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Summaries
of selected papers
from the 97th annual meeting
of the AMERICAN
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and meetings
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November 10—14, 1969
INNER CITY
QUALITY OF LIFE
CAFOR
ENVIRONMENT
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MICROWAVES
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PROVIDERS
MANPOWER

HEALTH SERVICES FOR THE POOR

Acculturating Health Care In the Ghetto Community

Acculturation of the health care delivery system within the community is the goal of the family health team, according to James Bates, Dr. Harry M. Lieberman, and Dr. Rodney N. Powell of the South Central Multipurpose Health Services Center in Los Angeles.

At the center in Watts, the health team strives to take into account the different life styles of the poor. Health workers must work out the regimen with and not for the patient, the authors emphasized.

The ghetto community also needs help in moving away from its ambivalence toward medicine as an extension of the dominant society, they noted. Poor people have to be encouraged to voice their concerns and question what they do not understand. Generations of health professionals and facilities have taught the poor to be passive and they require new conditioning.

The authors explained that the family health team at the Watts center consists of one or more of each of the following—pediatrician, generalist, internist, public health nurse, registered nurse, licensed vocational nurse, nurse's aide, receptionist, clerk, medical secretary, social worker, and neighborhood health agent.

For this group to be successful, it must move from the traditional pyramidal authority structure to a system of sharing group authority. Impeding this change in the authority structure are the education of health professionals, which emphasizes stratification in rigidly defined roles, and the rapid turnover of personnel on the health team. On one team, only five of the original 12 members remain after 17 months, and eight additional people were transiently attached to it during that time.

The authors also discussed the neighborhood health agent at the Los Angeles center. After a year of training at the center, he can function as the keystone that unites the medical facility and the community into a single arch of locally responsible health service.

The family health team works on many facets of the patient's needs, the authors said. In addition to medical care, the team may help in obtaining emergency food allowances and with housing, food purchasing or preparation, clothing, furniture, welfare tangles, transportation, employment, and legal assistance. Only when the acute crises are worked out can the team begin to help a family to help itself.

How Well Do Consumer Health Groups Operate?

Although participation by residents (consumers) in neighborhood health centers is widely advocated, there is no general agreement on goals for participation, the form it should take, or the means to implement it.

This conclusion was reached by Gerald Sparer, George B. Dines, and Daniel Smith, all of the Office of Health Affairs, Office of Economic Opportunity, on the basis of appraisals of 27 neighborhood health centers over a 2-year period.

A team that included specialists in medicine, dentistry, nursing, business and management, manpower training and development, and consumer and community organization made 2-day onsite visits to carry out project reviews. They met with consumer groups affiliated with the centers and collected information on the organization and operations of these groups. The team's data, as well as the impressions and data of project analysts and consumer specialists in the Office of Health Affairs, were used to analyze the administration and organization of the consumer groups as they related to the degree of involvement in health center matters, the authors explained.

The 27 centers were rated on (*a*) degree of involvement—the actual participation of the consumer group in policies, practices, and operational decisions—(*b*) personality parameter—outstanding personalities are considered primary agents in influencing activities and in understanding the dynamics of the process of consumer involvement—and (*c*) conflict—internal or external relations that have disrupted group functioning or relations between groups.

Seven centers were rated high in the degree of consumer involvement, nine were rated moderate, and 11 rated low, said Sparer and associates. The character of the administering agency (hospital, health department, medical school, group practice, or community corporation) was not related to the degree of consumer involvement. Nor was the structure of the consumer group critical. Five of the seven high-rated groups had advisory functions only; in acting in operational matters they were indistinguishable from the two high-rated centers with consumer groups established as governing boards.

Consumer groups were also scored on their committee structure and function, status of bylaws, regularity of meetings, board election procedures, experiences, and availability and completeness of minutes, said the author. Scores on these factors indicated that consumer groups have had much difficulty in holding adequate elections and in establishing effective bylaws and that effectiveness of the groups' function was related to the degree of involvement in operations.

Outstanding personalities were identified on both sides—eight in consumer groups and 16 in provider groups. Eight centers had no outstanding personalities in either group. Consumer group personalities act in behalf of that group, but three of the 16 provider group personalities had a strong consumer orientation.

Of the 11 low-rated centers, only one had an outstanding personality in its consumer group. Group organizational status appears related to

the existence of an outstanding personality in the group, the authors opined.

Among the centers, seven had experienced conflict related to the consumer group prior to the site visits. In three, conflicts were internal to the consumer group and in four, conflicts were between the consumer group and the health project or the administering agency. In the low-rated groups, conflict was found only once. Conflict often relates to involvement, and these groups were more likely to be less active and less organized, the authors noted.

Much additional experience is required to understand the nature of these conflicts, they said. We cannot assume that conflict is counterproductive; sometimes major strides in consumer involvement and project functioning have resulted from conflict.

Health Centers as Vehicles Leading to Social Change

A political scientist's view of the neighborhood health center as a new social institution was offered by Dr. Eugene Feingold of the University of Michigan School of Public Health. The neighborhood health center was initiated partly in response to social discontent and demands for popular participation in and control over the formation of social policy.

Those in power in the nation, he stated, have emphasized participation rather than control. Whether our institutions are capable of modification rapidly enough to deal with increasing social turbulence is in question. It remains to be seen whether the new institutions amount to real change or are merely tinkerings in an effort to satisfy a large enough group so that the remainder can be ignored or repressed.

Feingold used the concept of power as the theme for his comments on the neighborhood health center. The power relationships of the center vary in generality from power relationships within the center to those between the center and the community to the more general social problems of the powerlessness of minority ethnic groups and of the poor.

Feingold pointed out that to the extent that the neighborhood health center changes or has the potential for changing established relationships, it becomes the focus of opposition. Some centers found that local pharmacists and medical societies tried to exercise local and national political influence to restrict the centers' programs.

Opposition to some centers came from black physicians practicing in the ghetto who feared losing patients to the center. These physicians had long served the poor free or for low fees. Now that the poor are able to pay for care through the Medicaid program, they feel that they should get the fees. In Detroit, black professionals, working with other representatives of the black community, forced the health department to change its plans for a neighborhood health center. The center now operates with a staff of black physicians drawn from the ghetto, most of whom are only part time with the center.

In addition to the services it offers, the health center wields economic power as an employer, bank depositor, and purchaser of goods and services. One center tried to use its banking business as a carrot to persuade local financial institutions to modify their lending practices and its purchases of goods and services to bring money into the black community.

Power aspects of community participation were also discussed by Feingold. Community participation in planning and operating health centers is required by the OEO guidelines, but the definition of participation is ambiguous, he said. Some conflict in community participation is inevitable because the community, the sponsors, the local community action program, and OEO each have their own interests and goals. It is difficult to work out the conflicts when each of the four participants is, in addition, the locus of conflicting interests in its own house.

As the centers gain broader community participation, a number of problems remain unsolved. Who represents the community? How are characteristically disorganized, unrepresented groups to be identified and representation of these groups secured? Just what is the proper division of power between the community and the sponsor?

Because members of the community participation boards represent different interests, boards frequently have trouble functioning effectively. In one multiservice neighborhood agency encompassing a health center, the stakes were high enough that the conflict resulted in a death which may have been accidental but may have been murder. In another, board members resisted efforts to give them training because they thought the training would change the distribution of power. When the center serves a mixed community, struggles for power and rewards often are ethnically based.

Power relationships between members of the health team also often cause conflict. Some professionals are threatened by the suggestion that part of their job can be done by someone with less training. Because the paraprofessionals or nonprofessionals are usually recruited from and identified with the neighborhood and the professional staff with the sponsor, power struggles between them become struggles between the sponsor and the community.

Feingold also looked at the centers from another view of politics. Political participation contributes to the individual's development because it increases his sense of public and social responsibility and exposes him to diverse points of view. Those exposed to the decision-making process become knowledgeable about how decisions are made and develop a sense of responsibility for their consequences.

We need to understand more clearly the circumstances under which this change in the individual occurs, he said. The neighborhood health centers may contribute to such an understanding. In the process they may provide power to the powerless and help to make authority legitimate once more.

Indigenous Fill New Jobs As Screening Technicians

A program for training indigenous workers as screening technicians to work in Denver's Neighborhood Health Program was described by Dr. William K. Frankenburg and co-workers of the University of Col-

orado School of Medicine and the Denver Department of Health and Hospitals.

A shortage of nurses and physicians to screen preschool children for handicapping conditions involving development, hearing, articulation, and eye function led to choosing this new career area for a training project; also the indigenous seemed to be ideally suited to work not only in health clinics but in the homes of the poor who might not come to clinics, the authors explained.

The job description they designed for screening technicians required an ability to read the manuals written at the seventh grade level, to administer tests to standards of proficiency, to calculate the age of children (requiring arithmetic skills at the fourth grade level), to write results legibly, and to have good rapport with the poor and fellow health workers. Three job levels ranging from screening technician to supervisor of screening technicians were set up.

Frankenburg and co-workers outlined the screening of applicants for the jobs. The job itself was not only explained but was demonstrated; in individual interviews, applicants were evaluated for financial need, number of preschool dependents, availability of babysitters, health of the applicant and family members, emotional stability, motivation, and maturity. Groups of five or six candidates were also presented with hypothetical situations they might encounter on the job. Of 15 people considered for the training program, two were excluded immediately because they could not read at the seventh grade level. Five applicants were finally selected.

During the training course video tapes showing administration of the screening procedures were used as well as the training manual. One screening procedure was taught at a time—articulation first because it was the easiest to master—and development screening—which includes the greatest number of subtests—was taught last.

The trainees first became proficient by testing each other. They then evaluated preschool children. Films made of the trainees testing children enabled them to observe themselves screening. From the first day they spent afternoons in pediatric clinics testing patients under the direction of one screening instructor. All trainees mastered the four screening procedures in 4 weeks and spent the fifth week in clinics testing children with the combined four procedures, the authors reported.

All five trainees met proficiency requirements without further training, obtaining interobserver reliability of 90 to 100 percent with their professional counterparts on 10 consecutive children tested with each screening procedure.

Frequent evaluations of working habits are important, maintained Frankenburg and co-workers. The screening technicians were evaluated by their professional co-workers weekly during the first month, biweekly the following month, and monthly thereafter. First evaluations of screening skills were scheduled for 3 months after initial training and every 6 months thereafter.

The authors described the sensitivity training sessions, conducted to help alleviate anxieties aroused when persons move into new careers. In weekly group sessions between the screening technicians and a psychologist, it became apparent that the technicians, though they had readily volunteered to teach, had inwardly rejected the assignment. In discussions the group members were made aware of their added importance as teachers. Through role playing and mutual help as well as staff-sponsored workshops, they had no difficulty in their teaching assignments. Other topics discussed during sensitivity sessions included attitudes toward peers and supervisors and problems of identity.

The authors listed several principles in the training of indigenous workers which they tried to apply in the Denver screening technicians program; new careers for the indigenous should be in fields which are not likely to be automated out of existence; select only trainees who can master the knowledge and skills required for the job and who will work in it for an indefinite period; and the learning skills of trainees, number of individuals to be trained at one time, and frequency of training periods must be considered in planning a sound training program.

Finally, they stated, it is essential to have adequate funds and job openings to assure the careerist a job in which to apply his new skills. The technicians are paid from funds of the Denver neighborhood program; after 6 months of satisfactory performance they are promoted to civil service status which assures them of long-term job security.

Sensitivity Training Helps In Harlem Health District

Seminars to improve interpersonal relations among staff and with the consumers they serve in the East Harlem District Health Center were assessed by Francis C. Lindaman, director of the Program of Continuation Education in Public Health at Columbia University School of Public Health and Administrative Medicine.

Implicit in both objectives, he said, was correction of situations impeding delivery of health care to the center's predominantly Puerto Rican and Negro consumers—some of the lowest income families in New York City.

Lindaman quoted an exchange between a nurse and a health district pest exterminator that typified the need for the seminars.

Nurse: If you went into an apartment to exterminate roaches and saw an abused child there, what would you do?

Exterminator: I'd make a report about it to my bureau.

Nurse: But what would you *do* about it?

Exterminator: Look Miss, I'm not a social worker.

Nurse: But you *are* a social worker! Everyone who works in health must be a social worker—you, me, the telephone operators, the doctors.

The district health officer asked Columbia to devise a program for his entire 224-person staff—professionals, paraprofessionals, and nonprofessionals. The seminars were half-day or full-day sessions held once a week over a 3-month period. They

combined training in technical skills such as pest control and sanitary inspection with skills in human relations consultation, communication, and sensitivity. Attendance was voluntary, and attendees appraised the course by answering a post-course questionnaire.

Lindaman discussed some of the mistakes made in setting up the seminars. Members of the community were not involved early enough. Persons and agencies from East Harlem were invited to help plan sessions only after dates were selected and support assured. This late involvement proved costly in terms of poor cooperation and lack of community involvement.

Another mistake he cited was failure to persuade supervisors and administrators to encourage their clerical and custodial employees to attend. As a result, few who most needed the training attended. The district health officer particularly wanted to involve nonprofessional staff, since the clerks and custodians are the people whom the consumers, members of the community, first encounter at the center.

A third mistake was to disguise some of the sensitivity training session with titles such as "pest control," "waste disposal," and so forth. These sessions were least well attended and got the lowest rating in the evaluation. Sessions on interpersonal relations and life styles of Puerto Ricans and Negroes got the highest number of "very useful" ratings.

Positive results of the sessions were also reflected in the responses to questions on the post-evaluation questionnaire, he reported.

Ninety-seven percent of the nonprofessionals and 59 percent of the professionals thought the seminars promoted better understanding and improved interpersonal relations among the staff; 78 percent wanted continuing staff development as an integral part of the health district's activities, and 67 percent thought other health workers should have a chance to attend such seminars. The training program, with appropriate modifications to take into account the mistakes in the East Harlem Project, is being offered in two more New York City health districts, and plans are underway to offer it in others.

HEALTH PLANNING

Hospital-Health Department Program Planning Musts

Since the end of World War II, changes in urban society have forced changes in the functions and roles of urban voluntary hospitals and local health departments. The hospitals have become more interested in communitywide problems and the health departments have become more interested in the provision of direct medical service to patients. In some instances, both organizations have jointly sponsored medical care programs within the facilities of the local health departments. According to Dr. Paul Torrens of St. Luke's Hospital Center, New York City, indications are that this trend soon will be increasing.

Reviewing some of the important issues uncovered in his experience with jointly sponsored programs, primarily with that of the St. Luke's Hospital Center and the New York City Health Department, Torrens pointed out the following issues to be considered before a joint program is initiated: (*a*) organizational philosophy and reason for existence of individual agencies, (*b*) responsibility for overall program management, (*c*) financial support for programs, (*d*) facilities and equipment, (*e*) patient eligibility, (*f*) medical records and statistical reporting forms, (*g*) personnel policies and management, (*h*) professional involvement, and (*i*) community involvement.

A most important consideration in the development and operation of jointly sponsored programs, Torrens believes, is the designation in advance of responsibility for overall program management as well as for specific substantive elements. First, he said, an overall plan of operation for the program must be developed and agreed to by both parties. Also, he went on, they must establish a clearly defined mechanism for reviewing the program's purpose and operation at regular intervals so that necessary changes can be made logically and rationally.

Second, responsibility and authority for supervising all daily activities of the program must be assigned to a specific person or persons so that everyone connected with the program knows exactly who is in charge and who is in charge of what. In Torrens' opinion, this supervisor should be the representative of the partner organization which is supplying most of the money, staff, or other essential ingredients.

Third, a mutually agreed on mechanism should be established for long-range planning that involves both parties in direct proportion to their input into the program. This can be the same body which reviews the program's purposes and operation, Torrens suggested.

Finally, Torrens said, a clear definition of who has the ultimate authority to make a binding decision for the entire joint program should be considered and discussed. However, he added, experience has shown so far that the need to use this ultimate decision-making authority has been quite rare—at least in the programs in which the daily activities have proceeded harmoniously and cooperatively.

To Prevent Chronic Disease Improve the Environment

The search for readily available comprehensive medical care is not synonymous with comprehensive health planning, remarked Dr. John J. Hanlon, Assistant Surgeon General, Public Health Service.

The medical profession must become much more cognizant of the fact that a very significant proportion of the so-called chronic, noncommunicable diseases as well as mental illness have their genesis in the environment, he said. Not only can more attention to the environment prevent many of these illnesses, but the expenditure of money and professional effort merely to treat

clinical conditions without concern for their environmental sources is fruitless.

In contrast to the $110 billion cost of the Vietnamese war for the same 9 years, the war on disease cost about $41 billion per year or about $368 billion for the period 1961–69. Of this, only $1.8 billion were devoted essentially to disease prevention and the promotion of positive health. These categories include maternal and child health, school health, general public health, and philanthropies which support voluntary health agencies.

Hanlon noted that the number of U.S. dead from the war in Vietnam was 42,000 compared with 15 million U.S. deaths from chronic diseases. Whereas 1,300 American servicemen have been captured or are missing in the war, on any average day 700,000 American civilians are captured or missing from society in institutions for mental illness and about 200,000 mentally retarded are in residential institutions. Other comparisons of the tolls in Vietnam and of chronic diseases were equally impressive.

Conceivably, about one-third of the current illnesses could be subject to control and the ultimate deaths of those involved postponed, Hanlon asserted. Obviously, any achievements of this nature must depend on high-priority emphasis on primary and secondary prevention and a forthright approach to the hazards of the environment.

While we have been able to alter certain aspects of our environment for the benefit of the young, this has not been possible for the older population. To the contrary, as we have changed our environment through advancing technology, the older population has not found it possible to respond or to adapt adequately to it, much less benefit from it, as evidenced by the failure of life expectancy of persons past 45 years to increase. Furthermore, Hanlon pointed out, there is no reason to expect that the current biologic advantage currently enjoyed by the young will persist.

On all levels of government the interests and activities of so-called comprehensive health planning are determined mostly by persons primarily concerned about the ready availability of emergency and therapeutic medical care and those who are involved in providing it, Hanlon observed. Rarely does one find representation by persons whose primary focus is on disease prevention, health promotion, and environmental health.

Persons involved in and responsible for the commendably conceived comprehensive health planning movement should assure that preventive medicine, health promotional activities, and environmental health interests are equitably built into the organizations and systems as they evolve further, Hanlon suggested. Otherwise, those concerned about prevention and the environment, must seek separate legislation and comprehensive planning programs.

Officials Cite Future Roles of Local Health Departments

As the emphasis in public health practice changes to the provision of medical care services, new forces influence the shape and direction such practice will take. We must recognize that the poor as a sizable segment of the community have become a powerful consumer pressure group, said Dr. Maurice Kamp. And, he went on, the poor have discovered the effect and importance of the "march" and the various "ins" to express their feelings and desires. While no one denies the validity of their claims, it is difficult to meet them because the only interest of the poor is that all in the health field produce—and quickly.

Kamp, who is director of health of the Mecklenburg County Health Department, Charlotte, N.C., believes that in order to meet the increasing demands for comprehensive health care a large part of the local health department should be housed in the public hospital. The health department would be charged with preventive services, home health services, staffing other than by physicians of neighborhood or satellite centers as well as all other outreach activities of a coordinated health care delivery system.

The changeover of the isolated position now occupied by local health departments may appear threatening to both health officers and hospital administrators. However, Kamp said, if a realistic approach is to be made for providing the best type of service to all citizens of a community, there seems to be little place for parallel operations of these two units—often operating with few points of juncture.

To overcome the increasing shortages of health manpower, the training of paramedical personnel must be accelerated. Kamp reminded that physician-assistants, nurse-pediatricians, mental health aides, laboratory and physiotherapy workers, and sanitation staff members do not require long-term professional training, and such training can be provided by community colleges and combinations of university and professional schools.

To illustrate what local health departments must do if they are to operate effectively and to fulfill their increasing responsibility for medical care services, Kamp pointed to plans for the Watts area of Los Angeles. There, a partnership of Los Angeles County, Regional Medical Programs, the Charles R. Drew Medical Society, the University of Southern California, and a community advisory body of health professionals and laymen will provide improved medical services and training for the residents. A department of community medicine will function like the local health department envisioned for the future. According to Kamp, this department undertook much of the early planning for a medical center and is presently charged with delivering comprehensive medical care for about 25,000 people. Most of this care will be provided on an ambulatory basis in a series of satellite health centers operated by private physicians and by Los Angeles County health-related agencies. Also, the medical center will be a training center for levels of health work, especially the development of new paramedical positions.

Research at the Local Level

Functioning as the closest official governmental unit to the people they serve, local health departments provide a central agency which is a

point of contact and a coordinator for other official health-oriented agencies as well as for volunteer health organizations and individual medical and health practitioners. According to Dr. Franklin D. Yoder, director of the Illinois Department of Public Health, perhaps the newest and most urgent need is research at the local level, not only for the collection of data but to coordinate the activities of other health agencies, facilities, and services.

For instance, Yoder said, there is a need for use of hospitals in the development of community health patterns. The new trend in outpatient and short-term mental health services requires local health agency participation. Crossing ethnic lines with health programs is an important area of research and development which the local health agency can undertake.

The future of local health departments must evolve around the effective use of the tax dollar, which is becoming increasingly difficult to raise at the local level. Yoder pointed out that adequate financing is and will continue to be a major task and a basic requirement for successful local operation.

In Yoder's opinion, the future of local health departments depends directly on how well they can meet the expectations and demands of the consumers they serve. The traditional ways of providing health services are no longer adequate to meet present needs. He believes that all health professionals, to fullfill their mission, must look for new ways to solve old and new problems. The future of local health departments depends on how well they can use innovative approaches to health problems and how willing the community is not only to support innovation but also to provide the necessary funds, he concluded.

The Computer as a Tool In Health Screening

"The individual feels himself to be a human being only to the degree that he retains the ultimate power of decision in all matters that fundamentally affect his fate." So declared Dr. Samuel R. Sherman of Mt. Zion Hospital in San Francisco and co-workers Morris A. Bunow and Avram Yedidia of Health Testing Services, Berkeley.

During the summer of 1967, 21,000 men and women working in California canneries underwent a multiphasic screening health examination in a mobile testing unit at their place of employment. The authors said that the program was repeated in the summer of 1968, with a similar number of persons tested. Many tests involved collecting samples which were analyzed at a central automated laboratory. The data were computer processed by leased time and analyzed at a base installation in Berkeley.

More than 8,000 persons who responded abnormally to tests were referred to some 1,300 physicians. In many instances the physicians and the persons referred had already established relationships, but often the abnormal test result had been unexpected, the investigators reported.

Preparation for the Screening

The multiphasic health examination was not imposed on the cannery workers by any outside force, the authors asserted. Workers' representatives and employers conceived the idea and financed the testing. The professionals and technicians who implemented the testing were selected by a joint committee representing labor and management.

As a result of an active program of health education of the workers and neighboring physicians well in advance of the arrival of the mobile unit, some 90 percent of those eligible availed themselves of the opportunity for testing. Once testing was undertaken, the authors reiterated, it was not forced on the individual worker.

The most delicate issue was the question of intervention between physician and patient, the authors revealed. However, many facets of the project were reshaped in accordance with decisions reached in discussions with the physicians.

The Computer and the Program

A computer is a tool for reporting "yes" or "no" answers to questions. Intelligent use of the computer, the authors stated, depends on designing questions in such a way that the answer will be significant to the goal to be reached.

The computer as such does not and can not act. It can not intervene. Its contribution is speed, facility, and accuracy in answering specific questions, they pointed out. Its value depends on the intelligence with which it is used.

The computer was used in a program designed to avoid arbitrary intervention with anyone. The project offered a service to people, the authors commented.

In the immediate sense the program was a good vehicle for health education, the investigators observed, and it brought persons with abnormal findings in contact with physicians. Also in the immediate sense, the program provided physicians with a useful adjunctive clinical tool—the computer.

Results of the Program

Through computer-generated analysis it was possible to assess findings by age, sex, and ethnic origin, the authors said. Forty-six percent of examinees with abnormal findings in 1967 who were tested again in 1968 had no abnormal findings. Thirty-three percent of examinees with no abnormal findings in 1967 who were tested again in 1968 had abnormal findings. Of the 1968 examinees, 41.4 percent had one or more positive findings.

Abnormal electrocardiograph findings were noted almost twice as often among Negroes as in the population as a whole. The incidence of abnormal electrocardiograph findings among persons of Mexican descent is lower than among the total population, the authors observed. These reports on the total population can also be expected to accumulate information that may be significant to epidemiologic research.

Individual reports were also designed to provide the investigators with information about the results of the patient's visit or visits to his physician after testing. The authors disclosed that correlation was based on followup reports by physicians. Findings confirmed those previously

known to the physician and those previously unknown.

By identifying persons who needed care and following up their cases, available professional resources were concentrated on patients who might otherwise have gone without care. Also, the profile of findings provided the physician an opportunity to assess the total health status of his patient.

Physicians' Responses

The computer is being used to work with physicians to the extent and in those ways that the physicians and professional workers in the multiphasic health program select as promising the most benefit to the population tested, the authors stated. Physicians' acceptance is evidenced by their response.

During 1967 the computer was instructed to produce for the physician a report only on persons with abnormal test results. For workers with no abnormal findings, they reported, the data were stored. By the second year, many physicians considered the multiphasic report so valuable that they requested the printout on each of their patients tested.

These physicians perceived the report as important baseline information about an individual patient at a given point in time, the investigators observed. Because the program was not conceived or implemented as intervention, physicians became interested.

The program is a vehicle which can enhance availability and quality of medical care—two critical issues in the delivery system. As a byproduct, the authors concluded, economies in the cost of medical care may also accrue through emphasis on appropriate and necessary services.

New Report System Devised For Child Health Projects

To provide some answers to the question, what good have the children and youth projects under title II of Public Law 89–97 done for the health of the children? a quarterly summary report was developed for the Children's Bureau. In the words of Prof. Vernon E. Weckwerth, University of Minnesota School of Public Health, the report is based on a "real world" model and it is intended to provide information for administrative purposes of planning, organizing, and assembling resources and directing and supervising of health care delivery for children and youth.

The quarterly summary is a report system, not a record system, which began with a crude definition of outcome—the production or maintenance of healthy children—and which shows on a quarterly basis progress being made by cohorts toward this outcome. Weckwerth explained.

Among the requisites for the report system, Weckwerth mentioned the following:

- It had to permit reporting of any combination of locally chosen ways to deliver care, showing both the commonality where care was uniform and great diversity where it was not uniform.
- A logical inconsistency in the law which said that each project shall be tailor made to the idiosyncracies of the local area, but that statistical reporting shall be uniform. In other words, the report had to be useful to each of 65 idiosyncratic projects, each doing its own thing on a demonstration basis, and yet meet bureaucratic and legal requirements and interests.
- It had to encourage the creativity of new approaches to delivery of care while being constrained to service without research.

We obviously had to include enough data items commonly used in episodic care to satisfy minimal credibility, said Weckwerth. But the projects themselves pushed for new data units and new data relationships to describe both their commonality and their uniqueness.

In general, said Weckwerth, the report is an answer-oriented report which is directed toward outcome of service delivery rather than only the usual input and activity numerator counts. It is based on a flow of services, registrants or records, and resources. Implicit is the requirement of record linkage and the fact that health status is conditional on antecedent health and current action.

Weckwerth concluded that some of the generic principles in the report can be used to generalize to any delivery of care system.

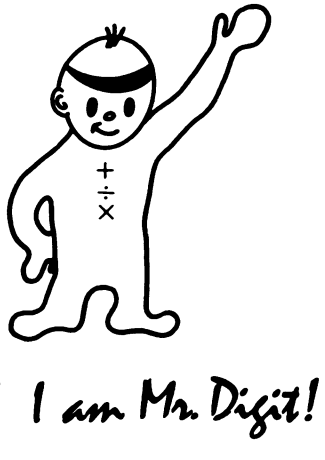
STATISTICS

Let's Play the Numbers, Nurse Administrators

How can statistical data show whether an agency is meeting the community's needs, whether its services to patients are appropriate, whether its personnel are being used appropriately and efficiently? How can they help an agency plan for the future?

Loretta V. Petersen, nursing consultant, bureau of adult health and chronic diseases, California State Department of Public Health, Berkeley, and co-workers tried to answer these questions for nursing administrators. To do so, they used uniform data on 35 home nursing agencies in California which had participated in 1965–66 in a study aimed at evaluating their programs. The survey covered a broad spectrum of agencies—small and large, voluntary and official, serving the old and the young, and ranging in size from one nurse to a large multidisciplinary staff.

Nursing administrators, Petersen and co-workers pointed out, have too often shunned, bypassed, neglected, and feared statistics. The adminis-



trators have thereby been deprived of an important administrative tool that could aid them in making current evaluations and future plans, said the authors.

To aid these nursing administrators, Petersen and co-workers used data from the study of the 35 home nursing agencies to set up an imaginary dialog between the director of one of the agencies and a "Mr. Digit." This dialog included the following exchange:

Mr. Digit: On the tables I will show you, you are Agency 17. You admitted 159 patients in a 6-month study from which these tables are derived, which places you in a class with 10 other agencies which admitted between 100 and 200 patients during the same time.

You are obviously serving primarily older people. . . . They include far fewer men than women, and they are predominantly white.

Nursing Director: Is that about what I should be doing?

Mr. Digit: One thing that will help you decide is to look at what other home care agencies are doing. Since the median age for all agencies is 72 and the range among them, with one exception, is between 66 and 78 years, your patient load [with a median age of 69] is on the younger side. Look at data from your community to see whether it has a relatively young population. Examine your policies and practices to see if you can detect why you are not serving a larger portion of the elderly or why you are serving an unusual number of yourger patients.

Not More Data Banks But Better Data

Banks in which data are stored in the form of individual elements for retrieval in aggregated form, that is, in the form of statistics, are an inefficient and unfair way of servicing users of statistics. The money thus spent might better be used to improve basic sources of data and to distribute the statistics in published form.

This is the proposition put forth and defended by Theodore D. Woolsey, director of the National Center for Health Statistics. He argued against the form of the relationship between the data bank and the users of statistics, the urge to link many kinds of data inside the computer, and the tendency of proponents of the data bank to neglect basic problems of data collection.

For efficient dissemination of statistical information, Woolsey said, chief reliance should be placed upon the publication of reports. Getting data into the hands of all potential users by a vigorous distribution effort should take priority over serving users one by one. Publication of reports is fairer to all users. If the data to be gathered are selected with a view to relevancy to today's problems, the questions to be answered, using the statistics, are likely to be controversial. The relevant data should therefore go out to both sides in the controversy—and without the hindrance of user charges. Otherwise, asked the author, how often will one side be aware of data and have the wherewithal to pay for its extraction from the data bank while the other side remains in ignorance?

The units of data which have been defined for different purposes (for example, "disabled person") should not be forced into the same mold solely for the purpose of record linkage in a data bank. This rule does not mean, however, Woolsey explained, that records should not be linked for purposes planned in advance, but only that the systems should not be carelessly de-optimized for hypothetical future advantages.

We should look with great skepticism, Woolsey declared, at all proposals to store, particularly in disaggregated form, great masses of data from more than one system. Such data often are not really relevant to the problem and are frequently of doubtful and uncontrollable quality. The very existence of administrative information, he said, seems to lead to the temptation to use it for inappropriate purposes instead of going to the expense of gathering appropriate data.

Woolsey expressed the belief that whenever people become absorbed in the problems of data storage and retrieval in a computerized data bank, they tend to neglect the problems of achieving maximum reliability of information at the grass roots. While not opposing health information systems as such, Woolsey stated that they often seem to denote a computer with a lot of irrelevant data of unknown quality. Enormous resources have been diverted to gadget-ridden health information systems, he said—resources that might better have gone toward solving the real problems of creating and operating high-quality data-collection systems.

Five New England States Standardize Statistics

The vital and health statisticians of New England met in June 1967 and agreed to collaborate in standardizing their States' procedures for vital statistics. A common program designed to produce State and regional mortality and natality data and indexes on a common computer is the result, according to Mrs. Marian Maloon Colby, director of the State bureau of vital records and public health statistics of New Hampshire.

On January 1, 1968, Colby reported, Maine, New Hampshire, Vermont, and Rhode Island introduced the standard certificates with a minimum of variations. Uniform coding procedures were adopted and standard punched cards put into use. Maine has provided the funds for developing standardized computer programs. At present, Colby said, the system is designed so that each State edits its own punched cards locally and sends magnetic tapes to the Maine State Department of Health and Welfare, which is the central data processing facility.

The 1968 indexes and data have been distributed to each of the four States. Massachusetts will be included in the system by the time the 1969 data are processed. The five collaborating States comprise a population base of 8½ million people, Colby pointed out.

At a meeting in June 1969, the statisticians discussed not only the progress and problems in the vital statistics collaboration, but also submitted a proposal to the New England Regional Commission for the establishment of a Regional Center for Health and Demographic Statistics. This commission, one of the

five regions designated under title V of the Public Works and Economic Development Act of 1965, had already set aside funds for the planning of such a center and was considering further allocations.

The New England Center for Continuing Education agreed to act as fiscal agent for the statistical center and accepted it as a constituent program. Situated on a site adjoining the University of New Hampshire campus in Durham, the center for continuing education is a cooperative venture of six State universities. Office space for the proposed statistical center has been reserved in the administration building of the center for continuing education. Thus, Colby pointed out, the Regional Center for Health and Demographic Statistics has ideal arrangements for its operations.

Colby concluded with a quote from a Westerner about the cooperative venture: "If you New Englanders can do it, anybody can."

Hospital Admissions Held 86 Percent Preventable

More than half of the sampled hospital admissions were classified as preventable, more than an additional one-fourth were classified as probably preventable, and only 6 percent were classified as definitely not preventable, according to Dr. Andrew C. Twaddle and Dr. Roger H. Sweet.

These data emerged from a study at the Massachusetts General Hospital in cooperation with the department of preventive medicine at Harvard Medical School. Twaddle and Sweet were affiliated with both institutions; however, Twaddle is now at the University of Pennsylvania. The purposes of the study were to develop methods for assessing the extent to which hospital admissions might be considered preventable, to identify factors predisposing preventable admissions, and to provide case histories of preventable illness and admissions.

Design of the Study

The sample of 77 cases was drawn from patients admitted to the general house (ward) medical service of the Massachusetts General Hospital between January and July 1968. One male ward and one female ward were selected after determining that no selective bias disturbed the researchers' assumption that these wards could represent the house medical service.

Of the patients admitted to the wards, Twaddle and Sweet sampled half of those whose first admission to Massachusetts General Hospital had occurred since December 31, 1965, and who resided within 30-minutes driving time from the hospital. All patients in the sample were white and under 80 years old.

This study, the co-authors said, focused on the preventability of hospitalization. They took as their standard the present state of medical knowledge, overlooking many practical contingencies of real-world medical practice.

The investigators perceived preventability of hospitalization as involving three components.

- Was this illness preventable?
- Was this illness sufficiently modifiable so that this hospitalization could have been avoided?
- Was this hospitalization avoidable?

For each case, assignment to a preventability or modifiability classification was accompanied by a statement explaining how the illness might have been prevented or modified, Twaddle and Sweet explained. In addition, an effort was made to assign the failure to the patient, his physician, or some other source.

What Was Learned

Contributory to the preventable admissions, Twaddle and Sweet reported, 17 percent of the sample had an illness classified as preventable, and the illnesses of an additional 54 percent were classified as probably preventable. Only 19 percent were admitted with illnesses which were clearly not preventable.

That secondary prevention is the more important contributor is indicated by the fact that 50 percent of the sample had illnesses classified as modifiable and 45 percent had illnesses classified as not modifiable. Only 9 percent had illness judged both preventable and modifiable, and only 9 percent had illness judged neither preventable nor modifiable.

Patients whose admissions were preventable differed from the total sample in that they were disproportionately young, native born, and single, widowed, separated, or divorced, Twaddle and Sweet continued. In addition, these patients were less likely to have had a death in their families, but more likely to have been admitted to the hospital two or three times before and to report their health as fair or poor before the current illness.

Among the patients' failures to prevent illness, heavy cigarette smoking and being overweight, which in many cases overlapped, were the most frequent factors. Both of these circumstances were found only in the probably preventable category, Twaddle and Sweet said.

Delay in seeking care was the third most frequent, although this seemed more important in relation to illness modifiability. With reference to only definitely preventable illness, the investigators said drug abuse including its sequelae was the most important failure, followed by alcohol problems.

Of the seven physicians' failures relative to illness preventability, three were inappropriate diagnosis and four were inappropriate treatment. All physicians' failures were considered probably preventable. Five cases resulting from public health failures involved control of the spread of infectious disease.

The volume of preventable admissions suggests that important payoffs may be expected if increased emphasis is placed on preventive medicine both in the training of physicians and in medical practice. Second, Twaddle and Sweet concluded, a major effort should be made to correct physicians' errors in diagnoses and treatment and physicians' delay, as these seem to be the most consequential factors leading to preventable admissions.

Would Adapt Data Bank To Us—Not Vice Versa

Many people believe that social mechanisms are not responsive to human needs and that we are being

asked to shape up to machine or bureaucratic demands, said Dr. Charles Metzner, professor of medical care organization, School of Public Health, University of Michigan. He urged that as we contemplate fashioning a new tool—data banks—we not repeat the error.

"I am not entirely in favor of immediate establishment of data banks," the research psychologist stated. "I have no great fear, however, of either computers or data bank installations." Data processing machines, he explained, require human input to be productive. Also, if the data are to be properly circulated, an information processing policy has to be formulated.

A large body of literature has grown up on computer mistakes. These mistakes can be blamed on the designer or the programer, Metzner noted. They suggest, however, that we still must be careful about what goes into a data bank. "I do not now and—in the absence of much testing—will not trust the procedures used to preserve confidentiality," he declared. "People must program confidentiality, and what one man may program, another may decode. Our forefathers took great pains with legal protections, including a Bill of Rights, which could be partly nullified unless similar protection is built into the information system."

Worship of Bigness

Our sufferance of large-scale organization has created the demand for large-scale information sources. There are dangers, however, in automatically assuming that what is faster, newer, and bigger is better, Metzner declared. Aggregations of health data are considered necessary for planning. And planning peculiarly implies purpose. We have had much experience in public health with accumulations of data to little purpose, he commented. The question of the day is, Whose plan and to what purpose? In other words, Who is programing the machine?

Objecting to the preference in Federal Government facilities for the large computer, Metzner pointed out that the large ones can digest data so rapidly that there is little necessity to consider, for example, whether a given table is meaningful. "Get it and decide later or—since you have it—why not reproduce it? The data will swell the volume of the report." Fortunately, time-sharing of the large machines has restored the possibility of doing occasional thinking, he said. Yet if research productivity is measured by the page, random input procedures can win hands down.

Facts or the Truth?

Because we are generally concerned with "only the facts, please,"—or, in its newer form, "telling it like it is"—we seldom make the methodological effort required to determine truth, even as what works. In collecting facts, Metzner pointed out, we tend to overlook conceptual differences and difficulties. Yet even with the best conceptualizations we possess, many intermediate processes are necessary. Much can yet be learned from examination of straight frequency distributions in addition to how to handle them statistically.

In true research, said the professor, much effort is spent in developing hypotheses, or even concepts, after testing the meager set we had before obtaining the data. This effort demands an intimate knowledge of how the data were obtained, classified, and processed—information we can seldom obtain readymade from a data bank.

If the data for inclusion in a data bank are subject to standardized definition, changes are made difficult. If they are not, comparability and communication may be lost. Metzner noted that obtaining agreement on definitions, such as the meaning of a unit of health services or of group practice, is difficult. If we are using different operations or even concepts, he said, we may not be ready for the common effort of a data bank.

Nevertheless, Metzner expressed the belief that the difficulties inherent in establishing a data bank can be surmounted. "It should not be necessary," he declared, "for us to restrict our names to 24 letters to satisfy a data bank. Nor should we have to adopt the numbering procedures of concentration camps to facilitate the statistical operations considered necessary to a free society."

MEDICAL CARE

New Corporation to Operate New York City's Hospitals

The organization of New York City's hospitals must change if they are to survive or to improve, declared Henry E. Manning, deputy commissioner of the Department of Hospitals, City of New York. He described the incipient New York City Health and Hospitals Corporation which on July 1, 1970, will be empowered to operate the city's hospital system and to assimilate responsibility for personal health services currently rendered by the department of hospitals. Manning believes the corporation offers the best solution to the hospitals' problems.

Genesis of the Concept

New York City's expenditures for medical care have increased to about one-sixth of its budget, Manning revealed. The 18 hospitals, with nearly 16,000 beds, and massive ambulatory care programs in both hospitals and neighborhood clinics constitute an extraordinary network of facilities and programs throughout the city.

Some 25 agencies have a part in administering health services in New York City. From a medical point of view, Manning exclaimed, the hospitals department has chronic advanced arteriosclerosis.

The city's health care expenditures are exceeded only by its financial commitments to education and welfare, Manning disclosed. Nearly half of New York's population depends on the city to provide some or all of their medical care. Four-fifths of the aged and one-third of the city's children rely solely on the city's pub-

lic hospitals for their health care. Only about 20 percent of the city's medical dependents receive public assistance payments.

As a result of six investigations by various State and local agencies, six proposals for operating the city's hospitals were considered. After considerable study the department of hospitals became increasingly satisfied that the creation of a public benefit corporation might be the most pragmatic and acceptable resolution of the hospitals' difficulties.

