A Forum on the Public Health Work Force: Assessing the Current and Future Supply of and Requirements for Personnel

ADELE M. MILLER

CRITICAL SHORTAGES EXIST in the field of public health in physician epidemiologists, toxicologists, and other types of public health personnel. In some specialties, however, the major problem is a shortage of specific types of competency, not of numbers. These were the principal findings of a 4-day workshop entitled A Forum on the Public Health Work Force, which was held March 30–April 2, 1982, in Washington, D.C. The New Federalism and present-day constraints on resources, the forum participants concluded, will intensify competition for scarce health dollars, which in turn will prevent any significant expansion of the public health work force and reduce turnover of personnel. To meet the continuing demands placed on public health, more continuing education programs will need to be introduced to overcome the gaps in preparation of the persons currently employed and to improve their professional competency and managerial skills.

Cosponsored by the Bureau of Health Professions of the Department of Health and Human Services and the American Public Health Association (APHA), the workshop provided, as its title suggests, a forum where experts could discuss methods to assess the supply of and requirements for the current public health work force and could project areas of oversupply and shortages, not only in terms of numbers but in specific competencies as well. The workshop also provided guidance as to the direction that the preparation and practice of public health personnel should take in the future.

Some 54 participants, in addition to staff of the American Public Health Association and Bureau of Health Professions (see box), were invited to share data and opinions relative to shortages and surpluses of specific public health specialists and to identify skills and knowledge that are not routinely available from existing full-time staff or consultants or through sharing arrangements among organizations. The participants included employers of public health personnel in addition to educators, practitioners, and representatives of professional associations.

The first day of the workshop, presided over by Thomas D. Hatch, Director of the Bureau of Health Professions, was devoted to a series of presentations about the public health work force, which established

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a common ground for small group discussions. Following the presentations, all participants were assigned to one of three Employer Work Groups to discuss the employment settings of State and local governments, academic and research institutions, and nongovernment organizations such as private industry, consultant or proprietary firms, professional associations, and voluntary agencies. Participants were then assigned to one of four Specialty Work Groups, which concentrated on environmental health, public health education, health services administration, and epidemiology and statistics. The seven work groups prepared position papers that focused on the workshop objectives.

Workshop Objectives

For each of the four selected specialty areas and the three employment settings, the objectives were as follows:

1. To determine the basis for statements about the supply, requirements, and competency of public health specialists.
2. To identify job categories, titles, or subspecialties for which shortages or surpluses of personnel exist.
3. To identify education and training needs by subspecialty.
4. To predict changes in the requirements for public health personnel over the next 5 years.
5. To develop broad recommendations for resolution of identified problems.

Supply and Requirements

The employment of public health personnel in any area is affected by many variable factors that interfere with the supply and demand function of the free market, Dr. Marc V. Roberts told participants in his keynote address. He noted that in a "perfect" occupational marketplace, economic forces—demand, wages, prestige, and benefits—are unconstrained and over a reasonably short time, balance each other to maintain work force equilibrium. Factors that render the public health marketplace "imperfect" include budget mechanisms in public organizations, civil service requirements, lower wages and prestige for public health specialties as compared with specialties such as medicine, and the long lead time required for the preparation of many types of practitioners. These factors create an economically "imperfect" industry and affect the supply of and requirements for public health professionals.

In other health areas, one can establish a target level of services and goods and multiply by the number of employees per target unit to determine the total number of employees needed. However, in public health, the process of determining personnel supply and requirements is more complicated. The supply is, in effect, negotiated by society's willingness to accept or reject levels of ill health and wellness and involves considerable political and social debate. There are no natural benchmarks for the public health professions such as there are for other occupations.

How then can experts make any determinations? Roberts suggested that decisions be arrived at by using a management analysis in which estimates are made of the most cost-effective measures to provide an accepted target level of services. Planning experts must consider the rate of convergence between the effort to recruit adequate numbers of health professionals and the success of the effort to meet the changing incidence of targeted health problems. If in attempting to reach the desired level of services, training capacity is expanded too rapidly, a surplus will emerge. (The recent increase in medical school graduates and the alleged surplus of physicians is an example of such a phenomenon.) It is necessary to devise an appropriate strategy to converge on the target level more slowly, while simultaneously assessing the health problems that affect the work force.

