The Public Health Workforce:

An Agenda for the 21st Century

A Report of the Public Health Functions Project

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service

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EXECUTIVE SUMMARY

Today our Nation faces a widening gap between challenges to improve the health of Americans and the capacity of the public health workforce to meet those challenges. Deeply concerned with this trend, the Public Health Functions Steering Committee in September 1994 commissioned the Subcommittee on Public Health Workforce, Training, and Education, charged to:

> provide a profile of the current public health workforce and make projections regarding the workforce of the 21st century. The Subcommittee should also address training and education issues including curriculum development to ensure a competent workforce to perform the essential functions of public health now and in the future. Minority representation should be analyzed and the programs to increase representation should be evaluated. Distance learning should be explored. The Subcommittee should examine the financing mechanisms for curriculum development and for strengthening the training and education infrastructure.

The plan presented here builds on work already in place with a call to practical action of Federal, State, and local public health agencies; academic public health departments; community health coalitions and organizations; philanthropies; and all others concerned with the health of Americans.

This report uses as an analytic framework the statement *Public Health in America*, with its enumeration of 10 essential services of public health, incorporating and building upon previous discussions of public health functions. The public health workforce includes all those providing essential public health services, regardless of the nature of the employing agency. The report endorses individual and organizational excellence as the only standard acceptable to the public and decisionmakers who must play a vital role in realizing the vision of "Healthy People in Healthy Communities." The Subcommittee divided its efforts into:

- Enumerating the current workforce in public health function positions and assessing future changes in workforce roles and the impact of these changes on the workforce composition;
- Identifying training and education needs for core practices/essential public health services; and
- Developing a strategic plan for using distance learning approaches to provide high-priority public health education and training.

The specified action items listed below, and elaborated upon in the full report, represent essential first efforts and will require the concerted attention of all partners on the Public Health Functions Steering Committee and many others if they are to have the desired impact. **These steps are not sequential, and work on all of them should proceed concurrently.** The necessary actions include:

1. National Leadership

The Public Health Functions Steering Committee should continue to serve as the locus for oversight and planning for development of a public health workforce capable of delivering the essential public health services across the Nation, including support for any legislative authorization or financing mechanisms needed to fully implement this report and a commitment to ensure that current workforce development resources are wisely invested in achieving identified goals. Each partner organization is encouraged to develop specific plans and policies that complement this collaborative effort.

2. State and Local Leadership

In order to ensure that programs are appropriately tailored to the unique configuration of needs and resources in each State and in each local jurisdiction, a mechanism to develop State public health

*By "Federal, State, and local public health agencies" this report means any health, substance abuse, environmental health and protection, or public health agency charged with some portion of the roles encompassed in the statement *Public Health in America.*

workforce planning and training should be developed and implemented. This mechanism should include not only development of identified leaders, but also cultivation of leadership qualities throughout the workforce. The State, or where appropriate, regional, efforts should emphasize possible partnerships among practice and academic entities involved in public health. These efforts should be responsive to and provide input into those at the national level. In addition, these efforts must involve local public health entities and be responsive to their needs.

3. Workforce Composition

A standard taxonomy should be used to identify the size and distribution of the public health workforce in official agencies (health, environmental health and protection, mental health and substance abuse; local, State, and national) and private and voluntary organizations. This effort should be coordinated with the Bureau of Labor Statistics to enhance uniformity in occupational classification reporting. To the extent possible, the taxonomy should be consistent with *Public Health in America*, recognizing that specific occupational titles will vary across organizations.

Using the same taxonomy, the Steering Committee should recommend and support a mechanism to quantify the future demand for public health workers, paying particular attention to issues of diversity and changing demographics in the workforce.

4. Curriculum Development

The statement of competencies for the public health workforce developed by the Subcommittee should be refined and validated, identifying the subset(s) of competencies associated with each of the various professions that make up the workforce.

Basic, advanced, and continuing education curricula to train current and future public health workers in the identified competencies should be supported (where existing) and developed (where not yet in place). Implementation should be coordinated with the State planning efforts (above) and make maximum use of new technologies (below).

Improved methods (such as certification) of identifying practitioners who have achieved competency should be identified and implemented if demonstrated effective.

5. Distance Learning

All partners in the effort to strengthen the public health workforce should make maximum use of evolving technologies such as distance learning. A structure should be established to develop an integrated distance learning system building on existing public and private networks and making information on best practices readily available.

The agenda presented in these recommendations only partially fulfills the original charge to the Subcommittee. In its continuing leadership role, the Steering Committee should identify other tasks that need continuing attention and make plans for their completion. With the continued attention of the Public Health Functions partners, the public health workforce will be strengthened to contribute even more to the health of communities in the 21st century.