Basic Principles

Inevitably the question arises, Manning continued, whether it is proper to vest in a corporation such enormous public trust, responsibility, and authority over the city's vital health services. The justification for doing so, he philosophized, rests on two basic principles which have been built into the corporation charter and tend to make it the ideal instrument of government for the functions assigned to it.

1. The corporation will have all the independent powers necessary to be an effective provider of services.

2. A deliberate, direct, and efficacious link to the elected officials of city government has been carefully and legally structured into the total concept.

These two principles balance the necessity for public accountability with the equal necessity for unrestrained freedom to organize and execute programs for delivery of services, Manning continued. The next step is for New York City to organize the corporation and devise and construct management systems to support its operating programs. The task is monumental and the challenge undoubtedly is among the most exciting in the health field today.

The Corporation's Potential

The pressing need is for all the hospitals to be able to provide services in physical environments and under conditions that are satisfying to both patients and personnel, Manning said. In making this ideal a reality, the corporation will engender an opportunity to transcend significantly the immediate goal of efficiently managed hospitals and clinics.

The potential of the corporation in speeding results of comprehensive health planning is nearly boundless. Existing affiliations between public hospitals and medical schools and voluntary hospitals could be molded into greater integration of joint public-private effort to produce total services.

Manning discussed some of the prerogatives of the corporation. The corporation will be able to raise its own monies, issue bonds, and make contracts without involving unnecessary, third-party, city overhead agencies.

The corporation will have the liberty to recruit and employ its own personnel. As required by legislation, all employees will be transferred to the corporation, and nonmanagerial employees will be protected by a system similar to civil service. Yet, Manning explained, we will not be limited by the extremely precise regulations of the actual civil service system and will not in any way be governed by either the city or State civil service system machinery.

With this sort of freedom, coupled with new management organization and personnel, and with new techniques, such as program budgeting, it is our hope that individual hospitals will become responsive to the specific needs and demands of their service areas, Manning enthused. We most emphatically are working for strong, decentralized hospitals within the municipal system; replacing a departmental bureaucracy with a corporate bureaucracy would be folly.

Social Needs Better Served By Direct Pattern of Care

Global trends suggest that the direct pattern of general physicians' care serves social needs more effectively than the indirect pattern, declared Dr. Milton I. Roemer, University of California, Los Angeles. He compared patterns of physicians' care in Belgium, Canada, Ecuador, West Germany, Great Britain, India, Poland, and Tunisia. Although a variety of patterns exists in each country, Roemer discussed the pattern most prevalent under social security laws.

Under the indirect pattern of medical care governmental social security authorities contract with various health entrepreneurs—physicians, hospitals, dentists, pharmacists, and other health workers—for services to designated beneficiaries. The direct type is that in which the authorities provide health services by hiring physicians or others as employees and building their own facilities. Both patterns entail certain subtypes, Roemer explained.

Indirect Pattern Countries

Belgium, Canada, West Germany, and Great Britain have indirect patterns. These highly industrialized countries have a strong tradition of an independent medical profession as small private enterprises. When social security programs were enacted, political realities required the authorities to enter into contracts with the existing corps of private general practitioners.

In Belgium, he continued, general physicians have no direct or financial relationship with social security officials. Patients have free choice of physicians and personally pay for services. The patient is reimbursed from his mutual benefit fund for 75 percent of the fee according to an official schedule which has been negotiated with the Belgian Medical Federation.

There is a mixture of systems among the provinces in Canada. In Saskatchewan, where social insurance for general physicians' care has been operating longest, the usual pattern is payment of all fees by a fiscal intermediary which, in turn, collects the full costs from the government. This involves no cost-sharing or reimbursement to the patient, Roemer said.

In Germany, he reported, the degree of collective responsibility within the medical profession for general physicians' services under a budgeted outlay is somewhat greater. The sickness fund, to which the patient must belong, pays fixed quarterly per capita sums to various associations of physicians. These associations pay each physician his fees after a critical review of his claims.

Great Britain holds the medical profession responsible to meet demands within a fixed expenditure, Roemer said. General physicians are in private practice, but each is paid fixed monthly amounts determined by the number of persons who have chosen him for care. The size of the general physician's panel may vary monthly, but he earns no more for extra units of service to a patient.

Roemer pointed out that in all four indirect pattern countries physicians own and operate private offices, but the relationships to patients and social security agencies vary. The pattern for specialized medical services in these four countries is usually different. The specialist is often, though not always, affiliated with a hospital and paid a salary for the greater part of his time.

Direct Pattern Countries

The direct pattern countries are Ecuador, Tunisia, India, and Poland. In these countries private medical practice usually has been restricted because of poverty, Roemer said.

In Ecuador, only about 5 percent of the population is enrolled under social security, these persons being concentrated in the main cities. The most common arrangement, Roemer revealed, is for part-time, salaried physicians paid for 2 to 4 hours a day in organized clinics, but free to spend the remainder of their time in private practice.

The principal social security agency in Tunisia lacked the financial resources to construct facilities. Instead, Roemer disclosed, the agency contracted with the Ministry of Health to use its health centers and hospitals. Physicians are salaried.

Since only about 3 percent of India's population is covered by social security, he said, the agency pays the State ministries of health for general medical services to beneficiaries at established health centers. In Bombay and Calcutta, however, the demand for private physicians precluded attracting sufficient physicians into government service. Therefore, Roemer continued, the British indirect pattern was adopted, and insured persons choose a private physician, who is then paid a flat per capita monthly amount.

Poland, he said, is more highly developed economically than Ecuador, Tunisia, or India. Nevertheless, every Polish physician is obligated to work 7 hours a day in public service; otherwise he may engage in private practice. Noninsured persons, mostly small farmers, must pay for service.

General Observations

In all countries, regardless of system, insured persons appear highly satisfied with their particular pattern, Roemer observed. The indirect pattern tends to be attractive to both patients and physicians.

However, the quality of general physicians' services under the indirect pattern has been suspect. When costs can be compared in the same country, as in India and to a small extent in Ecuador, the indirect pattern is found to be more expensive per person covered than the direct pattern, he said.

Many problems of the direct pattern of general physicians' services, Roemer continued, are attributable to the paucity of resources where it exists. Nevertheless, the organized arrangements of the direct pattern usually give the general physician access to more ancillary personnel and equipment than a private office.

In nearly all countries the trend is increasingly for general practitioners and specialists to work in organized frameworks. This tendency, Roemer stated, is evidenced throughout the United States in the development of general hospitals, group practice clinics, special health centers, and both public and voluntary health service programs.

In Latin America extension of social security and public health programs has brought more than two-thirds of the physicians under the direct pattern. In Africa, Roemer continued, this pattern is the rule except for private practitioners in capital cities, and even they often have part-time, salaried employment. In socialist countries, most recently Cuba, nearly all physicians give service through the direct pattern.

In Great Britain and Western Europe, he said, the general physician is still largely a private practitioner under the indirect pattern, but the proportion of specialists in organized hospital employment is steadily rising. In Asian countries except mainland China, about half the physicians are principally in private practice, but this proportion is declining as government and other organized services are expanding.

Much more careful research is needed to demonstrate the ultimate consequences of different patterns for providing all components of medical care, uninfluenced by other social or demographic variables. While many subtleties are involved, Roemer concluded, the net advantages are greater for the direct pattern of service.

Nonpartisan Board Runs Cook County Hospitals

Recent Illinois legislation places the operation of Cook County's medical facilities under a nonpartisan professional governing board, stated Dr. Franklin D. Yoder and Shirley Reed of the Illinois Department of Public Health. The legislation is an attempt to spotlight consumer needs, to reduce political overtones which have influenced operation of the health facilities, and to emphasize professional direction in forming policy and delivering services by using the health team approach, they explained.

The State health department, with its responsibility in community health care services, played a key role in this innovative process. The department, Yoder and Reed recalled, nominated two members of a five-man selection committee which appointed a nine-man governing commission. The commission, called the Comprehensive County Hospitals, Health and Allied Medical Programs Governing Commission, will govern the operation of Cook County health facilities and institutions including Cook County Hospital and Oak Forest Hospital.

Yoder and Reed revealed that Cook County Hospital, with 2,500 beds, is the largest public hospital in the world. It is the center of numerous medical services in a metropoli-

tan area of more than 7.5 million persons.

Oak Forest Hospital, basically a chronic disease facility and a leader in geriatric medicine, is also tax-supported and located in Cook County. This hospital has a bed capacity of 2,400 and a staff of more than 2,000.

Realization of the goal, good health for all, cannot be achieved without changes within the established way of delivering health services and medical care. Yoder and Reed declared. This truism applies to public hospitals no less than to other components of the health care system. Awareness of the need for change, they said, is just as relevant to the art of administering a large public hospital as it is to such innovative processes as establishing neighborhood health centers and using community health guides to connect people with health services.

The commission, said Yoder and Reed, represents a departure from the previous direct political link between county government and the health facilities. Regardless of the controversy surrounding the selection of the commission, its members represent many sectors of the community.

Under the law which established the commission, they continued, the members will have the authority to select an executive director and staff, to appoint key personnel at Cook County and Oak Forest hospitals, and to determine programs. One of the commission's first major responsibilities will be to select an administrator for Cook County Hospital.

The county board, as the elected body directly responsible to the public, will still maintain control of the financial appropriations, Yoder and Reed revealed, but management of the public facilities will be the responsibility of the commission working in cooperation with the hospital administrators.

Yoder and Reed emphasized that the State health department was consulted not only at the legislative level when the law was being formulated, but also when appointing the selection committee and in proposing candidates for the commission. The State agency, they said, had a significant part in this new approach to an old problem.

HEALTH COSTS

NYC's Health Department Auditing Medicaid Abuses

The New York City Department of Health believes that government, as consumer representative and purchaser of tax-supported health services, has the responsibility for auditing services purchased from contracting professionals and that professional group peers employed or contracted by the health department should audit their professional peers.

Two principal methods are used in the audit program, stated Dr. Lowell E. Bellin, first deputy commissioner, and Dr. Florence Kavaler, deputy executive medical director of Medicaid, of the department. The first is onsite visitation in private offices of practitioners and the second, quality audits of care received by patients selected from high-volume practitioners or referred by complainants. Allegedly errant practitioners may choose to have either informal or formal hearings in the health department. Available health care audit data in 1968 indicated that every dollar invested in the audit program produced a return of $41.

The recipient of service is the ultimate source for evaluating quality care, said Bellin and Kavaler. More than 6,000 letters were sent to Medicaid patients who received private dental care inviting them to visit branch offices to have staff dentists assess the quality of their care. Of the 6,000 patients, approximately 1,300 responded and were examined. About 120 of these patients showed evidence of poor quality dental care, and another 120 revealed discrepancies between the work performed and the services claimed to have been performed on the invoices.

Because 1,300 examined patients were not a random sample but a self-selected group, we cannot apply the finding to the entire dental program, they said; rather, we estimate that poor quality dental care plus alleged fraud would be in the range of 5 to 10 percent.

The health department's policy of authorizing high quality but less costly alternatives in dental prostheses had a dollar value in savings in 1968 of about $27 million. This figure, said Bellin and Kavaler, is not based on a sample, because every request for dentures is subject to professional review. The potential expenditure for dental care was $110 million, which was reduced to $83 million through plans for modification of treatment.

Overuse in terms of unnecessary fillings, extractions, or use of general anesthesia has been minimized through professional review of pretreatment and post treatment radiographs and through restriction of general anesthesia to qualified specialists. Review of pretreatment and post treatment X-rays, with fillings costing more than $100 or with fillings or extractions in deciduous teeth around the time of expected exfoliation, has produced additional significant savings.

The NYC Medicaid program entered into an agreement with the Optometric Center of New York to reexamine patients and assist in the peer evaluation of optometric care being rendered. In 1969 a total of 2,500 patients were selected and requested to appear for reexamination at the center; 500 responded. Of the 500 patients, 361 had received satisfactory care, and 86 had received unsatisfactory care. Possible erroneous claims of potential fraud requiring further investigation and followup was indicated for 12 patients. In these alleged fraud cases, patients suggested that services the optometrists claimed for payment actually were not provided.

Patients who received podiatric care are invited to foot clinics of the M. J. Lewi College of Podiatry, with which the health department also entered into agreement. Overuse of podiatry included such areas as the use of X-rays, compression bandages, and prescription orthopedic shoes.

Prior approval is needed for orthopedic shoes of more than $40 per pair and for the use of appliances. This control is useful for potential overprescribing.

As yet we have no analogous statistics on the incidence of poor quality, fraud, and overuse among the patients of physicians, said Bellin and Kavaler. However, a recent State budgetary increase will permit us to expand our monitoring activities of physicians in order to assess and deal more adequately with their abuses.

Multifaceted Plan Offered To Check Hospital Costs

Incentive reimbursement mechanisms to check increases in hospital costs have been proposed by the President's Commission on Health Manpower and the Secretary's Committee on Hospital Effectiveness. The difficulty lies in establishing the best method for applying incentives to hospitals so that maximum reimbursement is offered to the ones that are both cost conscious and efficient, stated Dr. C. P. Hardwick, director of the research department, Blue Cross of Western Pennsylvania, and Dr. Harvey Wolfe, associate professor of industrial engineering, University of Pittsburgh. The following three approaches to incentive reimbursement are being tested by the research department of Blue Cross of Western Pennsylvania.

Departmentalized Plan

This plan demonstrates the value of incentive payments in conjunction with the use of management analysts or industrial engineers. A study, financed by the Division of Community Services of the National Center for Health Services Research and Development, Public Health Service, involved the placement of industrial engineers in three selected hospitals to work with each hospital's administration in seeking and analyzing potential cost-reduction situations and in making recommendations to improve the existing system.

For example, the laundry department of one hospital was studied. Data were gathered by observing and recording the use of equipment, performance of washing and finishing crews, and output in terms of washed laundry per employee. Analysis, according to Hardwick and Wolfe, indicated that (*a*) conditions were much too crowded during the day turn operation, when the bulk of the laundry was handled; (*b*) washing and finishing crews could easily handle more than 5,000 pounds of laundry in a turn and often did so during the early part of the week; and (*c*) the combination washer-extractor was used nearly to peak capacity to minimize the need for separate washing and extracting equipment, but a sizable amount of laundry still had to be washed and then loaded into extractors.

After studying the operation, a proposal was submitted to the manager of the laundry room and the administrator for their criticism and suggestions concerning a changeover to a basic two-turn operation. The advantages of the proposed method, the investigators said, included less congestion, a better balanced flow of operations, more available equipment time for all classes of equipment, more time available for the use of the washer extractor, maximum operations during each shift, eliminating most of the weekend operations, and finally, accomplishing the functions of the department in 208 fewer man-hours per week. The estimated savings in the laundry operation was $16,800 per year.

Multiple Regression

A point-reimbursement plan based on multivariate regression analysis is being tested as a method for objectively estimating costs for inclusion in a "target rate" model. Hardwick and Wolfe said that the use of this model enables a tailoring of cost projections for each hospital, depending on the meaningful services it provides.

In using the point system approach, incentives will be paid if actual costs are less than projected costs and such performance can be verified by standard cost-accounting procedures. Thus the hospital is rewarded or penalized for specific actions that lead to lower or higher costs.

Under such a plan we hypothesized that, by offering hospitals more than present reimbursement (that is, cost plus an incentive, with the idea that in the long run this will be less than the present increase in costs), administrators would, without altering quality, strive for cost reduction and improvement of methods within their hospitals, Hardwick and Wolfe said. The hospital whose administration and medical staff can contain its annual operating costs below the target or projected figure will be paid an incentive, they stated. The dollar difference between the target and actual costs usually is divided on a 50–50 basis, with a portion going to the hospital as an incentive payment to encourage further cost reductions and an equal portion being indirectly returned to the consumer—whether taxpayer, Blue Cross subscriber, Medicare beneficiary, or supporter of the third-party payment system—in the form of stabilized premiums or even reduced premiums if the savings are substantial and widespread.

Negotiated Budget

Under this plan a hospital agreed to participate with Blue Cross in testing the reasonableness and workability of a negotiated budget or a cost projection plan acceptable to both parties, Hardwick and Wolfe said. Incentives would be paid to the hospital on the basis of reduced costs.

Budget preparation required a number of steps to arrive at a total dollar figure before negotiations could proceed. The study hospital was asked to prepare a budget for fiscal 1970, by departments, showing in detail anticipated expenditures for personnel, equipment, supplies, overhead, and so on. In addition, a similar statement of expected revenues also was prepared for such income-producing departments or services as radiology, pathology, pharmacy, anesthesiology, and dietary. The income statement was used as a check against expenditures to ascertain that they were not overbudgeted.

An inherent problem in using the budget negotiation incentive, they said, is the present lack of control

over all the factors that affect hospital costs. An end result of such a situation is manifested where payments exceeding cost are made for inefficient operations or unreasonable expenses. For example, a small rural hospital is presently paying a radiologist 50 percent of net charges, or about $50,000 annually. The radiologist usually spends approximately 15 hours a week at the hospital. This payment seems to be unreasonable, said Hardwick and Wolfe; however, since another hospital in the area initiated this financial arrangement, the hospital was forced to do the same or lose the services of the area's only available radiologist. In this instance the hospital refused to accept an adjustment in the budget for this unreasonable expense since the arrangement is attributable to the action of the other institution.

The multifaceted approach presented is an effort to explore several ways of overhauling current reimbursement mechanisms, Hardwick and Wolfe said. The lack of incentive to reduce or hold in check costs of providing hospital services has led to serious questioning of current blank-check cost reimbursements now being used. Before any replacement of the current system, however, they said, a new approach must be defined and agreed upon.

Can Out-of-Hospital Care Reduce Inpatient Use?

Blue Cross-Blue Shield contracts in Sedgwick County (Wichita), Kans., constituted the experimental population for a study designed to determine whether out-of-hospital benefits would reduce inpatient hospital use. Patterns of care resulting from the experimental benefits also were to be studied, reported Daniel B. Hill, economic research associate of the Blue Cross Association, and Dr. James E. Veney, assistant professor of sociology, College of Wooster, Ohio.

In accordance with the statistical parameter established, an experimental group (5,000 contracts and about 13,000 members) and a control group (10,000 contracts) were selected by matching inpatient utilization rates for 1967 and single-person contract proportions. The experimental group received selected free out-of-hospital benefits for an 8-month period in 1968. Inpatient utilization rates for the experimental group and for the control group for this period as compared with rates for the equivalent period in 1967 served as the basis for determining the effects of experimental benefits. Number of admissions, days of care, and inpatient payments per 1,000 contract months were obtained in each instance for medical and for surgical cases for both family and single person contracts. Interviews of physicians and members provided additional information concerning patterns of use and knowledge of the experiment.

The Kansas outpatient experiment did not demonstate that total inhospital costs could be reduced by the provision of comprehensive outpatient benefits, Hill and Veney said.

Compared with the control group and 1967 experience, they said, the experimental benefits appear to have reduced medical admissions resulting in stays of 10 days or less. For family contracts, medical admissions and medical days were reduced about 20 percent each, with the changes determined to be significant at the 95 percent confidence level. Payments were reduced by about the same degree, although the measure of payments by length of stay was not thought to be too reliable, they said. Medical admission experience for short stays under the single person contract supports this use-reducing effect, although the results were not as statistically significant for the smaller group. In light of evidence that the experimental benefits also generated some hospital admissions that would not otherwise have occurred during the experimental period, the observed reductions in use during short stays would appear to be on the conservative side, Hill and Veney stated.

Inconclusive evidence shows that the experimental benefits created medical admissions resulting in stays exceeding 10 days; the most pronounced effect being felt in stays exceeding 20 days. This evidence is not based on statistical significance tests, they reported.

For surgical admissions, the single-person contract experience contradicts the family contract experience. Single contract admissions and days were increased drastically for stays of 10 days or less. A smaller increase was seen for stays of 11 to 20 days, while admissions and days for stays of more than 20 days were approximately halved. For single-member contracts, they said, the experimental benefits apparently increased the detection of surgical needs before extended hospital stays were required. The family contract experimental group showed mild (less than 10 percent) and statistically insignificant reductions in surgical admissions and days, with no perceivable pattern in length of stay.

In aggregate terms, the Kansas experiment did not indicate that outpatient benefits would reduce inpatient costs in the short run. Rather, it appears that some unnecessary short stay cases were avoided while other inpatient cases were detected as a result of the free outpatient benefits.

Younger Age Group Uses UAW Nursing Home Benefits

In 1964 the International Union of United Auto Workers (UAW), in collective bargaining with 17 major corporations, expanded the health care benefits for approximately 2¾ million members and their dependents to incorporate long-term and convalescent care in a nursing home or extended care facility.

A relatively younger age group has utilized these benefits, reported Thelma C. Zwerdling, research consultant of the Michigan Health and Social Security Research Institute, than other studies of nursing home use during the last decade seem to indicate. Since the objectives of the negotiated program are health care and rehabilitative services rather than custodial or domiciliary care, the age distribution seems to conform to the intent of the benefit; 21.5 percent of the users were under 65 years of age for both years following initiation of the program, which reflects the importance of the extended care benefit in the younger age groups.

Length of stay increased dramatically during the second year, she said; 30 percent of the beneficiaries aged 65 or over stayed longer than 100 days, which exhausted their Medicare benefits. Six and one-half percent of the patients, all over 65, exhausted the liberal potential (730 days of care) of the UAW negotiated benefit, and 10 percent of those with diseases of the central nervous system and heart also exhausted the benefits. Variables of age, sex, and marital status had substantial relationships to length of stay.

While the younger age group generally had stays of shorter duration (less than 21 days), a comparable proportion of the over and under 65 age group needed the benefit for more than 100 days of care, she said. Sixty-seven percent of the cases were in four major diagnostic categories: central nervous system diseases, heart diseases, malignancies, and fractures.

Age was a significant factor in disposition, she reported. In the under 65 group, a greater proportion returned home, one-quarter as many died, less than half as many transferred to acute care hospitals, and none exhausted the benefits.

Investigation of the first 2 years of the UAW program has demonstrated that in the main it is successfully meeting some of the purposes for which it was intended, Zwerdling said. Nevertheless, broad as well as specific areas of nursing home care need future study to provide answers to issues of public policy in prepaid mass-based programs. Research on the quality of care delivered, impact of the nature of the facilities on care, and relation between hospitals and extended care facilities needs to be initiated to reconcile the goals of the programs with the accomplishments.

From these preliminary explorations, Zwerdling reported, the Research Institute and Brandeis University have designed and are currently carrying out a study in the metropolitan areas of Detroit and Flint that attempts to compare critical features of the UAW program with features of Medicare relating to the following specific questions:

1. Does the 3-day prior hospitalization requirement of the Medicare program in fact result in an average of more days of care? at what cost? and with what beneficial effects?

2. Is there a need to lower the age eligibility for the Medicare program in terms of efficiently and adequately delivering health services, and what are the relative costs of delivering the benefits to those under 65 in the UAW program?

3. What would constitute the optimum duration for the benefit?

4. What relative effect does the 100-day limitation and the co-insurance provisions of the Medicare program have on duration of stay, and with what results? Is there a unique identifiable population using more than 100 days of care?

Preliminary fieldwork, almost completed, Zwerdling said, may offer new insights into the relatively unexplored and complex area of nursing home care as a health care resource.

Medicare-Medicaid Effects On Care of Mentally Ill

An ad hoc task force, composed of staff of the Social Security Administration, the Social and Rehabilitation Service, and the Health Services and Mental Health Administration, Public Health Service, has been engaged in a comprehensive study of the use of covered services by psychiatric patients under Medicare and Medicaid. An interim report has been transmitted by the Secretary of the Department of Health, Education, and Welfare to the House Committee on Ways and Means and the Senate Committee on Finance. Dorothy P. Rice, chief, Health Insurance Research Branch, Social Security Administration, and Ruth I. Knee and Margaret Conwell, of the National Institute of Mental Health, summarized the information presented in the interim report, the various studies undertaken, and the preliminary findings obtained before submission of a final report to Congress.

Despite the relatively short period that Medicare and Medicaid (1966) have been in effect, they said, the impact of these programs on the treatment and services for aged persons with mental illness can be seen. Psychiatric patients of all ages constitute a very small proportion of the total population in general hospitals, but an increase in the use of these facilities by aged psychiatric patients is discernible.

To determine Medicare's impact on the use of general hospitals by aged psychiatric patients, the Social Security Administration contracted with the Commission on Professional and Hospital Activities (PAS) to obtain data on hospital discharges with a primary psychiatric diagnosis. The study covered the periods 18 months before and 18 months after the implementation of the Medicare program.

In the 18 months before Medicare, according to the study, psychiatric discharges of aged patients comprised about one-tenth of all psychiatric discharges and 13.5 percent of total days of care; these proportions rose to 12.3 percent and 18.1 percent in the 18 months following Medicare's initiation. Significantly, the number of discharges of aged psychiatric patients increased nearly 29 percent within the two periods. The proportion discharged under age 65 increased only 1.2 percent, and for two age groups (under 15 and 45–64) a decrease was registered.

The average length of stay for aged psychiatric patients rose from 16.2 to 18.7 days, bringing the increase in total days of care up to 49 percent. For the under 65 group, the increase in days of care was only about one-tenth that of the aged.

Possibly, with the incentive of Medicare payment, Rice and associates said, hospitals without psychiatric units, previously reluctant to accept aged psychiatric patients because of their frequent inability to pay, reversed their policy and started accepting such patients at all ages. In addition, they said, in hospitals without psychiatric units before Medicare, patients with psychiatric diagnoses may have been classified otherwise in order to be eligible for private health insurance. With Medicare payment available for such care, patients are more likely to be classified correctly.

The greatest impact of Medicare, Rice and associates said, was in the

source of payment. The PAS study showed that for the 18-month period before Medicare, about 60 percent of the discharges and days of care was paid for by insurance: 43 percent by Blue Cross and 17 to 18 percent by commercial insurance. More than one-fifth (22 percent) of the days of care were paid for privately or out-of-pocket.

In the 18-month period after Medicare started, they reported, the out-of-pocket portion of payment for total days of care was reduced to 3 percent, the private insurance portion was reduced to 6 percent, and Medicare and Medicaid became the source of payment for 90 percent of the discharges and 89 percent of the days of care.

A substantial portion of the mental hospitals in the United States are now participating in the Medicare program, said Rice and associates. The special Medicare limitations applicable to aged psychiatric patients in mental hospitals, however, result in payments amounting to only $25 million in a year. Federal payments to mental hospitals under Medicaid, on the other hand, they said, have been considerably greater—about $140 million.

The most exciting finding, they stated, is the continued decrease in the resident population rate in mental hospitals for persons aged 65 and over and in their rates of first admissions. But it is too early to judge the extent to which the availability of medical assistance or Medicare payments have influenced this drop, they said.

Although mental illness has been regarded as different from other illnesses, they stated, considerable progress has been made in expanding private and public insurance programs for persons with mental disorders. The public's attitude toward mental illness has changed with the growth, development, and use of new drugs, new forms of therapy, and the increased use of alternatives to long-term institutionalization in a mental hospital. Clinic services, especially community mental health centers, can furnish essential alternative resources for comprehensive care of the mentally ill. Unfortunately, they said, these services are not uniformly supplied in all States.

PUBLIC HEALTH NURSING

Emergency Room Treatment Misses Serious Illnesses

Although the urban hospital emergency room is organized to care for immediate acute medical emergencies, many patients have physical, social, or emotional difficulties which are not treated, asserted Effie S. Hanchett, research associate, and Dr. Paul R. Torrens, chief, community health studies unit, department of medicine, St. Luke's Hospital Center, New York.

Research shows that the urban hospital emergency room is not only the first place to which the urban poor turn for general medical care, it is frequently the only place where they come for care, emphasized Hanchett and Torrens. They believe that if the patients' problems are not identified during the course of the emergency room contact, it may be a long time before another opportunity occurs to identify these ills.

To study this situation further, the community health studies unit at St. Luke's Hospital Center conducted an 18-month demonstration project within its emergency room. A public health nurse and a social worker, using an interview guide that identified broad areas of concern, interviewed 475 patients. The public health nurse evaluated 252 patients, and 223 were evaluated by the social worker. Only the nurse's observations were discussed by Hanchett and Torrens. The public health nurse evaluated patients' needs for services in seven areas: physical health, emotional health, family and household, friendship and socialization, employment and income, housing and residential, and agency utilization.

Using rough indicators of severity, the nurse discovered that in each category, at least 10 percent of the patient population had problems which posed a serious threat to life or independent functioning, or both. Combining these individual and separate categories, the nurse discovered critical need for additional services in 9 percent of the patient population in at least four out of seven areas. Many problems had been present for a long time and had never received detailed attention. In short, Hanchett and Torrens believe, the staff of emergency rooms are regularly seeing large numbers of patients who have multiple, serious, and interlocking problems and are in urgent need of many additional services and assistance.

The patient evaluation project has also shown that these problems can be identified in detail within the emergency room setting if the appropriate professional staff is present and has enough time and room to work, they said. Much of the patient's life situation can be reviewed in a single emergency room visit and his level of daily functioning and his probable need for additional services can be roughly determined.

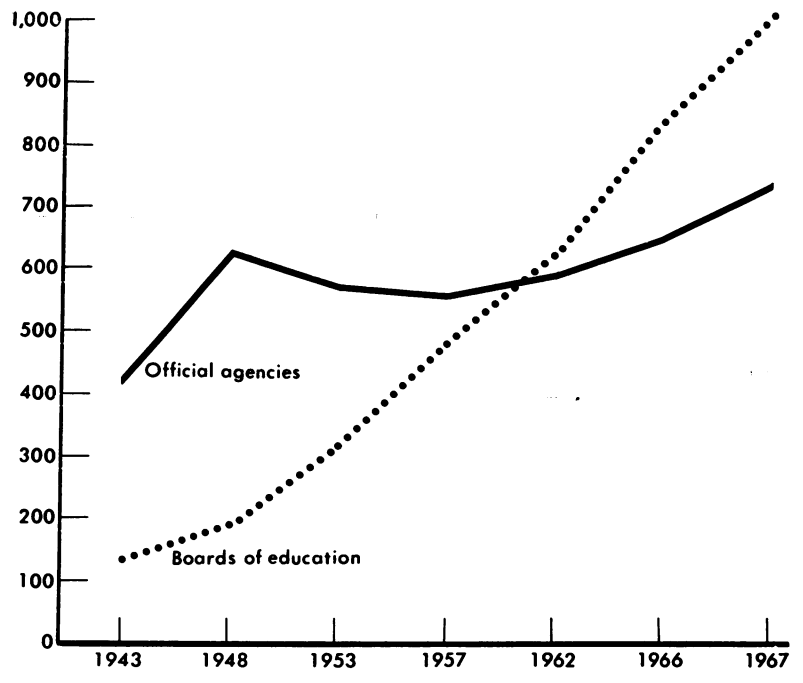
Ideally, someone on the emergency room staff could assist in identifying problems other than persons treating the presenting complaint, they asserted. This staff member could determine what additional resources would be valuable to the patient and assist him in obtaining these services and in using them in a maximally productive manner.

Hanchett and Torrens concluded that the skills which the present-day emergency room needs are just those skills which have characterized the nursing profession in the past. The nurse's interest and training in case-finding and patient evaluation, patient education and teaching, referrals to community agencies, and followup on patient problems would add a significant dimension to emergency room medical care.

Dynamic Community Role Predicted for Nurses

Community health nursing services in Illinois have been plagued by perpetual personnel shortages, inadequate financing, and piecemeal approaches to staffing, reported Eunice Claus Kelly, director of nursing,

Changes in number of nurses employed in tax-supported agencies, 1943–67



Du Page County Health Department, Wheaton, Ill. Fragmentation is a major barrier because there are so many specialized agencies and special interest groups employing nurses. Broad direction is lacking and, in many settings, nurses are under-utilized and participating in a variety of activities not requiring nursing skills.

Community Nursing in Illinois

Of the 102 counties in Illinois in 1967, 32 were covered by full-time health departments. In 23 counties there were health departments newly formed by resolution of the county board of supervisors and providing only nursing services. These were stimulated largely by Medicare. There were 31 visiting nurse services and four combinations, but in only nine counties was there countywide coverage for nursing care of the sick, explained Kelly. Forty-two counties had neither a health department nor any other organized countywide nursing service. In many of these 42 counties, however, nurses were employed by boards of education to provide inbuilding services to special school enrollments. Kelly noted that between 1943 and 1967 the number of nurses employed in health departments increased 50 percent. In the same period, the number of nurses employed by boards of education increased 650 percent (see chart).

Programs in community health nursing will require new organizational patterns, revised financial patterns, and altered legislation, according to Kelly. She called for a massive educational and public relations program.

Recommendations for Change

The Committee on Community Health Nursing, one of the seven standing committees of the Illinois Study Commission on Nursing, assessed social, cultural, economic, administrative, and educational factors and trends affecting the delivery of health and nursing services in community health nursing. Kelly summarized the recommendations of this committee.

The first group of recommendations redefined the nursing role in community health programs and assured participation by nurses at all levels of planning, Kelly explained.

A second group of recommendations was directed toward the problems of health personnel utilization. The Illinois Department of Public Health was asked to develop standards and priorities regarding allocation and use of health personnel; to forcefully promulgate and interpret these standards and priorities among employers of nurses throughout the State; and to provide continuing statewide education, guidance, and supervision to insure understanding, acceptance, and program action in accord with such utilization standards. Agencies were urged to use industrial and business management skills whenever appropriate in the administration of nursing services, to budget for the employment of such experts and consultants, and to recognize public relations and public interpretation as high-priority activities in nursing organizations.

Recommendations directed to improved educational facilities pointed to the need for improved recruitment materials at all levels—into nursing, into community health as a specialty, and into leadership positions, Kelly said. The recommendations call for early implementation of a master's degree program in public health nursing at the University of Illinois College of Nursing, and, of course, reiterates the need for a school of public health in the State.

The Illinois Department of Public Health was called upon to lead in providing more adequate clinical practice situations in community health, developing specific standards for approval of agencies utilized for clinical practice and providing the needed financing for continuing education programs. The Board of Vocational Education and Rehabilitation was asked to develop means to recruit and train technicians and auxiliary workers statewide.

A pivotal recommendation called for the creation of a division of nursing within the Illinois Department of Public Health. Perhaps the most significant recommendation of all, she stated, calls for study and demonstration of the feasibility of providing community nursing services through the development of independent, centrally managed nursing agencies to serve as "pools of nursing resources" for broad population areas. Such pools would pro-

vide a variety of community nursing services and would permit such organizations as local health departments, visiting nurse associations, school districts, and industry to contract for service.

The joint committee, according to Kelly, believed that the pool concept could provide improved service with adequate nursing direction, supervision, consultation, and special services, all of which would be impractical and much too costly for the many small operating units that form the pattern of community health nursing in Illinois today.

Family Nurse Practitioners Key to Medical Needs?

Formally trained nurse practitioners working as physician associates, such as those provided by the Frontier Nursing Service, Inc., could increase the effectiveness of our health care system, said Dr. Richard F. H. Kirk, University of Colorado School of Medicine, and co-workers.

Kirk and co-authors studied the Frontier Nursing Service, Inc., of Leslie County, Ky., to determine what functions the nurses perform beyond those that nurses traditionally perform and to determine where they gained the knowledge and ability to carry out added duties. The authors hoped that the observations from the study would help to define the kind of training needed for nonphysicians to provide primary care.

Frontier Nursing Service, Inc.

Frontier Nursing Service, Inc., is a nurse-administered organization with a staff of 30 registered nurses. It was founded in 1925 to provide care to mothers and children in an area of great need with few physicians. By 1939 the service had an official school of midwifery, which trained nurse-midwives for service in Kentucky and elsewhere. The service built a 26-bed hospital at Hyden, Ky., which serves as a central service for Leslie and parts of adjacent counties. There are six outposts consisting of a clinic and living facilities for two nurses, at distances up to 25 miles from the hospital. Two physicians were employed at the Hyden hospital at the time of this study, the authors said. Administration of the service is aided by a medical advisory board, consisting of physicians from various specialties who are familiar with the vagaries of medical care in rural Kentucky.

Training is informal for nonobstetrical medical care and for nurses who do not take the midwifery course. Training consists largely of on-the-job learning from the more experienced nurses aided by sporadic contacts with the hospital physicians, the authors noted. Requirements for entering the organization consist of an R.N. certificate from an accredited school, an ability to assume responsibility, and a concern for patients.

The nurses are guided by standing orders formulated by the administration and the medical advisory board. The orders set forth the conditions under which the nurses may treat patients, a selection of medications, and dosage schedules. Specific conditions which the nurses cannot treat and which they must refer to the Hyden physicians are outlined. The nurses are required to keep complete records of all patients seen and procedures performed and must report to the physician patients with serious illnesses or illnesses not responsive to the standard treatment. Defining patient conditions is learned on-the-job.

Contact with patients occurred in places as diverse as the hospital clinic, nursing outposts, general stores, creekbeds, mountain cabins, and even post offices, the authors noted. The patient population ranged from families whose sole income was food stamps to well-to-do town storeowners. The ages of the patients ranged from conception to 92 years.

Duties Performed

The district nurses of the service carry a heavy load of patients. With a staff of nine nurses at their six outposts plus one or two students at a time, they made 23,739 patient visits in 12 months, stated the authors. Fifty percent of these were home visits requiring considerable travel time. The reason for the visit and number and percent of patients are shown in the following table:

Complaint	*Number*	*Percent*
Health promotion	5,434	20.5
Injuries	1,103	4.1
Chronic diseases	5,950	22.5
Infections	9,245	35.0
Gastrointestinal parasites	832	3.1
Gastrointestinal, other	709	2.1
Genitourinary	834	3.1
Mental	429	1.6
Midwifery [1]	1,874	7.0
Total	26,412	100.0

[1] 16 home deliveries and family planning visits are included with midwifery visits.

NOTE: Of the 23,739 visits, 11.2 percent of 2,673 were multisystem (more than one system involved in patients' illnesses).

The authors explained that one physician investigator observed 392 nurse-patient contacts and recorded the number of procedures and laboratory tests done by the nurses in the following table.

Procedure	*Number*
Vital signs	263
Otoscopic examination-ear	59
Mouth and pharynx examination	102
Lung auscultation	53
Heart auscultation	12
Neck palpation	22
Costovertebral angle palpation	9
Abdominal palpation	17
Apical and peripheral pulse comparison	4
Edema inspection	15
Wound inspection	12
Midwifery examination	27
Pupiliary inspection	3
Skin inspection	27
Cranial palpation	8
Joint palpation	21
Chest palpation	8
Other	32
Laboratory work	
Hemoglobin	86
Urine analysis	74
Throat swabs taken	40
Stools	10
Tine test	6
Blood drawn for venereal disease test	11

The authors concluded that nurses can assume the role of providing some primary medical care in a rural area, that they can care for a large proportion of patient complaints without consulting a physician, and that increased training and experi-

ence enabled nurses to care for a larger percentage of patients without a physician's direct aid.

Nursing Skills Used Little In Normal Clinic Operation

A cursory observation of clinics shows that in many of them little nursing care is being given, said Dr. Vivian Vreeland Clark, assistant professor, nursing education, graduate division, Hunter College of the City University of New York.

Clark said the Health and Hospital Planning Council of Southern New York, Inc., studied nursing in clinics as part of a broader study of ambulatory care. Twenty-one clinics in the outpatient departments of six different hospitals were first studied. The supervisor of each outpatient department was interviewed to learn the departmental philosophy, policy, and organization, and the satisfactions and dissatisfactions with nursing.

Direct observations of nursing activities were made in each clinic, and a checklist was used to record these observations. Nursing personnel and physicians filled out a brief questionnaire on perceptions of the nursing role, satisfactions and dissatisfactions with nursing, and suggestions for improvement. One or more individual patients were followed through each clinic to assess the service rendered by the various categories of personnel. The physical facilities, equipment, supplies, and maintenance of the clinics also were noted.

Most of the observations of the 21 clinics were fairly uniform and rather negative, Clark said. Rather than continuing to gather data in similar situations, she decided to seek clinics that offered outstanding care. Twelve special clinics were selected. The same method of gathering data was used.

The Traditional Clinics

In almost all the 21 traditional clinics the staff consisted of one or more registered nurses, as well as assisting nursing personnel, including practical nurses and aides. Although a registered nurse was usually present, frequently subsidiary nursing personnel or clerks were assigned to explain to the patient his program of treatment. The nurses were frequently restricted to managerial or clerical duties.

As a result of this assignment pattern, Clark noted, there tended to be minimal meaningful contact between the nurse and the patient. There was little opportunity for the nurse to listen to the patient's questions or complaints, and seldom if any teaching of patients by the nurse. Rapport between patients and nurse was minimal.

Clark discovered that, in addition to limited direct patient care, there was also little indirect nursing, such as exchange of information about the patient among the members of the health team, planning for care, and communicating with agencies in behalf of the patient.

The Special Clinics

The second group of 12 clinics included neighborhood health centers, comprehensive family care clinics, well-baby clinics, specialty clinics, and demonstration units. In these clinics, Clark reported, better nursing care was given, usually by the public health nurse. Public health nurses questioned patients about their home situations, as these had bearing on the patients' overall welfare, and about their understanding of their therapeutic programs. Other activities by nurses that Clark observed included help to patients in choosing an appropriate course of action according to the situation, telephone followup of patients who failed to keep appointments, and, occasionally, home visits to ascertain that the patient would receive vital care.

