look critically at the quality received for the money spent.

Specialists tend to think of health in the purest sense, as though it exists in a vaccum, Haynes remarked. The community, he said, tends to have a more balanced perspective and views health in relation to employment, housing, and other social problems. Health professionals and health institutions are now being forced by communities to abandon the posture of specialism and isolation in order to become more relevant.

The professional and the community should share control, Haynes declared, but only the irresponsible professional would abdicate all power. Sharing control may be difficult, he said, but abdicating certainly cannot be in the best interests of the community. The future of health services in this country may well depend on the ability of the health professional to effect a working relationship between organized medicine, the government, and the community.

The National Medical Association Foundation is experimenting with this kind of partnership in its District of Columbia program of health care for the inner city, Haynes said. Most of the equity for the prototype nursing home and comprehensive health care unit has come from the membership of the National Medical Association. The Equitable Life Assurance Society has indicated

its willingness to provide the 90 percent mortgage. But all of these efforts would be useless, he said, if the residents of the community decided that they did not want the facility. Because of very special circumstances the community did not participate from the onset of the program, Haynes reported, but they had an opportunity to modify the original plans. Adding a group practice unit as an integral part of the complex was in direct response to the community's expressed need for accessible comprehensive health services.

Unaffiliated MD's Starved for Additional Training

Many practical difficulties have beset the Regional Medical Programs (RMP), reported Dr. Vincent dePaul Larkin, former director of the New York Metropolitan Regional Medical Program—now director of medical affairs, Methodist Hospital of Brooklyn. They must attract staff, establish the relative roles of grantee and regional advisory groups, obtain the interest and cooperation of schools, societies, hospitals, practitioners, health departments, voluntary health agencies, and many others in a venture that, if successful, may threaten their status quo and conflict with their goals.

RMP's must search out data documenting the magnitude of the problems, Larkin said, estimate the resources available to solve the problems, involve the region in a voluntary cooperative venture to find and evaluate new solutions, and develop a mechanism for rapid, impartial scientific review.

The RMP projects a central role for medical schools in the cooperative arrangements that are to be developed and that hopefully will improve the care of patients with heart disease, cancer, stroke, and related diseases. But medical schools fall far short of being able to play this central role effectively, Larkin asserted. The faculty of the medical school, he said, is particularly unsuited at this time to plan and conduct programs for the "unaffiliated physician," the one who needs the most assistance.

Within our metropolis 60 percent of the 19,000 practicing physicians are staff members of teaching hospitals with approved intern and resident training programs, reported Larkin. These affiliated physicians are literally drowning in continuing education through mandatory ward rounds, consultations, lectures and conferences, voluntary attendance at courses, workshops, specialty lectures, meetings of heart and cancer societies and diabetes associations, and conventions of their particular societies and academies.

The other 40 percent are unaffiliated physicians, said Larkin, one-third of whom have no hospital appointment of any kind and two-thirds are members only of nonteaching proprietary hospitals. These practitioners are substantially cut off from learning at the location most likely to motivate them—the bedside of their own patients.

The less skilled and trained physician, the unaffiilated in particular, Larkin said, feels unwanted by the medical school and the university hospital because, in fact, he is unwanted. He cannot obtain a staff appointment there under any practical circumstances. Programs of continuing education are rarely offered there for him, and even more rare are the programs that are tailored to his needs and adapted to his practice. Lectures are scheduled for him at the convenience of the faculty and not at the convenience allowed by his office hours, which naturally are conducted for the convenience of his patients. Rarest of all are the programs developed with his assistance in advance and with continual feedback during and after the fact.

Pessimism about the possibility of engaging the unaffiliated physician in continuing education is unwarranted, Larkin declared. Having excluded him from better hospitals, denigrated him in conferences, and castigated him in public, we condemn him as uninterested when he fails to respond to our invitations to attend programs conducted at a level inappropriate to his needs. Yet when a determined effort is made to reach out to him, when appropriate programs are conducted at suitable times, the unaffiilated physician responds with dedicated attendance and attention.

The success of an educational program for unaffiliated physicians at St. Luke's Hospital in New York City suggests, said Larkin, that the voluntary teaching hospital is more suited than the medical school to the continuing education of the unaffiliated physician.

Health Planners: Learn To Quantitate Outcomes

Public Law 90–174, The Partnership for Health Amendments of 1967, includes new section 304 in the Public Health Service Act giving broad authority to support research, development, demonstration, and related training in all programs and institutions involved in health services, specifically including facilities and manpower research, reported Dr. Robert R. Huntley, associate director for program development of the newly created National Center for Health Services Research and Development, Public Health Service. Section 304 replaced section 624 (Hill-Burton demonstrations) and section 314(e)(3) (community health service research demonstrations). Section 301 of the Public Health Service Act, the general research authority of the Public Health Service, also funds some of the center's health services research activities, Huntley reported.

A series of personnel and budgetary transfers from the bureau of health services, the divisions of medical care administration and hospital and medical facilities, and the chronic disease center provides the fiscal and personnel base for this new center, he said.

During the past 5 months, the staff of the center, with the help of about 200 outside consultants (researchers, practitioners, administrators, and users) have been defining high-priority areas needing research and developing an internal organizational structure that reflects these priorities. Their activities, said Huntley, have resulted in the formation of the following seven program areas:

Health care organization and delivery
Institutions
Technology
Manpower utilization
Health data
Social analysis
Economic analysis

Three multidisciplinary research task forces concerned with health care costs, care for the disadvantaged, and automated multiphasic screening also are being formed, Huntley reported.

Four study sections have been created or modified to provide primary peer review for research grants submitted to the research and development center, said Huntley. Policy review and general advice are supplied by the National Advisory Health Services Council and the Federal Hospital Council, both chaired by the center's director, Dr. Paul J. Sanazaro.

The center, Huntley said, has chosen to focus much of its initial directed research efforts toward improving evaluation techniques as applied to "target" populations in two areas of considerable national urgency: comprehensive health service programs, federally funded and designed to serve defined disadvantaged populations, and automated multiphasic health screening programs.

It is no longer enough to justify activities in the health care field on the basis of "effort" or the judgment of peers that a service is "appropriate," said Huntley. We must learn to quantitate "outcomes" both intermediate and ultimate if experimentation with novel ways of organizing, staffing, and financing health services is ever to provide the data needed to increase their effectiveness or efficiency. Appropriate effort is an input, not an outcome, said Huntley, and therefore cannot be used to measure the effectiveness of new procedures.

Automated Multiphasic Screening

Automated multiphasic screening, which is rapidly becoming a professional, industrial, economic, and political issue, Huntley said, offers the center another opportunity to stimulate the development of better techniques for evaluation and then apply them to a potentially important health service. The evaluation of automated multiphasic screening, Huntley declared, must proceed along four main axes: technical, social-behavioral, economic, and biological.

Technical questions relate to the validity and reliability of test results and the maintenance of quality control, including the development of better and cheaper ways of measuring physiological and psychosocial disorders, for which early detection is believed to improve the prognosis.

Social and behavioral studies must be concerned with the acceptability of automated multiphasic screening to the population served and to physicians as a means of early detection of chronic disease and as an effective "outreach" service in finding those people in need of health services and getting them under proper care.

Experience with X-ray screening for tuberculosis and Papanicolaou smears for cervical carcinoma, from which high-risk segments of the population stay away in droves, is not encouraging, said Huntley. Nevertheless, "outreach" is a frequently stated objective of automated multiphasic screening and must be evaluated for this reason.

Another area of needed research, related to physician acceptance, Huntley said, concerns the most effective way to transmit the results of screening tests and to assure proper followup of abnormal findings.

The ultimate economic benefits attributable to automated multiphasic screening must await proof of effectiveness, but a number of economic questions need study now. One example, said Huntley, will suffice: Given a standard output, what is the most efficient mix of instruments, computer capability, professional and subprofessional personnel for an automated multiphasic screening installation?

If valid and reliable measurements can be assured, Huntley said, if representative population samples can be screened, and if periodic followup over a number of years can be achieved—three big "ifs"—automated multiphasic screening could significantly contribute to the knowledge of range and distribution of values for some physiological and psychosocial measures and offer significant clues for prognoses. Without such constraints, Huntley declared, the epidemiologic value of automated multiphasic screening data is limited, although the application of sophisticated analytic techniques can at least partly overcome bias in the selection of the population sample and the lack of long term followup of individual patients.

More precise indentification of risk factors that can be modified may be as important for the well-being of future generations as much of the current genetic and immunological research, said Huntley. Automated multiphasic screening may be a vehicle for perfecting the instrumentation and longitudinal followup required to make large-scale prospective population studies more feasible.

Laboratory

Pouch-Packed Vegetables Tested for Botulinum

The object of a recent study by N. F. Insalata, section head of microbiological research, and co-workers at the General Foods Corporation, Post Division Research, Battle Creek, Mich., was to detect the incidence of spores of *Clostridium botulinum* in two commercially available types of frozen vacuum pouch-packed vegetables. Fifty 10-oz. samples of chopped spinach and fifty 9-oz. samples of cut green beans were randomly collected from commercial sources and kept at a maximum temperature of 0° from the time of purchase until testing.

These samples had been packed in butter sauce, brought to a boil, and then boiled in the pouch for 15 minutes as part of their preparation.

For each set of samples, two study and two control mice were inoculated

separately with 0.4 ml. of sample material (trypsinized) or sterile gelatin phosphate buffer. All the animals were observed for 72 hours for clinical symptoms of botulism or death. Classic mouse toxin analysis demonstrated that none of the bean samples contained spores of *C. botulinum*—perhaps, they said, because of the physical nature of the bean, which is not as readily susceptible to soil contamination from the spores of *C. botulinum* as is the more leafy spinach.

Insalata and co-workers reported that six samples of the chopped spinach contained spores of *C. botulinum* type A or B. Inasmuch as the type-specific A and B antitoxins proved not to be monovalent, conclusive determination of the toxin (spore) type could not be designated more specifically than type A or B, they said.

Spores of *C. botulinum* type A or B are indigenous to raw spinach. The convoluted surfaces of spinach may retain clostridial spores and resist cleansing that removes spores from the smooth surface of the beans. The presence of spores in a frozen product that is blanched and then recipe-prepared by boiling for 15 minutes is not an imminent hazard, they concluded.