ACKNOWLEDGMENTS

It is difficult to acknowledge all the individuals who have contributed to the development of this complex and detailed report. The major contributors were the members of the Subcommittee on Public Health Workforce, Training, and Education and they are listed in Appendix I. In addition, members of the Public Health Functions Working Group and Steering Committee provided important comments on earlier drafts of this report and their input has been greatly appreciated and valued.

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INTRODUCTION

Today our Nation faces a widening gap between challenges to improve the health of Americans and the capacity of the public health workforce to meet those challenges. The public health community is actively engaged in a wide range of activities to keep the current workforce up to date and to anticipate future needs. As a leadership forum for action on public health infrastructure issues, the Steering Committee of the Public Health Functions Project (see Appendix A) in September 1994 commissioned the Subcommittee on Public Health Workforce, Training, and Education to review factors related to workforce challenges and to make recommendations for an action plan. Their charge was as follows:

> To further an understanding of the public health workforce, a Subcommittee . . . is charged with providing a profile of the current public health workforce and making projections regarding the workforce of the 21st century. As a part of this effort, the Subcommittee should examine the current and future shortfalls in the public health workforce, looking broadly at Federal, State and local levels, in public health departments as well as mental health, substance abuse, and environmental health agencies and at the emerging need for public health competencies in managed care systems, health plans, and in other governmental agencies such as departments of agriculture, education, and justice. The Subcommittee should also address training and education issues including curriculum development for graduate training in public health and ongoing training and development activities to ensure a competent workforce to perform the essential functions of public health now and in the future. Minority representation in public health disciplines should be analyzed and the programs to increase representation should be reviewed and evaluated. Distance learning and other advanced technology training methods should be explored to ensure that training and education activities are carried out in the most efficient and cost-effective manner. Therefore, the Subcommittee shall examine the financing mechanisms for curriculum development and for strengthening the training and education infrastructure, as well as explore the feasibility of establishing a Council on Graduate Public Health Education.

The Public Health Functions Steering Committee also developed a consensus statement, entitled *Public Health in America*, in 1994 (see Appendix B). Building further upon the core functions of public health (assessment, policy development, and assurance) identified by the Institute of Medicine (IOM) in its 1988 study *The Future of Public Health*, the consensus statement describes what public health does and what services are essential to achieving healthy people in healthy communities. Successful provision of these essential services requires collaboration among public and private partners * within a given community and across various levels of government. The Subcommittee used these essential services as a framework for their respective activities.

*The partnership must include all agencies and private or voluntary organizations in the areas of health, mental health, substance abuse, environmental health and protection, and public health responsible for fulfilling *Public Health in America.*

CONTEXT

As the American health care system evolves, a variety of forces are driving changes in the practice of public health. In addition to other dynamics, the continually changing ethnic, racial, immigrant, age, and economic groupings within our society require an increasingly skilled body of public health professionals. Accompanying these changes are shifts in the roles of public health practitioners and other health care workers within the various public health disciplines and in their need for training, continuing education, and related skill development.

One of the major training and education challenges results from the movement of some public health agencies away from a primary role directly providing personal health services to underserved populations toward greater emphasis on providing population-focused services to entire communities (Baker, et al., 1994). This transition is accelerating as more States mandate the enrollment of Medicaid populations into managed care arrangements; however, many public health systems will continue to provide direct care to some populations, including the growing number of uninsured.

Medicaid and other contracts between government agencies and managed care organizations (MCOs) establish new roles and relationships, which in turn affect the public health workforce. Also, new community-wide collaboration to achieve objectives of *Healthy People 2000* or other goals requires strong participation from health departments. Governmental health agencies will continue to oversee basic public health concerns such as ensuring clean water and environmental safety. Furthermore, the public looks to the Government for leadership in times of "health emergencies" such as hurricanes, floods, and communicable disease outbreaks.

The public health workforce requires up-to-date knowledge and skills to deliver quality essential public health services. To meet the training and continuing education needs of an evolving workforce, a clearer understanding is required concerning the functions and composition of the public health workforce both now and in the future. This information should be communicated clearly to legislators and other government leaders so that policy can be based on an understanding of the current demand for public health services and the supply of trained professionals required to meet that demand. Furthermore, because this is a geographically dispersed and demographically diverse workforce, new strategies for presenting efficient and effective training must be developed.

Based on a review of previously published reports, ** barriers to strengthening the public health workforce can be summarized as:

- Inadequate knowledge about the competencies the workforce will need to meet future challenges and about new training and education resources that will be needed to develop those competencies;
- Lack of formal training in public health and in the application of broad public health competencies to emerging new functions, e.g., constituency building, leadership, and use of electronic information systems;
- Limited public health professional certification requirements that can serve as incentives for participation in training and education;
- Indecision about workforce development across multiple public health and health financing agencies;
- Absence of stable funding for public health and the fragmentation imposed by categorical funding streams; and
- Failure to use advanced technology to its full potential, e.g., to provide training.