Clark saw public health nurses communicating on a peer level with physicians in planning patient care and communicating with all personnel of the health team to exchange information about the needs and plans for the patient. She said they recorded observations, care given, and future plans, so that continuity of care was promoted.

Most of the time, however, Clark stated, the small amount of direct nursing care given in the clinics made it seem as though the idea was acceptable only at the verbal level. Clark believes that the organizational structure hinders innovations and that poor channels of communication within the nursing division and between nursing, medical, and administrative lines is a hinderance to the maximum use of the nurses' skills.

Nurses' Education Does Not Affect Later Performance

The goal of both nursing education and nursing service is the improvement of patient welfare. Why is there a gap between goals and delivery of services? This question was asked by Dr. Marion E. Highriter of the department of public health nursing, University of North Carolina School of Public Health.

Methodology

For the past 5 years, Highriter said, she has been working on a patient progress study of 132 families newly admitted to the morbidity caseload of eight visiting nurse associations in the Northeast. Of the 61 nurses who participated in the study, 31 were graduates of baccalaureate programs and 30 were graduates of diploma programs. Thirty-six nursing schools were represented, and all but five nurses were graduates of National League for Nursing accredited programs. Most were less than 40 years old and had between 6 months and 4 years of public health nursing experience.

Patient progress was measured by four experienced public health nurse members of the research team, Highriter explained. They interviewed families before and after a 1- to 2-month period of service by the agency nurse. On the basis of interview data, the research nurses listed family nursing needs in a specified format resembling a nursing care plan. Progress was measured by the extent to which these needs were met during the period of nursing service. Ten percent of the families were interviewed jointly by the members of the research staff who compiled independent need assessments to provide a reliability check.

All data were reduced to scores by a numerical system based on the

conceptual framework used by Mickey in a study in Butler County, Pa. This system took into account the severity of the underlying health problem, the family's ability to cope with the problem, and the likelihood that nursing intervention might aid in solving the problem, Highriter stated.

According to Highriter in all six areas studied there was evidence that some nursing needs present at the first family interview had been met by the end of the study period. The greatest amount of progress occurred in the adjustment to illness area where, Highriter pointed out, one might expect time or the influence of family and friends to have a significant effect; thus comparisons between areas may provide some measure of the location and magnitude of nonnursing influences.

Nurse Performance Ratings

Highriter believed that the factors associated with nurse performance ratings based on patient progress fell into four groups—nurse personality characteristics, aspects of job satisfaction, characteristics of the nurse-family relationship, and characteristics of the supervision and consultation available to the nurse.

Personality variables were measured by the California Psychological Inventory, Highriter said. Nurses with high scores on psychological-mindedness had significantly higher performance ratings. In the job satisfaction group of variables, direct questions about job satisfaction did not lead to statistically significant relationships. Highriter explained, however, that a negative answer to the question "If you had it to do over again would you still choose nursing?" was associated with significantly lower performance ratings.

Nurses whose supervisors had both a master's degree and a democratic leadership style had significantly higher average performance ratings than those having supervisors with other educational backgrounds and leadership styles. Highriter pointed out that high nurse performance ratings in nutrition and diet therapy areas were associated with having nutrition consultants available in the agency. Nurse performance ratings in the area of accident prevention were associated with the educational background of the supervisor.

Highriter said there was no performance difference between baccalaureate and diploma graduates which even approached statistical significance in any of the nursing care areas studied. She said that this was true for patient progress ratings, measures of thoroughness of need identification, and for several other indicators of nursing performance, such as early discharge of patients with resulting inadequate service, and presentation of a hurried appearance which led families to curtail requests for service.

The performance ratings of baccalaureate and diploma graduate nurses in the six areas which could be assessed by interviews without the necessity of examining patients or observing nurses varied little.

Highriter, pondering on the lack of difference between the performances of the diploma and baccalaureate nurses, stated that this could be partly due to the more careful screening procedures employed by the agencies in the selection of diploma graduates. She wondered, however, how much this was related to complaints of "lack of relevance" heard on many college campuses.

She asked, Have we in nursing contributed to irrevelance by allowing the gap between education and service to become too great? Role deprivation of nurses in a poor climate for practice, lack of adequate program evaluation, and the gap between nursing education and service all seem interrelated. If we do not do something about these, we may be merely selecting rather than preparing the practitioners of tomorrow, she declared.

Pediatric Nurse Practitioner Nursing's New Dimension?

A 16-week action-oriented training program to prepare registered nurses as pediatric nurse practitioners was described by Priscilla M. Andrews, nursing director of the pediatric nurse practitioner program, and coworkers of Massachusetts General Hospital.

The continuing education program was inaugurated in the spring of 1968 to fulfill two main objectives—to prepare registered nurses for the specific role of pediatric nurse practitioner within a primary pediatric ambulatory setting and to promote change in current practices of delivering ambulatory pediatric health care, Andrews and co-workers stated.

The core staff consists of a full-time nursing director and assistant director and two part-time co-medical directors. This staff is supplemented by teachers from collegiate nursing schools, practicing pediatricians, and staff members of Harvard Medical School, Harvard School of Public Health, and children's studies and department of nursing of Massachusetts General Hospital. An advisory committee of pediatricians and nurses assists the staff in formulating course content, evaluation, and future plans.

The Nurse Trainee

The nurse trainee must already hold a job, or have a promise of a job within a practice setting that serves as the sole source of primary (preventive and curative) pediatric care for all the children in a family, the authors stated. In addition, each trainee accepted must have a guarantee from her employer that she will have the opportunity to apply her newly learned skills on the job. Andrews and co-workers explained that there were no educational requirements other than having a license to practice as a registered nurse and having completed a course in nursing education in a school of nursing approved by the National League for Nursing.

To date no tuition has been charged because the program has been funded as a demonstration project by the U.S. Children's Bureau with the assistance of the Commonwealth Fund, the authors declared. The nurse or her employer assumes responsibility for travel and living expenses. The nurses can continue regular employment with a minimum of 1½ days per week of released time for the duration of the course.

Thirty-one nurses have completed

the 16-week course, and 15 are enrolled in the current course, the authors said. Ages range from 22–55 years with about one-half of the trainees under 30 years. More than one-half of the trainees had a nursing school diploma, approximately one-third, a bachelor of science degree, and five, a master's degree. Approximately one-third of the nurses came from the offices of pediatricians in private practice; the next largest group was from health departments.

Classroom teaching as well as clinical practice sessions are based on behavioral outcomes, stated in terms of actions which can be observed, and which are used to measure the nurse-trainee's change of behavior.

Evaluation

A major emphasis of the course is upon helping the nurse to assume greater responsibility in child health care and to differentiate situations she can handle from those which require referral to the physician. The primary duties of the pediatric nurse practitioner are to render patient-centered services and make patient care decisions rather than to perform clerical, technical, and administrative tasks, the authors said.

Although all trainees' employers are committed verbally to the program's goals and concepts, some are reluctant to delegate responsibilities in practice, the authors noted. If there are insufficient clerical and technical aides in the setting, the nurse must spend some of her time in nonpatient duties. Where there are other registered nurses in the setting, she is more reluctant to function differently. In large group settings, it is more difficult for the nurse to achieve a close physician-nurse relationship built around specific children and families.

Implications for Nursing

Many persons who accept the program's concept will question the short duration of the training period, the youth of the nurses, the brevity of their nursing education background, and their lack of experience. Andrews and co-workers do not question that the nurses would benefit by a more intensive training or a structured experience of longer duration, but it would cost more. To date they estimate that costs are roughly $500 to $600 per trainee. The authors were unable to give a more exact figure because so much of the budget is devoted to marketing, promotion, research, and noneducational activities.

For nursing, however, this is a new role, the authors declared, and it is a challenging and highly satisfying one to many nurses. The training opens a door to many who left the profession because of dissatisfaction with traditional opportunities or because of family responsibilities. That nurses are interested in the program is attested by the fact that requests for information and admission, or both, have come from almost every State.

PUBLIC HEALTH ADMINISTRATION

Chattanooga is a Laboratory For New Service Programs

During the past 5 years, Chattanooga, Tenn., has been a laboratory for a number of new federally financed programs for providing services to people. From the beginning, the Chattanooga-Hamilton County Health Department was invited to participate in these programs, said its director, Dr. M. M. Young.

Describing some of the health department's experiences with a community action program, a comprehensive neighborhood health center, a Head Start Program, a pilot cities program, a model cities program, and regional planning, Young said that frustrations as well as accomplishments were encountered in interagency planning and implementation of new and comprehensive services to the deprived segment of the population. Health department personnel felt pressure, made mistakes, planned inadequately, and undoubtedly implemented programs in a way that could be improved, he admitted. However, he continued, needed services were provided to needy people far and above what was available to these people before 1965. Also, health department personnel were forced to try new ways of providing services and had to plan with other community agencies.

Young believes that accomplishments have far exceeded frustrations, much has been learned, and, despite the numerous frustrations, the programs are now taking on a degree of continuity. Participation of community residents has been achieved, if imperfectly. Efforts also have been made to meet expressed needs as well as more scientifically appraised needs of the residents and to deliver needed services more effectively, he said.

Persons in low-income areas have been effectively used in delivering needed services, Young went on. Use of indigenous "nonprofessionals" has extended the services of the health department and other community agencies, has resulted in better contacts and communication with the residents of the areas served, and has had an impact on professional workers in the health department and other agencies. Use of nonprofessionals also has made possible many new vocational opportunities for them.

The programs' impact affected the community through additional services provided, affected the professional workers in agencies providing services to the community, and affected the medical profession in that a comprehensive health center, the Alton Park Neighborhood Center, was established, Young said.

Currently, at the end of its first year of operation, the Alton Park center has enrolled about 6,000 persons (1,800 families) or about half of the eligible persons in the area served by the center, according to Young. About 450 visits a week are made for medical and dental services, and about 600 visits a week are

made by nurses and other family health workers. The health department trained and assigned to the center a public health nurse team, and public health functions in the center's locale have been delegated to the center.

Communication, horizontal and vertical, has been considerably enhanced as a result of the new federally financed programs. Avenues for possible improvement in coordination of service programs have resulted from numerous interagency meetings made necessary by interagency planning and funding at the Federal level. However, Young concluded, improved vertical communication from the Federal to the local level and the local to the Federal level is still needed.

Training for Participants In New Health Partnerships

The graduate department of community planning at the University of Cincinnati views its mission in health services administration as one to organize and develop training programs for qualified professional and consumer participants in "partnerships" that improve community health. Prof. Thomas M. Dunaye described the philosophy of this program as action-education in the continuous process of planned, purposive change in community environments, resources, services, and development of people—a process characterized by democratic community control, goal orientation, informed rational selection of alternative methods for goal achievement, implementation, and feedback.

Dunaye reported that a broad spectrum of training opportunities in comprehensive health planning has been developed for the four basic groups of participants in new health partnerships: health planning students, professional planning practitioners, all other allied health personnel, and citizen consumers. A full curriculum of interdisciplinary studies is offered to those preparing for professional health planning careers. Diverse continuing education opportunities are available to all others seeking to build a special knowledge of health planning concepts for various applications to improve the present system. The department's Community Human and Resources Training Project is an experimental effort to train neighborhood residents throughout communities of urban Cincinnati in the basic tools and techniques of organized, planned change.

Combined with this increased capability for effective citizen participation, Dunaye also described the program's tandem efforts to expand the opportunities for resident "health advocates" to be directly involved in deciding policies for all community health services. More seats at the policy-making tables of providers must include community representatives whose health care demands have either been poorly expressed or generally ignored until now. Consumers, who are well trained for decision-making participation, must be added to all executive and advisory bodies of official and voluntary health services, financing, education, and planning organizations. Dunaye further stressed that the providers of care must "open the doors of opportunity" for a greater community voice in determining what health services are established when, where, how, and for whom. He said the department's major contribution was promotion of the training for diverse partnerships between providers and consumers who mutually share this joint responsibility.

Another concern of the department's comprehensive health planning program is aimed at the educational development of untapped community manpower to assist directly in the delivery of health care. It recently joined several other community organizations in proposing a demonstration of experimental methods for recruitment and training of auxiliary health personnel who lived and would be employed in low-income, inner-city neighborhoods where services are heavily undermanned and often poorly used. Dunaye pointed out that it may soon become necessary to amend certain legal restrictions and licensing codes which could needlessly curb the expanding functions of these new types of indigenous health personnel. However, he again emphasized, it must be the institutions of professional training and established organizations of health care delivery that must assume the immediate responsibility of creating new educational and employment opportunities for community residents to participate directly in the provision side of patient care. In turn, we must remind ourselves, health service providers and those who train them have much to learn from consumers on how professional objectives and quality performance can best be met.

Finally, Dunaye proposed a broad conceptual model which summarized these three central objectives of comprehensive health planning education within the framework of a cybernetic system. He identified the following thrusts of the model: (*a*) to train provider and consumer partners for effective participation in health care opportunities for shared decision making, (*b*) to help providers and consumers train each other in new health partnerships of collaborative participation in delivering services, and (*c*) to help providers and consumers arrange new health partnerships and participation opportunities in both the decision and delivery processes.

Dunaye concluded that the concepts of "partnerships" and "participation" remain to be tested in applications where they are combined with planful purpose, rather than cliches of political rhetoric. Modern community health will progress only as rapidly as these concepts become jointly implemented. He called upon willing and dynamic health administrations to share more forcefully the advocacy tasks of building new community health norms through innovations in education.

Philadelphia Reassesses Community Health Services

Philadelphia reassesses and changes its community health services and its medical care delivery systems about once every decade, according to its health commissioner, Dr. Norman R. Ingraham. Each community decision, he said, has had a profound effect on the official health

agency and on the method whereby that agency relates to the 300-odd health institutions, agencies, and teaching facilities that serve Philadelphia proper as well as all of southeastern Pennsylvania, much of southern New Jersey, and a great deal of Delaware.

The Philadelphia Department of Public Health is intimately involved in changes in community policy, redirection in flow of funds and services, and adjustment of physical facilities to a program, and it is undertaking an increasingly important key role in these determinations, Ingraham said. After describing the dynamics of this role, he concluded that:

• The changes in the medical care delivery system in large cities throughout the country over the next several years will require a complete restructuring of the local health department. This need is so long overdue as to result in crises through complete breakdown of elements in the existing organization before there has been time to replace them.

• The greatest need is to return firstline family services care to those neighborhoods, comprised collectively of many hundreds of thousands of deprived citizens, from which such services have largely disappeared.

• The community hospital must externalize essential elements of its ambulatory care services into neighborhoods to meet the steadily increasing demands, and it must adjust to provide backup inpatient services to meet the demand of the ambulatory care facilities.

• With the radical changes in funding mechanisms and in the flow of funds which make all institutional adjustments difficult, the community must be protected against arbitrary actions by individual community hospitals and health agencies which are not in the public interest. This should be accomplished voluntarily with full cooperation and appropriate leadership, but, in the absence of these elements, it is essential that the public responsibility be exerted through regulation.

• The local health department must assume just as much leadership as the community is willing to give it to guide the local health institutions and agencies through the crises occasioned by these profound readjustments. In most metropolitan areas, the local departments and the health agencies must unite into regional organizations if plans and services are to be relevant. The continued existence of the local health department in a meaningful role depends on its ability to assume such a leadership position.

New Town's Health Services Not Easy to Implement

Reston, Va., a new town in the Washington, D.C., metropolitan area has an estimated population of 8,000 (less than 2,000 households). The population is expected to double in 1970 and reach 85,000 by 1980. While there are several private practitioners, the town is underdeveloped medically as well as in other community services. Political machinery is in its infancy.

Funded by private enterprise which manages Reston, a Reston-Georgetown University Project is being carried out by the department of community medicine and international health of the Georgetown University School of Medicine. According to an instructor in the department, Arlene Fonaroff, two major objectives of the project are (*a*) to develop and demonstrate methods for effective voluntary participation of local citizens with health professionals in planning community health programs and facilities and (*b*) to define characteristics of the Reston population in order to plan health programs and facilities responsive to community needs—this will assist in developing methods for teaching community medicine in a natural field setting.

Reston's current population is predominately middle- and upper-middle class. Opportunities for lower income residents are expected through expansion of the town's industrial base and construction grants supported by the Housing and Urban Development Agency. The sociological implications of introducing an open socioeconomic community are of considerable interest, said Fonaroff, because a range of people from poverty through affluence will presumably share the same facilities. Thus, she said, two assumptions have been made in approaching the project's goal of involving consumers in health planning—consumer involvement techniques used in poverty health programs are applicable to more affluent communities, and methods demonstrated in the new town could apply to communities in process of growth and change, such as model cities and inner-city ghettos.

The Georgetown project, started in 1968, uses a community action model which requires active planning participation by groups having a major stake in outcomes. Formal and informal communication at Reston follows the land-use pattern of clusters of dwellings designed to promote a sense of neighborhood, said Fonaroff. Thus, both of these formal and informal mechanisms are used to inform and involve residents in the project. Small discussion groups have been held to identify health, safety, and other community interests and to assess community support for health planning.

After a number of meetings between project members and the health committee of the Reston Community Association, it became apparent that both had similar goals: to develop plans for a comprehensive, innovative community health program and to develop such plans in a way that would reflect broad community involvement in and consensus with planning goals, according to Fonaroff. A decision for a community diagnosis evolved from these goals. The diagnosis was to provide (*a*) an objective systematic way to collect data on which to base plans, (*b*) a visible means of involving people in planning, (*c*) a dynamic way for each household to identify its health profile and its opinions, not only on health programs and facilities but on personal and community needs and interests, and (*d*) a framework for community education on alternate ways to meet Reston's present and future health needs.

However, Fonaroff reported, the health committee's membership changed, and its subsequent change of interest and involvement resulted in lack of active support of the com-

munity diagnosis. The committee independently drew up a plan of action which was recently proposed for study and consideration to a standing committee of the medical school. At this time, she continued, the local planning group therefore rejects the broad-based community involvement principles as the foundation for health planning and prefers to propose its plan for later consideration to the community at large.

The experience of the project to date, Fonaroff concluded, illustrates how the community power structure, and the project's connection with it, shape and constrain the planning process. The project is unique in that it supplies consultation without service. From the onset, community leaders and residents in general found it difficult to accept this as the role of the university, particularly so because of public knowledge that the nearby new town of Columbia, Md., had a definite commitment from the Johns Hopkins University to develop and provide health services.

Health Agency Executives' Views on Programs Differ

A study undertaken to determine the differential perceptions of hospital administrators and directors of local health departments regarding the importance of selected health care programs revealed that positive attitudes toward a specific program are more positive when that program is carried out within the administrator's institution.

Reporting preliminary findings of the study, Dr. John T. Gentry of the department of health administration, University of North Carolina School of Public Health, and associates also noted that age, participation in professional associations, formal training in administration, and employment in a voluntary hospital are additional variables associated with positive attitudes. Less favorable attitudes associated with proprietary hospitals and certain professional training have significance for health program achievement goals and the training of health service administrators, they said.

The health care programs included in the study were family planning, mental health, medical social work, rehabilitation, home health services, and screening for chronic disease. Data analyses will be based on 480 hospitals and 207 health departments. Executives of selected agencies were requested to complete and return mailed questionnaires. According to the authors, data analyses will include not only assessment of differential perceptions between the two groups of health agency executives but also how these differences relate to sociodemographic characteristics of the executives and to structural features of their respective organizations.

The authors presented the following findings of a preliminary analysis of the hospital data regarding program attitude relationships.

Regarding home health services, the data revealed that nursing services, physician involvement in coordination and planning, and physical therapy services were considered more important than home-delivered meals or transportation. Limited importance was also accorded to homemaker services and patient conferences.

For family planning activities, the use of indigenous workers and education and casefinding activities were judged less important than other program components. Stronger disapproval was expressed toward provision of the pill or intrauterine contraceptive devices as specific contraceptive measures than toward family planning programs in general.

Attitudes concerning rehabilitation and mental health services were similar, the authors reported. Physical therapy services surpassed all other rehabilitation program components in perceived importance, including the services of the occupational and speech and hearing therapists. Relatively less importance was given to casefinding and incorporation of rehabilitation practices within standard nursing procedures. Little importance was placed on the value of indigenous workers in mental health programs.

For medical social work services, highest priority was given to information and referral activities. This service outranked the more professional contributions of psychological and social consultation services. Cervical cytology was ranked highest in importance as a chronic disease screening activity. Relatively more importance was attached to screening activities normally carried out within hospitals, such as electrocardiograms and blood studies.

In the opinion of Gentry and associates, documentation of the areas in which major attitudinal differences occur is a prerequisite for undertaking specific efforts to further program implementation. Identification of general attitudinal levels of hospital administrators is of particular importance regarding consideration of the use of the hospital as a more comprehensive health service center of the future, they concluded.

Cites Curriculum Revisions In School of Public Health

Under a policy of continuing revision of the health administration curriculum, the philosophy of change is practiced as well as preached at the University of North Carolina School of Public Health, according to Prof. Morris Schaefer. Basic theories of health, administrative systems, economics, and politics are taught heuristically as well as didactically, he said.

Health administration students are expected to demonstrate planning and evaluation skills and insights into health systems and interorganizational, multidisciplinary group process. Thus, said Schaefer, graduate and continued education in health administration involves a diversified student body and a multidisciplinary faculty.

Recognizing the dimensions of social change several years ago, the school's department of health administration began to broaden its efforts beyond the preparation of physicians for the role of health officer, Schaefer stated. Progressive changes in the department's programs have been based on a number of assumptions. Several of the assumptions which he mentioned are:

• Graduate and continued education is not an end in itself, but is an instrument that helps students in their present and future responsibilities to the condition of the world, in respect to the state of human health.

• There is a fundamental unity of health needs, hypothesized by the pioneering thinkers of American public health but never put into operation.

• Health administration represents a fusion of two great skeins of intellectual, scientific, and practical development. One skein, connoted by the word "health," reflects the capability of the basic and applied life sciences to improve the human condition through knowledge, techniques, practice, institutions, professional organizations, and a particular market economy. The other skein is represented by the amorphously bounded term "administration," which itself connotes the merging and application of many social and natural sciences and disciplines toward the organization and delivery of the capabilities of health sciences. The weaving together of these threads makes health administration a fabric of richness, versatility, and utility.

• In professional education, as well as in practice, health administration has an intrinsic responsibility to focus and unify the disciplines and other elements pertinent to organized community health efforts.

• In education as in practice, health administration must relate health service efforts to the wider spectrum of societal efforts to improve the human situation, seeing health as a social as well as a biomedical condition.

• Health administration is not identified with one or several organizational roles, called "health administrator," but is rather a process distributed among many roles—many outside the boundaries of health agencies—particularly in the evaluation and formulation of health policies.

• Health administration must be studied from the perspectives of community systems, as well as from the perspective of agencies. Practitioners of health administration processes must be skilled in defining and influencing relationships and behaviors in such systems.

• Improved practice in health administration requires that faculty and student be oriented toward inquiry and discovery, and a capacity to carry out systematic administrative research is as important for the students heading for practice as for those going into academic pursuits.

• Graduate education experience should serve as an incident in a career-long process of learning as health professionals, a way station that will change perspectives, increase powers, and stimulate appetites for learning. For no student should it be terminal in character, even though it may be a last-earned degree.

Master's Degree Program

Schaefer pointed out that his department of health administration and the school have inaugurated the first off-campus master's degree program in health administration ever conducted by an American school of public health. Students are full-time employees of State and local governments, drawn from departments of welfare, mental health, rehabilitation, and planning as well as from departments of public health.

Schaefer said that the faculty of this program anticipates that it will do more than solve problems of manpower resources in a number of agencies. It also anticipates that several academic breakthroughs will emerge from working with students over a 3-year period and from working with students who come from various agencies involved differentially with the same contextual community, the State of North Carolina.

EPIDEMIOLOGY

Chamorros' Health Not Hurt By Migration-Westernization

The hypothesis that migration and Westernization are associated with an increased prevalence of a variety of disorders was not supported by the results of a study by Dr. Dwayne Reed, University of Texas School of Public Health, and associates. To explore this concept, the investigators compared three groups of Chamorros, natives of the Mariana Islands. Although similar in genetic background, the three groups had different sociocultural experiences by virtue of their residence on the islands of Rota and Guam and in California.

Seeking evidence of a variety of disorders among adults, Reed and associates examined more than 1,200 Chamorros. A 24-hour dietary survey was completed for a subsample in each area, and 10-year mortality data were obtained in Guam and California. The results documented differences in terms of migration, mobility, and sociocultural orientation.

According to the authors, the examination was the same in all three areas. Each person was given 50 grams of dextrose orally for a diabetes test. A medical questionnaire was administered which included an inventory of symptoms of illness as well as background questions related to personal habits, food preferences, sociocultural orientation, and migration. Height, weight, and skinfold measurements and a standard 12-lead electrocardiogram were taken by a nurse.

A physician took the blood pressure reading and completed the physical examination. The examinee was then interviewed by another physician for details of symptoms indicated on the questionnaire and for information about illnesses, medications, and behavior problems. Finally, a 15-cc. blood specimen was taken 1 hour after the dextrose had been consumed for testing serum glucose, uric acid, and cholesterol.

Most of the sociocultural characteristics measured showed an increasing departure from the traditional ways of island life from Rota to Guam to California. In contrast, the patterns of illness were inconsistent by area. The differences which did appear were mainly limited to symptoms and histories of illness. While these may represent real disease, the authors pointed out that the possibility must be considered that popular emphasis of physical and mental complaints—a prominent aspect of contemporary West-

ern culture—has affected the Chamorros of Guam and California. This possibility was supported by a correlation analysis of individual experiences. The analysis showed no substantial evidence of any relationship between the measures of mobility or sociocultural orientation and any of the illness indices.

One possible exception was indications of coronary heart disease, the authors reported. Class I ECG abnormalities, symptoms of chest pain, and histories of myocardial infarction decreased stepwise from California to Guam to Rota. Proportionate mortality rates for coronary heart disease among Chamorros also were higher in California than in Guam. This area difference could be related to sociocultural discontinuity—change from one way of life to another—they said. On the other hand, they pointed out, the analysis showed the same geographic pattern for dietary intake of fats and for serum cholesterol values, which suggests a more direct explanation for the distribution of coronary heart disease.

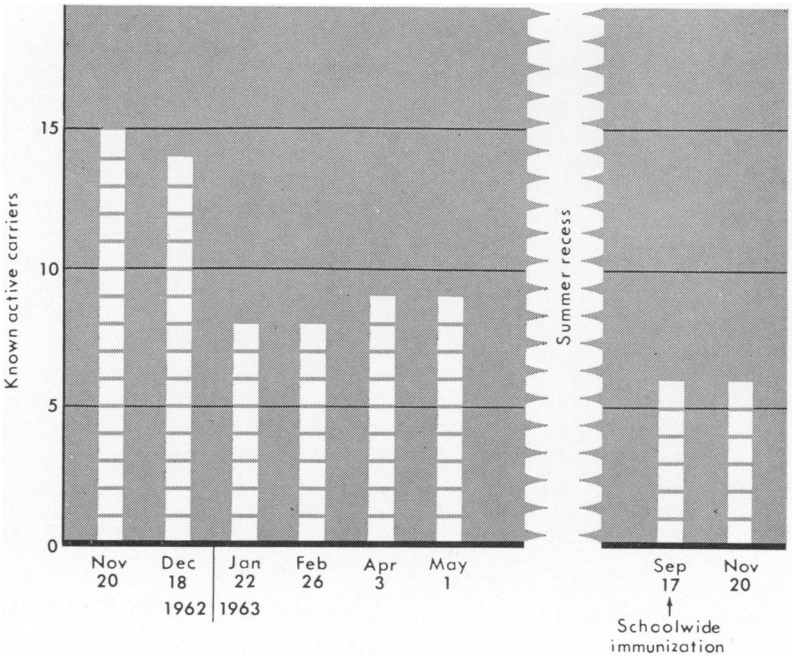
C. diphtheriae Survives in Partly Immunized Group

The results of a study of a diphtheria epidemic and its aftermath demonstrated that *Corynebacterium diphtheriae* was able to maintain itself for 14 months in a partly immunized population, reported Dr. James F. Jekel of Yale Medical School, Dr. Gabriel S. Zatlin of Emory University Medical School, and Dr. Otis F. Gay, health officer of Madison County, Ala.

They studied the spread of *C. diphtheriae* through a partly immunized school population of 660 children in an isolated rural area of Madison County. The epidemic, which began in the fall of 1962, seemed to be centered in the West Madison School District.

Patients with symptomatic (or clinical) cases as well as asymptomatic carriers had throat cultures taken weekly or biweekly in school or in their homes until the children became negative for three successive

Prevalence of known active diphtheria carriers, West Madison School, 1962–63



cultures. Periodically the entire West Madison School population, or a random sample of it, was cultured to detect new carriers. Eight schoolwide culture surveys were done. Among the children there were two deaths from diphtheria during the epidemic, 10 cases in which the patient recovered, and 32 asymptomatic carriers (see chart) identified.

1. The prevalence of infection among the school children varied between 0.9 percent and 2.1 percent during the 14 months.

2. Both toxigenic *gravis* and atoxic *mitis* types of *C. diphtheriae* were cultured concurrently from the same population. A total of 46 children, either clinical patients or carriers, were infected with toxigenic *gravis* organisms; all of the symptomatic patients were infected with *gravis* type organisms. The six children who were infected with atoxic *mitis* organisms were asymptomatic carriers.

3. Effective transmission of diphtheria bacteria apparently depends upon both the duration and intimacy of personal contact. The homes appeared to be the most important location in which transmission of diphtheria took place. School classrooms, play contacts, and the school buses followed in that order of importance.

4. The secondary attack rate in the homes during the epidemic was 26.1 percent for children under age 16. When adults in the family were available, cultures were taken, but the adults did not appear to play an important role in the spread of the infection.

5. Asymptomatic carriers differed significantly from clinical patients only in the percentage immunized against diphtheria. These carriers were more likely to have been immunized than were the patients. One fully immunized child remained an asymptomatic carrier for more than 2 months.

6. Diphtheria organisms were still present in the population when the study was terminated. However, no subsequent clinical case of diphtheria has been diagnosed in the population since the study was terminated over 5 years ago.

The authors concluded that after infection with *gravis* organisms, most children showed high serum

antitoxin levels (>0.25 antitoxin unit per ml.) whether or not they had a history of diphtheria immunization.

Use of Live Mumps Vaccine As Anti-Epidemic Measure

The results of an epidemiologic investigation indicate that whatever immediate protective effect may be conferred by inactivated mumps vaccine, this effect does not last beyond 1 year from the date of vaccine administration. Since maximum protection with the inactivated vaccine occurs only after two doses, optimally administered 2–4 weeks apart, simple logistics preclude its use as an anti-epidemic measure, in the words of Dr. J. E. Maynard, National Communicable Disease Center, Phoenix, Ariz., and associates.

During December 1967 to February 1968 an outbreak of mumps occurred on St. Paul Island, Alaska. This disease had not been present on the island during the lifetime of the resident population. However, in 1965 a group of residents had received two doses of commercial inactivated mumps vaccine in an effort to prevent importation of mumps from a concurrent outbreak on a neighboring island.

After the occurrence of the first case of mumps on St. Paul in late December 1967, the epidemiologic study was undertaken. Its purpose was to determine the effectiveness of inactivated vaccine administered 2 years previously in preventing clinical mumps. Also, live attenuated mumps virus vaccine was administered to a sample of the population to evaluate its effect in curtailing the epidemic. Since the attenuated vaccine was used at the same time that wild mumps virus was circulating on the island, the investigators could not determine the effect of wild virus as opposed to vaccine virus on the demonstrated antibody response in vaccinated persons.

At the time of the study, 315 persons were living on St. Paul Island. Pre-epidemic serum specimens were available for 195 persons. Of these, 172 (88 percent) did not have mumps serum neutralizing antibody titers at the screening dilution of 1:4 and were considered to be susceptible to mumps. Although the frequency of sero-susceptibility decreased slightly with age, the decrease was not marked and probably represented immunity status acquired by some island residents during periods of exposure while off the island at school or in contract employment, the authors said.

Among the susceptible persons who did not receive the live attenuated vaccine, the mumps infection rate was 59 percent and the clinical attack rate was 35 percent. In the susceptible group also, no significant differences were seen, in either infection or clinical attack rate, between those who had received the inactivated vaccine in 1965 and those who had not. Nor was clinical illness less severe in the group who had received inactivated vaccine in 1965, the authors reported.

Mumps serum neutralizing antibodies developed within 10 weeks after vaccination in 82 percent of the susceptible persons who had received the live attenuated vaccine. The clinical attack rate was 34 percent in this group, whereas in the susceptible group which did not receive this vaccine it was 35 percent. However, the authors said, the fact that the overall infection rate in nonvaccinated susceptible persons reached only 59 percent suggests that the introduction of attenuated virus may have significantly altered the balance of susceptible to immune persons and thus prevented further propagation of the wild virus strain.

Rubella Susceptibility Rates Higher in Some Areas

The largest single survey of rubella susceptibility reported to date—54,521 subjects—was conducted to evaluate Cendehill rubella vaccine, reported Dr. Jerome A. Gold of the Research and Development Division, Smith Kline and French Laboratories, and co-authors.

This survey of subjects screened for rubella antibody as measured by the hemagglutination inhibition test, they reported, included 35,398 subjects from the continental United States and Puerto Rico, 18,022 from Jamaica and Nassau, and 1,101 from Costa Rica.

Of the 54,521 adults and children studied, 30,698 were females and 23,823 were males. Twenty-eight percent were under age 7, 54 percent were ages 7 to 12, 7.5 percent were 13 to 17, 8.5 percent were 18 to 35, and 2 percent were over age 35. The percentages of rubella susceptible subjects among males and females were almost identical through age 17. Statistically, the differences in the age groups 18 to 35 were significant: 19.6 percent of the females were seronegative, while only 6.8 percent of the males were. Females over age 35 had a rate of 9.2 percent seronegative and males, a rate of 1.5 percent. Seventy-five percent of the subjects less than 7 years were seronegative, as were 47 percent of those age 7 to 12 and 30.8 percent of those 13 to 17.

The prevaccination survey also showed that some areas had higher rubella susceptibility among women of childbearing age. Since some women have children before they reach age 18, this phase of the study covered females age 13 and over. In areas where at least 100 females were prescreened, there was a higher than expected susceptibility rate: 57 percent in Puerto Rico, 39 percent in California, 36 percent in Delaware, 31 percent in northern Florida; in Costa Rica it was 36 percent; and 29 percent in Nassau and 32 percent in Jamaica. The findings, reported the authors, indicated that island and rural populations are more susceptible to rubella than other areas.

Evaluation of the postvaccination study of the response to Cendehill strain of rubella virus vaccine revealed that in closed, family, open-field, and adult female trials in the United States and the Caribbean involving more than 80,000 participants, the seroconversion rates of postvaccination were 97.4 to 98.5 percent, with geometric mean titers ranging from 1:51 to 1:72. In closed and family studies, there was no

evidence of spread of the vaccine virus to 1,069 rubella-susceptible contacts. The immune response in susceptible vaccinated females showed no apparent difference in response with age.

According to the authors, blood samples taken soon after vaccination and up to 40 days revealed that seroconversion occurs in most people within 30 days, although their peak antibody titers may not have been reached by that time.

"Serum" Hepatitis Acquired By Nonparenteral Routes

The concept of "infectious" and "serum" hepatitis is a subject of much discussion. Classically, infectious hepatitis (virus A) is an orally or parenterally transmitted viral illness of short incubation, while serum hepatitis (virus B) is thought to require parenteral transmission and a long incubation period. Some investigators, however, have suggested that serum hepatitis may be transmitted by close contact without parenteral transmission. A serum hepatitis (SH) related antigen detected during the incubation period and early clinical course of post-transfusion viral hepatitis was recently reported.

Describing their experience in New York City with the presence of the SH antigen in adult and pediatric patients with viral hepatitis, Dr. C. E. Cherubin, Columbia University School of Public Health and Administrative Medicine, and associates concluded that the epidemiologic distinction between infectious and serum hepatitis apparently does exist, but not as is commonly held.

Patients and Methods

All serum samples were tested for presence of SH antigen by a modified immunodiffusion method, and each positive sample was retested for reactions or identity with reference SH antigen, according to the investigators.

Serum samples were obtained as follows:

1. From all 60 patients at Harlem Hospital Center with a clinical diagnosis of viral hepatitis who were admitted between December 1968 and March 1969. All were questioned as to transfusion, personal contact with jaundiced persons, drug use and duration of use, duration of symptoms, and possible previous symptoms.

2. From 135 inpatients and 25 outpatients with a diagnosis of viral hepatitis seen at New York Hospital-Cornell Medical Center between April 1968 and March 1969. The same questions were asked of these groups as of the Harlem patients, and, in addition, for 18 patients liver biopsy confirmed the impression of acute hepatitis.

3. From 690 long-term drug addicts, without clinical hepatitis, by means of aliquots of blood specimens drawn for laboratory tests for admission on the detoxification wards of the Morris J. Bernstein Institute. These samples were obtained between December 1968 and May 1969.

4. From 10,287 volunteer blood donors at the New York Blood Center.

5. From 1,101 units of blood of commercial origin transfused at Harlem Hospital.

6. From 15 children and three nurses at New York Foundling Hospital during an outbreak of hepatitis, and from 35 contacts of the nurses and 21 contacts of the children.

Results

The drug users at Harlem Hospital were young adults (75 percent under 25 years old) and mainly male; 56 percent of these patients were SH positive. Those who denied drug use were somewhat younger, with a nearly equal sex ratio, and 50 percent of these were SH positive. At New York Hospital about 50 percent of all inpatients (drug users, unknown etiology, post-transfusion, and hospital staff) were SH positive, but only 20 percent of the outpatients were SH positive.

According to the authors, no difference was seen in the duration of illness between patients with and without SH antigen in all the hospital groups. About 40 percent were seen in the first week of illness and another 40 percent in the second. The outpatients at New York Hospital were seen after a distinctly longer duration of symptoms than the inpatients, which may explain their lower rate of SH antigen.

Of the drug users without clinical hepatitis, who were undergoing withdrawal, 2.2 percent were positive for SH antigen. These persons were generally much older than the drug users with hepatitis at the two hospitals.

The frequency of SH positives among the voluntary blood donors was about 1 per 1,000, but for the units of samples supplied by the commercial blood bank it was about 1.1 per 100. None of the patients or contacts in the hepatitis outbreak had the antigen.

Cherubin and associates believe that in light of these results many or most of the patients studied had acquired "serum" hepatitis by nonparenteral routes.

Elimination of Smallpox Vaccination Might Pay Off

The benefits of routine childhood smallpox vaccination no longer outweigh its risks, and it should be discontinued, reported Dr. J. Michael Lane and Dr. J. D. Millar of the Smallpox Eradication Program, National Communicable Disease Center. The United States records at least seven deaths per year attributable to vaccinia, and a minimum of 210 deaths can be expected over the next 30 years if the present policy remains unchanged. Elimination of routine childhood vaccination and concentration on vaccination of high-risk groups—health workers, travelers, military recruits—could reduce this total to 60 deaths .

The authors made these assumptions concerning the three high-risk groups in arriving at their estimate. Ten percent of 700,000 yearly military inductees with a mean age at induction of 17 will be primary vaccinees for the next 17 years, after which they will all be primaries.

Ten percent of health workers entering the labor force at age 21 will be primary vaccinees for the next 21 years. After 1991, they will all be primary vaccinees, they said.

There is no available age distribution data on travelers to endemic areas. At present, 10 percent of them receive primary vaccination in order to travel. An arbitrary increment of 10,000 primary vaccinees per year leads to an estimate that all travelers will be primary vaccinees by 1997, the authors reported.

Based on these assumptions, Lane and Millar stated, there may be 20 million adult primary vaccinations performed on this high-risk group in the next 30 years if routine childhood vaccination were discontinued now.

Since the United States has not been challenged with imported smallpox since 1949, they based their estimate of the rate of importation and spread of smallpox on analysis of European experience in recent years.

If the U.S. experience is similar to Europe's, with only two of each three imported cases spreading to others, and if all cases occur in unvaccinated persons with a case fatality rate of 33 percent, we can expect eight deaths due to smallpox from each importation epidemic.

In addition to this estimate, they continued, some deaths might be expected due to vaccinations performed to control the epidemics. The exact number of vaccinations needed for each importation cannot be predicted.

Assuming the worst, that outbreaks will occur at the end of this 30-year period when the 60 percent of the U.S. population born after 1970 will be unvaccinated, then each imported case with spread will require 1 million vaccinations—about 600,000 adult primary vaccinations with a risk of three deaths per million and 400,000 revaccinations with little risk of death. Two deaths due to vaccinia might occur in each outbreak, the authors reported.

When the vaccinia-related deaths are added to the eight deaths due to smallpox in each outbreak, a total of 20 deaths might result from three typical imports of smallpox. No deaths are expected from the import which does not spread.

To equalize the 150 lives saved by discontinuing infant vaccination, the United States would have to have 22 importations of smallpox in the next 30 years, or two every 3 years.

Furthermore, Lane and Millar concluded, smallpox spreads by close person-to-person contact. It does not spread readily when recognized and contained by public measures; therefore, the chain of infection can be traced and broken. Smallpox in endemic areas is being limited by smallpox eradication campaigns among persons who are geographically or socially isolated. Thus, continued effort to reduce the risk of importation, and outbreak control in the unlikely event of importation, should replace routine childhood vaccination as our major defense against smallpox.