At present, the country's general economic situation is causing a critical evaluation of the amount or level of services needed, the manner in which services are or should be delivered, and who should provide them. Roberts asserted that the appropriate level of public health professionals is determined by costs. What then determines the level of services? Obviously, the level is determined by what services society opts to provide.

Ultimately, the size of the public health work force depends on our ability to insure cost containment, to eliminate waste, fraud, and abuse, and to justify the service programs in the face of sophisticated challenges.

Control of Environmental Health Hazards

Can industry regulate and control environmental health hazards? A panel moderated by David B. Hoover, Acting Director, Division of Associated Health Professions, and consisting of three panelists, discussed whether industry could regulate itself and control environmental health hazards.

Ronald F. Coene said that he did not believe that industry could regulate itself because it does not have the resources to investigate and evaluate hazards, nor to provide surveillance and assume liability. However, he expressed the opinion that if management and labor, recognizing the need for safety in the workplace, joined forces, they could control environmental hazards.

Roberts pointed out that private corporations often exhibit a wide variation of responses to environmental

hazards, depending on the interests of the corporation. He noted that the public sector, since it is frequently insulated from public pressure, is sometimes the worst polluter. The Tennessee Valley Authority was at one time one of the worst polluters, but is now much improved, he said.

Dr. H. Daniel Roth suggested that industry cannot address certain problems because of their magnitude (for example, toxic substances). Private industry, he said, can address some localized occupational problems if it has real concern and is willing to identify health hazards and take corrective action. However, where issues are not clear, risks minimal, and evidence flimsy, it is difficult to get industry to support regulation.

Graduates of Schools of Public Health

The average age of graduates of U.S. schools of public health dropped during the 1970s below 25 years; the ratio of women to men became 1 to 1; and the number of graduates without work experience increased. These data were presented by Dr. Frank I. Moore in discussing a demographic profile that he derived from 16 studies of graduates of U.S. schools of public health. The studies represented efforts by the schools to find out what became of their graduates once they entered the job market. The most significant finding from the demographic analysis was that at the very time that the workplace was growing more complex and economic trends predicted a reduction in the number of jobs available to newcomers, current graduates of public health schools were both younger and less seasoned by previous experience and professional training than in the past.

Six months after graduation, virtually all graduates who wanted jobs had found them, Moore's data showed. The graduates reported employment in a variety of functions and settings, including some outside the traditional sphere of public health. Indeed, the

Participants and Speakers at Forum on Public Health Work Force

Invited participants:

Donald E. Barber, PhD, School of Public Health, University of Minnesota, Minneapolis.

Franklin K. Brough, MPH, PhD, Utah Lung Association, Salt Lake City, Utah.

Claude A. Burnett, MD, Northeast Health District, Athens, Ga.

Betsy M. Chadderdon, MPH, University of Texas, School of Public Health, Houston, Tex.

Helen B. Cleary, DSc, Department of Family and Community Medicine, University of Massachusetts Medical Center, Worcester.

Ronald F. Coene, National Institute for Occupational Safety and Health, Rockville, Md.

Judith Craven, MD, MPH, Director of Public Health, Houston, Tex.

Janice M. Dodds, EdD, Teachers College, Columbia University, New York, N.Y.

Gary L. Filerman, PhD, Association of University Programs in Health Administration, Washington, D.C.

Gershon Fishbein, Environmental Health Letter, Washington, D.C.

David Fraser, MD, Centers for Disease Control, Rockville, Md.

Larry J. Gordon, MS, MPH, New Mexico Department of Health and Environment, Sante Fe.

Thomas L. Hall, MD, DrPH, Puget Sound Health Systems Agency, Seattle, Wash.

Susan Harris, MPH, JD, American Health Care Association, Washington, D.C.

Andrew Haynal, MD, MPH, School of Public Health, Loma Linda University, Loma Linda, Calif.

Arden C. Hyde, Coalition for Health and the Environment, Washington, D.C.

Joel Kavet, ScD, National Center for Health Statistics, Hyattsville, Md.

K. Paul Knott, MPH, American Red Cross, Washington, D.C.

Lawrence J. Krone, PhD, RS, National Environmental Health Association, Denver, Colo.