** Individual reports are cited in the body of this report as appropriate and are included in the References.

The following sections present background on the three interrelated topics addressed by the Subcommittee on Public Health Workforce, Training, and Education. The first section explores what is known about the composition of the public health workforce and focuses on methods of identifying who carries out which public health functions. The impact of the changing role of public health on the future composition of the workforce is also examined. The next section addresses the public health education and (re)training challenges in an evolving health care system. In the third section, the use of distance learning strategies to meet the training and education needs of a widely dispersed population of working health professionals is discussed. The report then details the recommendations (Future Directions) of the Subcommittee to address these issues, and implementation.

COMPOSITION OF THE PUBLIC HEALTH WORKFORCE

Current changes in the public health system necessitate planning for organizational change (Nelson et al., 1994, 1995). This process emphasizes the importance of knowing the composition of the present workforce and being able to describe the workforce providing essential public health services to community members. Knowing which professionals are currently performing specific public health functions is integral to projecting what types of public health professionals will be required in the future. Effectively and efficiently providing training and education for an evolving public health workforce requires a clear understanding of the composition of that workforce. The landmark IOM study (1988) on public health noted that although public health workers had adequate technical preparation in specific fields, many may lack training in management, political skills, and community organization and diagnosis, all of which are essential for leadership in complex multifaceted public health activities. The IOM study further emphasized the challenge facing public health personnel to update their knowledge and skills in light of the continuous evolution of the public health field.

Definition of the Public Health Workforce

The public health workforce has frequently been defined as those individuals employed by local, State, and Federal government health agencies. Use of this definition is limiting; for example, individuals in academia who educate, train, or perform research in public health should be considered part of the public health workforce. As private sector health care delivery organizations provide more community-based public health services, their employees also should be considered part of the workforce. Furthermore, current models of the determinants of health (Evans and Stoddard, 1994) suggest that individuals from many sectors of a community (e.g., education, economic development) must be involved to produce health and well-being.

For purposes of this discussion, the public health workforce includes all those responsible for providing the services identified in the *Public Health in America* statement (see Appendix B) regardless of the organization in which they work. As an example, all members of the U.S. Public Health Service Commissioned Corps, whether currently assigned to the Department of Health and Human Services (DHHS) or elsewhere are included. At the State level, many workers in environment, agriculture, or education departments have public health responsibilities and are included. This expansive definition does not include those who occasionally contribute to the effort in the course of fulfilling other responsibilities.

Given this breadth, identifying organizations where public health is operationalized is a challenge. In the public sector, responsibilities for public health functions are shared among multiple agencies. For example, in the six States visited by the IOM Future of Public Health Committee, six different public health systems were observed. The committee found that States varied in their concept of public health and in the importance they placed on public health activities. The health agencies in each of these States were diverse in organization, authority, activities, and resources (IOM, 1988). At each

level of government, agencies charged with public health, environmental health and protection, mental health, and substance abuse services must be included in the process. As an increasing proportion of essential public health services are provided by the private and voluntary sectors, the difficulties in classification will be exacerbated.

Identifying, Classifying, and Enumerating the Public Health Workforce

Over the past 25 years, assessing the composition, size, function, and adequacy of the public health workforce has been the subject of numerous studies. Many of these initiatives have confronted myriad barriers in their attempts to track the workforce. The studies continuously encountered the following three problems as they sought to assess the public health workforce:

- Lack of clear, concise, mutually exclusive public health profession classification schemes/categories;
- An absence of consistent public health professional credentialing requirements; and
- A professional workforce educated in specific disciplines such as medicine, nursing, dentistry, or administration but lacking formal public health training.

As a further problem, support staff (e.g., receptionists, clinic assistants, laboratory assistants) often are not effectively oriented to the public health goals of the organization and are limited in the contributions they are able to make to the overall effort.

For example, the American Public Health Association (APHA) has 31,000 members actively engaged in public health practice and can enumerate them by their self-selected area of expertise or interest by the Association section with which they affiliate. With funding from the Bureau of Health Professions of the Health Resources and Services Administration, APHA actively pursued a comprehensive workforce enumeration in the mid-1980s, investigating methods of counting the workforce. The APHA Workgroup found that there was neither clear differentiation between persons trained at a given level nor between persons trained at different levels within the same occupational category. The Workgroup concluded that using professional titles to define function was inadequate since localities in each State could define the functions of specific personnel titles differently (APHA, 1983). The APHA group proposed a functionally based classification system based on three criteria—type of work setting, type of work performed, and type of position. One application of this approach is discussed below.