See Local Department Cast In Food Protection Role

Food protection programs at all stages of processing have not yet resulted in a consistently safe supply of food for the American consumer, as indicated by the frequency of foodborne illness, in the opinion of two Olympia, Wash., physicians. According to Dr. Byron J. Francis of the Washington State Department of Health and Dr. Ernest A. Ager, a private practitioner, the trend toward centralized food production and processing has resulted in diminishing control by local health authorities over the quality of foods reaching the housewife or food service establishment.

The physicians believe that local health departments can contribute more to the prevention of foodborne illness by (*a*) educational and regulatory emphasis on selected significant aspects of sanitation in food service establishments, particularly proper cooking, holding, storage temperatures, and prevention of cross-contamination of foods, (*b*) education of consumers in proper methods of preparation of potentially hazardous foods, and (*c*) early recognition of foodborne illness, followed when appropriate by rapid correction of unsafe practices or by interrupting use of a suspect food.

Citing examples of how the local health department can contribute to the prevention of outbreaks due to lapses in the phases of food protection that it does not directly control, the authors said that the department can first enter the picture with the final delivery and storage of food and then with its retail sale or preparation and service. For instance, the local health department may not be able to control the contamination of raw poultry by *Salmonella* or of raw meat by *Clostridium perfringens*, but it can insure that cooking methods will prevent the organisms from causing an outbreak.

Preparation of food takes place in restaurants, homes, and many other places, all in the realm of responsibility—if not always of control—of the local health department. Francis and Ager referred to national reports that mistakes in these settings caused at least 138 known foodborne outbreaks in 1968. This number can only be a minimum measure of the importance of the department's role, they added, because reporting is incomplete and because for 106 outbreaks the place of mishandling of food was unknown or unspecified.

When a ready-to-eat food is suspected in an illness, the local health department may have the first opportunity to recognize a possible outbreak and to begin action to establish its cause and prevent its recurrence. Sometimes, the authors pointed out, the department can exonerate food as the source of an illness—this builds public confidence in a proper food protection program.

Taking adequate samples of possibly involved food and of food of related history deserves high priority, according to the authors. Decisions as to what, if any, examinations are appropriate may then await further information. This information can be obtained through the familiar epidemiologic investigation which includes food preparation histories and data relating to the illness and its association with food consumption.

Remedial action on the local level may include control on sale, on preparation, or on service until satisfactory measures have been taken to correct whatever defects gave rise to the outbreak and any other unsafe practices observed. These controls may provoke accusations of

unfairness and protests that many other causes of food poisoning are being overlooked. However, the authors submitted, when a hazard is identified, the most unfair action possible is to allow it to continue.

California Encephalitis Observed in Pennsylvania

Serologic data obtained in 1968–69 studies of people, horses, and wildlife suggest that an extensive foci of California encephalitis virus exists in southeastern Pennsylvania, according to Dr. Martin Marcovici, Pennsylvania Department of Health, and fellow investigators. This is the first time that California encephalitis virus infection has been documented in Pennsylvania, they went on, although the relationship of this agent to the incidence of central nervous system disease of unknown etiology is yet to be determined.

During the past 10 years about 700 cases of primary encephalitis were reported in Pennsylvania, primarily in the summer and early fall. More than 90 percent of the cases were recorded to be of "unknown etiology," and about 75 percent of the cases were in children and young adults. These epidemiologic data and the occurrence in 1968 of an epizootic-epidemic of eastern equine encephalitis (EEE) in three neighboring States prompted the authors to investigate the status of arbovirus infections in the State, particularly in the southeastern part.

The investigators used three serologic tests—neutralization, complement fixation, and hemagglutination inhibition—to detect arbovirus infections in people, horses, and wildlife. A plaque neutralization test was performed on human and horse serums, using primary duck embryo tissue culture to detect neutralizing antibodies to eastern, western, St. Louis, and California encephalitis (BFS–283) antigens. These viruses were adapted to the host system after two plaque purifications of mouse-brain adapted viruses.

The investigators observed very low numbers of eastern encephalitis reactors in birds (0.4 percent) and no reactors in mammals. These observations indicated that Pennsylvania was not affected by a 1968 epizootic in neighboring States. Only one case of human EE was seen (a person who had become infected in New Jersey), and no deaths or laboratory confirmed EE occurred in horses. The rates for hemagglutination inhibition and complement fixation reactors for western and St. Louis encephalitis were also low.

However, the authors said, the picture was significantly different when approximately 1,000 people and 59 horses in southeastern Pennsylvania were tested for California arbovirus neutralizing antibodies. In different areas the rate of infection in people varied from 5 to 30 percent and in horses from 14 to 60 percent. A deermouse from the area was positive for California virus by complement fixation test. A group of horse serums positive in vitro were retested and confirmed as positive in an intracerebral neutralization test in mice, using both BFS–283 and LaCrosse antigens.

More positive serums and higher titers were detected with LaCrosse antigen. This may indicate, the authors said, that the virus responsible for the existence of an endemic area of California arbovirus in Pennsylvania is antigenically related to the LaCross strain of the California group.

RADIOLOGICAL HEALTH

Why Any But Unavoidable Or Beneficial Radiation?

Applying an arbitrary finite radiation standard, such as 0.5 milliroentgen per hour, uncritically to each and every kind of radiation source, indeed, to each individual source of each type, can be a trap, stated Irving Michelson, director, Environmental Health and Safety Research Associates, New Rochelle, N.Y. The 0.5 millirem per hour standard for intermittent exposure, or 0.17 millirem per hour for continuous exposure was intended to be the maximum dose received by people in the general population and not the maximum radiation output from each source or type of source. Since radiation effects are substantially accumulative, the dose per person is really the sum total of the radiations received from all sources at all times, not just from a single source at any one time, he said. If we accept the reasonableness of a 0.5 millirem per hour maximum dose rate for people, it is incumbent on us to apply it only to people, taking into account all sources that contribute to the dosage.

Radiation dosages can sneak in the back door, too, Michelson said, including unplanned exposures with no deliberate need for the radiation per se. I refer to such phenomena, he said, as the exposure of smokers to radioactive polonium-210 in cigarette smoke, the exposure of high school and college students to radiation from physics demonstration equipment, and the radiation burns some people have received in the last few years from gold jewelry made from spent gold radon capsules.

Few people ever consider that a single plane trip to Europe might increase their radiation exposure way above 0.5 millirems per hour, Michelson said, but the supersonic transport flights will do it. A recent British study of radiation from cosmic rays in a Concorde plane at a normal cruising altitude of 65,000 feet, in the absence of solar flares, showed an average dose rate of 2.2 millirems per hour. This may not mean much to the occasional traveler who might be willing to accept the added dose for the advantage of saving 3 hours or so per flight but consider the crew, who may spend 500 hours a year on such flights. Obviously they will have to be classed as radiation workers for their large doses to be considered acceptable. Semantics can be a great comfort, said Michelson. How soon will the general population need to be classified as radiation workers if present trends go unchecked?

Radiation protection authorities do not seem to make any allowance for the fact that chemical carcinogens and mutagens are in our environments, our foods, and our drugs.

I would feel much greater confi-

dence, said Michelson, if a hard and fast rule were being applied *in toto* instead of piecemeal and if all unneeded radiation were completely ruled out and I received only the radiation doses that either are unavoidable or offer distinct benefits.

Secondary Schools Surveyed For X-radiation Exposure

The Bureau of Radiological Health conducted a joint State-Federal survey to assess the type, quantity, and use of potential or actual radiation-emitting sources in secondary schools, reported James A. Kraeger and associates of the Environmental Health Service.

In the 181 schools visited, 97 of 103 X-ray tubes found were unshielded, they said. The six shielded tubes were in functional radiographic and fluoroscopic units. The unshielded cold cathode gas discharge and Coolidge tubes emitted the highest levels of radiation. Exposure rates of 21 of the 97 tubes ranged from zero at the voltage applied to a calculated high of 108 roentgens per hour at 24 inches from the midpoint of the tube. Fifty-five percent of all X-ray tubes tested emitted roentgen-level-per-hour rates at 24 inches from the anode.

Only 20 of the 103 tubes were used—38 percent of them in classroom demonstrations. The instructor used them once to six times a year, and one tube was used twice a year by students in the laboratory.

Thirty-three gas discharge or "heat effects" tubes were observed. Half of the 14 tested produced measurable radiation. Exposure rates from these tubes varied from zero to 4 roentgens per hour at 12 inches from the anode of the tube. Eight tubes were used by the instructor one to 12 times a year for demonstration purposes. In one school a tube was used by students 12 times a year in the laboratory.

A total of 149 deflection or magnetic effect tubes were observed. Measurable radiation was emitted from 71 percent of the 97 tubes tested. Exposure rates varied widely, ranging between zero and 1.5 roentgens per hour at 6 inches from the midpoint of the tube. During a school year, 90 percent of the tested tubes were used by the instructor from 1 to 24 times a year. Three schools reported that the tubes were used in the laboratory by the students.

Of 119 fluorescence effect tubes observed, 64 were tested, and 77 percent emitted measurable radiation, the authors reported. Exposure rates ranged from zero to greater than 5 roentgens per hour at 12 inches from the tube. The instructor used 82 percent of the tested tubes 1 to 24 times a year. Three schools indicated that this type of tube also was used by students in the laboratory.

Less frequently used tubes, such as the kinetic energy, canal ray, vacuum discharge, cathode ray display, and Geissler tubes produced no measurable radiation at the voltages applied.

Of 909 radioactive sources found during the survey, 628 sources of radionuclide content were identified. Another 132 radioisotope kits with unspecified contents and 124 miscellaneous sources were observed. In a few instances, licensable quantities of radioactive materials were found, including one 20-microcurie source of radium-226, two 7-microcurie sources of radium-226, one 50-microcurie source of phosphorus-32, and one 10-microcurie source of cobalt-60. One school also possessed a number of sources or quantities large enough to require a specific license: 10 vials of phosphorus-32 (10 microcuries each) and 50 microcuries of carbon-14, plus other sources. Although adequately labeled, Kraeger and associates reported, the storage of these materials often was inadequate. Any student could readily obtain the material without the instructor's knowledge.

One significant failure in the secondary schools was the lack of literature on radiation protection. Only 11 of the 181 schools had a copy of the National Council on Radiation Protection and Measurements Report No. 32, entitled "Radiation Protection in Educational Institutions." Sixteen teachers indicated that they had read the report, but the number would have been substantially lower had not the report been distributed to the schools just before the survey by a local radiological health agency.

Our survey, Kraeger and associates said, showed that a significant number of radiation sources are available which, if used improperly, could pose an exposure problem to the instructor and students; also that many teachers had little knowledge of the contents and availability of NCRP Report No. 32.

The Bureau of Radiological Health has initiated several mechanisms to control radiation exposure from demonstration-type cold cathode discharge tubes, reported Kraeger and associates. The only domestic manufacturer of these tubes voluntarily complied with a directive to stop manufacturing them, they said, and recalled from his distributors the tubes they had on hand.

Performance standards are being developed for these tubes, they reported, to establish the maximum radiation exposure rate limit and divergence of the exit beam from tubes designed to produce X-radiation. The standard will apply to importers as well as domestic manufacturers of the demonstration-type cold cathode discharge tubes.

Reactor Safety Evaluations As a Public Health Service

The Bureau of Radiological Health routinely conducts a technical review and evaluation of all types of nuclear facilities, according to Charles L. Weaver, director, Division of Environmental Radiation. The results and recommendations are submitted to the State health agency responsible for the environmental health aspects of the plant.

Radioactivity levels in the environment are measured through several national surveillance networks operated by the Bureau, Weaver said. The results of this comprehensive, periodic sampling are used to estimate population radiation exposure. Many States coordinate similar measurements with the national system.

Weaver said that the primary objectives of environmental surveillance programs for nuclear power stations are: (*a*) to verify the adequacy of source control, (*b*) to pro-

vide data to estimate population exposure, and (c) to provide a source of data for public information.

Two factors, he said, have caused a change in the nuclear facilities program activities—the rapid growth of nuclear power and the growing public concern about the use of nuclear power in the United States. The surveillance guidance recommended by the Bureau and published by the Public Health Service is considered to be adequate from a public health standpoint. Because of the planned increase in nuclear power, it is important to consider the development of a coordinated nationwide surveillance program to meet public health responsibilities for estimating population exposure.

To obtain data for refining environmental surveillance program recommendations, field studies have been initiated at a boiling water reactor in Morris, Ill., at a pressurized water reactor in Rowe, Mass., and at a nuclear fuel reprocessing plant in West Valley, N.Y., reported Weaver. In these studies emphasis is placed on identifying critical pathways of radioactivity from source to man, including the delineation of any reconcentration media or indicator radionuclides within the pathways, and correlating stack discharges with the environmental levels produced.

Included in a summary of the more significant findings at the boiling water reactor were the following: (*a*) exposure of the surrounding population was not measurable in the water or food pathways and (*b*) external exposure from noble gases discharged to the atmosphere was estimated to be 5 to 15 millirems per year. Results from the other facilities under investigation are still being analyzed.

The Bureau has conducted a research project to obtain data that will help clarify the radioactive air pollution characteristics of conventional and nuclear plants, said Weaver. Natural radioactivity is emitted from fossil fuel plants in the fly ash.

Using fractions of the dose limits recommended by the International Commission on Radiological Protection to provide a common health index, the investigators compared nuclear and fossil fuel on a permegawatt electrical basis. They concluded that the noble gases from a boiling water reactor produces more radiation exposure than an old coal plant and the pressurized water reactor produces less exposure.

When a typical modern coal plant was similarly compared, the same relative exposure relationship was maintained. However, exposure from the modern coal plant was considerably reduced and approached that of a pressurized water reactor. Air samples collected over extended periods of time around an oil plant, Weaver said, showed no detectable radioactivity above normal background level.

Measurement of Accelerator Produced Stray Spectra

Neutron energy spectra have been obtained around the Yale M.P. Tandem Van de Graaff accelerator during a variety of experiments, reported G. R. Holeman, health physics division, Yale University. The spectral measurements were performed with a Bonner spectrometer. The spectra were unfolded by using an iterative technique, and the ability of the spectrometer to unfold test spectra was evaluated.

Holeman presented neutron spectra for a variety of beam currents, beam energies, accelerated particles, and shielded conditions. He also discussed the process of converting neutron spectra to absorbed dose and dose equivalent and presented results using various dose conversion factors and quality factors.

Holeman stated that the technique described for determining neutron spectra seems to be accurate and feasible, with the following advantages:

A wide energy range from thermal to more than 20 million electron volts is covered.

Time-consuming calculations are performed on a computer. Neutron spectrum, absorbed dose, dose equivalent, and implied quality factor are obtained from one set of measurements.

The system can be active or passive.

He listed the following disadvantages of the technique:

The program errors involved are not well understood.

The spectra are void of detail.

A long time is needed for a complete survey of the accelerator laboratory, and changes in beam characteristics during this time will affect the survey results.

A fast computer is needed to analyze the results.

The measurement of stray neutron spectra around the accelerators Holeman said, is a time-consuming complicated process with many associated problems including machine variations, pulsed characteristics, small pulse widths, very high and very low dose rates, and poor resolution spectrometers.

Radiological Technologists Needed at X-ray Facilities

During a survey of X-ray facilities within the Federal Health Programs Service, deficiencies were found in radiographic and fluoroscopic machines, reported Lois A. Miller, public health analyst, and LaVert C. Seabron, chief, X-ray Services Section of the Bureau of Radiological Health, Public Health Service. Total filtration in the useful beam of 1.5 percent of the radiographic machines was less than that required on the basis of the maximum tube potential; aluminum filtration had to be added to increase the total to the value required.

Inadequate collimation of the useful beam—the dimensions of the primary beam exceeded the dimensions of the film size used—was found on 6.4 percent of the medical X-ray machines. Although 63 percent of these machines were equipped with a variable collimator that visibly indicated beam size, many operators of the machines did not know how to use the collimator correctly; therefore, its value in reducing unnecessary radiation exposure was negated, they reported.

Protection of operator and patient was adequate at most fixed installations, they said. A lead-lined shield or booth usually was provided for the operator, and sufficient shielding protected persons outside the X-ray

room from scattered radiation. On 75 percent of the mobile X-ray machines, however, the length of the exposure switch cord did not allow the operator to stand at least 6 feet from the patient, the X-ray tube, and the useful beam. Where operator protection was found inadequate, corrections were recommended.

Major deficiencies observed in fluoroscopes were absence of Bucky-slot covers, failure of the diaphragm system to restrict the X-ray beam to the area of the viewing screen, and absence of a protective drape between the patient and fluoroscopist to intercept scattered radiation. Such deficiencies, they stated, are likely to be found on fluoroscopes manufactured before 1960; on machines manufactured after 1960, these appurtenances are standard equipment.

In only one machine was the total filtration in the primary beam less than 2.5 millimeters aluminum equivalent. The dose rate at the panel top of all fluoroscopes was found to be equal to or less than 3.2 roentgens per milliampere-minute, they reported. No instances were noted of excessive transmission of the X-ray beam through the viewing screen.

Accuracy and reproducibility of the timer was deficient in 19.8 percent of the X-ray units, they said. The timer should deliver the exact exposure time for which it had been set and reproduce the same exposure time in successive tests. Reproducibility is most important in preventing overexposure, they stated. By adjusting the timer the operator can compensate for an inaccurate timer; then the timing must be consistent in succeeding exposures. However, it is almost impossible for an operator to compensate for this defect because of the variations in exposure time. Patients may receive unnecessary exposure from retakes necessitated by the unacceptable films produced as a result of the faulty timer.

Inadequate training of X-ray machine operators and modification of existing equipment so that it meets currently acceptable standards are the major problems, they said; therefore, the following procedures were recommended:

Institute a short training program for new X-ray personnel as radiological technologists. Such a course would provide the Federal Health Programs Service with a steady supply of trained operators.

Implement modifications or changes in the equipment and operating procedures.

Continue surveying for radiation safety of facilities; certain facilities should be surveyed annually and others, every 2 years.

FAMILY PLANNING

Elegance Versus Relevance In Population Research

Although relevance rather than elegance should be the primary consideration in the selection and design of population research activities, it does not follow that population research is inherently inelegant or lackluster. Indeed, the magnitude and complexity of the population problems which man seeks to solve present unprecedented challenges and opportunities for linking science, art, and compassion to brighten man's future. The researchers who perform yeoman service in the population field will be able to face both their peers and their progeny with pride and a clear conscience.

These views were voiced by Dr. Norman A. Hilmar of the Center for Population Research, National Institute of Child Health and Human Development, in discussing how science and technology could provide man with more effective and acceptable ways to control his fertility. Toward this end, Hilmar said, the fundamental studies which should be encouraged in reproductive biology and related fields are those which explore avenues of potential application in the development of effective contraceptive technology for man.

Hilmar asked, How does one decide on the relevance of various developmental, testing, and evaluation efforts for a new birth control technique? As one way to assure increased relevance for the contraceptive development efforts, the Center is seeking ways to characterize the criteria affecting acceptability of fertility control measures. This will be a basis for planning rationally the spectrum of fundamental research, applied research, development, testing, and evaluation to expedite the acquisition of promising new methods, he said.

Effective methods by which couples can control their fertility are the key to the success of the voluntary family planning efforts to which most of the world is committed in word, if not in deed, Hilmar said. He pointed out that experience has demonstrated repeatedly that available and acceptable alternatives to abstinence and coitus interruptus have done more to motivate couples to use such methods than exhortations in the mass media or blandishments from family planning workers. Family planning program operators need improved ways to confront and influence researchers concerned with reproductive biology and contraceptive developments, so that the program barriers stemming from unacceptability of existing fertility control measures may be translated into research and development objectives for focused research.

The needs and opportunities in this regard are many indeed, Hilmar said. And, he went on, all of them are worthy of attention, provided always that their practical application in the management of human fertility can be reasonably assumed if and when the given product or procedure materializes.

Some of the needs which Hilmar mentioned were:

- Simple, reversible methods of sterilization for both men and women, whether by surgical means, improved pills, or long-lasting implants.
- Improved, simplified, and safe methods of performing abortions, whether by chemical abortifacients, classic or vacuum curettage, or by triggering the reabsorption of the fertile egg or embryo.
- Alertness to finding ways to control in advance the sex of unborn infants so that couples may eventually control not only the timing

and number of their children, but their sex as well.

• Simple and effective methods to prevent or correct unwanted infertility.

In Hilmar's opinion, a full array of methods and materials to accomplish these objectives will enormously enhance the attractiveness of family planning services to the many people of the world for whom such services are not yet a practical and available option.

Aim Epidemiologic Strategy At High-Risk Parity Group

In discussing the development of an epidemiologic strategy to reach a high-risk parity group in a family planning program, two New York City physicians, Charles B. Arnold of the Albert Einstein College of Medicine and Sylvain R. C. Fribourg of the Mount Sinai School of Medicine, presented the following assumptions related to three program levels:

• Communitywide, programed fertility regulation is an important factor in the reduction of personal or community poverty, or both.

• A critical, personal precondition for an individual or a group to undergo upward social change (away from poverty) is good personal health.

• The ante-natal and post partum periods can contribute negative health events to mother and fetus-then-infant which can have long-term disability implications for upward social movement (in the physical, emotional, and cognitive health spheres).

• The personal health condition described can be effectively initiated and sustained at the community level through pregnancy prevention and by increasing birth intervals (family planning services).

• The most critical target group to identify in order to meet these assumptions is the women most likely to have lower quality outcomes in their pregnancies—the so-called high-risk parity group. These women make a disproportionate contribution to community poverty and ill health which belies their absolute fertility.

• Family planning programs should try first to reach the high-risk group of women under 20 years old, those with multiparity of five and over, and those with chronic diseases. Pregnancies in this group could lead to maternal disability (or further morbidity for those already disabled) or morbidity producing intrauterine conditions for the fetus, or both, and thus perpetuate the sociobiological linkages with poverty.

• Certain specified outcomes will be forthcoming from the policy, planning, and organizational levels. Not all of these outcomes will be optimal or ideal, however. One must anticipate a certain attainment level of effectiveness from, for example, planning procedures, budget personnel, training processes, staffing vacancies, and distribution problems with contraceptives. In demonstrating a concern (within the context of the evaluation design) for these problems, the evaluator becomes cognizant of "the family planning system." For example, in attempting to lower fertility among the high-risk parity population, an imperative "organizational level" assumption concerns the accessibility and reliability of clinical records or vital event registration, or both, which would assist in the group's identification.

Implications

Arnold and Fribourg foresaw at least three principal implications for population programing in the epidemiologic strategy.

1. It should permit program evaluation to be viewed holistically; thereby some of the problems of partial or fragmentary analysis of program effectiveness could be avoided. Accordingly, a new emphasis would be placed on policy and organizational issues as intervening or control variables.

2. It would draw students of epidemiology, policy, and organization closer together on these theoretical and substantive questions. At the same time, it would encourage a "problem oriented" rather than a single discipline orientation in program evaluation.

3. It would result in more precise "targeting" for population programs by expressly recognizing at the program evaluation level the inherent interrelationships between policy development, organizational issues, personal and societal poverty, health states, and fertility.

Atlanta Area Computerizes Family Planning Data

Techniques of information management relative to the needs of family planning programs are as new as the emergence of large-scale programs in family planning themselves, stated Jack C. Smith and Peter B. Tamblyn of the Family Planning Evaluation Activity, National Communicable Disease Center, Atlanta, Ga. Failure to recognize and fulfill the need for an adequate system of data management will retard the growth of a program. In time, they said, an inadequate data system may limit the ability to provide patient services.

Research at NCDC is directed toward the development of a family planning services data system of maximum utility—one that provides maximum usefulness of data which may be collected within the restrictions necessary to minimize expenditure of time and effort for both patient and clinic staff. To insure this maximum usefulness, the authors said, services statistics are collected in such a way that they can be analyzed at three levels of focus. The equally vital levels provide a focus (*a*) on the overall program to evaluate its success in providing family planning services to the community, (*b*) on each agency to determine its level of activity in providing service and making referrals, and (*c*) on the individual patient to provide effective continuing family planning services.

In Metropolitan Atlanta four agencies—the Emory University Family Planning Program, Planned Parenthood of Atlanta, Incorporated, and the public health departments of De Kalb and Fulton Counties, are the major sources of family planning services for the population that is medically indigent.

Cooperation in Atlanta

Though different in their policies, organization, and methods of delivering family planning services, the

four agencies have a common base of cooperation—the Atlanta Area Family Planning Council. This council is made up of agencies and organizations with a direct interest in the public provision of family planning in Atlanta and is a sounding board for any problems related to the delivery of these services. By agreement of the council, patients from one agency may be referred to and served by another agency.

One of the early problems, the authors pointed out, was finding a common identification scheme to distinguish patients. In developing the Atlanta area family planning services (AAFPS) data system, it was decided to use an existing framework of identification in the community—the Grady Hospital number. This hospital is the major provider of medical care for the indigent segment of Metropolitan Atlanta, and the four agencies participating in the AAFPS data serve, for the most part, the same population.

AAFPS clinics use two data forms. The initial or post partum form, referred to as FP1, is completed for any patient making her first visit that will be reported to the data system or for a former patient whose pregnancy status has changed since her last clinic visit. The FP2, the followup information form, is completed when a patient receives followup contraceptive care.

The FP1 and FP2 are brief, one-page marksense forms and serve a dual purpose. Clinics send the original copy directly to the central processing point and retain the duplicate as a patient record for the visit. A clinic code identifies both the agency and clinics of the agency. Every clinic has a copy of the name, address, and code of all AAFPS clinics, as well as a schedule of family planning sessions. If a patient is transferring to another clinic, the central processing office notifies the clinic to which the patient is referred by sending each clinic a monthly updated printout of the patients scheduled to be seen.

AAFPS Data System Feedback

We believe that feedback is an essential component if a data system is to be useful for personnel at the clinic level and meaningful for program administrators, the authors said. The keywords for feedback are rapidity and simplicity, they further stated.

Feedback from the data system serves as a powerful administrative aid. The system generates the statistics necessary to monitor the progress of each agency as a whole and of each separate clinic.

The AAFPS system aims to facilitate all of the necessary reporting by producing a variety of statistical summaries. Computerized reporting by manipulation of visit record documents sent to the system from the clinic provides the maximum amount of information for individual clinics and agency level reports with a minimum investment of time.

Service statistics extracted at the central processing office onto a one-page monthly fact sheet provide a highly condensed thumbnail summary of each agency's family planning program. The fact sheet, reported Smith and Tamblyn, provides the administrator with a quick review of the last month's performance and a projected patient load for each clinic.

Finally, for the focus on the individual recipient of service, a history file of the visits made by each family planning patient to participating Atlanta clinics is maintained by the computer.

All patients by definition are prospective, delinquent, or inactive, according to the authors. The system produces clinic-specific listings on prospective and delinquent patients each month. These listings include, for each patient, data describing the patient regarding the clinic where she was last seen, type and date of that last visit, method of contraception received, and brief demographic information. As an additional aid to make the individual patient feedback as usable as possible, the patient's name, address, and telephone number appear on each listing provided to the clinic. Key personnel involved in followup care of contraceptors rely on the prospective and delinquent patient listings to provide a current inventory of the activity status of their family planning patients and use both listings to contact patients about clinic visits.

In conclusion, the authors said that future plans call for a study to compare the effectiveness of each procedure in reducing patient discontinuance.

MATERNAL AND CHILD HEALTH

Minneapolis Educates Young Mothers

The Maternity and Infant Care Project of the Minneapolis Health Department and the city's public schools have participated since 1968 in a comprehensive "learning center" program for pregnant school girls, reported Dr. Evelyn E. Hartman, director of maternal and child health of the department. During the 1968–69 school year, a total of 199 girls were enrolled in the program, she said.

The Maternity and Infant Care Project provides a public health nurse and conducts a neighborhood maternity and family clinic in the school facility, and the school system provides the social worker and the counselor. The public health nurse is concerned with the total health needs of the girls, Hartman stated, and particularly with early and continuing prenatal care. The nurse also conducts group discussions on such subjects as the physiology of pregnancy, nutrition, hygiene, contraception, and venereal diseases.

During the 1968–69 school year the public health nurse had contact with 182 of the 199 girls enrolled. A total of 123 or 67.5 percent of the girls were Minneapolis residents. Of these, 59 or 48 percent were from the area served by the Maternity and Infant Care Project. About 19 percent of all the girls were black, 3 percent were American Indian, and the remainder were white. They were from 12 to 19 years old, and about 13 percent were married.

Nearly all of the unmarried girls had received service from a social or welfare agency, but none of the married girls had received such service. All but one of the 182 girls in the group received prenatal care; this one girl delivered a stillborn baby, Hartman said. Five girls were repeating a pregnancy. Most prenatal care was started within 3 to 5 months.

Medical or obstetrical problems were encountered in 43 or 24 percent of the total group, she reported. Among these were three with kidney infections, two with preeclampsia, nine with vaginal bleeding throughout the first 4 months, two with sickle cell anemia, eight with other anemias, four with weight gains, and three with rheumatic heart.

Before the end of the school year, 106 girls had delivered. Two had stillbirths, two neonatal deaths occurred in a pair of twins, and eight births were premature. Five deliveries were made by cesarean section.

Of the girls in the school program who delivered, 62 or 58 percent kept their infants. Of those in the Maternity and Infant Care Project, 76 percent kept their infants.

Many girls drop out of school after delivery because of the lack of infant care facilities, Hartman stated. So that these young girls can become better mothers by learning about infant care and motherhood while continuing their education, an infant developmental center is being jointly planned by educational, welfare, and health agencies.

In interviews after delivery, Hartman reported, 43 percent of the girls stated that they would use some type of contraception in the future, 21 percent were definitely opposed to the idea, and 36 percent were undecided.

Intensive Screening Needed To Detect Plumbism

Two important conclusions can be made about clinical aspects of plumbism in young children, according to Dr. J. Julian Chisolm, Jr., associate professor of pediatrics, Johns Hopkins Medical School, Baltimore, and associate chief of pediatrics in Baltimore City Hospitals: (*a*) early diagnosis on clinical grounds alone is exceedingly difficult if not impossible and (*b*) by the time the clinical diagnosis is obvious, permanent brain damage, which cannot be modified by therapy, may already have taken place. Significant reduction in the risk of permanent brain damage requires identification of the child with an increased body burden of lead before the onset of toxic manifestations, he stated.

Early diagnosis therefore depends on an appreciation of the causative factors, a high index of suspicion, and the availability, performance, and interpretation of certain specialized laboratory procedures. Fundamentally, he said, the diagnosis of lead intoxication depends on the demonstration of an excessive body burden of lead and biochemical evidence of the toxic effects of lead in the body. The content of lead in shed deciduous teeth, the EDTA (edathamil calcium disodium) mobilization test, and the content of lead in whole venous blood provide indices of the body burden of lead. Of these, he said, blood lead concentration is the most useful.

Lead poisoning in childhood is a preventable disease. The knowledge and means of prevention are available, said Chisolm. Treatment, he said, is not uniformly successful in preventing the permanent brain damage that follows acute encephalopathy, and we should therefore concern ourselves far more than we do with primary prevention of the disease.

Intensive screening of high-risk populations certainly is indicated. Of the three techniques available (blood lead determination, lead in hair, and the urine delta-aminolevulinic acid or ALA test) the urine test probably will not prove adequate for this purpose, and the lead-in-hair test requires confirmation. Blood lead determination provides the earliest and most direct index of an increased body burden of lead. Chisolm suggested that efforts be made in the analytic field to improve the technique so that smaller amounts of blood are required for accurate measurement. If this can be achieved, he said, blood lead determinations would be suitable for screening purposes.

A coordinated plan incorporating mass screening of both children and deteriorated housing in high-risk areas, plus the use of organized treatment centers, could do much to reduce the incidence of severe plumbism even today, Chisolm said. However, no treatment program can be successful, he stated, unless the housing hazard is effectively wiped out. Elimination or proper rehabilitation of substandard housing and rebuilding of the inner core of our cities hopefully will eliminate childhood lead poisoning as it is now seen. Until this is done, he said, pediatricians responsible for the care of children residing in hazardous areas must ever be alert to this problem.

Intellect of Low Birth Weight Infants Tested

The effects of two interventive programs of stimulation on measurable intellectual performance of 120 children, aged 2 months to 4 years, were studied by Dr. Margaret I. Williams, department of pediatrics, School of Medicine, and Dr. Sandra Scarr, School of Education, both of the University of Pennsylvania, Philadelphia. The birth weight of each child was less than 2.5 kilograms (5½ pounds), and all were of poor socioeconomic background. Less than half of the mothers had received prenatal medical care, and nearly half had complications of labor or delivery, they said. The majority of infants had postnatal difficulties including difficulty in initiating respiration, respiratory distress, hyperbilirubinemia, and sepsis.

Infants in four age ranges (birth to 1 year and 1 to 2, 2 to 3, and 3 to 4 years) were assigned randomly to three treatment groups:

1. Home visiting with instruction plus provision of educational materials
2. Provision of materials alone
3. No intervention

Group 1 children received both educational toys and tutoring on a regular basis over a 4-month period. The tutoring was carried out by undergraduate and graduate students of education.

Infants under 1 year old in group 1 were not tutored directly, reported Williams and Scarr. In biweekly visits the tutors talked with the mothers about the importance of early stimulation and suggested concrete play activities that the parents might institute with the children. Mothers were encouraged to bring the infants out of their usually dark bedrooms and into the lighted and partially decorated living areas, to put the infants on firm surfaces like the floor so that they could have the experience of locomotion, to give them materials to look at and listen to, and to talk to their infants.

The 1- to 3-year-old children in group 1 received weekly visits during which the tutor played verbal games with the children and instructed the mothers on stimulating their babies. The importance of verbal development for later school achievement was stressed to the mothers, who were encouraged to talk and to read to the children. The toys supplied to these groups, they said, were chosen for concept development, and books were chosen to stimulate speech. Because of the wide differences in age and ability between these age groups, no attempts were made to give identical treatment to all. For the children who were just learning to speak, single words were reinforced. For those whose single words were numerous, short sentences were reinforced. An attempt was made to encourage and reward the child for the next step that he could take in language development.

The 3- to 4-year-old children in group 1 were visited in their homes three times a week by undergraduates who were pretrained to use the Bereiter-Englemann direct verbal training method. They met weekly to discuss the children's progress and to receive more help in implementing the program. Each child was visited by the same tutor for the 4 months of the study, according to Williams and Scarr. The tutors all started with the beginning language program. Some children progressed faster than others, and at the end of 4 months substantial differences existed in their language levels despite the fact that all had received equal tutoring time.

Group 2 children received the same educational materials at each age as did the children in group 1, but no tutoring. Group 3 children received neither toys nor tutoring.

All the children were tested with measures of motor functions, social maturity, and intellectual ability before and after the 4-month period of intervention. The data were analyzed for treatment effect and for interrelation of treatment and neurological status.

The gain in each area was found to be largely dependent on neurological status, reported Williams and Scarr. Children with neurological impairment gained less from treatment than those who were unimpaired. The neurologically normal infants of group 1 showed significant improvement over group 3 in verbal performance. The neurologically damaged infants of group 1 showed improvement in social maturity measures. No treatment effect was seen in group 2.

These results, they said, suggest that learning ability in low birth weight infants is directly associated with central nervous system damage.

Multiservice Program Helps Pregnant Teenagers

A special multiservice program for pregnant girls under the age of 18 is co-sponsored by the Comprehensive Care Program for Children and Youth at Mount Zion Hospital and the San Francisco School District, in California, reported Dr. Ruth Gross and associates at the hospital and medical center in San Francisco. The program, housed at the hospital, serves no more than 35 girls at one time from a neighborhood poverty area. They receive comprehensive medical and obstetrical care; regular schooling; education in health, nutrition, and family planning; skill assessment and development; and psychological support through individual and group counseling. Their infants are eligible for comprehensive health care and enrollment in a special well-baby clinic held in the evening.

During 2 academic years, 122 girls were enrolled in the program. All but two were black. At the end of the first 2 years, efforts were made to assess the effectiveness of the program.

The target group was limited to 82 black primiparas, 18 years of age or younger, who had participated in the special program and delivered their infants at Mount Zion Hospital. One control group included 108 black primiparas in the same age range who delivered at Mount Zion Hospital during the same period as the target group but were not enrolled in the multiservice program. A second control group of 119 black primiparas, aged 20 to 30, also delivered at Mount Zion.

More than half of the mothers in the target group began their obstetrical care in the second trimester, said Gross and associates. They could not obtain comparable information for the control groups.

One statistically significant finding, they said, related to the incidence of low hemoglobins at term. Values at term of less than 10 grams were encountered in only 3 percent of the target group as compared with 16 percent of the teenagers not served by the program.

The incidence of fetal wastage (stillbirths and neonatal deaths) was higher among the offspring of the older group than among either teenage group, they reported. The birth weights of the infants in the three groups were of particular interest because of the observations of others that teenage pregnancies are associated with the increased incidence of low birth weight infants. In this study, the percentage of infants weighing under 2,500 grams was 7 percent in the target group as compared with 15 percent in each of the two control groups.

Seventy percent of the infants of the target teenagers are enrolled in the comprehensive program at Mount Zion Hospital, said Gross and coworkers. Fifteen percent receive private care, and the status of 15 percent is unknown. Among those enrolled in the program, the attendance at the special well-baby clinic is outstandingly good (76 percent).

Preventable morbidity (seven falls, one burn, and two ingestions) was noted for 10 infants. Two infants had preventable deaths. One

died at 6 weeks apparently from suffocation while sleeping with her mother, and one died at 4 months of heat exhaustion after being left for a prolonged period in an overheated room. Three infants of less than 3 months were deserted by their mothers.

All infants in the program received developmental screening tests at 4 months, 7 months, and 1 year. No evidence of developmental retardation has been observed, they reported.

Sixty-two girls in the target group were interviewed by questionnaire in the followup study to assess psychosocial and educational aspects, they stated. Three-fourths of the girls had returned to school or were intending to do so. One-third professed interest in continuing their education after high school, either in college or a vocational training program. Child care problems among the one-fourth who dropped out of school accounted for only three of the stated reasons for dropping out. Among the other reasons mentioned were desire to stay home, unsatisfactory course work or school placement, or a second pregnancy.

Almost all the infants were assessed by their mothers to be healthy and happy. However, more than half of the young mothers feel that they have health problems: back trouble, anemia, overweight, infection in the uterus, bleeding, and so forth.

Seventy-five percent stated that they are or will be using a contraceptive; most commonly, the pill. The remainder claimed, mainly, that they have no need for contraception.

Ten percent of the girls are known to have had a second pregnancy, reported Gross and associates. Of the group interviewed, 15 percent are married and 25 percent have plans for marriage—approximately half of this number to the father of the baby.

Supportive services, counseling, and vocational guidance for teenage mothers should be continued for a substantial period after the pregnancy, the authors stated. Infant day care facilities acceptable to the young parents should be readily available. The most essential requirements for the achievement of long-lasting results in programs such as this one are the most difficult to implement, they said; namely, the economic and social changes necessary to alter the life style of these girls.

Parents' Role is Primary In Seeking Medical Care

Much of the literature concerning public health addresses itself to the medical problems of the poor by focusing on the need for accessible facilities. The experience of the Bowen Center indicates that the role of the parent as the agent for acquiring medical services should be a primary consideration in determining the medical care delivery system. This is the view of Barbara J. Cherry, assistant director and caseworker of the center, and Alma M. Kuby, research associate, American Hospital Association, Chicago.

The Bowen Center serves multiproblem families in which the children are neglected or abused. It is a 5-year demonstration project, funded by the U.S. Children's Bureau, and operated by the Juvenile Protective Association of Chicago. During 3 years of operation, the center has been actively engaged with 36 families that are typical of a protective caseload—families in which parental functioning is so impaired that some outside source has seen fit to seek the intervention of an agency without the request of the parent. The referring agencies made it clear in several instances that they viewed the Bowen Center as a final resource for help. The parents' failure to seek or use necessary medical care was the actual basis of 12 referrals.

When processing these cases, Cherry and Kuby reported, the center staff rated each family for various aspects of parental functioning. Three-fourths were rated as demonstrating severe or gross neglect in providing medical care, meaning that in 27 families there was emergency care only or no medical care at all.

The experience of obtaining medical care for multiproblem families indicates that a distinction should be made between two types of neglecting mothers, they said: those who minimally recognize the need for medical care and who fail in their attempt to deal with the complex health care system, and those who are so disturbed in their parental functioning that they can neither identify medical problems in their children nor respond to their pain or discomfort.

The abusing or neglecting behavior of a parent that brings the family to the attention of a protective agency is always accompanied by a host of problems: marital instability, poverty, physical or mental illness, antisocial behavior, and other. The parents usually are the products of deprived childhoods in which normal growth-producing experiences were denied to them. Fixated at an early emotional level, they seek desperately to fill their unmet needs through avenues that further deplete their lives—drinking, sexual promiscuity, criminal behavior, and exploitation of the spouse or children. The overwhelming factor is that rarely in the lives of these families is there an area that is not filled with problems, they said. Some members may withdraw into shells of apathy and despair while others act aggressively against their environment.

Life in such households is sheer chaos, they said, having no routine or structure. Meals are not prepared. Clothes are not washed or ironed, and sometimes not even picked off the floor. The apartments are drab, dark, and frequently foul smelling. Any money that becomes available is spent immediately and impulsively. The children are left alone and unsupervised to manage for themselves. Disaster is always just around the corner: an eviction notice, a wage garnishment, a school suspension, or an unwanted pregnancy. These families are suspicious of outsiders, fearful of the unknown, and uncommunicative in most encounters. Life for them is a depressing ordeal, and it is almost impossible for them to experience pleasure or genuine enjoyment.