George A. Kupfer, MS, Bureau of Consumer Protection and Environmental Health, Milwaukee, Wis.

Corrine W. Larson, MS, Minnesota Department of Health, Minneapolis.

Peter J. Levin, ScD, College of Health, University of Oklahoma, Oklahoma City.

Christine Ling, MPH, Hawaii State Department of Health, Honolulu.

Stephen F. Loebs, PhD, Graduate Program in Hospital and Health Services Administration, Ohio State University, Columbus.

J. Newton MacCormick, MD, MPH, State Department of Human Resources, Raleigh, N.C.

J. Walter Mason, DSc, School of Public Health, University of Alabama, Birmingham.

Betty Maugans, Conference of State Sanitary Engineers, Landover, Md.

Dwight F. Metzler, Bureau of Water Supply, Kansas Department of Health and Environment, Topeka.

J. Michael McGinnis, MD, Office of Health Promotion, U.S. Public Health Service, Washington, D.C.

public health degree appeared to provide substantial opportunity for relevant employment and upward mobility within that employment.

Dr. Thomas L. Hall, in reporting on a survey of recent graduates—classes of 1978 and 1979 in 19 U.S. schools of public health—noted that the fate of new entrants into a particular labor force "will generally provide a valuable and inexpensive indication of the current balance existing between manpower supply and demand" (*1*). The results of the survey suggested a favorable job market for new public health professionals; four of every five of the respondents were employed, and 13 percent were enrolled in an educational program. Most of the adverse sex differentials in the job market seemed to have decreased or disappeared except for income: the survey showed that men continued to have substantially higher incomes after graduation than women.

Betsy M. Chadderson, speaking from the perspective of a placement officer, stressed the need to help students improve their options and evaluate their choices. A variety of factors enter into the choice of a job, such as interest in people versus data, profitmaking versus nonprofit organization, and the social needs of the jobseeker and his or her family.

Assessment of Continuing Education Needs

A meager 3 percent of the total estimated U.S. 1980 public health work force of 500,000 attended the 583 continuing education courses offered during the 1980–81 academic year, said Dr. Edward E. Roulhac, in assessing the need for continuing education programs in schools of public health. A significant majority of our current public health work force, he said, may be practicing at a less than optimal level of competency because of inadequate exposure and access to continuing education. Obstacles to be overcome include (*a*) information overload, caused by a proliferation of journals,

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Kent W. Peterson, MD, Environmental and Preventive Medicine, IBM, White Plains, N.Y.

Otto H. Ravenholt, MD, MPH, Clark County Health District, Las Vegas, Nev.

P. G. Rentos, PhD, National Institute for Occupational Safety and Health, Cincinnati, Ohio.

Marc V. Roberts, PhD, Department of Health Policy and Management, Harvard School of Public Health, Boston, Mass.

H. Daniel Roth, PhD, Roth Associates, Inc., Rockville, Md.

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Sidney Shindell, MD, Department of Preventive Medicine, Medical College of Wisconsin, Milwaukee.

Mervyn F. Silverman, MD, MPH, San Francisco Department of Health.

Harry Steigman, MPH, Pennsylvania Department of Environmental Resources, Harrisburg.

Mary Jane Suskind, MA, MPH, D.C. Department of Human Services, Washington, D.C.

Bailus Walker, Jr., PhD, MPH, Michigan Department of Health, Lansing.

Peter Weil, PhD, American College of Hospital Administrators, Chicago, Ill.

Karl A. Western, MD, DTPH, National Institute of Allergy and Infectious Diseases, Bethesda, Md.

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periodicals, newsletters, monographs, self-instruction aids, and announcements instead of a systematic, meaningful, long-term exposure to appropriate continuing education interventions; (*b*) slowness in the transfering of new knowledge and techniques to the worksite, where they can be directly infused into the mainstream of public health practice; (*c*) failure to use modern high-level technologies to update instructional resources in continuing education courses; and (*d*) lack of commitment and agreement among consumers of continuing education (public health practitioners), providers (schools of public health), and supporters (employers, government, and professional associations) that would sustain a coherent continuing education initiative as a priority in the nation's overall future health policy.