Biochemists Aim for Presymptom Screening

To establish early preventive management, public health biochemists largely concern themselves with applying the newer technologies in clinical biochemistry (coordinated with well-planned screening studies) to the early presymptom detection of chronic and degenerative disorders, said Emanuel Kaplan, chief, division of biochemistry, and R. L. Cavenaugh, director, bureau of laboratories, Maryland State Department of Health, Baltimore. Such screening is aimed at apparently well people, they said. For instance, of the estimated 2 percent of the U.S. population with diabetes, the majority are unaware of their affliction.

Multiphasic screening for blood uric acid forewarns of gout, which accounts for 3 to 5 percent of all cases of arthritis, they said. Hyperuricemia affects about 3 percent of the U.S. population and up to 25 percent of the blood relatives of patients with gout.

Laboratory work at cardiovascular screening centers, to assess risk factors in coronary artery disease and to improve long term survival of recovered heart attack victims, may include tests for blood glucose, serum cholesterol, triglycerides, and uric acid. Kaplan and Cavenaugh said the serum cholesterol measurement is reported to be the best single test for detecting hyperlipidemia and associated susceptibility to coronary heart disease.

The public health biochemist is also concerned with analyses for the detection, prevention, and control of the inherited diseases of metabolism, said Kaplan and Cavenaugh. More than 200 disorders have been reported—most of them rare. Inborn errors of metabolism account for about 10 percent of all mentally retarded patients. Most errors are detected early by biochemical means, they said.

Screening of Infants and Children

Screening for phenylketonuria (PKU) is a well-established procedure. Maple sugar urine disease, a less frequent disorder associated with mental retardation, resulting from blockage of metabolism of branched chain amino acids, leucine, valine, and isoleucine, can be screened readily by a bacterial inhibition test similar to the one used for PKU, they reported.

Screening for homocystinuria can be done simply and reliably by a cyanide-nitroprusside test of urine. Mental retardation may not become apparent for several years in this disorder, although the homocystine excretion is present at birth. Altering the diet may prevent retardation from this disorder, they said. Kaplan and Cavenaugh said that techniques are being evaluated for the early detection and diagnosis of a wide variety of amino acid disorders in infants by screening the blood or urine by paper chromatography, high voltage electrophoresis, and amino acid analyzer techniques in multiple tests on single specimens.

Galactosemia, characterized by mental retardation, malnutrition, and cataracts, is a hereditary disorder of carbohydrate metabolism that is amenable to treatment if detected early, they said.

Glucose–6–phosphate dehydrogenase deficiency is a widespread genetically determined inborn error of metabolism that may lead to hemolytic anemia when the affected person is exposed to certain drugs and other agents, said the biochemist.

Introduction of the rapid hemoglobin electrophoresis techniques makes it worthwhile to screen for sickle cell diseases and other hemoglobinopathies in prenatal and child health clinics in communities with a high Negro population.

Neuroblastoma is the most commonly encountered soft tissue malignancy in childhood. Survival is closely related to the age of the child at the time of diagnosis and the site and extent of the tumor. Associating the excretion of catecholamines in urine is a striking advance in diagnosis. A simple and inexpensive urine screening test that is applicable to specimens collected in child health clinics has been described.

Lead intoxication associated with the ingestion of lead-containing paint is a major public health problem albeit a preventable one, the biochemists reported. Coproporphyrinuria, although not specific, is considered a detectable physiological response to lead and is used in locating children at risk. A closer correlation between poisoning and the excretion of increased delta-aminolevulinic acid has been demonstrated.

A simplified laboratory procedure using disposable ion exchange colums has been introduced for mass screening of children for plumbism. Quantitative blood lead determinations, done in many municipal and State public health laboratories, are the most reliable aid in diagnosis, they said.

Serum chemistry examination is required in the management of the increased number of convalescent tuberculosis outpatients who are on long term therapy with relatively toxic second line drugs. In this way laboratory warning is given on drug toxicity.

A necessary and integral part of drug addiction programs, and vital to their control, Kaplan and Cavenaugh said, is the availability of laboratory service for surveillance through routine screening of urine to provide objective evidence of the drug addict's adherence to the program. The methodology involves drug isolation by extraction and demonstration by thin layer chromatography.

By application of current knowledge in clinical biochemistry to diseases amenable to early detection, by research into methodology for appropriate screening techniques, and by coordination of laboratory activities with existing health department programs, the public health biochemist can make an important contribution, they reported.

Importance of Lab Backup Stressed by Scientists

The laboratory is of paramount importance in epidemiologic investigations and long term or epidemic studies of vectors and reservoirs, said Dr. Tom D. Y. Chin, director and Dr. D. Bruce Francy, of the Ecological Investigations Program, National Communicable Disease Center, Public Health Service, Atlanta. For many diseases, Chin said, the etiological diagnosis can be established only by laboratory examination of the appropriate specimens obtained from patients.

Etiological Diagnosis

Chin emphasized that successful epidemiologic investigations require teamwork. In many infectious diseases the etiological diagnosis can be established only by laboratory examination of appropriate specimens obtained from the patients. The laboratory should be consulted as soon as possible to develop plans for etiological and immunological aspects of the investigation. The laboratory diagnosis of human infection is established by isolation and identification of agents, antibody studies of acute and convalescent serums, and examination of infected tissues or exudates from lesions. Proper collection and preservation of specimens are essential.

Furthermore, Chin said, to gain an adequate understanding of the epidemiology of the disease, it is essential to determine the incidence of subclinical infection. The type of laboratory support required depends on the nature of the disease to be investigated. Therefore, to insure optimal results in any epidemiologic investigation, close collaboration and adequate communication must exist between the laboratory and the field investigator.

The laboratory is particularly important in investigations of outbreaks such as of aseptic meningitis encephalitis, and acute respiratory disease, said Chin. These clinical syndromes can be caused by a great many different types of agents. For example, aseptic meningitis can be caused by any of the 66 different types of enteroviruses as well as by other agents such as *Leptospira*, arboviruses, herpes simplex, mumps, and lymphocytic choriomeningitis viruses.

The complexity of etiological diagnosis of acute respiratory illness is illustrated, Chin said, by a study in which a child had three episodes of lower respiratory tract infection within 21 days. Laboratory studies indicated that each illness was caused by a different virus. Within 3 weeks, 15 infections caused by six different viruses were detected in the six members of his family.

Vector and Reservoirs

The reason for ecological field studies, Francy said, is to learn enough to modify a link in the chain to eliminate human infection. Many studies can be done with arthropods, their population fluctuations, and distributions, but without laboratory results indicating which vectors and reservoirs are associated with which infection agents, the studies become less meaningful.

Although some investigations require less laboratory support because of fewer vector possibilities or a focal distribution, all field studies are dependent on laboratory results in order to logically extend and plan further studies, Francy said. Field personnel depend on laboratory assistance not only for the results of specific tests and data but for the type and number of specimens needed and information about the conditions required for holding and shipping the different specimens.

Field studies in most epidemic situations yield limited results, Francy remarked. In order to get a clear picture of events leading to epidemics, it is necessary to conduct studies of seasonal activity during interepidemic periods.

Newer techniques and tests can enhance the value of ecological studies as well as provide quick results during epidemic investigations. Because of rapid laboratory techniques, Francy said, investigators may be able to concentrate their efforts in a limited area for control and followup studies. If the identification of the pathogen is not made early, specific control measures may be delayed or applied in the wrong areas, which may reduce their efficacy. It is also difficult to evaluate control procedures late in an outbreak when its natural decline may mask the effect of the control procedures.

Samples on Filter Paper Used in Glucose Screening

In 1966 Bittner and Manning reported the adaption of a sensitive neocuproine glucose procedure to the conventional Technicon AutoAnalyzer. Their technique was slightly modified for the analysis of blood samples collected on filter paper, and the combination of the two techniques was applied to a diabetic screening program, described by R. G. Reynolds and co-workers at the Public Health Laboratories, Ontario Department of Health, Toronto.

In the procedure, reported Reynolds, the AutoAnalyzer trays were filled with cups, and 1.5 ml. of distilled water was pipetted automatically into each cup. When the samples were received at the laboratory, they were separated from the data sheets and quarter-inch disks were punched out into the sample cups of water.

After about 30 minutes of elution time, the eluate was mixed by inversion and put into the AutoAnalyzer for analysis. Quantitation was accomplished by direct comparison

of sample peaks with those of glucose standards, prepared by diluting the conventional macro AutoAnalyzer standards 1 : 160 with saturated benzoic acid.

Blood samples were obtained from 78 donors by Vacutainer and also on filter paper. Vacutainer samples were analyzed by standard ferric cyanide procedure, and punched out filter paper disks by the neocuproine procedure, in duplicate, using the AutoAnalyzer. The filter paper samples were arbitrarily quantitated against standards diluted 1 : 100.

The mean value of 156 determinations by each technique was calculated, and by arithmetical comparison of the two mean values it was inferred that results from the filter paper samples, if multiplied by 1.6 (or compared directly with standards diluted 1 : 160), would be comparable with those obtained by standard AutoAnalyzer technique. When individual results on 156 filter paper samples were multiplied by 1.6 and compared statistically with the results on Vacutainer samples using standard AutoAnalyzer techniques, the standard deviation was ±5.9 mg. per 100 ml.

Through 22 working days the AutoAnalyzer technique was used for determination of 16,575 samples, Reynolds reported. About 700 tests were conducted per day; on several days 1,000 tests were completed. Two nurses obtained the blood samples; in peak periods a third nurse was required. The samples were analyzed by two laboratory technicians, and a third assisted on peak days. Two single-channel AutoAnalyzers were used.

Of more than 15,000 patients screened, 1.8 percent had blood glucose values exceeding 140 mg. per 100 cc. of blood. Almost 1,300 determinations also were made on the blood samples of inhabitants in homes for the aged. The incidence of elevated glucose in this group increased to 14.8 percent, Reynolds reported. The followup data from this study are now being compiled.

The cost of reagents was substantially less than a half cent per test, Reynolds said. Filter paper is economical for handling samples; for instance, 500 such samples can be transported in a 9- by 12-inch envelope.

By relating to the customary AutoAnalyzer values, Reynolds said, we thought our analytical findings would conform to what is probably the most familiar range of normal values in use today.

With the small sample size (8.3 μl.) and the speed of analysis (60 samples per hour), we worked at the maximum sensitivity of this procedure, said Reynolds. The automated neocuproine glucose procedure provided adequate analytical sensitivity for diabetic screening purposes with this size of sample and deserves consideration for more extensive use.