Approaches to the delivery of medical care for these types of families must be different, said Cherry and Kuby. Experience at the center has shown dramatically that when several disciplines—medicine, social work, nursing, psychology, education—pool their knowledge, commitment, and support, the neglecting

parent and his family can be helped.

We share the belief of those who see neighborhood-based clinics as an appropriate start in helping such families, they said. When parents think a health setting has something to offer them, they are more likely to let their children become involved. We know that placement and coverage are not enough to involve these parents. We must pursue them, understand them, and tolerate them.

NYC Incentive Program For Nurse-Midwives

In 1968 the New York City Department of Health instituted a nurse-midwifery service through its maternal and infant care projects. The mission, reported Dr. David Harris, deputy commissioner, and associates at the department, was to stimulate the use of certified nurse-midwives in patient care—a goal long encouraged by health care planners.

A 25-page guide for the development of the service was distributed to 12 hospitals where maternity care services were affiliated with the department's maternal and infant care projects. The guide recommended that nurse-midwifery services be developed in the major hospital-clinic affiliation programs as rapidly as funds and personnel were available. As incentive, the director of nurse-midwifery services of the health department offered to recruit certified nurse-midwives. In addition, she would screen them for eligibility for a New York City permit to practice midwifery and recommend the appropriate salary for each certified recruit. Salaries would be quoted according to the nurse-midwives' educational preparation and experience. With the concurrence of the chief of obstetrics in each participating hospital, the central office of the maternal and infant care projects would assign the certified nurse-midwife for employment by the hospital.

Employment arrangements, according to Harris and co-workers, were made with the understanding that the nurse-midwife would devote approximately half of her time to project clinic patients in the community and half to the care of patients in the hospital. The project reimburses the hospital for half of the nurse-midwife's salary.

Guidelines for establishing a nurse-midwifery service include job descriptions for certified nurse-midwives, a patient-care program chart, and an organization chart describing the dual responsibilities of the nurse-midwife within the community-based maternal and infant care clinics and the hospital inpatient services. Medical supervision is provided at all times, they reported, and coordination is accomplished by the director of nurse-midwifery services through the central office of the maternal and infant care projects.

The response of the affiliating hospitals to the nurse-midwifery service program has exceeded expectations, reported Harris and associates. Since the inception of this program, they said, 10 nurse-midwifery service affiliation programs have been established. Two services were established where in the past only a nurse-midwifery education program functioned. Five totally new nurse-midwifery service programs were initiated in hospitals that never before had employed nurse-midwives in any capacity. Three other hospitals have requested certified nurse-midwives for service, they reported, and the nurse-midwives are currently being recruited. Initiation of these additional services is expected in the spring of 1970.

In a survey conducted by the department (June 1968–May 1969) 41, or 85 percent, of the sample nurse-midwives reported that they attended 625 post partum, 960 family planning, and 1,815 combined post partum-family planning sessions. Projecting that the average certified nurse-midwife sees a minimum of 10 patients a session, the investigators estimated that 34,000 of New York City's post partum or family planning patients were cared for by certified nurse-midwives during the 12-month period of the survey.

In contrast to her European counterpart, the U.S. nurse-midwife always functions within a medically directed health service. She is part of the obstetrical team. Since she is never an independent practitioner, the ultimate responsibility for the patient continues to remain with the medical staff. According to Harris and associates, a potential solution to manpower needs in obstetrics exists in New York City in the person of the nurse-midwife.

Degree of Success Noted In Preventing Plumbism

Morbidity data in recent years tend to suggest a degree of success in the control of lead poisoning in Baltimore City children, according to Dr. Emanuel Kaplan, chief, division of biochemistry, Maryland State Department of Health, and chairman, Lead Paint Poisoning Prevention Committee, Baltimore City Health Department.

In the 3-year period 1967–69 there were 141 combined instances of clinically diagnosed lead paint poisoning and abnormal absorption of lead as compared with 276 instances in the prior 3 years 1964–66—a drop of almost 50 percent. Factors that undoubtedly have played a role, Kaplan said, are continuous education and enforcement activities of the city health department, efforts of local hospital pediatric services, establishment of comprehensive health care clinics for children in the susceptible age living in high-risk areas, family planning, and an improved social climate.

Other contributing factors affected about 15 percent of the approximately 290,000 dwelling units existing in Baltimore in 1960, he stated. These factors included the demolition of almost 10,000 dwelling units, largely in the inner city, for urban renewal and as sites for schools and expressways and the placing of an additional almost 40,000 dwelling units under multiple family dwelling rental inspection, which requires smooth walls that must be free from flaking paint. There also was a reduction in occupancy of some structures to avoid the need to apply for a multiple family dwelling license, with its risk of violation notice to correct structural defects.

Despite these apparent gains, said Kaplan, the eventual elimination of childhood lead poisoning undoubtedly depends mainly on the improvement or elimination of substandard housing.

SCHOOL HEALTH

Some Things We Need In Sex Education

The needs in sex education are clear, resounding, unmistakable, personal, and compelling, in the words of Dr. Delbert Oberteuffer, editor of the *Journal of School Health.* But, he went on, to know what we are doing requires more than knowledge of the needs people have for information and counsel. Many people just stumble into and across this volatile area, teaching little more than the mechanisms and geography of the reproductive system. However, if a teacher were to delve into the subject matter he would have the opportunity to organize a rich educational experience and to explore the most significant and important aspects of life.

From childhood to old age, man has problems—both personal and social—as he tries to adjust to a society with moral standards that proscribe his sexual activity. Thus, Oberteuffer recommended, good teaching must become more than transmission of static knowledge which has no relevance to ongoing problems. To affect behavior and to produce development are in the long run the principal goals of education. And, to achieve these, far more than the anatomy of the parts is needed, he said.

It is good to be knowledgeable about pregnancy or less than terrified at the first nocturnal emission, and it is good to be supported by standards and values as one feels the first temptation to do what seems to come naturally. And, Oberteuffer continued, it is also good to know some things about the social problems of child neglect, child abuse and abandonment, illegitimacy, and abortion. Discussion in these areas is within the broad scope of sex education.

However, Oberteuffer pointed out, subjects such as predetermination of sex, designing offspring for special jobs and environments, use of artificial insemination, generation without sperm or egg, causes and prevention of divorce, biological origins (or lack of them) in our religious or moral codes are as much a part of sex education as are birth control, the population explosion, and contraception. Of course, he cautioned, all these subjects should be taught within the existing legal boundaries and community limits.

We have to understand, Oberteuffer went on, that sex education is inescapably related to the great religious doctrines of every culture in our society. We may think we can teach without concern about the Christian doctrines relating to chastity, monogamy, or divorce, or the Judaic or Moslem or any other religious admonitions about modesty or privacy or marriage customs—but we cannot.

Seeking to allay the fears of some about sex education in schools, Oberteuffer said that no diabolical plot exists to undermine the teachings of any religion. True, he said, there may be capricious sensationalists among our teachers who may disturb their charges, but they are few compared to the number of teachers who seek only to substitute enlightenment for bewilderment and ignorance and to provide substance to be used in the decision-making process so prominent throughout our lives.

Do Problem Children Become Problem Adults?

Current research supports the theory that a relationship exists between early behavior problems and later deviant behavior. Thus, a study was undertaken to determine whether adolescents who are classified as behavioral deviants can be identified during the elementary school years. Ninety-three percent, or 478 children, of a random sample of children who had been studied previously were used for this study.

According to Dr. Carl O. Helvie, Duke University School of Nursing, Durham, elementary school variables (predictors) were related to adolescent behavior (criterion) to determine their relative predictive value. Available elementary school variables included race, sex, teachers' and psychiatrists' ratings of childhood behavior, school attendance, grade level, IQ scores, standardized reading and mathematics scores, number of siblings, position in family, parents' education, number of marriages for mother, working status of mother, and parental supervision of the child.

High school variables included areas of achievement such as IQ, reading and mathematics level changes, grade level change, and low school grades. Areas of adjustment included school dropout, school special service records, juvenile court records, truancy, and high residential mobility. Predictor variables for each adolescent behavior were identified, and scoring instruments for them were developed and tested for their sensitivity and specificity.

Findings

The teachers' and psychiatrists' evaluations of the behavior of specific elementary school children differed in their value as predictors of adolescent behavioral patterns for all the criterion variables except IQ change, for which both ratings were equally predictive. For psychiatric services, the ratings by psychiatrists were slightly more predictive than those by teachers, and for all other criterion variables the teachers' ratings were far more predictive than the psychiatrists' ratings.

In general, the IQ, achievement, and social variables all had predictive value and thus confirmed the hypotheses that IQ and achievement test scores recorded while the child was in elementary school will have predictive value for various adolescent behavior patterns and that data on conditions existing at a point in time during elementary school years will have predictive value for various adolescent behavior patterns. However, Helvie pointed out, a wide range was seen in the value of these variables as predictors.

Generally, combined ratings by teachers and psychiatrists, teachers' ratings, attendance, IQ scores, grade level, and psychiatrists' ratings were good predictors of all adjustment

categories. Social class, mathematics and reading scores, race, and sex were borderline predictors; that is, Helvie explained, they had fairly high predictive value for some adjustment variables and low values for others. Working status of mothers, position in family, number of marriages for mothers, parental supervision, and number of siblings had slight predictive value.

In all instances, Helvie reported, the prediction instruments reached a higher sensitivity and specificity than a chance 50–50. This confirmed the hypothesis that by combining the judgmental, achievement, social, and personal variables observed in elementary school, which are most predictive of adolescent behavior patterns, it will be possible to devise instruments to identify high-risk groups (of adolescent behavior difficulty) during elementary school years at significantly higher than chance 50–50 odds. The validity of all instruments in their order of importance was truancy, juvenile delinquency, school dropout, mathematics retardation, reading retardation, psychiatric services, school grades, family mobility, grade retention, special services, and IQ drop.

When variables were combined to develop an instrument for predicting truancy, delinquency, and school dropout, the sensitivity of the instrument was between 81 and 82 percent and the specificity was between 73 and 80 percent.

Helvie concluded that, after further validation, these instruments should assist future casefinders in identifying high-risk elementary school children for referral.

Migrant Education Program Includes Health Services

The experiences of California's migrant education program illustrate the extent of health services which can be provided under the Elementary and Secondary Education Act, according to Dr. Victor Eisner of the University of California School of Public Health, Berkeley. For example, he said, in one county the project administrators established three clinics with project funds. They were staffed by project nurses and aides and by part-time physicians.

At these clinics, held weekly, children 2–17 years old received health appraisals, immunizations, and treatment of minor illnesses. For services not provided in the clinics, referrals were made to health department clinics for migrants, to private physicians, and to local hospitals, and, when necessary, project funds were used to pay for these services.

The project also provided an outreach service through its nurses and aides who were based in the migrant camps; they worked in the project schools and day care centers and also visited all new families in the camps. An informal agreement between the camp nurses and the county public health nurses had reduced duplication of effort, so that county nurses provided similar outreach services for migrant families living outside the camps.

In addition, project funds were used for dental treatment in a mobile four-chair experimental unit from the University of California School of Dentistry in San Francisco. The use of nurses, aides, and teachers for intensive family orientation and education resulted in efficient use of the dental unit and enabled most of the children in camps to receive complete restorative care, Eisner reported.

Such extensive health services will be included in educational programs only if health personnel take an active part in promoting them, Eisner stated. Few educators are familiar with the details of planning effective health services nor do they generally know what outside health resources in a community should be coordinated with school programs. On the other hand, he pointed out, health personnel are frequently unaware of the new potential of school health services.

Traditionally, school health services have emphasized casefinding and referral. In areas where children receive adequate health care outside of school, this has proved sufficient, Eisner said. In poverty areas, it usually is not. This is why title I of the Elementary and Secondary Education Act provides funds for treatment and for necessary ancillary services, he explained. Project funds may pay for dental care, as described, and they may be used to pay for service at existing facilities or to set up new facilities. They may also be used for supporting services, such as transportation and interpretation. Eisner believes that an investment of health personnel time in coordinating and improving these programs can result in substantial additions to the health care of children served by these projects.

In Eisner's opinion, the wide range of options allowed in these projects is at once their strength and their weakness. While it allows flexibility in meeting local needs, it carries the risk that programs will be poorly designed and therefore ineffective. He recommended that health agencies provide support and guidance to these new school health programs. In turn, he concluded, school health can become a valuable part of a community's health resources.

Reading-Spelling Patterns Clue to Dyslexia Subtypes

The identification of three main subtypes of developmental dyslexia on the basis of three distinctive reading-spelling patterns was revealed by Dr. Elena Boder, pediatric neurologist, School Health Centers, Los Angeles City Schools.

According to Boder, the three dyslexic reading-spelling patterns appear to be specific and suggest a useful direct diagnostic approach to classifying dyslexic children into three clinical subtypes.

One or another of these three patterns has been found in all severely retarded readers who fulfill standard diagnostic criteria for developmental dyslexia, she reported. These patterns have not been found among normal readers and spellers. A direct correlation has been found between the reading and spelling performance of a dyslexic child, thus, his reading and spelling are mutually predictive.

Boder's definitions for the three main subtypes of developmental dyslexia follow.

Dysphonetic group. The reading-spelling pattern of children in this group reflects a primary deficit in letter-sound integration and in the ability to develop phonetic skills.

They read globally, responding to whole words as configurations, or gestalts. Lacking phonetic skills, they are unable to decipher words that are not in their sight vocabulary. Their numerous misspellings, being nonphonetic, are unintelligible. Their most striking errors are semantic-substitution errors—for example, reading "funny" for "laugh" or "chicken" for "duck."

Dyseidetic group. The reading-spelling pattern of children in this group reflects primary deficit in the ability to perceive whole words as gestalts. They read phonetically, sounding out most words as if they were being encountered for the first time. Their misspellings, being phonetic, are intelligible.

Dysphonetic and dyseidetic group. Children in this group are deficient both in developing phonetic skills and in preceiving whole words as gestalts. Without remedial reading instruction they tend to remain alexic, or nonreaders.

Since these three dyslexic patterns reflect a child's strength as well as his weakness in the visual and auditory processes prerequisite to reading, they appear to have prognostic and therapeutic implications differing for each of the three subtypes, Boder stated.

Ex-Addicts Help Teachers In Drug Education Program

Reporting the results of an experimental program in which four former narcotics addicts were invited to help health education teachers present curriculum materials on drugs, Prof. Gilbert L. Geis of the School of Criminal Justice, State University of New York, Albany, said that the students emerged with attitudes considered by health educators to be more desirable than those of control students. The experiment was conducted in two East Los Angeles junior high schools during the 1968–69 school year.

Tests administered at the beginning and end of the school year to the program pupils as well as to control pupils, who were receiving the standard drug education course in two other junior high schools, revealed that the experimental pupils also had acquired more accurate information about drugs than the control pupils, according to Geis.

Initially, individual ex-addicts met with classes. To add interest to the program, however, this was changed to panel discussions with all four former addicts. Generally, the ex-addicts told their personal stories, and students questioned them regarding further details of their experiences. Then the students posed questions about drugs in general and the effects of particular drugs. The female member of the panel was usually asked about the relationship between drug use and pregnancy and the effect of drugs on newborn children.

One panel discussion uncovered a striking concern among the pupils as to the effect that addicted parents or relatives might have on them. A visiting nonaddict panelist who had had such an experience reported that she had escaped her home environment relatively unscathed, much to the relief of some pupils who had questioned her closely about her early home life.

Marihuana

The most difficult questions the panelists had to contend with related to their views on marihuana and the possibility of its legalization, Geis reported. The problem stemmed from the ex-addicts' conviction that the drug was quite harmless and that enforcement efforts to suppress it created more problems than they resolved. However, the ex-addicts knew that their views were not shared by the school authorities and believed that they were obliged to mask them. In one discussion, a panelist was asked if he would smoke marihuana if it were legal, and he readily said that he would. According to this ex-addict: "The school program coordinator really chewed me out about it. He said we were not supposed to say that."

Subsequently, the ex-addicts developed a pattern of fencing with questions about legalization of marihuana. They also became more unrelenting and categorical in their verbal opposition to all drug use. To illustrate, Geis cited the following classroom discussion which took place late in the program:

Question: What do you think about legalizing marihuana?

Ex-addict 1: There are pros and cons, but I'm not for it.

Ex-addict 2: Do you kids have any opinions? [No response.] Well, we have one legal drug already, alcohol. And we have accidents, ruined marriages, and all of that sort of thing. I wonder why we need another legal drug like marihuana.

In this discussion, Geis pointed out, ex-addict 2 was the same man who had been taken to task because of his pro-marihuana statement.

Conclusion

The experimental program was not renewed for the 1969–70 school year because of lack of funds and because disenchantment and a sense of battle fatigue among the participants replaced the sense of mission and discovery necessary to launch the program, according to Geis. In his opinion, the failure to proceed, amend, and refine the program must stand as a fault of the original blueprint which was not able to incorporate procedures necessary to produce at least program continuity based on satisfactory test results, if not good will.

On the other hand, Geis believes, the program contributed important information for the long-term debate regarding the efficacy of drug education and the use of former addicts in combination with health education teachers. Pupils from both the experimental and control schools are being interviewed for information on their drug habits, if any, a task essential to further evaluation of the program. Among other things, he concluded, this inquiry should provide information about the fundamental effects of the program as well as insight into the relationship between information regarding drugs and the use of drugs.

Screen Children's Urine for Kidney Disease Symptoms

Since chronic renal insufficiency probably begins in childhood, an effort is being made in Galveston County, Tex., schools to determine

the risk factors in acquiring this disease. Reporting the results of the first two annual examinations of some 10,000 children, Dr. Warren F. Dodge, department of pediatrics, University of Texas Medical Branch, Galveston, and associates said that children with detected abnormalities have shown no predilection for specific socioeconomic or ethnic groups. Further, persistent abnormalities have been detected in a larger number of children than the number in whom the abnormalities would progress to chronic renal insufficiency. Thus, they said, additional years of followup are required to define accurately the "at risk" group of children.

The ethnic distribution of the children currently being studied is 62 percent Anglo-American, 28 percent Negro, and 10 percent Latin-American. These children were examined initially during the 1967–68 school year, while in the first to the third grade and aged 6–9 years. At present the longitudinal investigation is in its third year, and children in the third to the fifth grade are being examined.

The examination at school includes determination of height, weight, arm circumference, blood pressure, and collection of clean voided urine specimens for quantitative culture and urinalysis. Children with abnormalities are promptly retested two more times. Also, children with persistent abnormalities are tested three times during the next school year.

Demographic data and medical histories are obtained by interviews with a randomly selected proportion of parents during the summer school vacation. To date, the parents of about 3,000 children have been interviewed. According to the authors, when appropriately weighted, this interview sample represents a 24 percent cross section of the study population. Additional medical information is obtained from a child's physician 3 months after an observed abnormality is reported to the parents and the physician.

Prevalence rates for significant bacteriuria, proteinuria, hematuria, glucosuria, and hypertension were determined during the first and second year and incidence rates during the second year. No statistically significant differences for the first year prevalence rates were observed when analyzed by socioeconomic and ethnic groups. No difference in blood pressure was noted for children with bacteriuria and proteinuria. During the second year bacteriuria recurred in 50 percent of the children and proteinuria persisted in 60 percent.

Results of subsequent annual examinations of children in whom abnormalities persist for 1 year will allow reduction of the at-risk group to children in whom the abnormalities persist or recur over a period of several years, Dodge and associates said. The children with persistent abnormalities for several years are most likely to suffer chronic renal insufficiency, and they comprise the group for whom accurate predictors can be developed propitiously. Use of such predictors in the future will permit more prompt selection of those children (with early evidence of renal disease) for whom early appropriate therapy is indicated. This, in turn, should allow more effective control of chronic renal disease, the authors concluded.

CANCER

Genetic-Environmental Role Seen In Some Neoplasms

In 171 cases of primary central nervous system (CNS) neoplasms collected during the 18 months of a four-hospital study in Minnesota in 1963–64, 157 patients were successfully matched with 157 controls for such variables as hospital of admission, sex, age, race, geographic area of residence, and locale of residence: urban, rural nonfarm, or rural farm. (See table.)

Of the study group, brain tumors that were clinically highly suspect in 31 patients remained histologically unverified at the termination of the study. In the 126 histologically verified cases, age, sex, and type distribution were closely comparable to the distribution of primary CNS neoplasms in the mortality data of a Minnesota study in 1958–62, reported Nung Won Choi, of the University of Manitoba, and associates at the University of Minnesota and the Medical College of Georgia.

In the 1963–64 study, they stated, a familial aggregation of "brain tumors" was observed among relatives of the study subjects. No specific association was found among the groupings of tumor types and ABO blood type and Rh positivity. On the basis of the observed familial aggregation, the possible role of a genetic factor in the genesis of CNS neoplasms cannot be rejected, they said.

The possible importance of extrinsic factors in the genesis of the neoplasms, especially gliomas in young children, was hypothecated on the grounds that considerably higher proportions with a history of abnormal delivery (that is, instrumental delivery, cesarean section, and so forth) among the study subjects was reported. A significant association also was noted between the occurrence of gliomas and a history of previous abortions occurring to the mothers of the study subjects.

A relation between primary CNS neoplasms and past medical history concerning various illnesses and

Types of CNS neoplasms in Minnesota four-hospital study, 1963–64

CNS neoplasm	Number
Gliomas:	
Unclassified and mixed	6
Astrocytoma	35
Glioblastoma	23
Medulloblastoma	6
Ependymoma	7
Acoustic neuroma	8
Neurofibromatosis	2
Meningioma	24
Pituitary tumor	3
Blood vessel tumor	3
Pinealoma	1
Craniopharyngioma	4
Tuberous sclerosis	1
Miscellaneous tumors	3
Clinical cases not yet diagnosed pathologically	31
Total	157

brain trauma was not, for the most part, substantiated in this study except for a significant association of the neoplasms with certain symptoms noted before diagnosis of such neoplasms; for example, between gliomas and "convulsions," "trouble with the central nervous system," "eye troubles," "enlarged glands," and so on. The possibility that such clinical phenomena could be the result of tumor development, they said, was not ruled out.

Analyses of history of cigarette and alcohol consumption resulted in a negative association with the neoplasms, they reported, while no association between the neoplasms and pipe or cigar smoking was noted.

According to the evidence, they said, it appears that both genetic and environmental factors may share a role in the genesis of certain CNS neoplasms, especially gliomas.

Rhabdomyosarcomas, Genes, and Environment

Death totals and mortality rates for rhabdomyosarcomas from 1960–64 were studied by Dr. Frederick P. Li and Dr. Joseph F. Fraumeni, Jr., of the National Cancer Institute. A total of 376 white, 40 black, and two other nonwhite children died of the disease during this period (see table). The overall mortality rate was less than two per million per year. Although the rates for whites were higher than for nonwhites, they said, the difference may be partially attributed to more complete ascertainment among whites. The sex ratio, male to female, was 6:5.

The rhabdomyosarcomas occurred most often in the head and neck areas, the urogenital organs, and the extremities—as reported in other studies. No clear age or sex differences occurred by site, except that 18 to 21 children with tumors of the upper extremities were boys.

Rhabdomyosarcoma may occur in infancy and show a peak mortality before 4 years of age, indicating that the neoplasm may arise *in utero* or soon after birth. Of particular interest in the study was the occurrence in five families of a high frequency of soft tissue sarcomas in the children and of breast and other types of cancer in parents, grandparents, and other young relatives. Neoplasms associated with rhabdomyosarcoma may include adrenocortical carcinoma and brain tumor, which occurred in the first-degree relatives of two other children in the study. The familial patterns seen with rhabdomyosarcoma, while suggesting the role of inheritance, may result from an interaction of genetic and environmental factors.

These findings suggest that identification of oncogenic agents and mechanisms in human cancer may be enhanced by the use of familial cancer aggregations for laboratory and further epidemiologic studies.

Aberrations and Cancer Among A-Bomb Survivors

Ionizing radiations induce somatic mutations in man, as in other species, that are sometimes detectable in the form of chromosome breaks and rearrangements. It seemed to us, said Dr. Arthur D. Bloom and associates of the Atomic Bomb Casualty Commission and the University of Michigan Medical School, that the populations of Hiroshima and Nagasaki might serve as a model by which the types and frequencies of detectable somatic mutations might be correlated in a prospective manner with the development of clinical disease.

To that end, they said, they began to screen cytogenetically all available heavily exposed persons in these cities, using the easily applicable peripheral blood culture technique. By obtaining data on the frequencies of aberrations found in the circulating lymphocytes, they stated, they could expect to have a measure of the load of aberrations to which these populations are subject, assuming that if lymphocyte aberrations were present, chromosomal aberrations also would be present in the cells of many other tissues.

Several interesting findings emerged from these cytogenetic studies, Bloom and co-workers said. Clear age differences occurred in the frequency and types of observed aberrations. Among 94 younger survivors exposed to more than 100 rads, the frequency of cells with dicentrics, rings, and fragments was 0.5 percent—almost precisely the same as among 77 older exposed persons. Yet the proportion of cells with balanced translocations or pericentric inversions was only 0.1 percent in the younger subjects, 20 to 49 years old, and 1.1 percent among those between 50 and 88 years old.

Furthermore, a recent review of

Number of deaths and mortality rates per million per year for rhabdomyosarcoma in U.S. children, by age at death, sex, and color, 1960–64

Color and sex	0–4 years		5–9 years		10–14 years		0–14 years	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
White:								
Males	97	2.17	67	1.56	42	1.07	206	1.62
Females	94	2.19	54	1.31	22	.58	170	1.39
Nonwhite:								
Males	14	1.79	2	.29	5	.84	21	1.01
Females	5	.64	8	1.15	8	1.35	21	1.02
Total	210	2.03	131	1.33	77	.87	418	1.44

248 additional exposed persons showed roughly a linear increase in the frequency of cells with dicentrics, rings, and acentric fragments, with increased dosage in subjects estimated to have been exposed to from 100 to more than 700 rads. Increased translocations and inversions also were seen, though not linearly related to the estimated exposure dose.

Generally, Bloom and associates reported, 35 to 62 percent of all subjects estimated to have been exposed to more than 100 rads will have at least one or two cells, in 100 cells examined, with complex chromosomal breaks or rearrangements. The proportion of cytogenetically abnormal cells in any one person, they stated, will vary with age at time of exposure and with exposure dose.

While these aberrations per se are not indicative of any radiation-induced disease, their potential relationship to neoplasia is important, said Bloom and co-workers. Long-term, continued medical and cytogenetic surveillance of the A-bomb survivors will hopefully tell us whether or not induced aberrations, whether viral, drug, or radiation produced, are of biological importance to man.

Carcinogenesis in Youth

Since 1946 the Atomic Bomb Casualty Commission has maintained continuous surveillance of leukemia cases in the cities of Hiroshima and Nagasaki, according to Dr. Kenneth G. Johnson, professor of public health, Cornell University Medical College. During 1946–64, leukemia developed in 160 persons who were up to 1,500 meters (0.932 mile) from the hypocenter and in 166 persons who were beyond 1,500 meters but within 10,000 meters (6.2137 miles) of the hypocenter. A total of 412 persons beyond 10,000 meters and not in the city also developed leukemia during this period.

The largest number of cases, mostly chronic leukemia, occurred during 1946–55, said Johnson. During 1950–54 the average annual rate of leukemia in persons exposed up to 1,500 meters was 48 cases per 100,000 persons per year. The rate was 37 during 1955–59 and 14 during the period 1960–64. Corresponding rates per 100,000 persons per year exposed beyond 1,500 meters were two in 1950–54, four in 1955–59, and two in 1960–64, representing a 24-fold increase of incidence during the period 1950–54, a ninefold increase during 1955–59, and a sixfold to sevenfold increase even as late as 1960–64.

Apart from the magnitude of the differences between the rates for those persons within and beyond 1,500 meters, the highest incidence was observed during 1955–59 in persons who were less than 14 years old at the time of the bombings, Johnson said. In this group of young persons the incidence of chronic leukemia, which usually occurs later in life, accounted for more than half of the total incidence of leukemia during the same period.

Persons in early life were at greatest risk. They developed a type of chronic granulocytic leukemia not usually seen in childhood. The Atomic Bomb Casualty Commission has to date detected no excess of leukemia in persons who were *in utero* at the time of the bombings or who were conceived after 1945 by parents who were atomic bomb survivors, according to Johnson.

Increased rates for other types of cancer have been detected at sites that would be expected to have been heavily irradiated, Johnson said: the marrow, thyroid, breast, and lung. The relationship is strongest for leukemia and weakest for lung cancer. Leukemia appeared 6 to 7 years after the bombing while solid tumors have just begun to appear, 15 to 20 years later. Studies with different kinds of human exposure to ionizing radiation showed that the young are at particularly high risk.

Heavy Irradiation May Not Cause Leukemias

A retrospective cohort study of leukemia incidence among patients irradiated for benign and malignant gynecological disorders has been reported by Joseph K. Wagoner of the National Cancer Institute. A total of 1,893 patients having benign uterine disorders and 7,835 patients having uterine malignancies, diagnosed and irradiated during 1935–64 in medical centers within Connecticut, were followed through 1966.

Comparison, he said, was made between the risk of developing leukemia among each of the gynecological cohorts with that expected on the basis of age-calendar time specific incidence rates for the general female population of Connecticut. A significant excess of leukemia (12 compared with 5.18 $P<0.05$) was demonstrated only among patients irradiated for benign gynecological disorders.

A study of the quantitative relation between irradiation and leukemia showed that the age-standarized incidence of leukemia decreased from 56.30 per 100,000 women per year at the lowest (mean marrow dose range, 40 rads to 126 rads) to 18.61 at the highest (mean marrow dose range, 300 rads to 1,500 rads) dose cohort, Wagoner reported.

A possible explanation, other than in terms of irradiation, was sought for this inverse relation between mean marrow dose and leukemia. The inverse relation, he reported, was not attributed to an effect of age, susceptibility or diagnostic differentials, socioeconomic status, or to completeness and length of followup. The unusual distribution of leukemias in favor of myelogenous and acute forms among the patients with benign gynecological disorders was, however, highly suggestive of a role of irradiation in the genesis of these leukemias.

He concluded that the concept of irradiation producing in time a leukemogenic response related to dose alone without other consideration was no longer tenable. A postulated mechanism for these observations, Wagoner said, is that the very heavy doses received by the pelvic marrow among patients treated by conventional X-irradiation may be destructive to the stem cell of that marrow. On the other hand, he continued, more moderate doses delivered by radiotherapy are stimulating to leukemogenesis.

Two circumstances support such a mechanism, he said: the present finding of an increasing leukemogenic response at mean pelvic marrow doses up to 500 rads, followed by an

inverse relation over higher dose ranges, and the observation of bone marrow destruction at doses of 500 rads or more among persons experiencing exposure of the entire body. It follows, he said, that while a linear model may adequately describe the relation between irradiation dose and leukemogenesis it does so only within a restricted range of doses for irradiation concentrated in a limited anatomic area.

CHRONIC DISEASE

Reducing Risk Factors In Coronary Heart Disease

Community programs can be established to screen large numbers for the risk factors in coronary heart disease. The high-risk subjects thus identified can then be randomized in order to test specific hypotheses about the efficacy of various modes of intervention.

An ongoing program of primary prevention in Franklin County (Columbus Metropolitan area), Ohio, appears to verify these assumptions. The project started in 1967 with a pilot study in one industry in Columbus, reported Dr. Martin D. Keller, professor of preventive medicine, Ohio State University, Columbus, and co-authors. Screening examinations were given to 3,300 men 40–59 years who were employed in Franklin County.

Methods

The eligible men are offered a rapid screening test to identify those having a combination of elevated serum cholesterol (250 mg. percent and over) and elevated blood pressure (160 systolic or 95 diastolic, or both). The men having these characteristics are given a complete cardiovascular examination, including an electrocardiogram at rest and after exercise.

Those showing no evidence of clinical coronary artery disease are randomly assigned to (*a*) the risk-mitigating-counseling group or (*b*) the biennial reexamination group. We expect, said the authors, that 500 will be entered in each group. Members of group 1 are involved in a multifaceted program of risk mitigation, including dietary control of weight and serum lipids, physical fitness, smoking withdrawal, and clinical control of the conditions contributing to risk, such as hypertension and diabetes. A team of medical and paramedical specialists conducts the program for group 1 in cooperation with each subject's personal physician.

Members of group 2 are given a biennial cardiovascular examination, but no attempt is made at intervention other than referral to their physicians. Data obtained from both groups include information on serum lipids, histories of diet and exercise, smoking status, and measurements of physical fitness. Sociological and psychological variables that may be associated with high-risk and the participants' compliance in the program are also studied, said Keller and co-authors.

Early Results

All of the first 83 participants to be followed for a full year in the pilot study as part of the risk-mitigation-counseling group showed a drop in their serum cholesterol levels during that year:

Percent of fall	*Number of men*
Less than 10.0	19
10.0–14.9	12
15.0–19.9	20
20.0–24.9	16
25.0–29.9	9
30.0 and over	7

Seventy-one (86 percent) of the participants lost weight during the first year. There were 41 cigarette smokers among the first 83 participants. During the first year of the pilot program, reported the authors, 12 men (29.3 percent) stopped smoking and did not start again. The others reduced the quantity of smoking. Of 71 men in the exercise program for year 1, progress beyond the initial exercise stage prescribed was reported by 44 (62 percent). After 1 year in the pilot program, 71 participants (86 percent) showed a reduction in their diastolic blood pressure levels, while 64 (77 percent) showed a reduction in their systolic blood pressure levels. Sixteen participants were receiving antihypertensive drugs.

The most striking changes among the 83 participants, however, said Keller and co-authors, appeared in the diets reported. All the nutrients listed showed a significant change over 9 months. For example, mean protein intake dropped from an initial figure of 92.0 grams to 79.6 after 9 months, total fat from 111.6 grams to 84.1, and saturated fat from 37.5 grams to 20.8.

On the basis of our experience in Columbus, concluded the authors, we are confident that we can maintain the cooperation of the physicians, the health agencies, and the industries in this program. The men appear interested in participating, and there is encouraging evidence of their compliance with advice and the reduction of risk factors.

Community Study Seeks More Data on Stroke

The paucity of data on the incidence of stroke shows that we are ignorant about the stroke process, declared Dr. Alfred Hurwitz, medical consultant, Division of Chronic Disease Programs, Public Health Service, and co-authors. Seeking to enlarge the data on this disability, the Stroke Section of the Heart Disease and Stroke Control Program of the Service established the Collaborative Community Stroke Study.

An increased interest in the stroke process has been aroused in the last decade, said the authors, by the realization that stroke is the third greatest cause of mortality in the United States. Epidemiologists and clinicians have also recognized that valid correlations may exist between stroke, risk factors, and geographic variations. Finally, Hurwitz and co-authors pointed out, stroke may well be a preventable disease.

The objectives of the study, said the authors, are:

1. To determine accurately the incidence of stroke over a 2-year period

in seven different geographic sections of the United States.

2. To diagnose the types of stroke occurring (cerebral thrombosis, intracerebral hemorrhage, subarachnoid hemorrhage, cerebral embolism, and—to a lesser extent—transient ischemic attack).

3. To characterize the demographic variables of the populations sustaining these strokes.

4. To determine the functional and socioeconomic impact of stroke on the individual patient.

5. To determine the impact of stroke in the community.

6. To increase local awareness of the stroke process, thereby improving the care of the stroke patient.

The study has three phases of operation, said the authors, namely ascertainment, patient followup, and data analysis. Data are collected on institutionalized and noninstitutionalized stroke patients. Hospital records and community physicians are the sources of case ascertainment. An interview with the patient, his family, or both sources is carried out 4 months after the stroke. The stroke diagnosis is made at the office of the Stroke Section with designated criteria. A computer program is being established to make this diagnosis uniformly. Information from the followup interview will be used to assess functional and socioeconomic disability of the stroke victims. The Collaborative Community Stroke Study, Hurwitz pointed out, should provide local community health planners with vital information for stroke program development and assessment.

Need for Sound Evaluation Of Multiphasic Screening

The effectiveness of multiphasic screening programs in reducing morbidity and mortality in a community has not been established, declared Dr. Lewis Kuller, associate professor of chronic disease, Johns Hopkins University School of Hygiene and Public Health. Top priority, therefore, should go, he said, to therapeutic trials to determine how effectively risk factors or early pathological changes detected in the screenees have been reduced. Less stress should be placed on trying to substantially increase the number of persons screened until we can be more certain of the effectiveness of specific therapy.

In 1953–54, Kuller reported, the Commission on Chronic Illness conducted a morbidity survey of the Baltimore population. This phase consisted of a household survey of every 80th address in the city (yielding a sample of 11,324 persons), a clinical evaluation of a subsample of 764 persons, and a multiphasic screening examination of 2,024 other members of the total sample over age 16 (only 29 percent of those invited).

A 12-year followup study of 4,121 persons 40 years or over at the time of the initial interview in 1960 was completed in 1966 in order to compare the characteristics of the screened (984 persons) and the nonscreened (2,738). Only about 3 percent of the cohort was lost to followup. This study revealed the following information:

1. A higher percentage of members of the upper social class were screened.

2. The death rate for screenees, as compared with that for nonscreenees—especially for women and members of the younger age groups (40–49 years)—appeared to be slightly lower (see chart).

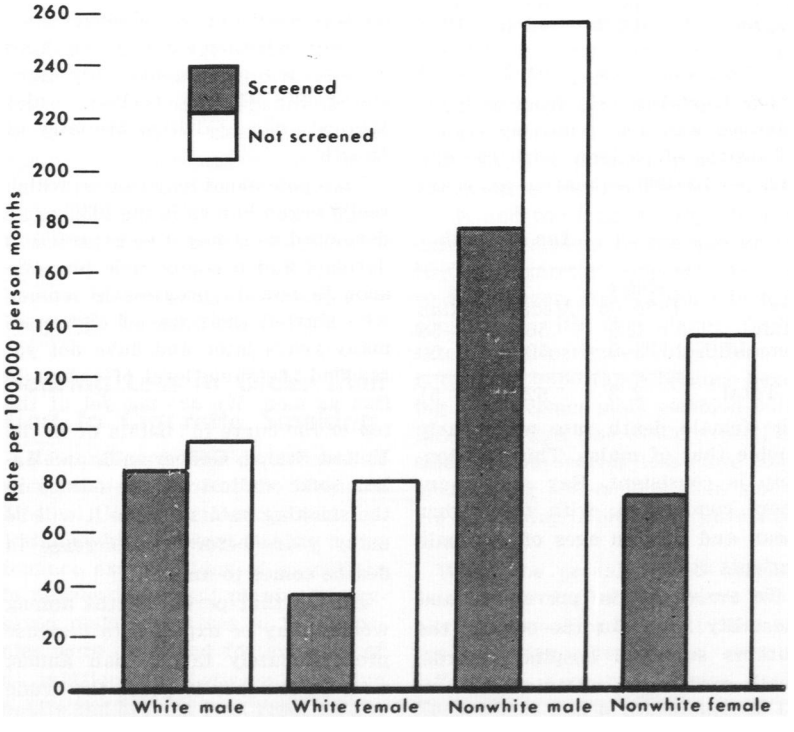
3. Surviving screenees and nonscreenees, reinterviewed in 1967, were found to be similar with regard to history of diseases, medical care, and cigarette smoking habits.

Whether, said the author, the decreased mortality among screenees should be attributed to biases associated with selection for screening or with the effectiveness of the screening program could not be determined because of the absence of a "true comparison group." He expressed the belief, however, that the difference in survivorship reflected initial selection for screening. Persons with major disability and disease, Kuller explained, are unlikely to be included in a screening program.

As was to be expected, screenees with abnormal laboratory tests had a higher case fatality rate than those with normal results.

Multiphasic screening, Kuller said, offers one of the best methods of

Race- and sex-specific death rates for persons 40–49 years, according to whether screened or not



early identification of disease and subsequent reduction of mortality and morbidity. The decision as to whether or not to treat the patient and the specific methods of treatment to be used, however, he said, should be determined before the screening program begins. And probably, he added, the sponsors of the screening program and the therapeutist should be the same.

Multiple Sclerosis In Allegheny County, Pa.

A total of 865 persons with a diagnosis of probable multiple sclerosis were identified in Allegheny County (Pittsburgh), Pa., in a 1967 study. The backdated point prevalence rate established in the study, of 54.4 cases per 100,000 population per year, qualifies the county as a high-risk zone for the disease, said Dr. Richard L. Ray, an intern at the Presbyterian-St. Luke's Hospital, Chicago, and co-authors, who conducted the study.

The highest prevalence was observed in white females, the authors reported; all other sex-race groups had similar values, as the following table shows:

Race	*Male*	*Female*	*Total*
White	43.8	66.4	55.5
Negro	42.2	42.6	42.4
Total	43.6	64.4	54.4

The mortality rate from multiple sclerosis was also relatively high—2.3 deaths of patients with the disease per 100,000 population per year:

		Age at death	
Sex	*Rates 1965–66*	*Mean*	*Median*
Male	1.6	56	58
Female	3.0	50	50
Total	2.3	52	51

The female death rate was nearly double that of males. This relationship is consistent, Ray and co-authors commented, with the higher mean and median ages of the male patients at death.