Public Health Personnel in Industry

"Traditionally the responsibility for public health issues was seen as a government responsibility. However, the combination of legislation, public awareness, and corporate enlightenment has led to greater public health activity in private industry," said Arden C. Hyde. To encourage this mutuality of interest, institutions that train the public health work force need to know what skills are required to address health problems in corporate settings, and corporations need to know precisely what public-health-trained personnel can do for them. Such cooperation will promote the best interests of public health graduates by identifying employment opportunities in private industry. It will also encourage private industry to recognize the effect of employee health problems on overall productivity and efficiency and the role of private industry in improving health conditions in the workplace.

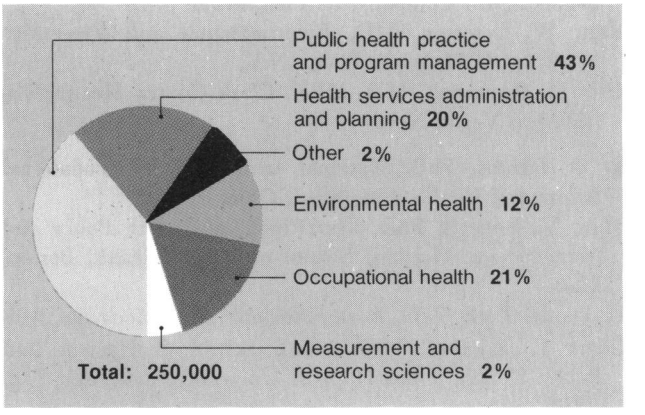
Prevention in Medical Education

"The physician is in a strategic position to offer preventive services such as immunizations . . . . [He] may be an effective motivator of lifestyle changes related to smoking, diet, and exercise . . . and has a special opportunity for triaging vulnerable patients to the prevention services of other health providers," said Dr. J. Michael McGinnis. "Medical education offers therefore an important opportunity of preparation for a preventive role," he added. Barriers to an expanded role for prevention in medical education, he said, include competition for student time and student interest, lack of interest of many on the medical faculty, overemphasis by physician-faculty on disease detection and management rather than on prevention and control, and lack of reimbursement of physicians for preventive care. However, McGinnis pointed out, opportunities exist in "teachable moments" when prevention can be integrated into the curriculum; and moreover, role models can be identified who have an interest in prevention. He encouraged deans to take the lead in ensuring that opportunities for change are not lost through neglect, lack of interest, or fragmentation of efforts. He listed other steps to enhance the occasions for including prevention in the curriculum, such as expanding opportunities during residency periods, focusing on prevention in annual meetings of professional societies, reviewing licensure and certification examinations for their preventive focus, encouraging private foundations to support the teaching of prevention, and instituting a Federal program to make change possible.

Available Data on Public Health Personnel

The difficulty of obtaining precise numerical estimates of shortages and surpluses in each public health specialty was discussed by Jerald McClendon. He pointed out the wide-ranging and multidisciplinary nature of the public health field, its lack of the comprehensive lists of personnel that licensing agencies or credentialing boards provide in other fields, and the tendency of public health personnel to identify themselves by their professions (for example, as physician, biochemist) rather than as public health specialists. As a result, estimates of the number of public health personnel are rough. In a 1982 report to the U.S. Congress on public health personnel as of 1980 (2), the primary public health work force of full-time professionals was estimated to be roughly 250,000 persons (see chart). Only 20 percent of the 250,000 had graduate training in public health. The best available estimates show that 43 percent of these full-time professionals were in public health practice and program management, 20 percent in health services administration and planning, 12 percent in environmental health, 21 percent in oc-

Primary public health work force by specialty



Expected changes in the employment of public health personnel in the next 5 years

Category	Rate of growth				No opinion or information	No response
	Negative	None or slow	Moderate	Rapid		
State government	4	17	10	1	1	2
Local government	5	14	13	0	1	2
Academic programs	7	16	6	0	3	3
Research organizations	1	17	11	1	2	3
Industry	1	4	19	6	1	4
Proprietary consulting firms	0	6	18	3	3	5
Voluntary agencies	4	14	9	0	5	3
Epidemiologists	0	12	13	4	5	1
Statisticians	0	14	11	1	6	3
Industrial hygienists	0	7	15	6	4	3
Sanitarians	1	17	6	1	7	3
Environmental engineers	0	13	9	7	3	3
Toxicologists	0	3	18	7	5	2
Health educators	1	13	13	2	4	2
Administrators	2	13	9	4	5	2

cupational health, 2 percent in the measurement and research sciences, and 2 percent in other fields such as population studies, behavioral sciences, family planning, and international health. McClendon challenged the workshop participants to help improve the estimates and conclusions in the report to Congress.