Automated System Needed To Detect Streptococcus

Within the next 2 years at least part of the laboratory diagnosis of streptococcal disease will be automated, said Dr. Max D. Moody and Dr. G. F. Atwood in a joint report on the present status of automated detection of streptococcus.

Moody is chief of the streptococcus unit, laboratory division, National Communicable Disease Center (NCDC), Atlanta, and Atwood is a co-worker in the unit. For the past 3 years the unit's activity in automated diagnosis of streptococcus has been stimulated by certain State health departments that are overwhelmed with specimens from successful screening programs.

The rheumatic fever subcommittee of the American Heart Association and the Heart Disease and Stroke Control Program of the Public Health Service are interested in expanding such screening programs. These groups feel that streptococcal pharyngitis must be increasingly diagnosed if primary prevention programs are to be effective and rheumatic fever eliminated, Moody and Atwood said. Theoretically, the expanded program would increase the load of clinical laboratories to 150 million throat cultures a year. This many cultures could be examined only by an automated method, they stressed.

If the procedure is to be totally automated, they said, the difficult and time-consuming elution step in the Hochberg method (developed in 1963) would have to be eliminated or an optimal filter system discovered. Development of this approach at NCDC, they reported, has resulted in a direct fluorometric readout, without the elution step. Clinical studies at NCDC indicate that this further developed method is comparable in accuracy and reproducibility to conventional techniques and the Hochberg approach.

Another approach to automated detection of streptococcus stems from successful efforts in the NCDC Venereal Disease Research Laboratory to develop an automated fluorescent treponemal antibody (FTA) test, Moody and Atwood reported. Because FTA and streptococcal fluorescent antibody (FA) procedures are similar in some respects, possible adaptations are being studied. If successful adaptations are developed, they would provide an automated method closely corresponding to the present microscopic FA technique, they said.

In NCDC efforts to automate the detection of streptococcus as soon as possible, concepts not based on present clinical laboratory methods have been considered. One such concept is continuous particle electrophoresis (CPE), but the authors reported that at this stage in its development CPE is too limited to be considered a practical approach to automation.

Moody and Atwood noted that many details must be worked out before such diagnosis is automated and gave three reasons why information about such automation should be disseminated now. They said the information would (*a*) help laboratories with active screening programs for streptococcus make financial and staff preparations for automation, (*b*) encourage laboratories with less active programs to consider increasing their programs through automation, and (*c*) lead to greater immediate acceptance and use of automated equipment when it becomes available.

Besides economy and accuracy, other factors that will influence their selection of an acceptable automated method are the amounts of reagents used, the engineering simplicity, the

number of specimens handled, and the amount of handling that specimens require before automation.

Moody and Atwood expect the data on which they will base their decision to be available by July 1969. Development and testing of the chosen method will follow and the scientists hope to report the results of these tests at the 1970 APHA meeting.

Large-Volume Air Samplers Becoming More Efficient

Aware of the need for a large-volume air sampler that is both reliable and simple, we sponsor and conduct research to explore the possibility of developing new and improved devices, reported Herbert M. Decker and co-workers, commodity development and engineering laboratories, Fort Detrick, Md. Areas of investigation include samplers operating on the following principles:

1. Electrostatic precipitation in the field produced by a space charge.
2. Electrostatic precipitation in the field produced by charged parallel plates.
3. Electrostatic precipitation of particles onto oppositely charged liquid droplets.
4. Air washing, with subsequent removal by a cyclone.
5. Inerital impaction by a rapidly moving surface.
6. Inertial impingement onto a wetted surface.

Of all these approaches, the principle of electrostatic precipitation in the field produced by charged parallel plates, the principle of inertial impingement on a wetted surface, and the principle of air washing with subsequent collection in a cyclone appear most promising, the investigators said.

Electrostatic Precipitator

As an outgrowth of a Fort Detrick development contract, large-volume electrostatic precipitator air samplers have become commercially available. The air enters these samplers through a corona discharge that negatively charges the particles and passes between a high-voltage plate and a collection disk. The particles negatively charged by the corona are attracted and concentrated into a liquid that flows over the collection disk, which is at ground potential. The liquid flows into a groove located at the periphery of the disk and then is picked up by a suction probe and pumped into an effluent reservoir. The air is drawn through the sampler to the exhaust by means of a centrifugal blower. Recent engineering and development work with subsequent retrofitting has been done on this type of sampler, and it has become considerably more reliable.

Multislit Impinger

Of particular interest to the investigators at Fort Detrick is a simple multislit impinger sampler. The operating principle was adapted partly from the single slit agar sampler developed several years ago for the direct impaction of bacterial particles onto a rotating agar plate. The agar slit sampler is available in a commercial version and has been widely adopted and used in public health laboratories as well as in our own research, the investigators reported.

The initial multislit impinger sampler that we developed about a year ago operates on the principle of inertial impingement of airborne particles into a liquid film maintained on the surface of a rotating disk, they said. Air is drawn into the sampler at a rate of 500 liters per minute through eight small rectangular slits located near the surface of the disk. The collection liquid is pumped to the center of the rotating disk through a small-diameter stainless steel tube suspended above and across the diameter of the disk.

This tube also serves as a spreader to distribute the liquid uniformly over the surface of the disk, they said. The high-velocity air jets directed against the liquid film cause the airborne particles to impinge into the liquid. The particle-laden liquid then flows across the surface of the disk and is removed by a hollow plastic scraper positioned at the rim of the disk that allows the liquid to pass into a collection tube, where it is drawn by vacuum into a container.

This multislit sampler recently was improved to determine optimum sampler design and operating conditions, the group reported. Such parameters as width of slit, distance from slit to disk, and rate of liquid input were investigated. Based on the test data obtained, the most desirable design and operational features were selected. This sampler, which currently is under commercial development, now operates at 1,000 liters per minute. Other modifications include changes to the angular placement of the slits and the collection liquid feed system. In addition, the sampler was converted into a self-contained unit by incorporating a peristaltic pump, for supplying and removing the collection fluid, and a centrifugal blower. The sampler is approximately 13 by 13 by 16 inches in size.

Liquid Scrubber

A liquid scrubber aerosol collector that operates at an airflow rate of 1,000 liters per minute is currently being developed and shows considerable promise, the investigators said. This sampler consists of a spray device, a collection tube, a glass coalescence tube, and a cyclone mist separator containing a wash tube.

The principle of operation is based on the production of a fine mist in a rapidly moving airstream, with the ultimate collection of the aerosol in the mist or impaction on the elbow and subsequent washoff. The particulates in the mist are collected at the effluent end of the cyclone.

Results

The researchers reported that the results of twenty 5-minute tests for each sampler with *Serratia marcescens* as the test organism showed that the average collection efficiency was 95 percent for the electrostatic precipitator, 90 percent for the multislit sampler, and 70 percent for the liquid scrubber sampler. These percentages are based on an assumed 100 percent efficiency for the all-glass impinger (AGI–30) sampler, they said.

Similar trials with *Bacillus subtilis* var *niger* as the test organism showed that the collection efficiency was 74 percent for the electrostatic precipitator, 86 percent for the multi-

Efficiency of large-volume air samplers, in percent

Type of sampler	Test organisms	
	Serratia marcescens	*Bacillus subtilis* var *niger*
Electrostatic precipitator	95	74
Multislit impinger	90	86
Liquid scrubber	70	63

slit sampler, and 63 percent for the liquid scrubber. The workers reported that the reason these recoveries were lower than for *S. marcescens* was the apparent interaction between gram-positive spore formers and the collection medium (normal growth tissue culture medium) used. This medium contains Hanks balanced salt solution and lactalbumin hydrolysate.

It is encouraging to those interested in improving the methodology and sensitiveness of air sampling, said the group, that considerable progress is being made. One point should be stressed, they said: All these samplers are constantly being modified and improved, and the efficiency figures reported today are subject to change.

Whether a sampler is 80 percent efficient or 70 percent is not actually important. What is important, said the investigators, is the total number of particles recovered for assay. Simplicity of design, compatibility of the collection medium for sampling the organisms, operational dependability, and cost effectiveness also must be considered in the final selection of a sampler.

This research signifies a turning point in microbiological air sampling, said the researchers. We are now at the threshold of sampling large volumes of air for determining the presence of the microbiological flora in research laboratories, hospitals, and clean rooms.

Close Field-Lab Work Needed for A-1 Results

Most ecological studies of human infectious agents depend for success on accurate and timely laboratory results, said Dr. Philip H. Coleman, chief of the Arbovirus Infections Unit, laboratory division, National Communicable Disease Center, Public Health Service, Atlanta. But field ecologists are often unfamiliar with the procedures of obtaining and submitting material for laboratory examination, he remarked.

Coleman stressed the need for collaboration between the field ecologist and the laboratory worker and discussed the general difficulties that field investigators frequently overlook.

The typical ecological or epidemiologic investigation, he said, can be divided into four stages: planning the study, field investigations, laboratory testing, and interpretation of results. All too frequently, the laboratory worker is asked only to test specimens and interpret the results, he noted, but he should be involved in every stage of the investigation.

The importance of collaboration during the planning stage was stressed by Coleman, who pointed out that the parameters of a study may depend on the type and number of tests the laboratory can perform and the speed with which the results can be obtained.

In the field stage, Coleman said, the investigator can avoid difficulties if he considers laboratory requirements on the proper selection of specimen donors, the collection of adequate volumes of individual specimens, the procedures used in handling and processing specimens before they are submitted to the laboratory, the completeness and accuracy of data concerning the specimens, and the proper labeling of specimens.

Major problems during the laboratory testing stage, he said, concern the many types of tests that must be performed and the difficulty of testing specimens for an agent after the originally planned tests have been completed.

Often the results are misinterpreted, Coleman said. For example, the presence of antibody in a specimen does not mean that the antibody was recently acquired or that infection was clinically apparent. He further noted that labeling an agent does not guarantee that the agent produced a disease.

Closer cooperation between the field ecologist and the laboratory worker in all stages of a study should eliminate most of these troubles, Coleman concluded.

More Serologic Reagents Needed Commercially

The most important factor in serologic typing of the various members of the family Enterobacteriaceae is the immediate availability of dependable antiserums, said Dr. William H. Ewing, chief of the Enteric Bacteriology Unit, Laboratory Division. National Communicable Disease Center, Atlanta. If efficient investigations are to be made of hospital-acquired infections caused by *Klebsiella*, *Serratia*, or *Escherichia coli* (for example) antiserums for these organisms should be available for use while a series of infections is active.