To arrive at the prevalence and mortality rates for the county, the authors surveyed hospital records, death certificates, chronic care centers, and the membership registers of the Western Pennsylvania Multiple Sclerosis Society and the National Multiple Sclerosis Society for 1965–66. They also evaluated these sources in terms of case yield.

Of the 865 persons identified as having probable multiple sclerosis, 66 percent were identified as members of the two multiple sclerosis societies—56 percent were identified only through these societies; 40 percent were identified through having been hospital patients during the years 1965–66—21 percent of the total were identified only through this source; 14 percent of the total were located in chronic care institutions—9 percent were identified only through this source; and 5 percent were identified on death certificates—1 percent were found only through this source. About 20 percent of the cases were known to more than one source.

The authors compared these data, as well as the age-, sex-, and race-specific prevalence rates, with data from studies of prevalence done in similar metropolitan areas 5–15 years earlier and considered possible explanations for the contrasting results. They suggested that the possibility of retrospective contact with physicians—a method not used in their study—be considered since a large percentage of patients with multiple sclerosis had been discovered by this method in other studies. Surveying those physicians most likely to see multiple sclerosis patients—neurologists and ophthalmologists, they pointed out, could identify many additional patients without requiring the extensive effort of contacting all local physicians.

SMOKING

A Self-Inflicted Injury: The Smoking Disease

The volume of evidence that has accumulated concerning the results of voluntary exposure to cigarettes, and now the benefits of voluntary withdrawal, are sufficient to justify the statement that we no longer need to study whether cigarette smoking causes lung cancer, but only how, stated Sir George Godber, Chief Medical Officer, British Ministry of Health.

The epidemic of lung cancer, which really began in men in the 1930's, has developed as it might be expected to develop, and a comparable phenomenon is now in progress in women who started their use of cigarettes many years later and have not yet reached the same level of consumption as men. We are not yet at the top of the curve in Britain or in the United States, Godber said, and unless some radical change occurs in the smoking habits of men it will be many years before the increase in deaths comes to an end.

During that period deaths among women may be expected to increase proportionately faster than among men. In the last 10 years the crude death rate from cancer of the lung among men in Britain has increased by more than one-fourth, and among women by nearly three-fifths.

In the last century and the early part of this century, the great contributions to human health have been made by preventive rather than curative medicine, Godber said. In the last 20 years, active immunization has greatly reduced morbidity and mortality from a large group of infectious diseases while effective drugs for the treatment of other diseases, notably tuberculosis, have both reduced morbidity and mortality and the spread of the infections themselves. These gains have been secured by action against harmful things in the environment or by relatively simple single procedures for which the person's acquiescence was easily obtained.

Our present problem is totally different, said Godber. It involves modification of an almost general pattern of behavior that not only gives individual gratification but forms part of ordinary social intercourse for many adults. There is nothing else quite like it. The use of alcohol is harmful only in excess for a minority of persons. Yet there

are only two ways, he said, of preventing the injurious effects of cigarette smoking: either by abolition of the cigarette or production of a relatively innocuous cigarette. We know that the first of these courses is effective but we do not even know if the second is practicable, and it would be many years before we could know if any measure of this kind was successful.

Undoubtedly the greatest single contribution to the promotion of health in this country, in Britain, and in many other countries, would be the total abolition of cigarette smoking, Godber stated. No other single factor could offer an increase in the expectation of life for cigarette smoking young men or remove the causal factor in at least one-tenth of the annual deaths and one-fifth of the working time lost through sickness by the general population.

If we were campaigning against some injurious factor in the environment, say, excessive exposure to asbestos dust, said Godber, we would unhesitatingly aim at total removal if we could. The reason perhaps is reflected in the Norwegian report, "Influencing Smoking Behaviour," which states "Data are also scarce on what motivates certain individuals to reject smoking altogether, even if this group of persons in our present society must be considered to be an interesting group of deviates." Nearly four-fifths of the physicians in the United States and seven-tenths of the physicians in Britain are such deviates—at least where cigarettes are concerned, he said.

Many smokers are converts to nonsmoking, and every year many others, not of our profession, are also converted, stated Godber. In Britain there is already evidence that the well-to-do smoke less and suffer less from smoking diseases.

A recently published study by the British Social Survey shows that boys who start smoking usually know of the association with lung cancer, and half of them want to stop. But group pressures and an acquired taste are too strong. They believe that there is credit to be had from one's peers in being seen as tough, precocious, and unmindful of conventional achievements. The subversive message is there in the pattern of the adult world, and it will remain so until the truth is presented, at least as often as the false.

To my mind, said Godber, we cannot hope for a major success against cigarette smoking so long as it is constantly presented to the public as a desirable activity. The Norwegian report to which I have referred, he said, contrasts the pitifully small amount of exposure the person receives to arguments against smoking as compared with the enormous amount of persuasion in the opposite sense, not only through effective commercial advertising but much more through the personal example of so many others in the social group and in films, television, and even literature. An investigation of English school children suggested that in taking up smoking they sought to improve their self-image. In Britain, at least, a great part of the advertising of cigarettes presents young people in situations implying social advantage to the smoker.

The influence of parents, teachers, and younger people in the public eye is known to be powerful, and certainly children from smoking households are more likely to start than others. I cannot see how we can hope to break this vicious circle, Godber said, until the image of the cigarette smoker is somehow changed. We may make slow and painful headway, but we are trying to change attitudes against a background of behavior in quite the contrary sense. The almost automatic publicity for any suggestion that cigarette smoking might, after all, not be as harmful as we know it is shows only too clearly how the public wants to react.

Hearing Loss in Older Men Tied to Cigarette Smoking

Researchers in the department of preventive medicine at the Woman's Medical College of Pennsylvania, in Philadelphia, conduct health maintenance examinations of executives in nearby industrial plants. Ninety-seven male executives in 14 companies were examined for evidence of a relationship between smoking habits and hearing loss, reported Dr. William Weiss, visiting associate professor of preventive medicine at the college. Occupations included accountants, actuaries, and executives of plants that manufacture bricks, drugs, clothes, cans, and valve controls; plants that process minerals and chemicals; publishing plants; and baking plants.

A preliminary study showed that no association existed between smoking habits and hearing levels in men under the age of 50; therefore, this study was limited to 97 men 50 years old and older, he said. The examinees were divided into four groups: nonsmokers who had never smoked; current and past smokers of cigarettes and a few men who also smoked cigars or pipes; cigar smokers who did not smoke cigarettes, including some who also smoked pipes; and men who smoked only pipes.

Auditory surveys were made in a soundproof booth with a Beltone audiograph at intervals of 5 decibels and at pure tone frequencies of 250, 500, 1,000, 2,000, 4,000, and 8,000 Hertz, Weiss reported. Each ear was tested and counted in the analysis so that results for 194 ears were available. The 1964 standards for audiometric zero of the International Organization of Standardization were used.

Of the 97 men 20 had never smoked and 77 were current or exsmokers, including 65 cigarette smokers, eight cigar smokers, and four pipe smokers, as defined. The men were aged 50 to 67. The largest proportion of nonsmokers was in the age group 60–64 and the largest proportion of cigarette smokers in the age group 55–59. Cigarette smokers tended to be younger, Weiss said, which is consistent with the higher death rates they experience. This difference is of some importance because hearing loss becomes more common with increasing age. One would expect, he said, to find hearing loss more common among nonsmokers than smokers if smoking habits were unrelated to hearing.

When the prevalence of hearing loss of 15 decibels or more was plotted by smoking habits at the various pure tone frequencies, certain differences appeared, Weiss said. Nonsmokers had a prevalence of 18

to 20 percent at the three lowest frequencies. This increased rapidly to a high of 92 percent at 8,000 Hertz. Cigarette smokers had a prevalence of 38 percent at 250 Hertz and 35 percent at 500 Hertz. The differences between nonsmokers and cigarette smokers were significant for these frequencies at a level of 0.05 by the chi-square test. At higher frequencies the cigarette smokers were similar to the nonsmokers. In contrast, he said, the cigar smokers were similar to the nonsmokers at low frequencies but showed higher prevalences at frequencies of 1,000 to 4,000 Hertz. Because there were only eight cigar smokers, however, these differences could have occurred by chance.

When the cigarette smokers were divided into 48 who smoked 20 or more cigarettes per day and 17 who smoked less than 20, the prevalence of hearing loss at the two lowest frequencies was more striking among the heavy smokers, Weiss said. Prevalence was 48 percent at 250 Hertz and 41 percent at 500 Hertz. These differences were significant at the 0.005 level by the chi-square test when the heavy cigarette smokers were compared with the light cigarette smokers combined with the nonsmokers. At higher frequencies, the differences disappeared, he said.

When the data for the four companies with the most (11) examinees were analyzed, there was good correlation between the prevalence of hearing loss at the two lowest frequencies and the prevalence of cigarette smoking, Weiss said. While the percentage of cigarette smokers ranged from 64 to 91, the percentage of ears with loss ranged in the same order from 10 to 55 at 250 Hertz and from 25 to 41 at 500 Hertz.

The degree of hearing loss in heavy cigarette smokers is limited to minor defects, Weiss reported. Differences occur mainly between 15 and 25 decibels of loss. The pure tone audiographic pattern, characteristic of heavy cigarette smokers, was mild hearing loss at the two lowest frequencies. The threshold was closer to normal at 1,000 and 2,000 Hertz and then rose again (became more abnormal) at the two highest frequencies. The loss at the lowest frequencies was associated with smoking while the more severe loss at the highest frequencies was characteristic of that occurring with increasing age.

Heavy smokers of cigarettes had a significantly higher prevalence of hearing loss than nonsmokers and light smokers. Loss was limited to low frequencies (250 and 500 Hertz) and to a mild degree of abnormality. These findings, Weiss said, are consistent with the hypothesis that cigarette smoking causes a conductive hearing defect, most likely involving the eustachian tube.

NUTRITION

Iron Deficiency Abounds In Young Women

Iron intakes of young girls and women are generally much lower than the Recommended Dietary Allowance of 18 milligrams per day for all females from 10 to 55 years of age. The average consumption by girls and women included in all the surveys I studied, said Dr. Hilda S. White, associate professor of home economics, Northwestern University, Evanston, Ill., was usually 10 to 12 milligrams per day. Only 12 of the more than 60 population samples had mean iron intakes greater than 12 milligrams per day.

We must look more carefully at the sources of iron in the diets of girls and women in different age groups, said White, to consider the influence on food habits and dietary patterns of ethnic, cultural, and economic factors. Calculation of the amount of iron present in a diet may be of little significance if the iron is derived almost entirely from plant foods. In general, the iron in such foods is less well absorbed than that from meats. In 1968, White said, the World Health Organization pointed out the need for expressing "dietary iron intake in terms both of the total iron intake and the absorbability of this iron. Iron in diets containing large amounts of animal protein may be expected to be absorbed to the extent of 15 to 20 percent, whereas the absorption of iron from diets that are predominantly composed of vegetable foods may be as low as 5 to 10 percent."

Available data suggest a high prevalence of anemia among pregnant girls and women, said White, particularly among those in low-income populations. The Chicago Board of Health conducted a study of approximately 1,000 pregnant teenage girls, all 15 years old or younger when they conceived. The girls were examined in the second or third trimester—usually in the third. A breakdown of the values for hemoglobin concentration obtained at the initial examination revealed that 35.7 percent had between 10 and 10.9 grams of hemoglobin per 100 milliliters of blood, 18.1 percent between 9 and 9.9 grams per 100 milliliters, and 6.9 percent below 9 grams per 100 milliliters. Approximately 60 percent of the girls were anemic or had hemoglobin concentrations of less than 11 grams per 100 milliliters—often considered to be the lower limit of normal for pregnancy. The prevalence of anemia in the total population of pregnant women is not known. The same can be said for the population of nonpregnant women.

Investigations of storage iron, while still very limited, suggest that many nonanemic girls and women are in fact iron deficient. Unfortunately there are no easy methods for measuring iron stores. The most reliable procedure is evaluating the amount of iron in a bone marrow biopsy specimen, using histological staining techniques. The method, however, is not practical for large-scale use, White said. In a study of 114 young Texas college women, described as being in "excellent general health," almost one-third of the young women had iron stores classified as zero or trace. The investigators estimated that the amount of reserve iron of two-thirds of the college women was less than the amount required for a normal pregnancy.

These findings, added to what we

do know about low iron intakes and the extent of anemia in certain population groups, White said, indicate that a significant proportion of the population is not now getting enough iron. If this is true, she stated, it is a public health problem, and consideration should be given to initiating preventive measures.

School Feeding Prodded By Baltimore Task Force

Through the efforts of the Mayor's Task Force on Nutrition, the Baltimore community has been alerted to the role of good nutrition relating to the performance and health of all citizens in all age groups, said Eleanor McKnight Snyder, secretary of the task force and chief of the division of nutrition, Baltimore City Health Department.

The task force has been a coordinated effort, involving citizens and local and State agencies, directed toward alleviating malnutrition in Baltimore City, she said. In seeking to attain these goals, the task force is molding the efforts of many city agencies to deliver effectively the benefits of planned nutrition programs to the city's poor and disadvantaged.

Among its many other accomplishments, the task force has prodded into greater usefulness the programs for feeding school children.

In January 1969 the city resumed the U.S. Department of Agriculture Breakfast Program. Although adequate publicity had been given to national appropriations, it was difficult to determine what local subdivisions considered as their share. They had no share until they requested it. Sometimes local administrators did not bother to request funds because it seemed too much of a chore. Intervention of the task force into this problem created a stir in the Baltimore newspapers—enough of a stir that Federal authorities felt the need to defend their position. They pointed out in a letter to the Mayor that Maryland had returned $45,500 as unneeded for free lunches and the USDA Breakfast Program during 1967–68 and had never questioned whether the allocations were adequate to meet the need for free or reduced-cost meals throughout the State. During the 1968–69 year, Snyder said, it was estimated that more than 700,000 Maryland children were not participating in the program.

Guidelines for selecting the children who were eligible to participate in the free or low-cost meals were revised and presented to the Board of School Commissioners on June 5, 1969.

During May 1969 the school health services medically appraised the children in the first, second, and third grades to help the principals in selecting children for the program. Heights, weights, and hematocrits were done on 21,617 children; 8,792 or 40.7 percent had microhematocrits below 36; 541 children had readings below 30. These children were to be given priority in school feeding programs regardless of family income, and conferences were held with the parents to help them understand the food needs of growing youngsters.

All allocated funds (see table) are designated for "free or reduced-cost" meals. We continue to have free or "full cost" meals, Snyder said. Baltimore has not taken advantage of section 11 funds of the National School Lunch Act, which are for low-income areas. An estimated 60 percent of nonparticipating children would be included if a reduced-cost meal was available.

Funds were made available to establish three major centers so that all schools would have food service available, including 66 elementary schools that never had food service. Equipment for a Vit-A-Lunch service was purchased and is being installed. It should be operating within this school year, Snyder said. In the meantime, 18 existing school cafeterias are preparing 11,254 bag lunches for delivery to these 66 schools.

We are severely hampered at the moment by the inactivity of Congress, she said. The State department of education must function on letters of credit based on last year's participation. Representatives of the task force had several conferences with top officials in the U.S. Department of Agriculture to assure the Baltimore community that they were not missing any available resource. This activity is necessary to maintain communication, Synder said.

Small agencies like day care centers and neighborhood centers were unaware that funds also had been appropriated to help in their food programs. The task force acted to publicize the available funds and assisted in completing the necessary application forms.

Accomplishments of the Mayor's Task Force on Nutrition, Baltimore, Md.

Allocation	Fiscal year 1968–69	Fiscal year 1969–70
	October	October
Free milk (cartons)	7,000	7,000
Free lunches	2,000	30,000
Reduced-cost lunches (see text)	None	None
USDA breakfasts	None	2,800
City funds	$100,000	$553,000
State funds	None	Share of $1.2 million
Federal funds	All used	(?)

New Foods—Delights, Doubts, and Dangers

As food manufacturers, it is clear that we need to provide protein nutrition for two groups of people, the overfed and the underfed, stated E. F. Binkerd of Armour and Company, Oak Brook, Ill. The different needs of these two groups cannot be met by the same products; but for both, the effort to supply balanced nutrition is essential.

For the underfed, price is a determining factor. Beef pricing is directed by grade and desirability of the different muscles in a carcass. A premium price is awarded for the fat, slightly immature animal. It is the lean meat from the older animals, he said, which economics forces us to use as starting material for low-priced products. Even so, the price may still be too high. Consequently, reported the author, we are forced to look for cheaper proteins to extend meat without lowering the protein nutritive factor. Some of the candidates for meat protein replacement are (*a*) fish protein concentrate, (*b*) vegetable protein, (*c*) yeast, (*d*) algae, and (*e*) fungi.

Several production facilities for producing fish protein concentrate are in operation. While the bulk of the product is used in animal feed, a limited amount of deodorized fish protein concentrate is being manufactured for human consumption by the Agency for International Development, Binkerd said. The product is an odorless, bland-flavored powder, containing 75 percent protein and 0.50 percent fat.

The most promising new source of protein is the soybean. Soy protein is available as grits, flour, concentrates, or isolated protein. About 3 percent of the soybean meal processed in the United States is used in food, said the author. Potential supply is enormous. Dehulled soybeans are flaked, the fat extracted, and then given a mild heating. The flakes may be used as grits or ground into a flour. Protein content is 40–50 percent. Concentrates containing 70 percent protein are prepared from the flakes.

The protein may be converted to a thick batter and air beaten in, passed through a grinder, and then dried. The particles have a porous structure which allows rapid rehydration. The isolate, or soluble soy protein, is 90 percent protein which may be spun into fibers and combined with fat, egg solids, salt, color as required, binders, and flavoring agents to simulate beef, ham, fish, or poultry.

The rapid growth and relative ease of growing yeasts have led to many investigations of these organisms as a protein source. One species, *Candida utilis*, has been grown on molasses and sulfite waste from papermaking. Flavor was not satisfactory, and nutrient deficiencies appeared in young animals.

Saccharomyces is used as a supplement in dog food and could be used to some extent in human food. Other *Candida* and bacteria may be grown on petroleum. Several petroleum-based research groups are active in this field.

Algae have been proposed as a food organism. Estimated yields and costs have varied widely. There are also flavor problems. The best prospect with these organisms, Binkerd said, seems to be to grow them on sewage and harvest the crop for livestock feed.

Bacteria and fungi of various types have been grown in submerged culture. Rank, Hovis, and McDougall have developed a process using potato and other starch waste as the substrate. Nutritional data have not yet been accumulated for this organism.

In experimental diets, animals grew better when fed two or more proteins together instead of one highly rated protein. Thus, high-quality protein can be supplemented by an inferior one, Binkerd asserted. For both the overfed and the underfed, the principle of supplementation by combining animal and vegetable protein applies. Both groups are in danger of malnutrition. This calls for development of two products—snack foods and a line of economy foods—both with balanced and optimum protein nutrition.

Today, he said, most meat analogs retail for as much or more than the meat they imitate. Eventually, the analogs' biggest attraction is expected to be low cost—roughly half that of trimmed, boned, and cooked real meat.

Among the doubts, a prominent one is the relaxing or altering of regulations limiting the use of vegetable protein supplements in meat products, stated the author. An even thornier problem is how analogs should be labeled. Another doubt is palatability—bitterness and popcorn-like or sweet nutty flavors that become rather unpleasant.

Proteins differ in nutritional quality, depending on the source, and vegetable protein is nutritionally inferior to animal protein. For this reason, the replacement in whole or in part of vegetable for animal protein in the diet, without first fortifying it with the amino acids would be contrary to sound nutrition. Similarly, he stated, we must not overdose people with unsaturated fats. When unsaturated fat is consumed, it goes into the cellular tissue and, because it is so susceptible to oxidation, draws on the body supply of vitamin E to prevent oxidation. This can lead to vitamin E deficiency.

This, Binkerd reported, is the challenge of the meat industry to come to grips with the marketing problems of now and the future.

COMMUNICABLE DISEASE

Get Involved in Community, Then Attack Gonorrhea

In a new approach to gonorrhea control, the emphasis is upon stimulating community awareness of the problem and the community's acceptance of, and participation in, a comprehensive health program—a program including efforts to control gonorrhea through epidemiology and education.

Dr. John W. Lentz, chief of the venereal disease control section, Philadelphia Department of Health, and Jerry M. Hershovitz, of the same section, presented evidence that gonorrhea is epidemic in many urban areas. They showed that current control methods have failed to reduce the gonococcus attack rate on its natural host, man, and analyzed the reasons for this failure.

Then Hershovitz described his personal experience with the new approach in a model city ghetto area in Philadelphia. He was, he said, the first public health adviser assigned to organize and promote a public awareness attack against gonorrhea

in one of the many comprehensive health care centers established as part of the Office of Economic Opportunity's Community Action Program.

Involvement in Community

Gonorrhea and all other manifestations of a community's breakdown are interrelated, declared Hershovitz. In order to show the community that our commitment is in the community's best interest, we must learn, he said, to deal with these other manifestations. Involvement in other areas will act as an entering wedge for mounting a later, effective attack on gonorrhea.

"For example," said the author, "a major concern of the community where I was assigned was to stop senseless gang killings among the children. Nine of every 10 youngsters in the community were in some way affiliated with a gang. For months I attended meetings with concerned parents, with the police, and eventually with the gang members themselves in order to help the community find solutions. Recently I was elected adult adviser of a neighborhood gang, simply because they said 'he cares.'"

Because drug abuse is another manifestation of community breakdown, Hershovitz joined a community task force to help deal with it.

"The sanitary conditions in the community were beyond description," reported Hershovitz. "Today," he said, "I am chairman of the community task force that has brought about the cleanup of the streets for the first time in 3 years."

Results

Through community organizations, antipoverty groups, and the church, Hershovitz was able, he said, to take the gonorrhea problem to the people. The Community Mental Health Center also took up the campaign against the disease by conducting discussion groups for youngsters and adults.

A self-help program was established for gang members. They were trained in the clinical and epidemiologic aspects of venereal disease so that they could teach their peers. More than 100 youngsters received such training, Hershovitz stated. Several have already conducted lectures on venereal disease in the public schools, he reported.

A venereal disease information and education center was included in the community's architectural workshop and cultural center, which were established as part of an urban renewal project.

Today, stated Hershovitz, community support has enabled the neighborhood health center to establish an effective gonorrheal control program. The laboratory staff of the center perform routine gonorrhea cultures on all female patients regardless of their age or reason for seeking medical care. Gonorrheal smears are taken on all male patients suspected of having the disease so that physicians can arrive at an immediate and definitive diagnosis.

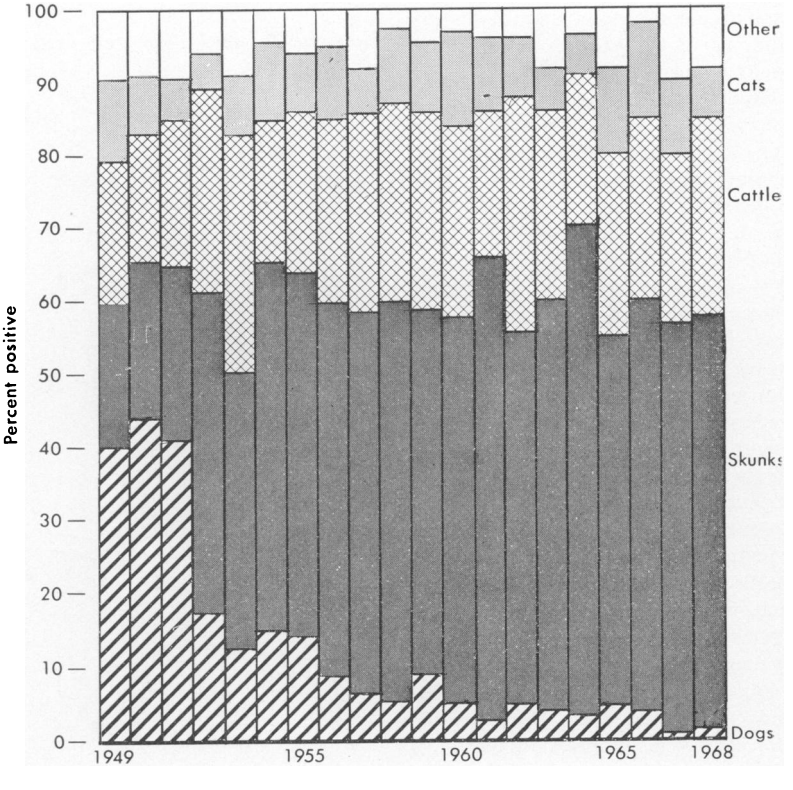
Because an increased number of venereal disease patients were seeking treatment at the health center, the Office of Economic Opportunity allotted additional funds for an epidemiologic program. Approximately 60 gonorrhea patients are treated each month, Hershovitz said, compared with seven less than 1 year ago.

Hershovitz expressed the belief that gonorrhea is now recognized by the community as a major health problem. "There appears to be enough support," he said, "for the health center's gonorrheal control program to contain the disease locally." "The community, however," he added, "is not an island."

Professional Board Advises On Rabies Prophylaxis

Advice about initiating rabies prophylaxis is provided to physicians in Iowa by a board comprised generally of three professionals from the Iowa State Department of Health. The board must reach a consensus before such prophylaxis is recommended, reported Dr. Arnold M. Reeve, who was formerly chief of the

Percent of animals with positive laboratory results for rabies, by species, Iowa, 1949–68



preventive medical service of the department and is currently the Commissioner of Public Health. Reeve described Iowa's "rather comprehensive service for prevention of rabies in man."

The rabies board, said Reeve, considers all known circumstances surrounding an alleged exposure. The aim, he explained, is to recommend rabies immunization wherever indicated and to recommend against it when there has been no exposure to rabies or when the probabilities of exposure are so low that administration of the vaccine or antiserum would be undesirable.

The location and extent of the person's bite has a bearing on the kind of immunization, if any, that is recommended—whether combined passive and active immunization or active immunization alone. The immunization status of the bitten person is also considered; many Iowa veterinarians, Reeve pointed out, have pre-exposure immunization. Another factor of importance is the presence of rabies in the locality where the biting occurred. The circumstances of the biting are considered—the availability of the animal for observation, whether the animal was provoked into biting, the history and vaccination status of the animal, and the species of animal.

Rodents are frequently suspected of exposing human beings to rabies, Reeve reported. Yet, he said, laboratory examinations of thousands of rodents have resulted in few positive results. In our experience, he stated, the squirrel most often showed positive results. We believe, said the author, that the data from present tests are more refined than those of the years preceding adoption of the fluorescent antibody technique. This refinement, he added, may well account for the smaller number of rodents with positive test results in recent years.

Dog rabies has become rather uncommon of late, according to Reeve, declining from the highs of 20 years ago, when it accounted for about 20 percent of all positive results, until it now accounts for only about 1 percent (see chart). Reeve ascribed this reduction to the Iowa Dog Vaccination Law and to more stringent local dog control laws. Skunks have become our most common source of positive rabies results, he pointed out, and the species now accounts for approximately 58 percent of all positive results.

Despite the general lack of positive results of tests of rodents for rabies, Reeve described an instance in which the rabies board recommended rabies immunization. A hamster had bitten a number of children in a classroom. The animal died and was found positive for rabies on fluorescent antibody test. The animal had been vaccinated with live virus only a few days before it bit the children. The board recommended that all children bitten by the hamster be immunized; there were no ill effects.

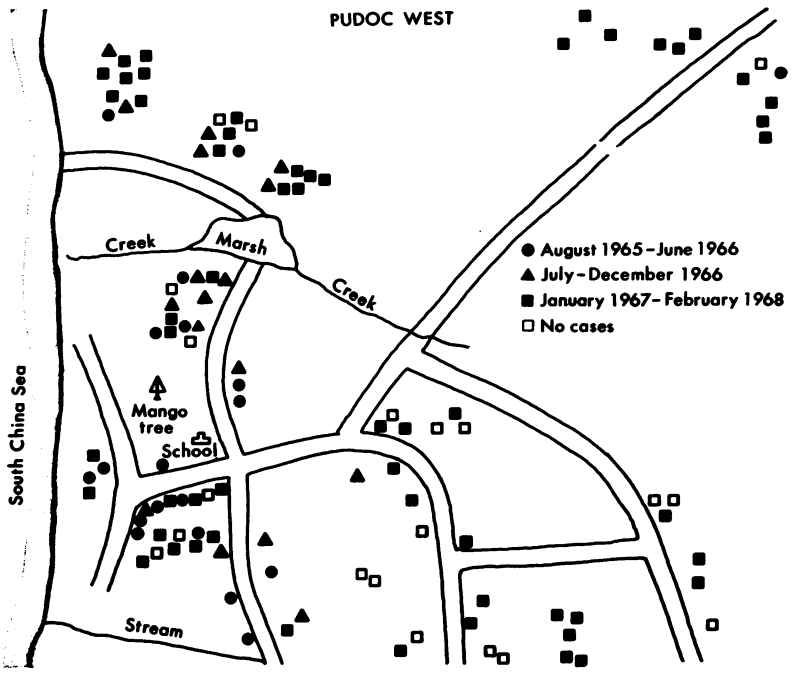
Epidemic of Capillariasis In the Philippines

An epidemic—more than 1,000 cases—of an unusual, often fatal, chronic wasting disease, caused by a newly discovered species of *Capillaria*, was reported in February 1967 in northern Luzon, Philippines. *Capillaria* is a genus of nematodes that are common parasites in vertebrates. However, according to Dr. Roger Detels, epidemiologist, Naval Medical Research Unit No. 2, Taipei, Formosa, and co-authors, these parasites have previously been reported in only 17 human beings and have never been implicated as the cause of an epidemic.

Therefore an epidemiologic study was undertaken in Pudoc West, the barrio most severely affected by the disease, to elucidate the possible modes of spread of intestinal capillariasis. In this small (population 725), remote barrio, reported the authors, the men grow primarily rice and vegetables, but also fish in the brackish water at the mouth of the streams and in the sea. Boys assist their fathers from about 10 years of age, but the women help in the field only during planting and harvesting; the women rarely fish.

Through January 1968, a total of 229 cases in which the new species of *Capillaria* was implicated had occurred. Within households, the initial cases were predominantly in males (male:female = 6.9:1), although subsequent cases were not (male:female=1:1). Initial cases

Households newly infected with *Capillaria*, Pudoc West, August 1965–February 1968



also occurred more frequently in the third to fifth decades of life. Few households had single cases, and in 83 percent of the households with more than one case, sequential onset could be demonstrated. The disease spread first within the areas of densest habitation, only later reaching the more sparsely populated regions (see chart).

The similarity between the age and sex distributions of the patients who had the subsequent cases and the age and sex distributions found in the general population of Pudoc West suggests that the parasite responsible for the intestinal capillariasis may have no specific host preference. Rather, the authors suggested, the persons initially infected —largely males—may have acquired the parasite in the course of their occupations of farming and fishing.

The earliest infected households in Pudoc West were close to the sea. In addition, the barrios with the most cases were all situated very close to the sea, and no cases were reported in barrios more than 10 miles inland. These facts suggest, Detels and co-authors explained, that the parasite may have been introduced into the area by a fish or other form of sea life at an opportune time for its adaptation to man.

Although the source from which the patients with the initial cases acquired their infection is not known, the pattern of spread within households and within the barrio suggests, said the authors, that the parasite may also be transmitted directly from man to man.

Public Health Significance Of Rabies in Thailand

An average of 250 human deaths from rabies per year have been reported by public health officials of Thailand over the period 1956–65. Moreover, according to Dr. Paul C. Smith, Department of Veterinary Diagnostic Services, Walter Reed Army Institute of Research, Washington, D.C., and co-authors, the officials admit unofficially that the actual number may be two or three times that figure.

Endemic rabies is rampant in domestic and stray dog populations. Efforts to determine actual reservoirs in sylvatic animals have been minimal, the authors noted.

Therefore, in 1966, the SEATO Medical Research Laboratories, using fluorescent rabies antibody (FRA) technique, mouse inoculation, and serum neutralization tests, undertook a survey of indigenous small mammal and bat populations in Thailand for evidence of rabies virus infections.

Rodents, especially *Bandicoota indicus* (a field rat), were shown to be infected with rabies virus. The isolates recovered, Smith and co-authors reported, were similar to other natural isolates. Incubation periods in weanling mice inoculated with the original isolates were often 14 days. In reply to a question from the audience, the authors stated that young adult bandicoots inoculated intramuscularly with these strains showed variable incubation periods ranging from 14 to 78 days.

Two of 79 dog-faced fruit bats (*Cynopterus brachyotis*) were shown to be positive for rabies. Subsequent studies revealed one other isolate from this species and one from the common yellow bat (*Scotophilus* species insectivorous). These bat isolates were characterized by an 18-day incubation period and caused creeping paralysis when inoculated into weanling mice.

An attempt in 1968 to locate a sylvatic colony of rodents harboring rabies virus infections in order to conduct epidemiologic and ecological studies failed. More than 300 rodents were examined in areas that roughly corresponded to the areas where infections had been found previously. The only obvious difference, commented the authors, was the seemingly much lower population of rodents in 1968. A drought had also occurred in some of the areas.

ENVIRONMENTAL HEALTH

Severe Childhood Allergies Linked to Pollution Levels

A survey of hospitalized cases of asthma and eczema among children under 15 indicated a significant association with air pollution levels, according to Dr. Harry A. Sultz of the School of Medicine, State University of New York at Buffalo, and co-workers of the Graduate School of Public Health, University of Pittsburgh, and the Erie County (N.Y.) health department.

They identified 617 patients hospitalized for asthma from 1956 to 1961 and 165 patients hospitalized for eczema from 1951 to 1961. Sources of the data were the records of 22 hospitals in or near Erie County. The cases were distributed by census tract of the patient's residence at the time of diagnosis and were grouped according to the level of air pollution at the time, as measured by suspended particulates in each area.

In addition they explained, since air pollution levels are strongly associated with socioeconomic status of the area of residence, the 135 census tracts in the study area were also ranked on the basis of median income, education, and unemployment rate in 1960 and divided into quartiles.

There were 194.3 children hospitalized for asthma per 100,000 population at risk at the lowest air pollution level, but 303.4 cases at the highest level. There were 29.1 children hospitalized for eczema per 100,000 at the lowest level of pollution, but 102.2 cases at the highest level. These findings indicate, Sultz and co-workers declared, a significant association between air pollution and incidence of asthma and eczema cases severe enough to cause hospitalization.

No pattern of variation in incidence by social class within air pollution levels was observed, although there was a consistent increase in incidence by air pollution level within each social class.

The most striking association, they noted, was between air pollution levels and the incidence of boys under 5 years hospitalized with

asthma or eczema. The standardized morbidity ratios for asthma cases among these young boys rose from 79 percent at the lowest air pollution level to 120 percent at the highest level. The standardized morbidity ratios for eczema in these young boys increased from 45 percent at the lowest level to 153 percent at the highest level. The authors postulated that the stronger association for boys under 5 may be related to the well-known greater incidence of asthma among boys.

Parallel findings for asthma and eczema were not surprising, said Sultz and co-workers. There is little question that the child with eczema has the same increased sensitivity that is associated with hay fever and asthma.

These results do not take into account the effects of air pollution on the majority of asthma and eczema patients who never require hospitalization, the authors added. Chronic allergic disorders are the most common long-term conditions of childhood. If air pollution affects the incidence of severe cases among children as strongly as our data for Erie County suggest, there are important widespread implications in terms of medical costs, utilization of physicians and hospitals, and personal suffering, they said.

Charge a Cent a Pound for Solid Waste Services

The sharply increasing volume of solid waste and the public's insistence on abating refuse-related air, water, and ground pollution call for major new sources of money to pay cities for the required higher quantity and quality of refuse operations, said Leonard S. Wegman, president of Leonard S. Wegman Co., Inc., New York City. He proposed an equitable system of revenue production in which each article directly, and by itself, generates the funds needed for such services.

Such a system can be developed based on the principle of assessing at the point of manufacture a charge of one cent per pound against all items which will require disposal within 10 years from origin, stated the author. Assessment would be made on packaging, glassware, clothing, refrigerators, bedding, washing machines, television sets, automobiles, paper plates, towels and cups, plastic cutlery, candy wrappers, toothpaste containers, beer cans, soda bottles, and cigarette cartons.

Wegman noted that the cities' refuse work is actually the end step of our national production system. Therefore, a charge for disposal is just as equitable as the charges for manufacturing, selling, delivery, and the like—already included in the price to the consumer.

A practical method of gathering the revenue would be for the manufacturer to pay this disposal charge, Wegman said. Obviously, the manufacturer will pass this charge on to the consumer. The price to the consumer is merely increased a fraction to pay for the article's eventual collection and disposal when he discards it and looks to his city to take it away.

The manufacturer could pay his assessment into a Federal Government trust fund for all the articles he produces, on a weight basis. The Government, he said, would then distribute the funds on a per capita basis to all municipalities which perform responsible tasks of refuse collection and disposal.

With only limited Federal participation, a graduated system of payments would encourage municipalities to dispose of solid wastes with a maximum of air, water and land pollution controls. Perhaps a 60 percent payment could be made to the city with minimum controls, and up to 100 percent to communities with the best control systems. In any event, Wegman reported, the local community will continue to decide what degree of refuse collection and disposal best suits its own needs.

The new source of funds will, however, make it less financially painful to do the best possible job. In the few instances where adequate funds have been made available for refuse disposal, U.S. municipalities have found no difficulty in meeting all criteria for effectiveness and protection of the environment.

Wegman said the disposal charge would yield $3 billion a year. If cities hold present budget levels, these Federal supplements would enable local sanitation budgets to be jumped 80 percent without any impact on local revenue structures.

This method of accumulating funds for a specific goal resembles the tax on each gallon of motor fuel and the per pound charge on various tire and truck components. Those assessments are paid into the Federal highway trust fund which, in turn, provides the major part of the money for the Interstate Highway Program, he said. The system is fair because the fuel and tire purchasers are major users and beneficiaries of the interstate highway.

A time lag will occur between revenue accumulation and expenses for actual refuse services, and this lag will favor cities. The Government will receive funds for assessable articles within a few months of production and distribution. But collection and disposal services for the discarded articles would not be needed for several weeks for food cartons and up to 7–10 years for automobiles and refrigerators. Advance payments by the Government to the cities, the author said, could enable the cities to set aside the capital and plan improved methods of collection and disposal. The cities would depend on this predetermined source of funds from outside their own tax base.

Discards not issued as consumer goods from an established point of manufacture would be paid for by the source sending it to collection and disposal as, for example, commercial waste. Similarly, he said, landscape waste would have to be assessed against the property owner on a per ton basis, or other suitable equivalent. This could be equitably based on property size. Demolition should be charged for only at the direct cost of disposal, because the contractor delivers it to the point of disposal without cost to the municipality. Such direct revenue would be deductible from Federal payments.

Under the proposed system, Wegman said, each element of refuse will directly and precisely prepay its own freight, instead of riding free on an

unrelated and overburdened property or other local tax roll. The consumer will understand the equity of the principle that each article he uses, which eventually will require collection and disposal as solid waste, has already fairly produced the funds needed for that ultimate essential operation.

Strong State Role Outlined In Solid Waste Management

State assistance to local governments for planning and building solid waste treatment facilities will become a necessity, asserted Wesley Gilbertson, deputy secretary for environmental protection, Pennsylvania Department of Health.

Gilbertson, who presented the State viewpoint during a session on solid waste management, posed three questions for assessing a State's solid waste management program.

1. Does the State law assign specific responsibility for operations in solid waste management to any level of local government? There should be clear-cut responsibility delegated to some level to see that waste collection and disposal are provided, although some operations may be carried on by private enterprise. I would be willing to wager that most States do not have such provisions, he declared.

2. Is there any assigned responsibility for future planning? Local governments should make local plans and State governments statewide plans, with the State having power to approve local plans.

3. Is there a clear-cut regulatory system for all aspects of solid waste management? Gilbertson emphasized that the system should include refuse from industry and agriculture as well as all forms of waste generated by municipal activities.

Conflicts between local governments are causing serious problems in solid waste management, he noted. Local governments, by municipal action, are zoning each other out of disposal sites. Ways must be found to resolve these situations. The State agency should delineate solid waste service areas, designate the sites, and perhaps acquire them for public use through condemnation procedures. Another State role is coordination of solid waste management with control of air and water pollution in both planning and regulatory aspects.

He urged that States be authorized to provide technical assistance and train operational personnel in solid waste management, since the success of future operations depends heavily on the availability of scientific know-how and of personnel with both technical and management skills.

Regarding research, he noted that the State agency has an opportunity to look for ways to put into practice the recycling and reuse of solid waste byproducts. The ultimate solutions to pollution, he postulated, may lie in our ability to reduce the flow of solid wastes into the environment by returning portions, perhaps via treatment, to beneficial uses.