A New Survey of Public Health Personnel

For many years, public and community health has been the "stepchild of our analytical and data collection efforts," said Howard V. Stambler. The lack of definitive, objective hard data on the public health work force has precluded sound conclusions on the current and anticipated supply of and requirements for public health personnel. The need for a coordinated, sequential project to arrive at agreed-upon definitions, to identify the areas to be studied, and to institute studies on an incremental basis led to award of a contract in September 1980 to the American Public Health Association (*3*). As a result of that contract, Stambler said, we will begin the process of assembling reliable, quantitative work force data that will enable us to respond to a host of policy questions now being debated in the Department of Health and Human Services, the Congress, and the Office of Management and Budget. How many and what types of personnel are in the public health field? Is the current supply adequate? Are there distribution problems? What are likely to be the future demands for such personnel? Is the current rate of training adequate to meet those needs? What is the appropriate Federal role for supporting the training of public health personnel? Manpower analysis and data are critical to monitoring, understanding, and improving our health care system and the health of our citizens.

Dr. William H. McBeath discussed the problems inherent in designing a system for monitoring the supply of and requirements for professional public and community health personnel. One of the most difficult tasks, he said, is to arrive at definitions that are acceptable to as many interests as possible. To that end, the American Public Health Association convened a distinguished advisory group that has identified the most important elements to consider in arriving at definitions. APHA has also involved more than 30 representative organizations in a review of the project's draft products and has involved the leaders of its 24 specialty membership sections in a review of their sections' areas of particular interest. APHA is committed to establishing a lasting and effective system, he said.

Overview of Anecdotal Information

To help determine current perceptions of shortages or surpluses in the public health work force, a preworkshop assignment was sent to each participant. Anne Foglesong analyzed the responses and reported the results. The problem that was most frequently reported was the inability to compete with private industry in offering salaries that were attractive to experienced employees. The greatest difficulty was reported in hiring toxicologists, but hiring difficulties were also evident for epidemiologists, industrial hygienists, and environmental engineers. Little or no hiring difficulties were noted for statisticians, health educators, administrators, and sanitarians.

In relation to work settings, a moderate growth rate was expected in industry and in proprietary consulting firms (see table). Slow to moderate growth was expected in State and local government employment,

whereas zero to slow growth was expected in academic and research organizations and voluntary agencies.

Position Papers by Employer Work Groups

Three Employer Work Groups presented position papers (*4*).

State and local governments' personnel needs. The State and Local Government Employer Work Group concluded that in the next 5 years there would be an increased demand for public health services. However, because of relatively smaller means due to reduced Federal funding, some reduction in the scope of public health programs is expected. In addition, there will be less entry-level hiring because of diminished job mobility and response to requirements. The result will be an acute shortage of effectively trained personnel in functional areas, particularly of environmental health personnel skilled in toxicology, risk assessment, and hazard control. Little or no growth was projected for specialty areas such as public health nursing, maternal and child health, and nutrition, although the need for such personnel will persist.

An urgent need for substantial change in the training of public health personnel was recognized by the State and Local Government Employer Work Group. Environmental health personnel, for example, will need retraining in areas of toxic, chemical, and other hazards resulting from new materials and new manufacturing and distribution processes. Also, the education and training process should include more practical experience. To strengthen the capacity of public health agencies to cope with the challenges they will be facing, long-term continuing education should be provided to enhance management skills in the areas of finance, planning, statistics, and political processes.