Although cultures from a suspected outbreak can be collected and studied later, such a procedure has distinct disadvantages, Ewing said. If antiserums are on hand or can be procured quickly, the bacteria can be partially or completely characterized, and investigators may be able to determine the source of infection (autogenous or exogenus) as well as follow its spread and the course of therapy. Further, the patient's charts are available on the service at that time and pertinent data can be extracted from them. Retrieval of particular charts is frequently difficult after patients are discharged and their records filed away.

Previously unobtainable antiserums for members of several genera of the family are becoming available from commercial outlets. This is fortunate, Ewing said, and these firms should be encouraged to produce many more serologic reagents. Most workers are aware that certain antiserums for *Shigella* and

Salmonella are available from commercial sources, but many may not know that all of the serologic reagents necessary for complete characterization of the fifty or so common serotypes of *Salmonella* are or soon will be available. Similarly, antiserums for all 72 of the characterized capsular types of *Klebsiella* should be available soon.

In the identification of Enterobacteriaceae, the genus and species of a micro-organism first is determined by means of its biochemical reactions. Then serologic methods are employed to orient the strain in the proper (indicated) antigenic schema, if one exists. Antigenic systems have been described for almost all the known genera of the family but all of them are not in use in the United States. This is particularly true of the systems described for the different species by *Enterobacter* and *Proteus*. These should be studied, integrated where possible, and put to use, Ewing said.

Obviously every laboratory cannot maintain a collection of all the antiserums referred to, even those presently available, said Ewing. Nor is it necessary or desirable to determine the serologic characteristics of every isolant. Some degree of selectivity should be exercised, and quantification—at least rough estimates of the numbers present—is of considerable value in selecting strains for serologic examination.

The personnel of each laboratory must determine the extent to which it is feasible to utilize serologic methods. Hospital laboratories differ according to the size of the institution, the nature of the census, and the interests of the physicians. Since there are several stages at which biochemical as well as serologic characterization of Enterobacteriaceae may be terminated, laboratory workers should proceed as far as they can, using standard or recommended methods, and then forward selected pure cultures (usually groups of strains) to a central laboratory for further work.

It follows that the system of central laboratories should be enlarged and their capabilities for serotyping increased, Ewing said. Not enough centers are available to examine all the cultures that should be studied, but facilities and means for the additional training that may be required are available.

Automation of FTA Test Is Significant Step

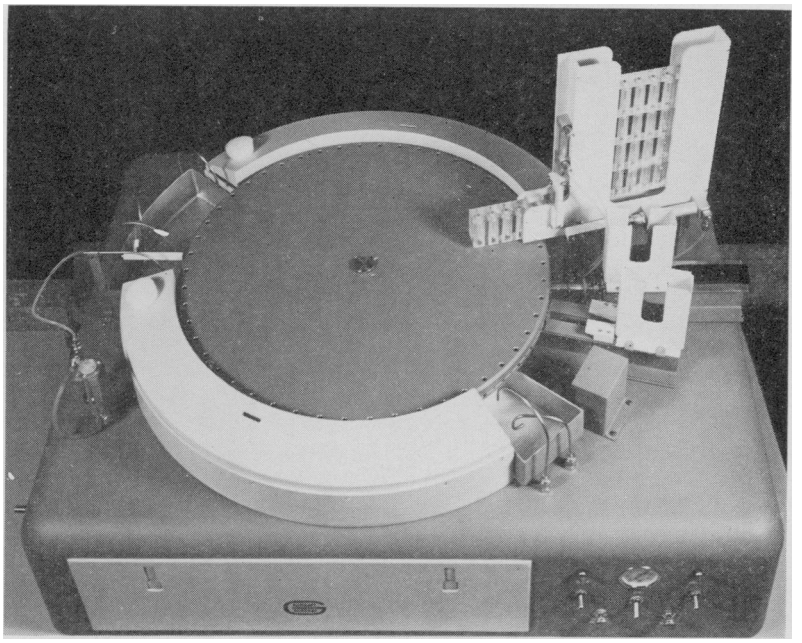
Recent studies, testing for the presence of syphilis with prototype equipment, have confirmed the feasibility and applicability of the immunofluorescence technique to automation with equipment that is relatively simple to operate, reported Genevieve W. Stout and co-workers at the Venereal Disease Research Laboratory, National Communicable Disease Center, Atlanta, Ga.

Using the fluorescent treponemal antibody-absorption (FTA–ABS) manual test, a serologist can perform about 40 tests per day. With the SeroMatic System (developed by the Aerojet-General Corp.) a serologist can perform more than 150 tests in an 8-hour day.

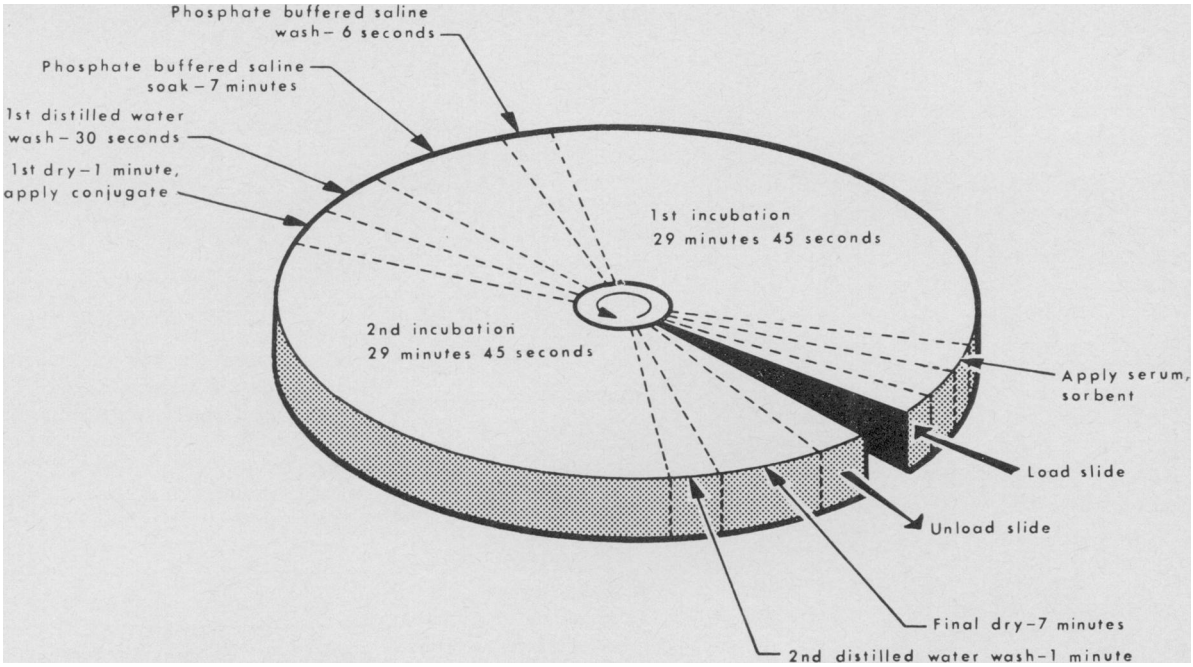
The Aerojet instrument (estimated price, $15,000) consists of an automated slide processor and a microscope attachment for performing the automated fluorescent treponemal antibody (AFTA) test. The processor is an electropneumatic device that performs sequentially the steps of the manual FTA–ABS test, from the addition of serum to an antigen slide until the reaction is completed and ready for reading. The microscope attachment relieves the serologist of the task of applying cover slips, adding immersion oil to the darkfield condenser, positioning slides on the mechanical stage, focusing the microscope, and locating the reading areas.

The slide processing is accomplished by means of a rotating table, with a capacity of 50 slides, that moves the slide through the various process stations. The initial test can be completed in about 86 minutes; thereafter a test is completed every 1¾ minutes.

Comparison of manual and automated techniques for testing 859 specimens from clinically defined donor groups showed 87 percent agreement, the workers reported. Several changes were made simultaneously in the technique for the AFTA test so that it would more nearly approximate the manual procedure. These changes eliminated most of the random variations, they said, and test agreement increased to 90 percent on 201 specimens in clinically defined categories, with the manual FTA–ABS test being slightly more sensitive. Additional adjust-



The SeroMatic System, developed by Aerojet-General Corp.



Processing sequence: total processing time, 85 minutes 45 seconds.

ments are being made that are expected to raise the sensitivity of the AFTA test and further improve its agreement with the manual procedure.

Automation of other indirect fluorescent antibody tests is now being investigated and is expected to be feasible, the NCDC workers reported. Automation of the FTA test is a significant step in the laboratory diagnosis of all infectious diseases. Such automation, they concluded, can free skilled workers from laborious manual testing.

Eighty Percent Detection In Pilot Gonorrhea Test

Although gonorrhea is the most frequently reported gram-negative bacterial infection, the humoral response associated with the disease is poorly understood, reported Dr. John D. Schmale, medical officer assigned to the Venereal Disease Research Laboratory, National Communicable Disease Center, Atlanta, in a pilot study designed to illustrate the humoral response to the *Neisseria gonorrhoeae*. Schmale pointed out that a serologic test is urgently needed, especially as an aid in screening for the asymptomatic women who comprise a significant reservoir of infection. Complement-fixation, precipitin, indirect fluorescent antibody, and other immunoassays have been used to reveal human antibodies reactive with gonococcal antigens, he said, including protoplasm and cell wall fractions prepared through the use of the Ribi cell fractionator and various other physicochemical procedures.

Both the immunoassay system and the antigen preparation influence the antibody response detected. Thus far, the most promising test system appears to be a complement-fixation assay using a gonococcal protoplasm fraction, he stated. Pilot studies indicate that this combination detected approximately 80 percent of the women with known gonococcal infection.

Teamwork is Essential In Eradication Program

Teamwork between the field man and the laboratory worker in attempting to eradicate disease is a concept much discussed but less frequently practiced, said Dr. J. D. Millar, chief, Smallpox Eradication Program, National Communicable Disease Center, Atlanta. The degree to which it is practiced, he remarked, may determine the success or failure of a program.

Experience with two major worldwide programs, eradication of malaria and smallpox, Millar said, reveal that the laboratory is integral in achieving the eradication of a disease, even though its role may be small or great, depending on the process of the disease.