In 1989, the Bureau of Health Professions organized a Public Health Workforce Consortium that developed a series of position papers on the public health workforce (Public Health Workforce Consortium, 1989). The Consortium suggested that many of the difficulties encountered in gathering workforce data were the result of shortcomings in classification schemes for public health work, work settings, and workers. These inadequacies were traced to a lack of standardized methods for categorizing public health professionals and their work that often resulted in ambiguous classifications. Existing occupational classifications failed to consistently identify the duties and qualifications expected of the incumbents (Moore and Hall, 1989). The Consortium also cited the lack of clear boundaries between public health occupations as problematic. For example, the knowledge base, skills, and tasks required in epidemiology and biostatistics overlap extensively; there is no single defining characteristic that unequivocally places a professional in one category as opposed to the other. Absolute clarity and consistency may never be possible, given the nature of public health. However, failure to describe the workforce clearly hampers efforts to assist decisionmakers to make appropriate investment in the entry level and continuing education of public health workers.

In 1996, the Standard Occupational Classification (SOC) Revision Policy Committee convened by the Bureau of Labor Statistics, Department of Labor, and the Bureau of Census, Department of Commerce, sought the DHHS's assistance in revising and

updating the health occupation categories used in regular tabulations of the entire U.S. workforce.

Drawing on the earlier work of APHA and the Workforce Consortium discussion, some additional categories were identified and forwarded to the SOC Revision Policy Committee. Adoption of these changes (see Appendix C) will enhance uniformity in occupational classification and data collection activities within the Departments of Health and Human Services, Labor, and Commerce and with their State, local, and private sector partners.

Estimates of Workforce Composition and Supply

The objectives of a recently completed study by The George Washington University Medical Center, Center for Health Policy Research (Solloway et al., 1996) were to assess the size and composition of the government agency public health workforce in five States, examining the changing patterns of public health practice and linking the workforce to the essential public health services. The study also sought to identify education and training needs of public health personnel as well as barriers to meeting those needs. In meeting these objectives, the study highlighted difficulties in developing a national workforce data set (Solloway et al., 1996). Investigators found that the detail needed to classify the workforce was typically not available in existing State personnel data systems and needed agency input. Applying a standard public health occupational taxonomy in the five States proved to be labor intensive and time consuming. Investigators reported that by the completion date of the report the data were no longer valid, because of reductions or turnovers in personnel, although the magnitude of error was not clear.

Study findings also suggest that the aggregation of data into a standard occupational taxonomy obscures variations in workforce activities. The investigators felt that aggregated workforce data were not useful in understanding the functions of the workforce, identifying personnel shortages, or addressing training and educational issues (Solloway et al., 1996).

The Center for Health Policy Studies of The University of Texas, Houston Health Science Center, used the methodology developed by the APHA Workgroup in the mid-1980's to assess the professional public health workforce in Texas (Kennedy et al., 1996). Using a two-staged survey, the Texas Public Health Workforce Study Group first surveyed employers and potential employers of health personnel and then focused on individual employees. The study provides an estimate of the supply of public health professionals and identifies shortage areas in Texas. A description of this and other selected public health workforce assessment studies is found in Appendix D, presenting study objectives, methods, and information available for each project.

In addition to these efforts, the DHHS Data Council has been asked by the Public Health Council to consider mechanisms for improving public health workforce reporting; no action date for a reply has been set. Proxy measures of the workforce could be used to further the enumeration. Possibilities include reported graduations from schools and programs in public health, reported certifications as public health specialists within professions such as medicine, nursing, or health education, and reported position vacancies or association membership trends over time. Each of these approaches has significant shortcomings but might be used to supplement or clarify other data.

This discussion has illustrated a number of methodological concerns that have hampered the ability of policymakers to accurately enumerate the level of public health personnel across the country. Among the more notable concerns for data collection are:

- Occupational classifications in use rarely reflect the duties and qualifications currently expected of the incumbents;
- Boundaries between public health occupational categories often are not delineated; categories are not mutually exclusive and

overlap extensively with regard to knowledge base, skills, and tasks;
- Classification systems lack consistency; some occupations are defined by what people do, while others are defined by the populations they serve or by the required underlying skills;
- Position descriptions/job titles for public health professions lack uniformity across States and organizations; and
- No comprehensive public health professional licensure or certification requirement provides categories for data collection.

COMPETENCY-BASED CURRICULUM

As the entire health system changes, major training and continuing education challenges will emerge. Training and retraining in the public, private, and voluntary sectors are needed to prepare the workforce for new challenges and responsibilities. Six priority areas for a competency-based curriculum are cultural competency, health promotion skills, leadership development, program management, data analysis, and community organizing (Joint Council of Governmental Public Health Agencies, 1995).