Academic and research organizations' personnel needs. Specific areas of shortages of academic and research personnel were identified by the Academic and Research Organizations Employer Work Group. These included environmental and occupational health personnel, public health physicians, statisticians, toxicologists, health finance specialists, and epidemiologists. Cooperative relationships among public, private, and academic institutions to alleviate these problems should be promoted. Tax incentives would encourage the private sector to make funds available for research and would support the educational costs of the personnel required by industry. On the other hand, faculty of academic institutions could become involved in community problems through part-time practice or consultation. It would be necessary to provide faculty development grants, special leave arrangements, and other innovative means to enable faculty to engage productively in practical problem-solving. Consortium agreements among public health campuses would also contribute to better use of scarce professional resources. Continuing education offerings that do not interrupt employment are necessary for a technically proficient work force. Such programs should include fiscal management and policy analysis so that public health academics can help legislators and public executives make informed priority determinations.

In summary, the supply of highly trained experienced faculty and research personnel remains limited, competition between the public and private sector is keen, and both short-range and long-range projections of the demand for such personnel indicate there will be difficulties in recruitment.

Private sector's personnel needs. The Private Sector Employer Work Group identified three major categories of employers with varying needs for public health personnel, namely, business and industry, voluntary nonprofit agencies, and direct providers of health services. Direct providers will need functional specialists in administration, health education, and environmental health who have field as well as didactic training. Budget constraints on national voluntary agencies may result in reduced staff, but the persons who continue to staff those organizations will require additional expertise in management, resource allocation, and political and technical areas.

Both health-related businesses (insurance and consulting firms, pharmaceutical and pharmaceutical supply houses) and nonhealth-related businesses (service and manufacturing firms) need to be sensitized to the contributions that persons trained in public health can make. Although many businesses employ such persons, they tend not to be thought of as public health personnel. Educators need to improve their relationships with business and industry so that they can attract industry-oriented personnel into public health training. They need also to identify curriculums that are oriented to industry needs and that will expand the employment potential of their graduates. Specific areas of interest to industry include managerial knowledge and communication skills, environmental health risk assessment and management, and cost-benefit analyses of environmental problems.

Position Papers by Specialty Work Groups

Four specialty work groups presented position papers on the personnel needs in their respective areas of specialization (*4*).

Epidemiology and statistics. The Epidemiology and Statistics Work Group projected that there would be little growth in jobs for epidemiologists in public agencies and academia because of funding constraints. However, the nongovernment sector, particularly consultant agencies and large industrial firms, could provide new career opportunities because of their need for studies to address pragmatic and relevant issues.

Because of the shortage of physician epidemiologists, the demand for nonphysician epidemiologists with doctorates will continue to be high, but inexperienced public health epidemiologists without a doctorate are likely to experience some difficulty in finding suitable employment in public health. Doctoral and postdoctoral training in epidemiology should be provided for established health professionals, along with other training initiatives, including short courses, continuing education, and external degree programs; such training should provide opportunities for field experience. To reverse the decline in physicians with training in epidemiology, a variety of programs are needed, including scholarships with preferential employment or repayment provisions and career rewards.

Slow growth is anticipated in the demand for the services of all statisticians over the next 5 years. Statisticians will require a strong background in data processing technology and analytical skills, as well as orientation to the multidisciplinary public health team and the substantive areas of public health practice.

Environmental health. Environmental health encompasses a broad spectrum of related specialties, which include but are not limited to air quality, food protection, hazardous substances, product safety, shelter, industrial hygiene, radiation protection, solid waste management, vector control, waste disposal, and the water supply. This diversity makes recruiting, education, research, and training in environmental health difficult. The spectrum of problems is so broad and is expanding so rapidly that the solutions require a cooperating partnership among official agencies, the general population, academia, agriculture, commerce, and industry.

The Environmental Health Work Group recommended that the environmental health work force be expanded to meet present and future needs despite cuts in funds and a shift in regulatory emphasis from Federal to State and local governments. The group predicted that the greatest shortage of adequately qualified personnel to serve the needs of both the public and private sectors would occur in the next 5 years in the problem areas of management of toxic substances and hazardous waste, occupational safety and health, and water treatment. The group also recommended Federal support, in conjunction with State and local governments and industry, for training programs, incentives to encourage research and advanced study, and the establishment of national standards. Educational programs, in addition to developing technical competence, should include specialized training in the political process, the formulation of public policy, and communication skills.