Three distinct responsibilities devolve upon the laboratory, he continued: (*a*) diagnostic confirmation in case detection, (*b*) quality control of the implements of eradication, and (*c*) innovation and acceleration through new knowledge.

The first two are basically service functions, said Millar, and the last is a research entity. All three are equally important to the success of an eradication effort. The field epidemiologist and the laboratory worker must assign their collaborative priorities to the goal of eradication rather than consider personal or professional preference the one important criterion.

Environmental Health

Citizens Act To Curb Air Pollution

Citizens clean-air groups, varying in makeup, objectives, methods, and effectiveness, exist today in Los Angeles, New York, Seattle, St. Louis, Chicago, the Delaware River Valley, Buffalo, Washington, D.C., and at least another dozen places. In many instances, according to Mrs. B. Brand Konheim, acting director of public information and education, New York City Department of Air Resources, the citizens have taken bold positions where public health officials have feared to tread.

Most citizens groups—school teachers, housewives, engineers—are angry about existing atmospheric conditions and the general apathy of the public, said Konheim; they begin talking to each other, educating themselves, and stirring up others. They name their groups: Citizens for Clean Air, Stamp Out Smog, Action for Clean Air, The Anti-Pollution League. Many such groups affiliate themselves with the local tuberculosis and health associations so that essential office facilities and responsible medical opinion are available.

The success of the groups, or at least moments of success—for the effectiveness of the groups often wavers—overshadow the weaknesses. From the successes, Konheim said, public health officials could cull those elements they might wish to consider in promoting an active role for citizens in their air pollution control efforts.

The groups have used varying techniques, such as conducting a speakers' bureau servicing civil and professional organizations, enlisting organizations in behalf of a specific control program, sending letters to editors of newspapers, testifying at every related public hearing, receiving telephoned complaints from citizens, surveying aspiring politicians, organizing debates, and promoting magazine and newspaper features and TV and radio interviews.

By using a mixture of techniques, Konheim said, tangible successes have been achieved. Stamp Out Smog, in California, has attained exhaust control devices on 1966 model cars. Citizens for Clean Air, in New York, persuaded the City Council to strengthen a proposed timetable for reducing the sulfur content in fuels. New Jersey's Citizens for Clean Air called for replacement of the Air Pollution Control Commission, dominated by industry, with a cross section of professionals and citizens forming a Clean Air Council. The Delaware Valley Citizens for Clean Air appealed for and has persistently defended the creation of an 11-county, air-quality region straddling three reluctant States. And as the result of a lawsuit, the District of Columbia's Citizens for Clean Air is achieving a park on the site of a former garbage dump.

Political response appears to come after a new climate of opinion is created, according to Konheim, and air pollution control assumes a new priority in the public consciousness. Once the politicians become involved enough to appropriate funds for a full-scale control program, Konheim thinks that the role of the citizen should properly change.

If the short range goals of the control program represent tangible improvement in air quality, the citizens can be most effective in giving wholehearted support to that program, so that with this allegiance the control officer can more effectively fight the many who must still be fought.

The change will be made reluctantly, she said. Citizens have only to love nature, Rachel Carson, and eating at outdoor cafes to become self-proclaimed experts on how to deal with the complex chemistry of contaminated air.

A still loftier mission of the citizens groups is to create a continuing high priority for clean air, Konheim stated. Are highway designers investigating air pollution before use of air rights is planned? Are auto manufacturers considering clean exhaust as important as clean body lines? Are builders of huge housing complexes specifying nonpolluting methods of providing heat and disposing of wastes? Are packagers considering what happens when new plastics are incinerated? And most important, are our schools developing another generation of polluters, or a generation that places a high stake on clean air?

Chasms Separate Science And Citizen-Consumer

Who speaks for the citizen-consumer? asked Howard Ennes, second vice president for corporate relations, The Equitable Life Assurance Society of the United States, New York. For me at least, he said, one point is pertinent: Professionals and scientists and public service administrators must recognize the chasms separating science and technology and public policy from the citizen-consumer. They must actively seek an effective partnership—simply for the sake of survival—especially in the fields of environment and health and human ecology.

The social protests of the day, he continued, to which health and environment interests will not remain immune much longer, are taking many forms. Ennes quoted Herbert Gans: "Some will ask for equality, pure and simple; others will press for more democracy, for greater participation in and responsiveness by their places of work and their governments; yet others will ask for more autonomy, for the freedom to be what they want to be and to choose how they will live. All of these demands add up to a desire for greater control over one's life, requiring the reduction of the many inequities—economic, political, and social—that now prevent people from determining how they will spend their short time on this earth."

Ennes commented that our society and our nation will be well served if we individually dedicate ourselves to the three objectives for action suggested by the National Advisory Commission on Civil Disorders:

1. Open up opportunities to those who are restricted by racial segregation and discrimination, and eliminate all barriers to their choice of jobs, education, and housing. To

which I would add health services, said Ennes.

2. Remove the frustration of powerlessness among the disadvantaged by providing the means for them to deal with the problems that affect their own lives and by increasing the capacity of the public and private institutions to respond to these problems. To which I would comment, continued Ennes, that the frustrations of powerlessness are not unknown to any of us, though not to the great degree they bear upon the disadvantaged.

3. Increase communication across racial lines to destroy sterotypes, to halt polarization, end distrust and hostility, and create common ground for efforts toward public order and social justice. Clearly, said Ennes, the burden of poor communication bears heavily on all of us.

To be very practical for a moment, rather than philosophical, Ennes said, what we really are talking about is involvement and participation. There are many examples of significant and sometimes successful efforts at citizen-consumer involvement in environmental health. I could cite a few, and you know many more: Citizens for Clean Air, Citizens for a Quieter City, the Pure Waters program, ECHO (in Detroit), and other model-city efforts (in Oakland, the District of Columbia, and elsewhere).

The comprehensive planning concept, in a somewhat different context, offers an opportunity for increased citizen-consumer involvement in determining needs, identifying resources, and setting priorities. Regrettably, the degree of authentic citizen-consumer involvement is not yet great, nor are environmental considerations adequately encompassed.

Ennes continued: As Dr. René Dubos, one of the greatest of living scientists told an international gathering, "We must not ask where science and technology are taking us, but rather how we can manage science and technology so that they can help us get where we want to go." What he was asserting, said Ennes, is precisely what we as a people seem to dismiss as unthinkable: that we, which apparently means mankind, must abandon our modern practice of asking where science and technology are taking us, and must instead ask how we can manage science and technology so that they will help us achieve *our* purposes.

Dr. David Gates, director of the Missouri Botanical Gardens, Washington University, maintained, said Ennes: "We may go down in history as an elegant technological society which underwent biological distintegration through lack of ecological understanding."

Few Public Pools Meet Health Standards

The operation of public swimming pools is not as good as it should be, according to A. P. Black, director, Iodine Demonstration Grant, and coworkers. Although both swimming pool and water supply operators are required to meet the same bacteriological standards, the water in the swimming pool is subject to continuous pollution from bather load, the atmosphere, and the soil. In contrast, water supply operators distribute their purified product in a tightly closed, protected distribution system, use residual recorders, and in most cases, sophisticated chlorine control equipment to provide water that meets drinking water standards.

Field Study

The authors described a field study of the chemical and bacteriological quality of water of 193 below-ground public pools in Florida. The pools ranged in size from 11,000 to 624,000 gallons. Parameters investigated included turbidity, type of filter, presence or absence of algae, pH, determination of chlorine residual by amperometric titration and orthotolidine test, coliform density by both multiple tube and membrane filtration, fecal streptococci, total staphylococci, and *Pseudomonas aeruginosa.*

Of the 193 pools, 105 failed to have the chlorine residual required by the State health code, and 106 had pH values outside acceptable limits. Eighteen percent of the pools studied contained coliforms or showed unsatisfactory membrane filtration results, the authors stated. Fecal streptococci were isolated less frequently than coliforms in pools with low chlorine residuals. Staphloccocci were isolated in a large proportion and were present in large numbers in pools with low chlorine residuals. *P. aeruginosa,* which is a potential pathogen and a causative agent of ear infection among swimmers, was isolated with about the same frequency as coliforms.

The standard orthotolidine (OT) test as performed by pool operators gives results that are both erroneous and misleading, the authors stated. The operator is primarily interested in the level of free available chlorine in the pool. During this survey, however, the authors said they found no operators and only one sanitarian who measured chlorine residuals properly. Most merely read the flash and 5-minute residuals at pool water temperature, which leads to inaccurate results. A second, more accurate method of measuring free available chlorine is by means of an amperometric titrator. The free available chlorine is determined by titration with phenylarseneoxide at pH 7.0.

In 27 of the 28 pools using cyanuric acid stabilized chlorine, orthotolidine residuals were compared with residuals measured by amperometric titration, the authors declared. Eleven pools showed no measurable free available chlorine residual by amperometric titration. Two had free available chlorine residuals of less than 0.3 ppm and nine showed values greater than 0.3 ppm. Each of the 22 pools showed a high free available chlorine residual with the OT "flash" test.

Many pool operators knew little more than the simple details of mechanical operation. Too many had little or no conception of the significance of pH or chlorine residual, or how to maintain a residual within acceptable limits. Many monthly reports to be submitted to the health department were found filled out days in advance.

Recommendations

Although automatic control systems such as those used in water treatment plants are relatively ex-

pensive compared with the cost of disinfecting equipment used at a public pool, the cost is little compared with the total cost of the pool. Black and co-workers listed these advantages of automatic recording and control.

1. A continuous safe residual level is maintained.

2. The recorder charts provide a reliable permanent record for health authorities, not only of residual present but also of continuity of recirculation.

3. Cost of operation may be reduced because of the efficient use of chemicals.

Both free chlorine and iodine are effective pool sanitizers. Chlorine is more costly when used to maintain a free chlorine residual, Black and coworkers stated. The instability of chlorine and its activity are assets in controlling algae and keeping a pool free from organic material, but pool operators have difficulty maintaining adequate residuals in times of heavy pool use, and there is no simple accurate test for free available chlorine. Bathers also suffer from eyeburn in heavy chlorinated pools. Iodine is superior to chlorine because it is more stable in dilute aqueous solution. Until an effective algicide is developed, however, the authors believe iodine cannot be recommended for general pool use.

The authors strongly recommend that the statement "free chlorine residuals at pool pH" be included in any swimming pool code and, further, more effective operation of public pools could be obtained by requiring licensing of operators and by requiring complete automatic control of chlorination and pH adjustment.