It is clear that the public health workforce must be competent in the latest approaches to traditional public health skills (e.g., epidemiology, health policy development, and health education) and must understand the impact of efforts to manage care and integrate delivery systems on health, the changing role of government, the building of community partnerships, the use of new information technologies, and the uses of data in policy development and decisionmaking (Nelson et al., 1996a, 1996b). In addition, to be an effective participant at the community level, the public health workforce must be conversant with continuous quality improvement, the strengths and challenges of diversity, and system development. If the public health organization provides personal care services, they must be of the highest quality as well. Current projects such as the SAMHSA Mental Health Managed Care and Workforce Training Project focus on these concerns. No one worker or profession will master all knowledge, but an agency's entire workforce should encompass the full range of public health competencies identified by the Competency-Based Curriculum Work Group (see Appendix E).

Education and Training: Reassessment and Retooling

The Pew Health Professions Commission report (1995), entitled *Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century*, observed: "The needs of the integrated systems will not be met simply by hiring [new] public health professionals [but by] substantial and ongoing retraining of nurses, physicians, allied health personnel, and managers . . . [who are] required to apply the skills in new contexts." The report calls for creative and risk-accepting leadership in providing training and education, a "renaissance" for educating public health professionals. The training and retraining for public health should be based in competencies, that is, in what people should be able to do, rather than what they should know (Lane et al., 1994).

What is needed, then, is a reassessment and a retooling of the entire public health education and training enterprise. The goal is to make efficient and effective use of scarce resources so they will be responsive to emerging health systems (Lincoln et al., 1996). This educational "renaissance" will be distinguished by several features. First, it will involve a stronger role of partnerships and collaborations between groups from the public, voluntary, and private sectors—MCOs, business and industry, schools of public health and other health professions, State and local health departments, professional associations, community-based organizations, foundations, Federal Government, and other key stakeholder groups. Partnerships and collaborations will enhance the relevance of education and training and provide potential financial support resulting in a more effective and efficient educational program. The potential range of partnerships can be appreciated by considering the array of interested bodies

participating in the *Healthy People 2000* Consortium (see Appendix F).
Another distinguishing feature will be the recognition that traditional approaches to delivering instruction (e.g., classroom settings) are no longer the sole method of adequately preparing students to enter practice or for providing continuing education to a widely dispersed public health workforce. Field-based learning experiences that take full advantage of state-of-the-art learning technologies, such as those involved in distance learning, must be implemented. Care and creativity will be required to effectively use these technologies in situations traditionally done face-to-face such as internships in mental health or substance abuse. As the workforce becomes more diverse, methods should be adapted to meet the needs of each student.

Finally, the educational "renaissance" will be characterized by continuing movement from the conventional approach of teaching a curriculum based on subject matter areas toward the teaching of performance-based competencies. The new emphasis will be on demonstrated skills and behavior. Focusing on measurable learner-centered competencies provides the additional benefit of accountability and facilitates consideration of issues surrounding performance improvement at the organizational and individual employee levels (Nelson et al., 1997), licensure, certification, and enumeration.

The previous work of the Faculty/Agency Forum and the Council on Linkages Between Academia and Public Health Practice and the competencies identified by a number of public health disciplines (see Appendix G) provide an excellent beginning for this effort, as does the report *Taking Training Seriously*, issued by the Joint Council of Governmental Public Health Agencies. Other discipline-specific competencies that helped to inform the recommendations in the Future Directions section of this report are presented in Appendix H.

DISTANCE LEARNING SYSTEM DEVELOPMENT

As noted in the previous section, compelling and urgent programmatic forces are making enhanced training and education opportunities for public health professionals a necessity. Public health professionals are "knowledge workers," professionals who interpret and apply information to create and provide "value added" solutions and who make informed recommendations in continuously changing work environments (Winslow and Bramer, 1994). Public health workers require the ability to acquire and apply theoretical and analytical knowledge and the habit of continuous lifelong learning to remain viable and productive.

The emergence of a world interconnected by networks of computers, satellite downlinks, and telecommunications technologies represented by the Internet, World Wide Web, and corporate and private intranets offers great potential for the lifelong training and education of public health workers. In combination with traditional classroom learning, networked computers and telecommunications technologies provide distance learning systems that enable diverse groups of geographically dispersed individuals to access information for training and education anytime, anywhere. These same technologies also provide an infrastructure for integrating national efforts with local community needs and concerns. Local networks of electronic information resources further stimulate and provide opportunities for involvement across all segments of a community: education, health care, local government, business, and individual citizens. Blacksburg Electronic Village (Virginia) and Smart Valley (California) are exemplary demonstrations of such community involvement. Care is needed, however, to ensure that access to such resources is equitable across communities and populations.