Health education. The field of health education has a significant potential for contributing to the prevention of disease and the promotion of health. Health educators are employed in a variety of work settings—medical care, community health, school health, business and industrial sites, and academic or research institutions. However, a substantial number of persons currently filling health education positions in worksites outside of academia have no formal preparation or even continuing education in health education. In many cases, they have been trained in such areas as adult education and the social sciences. The Health Education Work Group pointed out the need for better preparation of health educators through improved training, including field experience, and also the need for support of research and evaluation. Extended degree programs, master's degree programs, and continuing education programs should be established. The work group recognized, however, that tight job markets and economic limitations make academic institutions reluctant to adopt such programs. The work group also recommended that a competency assurance program be established, which would include self-assessment, competency-based training, and the credentialing of health educators.

Health services administration. Health services administration encompasses those skills necessary to plan, develop, manage, and evaluate health programs, institutions, and health care systems. The Health Services Administration Work Group forecast a continued demand for health service administrators, with a probable increase in the private sector's demand and a decrease in the public sector's demand. The work group was unable, with the available data, to assess the degree to which production would balance the expected demand for new entry-level graduates. Generally, the group's members expressed the belief that the job market for new graduates was likely to become much more competitive in many administrative specialties, whereas selected specialites would remain in high demand. Relatively more training effort should be directed at upgrading the existing supply of health service adminis-

trators as compared with the production of new administrators.

A serious lack of faculty expertise poses the most significant training problem, which could be remedied through doctoral and post-doctoral training and field experience. The strengthening of curriculums, the establishment of external degree programs and continuing education programs, and linkages with public agencies and the private sector would help increase the relevance of training programs. New content areas should include financial management, health economics, epidemiology as a management tool, policy and the political process, marketing, and health law.

Summary and Critique

"The vagaries of sources and levels of financial support will continue throughout the 1980's and will force government and non-government providers of health services to undertake shifts in programs, services, and personnel in order to remain fiscally viable," said Dr. Bailus Walker, in summarizing the forum's deliberations. These circumstances will bring pressures to reduce the scope of health services and to change the organizational arrangements by which services are delivered.

Yet, despite these pressures, great demands continue. "A common thread in all the discussions of the forum was the recognition that the identification, evaluation, and subsequent modification of environmental and occupational factors in causing illness and premature death promise early and major payoff in the prevention of disease." There was considerable agreement that the current demand for environmental health personnel will increase substantially with public demand for more rigorous control of environmental and occupational hazards, and that the present and future need for toxicologists and epidemiologists (especially physician epidemiologists) will far exceed the supply.

The broader implications of disease prevention and health promotion were also highlighted in the forum. In a society that has been moving steadily toward more costly therapeutic approaches, especially those involving hospitalization, preventive approaches may come to be dictated on economic grounds alone. An even more persuasive stimulus, Walker noted, is the social advantage of eliminating or preventing the progression of disease or disability.

The redistribution of Federal, State, and local responsibilities, along with increased health care costs, will require the strengthening of management tools, the integration of a variety of services, and the coordination of facilities planning, health education, and manpower utilization. Health care managers, Walker said, must be conditioned through education and experience to pursue these goals, and planners and statisticians must provide improved tools for rational planning and resource allocation.

These changes, Walker continued, should prompt "a discussion of how to redirect our educational programs to provide health service personnel with new skills and renewed confidence to engage in a creative partnership and improve the quality of service."

Unfortunately, he said, although we do not have sound data to prove the point, it appears that the most capable health science students are not opting for careers in applied public health services, especially in State and local governments. In these times of economic change, senior faculty members in academic departments are less available to students as role models, because they spend increasing amounts of time seeking financial support for their programs. In addition, Walker commented, the public image of public health professionals is poor; they are too often seen as inefficient and unimaginative bureaucrats protected by civil service regulations.

Walker argued that "all available signs point to a current and future general shortage of public health professionals in many categories of subdisciplines," which market factors do not seem to be able to counteract. The problem for public health agencies is compounded in several critical areas—such as occupational health and epidemiology—because highly trained graduates are being enticed by more lucrative opportunities outside organized public health services.

"Thus," Dr. Walker concluded, "it is imperative that the Federal Government retain and even intensify its key role in ensuring the stability of financial support for training and education in public health . . . and make training and education a priority within its internal structure . . ."

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