Training and Certification Of Pool Operators Needed

About 300,000 trained operators are needed to man the 200,000 public swimming pools in this country; less than 15,000 operators have been exposed to training, reported Lloyd S. Hubbard, president, Halogen Supply Co., Chicago.

The shortage of trained operators will get worse, he predicted. By 1980 swimming will be the most popular outdoor recreation, according to a recent survey of the Federal Bureau of Outdoor Recreation. Public pools are being planned in virtually every community which does not have one, communities which already have pools are planning additional ones, and few apartments, motels, or hotels built in the future will lack pools.

Economic Aspects

Day to day throughout the swimming season thousands of public swimming pools have higher than tolerable turbidity, inadequate disinfection residuals, improperly controlled pH, improperly functioning filters, and other commonly found inadequacies, Hubbard declared.

Thousands of dollars are spent each year to repair or replace pool equipment because of the lack of trained and experienced operators, Hubbard stated. Economic losses are compounded by thousands of days of pool shutdown caused by mismanagement of mechanical systems by well-meaning but unskilled operating personnel.

Training Inadequate

In replies to a recent National Swimming Pool Institute questionnaire, 30 State health departments reported having no requirement for operator training, examination, or certification. Hubbard said that only Dade County in Florida, Arkansas, New York, and Oklahoma had requirements.

The courses of training range from a 9-hour voluntary one offered by public health officials in Washington, D.C., to 50 to 60 hours of study for 12 to 15 weeks in Dade County. At least 13 State health agencies offer voluntary courses varying from 5 to 24 hours of instruction, Hubbard said.

Hubbard pointed out, however, that the training branch of the National Communicable Disease Center recognized the need for qualified operators 10 years ago when it published a 150-page training manual and a course outline for 3 full days of study. This manual, although no longer completely current because of the rapidly changing technology, was not used by a single State.

Efforts to train and certify pool operators are isolated and dissimilar. Hubbard believes that the urgency of training should be recognized at the national level and collective action started on some uniformity of method.

Construction Safeguards

Most States require approval of pool plans and specifications by a governing agency before construction, Hubbard said. Most of these requirements exist at State level, and where no such requirements exist in code form, the recommendations of the American Public Health Association are often the basis for design criteria. Virtually all codes require adequate bathhouse facilities, adequate turnover of water, and appropriate mechanical systems for disinfection and filtration. Thus, the agency responsible is assured a reasonable level of safety and sanitation provided the facility is adequately supervised and operated.

In many States, inspections are made periodically and water samples are tested for bacteriological contamination. But the important point is this, Hubbard declared—adequate disinfection from hour to hour and day to day can neither be designed into a pool on the drawing boards nor inspected in a pool by occasional sampling. The health of the public can be protected continuously only through the training of public pool operators and the provision of some means of examining the trainees to be certain they have the knowledge they need.

Certification Needed

Although the Red Cross trains lifeguards and water safety instructors, it does not certify or teach pool operators how to operate mechanical systems, disinfection systems, or about good pool maintenance, Hubbard emphasized.

A recognized agency of government or business must have the authority to certify operators. Because the typical public pool is operated seasonally, the work can be temporary and the pool operator transient, Hubbard declared.

Certification would be a major step toward providing a supply of

qualified operators. This process could be similar to the Red Cross program of certification of water safety personnel which has made it possible for pool managers to hire qualified lifeguards and water safety instructors in all regions of the United States, Hubbard concluded.

NYC Air Pollution Affects Mortality

Exposure to periods of high, but not extraordinary, levels of air pollution—levels ordinarily found in urban air—is harmful according to a current statistical study, said Thomas A. Hodgson, Jr., division of epidemiologic research, department of public health, Cornell University Medical College, New York City. Heart and respiratory disease mortality in New York City are significantly related to concentration of particulate matter at a 0.005 level and temperature at a 0.025 level. Sulfur dioxide is not a statistically significant explanatory variable, he said.

Seventy-three percent of the variation in mortality from heart and respiratory diseases is explained by concurrent variation in air pollution and temperature, with pollution being the more important explanatory variable, he continued. An increase of two units (not an unreasonable change) in the average daily concentration of particulate matter during a month results in an increase of 26.7 in the expected average daily mortality from respiratory and heart diseases during the same month. This increase is almost 18 percent of the average number of deaths per day attributable to heart and respiratory diseases during the study sampling period. (Approximately 150 persons died each day of heart or respiratory diseases from November 1962 through May 1965.)

Particulate matter is an important explanatory variable for those 64 and under, Hodgson stated, inducing a greater effect on respiratory and heart disease mortality than temperature; for those 65 and older, particulate matter and temperature are of nearly equal importance as explanatory variables.

Hodgson listed the categories of mortality strongly related to particulate matter and temperature; pneumonia, vascular lesions affecting the central nervous system, arteriosclerotic heart disease including coronary disease, hypertensive heart disease and other diseases of the heart and circulatory system, and certain kinds of nephritis and nephrosis. Bronchitis is moderately related, he said, and tuberculosis of the respiratory system, malignant neoplasm of the respiratory system, asthma, and pneumonia in the newborn are weakly related.

The real underlying relation between mortality and air pollution is not simply that increased pollution on day t induces increased mortality on day t, and perhaps day $t+1$, without more delayed effects, Hodgson declared. As perhaps is obvious, he continued, a complex structure exists in which the role of time (that is, the extent to which health effects are delayed or cumulative with respect to exposure to pollution sometime in the past) is very important and must be explored. The table shows the expected average daily increase in mortality during a month per unit increase in particulate matter.

Expected average daily increase in mortality during a month per unit increase in particulate matter

Category of mortality	Average daily mortality for study period	Regression coefficient for particulate matter	Percent increase
Pneumonia	9. 40	1. 86	20
Bronchitis	. 81	. 17	21
Vascular lesions affecting CNS	17. 10	. 94	5
Arteriosclerotic including coronary heart disease	85. 80	6. 78	8
Hypertensive heart disease	8. 33	1. 54	18
Other diseases of the heart	18. 03	1. 70	9

Detroit Does Something About Rat Control

Biologists have estimated that the total offspring of one pair of rats, given the opportunities of total survival to maturity, an unlimited food supply, and a completely favorable environment, would theoretically number 1,500 by the end of about 1 year.

Detroit's booklet, "There is Something You Can Do About Rats," is popular and effective, according to John H. Ruskin, formerly assistant director of the bureau of sanitary engineering in the city's department of health. Its theme has helped to motivate thousands of Detroit citizens to do their part in rodent control. The real function of a public agency, Ruskin believes, is to catalyze the inherent and instinctive willingness of most citizens to engage in "self-help."

A successful rodent control program, as described by Ruskin, is basically composed of four points of attack—starve out, clean out, build out, and kill out—and depends on the three E's: engineering, education, and enforcement. Assigning priority to any of the three E's would be foolhardy, he said, because a program of this type would fail if it did not include all three.

Not all four points of attack can be applied on a citywide or countywide basis simultaneously and with consistent vigor by a small staff of sanitarians, Ruskin declared. But thanks to an augmented staff and the advent of anticoagulant poisons, Detroit's rodent control division launched an organized preventive service in the most heavily infested blocks of the city. Many volunteers were recruited to promote, on a self-help basis, a meaningful cleanup of rat harborages and to apply social pressures to occupants of the block who were unconvinced of the need

for compliance with the sanitation measures requested by the health inspectors.

An education and enforcement program was introduced to rid alleys of the 55-gallon oil drums used typically as a combination garbage receptacle, trashburner, and rat-feeding station. This container is cheap and durable, said Ruskin, but it supplies food for a large and widespread rat population. Air pollution experts and firefighters also cited the smoke and fire nuisances that resulted from the use of these drums.

The Detroit Department of Health, starting with a pilot area, revising the program to eliminate the inevitable but unpredictable misunderstandings of printed notices, and using a temporary augmented staff of inspectors, covered all 13,634 blocks in Detroit in slightly more than 2 years. Individually and through the press, every one of the 550,000 households in Detroit was notified that oil drums were illegal receptacles and would be removed as such by the department of public works on a certain date, by which time they must be replaced by an adequate number of approved 20- to 26-gallon galvanized metal containers with covers and handles.

Evaluation of the relative success of the program is frequently requested, Ruskin reported. A Detroit ordinance, since 1953, has required, as one of several conditions, that any premises be free of rats before a wrecking permit will be approved; and prior clearance must be obtained from the department of health. In 1955, rat infestations were found in 9.2 percent of 2,946 buildings that were checked; in 1966, only 0.36 percent of 4,505 wrecking applications were rejected because of rat infestations. A study of rat bite morbidity has revealed a highly significant reduction despite increasing reliability of reporting, so that hundreds have been spared this traumatic experience.

It's a Great Help to Know Where You're Going

Food inspection programs, as we know them, will not continue much longer, said Francis G. Lynch, chief, environmental health, City of Berkeley Health Department, Berkeley, Calif. The general pattern of inspection and enforcement was appropriate in the past, but I seriously wonder about the effectiveness and efficiency of the system now.

One of the essential tools in establishing realistic priorities of activity in environmental health programs is a good data information system—one that gives the most information about the subject, he continued.

Using the data information system set up in Berkeley, Lynch said, we tested our food inspection program, which dates back to the 1920's. We gathered the most objective data we could get on the existing quality of the food establishments in Berkeley. To be as objective as possible, we requested the California State Department of Public Health to evaluate the eating and drinking establishments and rate them according to a scoring system (of 100) set up by the State public health department.

The survey evaluation for the first year was in the low 70's, with an actual mean score of 72.8. For another 2 years the score was statistically comparable, 73.7 and 73.1. These ratings indicated that for 3 years, despite a continued effort, we had made no significant progress. We were doing plenty of work, but obviously were not accomplishing very much.

Were we satisfied with what we had? If so, should we continue in a program that lacked vitality, was costly, and had no measurable achievement? Perhaps if we did nothing, the staff thought, things would remain the same. Most communities have food establishments that, without control, remain good; the majority are mediocre; and competition takes care of the few that are far below the community's acceptable standards.

We decided that we were not satisfied with our program, Lynch continued. The data information system had let us know specifically where deficiencies existed in the program. For example, we knew that 40 percent of our establishments used improper food-storage methods, that only 2.3 percent were deficient because of rodents and insects, and that only 1.2 percent were below standards because of ventilation.