Organizations responsible for public health programs and training have a unique opportunity to participate in the creation and utilization of the National Information Infrastructure. There is an opportunity to leverage the enormous intellectual efforts, products, and services that already exist to achieve cost efficiencies and to explore new and exciting ways to provide education and training that emphasize individual differences, collaborative learning, experimentation, learner responsibility, skills for lifelong learning, freedom from constraints of time and place for learning, immediacy of information, a multiplicity of distributed learning environments, enhanced role for teachers/trainers as facilitators, and a renewed sense of responsibility for learning outcomes.

Distance learning is a system and a process that connects learners with distributed learning resources characterized by:

- Separation of place and/or time between instructor and learner, among learners, and or between learners and learning resources; and
- Interaction between the learner and the instructor, among learners, and/or between learners and learning resources conducted through one or more media; use of electronic media is not necessarily required (American Council for Education, 1996).

Federal agencies currently using distance learning systems include: Defense, Agriculture, Education, Veterans Affairs, Federal Aviation Administration, Environmental Protection, and Social Security Administration and within DHHS—Centers for Disease Control and Prevention, Food and Drug Administration, Health Care Financing Administration, and Health Resources and Services Administration. Schools of public health, State health agencies, the American Hospital Association, and others also have used distance learning systems, often with award-winning success.

Additional success in public health is cited in a recent study by Solloway, et al. (1996), which concludes that distance learning: (1) provides a consistent message to a large number of people within a short time period; (2) overcomes barriers to training such as time away from the job and travel restrictions; (3) promotes collaborative relationships among colleagues as well as communities, and provides increased opportunities for information exchange; and (4) provides an excellent vehicle for disseminating information, updating scientific knowledge, and teaching technical skills.

To develop an effective competency-based curriculum requires accurate information concerning the composition, functions, and education needs of the public health workforce. After developing curricula to meet the workforce's needs, the use of such strategies as distance learning are critical in providing training to a geographically dispersed and diverse public health workforce. An effort to improve vaccine coverage for preschool children initiated by the Clinton Administration 3 years ago serves as an example of the interrelationships between workforce composition, education, and the delivery of training. To meet the new vaccination goals, the National Immunization Program (NIP) staff had to develop a curriculum and training program on vaccine-preventable diseases. Equally important was identifying the sector of the workforce requiring training—nurses and other prevention personnel. Traditionally, training for NIP was delivered in a 5-day workshop for 50 students. NIP staff realized that it would need to greatly increase the number of public health practitioners receiving training in order to meet the program's goals. Using distance learning strategies, a series of satellite video conferences on vaccine preventable diseases was designed and produced to successfully train 25,000 participants nationwide through the first series.

FUTURE DIRECTIONS

Public health is integral to the well-being of the Nation's communities. It is time to take a serious and deliberate look at the composition, activities, and education needs of the public health workforce. Completing and fulfilling the charge made to this Subcommittee will require the coordinated and collaborative effort of the Public Health Functions Steering Committee partners and others. In order to move this agenda forward, the Steering Committee makes five major recommendations in the areas of:

- National Leadership
- State and Local Leadership
- Workforce Composition
- Curriculum Development
- Distance Learning

These steps are not sequential. Work on all of them should proceed concurrently. Using a consensus process involving groups of individuals representing over 20 public-health-related organizations (see Appendix I), the Subcommittee puts forward the following proposed action steps for each of the identified recommendations. Ultimately the goal is to develop a seamless approach to enhancing the workforce: identifying the workforce and assessing individual skills, examining changes in the evolving public health environment to identify areas requiring additional skill development, determining how best to obtain those skills, and finally, using strategies such as distance learning to provide the necessary training and education.

NATIONAL LEADERSHIP

The Public Health Functions Steering Committee should continue to serve as the locus for oversight and planning for development of a public health workforce capable of delivering the essential services of public health across the Nation. This includes maintaining support for any legislative authorization or financing mechanisms needed to fully implement the recommendations of this report and a commitment to ensure that current workforce development resources are wisely invested in achieving identified goals. Each partner organization and others are encouraged to develop specific plans and policies that complement this collaborative effort.

Workforce policies and funding priorities for public health workforce training must be responsive to both the supply of public health workers and the demand for their skills. Meeting the public health needs of individual communities requires an understanding of the types of public health professionals needed to provide required services, the actual positions available (the demand), and an understanding of who currently provides these services and their skills (the supply). The Federal role of (1) providing standards and guidelines; (2) conducting research and disseminating its findings; (3) ensuring equity across States; and (4) developing priorities for the Nation (APHA Policy Statement, 1996) should be appropriately incorporated into the national effort.