Relate Rise in SO_2 Levels To Rise in Daily Deaths

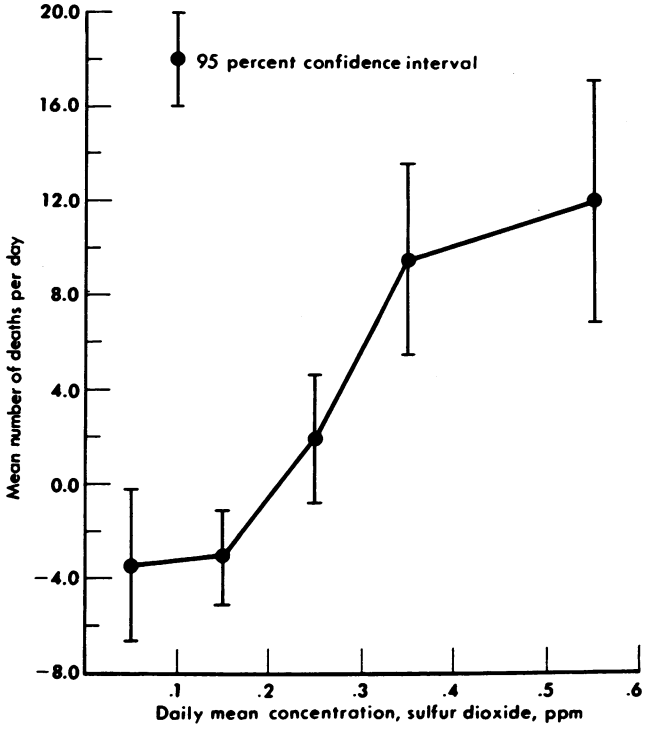
The mean number of daily deaths in New York City rose consistently as the level of sulfur dioxide increased, Dr. Marvin Glasser, associate professor, New York Medical College, and Dr. Leonard Greenburg, professor emeritus, Albert Einstein College of Medicine, found in analyses of mortality and weather data for 1960–64.

They studied deaths in relation to several factors—sulfur dioxide, smoke shade, temperature deviations from normal, windspeed, sky cover, and rainfall. To eliminate seasonal effects, deaths were expressed as deviations from a 5-year normal (the mean of the moving average for the same day in each year). Data for April through September were omitted because of low levels of pollution and generally high temperatures present during those months.

Glasser and Greenburg found that SO_2 levels were related to mortality to a greater degree when smoke shade was held constant than was smoke shade when SO_2 was held constant. Therefore they used SO_2 as an index of air pollution.

SO_2 was positively associated with mortality independent of the weather factors the authors studied. The evidence suggests that increase in mor-

Relationship between mean number of deaths per day, expressed as deviations from "normal," and daily mean sulfur dioxide concentration



tality was associated with an increase of SO_2 at all levels (see chart).

The difference in the mean number of daily deaths on days with mean SO_2 levels of 0.20 ppm or less compared with days having mean SO_2 levels of 0.40 ppm or more, they estimated, was in the range of 10 to 20 deaths per day.

Data on deaths and SO_2 levels were examined by calendar years. For 1960, 1963, and 1964, the positive relationship of daily mean SO_2 with daily mortality was discernible and statistically significant. The same general relationship held when the data were analyzed by bimonthly periods.

Glasser and Greenburg also considered their data by day of the week since records of SO_2 values were missing for 19 percent of the 910-day study period and records of smoke shade values missing for 6 percent of the days. They postulated that the missing data might be a source of bias. In this analysis they found that mean daily deaths had a pronounced peak on Mondays and then steadily declined to a low on Sundays. They concluded, however, that ignoring the day of the week might introduce a slight bias into the study, but any distortion attributable to this factor would be small.

Technology Can Help Solve Air and Water Pollution

The technology that causes us to use our natural resources wastefully has the potential for helping to control pollution, declared Dr. Lee A. DuBridge, Science Adviser to the President.

DuBridge outlined the position of the Federal Government on environmental control and cited areas in which technological research can contribute to cleaner air and water. Technologically, it is surely feasible for us to produce automobile engines which do not pollute the air. The Federal Government, he said, will encourage more rapid technological development and will impose regulations on automobile effluents as rapidly as feasible mechanisms for such reduction are available.

A vast amount of work has already been done on the technology of reducing objectionable waste products discharged into water by industrial plants; but refineries, chemical plants, steel mills, and powerplants each have different problems. Finding ways to reduce the harmful effluents from these various sources is difficult. Again, the Federal Government will encourage research and development in these areas, by encouraging industries and industrial associations to pursue technologies energetically, and, as rapidly as possible, will impose regulations on all plants to reduce their contaminating effluents.

The Federal Government will accelerate its help to local municipalities in building sewage treatment plants. The Government will also pursue activities in noise reduction and pesticide control and make renewed efforts to reduce environmental degradation caused by highways, dams, and other public structures and facilities.

DuBridge observed that, since it will probably be impossible to stop completely the discharge of wastes into the air and water, efforts should be accelerated to reduce to tolerable levels those pollutants which are harmful to human beings and other forms of life. However, we do not know which pollutants are most harmful or at what concentrations they cause harmful effects. This is true of lead and sulfur dioxide in the air, various radioactive materials, and a range of chemical substances discharged into water. If zero levels are not feasible or impossibly costly, we must establish tolerance levels so that safe standards can be set.

More intensive research is also needed into methods of degrading waste products into harmless forms, he stated. Bacterial degradation is widely used, but we depend too much on accidental degradation or decay caused by natural supplies of bacteria. Can we find bacteria to accelerate degradation of some products and ways to introduce the bacteria into piles of waste or polluted rivers?

The environment is everyone's business, DuBridge declared. Practically everyone drives a car, throws waste out the car window or on the street, or puts into the trash materials that ought to be reprocessed or reused. If two people rode to work in each car instead of one, we would enormously reduce smog as well as traffic jams. The trouble is, he mused, we all find doing this too inconvenient. Inconvenience may, in fact, be the greatest enemy of the environment.

DuBridge called on the community of scientists and engineers to pursue energetically the development of devices, methods, and techniques for reducing environmental deterioration, but everyone must also be willing to pay in taxes the costs incurred by city, county, State, and Federal Governments as they pursue these matters more actively, he said.

Decisions in Public Health Are Made by Others

The nature of public health problems is being determined by runaway science, runaway technology, runaway population, runaway urbanization, and runaway exploitation of natural resources. The public health community, far from influencing them, has been borne along as helplessly as leaves in the wind, declared Thomas F. Williams, director, Office of Public Affairs, Environmental Health Service.

Williams warned that decisions made in every sphere of community life are shaping the environment that determines whether we have sickness or health, life or death—often with almost total disregard of the ultimate consequences in terms of public health.

The public health community treats or researches chronic disease, he said, and then sends the victim back to the smog-filled air or the fumes and dust of an unwholesome work environment for which it only recently and reluctantly has shown any appreciable sense of responsibility.

The public health community clamors for more clinics and hospitals to treat the mentally ill, but remains relatively silent about the environmental stresses that push ever upward the rising toll of neuroses and psychoses.

The public health community de-

mands quick rescue ambulances and improved surgical techniques for treating 5 million accident victims every year, but has relatively little to say about the nature of the highways, about consumer products that lacerate, electrocute, or incinerate their users; about industrial machines and processes that kill thousands every year; or about dozens of other environmental hazards that predetermine the amount and kind of treatment that will be required.

I suggest, said Williams, that the voice of the public health community be heard loudly and clearly at the time when it matters most, when public policy is being formulated. We should have learned by now that most of the important decisions which society makes which have a profound impact on public health do not necessarily carry a public health label.

The role of the public health worker has been shrinking. To underline his statement, he asked who provided the impetus that brought long-needed attention to automobile safety? Not a public health worker, but a lawyer named Ralph Nader who, almost single-handedly sparked a peaceful revolution that may lead to a new kind of consumer participation in our society.

Who is calling most clearly for a national policy on environmental quality? Not public health workers—conservationists, consumer affairs advocates, and other concerned citizens. Who is leading the drive for urban renewal and rehabilitation of the city slums? Not public health workers, but welfare groups and other concerned citizens.

If the public health community believes that, from its rich tradition, it has something unique to offer in solving the nation's public health problems, it is time to take a closer look at the technological jungle in which we live, urged Williams.

Pollutants Can Unbalance Earth's Delicate Ecosystems

We have come to a turning point in human habitation of the Earth. The cumulative effects of pollutants, their interaction and amplification, can be fatal to the complex fabric of the biosphere, warned Dr. Barry Commoner, director, Center for the Biology of Natural Systems, Washington University, St. Louis.

The future temperature of the earth, he pointed out, depends on balancing the effects of two pollution processes—a rise in the fraction of solar radiation retained in the atmosphere because of the accumulation of carbon dioxide and a decline in this fraction caused by the shielding effects of pollutant aerosols. If the carbon dioxide accumulation is too great, the rise in temperature may melt the polar ice cap and cause huge floods.

We are approaching the point of no return in water pollution, as the fate of Lake Erie indicates, Commoner said. It has been calculated that, given present methods of waste disposal, the total biological oxygen demand imposed on surface waters in the United States by 1980 will become equal to the oxygen content of all river systems in the United States in the summer months.

Another threat to the earth's fragile ecosystem that he cited is the depletion of the humus content of the soil in large parts of the United States. This depletion has reduced the soil's efficiency for sustaining crops. The remedy, extensive use of inorganic nitrogen fertilizers, exacerbates the stress on the integrity of the aquatic ecosystem. There is also evidence that the high levels of nitrate in fertilizers suppress the growth of nitrogen-fixing microorganisms in the soil. These organisms may be vital in any future effort to restore the humus content of the soil, he continued.

In the author's view, dealing with present threats to the environment will require new cultural attitudes since the present-day phenomena of pollution are complex, inextricably linked with technology, and new to human experience. He cited several examples of how a complex ecosystem mediates the health effects of new environmental pollutants.

Benzpyrene, a common combustion product that is carcinogenic, was thought to be only an airborne hazard. Recently it was found that rain and snow carry it out of the atmosphere and deposit it on soil downwind of urban areas. Food grown in the soil can be contaminated with benzpyrene.

More complex, he explained, is the route of oxidized forms of nitrogen from inorganic fertilizer to the blood stream of human beings. In northern Germany, heavy applications of fertilizer to soil growing spinach coupled with low light intensities during the growing season caused elevated levels of nitrate in the spinach.

The human body is not well adapted to high levels of nitrate. In infants, nitrate may be reduced to nitrite by the action of intestinal bacteria. High levels of nitrite in the blood can cause asphyxiation due to methemoglobinemia.

In the United States, infant methemoglobinemia has been traced to high levels of nitrate in drinking water. High nitrate levels may originate in feedlot wastes or drainage. Streams through heavily fertilized farmland have been found to contain nitrate concentrations in excess of levels recommended by public health officials. Such streams are the sources of municipal water supplies in several Illinois towns.

Commoner pointed out that the health hazards are the results of applying beneficial new technology—food production is increased by using inorganic fertilizers, harmful insects are controlled with DDT, nuclear reactors improve power resources but pollute the environment with man-made radioisotopes and excessive heat.

Social benefits, therefore, are linked with these social hazards. Resolving such environmental health problems requires value judgments. Economic, social, and political policies are involved. For example, he stated, urban pollution due to photochemical smog cannot be eliminated without supplanting individually used gasoline-powered vehicles with electric-powered mass transit or with steam-driven vehicles. The first solution would put massive economic burden on cities; the second would severely disrupt a mainstay of the economy—the automobile industry.

It is not the proper task of science to determine for the rest of society which policies should guide the be-

havior of man toward his environment. Science can only help create an informed citizenry by giving the public knowledge in understandable terms, he declared.

Urges Health Professionals To Join Pollution Fighters

Nobody has been managing the environment, or perhaps everybody has, declared Dr. John Hanlon, Assistant Surgeon General and Deputy Administrator of the Environmental Health Service.

Public health environmentalists complain about the extent to which environmental health concerns are being bled away by other new or old agencies, he said. But health agencies are still, for the most part, responsible for environmental health functions, according to data he presented listing the agency with primary responsibility in 16 environmental health functions for 53 States and Territories and 45 major cities (see table).

The table shows also, he said, that primary responsibility is most diffused in air pollution control, solid waste management, water hygiene, food and milk processing and sanitation, and surveillance of pharmaceuticals. In these areas, however, the problems are so complex that multiple agency involvement and interagency cooperation is inevitable, if indeed, not necessary.

He termed "disheartening" the apparent dispersion of activities at the local level in the 45 major urban areas. The visage of local health agencies appears discouragingly weak, Hanlon stated.

Dispersed responsibility for policing the environment is also characteristic of the Federal level, he noted,

Agencies with sole or primary responsibilities in environmental health management in 53 States and Territories and 45 major cities, United States, 1969

Function	Health agency	Health and other agencies [1]	Other agencies [1]	Reported no activity	No information
	53 States and Territories				
Air pollution	37	----------	15	1	----------
Radiological health	48	2	2	1	----------
Solid waste management	44	4	4	1	----------
Occupational health and safety	23	4	5	10	11
Water hygiene	37	15	1	----------	----------
Food service and sanitation	46	----------	6	----------	1
Food process sanitation	23	1	28	----------	1
Milk sanitation	22	3	14	----------	14
Shellfish sanitation	9	2	2	----------	40
Housing hygiene	15	5	5	----------	28
Vector control	33	2	1	----------	17
Injury control	35	4	1	----------	13
Pesticide surveillance	3	----------	5	----------	45
Recreation sanitation	11	1	----------	----------	41
Hazardous products	13	----------	5	----------	35
Drug surveillance	15	2	21	----------	10
	45 major cities				
Air pollution	23	----------	18	4	----------
Radiological health	22	----------	1	22	----------
Solid waste management	11	5	23	----------	6
Occupational health and safety	8	1	1	19	16
Water hygiene	16	16	9	----------	4
Food service sanitation	37	7	----------	----------	1
Milk sanitation	31	4	3	----------	7
Shellfish sanitation	6	----------	----------	----------	39
Housing hygiene	10	3	6	----------	26
Vector control	19	2	2	----------	22
Injury control	15	1	1	15	13
Pesticide surveillance	2	----------	----------	----------	----------
Recreation sanitation	8	----------	----------	----------	----------
Hazardous products	2	----------	----------	----------	----------

[1] Other includes special pollution control authority; department of natural resources; nuclear energy agency; department of public works, public service, or sanitation; department of labor, labor and industry, industrial relations, or compensation board; water department or water department board; department of agriculture; consumer protection agency; State laboratory or State chemist; fisheries department or commission; department of conservation; department of housing; department of licenses and inspection; department of community affairs; vector control commission; department of motor vehicles, police, or public safety; board of pharmacy; building department; department of neighborhood improvement; and safety council.

listing some particular interests of these Federal agencies: the Department of the Interior and its Federal Water Pollution Control Administration, the Environmental Science Service Administration of the Department of Commerce, Department of Labor, Department of Housing and Urban Development, Department of Transportation, Department of Agriculture, and the Federal Trade Commission.

It is impossible for any single discipline, profession, or agency to do the whole job of managing the environment. But, he declared, the discipline called public health has as its primary concern the impact of the environment on the health and well being of the human organism. In the final analysis, this must be the ultimate consideration, and it is the responsibility for this aspect of the environment which the public health profession must guard and insist on. We must, therefore, be concerned with trends toward fractionation of this fundamental responsibility.

Industry has been making decisions which have had a profound effect on the environment; no one has given consideration to the net consequences of these decisions. The advertising business has thrived on the promotion of industry's products, often with little concern for their efficacy, safety, or environmental effects. Legislators and members of the executive branches of all levels of government have made decisions with far-reaching effects on the environment, again with little or no consideration of the ultimate results.

The dire present and gloomy potential of the planet is now the subject of a great welling up of local, national, and worldwide concern. Increasing numbers of the groups which constitute the public are raising their voices about the environmental crisis. We in public health need their help and they need ours, Hanlon emphasized. He urged loud and persistent protest by professionals and citizens together to demand and insure that what must be done is done.

DENTAL HEALTH

Dental Care Inextricable From Comprehensive Care

True comprehensive care for patients with heart disease, cancer, or stroke is impossible unless dental care is an integral part of the program. This opinion was voiced by Dr. James W. Bawden, dean of the University of North Carolina School of Dentistry, who discussed dentistry's role in regional medical programs.

Bawden reminded the audience that under Public Law 89-239, which provided for regional medical programs, dental resources and activities can be enlarged significantly to improve many aspects of patient education and professional education.

Only three dental projects are funded, he revealed. These are in Texas, Michigan, and North Carolina. The Michigan project concentrates on detection of oral cancer. The Texas project emphasizes extension of maxillofacial reconstruction services and is centered on the strong maxillofacial team in Houston. Both of these projects are new, and their functional phases are at a minimum. The North Carolina Regional Medical Program Dental Project was the first to be funded and activated, Bawden said, and is now in its second year of operation.

Our observations on the program may be presented in three categories, Bawden reported. The first is concerned with the experiences of establishing dentistry's case to participate and selling the concept of the proposed project to the North Carolina Regional Medical Program's board of directors and the site visit team. The second relates to the nature of the program, and the third to its implementation and progress.

Getting Approval

Bawden briefly mentioned the skepticism among the board of directors of the North Carolina Regional Medical Program and the program's site visit team. In our view, he said, it was absolutely mandatory that someone who has a broad concept of dentistry's role in the health system serve as a spokesman on the board of directors.

Prompt and vigorous action by the North Carolina State Dental Society and its ad hoc committee (appointed to study dentistry's potential contribution to the program) convinced the board that the profession was serious about participation, he said. The content of a report submitted by the ad hoc committee in June 1967 also impressed the board.

However, persuasion by the deans of the University of North Carolina schools of public health and medicine and by the executive director of the North Carolina Regional Medical Program was the key factor. Fortunately, Bawden continued, the site visit team included the dean of a dental school who was most knowledgeable, and he structured his questions to give the best opportunity to convince the team of the appropriateness and merit of the dental project.

Project's Objectives

The program is basically a continuing education effort and an emphasis on providing facilities in community hospitals for dental care for inpatients. Bawden revealed that the North Carolina Regional Medical Program embraces six categorical diseases, and carefully programed courses in the joint medical care of patients having these diseases are being constructed.

Individual courses emphasize the dentist's role in facilitating early diagnosis, review the oral manifestations of systemic diseases, systemic implications of dental disease, and special considerations pertaining to cooperative care of the patient by the dentist and physician, he said. The courses are designed to accomplish the following specific objectives.

- To make the dentist more astute in the early recognition of systemic disease and to encourage him to make medical referral when he suspects a problem.
- To encourage physicians to be concerned with the oral health of

their patients and to seek dental consultation and care.

• To make the physician and dentist more knowledgeable about oral manifestations of systemic disease and the effects of oral disease on systemic problems.

• To increase the number of hospital staff appointments for dentists and to improve the level of dental care available to the hospitalized patient.

The program also seeks to advise community hospitals on the most effective way to equip facilities to permit proper and efficient dental treatment for inpatients.

Project's Functioning

Six hospitals in North Carolina have been selected for the pilot project. These community hospitals include a spectrum in terms of geographic location, size of facility, and community environment. There is also a range of what Bawden said might be called "dental orientation" in the various hospitals.

Bawden explained that the courses are in the final stage of development and will be offered through these hospitals to dental and medical practitioners in the next few weeks.

A study is being made of equipment and facilities adaptable to the community hospital dental environment, Bawden continued. Emphasis is on rather inexpensive, mobile equipment which can be moved throughout the hospital.

Organized dentistry and the regional medical programs should continue to explore the possibilities of cooperating in spite of reduced funding available to the programs in recent months, he said. Dentistry should be included in such programs, and there is an important opportunity.

Dental Health Values Relate To Family's Life Style

Establishing dental health values appears to be a family affair closely related to the mother's attitudes and practices, according to Jeanette F. Rayner of the Division of Dental Health, National Institutes of Health, Public Health Service. She described a study of "Socioeconomic Status and Factors Influencing Dental Health Practices of Mothers."

The study was based on the hypotheses that (*a*) mothers' attitudes toward dental health practices are products of their dental practices, rather than precursors, and (*b*) the dental health practices of mothers are causally dependent on mothers' perception of their own social class, that is, subjective social class.

Method

A random sample of 524 white children, ranging in age from 11 to 14 years, was selected from two school districts in a suburban community of 52,362 population, Rayner said. Mothers of the children were interviewed by use of a pretested, coded questionnaire, and data furnished by the mothers were used for this analysis. She explained how responses on demographic, attitudinal, perceptual, and dental behavioral variables were scaled, using a modified Guttman technique, then subjected to a correlational analysis. Linkage and path analyses reduced the intercorrelational matrix to a causal model for the total sample.

Of these, Rayner continued, 33 were identified as members of the lower socioeconomic status group, 251 as middle, and 188 as upper. Each subsample was analyzed, and comparisons were made between resulting causal models.

General Observations

Significant differences were found between classes in respect to effects of respondents' subjective evaluation of social class, attitudes, education, and sources of information on mothers' dental health practices, Rayner revealed. For the total sample, respondents' subjective evaluation of social class influenced frequency of mothers' dental visits and their attitudes toward dental care. Information obtained after their children started school influenced mothers' attitudes toward dental care, but not their behaviors.

Apparently, Rayner said, the more highly educated the parents, the fewer and less intense are the mothers' other concerns for their children. In turn, she observed, the fewer and less intense concerns for their children also influence mothers' expressed satisfactions with the children's dental conditions.

Group Differences

In the lower class group, respondents' subjective evaluation of social class appeared not to influence mothers' dental health behaviors, Rayner reported. Level of parents' formal education seemed to influence only mothers' frequency of toothbrushing. However, mothers' satisfactions with children's dental conditions was also influenced by parents' formal education.

Rayner found that the model for the middle class most closely matched that of the total sample. For this group education, but not income, seemed to determine subjective social class. Subjective social class was an intermediate in the causal chain, falling between education and practices, though education appeared directly causally related to the frequency of dental visits.

The upper class deviated in that actual social status appeared to be more influential in determining dental health practices than subjective evaluation of social class. Subjective social class apparently had no influence on mothers' practices; it mediated only in respect to mothers' satisfactions with their children's dental conditions.

In this group subjective social class was primarily influenced by family income. Parents' education appeared to have less effect. However, level of parents' education seemed to be the variable most influential for frequency of mothers' toothbrushing and dental visits.

Involving Mothers

Lower class families may lack dental health values or deviate from norms accepted by others. The causal models, Rayner suggested, identify areas of influence wherein health educators might intervene and somehow educate mothers for change or the establishment of values.

Perhaps emphasis should be shifted so mothers can be more fully involved, she mused. Mothers' participation in children's dental health programs may be at least as important in improving children's den-

tal health practices as children's participation alone.

If children's dental health practices depend on observing their mothers' practices, Rayner reflected, then it seems reasonable to expend some effort in the health education of mothers. The health educator might teach the mothers directly and the mothers in turn, under the supervision of the educator, teach their own children. Verbal communications could be accompanied by some demonstration of behavioral responses of the mothers.

Since establishing dental health values seems to be a family affair, why not, Raynor queried, make dental health education a family affair also?

Dental Pilot Program Scores in Harbor City

One method of attacking the problem of dental care in a poverty community is to utilize the services of a partnership group practice with a broad spectrum of patients, stated Dr. Max H. Schoen, a dental administrator in Harbor City, Calif. This approach, he said, when coupled with capitation payments, may represent the closest approximation to "mainstream" dental care of any of the plans currently in effect.

Schoen presented preliminary data and experiences with a small pilot program to demonstrate the feasibility of such an approach.

The main office of the pilot program is located within the census tract where a Parent Child Center project of the Office of Economic Opportunity started recently. One hundred families, all at the poverty level, receive a multiplicity of supportive services, one of which is health care. Dental care can be received at this group's facility if desired. Medical care is provided by the Kaiser-Permanente system and the dental group practice is paid $16.67 per family per month. About half of the families are eligible for Medi-Cal benefits and their capitation is paid for by the Department of Health Care Services of the State of California. The remainder are paid for by the Volunteers of America through the OEO grant.

As families are signed up, an initial appointment for X-ray and examination is given. One dentist performs all the diagnoses in order to minimize individual variation, although the dentists performing the service can alter a diagnosis, usually in consultation with the initial examiner. X-rays, including panorex, periapical, and bite-wing films are used in the diagnosis. Treatment plans involving quadrant or half-mouth dentistry are projected.

As the Parent Child Center program develops, dental health education sessions will be held with the families. The staff of the group will meet with participants in seminar-type sessions. It is hoped, said Schoen, that the unifying of education and care will produce positive behavioral changes.

During the first 4 months of the program, 72 percent of those eligible, 3 years of age and older, were seen. The value of services performed was about $14,000, or more than three times the premiums earned. Less than one tooth per person was extracted while more than two teeth per person were filled. Fifty-one percent of those seen and 36 percent of all persons over 2 years of age have had dental work completed and were placed on recall. Only 59 percent of those seen had had previous dental care and 53 percent of those had been seen in the group's offices, prior to the start of the program.

Schoen pointed out that the relevance of the concept of unrestricted free choice of dentist by the eligible patient must be questioned. It has been noted that the free-choice non-system has resulted in an annual 84 percent nonuse of Medi-Cal. These latest figures show that free choice has resulted in a large percentage of never-users (41 percent) and that a majority of those who had ever received restorative dental care had obtained services at the dental group involved in the pilot program.

An intensity of dental care similar to that undertaken by the same dental group has been carried out for a number of fringe benefit prepaid plans, reported Schoen. If the experience can be transposed at all, he said, the services needed should drop drastically after the initial period. Even a degree of transiency should not prevent this reduction in need from occurring, since a relatively high percentage of people remain stable in a community for at least a few years.

Schoen concluded that the initial experience of this pilot project has demonstrated that very high utilization and completion rates can be achieved almost immediately. The first few months resulted in more dental care than the total previous dental experience of the families involved. He suggested that larger projects, covering more families and a much wider geographic area, should be conducted.

New York State Curtails Dental Medicaid

The dental program in New York State was curtailed not because the State could not afford it, but because public opinion did not support it. So remarked Dr. Naham C. Cons, director, bureau of dental health, New York State Department of Health. His subject was "Comprehensive Dental Care Under Title XIX—Can We Afford It?"

After defining "comprehensive" and "afford," Cons described New York State's experience with dental Medicaid. In New York, he said, the consensus at the start of Medicaid was that it would be naive to expect that all dental services known to modern dental practice could be made available under the program.

In dental care, especially costly prosthodontia, there usually is a choice of several acceptable treatment plans and the cost can vary greatly. In nearly every dental office, patients are presented alternative treatment plans, especially when the cost may be a serious inconvenience. This choice is rarely offered when a physician's services are needed.

Priorities and Principles

The fact that only about 40 percent of the U.S. population visited a dentist in 1968 and about half of those visits were for emergency care is ample proof of the low priority dental care is given. Nevertheless, Cons continued, the State embraced the American Dental Association's

principle that, "Care provided in tax-supported personal health services programs for the needy should meet as high standards of quality and adequacy as can reasonably be made available to others in the community." Local dental directors, backed up by peer group advisory or review committees, helped define the standards of quality and adequacy of the dental care which could reasonably be made available to persons in their communities.

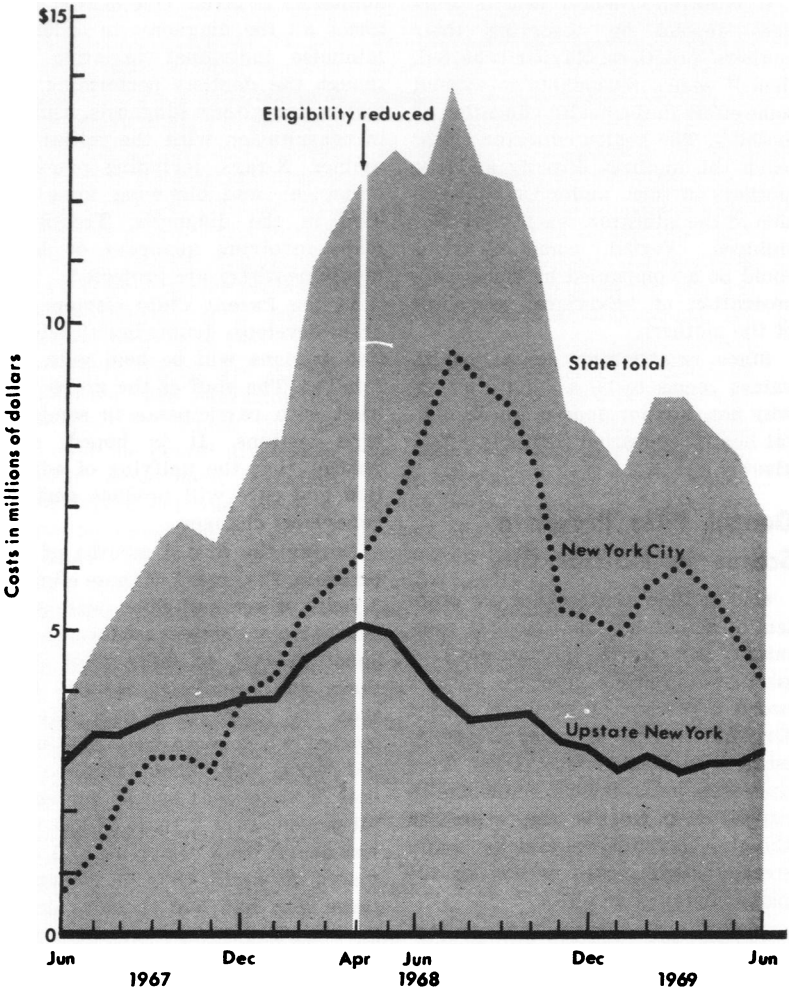
There were 6.2 million persons potentially eligible for Medicaid when the program started in 1966. Although title XIX did not authorize reimbursement for the care of medically indigent persons between the ages of 21 and 64 years unless they were receiving some form of public assistance, New York State made no such distinction. Thus, Cons pointed out, the potential caseload in New York State was greater than that for which the State received some Federal reimbursement.

Many dentists, with offices in or near low-income areas, found that patients who had formerly received only emergency dental services could receive complete dental care under Medicaid. Consequently, many of these dentists expanded their offices and staffs to cope with the increased demand, Cons said.

Local social services commissioners, who pay the bills in New York's program, were not always willing to pay for the types of care approved by the local director of dental care, Cons explained. Some balked at paying for fixed bridgework, others at cast chrome partials, and one even objected to filling deciduous teeth. All complaints by providers, patients, and welfare officials had to be answered in terms of the State's definition of comprehensive care and its interpretation by local dental directors and peer review committees.

However, Cons noted, utilization rates in the dental Medicaid program in New York never exceeded about 30 percent. If the utilization rate had been ideal, a manpower crisis would have required curtailing the program until new and better delivery systems evolved or better use of auxiliary personnel could have been achieved.

Dental expenditures for medical assistance, New York State, June 1967–June 1969



Fiscal Effects

As a result of the rapidly rising total Medicaid expenditures, in April 1968 New York State withdrew eligibility in the program from persons between ages 21 and 64 years who were not on public assistance. Although the dollar volume of dental services provided began to drop immediately, the dollar volume of expenditures for the State as a whole by date of payment did not reach a peak until July 1968 (see chart). Dental services amounted to 12.9 percent of the expenditures in New York State in calendar year 1968, Cons reported.

Lack of an accurate, rapid data processing and retrieval system as well as unfavorable publicity received by various providers of dental services, especially those in multiple-chair offices in low-income areas, resulted in new legislation in 1969, Cons continued. The 1969 legislation again reduced the number of persons cared for under the program, and it also reduced the range of services from comprehensive dental care to "preventive, prophylactic and routine dental care and services."

The new legislation prohibited dental prosthetic or orthodontic appliances unless necessary to "alleviate a serious health condition or one which affects employability." All professional fees were reduced by 20 percent.

However, the most costly elements of the Medicaid program were barely

curtailed. Hospitals, nursing homes, and public home infirmaries, Cons observed, spend 62 cents of every Medicaid dollar. The only corrective action taken in the institutional portion of the program was a 6-month freeze in rapidly escalating rates and a rather ineffective attempt to limit the length of stay in nursing homes.

Free Dental Care Pays Off For New Zealand Children

Training and utilizing school dental nurses in New Zealand solved the problems of controlling dental caries among children as well as the dental health manpower shortage, reported Eva E. Puder, dental hygienist, New York City Community College, City University of New York.

The key to successful children's dentistry in New Zealand, according to Puder, is school dental nurses—auxiliaries—who are trained in a 2-year post high school program to perform routine dental treatment service to all children ages 2½ to 13½ years.

The 2-year training program encompasses most routine phases of children's dentistry—restoration of carious teeth, prophylactic treatments, administration of local anesthetics, extraction of deciduous teeth, and topical application of fluorides. The school dental nurse is also trained to be a responsible dental health educator. Her education and maintenance are subsidized by government while in training, Puder reported.

The schools for student dental nurses are located in Auckland, Wellington, and Christchurch, headed by a principal who is a dentist, and staffed by dental officers (dentists) and dental tutor sisters (experienced dental nurses). For clinical operative dentistry the ratio is 10 to 12 students to one instructor, Puder stated.

After completing training, she continued, the students are examined by a board of external examiners who are members of the dental profession and participate in the final examination of the prospective school dental nurse.

Puder pointed out that the school dental nurses are employed by government only. Their services are utilized in public school clinics where all children have a choice of free dental care. Once a child registers for this service he is recalled at 6-month intervals. After the preschool age, recall is controlled at the school until the child reaches 13½ years. Then he is discharged from the services of the dental nurse and receives care from the family dentist. His dental care from this point on is paid for by government on a fee-for-service basis until he is 16.

These dental clinics are on the school grounds. The education department provides funds for the building, and the dental division of the health department provides funds for equipment and services. The clinics accommodate one or two school dental nurses who work jointly with the educational staff of the school, Puder said.

She reported that the school dental nurses work under close supervision of a senior dental officer who is available to assist in emergencies. They are also supervised by a dental nurse inspector who works directly under the senior dental officer.

After being skeptical initially, New Zealand dentists now fully support the school dental nurses because they create a dental health oriented patient, and also reduce dentists' workloads and thus help alleviate the dental manpower shortage.

Puder found that the dental nurse and her work are widely known by the general public. Parents readily explained about diet and dental health, fluoridation of water, the need to fill deciduous teeth, and how happy they are about this care of their children's teeth. Many children eat apples daily during their recess period. They are taught to do this by the dental nurses. New Zealand children have extremely well-cared for mouths, she declared.

PH Detail Person Promotes Oral Cytology Program

The public health detailer may be an adjunct to the promotion of public health programs as is oral exfoliative cytology to the detection of early oral cancer, declared Dr. Bruce B. Butler and E. Ann Godfrey Erskine, formerly of the Louisiana State Department of Health. They described the training and work of a new kind of dental public health person, a public health detailer.

Oral exfoliative cytology was introduced to Louisiana dentists through formal presentations at dental society meetings, Butler and Erskine said. Even though these programs may have been successful in promoting oral cytology to the audiences, they were unsuccessful because a minority of dentists attended the presentations. For a program of public health significance to be successful, or specifically for a program for detecting early oral cancer to be successful, Butler and Erskine opined, every dentist should be informed about oral cytology and have kits for use in taking oral smears.

A new use of person-to-person contact was demonstrated. Dentists were visited in their offices by a public health detailer. The detailer operated in a manner similar to the commercial dealer of pharmaceuticals and dental supplies, but she was trained to sell ideas.

Training

The objective of the detailer's training was to acquire knowledge for use in conversations with dentists, Butler and Erskine said. The first 2 months were devoted to learning basic information about the hard and soft structures of the oral cavity, including anatomy and function of the teeth and supporting structures. The trainee also learned about dental caries, periodontal disease, and oral cancer. The information was presented in informal lectures, selective readings, films, and discussions.

The third month was devoted exclusively to oral cancer and oral cytology. The detailer trainee also observed two district dental society cytology presentations and informally discussed oral cytology with dentists attending these meetings. Time was spent with the sales manager of a dental supply company, a detailer of pharmaceuticals, and a detailer of oral cytology kits. By the end of the third month, the detailer's presentation to dentists was developed.

The Shreveport Study

Two groups of 41 dentists each were matched by age, type of practice, years since graduation from dental school, and previous submission of oral smears, Butler and Erskine reported. Fourteen of each group had attended the formal oral cytology presentation, and 27 had not. The experimental group was detailed in 7 work days; the control group was not detailed.

The detailer was well received. Her mean waiting time was 6.7 minutes, and the mean detailing time was 9.2 minutes. Most dentists listened attentively.

The 82 dentists were sent questionnaires designed to elicit information about their observations of oral soft tissue lesions and experiences in oral cancer detection during the 6 months following their exposure to either type of oral cytology presentation. Among the 71 dentists who returned the questionnaire, Butler and Erskine said, were 93 percent of the experimental group and 80 percent of the control group.

Dentists from both groups referred their patients for biopsies. However, Butler and Erskine said, 22 percent of the dentists in the experimental group took smears, whereas only 7 percent of the control group did. These results indicate that the public health detailer was able to visit a substantial number of dentists in a relatively short time and that she succeeded in influencing a number of dentists to use oral cytology.

LABORATORY

Micro Equipment Reduces Cost of Virus Detection

Automated instruments for micro serologic techniques are available, remarked Dr. Helen L. Casey, chief, Viral Immunoserology Unit, National Communicable Disease Center (NCDC), Public Health Service. She described the Center's use of such techniques for diagnoses of viral diseases.

Casey recalled that before American-made equipment for performing micro serologic techniques was marketed in 1961, the major objection to use of any such equipment or techniques centered on small volume measurements. By January 1962, however, the Center had obtained micro equipment and commenced reducing tube or macro techniques to plate or micro techniques.

She said that hemagglutination-inhibition (HI), the most sensitive technique for detection of measles vaccine antibody, was chosen for the initial investigation. Simultaneous tests on 500 serums in tubes and plates convinced NCDC workers that the micro HI technique for measles was equally as satisfactory for detecting antibody as the macro method. Casey disclosed that the monetary savings in volumes of reagents and in technicians' time more than paid for the equipment.

Within 1 year all HI and complement fixation (CF) tests used throughout the Virology Section had been adapted to the micro equipment and were found to be as satisfactory in the micro volumes as were the measles HI tests, she continued. At present the section routinely uses micro HI techniques for detecting and identifying adenoviruses, influenza viruses, parainfluenza viruses, arboviruses, murine viruses, measles, rubella, and vaccinia viruses. An indirect micro HI technique is also used for *Mycoplasma pneumoniae.*

The micro LBCF technique is used for routine detection of adenovirus group antibody, influenza soluble antibody, certain group A and B arboviruses, measles, mumps soluble and viral, herpes simplex, varicella zoster, cytomegalovirus, the *Bedsonia* group, some murine viruses, and certain of the rickettsia.

Casey conceded that a standard micro neutralization technique suitable for all viruses has not yet been developed. However, a micro neutralization test was developed for three types of poliovirus, all of the Coxsackie B's, and Coxsackie A–9.

Micro gel diffusion is used to identify virus strains, particularly those belonging to the California group, she said, and to identify antigens of the pox virus group. Tests positive for vaccinia or variola can be read in approximately 4 hours, but 24 hours is usual.

Spraying, Wet Vacuuming Clean Most Effectively

Predusting, spraying, and wet-vacuum pickup results in the greatest reduction of bacterial flora on a floor, reported the Committee on Microbial Contamination of Surfaces of the Laboratory Section of the American Public Health Association. A subcommittee consisting of Dr. Donald Vesley, Austin K. Pryor, Dr. William C. Walter, and Dr. James G. Shaffer prepared the report.

The report covered studies conducted in hospitals in different parts of the United States during the summers of 1966, 1967, and 1968 to determine achievable levels of microbial cleanliness immediately after cleaning and disinfection procedures on floors of patients' rooms. The studies were a continuation of related activities in 3 previous years.

The committee described the guidelines it had established for achievable levels of microbial cleanliness. Up to 25 colonies per Rodac plate was considered good; 26–50 colonies per plate, fair; and more than 50 colonies per plate, poor. These numbers were mean colony counts from plates randomly applied on about 8 square feet in a high-traffic area immediately after cleaning, with the floor visibly dry.

In 1966 double-pail mopping resulted in a mean of 76 colonies per Rodac plate, whereas spraying and wet vacuuming without specified predusting resulted in a mean of 39 colonies. A mean of 99 colonies had been reported for unstandardized mopping in 1965.

In 1967 spraying and wet vacuuming with an average 3-minute disinfectant contact time resulted in a mean Rodac plate count of 46 colonies, whereas a mean of 23 colonies per plate was obtained with an average 13-minute contact. In 1968 Rodac plate counts after cleaning, using the same predusting, spraying, and wet-vacuum pickup procedure

as in 1967 and a 5-minute exposure time averaged 17 for a phenolic detergent-disinfectant, 20 for a quaternary ammonium detergent-disinfectant, and 30 for an all-purpose cleaner with no disinfectant.

Considerable variation was evident among individual hospitals and individual rooms regardless of method. It had previously been reported that bacterial reductions of more than 75 percent were achieved by predusting with chemically treated cloths without additional treatment.

The wet-vacuum pickup method generally yielded better results than mopping, even when the mopping procedure was carefully specified. The wet vacuum resulted in about two-thirds of the participating hospitals achieving good results.

The highest percentage of good results in the studies was associated with detergent-disinfectants and at least 5 minutes of product contact. However, even the all-purpose cleaner used with the wet vacuum resulted in 12 of 13 participating hospitals being placed in the good or fair categories. Microbial floor counts can be reduced substantially by effective soil removal even without using a disinfectant.

Goals for Public Health Lab Redefined for Future

The primary role of the public health microbiology laboratory will change from routine testing to providing a comprehensive improvement program to all laboratory facilities within its jurisdiction, according to Dr. Carl H. Blank of the Utah State Division of Health. The secondary role, he said, would be to provide laboratory expertise to support programs for special health needs.