We directed our efforts toward improving the methods of food storage, Lynch said, and in 1 year our score, according to the State health system, rose to 82.9 percent. After we reach our goal of 85 percent, said Lynch, a large portion of our energies can go into some other area of environmental concern in the food inspection program, using the data system to identify the most urgent environmental concern.

The final decision on realistic priorities of activity in environmental health programs is based on your professional judgment, said Lynch, and this I cannot emphasize too much. No computer, no information system, can make decisions. The system can, however, provide data from which realistic management decisions can be made, he concluded.

St. Louis Heat Experiences Pertinent to Health Care

The morbidity and mortality experiences in St. Louis resulting from the July 1966 heat wave illustrate their pertinence to general health care, stated A. Henschel and coworkers at the Public Health Service National Center for Urban and Industrial Health, Cincinnati.

The conditions during this heat wave, they said, were equal to a relative strain index of about 0.4 to 0.5. At that level of heat stress, nonacclimatized middle-aged or older persons would exhibit distress and progressive inability to maintain normal thermal balance. The less heat-tolerant persons would become heat casualties, and if relief were not forthcoming, they declared, some deaths could be expected.

Heat was listed as the primary cause of death in St. Louis on 246 of 1,428 death certificates in July 1966 (see table). A striking increase in deaths occurred from July 11 through 15. The death rate increased a day or two after the heat wave began and returned to normal the second day after it broke.

The total number of deaths in-

creased with age, with about half of the deaths occurring in the over-69-year age group. During the 6 days of the heat wave (July 9–14), the number of deaths increased except in the 1- to 19-year age group, the investigators reported.

The maximum temperatures were consistently in the low to middle 90's, 2° to 7° above normal, from June 22 to July 9. For the next 6 days maximum temperatures were above 100° F. (101° to 106°) and about 10° higher than normal.

The minimum temperatures at night were also 10° to 15° higher during the 6-day heat wave than either before or after it. The investigators said the higher minimum temperatures would slow the rate of nighttime cooling of the buildings and would, in effect, increase the total daily heat load. In addition, such high nighttime temperatures would interfere with proper sleep, rest, and recuperation.

For the heat wave period, the 246 certified primary heat deaths accounted for about 65 percent of the total excess deaths in July. More women than men died from the heat during this period although no sex difference was seen in total deaths. The percentage of heat deaths to total deaths also was greater for Negroes than white people (see table).

Available hospital records for 200 of the 246 persons who died were reviewed by the investigators. Eighty of 200 persons were dead on arrival at the hospital. Nearly all those admitted to the hospital during the heat wave had body (oral or rectal) temperatures of 103° to 106° on admission. These people appeared to be heat stroke victims.

The investigators reported as an interesting feature that one hospital was divided into three main units, one unit air conditioned and the other two not air conditioned. Thirty-five heat deaths occurred in the two units that were not air conditioned.

Laboratory data were obtained on only 100 of the 246 deceased patients. In most cases normal plasma electrolyte (sodium, potassium, chloride) values were found. Hyperkalemia has been reported as an important electrolyte alteration in heat stroke, the investigators said. Most of the liver function tests and enzymes showed abnormal values, indicating definite intracellular damage. Fasting blood sugars and blood urea nitrogens also were consistently above normal, they reported. Many showed abnormal reactions to blood tests, such as increased prothrombin times and bleeding problems, manifested by guaiac-positive stools, melena, and hemoptysis.

The available hospital records listed the following main diseases of the heat stroke victims and showed that many of these persons had more than one disease:

Disease	*Number of persons*
Arteriosclerotic heart disease	19
Congestive heart failure	10
Diabetes	7
Hypertension	6
Syphilis	5
Cerebral vascular accident	5
Alcoholism	4
Emphysema	3
Cancer (uterus, lip, breast)	3

The morbidity and mortality experiences during the July 1966 heat wave are pertinent to the problems of health care in a Civil Defense shelter, the investigators said. In 12 to 36 hours many persons would become heat casualties if the temperature within the shelter rose to 95° F. or above. Older and middle-aged groups are affected more than younger people. Persons with acute or chronic cardiovascular and pulmonary disorders are particularly susceptible, they said.

St. Louis deaths, July 1966

Ethnic group	Men	Women	Total
All deaths	711	717	1, 428
Caucasian	525	514	1, 039
Negro	186	201	387
Indian		1	1
Unknown		1	1
Heat deaths	101	145	246
Caucasian	69	87	156
Negro	32	56	88
Indian		1	1
Unknown		1	1

Law Enforcement Essential in Public Health Work

Prosecution is a dirty word in public health, and many health officers and sanitarians are litigation-shy. Don't be, said Frank P. Grad, associate director, legislative drafting research fund, Columbia University School of Law and author of the Public Health Law Manual (APHA, 1965). If you mean to enforce, you must be ready to go all the way. Education and persuasion will be far more effective if everyone knows that the health department means business where law enforcement is concerned, Grad said.

A health department, he continued, must have established policies on how long to educate and when to prosecute and, when a case is taken to court, the department ought to win it. That usually means that the department should select cases for legal action that it can win. You don't strengthen the department's powers and effectiveness, he said, by losing cases.

An enforcement program in environmental health, regardless of the special field (air pollution, water pollution, food sanitation, housing code enforcement) invariably has three components, Grad said: first, a legal basis in statute and regulations; second, staff assistance (inspectional, clerical, and supervisory including legal); and third, a method, plan, or system of administration and enforcement.

For a decent enforcement program, Grad pointed out, the substantive law must be adequate. It must reflect the current tasks and objectives of the field, and it must be clear enough that the public and the regulated field can be sure what the re-

quirements are. It must also provide for an adequate range of enforcement sanctions, such as civil penalties, injunctions, or criminal penalties. You can readily discern a place for the lawyer, he asserted, in the preparation of adequate statutory and regulatory provisions as well as in their enforcement. Every health department should have a legal staff, Grad maintained, or at least some legal staff services.

Few health departments know how to use a lawyer properly if they have one, Grad declared. They rarely involve him when a new enforcement program is being planned, and they rarely educate him so that he can appreciate the aims of environmental health regulation and so that he can assist effectively in drafting public health laws and regulations. Usually, he maintained, they call in the lawyer when the trouble is complete, and the request is usually very simple: Get us out of trouble and win this case for us!

Cases, particularly cases to enforce environmental health regulations, are won or lost long before they get into court, Grad said. The adequacy and detail of inspection reports, the proper labeling and analysis of any samples taken, the proper dating and identification of photographs of particular conditions—all these things win cases, and they ought to be part of the regular administrative process of the department. Only if the department does its job properly can the lawyer do his. A good enforcement program, said Grad, is the result of a proper balance of the components mentioned, combined in every instance with another essential ingredient; namely, the will to enforce the law.

Standards and Criteria For Health Protection

Often men must combine their efforts in common cause to attain the collective protection from environmental hazards they are unable to assure individually, said Norman A. Hilmar, Center for Population Research, National Institute of Child Health and Human Development, Public Health Service. In a representative republic, they frequently rely on the political process as the mechanism of choice for institutionalized solutions and safeguards.

To my way of thinking, Hilmar continued, government health officials must afford each person the opportunity for the best possible health protection obtainable by the most appropriate and effective means, whether the means be consumer education, self-regulation by industry, or rigorous enforcement by government.

Each health protection standard promulgated by government, Hilmar said, should have at least the following characteristics:

1. The standard should be truly relevant to the health and well-being of man and should be addressed to the prevention or control of hazards to his health and well-being.

2. The standard should be realistic and attainable. It should constitute a charter for prudent continuation of a desirable activity employing the best available methods of control under conditions that are economically feasible and do not constitute unacceptable risks to human health. In general, health protection standards should be attainable—at a cost that is not financially prohibitive. I can point to at least one case of government prohibition, said Hilmar: the health hazards to workers were so serious in factories producing phosphorous matches that a Federal tax, high enough to drive the matches off the market, was imposed. They were replaced by the sulfur matches we use today.

3. Adherence to the standard should be measurable with reasonable precision and reliability. Those responsible for enforcing standards and also those who are required to comply with them should be able to ascertain when a violation has occurred.

4. The standard should be aggressive in protecting the public. Uncertainties about the degree of control that is necessary should be resolved in the direction that will afford the greater protection to the public.

We all should feel gnawing doubts about a government official, Hilmar declared, if his main concern is to develop an ordinance or code that will not be challenged in the trade journals or in the courts. And for some control measures, he said, an ordinance or code too readily accepted by those regulated should be questioned.

Better Standards Needed For Home Heating Items

Every community needs the protection of special codes governing the installation of heating equipment, said Eugene L. Lehr, National Center for Urban and Industrial Health, Consumer Protection and Environmental Health Service Administration. These codes should and frequently do recognize hazards of the products of combustion as well as fire hazards.

Health departments can be a major influence in stimulating the revision of inadequate standards, he said. Frequently the technical requirements and laboratory testing procedures of national voluntary standards do not allow for normal hard use and deterioration during the life of the equipment.

In Memphis, Tenn., reported Lehr, 327 random residential inspections, primarily of space heaters, water heaters, and gas cooking ranges were made. Of slightly more than 1,000 appliances tested, 25 percent were found to be contributing measurable amounts of carbon monoxide to the home interior. About one-fourth were emitting 200 to 2,500 ppm of carbon monoxide. Similar situations were found elsewhere, he said, and concerned health departments have undertaken special surveys.

Health agencies cooperating with medical societies can suggest that physicians consider the possibility of carbon monoxide poisoning when patients have certain symptoms, said Lehr. They can suggest the desirability of blood tests for suspected cases. Physicians should feel free to call on health agencies to investigate the home environment when evidence of carbon monoxide has been found in the blood of a patient.

Based on limited evidence, the injury control program of the Public Health Service has estimated that

each year at least 10,000 persons suffer chronic ill effects from exposure to sublethal but debilitating levels of carbon monoxide.

Lehr recalled that before revised national standards required the venting of all space heaters in mobile homes and camping trailers a series of carbon monoxide deaths occurred in trailers in widely scattered areas of the country. Brilliant detective work by two State health departments identified the agent as a particular model of unvented gas heater, he said. By a chance change in the dimensions of the appliance, he stated, this model generated carbon monoxide even under ideal conditions of use. With all windows and doors closed, the heater had deadly effects.