Proposed Action Steps

A. Organize a national forum of key stakeholders from both the public and private sectors to examine human resource allocation and trends in public health. Potential forum participants in addition to the Public Health Functions Steering Committee members include the American Association of Health Plans, Health Care and Financing Administration, State Medicaid directors, social workers, substance abuse and mental health professionals, nurses, professional organizations, and the business community in general.

B. Develop and implement modules for Leadership Training Institutes that enable public health leaders to better assess their roles in providing public health services in a changing environment.

C. Involve frontline public health practitioners from all types of organizations in the efforts

to enumerate, plan for, and educate the public health workforce.

STATE AND LOCAL LEADERSHIP

To ensure that programs are appropriately tailored to the unique configuration of needs and resources in each State and in each local jurisdiction, a mechanism for development of State public health workforce planning and training should be developed and implemented. This mechanism should include not only development of identified leaders, but also cultivation of leadership qualities throughout the workforce. The State, or where appropriate, regional, efforts should emphasize possible partnerships among practice and academic entities involved in public health. These efforts should be responsive to and provide input into those at the national level. In addition, these efforts must involve local public health entities and be responsive to their needs.

Proposed Action Steps

A. Ensure that workforce planning takes place in all appropriate jurisdictions. Allocation of human resources should be determined by State and local governments or on a regional basis when appropriate due to resources, geography, or other factors.

B. Within each jurisdiction encourage the participation of medical care delivery systems and others with public health responsibilities to achieve mutual goals in workforce development.

C. Develop a partnership with States to quantify the *supply* and *demand* of personnel providing essential public health services at the State, local, and private sector levels.

WORKFORCE COMPOSITION

A standard taxonomy should be used to regularly identify the size and distribution of the public health workforce in official agencies (health, environmental health and protection, mental health, and substance abuse; local, State, and national) and private and voluntary organizations. This effort should be coordinated with the Bureau of Labor Statistics to enhance uniformity in occupational classification reporting. To the extent possible, the taxonomy chosen should be consistent with the *Public Health in America* statement, recognizing that specific occupational titles will vary across organizations.

It is in the public's interest to have a public health workforce that is ethnically and culturally diverse and is adequately trained and deployed to provide essential public health services. Using the same taxonomy, the Steering Committee should recommend and support a mechanism to quantify the future demand for public health workers, paying particular attention to issues of diversity and changing demographics in the workforce.

Proposed Action Steps

A. Identify a lead agency or organization to provide leadership in continuing efforts to assess the size, composition, and distribution of the workforce as related to essential services of public health.

B. Examine methods used by professional organizations such as American Nurses Association, American Medical Association, American Psychological Association, American Dental Association, and National Environmental Health Association to classify their respective workforces and incorporate where helpful.

C. Develop a standard taxonomy based on the 10 essential public health services to qualitatively characterize the public health workforce. This classification scheme must be derived through collaboration and consensus of the entire public health community.

D. Use the SOC System of the workforce and data from the Bureau of Labor Statistics and census surveys to track shifts in the staffing mix of personnel among the governmental, private, and voluntary sectors.

E. Identify and take action steps to ensure that the public health workforce is ethnically and culturally diverse.

F. Work with the Office of Management and Budget to include appropriate public health entries in the SOC System to facilitate identification of public health worksites, such as local health departments and other organizations providing essential public health services.

CURRICULUM DEVELOPMENT

Preparation of the current and future workforce requires clarifying essential competencies, making associated curriculum revisions, and identifying methods to keep both current.

Part I. Competencies

The statement of competencies for the public health workforce developed by the Competency-Based Curriculum Work Group (Appendix E) should be refined and validated, with the subset(s) of competencies associated with each of the various disciplines identified.

The competencies needed to meet the public health challenges of today and tomorrow should form the foundation for all future efforts to train and educate the workforce. Competency specification is a vital step for two reasons: (1) During the process of curriculum planning and development, it provides a central focus for the providers of training and education—schools of public health, medicine, nursing, dentistry, and the allied and associated health professions, as well as other academic institutions, public sector agencies, and private sector organizations; and (2) By determining competencies that will be needed, it is possible to examine the current capabilities and qualifications of the workforce, to identify gaps in the workforce, and to design and support systems for training/education of the workforce to fill those gaps.

Proposed Action Steps

A. Verify that identified competencies are indeed necessary for efficient and effective practice of public health. Validations of these competencies should be provided by a panel of practice-based experts who are in public health organizations, including employers.

B. Identify competencies critical to all public health practitioners and those critical to successful practice in specific organizational settings. The competencies presented in Appendix E should be viewed as "organizational" competencies, those required for the entire workforce deployed within a given public health setting. (Although all public health practitioners should be familiar with the essential services of public health, few, if any, individuals will be equally competent in all areas.) Categorizing competencies should be conducted by a review panel of experts including practitioners and employers from all practice settings.