Blank pointed out that functions are being updated to include training, consultation, reference or diagnostic testing, development and use of a basic management information system, and applied research within the concept of product and procedural evaluation. He enumerated the three phases involved in training as specialized study of sophisticated techniques for highly skilled bench workers, reviewers, or consultants; general instruction in performing routine tests and screening procedures related to direct patient care by less highly trained workers; and preparation of teachers for the two preceeding categories.

The microbiology section of the public health laboratory should be competent to obtain laboratory test information which is not available from other laboratories in its jurisdiction, Blank said. This service would encompass confirming, extending, and elaborating on results reported by other facilities.

The basic information evolved for management should include workload data, cost analysis, cost effectiveness ratios, methods of quantifying workloads other than numerically, and a system of analysis. Such analysis, he explained, would facilitate adopting new programs and changing or eliminating existing programs as circumstances require.

The microbiology section of the public health laboratory is impelled to adopt automation in order to decrease costs or at least to stabilize the costs of procedures and to help overcome the manpower shortage, Blank continued. Already FTA tests have been automated, and studies are being made to automate other fluorescent antibody procedures.

Millions of tests for syphilis serology are performed in this country each year, he recounted, yet most of the remaining serum is discarded. This serum, Blank said, could be used in setting up the large-scale screening programs without additional inconvenience to the population.

Chromatographic monitoring of bacterial growth and chromatographic measurement of metabolites will become valuable tools of the microbiologist, Blank predicted. Use of the gas chromatograph with and without pyrolysis will increase and, he concluded, organism profiles will be determined along with metabolite profiles in order to provide more rapid reporting to the physician.

Economy of Micromethods Boon to Small Labs

Simple, rapid, and inexpensive—micromethods may encourage small laboratories and scientists with limited means to participate in serologic study of respiratory viruses. So observed Dr. Max Rosenbaum, Earl A. Edwards, and Elizabeth J. Sullivan from Naval Medical Research Unit No. 4, Great Lakes, Ill. These investigators described "Micromethods for Respiratory Sero-Epidemiology."

Although conventional methods are simple in concept and direct in interpretation, they are usually used for mass serology by only the larger and more affluent laboratories. Valuable and timely epidemiologic information is not often obtained from the smaller laboratories discouraged from participating in serologic studies by the logistical problems and expense involved.

Adaptability of Micromethods

The microtechnique, said the authors, has been adapted for use in neutralization, hemadsorption-inhibition, and fluorescent antibody tests with respiratory viruses propagated in tissue cultures. Mass use of such tests can provide valuable information on the epidemiology and control of the most common infectious diseases.

Detection of viral reproduction depends on modifying host cell material or producing characteristic viral cytopathology, the authors explained. The inhibition of these effects by specific antibody and a fourfold or greater increase in its titer between the patient's acute and convalescent phase serum is the basis for diagnosis of a viral infection.

Tissue culture tests conducted by the micromethod require only a microplate for cell cultures, micropipet (dropper), transfer loop (dilutor), rubber plate holder, and priming blotter. The type of plastic plate used depends on the test desired.

Range of Tests

A common viral serologic procedure is the neutralization test. Several variations in performing tests for viral neutralizing antibody are possible. Should it be desirable to use cytological stains for virus assay purposes, flat-bottomed wells are best for such tests.

The microtechnique can be particularly useful for fluorescent antibody work with respiratory viruses,

such as myxoviruses or adenoviruses, the authors pointed out. The myxovirus hemadsorption-inhibition test is also readily adaptable to the microsystem. This test, the authors continued, is gaining popularity because it eliminates problems such as false viral inhibition due to nonspecific substances found in serums.

In some virus groups, such as adenovirus, rhinovirus, and influenza virus, inhibition of cell metabolism can be used to assay viral propagation rapidly. This method has been successfully used in lieu of the cytopathic neutralization test.

Comparison With Tube Method

Reproducibility of the microtest is as good as that of the tube test, the workers said. The range of titers, as well as the standard deviations, derived by either method are in good accord.

The important comparison between the two tests, the authors pointed out, is their usefulness in determining the number of times a significant increase in serum antibody titers occurs in pairs of homologous, acute, and convalescent serums. Such comparisons have demonstrated an average agreement of 84 percent for the two tests in diagnosing infection. The tests were equally reliable in detecting serologic infections.

Economy of the Micromethod

While comparing infectivity titers, the authors stated, the amount of time and expenses involved were recorded. The tube test required more than 300 culture tubes and more than 5 hours of labor merely to set up the test; the microtest required only three plates and was completed in less than 2 hours. The time for the microtest can be reduced to less than 1 hour if loop dilutors instead of micropipets are used to transfer the virus suspension.

The economy in neutralizing antibody assays is even greater, the investigators declared. The cost of performing titrations on 10 serum specimens would be at least $1 for materials alone. By the micromethod, the authors revealed, this cost was only 3 cents. The cost by micromethod did not include savings in utensil preparation, disposal, and technicians' time and morale in carrying out the test.

OCCUPATIONAL HEALTH

Upgraded Health Programs For Federal Employees

Among the entire national work force in 1967, more than 10 times as many working days were lost due to work-related injuries than to strikes and, additionally, millions of working days were lost due to sickness-absenteeism. Citing these statistics, Dr. John Baer of the U.S. Civil Service Commission added that the Federal Government recognizes the need to reduce drastically the heavy toll on lives, time, and money lost due to occupational injuries and illnesses and is therefore greatly upgrading its Federal employee occupational health programs.

In many industries, occupational health concerns begin as executive health programs because of the great financial investment in developing and training key officials. Such exclusiveness is, of course, no longer acceptable, declared Baer. If an occupational health program is good for the 40-year-old executive, then it is equally good for other employees aged 40 or older. To put this another way, if it is a good program for the high-salaried person, then it is even more important to the person who earns $4,000 or $5,000 and who already is generally receiving poorer health care, he went on.

Turning to the kinds of services the Commission considers appropriate for employers to offer, Baer said that the Federal Government's experience indicates that it is economical to provide a full-time program at locations where there are 300 or more employees on a single shift. Generally, it has provided such programs at a cost of about $25 per employee per year.

Baer suggested that the basic services to be offered by the programs should include emergency care; palliative treatment; immunization for influenza, tetanus, typhoid, and smallpox; screening programs for cancer and diabetes, and blood, urine, vision, and hearing disorders; referral of abnormalities to the employee's private physician; referrals from private physicians for simple or routine matters such as allergy inoculations, soaks, or bandage changes; health education programs (through the use of films, lectures, or pamphlets); and periodic physical examinations for employees 40 years of age or older.

These are the services needed to meet the minimal standards of adequate programs, Baer said. Many other areas of activity should probably be included. Counseling of the emotionally disturbed employee is certainly among them. Special attention should be given the employee who has a high degree of absenteeism, tardiness, problem drinking, interpersonal conflict with others, or who is overly dependent on others, destructive, and threatening in his behavior, as well as to the employee who is accident prone or self-destructive. Counseling and education is also important for supervisors who must deal with employees evincing such behavior, he pointed out.

Baer reported that chargeable work-related injuries and illnesses cost the Federal Government (as an employer) several hundred million dollars annually, not counting the cost incurred by lower productivity. The Government's answer, he said, is improved preventive health care. Greater attention, he continued, is also being given to environmental health conditions, including lighting, ventilation, and fumes. And, Government is now moving beyond the poster campaign for safety—greater emphasis is being placed on the cause of accidents.

Piecemeal Approach Is No Longer Acceptable

The Federal approach to occupational health hazards has been piecemeal—dealing with each danger as it arose, declared Assistant Surgeon General Chris A. Hansen, commissioner, Environmental Control Ad-

ministration, Environmental Health Service.

But, he cautioned, the Public Health Service has lacked operational or enforcement authority clearly defined in law. What we have done is to discover and disseminate knowledge and give advice or assistance when someone asked or when someone would listen.

He cited these annual statistics as reason for concern.

1. 14,000 persons are killed in occupational accidents
2. 3,600 die from occupational disease
3. 2.2 million are injured at work, seriously enough to cause them to lose time from their jobs
4. More than $2 billion is paid out in workmen's compensation claims
5. More than 25 million of the 80 million workers in the nation are not covered by workmen's compensation

These probably represent only a fraction of the injuries and illnesses attributable to the workplace, he said; occupational illness is often improperly diagnosed or is not reported.

Controls, Hansen said, are often applied only after the danger is apparent. Phosphorus matches were prohibited in 1913 only after workers in match factories were poisoned, and stiffer mine safety regulations were called for only after the 1968 disaster in a West Virginia coal mine. Only 11 States and three cities have what the Administration's Bureau of Occupational Safety and Health considers adequate occupational health programs, and eight States have no occupational health programs.

In surveys we have found extreme carelessness in handling substances such as lead, mercury, and carbon tetrachloride that have been known as hazardous for generations. Control procedures break down, deteriorate, or are simply ignored. Workers suffer from poisons that have been controllable since the Middle Ages.

Hansen described some of the bureau's efforts in battling occupational disease. The bureau provided the scientific basis for the coal dust standard—3 milligrams per cubic meter of air—incorporated in the proposed Federal Coal Mine Safety Bill. About 38,000 coal miners suffer from pneumoconiosis, and estimates of the total number of active and retired miners affected range up to 125,000.

A symposium on byssinosis will be held early in 1970 to bring together interested parties to exchange information and to make recommendations for more effective controls, he said. An estimated 8,000 to 9,000 cotton textile workers suffer from byssinosis.

Research by the bureau led to the establishment of standards for radioactive contaminants in uranium mines, but an estimated 600 to 1,100 workers will die of lung cancer caused by exposure before the standards were adopted. Again, we did not have the power to control or enforce the standards, he said.

Concerning another recently recognized hazard, airborne asbestos fibers, he pointed out that asbestos workers have a lung cancer rate seven times that of the general population. Potentially, millions are vulnerable to these fibers; construction workers and those living near an asbestos mill or near a construction site when the substance is being used are also exposed.

No worker should be expected to risk his health, limbs, or life for the sake of a job, he stated. All occupational hazards are by definition preventable. We must learn to prevent them and muster the resources to apply that knowledge.

Pneumoconiosis Prevalence Among Pa. Coal Miners

A 4-year study of 801 working anthracite coal miners in Pennsylvania indicated that between 9 and 34 percent of them were suffering from pneumoconiosis according to different criteria. Also, there was a progressively rising prevalence according to the length of time of underground exposure, which is indicative of dose-effect relationship. A remarkable rise occurred in the risk after 20 years' exposure.

Describing the study, Dr. George K. Tokuhata, director of the division of research and biostatistics, Pennsylvania Department of Health, and associates said that this pattern of change was partially influenced by the aging process of the working miners, but the relative contribution of the aging factor itself could not be determined. Evidence for pneumoconiosis was supported by an impaired pulmonary function and either abnormal chest X-ray or respiratory symptoms, or both. Respiratory symptoms were expressed in terms of bronchitis and dyspnea. The level of dust exposure was not included in the study.

Smokers seemed to have a much greater risk of acquiring pneumoconiosis than nonsmokers. According to the authors, this suggested a synergistic interaction between tobacco smoke and coal mine dust along with the effects of aging in the cause of pneumoconiosis. It also suggests, they said, that while cigarette smoking is generally harmful for human health, it could be particularly harmful in the presence of another known agent, such as coal mine dust. Thus, they concluded, the control of smoking habits might be as important as the control of dust in preventing pneumoconiosis.

The prevalence of pneumoconiosis was higher among coal miners in large collieries than among miners in small, so-called household mines. According to the authors, this difference may be due to possible differences in either the dust exposure level or the daily exposure time or both. Miners in large collieries usually work in a more mechanized environment, thus probably more dust-producing, whereas independent miners usually work in small "open hole" mines.

Since pneumoconiosis causes severe disability, and the condition may be irreversible beyond a certain stage of pathogenesis, the authors suggested that a relatively simple and easy method of self-assessment of the risks among miners would help in prevention. They believe that a study of a large number of miners is needed in order to estimate fairly accurately the individual risk based on age, exposure years, respiratory symptoms, and smoking habits. If this is possible, they said, miners with a near threshold risk, as evaluated by the miner himself, may be subjected to a mandatory, complete

diagnostic procedure including chest X-ray and pulmonary function tests. Such a study would also enable verification of the present findings, particularly those based on a relatively small number of observations.

Tokuhata and associates recommended the following further studies for improvement of pneumoconiosis control programs: (*a*) studies aimed at determination of the differences in the origin and progression of the disease between anthracite and bituminous coal miners, (*b*) studies designed to evaluate other diseases among coal miners, such as heart disease caused by impaired pulmonary circulation, bronchitis, lung cancer, arthritis, and other chronic illnesses, and (*c*) studies leading to a better standardization of mass screening procedures.

Seek Toxicity in Chemicals By More Sophisticated Ways

Recently, oral and skin LD_{50}'s and inhalation LC_{50}'s were considered sufficient for toxicological evaluation of industrial chemicals. Today, however, the range and variety of tests are constantly being expanded as innovations are introduced to meet growing needs for safety evaluation. Thus, said Dr. Robert E. Eckardt, the researcher must understand the utility of the new tests as well as their limitations, because increasingly he is being asked for advice by management in the total environmental health field.

Describing some innovations in toxicological testing programs, Eckardt, who is with the Esso Research and Engineering Company, Linden, N.J., said that when a new chemical is synthesized, evaluation for potential toxicity may begin with a simple oral LD_{50} determination. This gives the toxicologist a feel for the degree of toxicity involved.

As the new chemical is developed from laboratory bench scale studies and approaches readiness for the marketplace, the toxicologist expands his studies to include skin toxicity and irritation, eye irritation, and inhalation. Depending on the end use comtemplated for the chemical, the studies may be further expanded to include 90-day feeding of rats; 2-year or lifetime feeding of rats, dogs, or primates; use tests in panels of human beings; carcinogenesis tests; and metabolic studies. In some instances, Eckardt said, radioisotope studies will be done to trace the location of compounds in the body.

At the end of the feeding experiments, surviving animals are sacrificed and as many as 24 tissues are usually studied for gross and microscopic pathological findings, according to Eckardt. During the actual testing, he went on, periodic studies may include blood counts, urinalyses, and certain enzyme systems in the animals.

Recently, in a study of such enzyme systems, it was observed that lead interferes with delta-aminolevulinic acid (dALA) dehydrogenase. As a result, dALA accumulates in the blood from which it is removed by the urine and excreted. Although more work is required on this factor, Eckardt believes that measuring the dALA in the urine may be a more sensitive test for lead exposure than either blood or urinary lead determinations. Also, he said, it is a far simpler test to perform and less subject to contamination. Where lead determinations are being made, lead is usually being used, and there is always a great danger of contaminating the blood or urine sample with lead, he explained.

When a chemical is intended for use on human skin, such as for use in a cosmetic, testing may actually be carried out with people. Thus, said Eckardt, the material may be patch-tested in people and, by subsequently applying a challenge, patch-tested for its ability to cause skin sensitization. By using panels of people known to be sensitive to a particular compound, the possibility of cross-sensitization can be tested. Finally, actual use tests may be conducted with people.

To illustrate the value of use tests on people, Eckardt cited his company's experience with a compound which when added to lipstick would make women's lips stay moist-appearing longer. The compound was tested in a double-blind experiment in a group of women, who were given either a lipstick with the new chemical in it or a control lipstick. None of the experimenters knew which lipstick she had. The women were asked to use the lipstick for 2 weeks and then trade it in for the other one. They were then asked to compare the two lipsticks and to report any irritation experienced. Not only did this give the company an opportunity to evaluate consumer reaction to acceptance of the new compound in lipstick, but also to see if the compound caused lip irritation. This use test was valuable to the company, Eckardt said, because reports had been received that the compound might cause the lips to blister.

Eckardt pointed out that among the many other tests used to evaluate the toxicity of industrial chemicals are effects on tissue cultures, effects on parmecia, and even effects on domestic commercial animals such as cows, horses, sheep, and pigs. It seems that the more we study toxicology, he said, the more innovations are introduced. He concluded that possibly in 10 or 20 years someone could discuss the same topic and barely acknowledge the approaches being used today.

MENTAL HEALTH

Mental Health Insurance Is Broadening Coverage

The improvements in psychiatric care coverage owe much to the expansion of health insurance for all illnesses and to the more effective treatment of the mentally ill, according to Evelyn S. Myers, coordinator, psychiatric care insurance coverage, American Psychiatric Association.

The psychoactive drugs, introduced in the midfifties, proved valuable not only in treating hospitalized patients but also in keeping many mentally ill people out of the hospital. With mental illness more effectively treatable, such treatment also

becomes more readily insurable, Myers asserted.

An analysis of insurance coverage of 1,000 psychiatric admissions to 10 hospitals (five voluntary general hospitals, two private psychiatric hospitals, and three public general hospitals) showed that 74 percent of the patients in the voluntary hospitals had insurance coverage for a portion of their bill (an average of 71 percent of the bill was paid by insurance); 69 percent of the patients in private psychiatric hospitals had coverage and an average of 58 percent of the bill was paid; and in public hospitals 35 percent of the patients were insured and an average of 70 percent of the bill was paid, Myers noted.

Coverage for outpatient care was much less—26 percent of 12,917 patients seeing psychiatrists in private practice had insurance coverage for some part of the bill. Forty-five percent of the patients on whom information was available had approximately 50 percent of the bill paid, another 36 percent had about 80 percent paid, and the remaining 20 percent, less than 50 percent.

Trends in Insurance

First among important trends in mental health insurance listed by Myers was the influence of nationally negotiated health programs covering large numbers of employed persons. By 1969 negotiated plans accounted for almost half the employees covered by health benefit plans in private industry. Spurred by the negotiated plans, or in some cases acting independently, industry has also shown a substantial interest in improving health benefits.

The second important trend concerns the influence of the Federal Government. The National Institute of Mental Health guidelines for voluntary health insurance issued in 1963, with their emphasis on short-term care and coverage of all mental health professionals, have undoubtedly had an important effect, Myers emphasized. As a purchaser of care through the Federal Employees Health Benefits Program, the Federal Government has influenced developments significantly—all 36 of the Federal health insurance plans now have some mental illness coverage and the two plans (Aetna, Blue Cross and Blue Shield), covering 80 percent of Federal employees, have the same benefits for psychiatric care as for care of other illness.

The increased interest of insurers has been an encouraging recent trend. Blue Cross plans have improved their psychiatric coverage substantially in the last 10 years. Myers said that the National Association of Blue Shield Plans announced in 1968 that participating plans should have available after April 1969, to all groups willing to buy it, a fully paid benefit for outpatient psychiatric treatment.

Myers also stated that commercial carriers were taking a more flexible approach and were talking of a broad scope of benefits instead of restrictions. She also believes that the increased interest and activities of mental health professionals have been helpful.

At least 15 million persons have been covered in the last 10 years by new or expanded psychiatric benefits, she declared. For the most part these persons were formerly not able to manage the out-of-pocket expense, yet they earned too much to be eligible for publicly supported services.

Difficulties in Coverage

Myers reported that many insurance carriers balk at providing coverage for evaluation of psychiatric symptoms on the grounds that they do not constitute a "real illness." The chronic nature of mental disorders has disturbed others although, as in other diseases, treatment may be needed for only brief periods and only infrequently to keep the disease under control.

Another concern is the ability of the insurance companies to finance such services as consultation to community agents. Two kinds of consultation, one related to a specific patient, which if underwritten could be handled under almost any kind of insurance arrangement, and the other related to groups of insurees. The American Psychiatric Association's "Guidelines for Psychiatric Services Covered Under Health Insurance Plans" stated ". . . that there should be provision for professional counseling to appropriate community agencies—that is, parents, schools, labor unions, family service agencies—when a therapeutic gain for a group of insurees may be anticipated."

Myers believed, however, that an even stickier problem is the availability of public money to pay for psychiatric care services, and the consequent reluctance of insurance carriers to make insurance benefits available for such care—that is, in the State hospital. The federally supported community mental health center, Myers explained, has raised other questions related to payment for services rendered in contracting or affiliated components of a center, particularly those facilities that do not have medical facilities.

Myers stated that a number of experts think a logical next step in mental health insurance will be a paid-in-full outpatient benefit for mental health treatment. This type would have no deductible and no copayment by the patient for a benefit that would be limited to a certain dollar amount or a certain number of visits. This approach, presently in effect in the United Automobile Workers program and many prepaid group practice plans, is also being experimented with by Blue Cross and Blue Shield, and commercial insurance carriers, where it is not limited to psychiatric care but extends to other health services.

No Reverters to Heroin In Methadone Program

The Methadone Maintenance Treatment Program in New York City continues to be an effective form of treatment for a substantial number of selected heroin addicts, according to Dr. Frances R. Gearing, Columbia University School of Public Health and Administrative Medicine and director, Methadone Evaluation Unit.

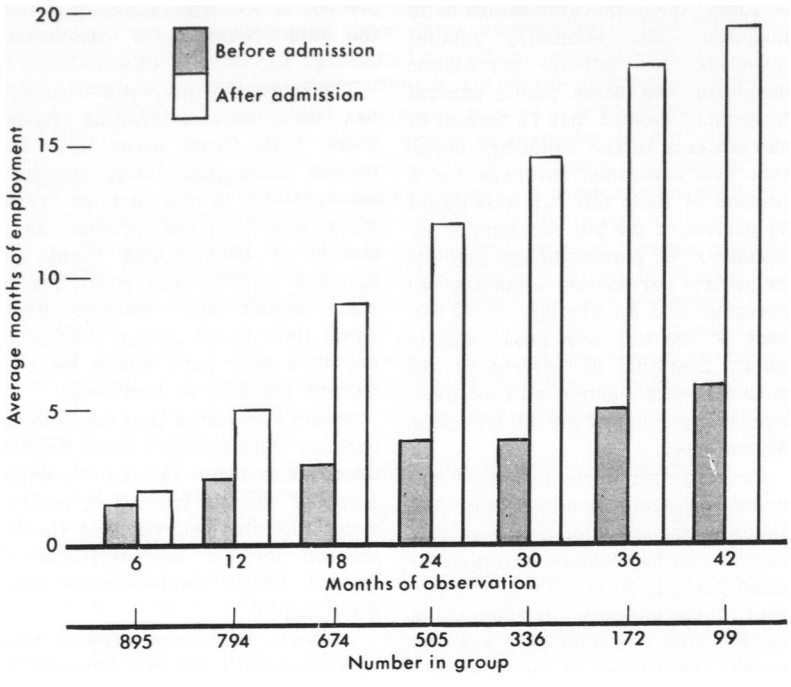
Initially the program consisted of two phases, Gearing said. During phase 1 (approximately 6 weeks in the hospital) patients were given methadone in increasing doses until they reached a stabilizing dose of between 80 and 120 mg. daily. During hospitalization they received personal, social, and psychological

support, and necessary medical and dental care. This care was provided by a team of physicians (including internists and psychiatrists), social workers, nurses, and counselors. Research assistants, who were former addicts currently being maintained on methadone, played a supporting role in the program.

In phase 2, the outpatient phase, the patients appeared daily for medication and for urine tests to detect use of heroin or other drugs, such as amphetamines and barbiturates. After a few months patients who were reasonably well adjusted were given bottles of ingestible medication in a fluid medium, and they returned to the clinic only once or twice a week for urine tests.

Gearing pointed out that within the last year the majority of new patients in the program were admitted on an ambulatory basis without an inhospital phase. Initial criterion for acceptance into the ambulatory induction group was employment or a relatively stable home situation.

Average number of months of employment before and after admission, by duration of observation, of 981 men in the methadone program (Morris Bernstein Institute and Harlem) August 31, 1969



Admissions and Dropouts

As of September 15, 1969, the dropout rate was 18 percent of a total of 2,205 admissions. The admission rate, size of the groups, and dropout rates varied substantially, as did the period of observation, Gearing noted. At present, only one of 10 addicts who apply to the program is rejected. Major reasons for rejection are age (inductees must be at least 20) and residence (must live in one of the five boroughs of New York City). With a current admission rate of approximately 60 per month, the average waiting time for admission is 12 months.

Patients in the program are between 19 and 80 years with an average age of 33 as compared with a mean of 28 years for addicts known to the Narcotics Register of New York City. Gearing stated that 67 percent of the patients are over 30 contrasted with 34 percent of the addicts on the narcotics register. Part of this difference can be accounted for by the requirements of a minimum age of 20 years and at least 5 years of known addiction.

None of the patients who have remained in the program have become readdicted to heroin, Gearing said; some, however, continue to have problems related to continued abuse of other drugs (primarily amphetamines and barbiturates) and continued abuse of alcohol. Discharge for alcohol abuse is more common for women than for men (28 percent compared with 18 percent) as is discharge for medical, psychiatric, or behavioral problems (8 percent compared with 3 percent), and death (9 percent compared with 6). Arrests and voluntary withdrawals account for a higher percentage of discharges among the men than among the women—arrests (22 percent compared with 14 percent) and voluntary withdrawals (21 percent compared with 13 percent).

Measuring Rehabilitation

One measure of rehabilitation is decrease in antisocial behavior as measured by arrests, Gearing said. Following admission to the program the percentage of patients arrested in each period of observation decreased markedly; 6 percent in the first year, 3 percent in the second, and 2 percent in the third.

A second measure of rehabilitation is employment. Among the 990 men from the Morris Bernstein Institute and Harlem units who had been in the program at least 3 months as of August 31, 1969, those employed or in school increased from 29 percent on admission to 65 percent at 12 months, 74 percent at 24 months, and 92 percent at 36 months, Gearing emphasized (see chart).

The Methadone Maintenance Evaluation Committee believes that methadone maintenance should not at this time be considered a method of treatment suitable for use by the private practitioner in his office practice, because he also needs staff trained in the technique of methadone maintenance. Also, many unanswered questions remain regarding what proportion of the addict population can be successfully treated with methadone.

Peer Teacher-Leaders Aid In Self-Help Groups

Peer indifference and isolation are endemic throughout our social fabric, noted Dr. Daniel H. Casriel, medical psychiatric superintendent,

Daytop Village, New York, N.Y. He said that there is general avoidance of constructive confrontation throughout our society's social fabric, because most people fear the consequences of challenging and being challenged. Disagreement with any authority within our culture is disapproved.

Yet Casriel believes that constructive challenge between equals is precisely what is needed in any human, including therapeutic, relationship if personal growth is to ensue. The old traditional authority figures—whether they were witch doctors, priests, holy men, faith healers, physicians, or alienists-psychiatrists—were often given magical omnipotence in one form or another.

If a patient delegates magic to the therapist or the therapist accepts the responsibility of getting the person well, Casriel believes that reconstructive treatment of all but the adult personality (where little, if any, magic is delegated or accepted) is doomed to failure. A therapist has no real magic power. All he has, and this is in no way an underestimation of this role, is empathy, a desire to help another human being, and knowledge which, if learned and applied by the patient, can be curative.

Self-Help Groups

Casriel stated that the list of self-help groups being established is growing rapidly. These groups started with Alcoholics Anonymous in 1936 and now include Gamblers Anonymous, Weight Watchers, Addicts Anonymous, Neurotics Anonymous, and groups of wives, parents, and friends of the afflicted. Self-help therapeutic communities such as Daytop and Synanon, and more recently, scores of lesser known smaller self-help communities and storefront operations such as Encounter and SPAN are sprouting and growing.

Casriel believes that first and foremost in these groups is the concept of equality—peer relationship. Both in Daytop and in private group practice, the entering member is treated as an equal, a peer by both the group and the therapist or group leader. The entering member soon learns that others around him have no magical gifts. He learns that he can be as mature, secure, adequate, lovable, and effective as those around him. The patient-member also learns that he is not only responsible for but capable of his own growth and development.

Significance of Treatment

The following significant implications of the effectiveness of humanistic peer participation as a therapeutic treatment process were listed by Casriel.

First and foremost is the total change of attitude that professionals have to develop to engage effectively in this type of treatment process.

Second, the obvious empirical observation that a feeling human being, who has learned for himself as a patient-student the process and has the capacity, ability, and desire to engage others, is an extremely effective therapeutic change agent. Symptoms identification with the peer (cured alcoholics with alcoholics and cured hysterics with hysterics) early in treatment is extremely helpful and in some cases necessary, but within a few weeks all patients, no matter what the variation of symptoms, realize they have the same problems and that underneath the symptoms, they are all human beings with the same basic needs and desires and the same basic fears.

Third, psychoanalysis must be returned to the area where it belongs—a highly specialized, limited fine tool, in the tool chest of psychotherapy.

Fourth, because of the relative ease of treating and training, large numbers of persons can be treated and trained at little cost and in a relatively short time. This ease of training means that large numbers of skilled groups can become available to meet a tidal wave of need. Costs are within realistic ranges.

Fifth, it is logical to see the role of the professionally experienced and trained psychiatrist, psychologist, and social worker as consultant and trainer and as the agent of initial interviews, medication, testing, or performing traditional ancillary roles.

Casriel believes the significance of the growth of these self-help groups for society is that the large number of untreatables can now be treated, that large numbers of persons who could not afford treatment can now afford it, that large numbers of persons who wanted treatment but had no available therapist in the area can now find therapists, and that a large number of persons who were unwilling or unable to commit themselves to many years of therapy can now look forward to major reparative psychotherapy and reconstructive (major personality change) therapy that can be accomplished in a matter of months for most or in 1 to 2 years for some.

Rate Psychiatric Disorders In the General Population

Typical psychiatric impairments of untreated persons in the community were very different from the impairments of persons receiving outpatient or inpatient psychiatric treatment, according to a study described by Dr. Bruce P. Dohrenwend, department of psychiatry, Columbia University.

His data were drawn from a methodological study of psychiatric disorder in contrasting class and ethnic groups in the Washington Heights area of north Manhattan. More than 500 persons between 21 and 64 years of age participated in the study, stated Dohrenwend. They consisted of 67 community leaders (State assemblymen, city councilmen, municipal court justices, businessmen, school principals, clergymen, and other influential persons), 257 adult heads of families (sampled on a probability basis from the general population), 118 psychiatric outpatients, 48 psychiatric inpatients, and 24 prisoners.

The respondents were interviewed by 15 psychiatrists, who made judgmental ratings of the psychiatric conditions of each, according to the Stirling County study rating of "caseness" and the Midtown study rating of "impairment." The Stirling County rating defined the disorder in terms of judged similarity to descriptions in the 1952 Diagnostic and Statistical Manual of the American Psychiatric Association. The main

measure of the Stirling County rating of caseness was described as ". . . a rating of the probability that at some time in his adult life, up to the time of the interview, the individual would qualify as a psychiatric case." The main rating of impairment in the Midtown study ranged respondents on a scale from well through five degrees of severity of symptomatology—mild, moderate, marked, severe, and incapacitated; respondents in any one of the last three categories were considered "impaired."

To secure examples of a variety of types of behavior problems, patients were selected for the study on the basis of similarity to brief descriptions of the types of symptom behavior according to which they were sorted by their therapists or evaluators, Dohrenwend noted.

SIS and PSS Questionnaires

The respondents were subjected at random to either the Structured Interview Schedule (SIS) or the Psychiatric Status Schedule (PSS). The SIS relies heavily on items with fixed alternative responses, such as true-false answers. Dohrenwend said, however, that the SIS used in this study is much expanded over the types of interview schedules used in the Midtown and Stirling County studies, especially in coverage of impairment of functioning in role areas. The PSS, by contrast with the SIS, relies mainly on open-ended questions, the probed responses to which are coded into fixed categories.

Toward the end of the interview with either the SIS or the PSS, the psychiatrist interviewer made a series of global clinical assessments, Dohrenwend stated. These interviews included a rating of caseness on the Stirling County scale and a rating of impairment on the rating scale of the Midtown study.

The results on the Stirling caseness rating, he noted, showed a sharp contrast between patient and nonpatient groups—patients were rated far more likely to be cases than community sample respondents who, in turn, were more likely to be rated cases than were leaders.

The results on the Midtown rating of impairment contained similar sharp contrasts between patient and nonpatient groups. As would be expected, the inpatients were clearly rated as more impaired than the outpatients.

Because the original objective of the study was to determine whether typical cases in the community suffered from psychiatric conditions comparable to those of psychiatric patients, Dohrenwend said, it was startling to find that the average impaired clinic patient was quite different from the average impaired respondent in the community sample.

As shown in the table, moreover, almost twice as many of the outpatient A's on the Stirling scale (that is, those rated almost certainly a psychiatric case) as of the community sample A's were rated "severe" or higher on the Midtown impairment scale. The contrast is even sharper when the comparison is with inpatients.

Problems of Interpretation

Dohrenwend also listed two major problems of interpretation. First, the interviewing psychiatrists usually guessed correctly or learned outright that they were interviewing psychiatric patients when this was true. Was it possible that knowledge of patient status led the psychiatrists to rate their respondents more severely ill than they would have done under other circumstances?

Second, these psychiatrist-interviewers were trained by Columbia psychiatrists in the Midtown study and Stirling County study rating procedures on the basis of published accounts. Would there have been less contrast between cases in

Interviewer rating of impairment for respondents rated "A", Structured Interview Schedule and Psychiatric Status Schedules combined, in percent

Degree of impairment	Respondent-rated "A" (almost certainly a psychiatric case)			
	Leader (N=8)	Community sample (N=51)	Clinic (N=90)	Hospital inpatients (N=47)
Unimpaired	37.5	19.6	2.2	0
Well	0	0	0	0
Mild	0	0	0	0
Moderate	37.5	19.6	2.2	0
Impaired	62.5	80.4	97.7	100.0
Marked	37.5	39.2	21.1	0
Severe	25.0	27.5	43.3	12.8
Nearly incapacitated	0	13.7	28.9	48.9
Incapacitated	0	0	4.4	38.3
Total	100.0	100.0	99.9	100.0

NOTE: The important comparison is between the community sample and clinic. With "well," "mild," and "moderate" combined, and with "nearly incapacitated" and "incapacitated" combined, chi-square tests show ($P<0.01$) that the overall differences between respondents rated "A" in these two groups could have occurred by chance. Moreover, the proportion of "A" clinic rated "severe" or higher is significantly larger ($P<0.01$) than the proportion of "A" community sample respondents rated "severe" or higher.

the patient and nonpatient groups if psychiatrists from the Midtown and Stirling County studies had made the clinical ratings?

A second set of ratings (reviewer ratings) were made on a subsample of the written records of the original interviews to investigate these possibilities, Dohrenwend said. These written records were edited to remove clues to patient status (that is, drug history and reference to treatment) and other background characteristics. A subsample of something over a fifth of the respondents in the Washington Heights study was selected to prepare the protocols of the interview for review by psychiatrists who received special training to be reliable with psychiatrists from the Midtown and Stirling County study staffs. The results of these reviews indicate that neither knowledge of patient status nor differences in comprehension of the Midtown and Stirling rating systems could account for the patient versus nonpatient contrasts.

Dohrenwend emphasized that the results of the study could not be easily explained away by differences in research setting or by differences in interview instruments. Rather the research in Washington Heights strongly suggests that typical cases in the community, according to the ratings of the Midtown study and the Stirling County study, are not the same as typical cases in either outpatient clinics or mental hospitals.

Do Mentally Ill Poor Get Relevant Care?

The basic issue in mental health intervention is behavioral change, declared Dr. Jacob R. Fishman, psychiatrist and chairman, board of directors, University Research Corporation, Washington, D.C., formerly director of the Howard University-District of Columbia Center for Mental Health.

He believes one of the basic failings of our current system of providing mental health and other services is that change is frequently resisted in the matter of quality of care. Quality care must be based on effectiveness, relevance, and results—not tradition, inertia, and role perpetuation.

Quality service is the basic right of all persons, independent of income, and it can only be achieved through a system of national health insurance with full mental health coverage so that the poor will have purchasing power to exercise options, Fishman said.

Now, the major budget, focus, and "prestige" in mental health agencies are placed on the inpatient service. This emphasis, asserted Fishman, results in a minimal share of limited services and dollars to clinic, consultation, and neighborhood services, and to aftercare and preventive education. Instead of developing mental health programs that benefit the greatest number in the long run, we build buildings, put in beds, then worry about "outreach" and community education seldom if at all.

The ultimate goal of care is to teach the patient to do things for himself, that is, making sure the patient understands the disease, the medical situation, the treatment and why it is necessary, and to educate him to care for himself, Fishman declared. Rather than focusing on this education for independence, the inpatient focus becomes a reinforcement of the welfare system and the dependency model.

To be effective, Fishman asserted, the focus of program and treatments must be on the community in which the person lives, the realities and problems of his life, and the psychological causes and consequences of both. He emphasized that activities such as special education, vocational training, community organization, and rehabilitation, which have always been considered peripheral or ancillary to "real psychiatry," must become much more central in our thinking and practice.

The New Careers Program

An example of a meaningful goal-directed activity related to vocational training is the new careers program. This program has had an important therapeutic effect on the vocational trainee, his family, and the community. The new careers program is structured to motivate change through the ego and identity supports provided by a meaningful work and career perspective, group support, economic independence, and the development of social and personal skills. The self-concept derived from helping oneself through helping others appears to be an important aspect of this program. Fishman pointed out that this program has produced much more extensive and lasting change than traditional forms of individual psychotherapy or traditional work-training programs.

The new careers model has been made integral to the staffing of the overall mental health programs. In addition, local residents with many different problems have been successfully trained and employed in subprofessional roles in related local services. Fishman stated that this training has been done with the intent to improve and increase mental health-related services in the community and to bring about change in the persons as well as in the service system in which he is employed.

The new careers program attempts to change the person, his family group, and the social institutions providing services. In economic terms, the training and employment of this population to provide services multiplies the effect of the public dollar. It also focuses on issues of self-help and competency for the local resident, who now undertakes to deliver the services for which, heretofore, he was only the dependent recipient; it crystallizes programs around meaningful social competence and provides a link between the suburban professional and the inner-city population.

For professionals, Fishman asserted, the program offers new roles as trainers, supervisors, and specialists. A fundamental reorganization and reorientation of staff patterns and service delivery for more effective and efficient use of professional and nonprofessional staff is a goal.

The new careers approach has been used successfully with adolescents in high school, where training has been combined with high school curriculum, remediation, and

paid on-the-job training. Such approaches to problem youths out-of-school or out-of-work have been discovered to be much more effective in producing lasting behavioral change than traditional psychotherapy, which has little success with adolescents in general and lower class adolescents in particular. Few in need ever get as far as the traditional clinics. Fewer come back for a second visit.

Group-activity-oriented therapeutic programs without the psychiatric label appear to offer great potential, particularly those programs which link meaningful work, pay, education, and social competency.

Need for Change

Our system of training is so structured as to block out opportunities for poor people who want to move up in the health professions. This block is the "gentleman physician" and "lady nurse" tradition, Fishman declared. Only the middle class can afford the moratorium on income and have the funds necessary to achieve preparation for a professional education. Our system of full-time study and prerequisite academic credentials precludes the poor.

We urgently need a system of training and mobility that will encourage and support more rational training and education at all levels of health care to meet the needs of today. A person at the bottom should have the opportunity for career advancement while fully employed—through experience, on-the-job training, released time for education, new and more relevant educational programs, and realistic career ladders.

Rather than operating services, city, State, county, and Federal governments should be in planning, monitoring, evaluating, and enforcing standards with services provided through contract with local independent facilities, groups, and agencies—privately run, financed, operated, controlled, and owned wherever possible by local community groups organized in whatever way is most feasible, efficient, and effective in that community.

Fishman concluded that the government should help develop partnerships between professional care delivery programs and the local community groups so that the local client population has a major, direct voice in policy, priorities, and operations; the highest possible technical skills are employed; and major incentive is provided for maximum efficiency, effectiveness, and relevance. Local government in this approach, as prime contractor, has the minimally bureaucratic role of planner, evaluator, and standards monitor.

Pigeons Can Be Indicators of Air Pollution

Dr. Martin F. Tansy, chairman of Temple University School of Dentistry's department of physiology, has found evidence of the damaging effects of air pollution in city pigeons.

Tansy, who assists in an air pollution training program at the School of Pharmacy, compared three fledglings and six adult pigeons obtained from the farming community of Brookville, Pa., with seven pigeons found in Philadelphia. Vital organs of the birds were removed and chemically analyzed.

All but one of the birds collected from the Philadelphia downtown area had much higher tissue lead levels than those from the rural area. Interestingly, no appreciable difference was seen between blood lead levels of the two groups of pigeons, Tansy reported. This seems to indicate that continuous exposure of the pigeons to varying quantities of lead in the air, as opposed to the ingestion of lead, results in a greater amount of lead finding its way into bones and soft tissue.

Instruments are now used at various reporting stations to measure the amount of pollutants in the air. But the instruments do not measure the amount of pollutants absorbed by human beings. According to Tansy, tests using human urine, saliva, or blood show only acute levels of pollutants, not the effect of long-time exposure. They cannot measure the effect of chronic exposure.

Tansy said the idea to use pigeons as pollution barometers came to him when he saw several pigeons walking near a street corner enveloped in a cloud of exhaust fumes from a passing bus. Because motor exhaust is a prime contributor to lead pollution in air, he decided to check pigeons for lead contamination.

Considering the cumulative effect of air pollution, Tansy felt it would be wise to use animals which live in a polluted atmosphere rather than use a purebred laboratory animal. The laboratory animal lives in a controlled environment and for test purposes is exposed to a massive dose of a single pollutant, such as sulfur dioxide.