In another instance, Lehr said, records indicated that at least 8,000 units of a self-contained baseboard gas burning heater had been sold—6,000 to one major distributor. The appliance was suspected by a county sanitarian investigating a single carbon monoxide death. When it proved faulty in tests in a State health department laboratory, the Public Health Service and the State agency discussed the dangers with the principal distributor (a national retail corporation). The firm immediately undertook its own investigation of the potential hazards and, aided by national advertising and its store managers, conducted an intensive recall and replacement campaign. Simultaneously, both the firm and the Public Health Service alerted the public by news release and requested assistance from utility companies, health agencies, and building departments in locating the defective unit. Response in the affected areas was excellent. Lehr described the Public Health Service's intensive broad-scale program to assist communities in reducing the hazards of accidental carbon monoxide poisoning. The following services are offered:

1. Cooperative demonstration projects in which selected communities will assist in analyzing their particular problems, in implementing prevention activities, and in continuing and evaluating their efforts.
2. Recommendations to national codemaking organizations that higher safety factors be incorporated in heating equipment and heating installation standards.
3. Assistance to State and local regulatory agencies in strengthening their codes.
4. Informational material to give the public a better understanding of the causes and prevention of carbon monoxide poisoning.
5. Informational material for physicians, calling their attention to the confusing similarity between symptoms of carbon monoxide poisoning and certain other conditions.

HSMHA Administrator Named

DR. JOSEPH T. ENGLISH, former assistant director for Health Affairs of the Office of Economic Opportunity, has been named administrator of the Health Services and Mental Health Administration.

The Health Services and Mental Health Administration, with 26,000 employees, is made up of nine national centers or services, including the National Communicable Disease Center, the National Institute of Mental Health, the Hill-Burton program and the Indian Health Service.

Educated in Philadelphia, Dr. English received his bachelor of arts degree from St. Joseph's College and his medical degree from the Jefferson Medical College. He interned at Jefferson Medical College Hospital. His psychiatric residencies were at the Institute of the Pennsylvania Hospital in Philadelphia and the National Institute of Mental Health at Bethesda, Md., where he served as clinical associate and senior resident.

From July 1962 to September 1965, Dr. English was on detail to the Peace Corps from his position as psychiatrist in NIMH's Professional Services Branch, and later in the Office of the Director. From September 1965 to February 1966 he continued this detail as assistant chief, Policy and Program Coordination, Office of NIMH Director. Meanwhile, he served as chief psychiatrist for the Peace Corps' Medical Programs Division from July 1962 to July 1966.

Dr. English also served as deputy chief, Office of Interagency Liaison, NIMH, from February to September 1966 and deputy assistant director, Office of Economic Opportunity for Health Affairs, May–July 1966. He was acting assistant director of this organization until March 1968, and later was appointed on a permanent basis.

Dr. English holds membership on many professional boards and Federal committees. He is visiting lecturer at Yale University School of Medicine, visiting lecturer in psychiatry, department of psychiatry, Harvard Medical School, and assistant clinical professor of psychiatry at George Washington University School of Medicine, Washington, D.C.

Dr. English has been the recipient of many awards for his outstanding accomplishments, among which are the Arthur S. Flemming Award as one of the outstanding young men in the Federal Service and the Meritorious Award for Exemplary Achievement in Public Administration from the William A. Jump Memorial Foundation.

Education Notes

Comprehensive Health Planning. A 3-week program in comprehensive health planning will be offered April 21–May 9, 1969, at the University of California, Berkeley, under joint sponsorship of the university's school of public health and health sciences extension and with financial support from the Office of Comprehensive Health Planning and Development, Public Health Service.

The program is open to 50 persons in legislative, administrative, or planning positions and who are presently or potentially concerned with comprehensive health planning. There are no tuition fees, and 35 stipends covering living expenses are available.

Subjects will include definitions of health and the relation of health to other community problems; identification and systematic analysis of problems, including the interrelations of biophysical and social causes; development of goals and priorities; evaluation of data; identification and comparison of alternative means to solve problems; economic techniques for evaluating the feasibility of alternatives; and political, administrative, and behavioral problems of implementation. The course does not cover the details of organizing comprehensive health care services.

The teaching staff will be drawn from the university's schools of public health and business administration and its departments of economics, city and regional planning, sociology, and political science.

For further information write to Health Sciences Extension, University of California, 2223 Fulton St., Berkeley 94720.

Special Program for Urban and Regional Studies of Developing Areas. The Massachusetts Institute of Technology is offering a nondegree program of advanced studies in the problems of urban and regional change within the context of national development.

Designed for mature persons with diverse backgrounds, the program is directed to those with positions in private or public organizations. Although most of the participants will be from developing areas, a few from economically advanced countries will be admitted. The principal criteria for admission are exceptional ability, experience, and professional position of the applicant. All applicants must have a thorough command of English.

The program is flexible, and participants are encouraged to tailor their work to their individual requirements. Participants may specialize in land use planning, urban design, the economic and quantitative aspects of urban and regional development, or they may crosscut several areas including social and political sciences, engineering, or management.

Tuition costs $3,600, but fellowships equal to $1,450 are available to participants who require such assistance.

Additional information is available from the Director, Special Program for Urban and Regional Studies of Developing Areas, Department of City and Regional Planning, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge 02139.

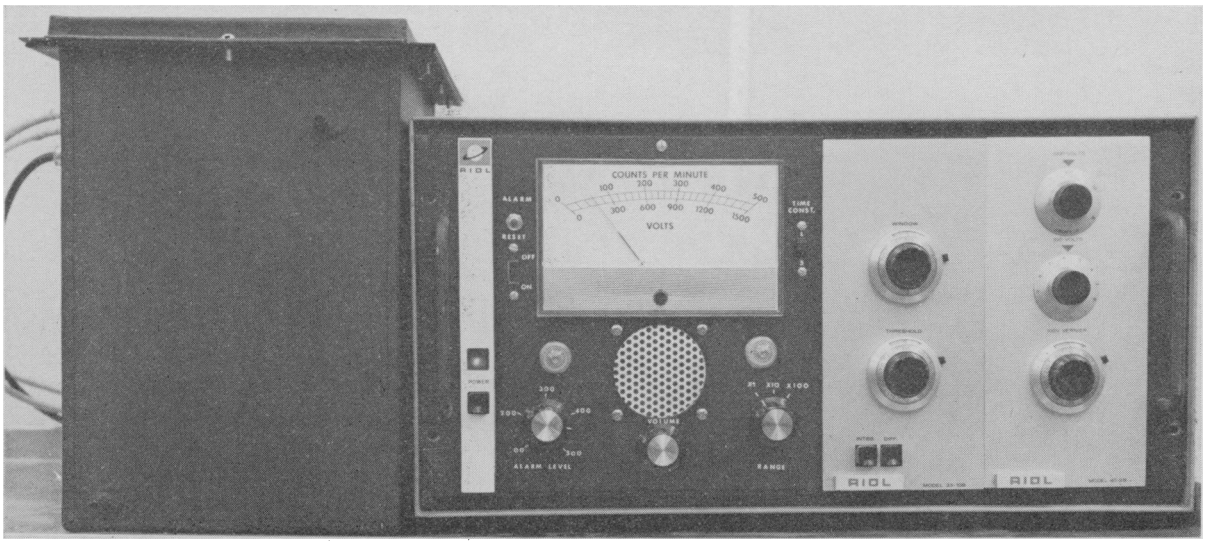
Graduate Program in Chronic Disease, Adult Health, and Aging. The University of Michigan School of Public Health has announced an expanded graduate program leading to the master of public health degree in chronic disease, adult health, and aging.

The curriculum is designed to prepare students for careers as administrators, consultants, and specialists in disease prevention and detection programs, care and rehabilitation of the long term patient, and services for the aging. The courses can be completed in 1 or 2 years, depending upon the applicant's academic training and previous experience.

Persons with a bachelor's or an advanced degree in the health or social sciences are invited to apply.

Traineeships are available for suitably qualified students. They range from $2,400 to $7,000 per year plus $500 for each dependent and full tuition (currently $3,210 for nonresidents of Michigan). Traineeships are tax exempt.

For further information, write to Ian T. Higgins, M.D., Program Advisor, Chronic Disease, Adult Health, and Aging, University of Michigan School of Public Health, Ann Arbor 48104.



Semiportable monitor for detecting gaseous tritium in air, urine, and water

Monitor To Detect Tritium

A semiportable monitor for detecting small amounts of tritium—the radioactive isotope of hydrogen—has been developed at the Bureau of Radiological Health Southeastern Laboratory, Public Health Service, in Montgomery, Ala.

H. H. Kelley, C. R. Phillips, and A. A. Moghissi, developers of the monitor, say that it can detect tritium in air, urine, and water at levels less than 5 nanocuries (one billionth of a curie) per liter of air and 3 microcuries (one millionth of a curie) per liter of water. The monitor is based on scintillation—a process which converts radiation into light—and is more sensitive than previous monitors using either the scintillation or ionization principles of detection. The monitor uses mainly commercially available components.

The apparatus can detect both the elemental and the oxide forms of tritium. The scintillation detector used in the monitor is more selective and therefore more sensitive to tritium than previous devices because of its ability to discriminate for particle energy and its reduced sensitivity to gamma radiations. The device uses anthracene-coated plastic rods to detect the beta particles emitted from tritium. These detectors can be decontaminated or replaced easily.

The scintillation events originating in the detector unit are amplified by two bialkali photomultipliers connected in coincidence to a summing amplifier. The supplementary circuitry converts the pulses into a measurable electrical current visible on a rate meter.

The detector, consisting of the detection chamber and the control unit, measures about 10 inches high, 17 inches deep, and 27 inches long. The detection chamber, in addition to the scintillators, includes the photomultipliers and summing amplifier. The control unit contains a high-voltage power supply, single channel analyzer, combination rate meter and alarm system, and related circuitry and housing. Future models are expected to be more compact.

Urinalysis has been one of the primary means of determining the presence of tritium in the environment of radiation workers. Tritium in vapor or liquid form is easily absorbed in the body fluids and excreted in the urine. This after-the-fact detection method, although relatively accurate, is time consuming, and undesirable as a routine monitoring technique. The new monitor, however, is capable of detecting tritium directly.

Tritium, the only radioactive isotope of hydrogen, occurs in minute quantities in air and water. The nuclide is produced by neutron irradiation of lithium, neutron capture by deuterium, or by direct release in the fission process. The nuclide often contaminates vacuum systems and other parts of particle accelerators.