C. Improve long-range planning. Public health competencies are evolutionary. They are affected by changes in responsibilities and the practice of public health. There must be a formal mechanism to update competencies to reflect changing demands. A mechanism for assuring current and accurate competencies may take the form of an institute, task force, or other entity supported by government, foundations, and/or the academic community. Responsibilities will include monitoring trends in the demand for public health services and interpreting those demands in terms of the skill and knowledge needed to provide the 10 essential services of public health.

Part II. Curriculum Development

The curriculum development process should be guided by attention to key competencies that are adequately addressed within existing curriculum offerings and those that are deficient. This process of development or enhancement of curricula focusing on competencies, rather than content, is a challenging task. Competencies are derived from an analysis of the performance of proficient practitioners with concentration on skills and abilities rather than on activities. A primary function of competency-based curricula in public health is that they can provide both educators and employers of public health personnel guidance and structure in the allocation of effort and resources.

Basic, advanced, and continuing education curricula to train current and future public health personnel in the identified competencies should be supported (where existing) or developed (where not yet in place). Implementation should be coordinated with State planning efforts and make maximum use of new technologies.

Improved methods (such as certification) of identifying practitioners who have achieved competency should be implemented if demonstrated effective.

Because the public health workforce is characterized by a diverse range of experiences, education background, and ethnicity, any program for systematically addressing the training and education needs of the workforce must direct its resources toward meeting the most important skill enhancement areas, especially considering the needs of communities and populations currently underserved by public health programs.

Proposed Action Steps

A. Ensure that the practice community has a substantial role in the curriculum development process. Examine existing models that link the academic and practice communities as a first step in facilitating practitioner involvement and target efforts and resources in their replication.

B. Determine the current status of "competency" of the workforce. Develop and implement a methodology (survey, direct observation, etc.) to assess the current level of proficiency in the practice of the competencies. This research effort will include an evaluation of how the competencies have been acquired (on-the-job training, formal education, mentoring, continuing education, etc.) and the perceived adequacy of these approaches in the context of the communities being served.

C. Develop measurable performance indicators for identified competencies.

D. Survey public health training/education institutions to assess the extent to which competencies are currently being employed to structure the curriculum.

E. Conduct an analysis of the competency statements (Appendix E) and make revisions for their most effective use in curriculum development. Education and training specialists should conduct this analysis.

F. Identify gaps between high-priority competencies that are needed and those competencies already present in the workforce. The competencies proposed by the Competency-Based Curriculum Workgroup incorporate projections of competencies needed now and in the future (5 years hence). After additional review, these projections can serve as a baseline. Identification and prioritization between the actual and the needed profile of competencies may best be accomplished by a panel composed of practice association representatives, academic institutions, and Federal agencies.

G. Translate competencies into discrete didactic and field-based learning experiences and activities.

H. Create a matrix of addressed and unaddressed competencies based on public health organizational needs with the results of the instructional provider survey (data collected during the needs assessment activity) by cross-referencing each element in the competency listing.

I. Support a curriculum development process that is sensitive to the needs of local communities in order to be responsive to the local priorities of each agency, State, or local community relating to the essential services of public health.

J. Recommend to the Council for Education in Public Health and other organizations within the accreditation community that competency-based approaches be incorporated into the standards for educational institution accreditation and into the standards for professional certification and/or licensure.

K. Develop criteria for identifying providers of public health training and education that are "models of excellence" and support these providers through grants and other forms of support. Implement the operation of a "clearinghouse" to promote sharing of exemplary teaching approaches among institutions.

Part III. Curriculum Update and Maintenance

Public health practitioner competencies are evolutionary in nature; hence, a curriculum to support the establishment of such competencies must include a formal mechanism for keeping them current and accurate.

Proposed Action Steps

A. Create and support an organizational entity with responsibility for conducting an ongoing "environmental scan" at the national, State, local, business, and industry levels to assess the demand for specific essential public health services. As shifts in essential services are detected, accompanying "corrections" in the competencies need to be reflected within curricula. The organizational entity may take the form of an institute, task force, or other entity supported by government, foundations, and/or the academic community.

B. Follow up graduates of competency-based training and education programs on a regular basis to determine the extent to which they are using the competencies they have previously acquired.

C. Maintain close liaisons with organizations sharing an interest in public health competencies to facilitate input from all key stakeholders.***

D. If judged to be appropriate, establish a national "competency assessment system" for public health practice. The system will (1) establish standards of practice based on approved competencies; (2) develop a mechanism for assessing whether these standards are being met; and (3) administer a nationwide program for assessing competencies on an individual basis and for the potential credentialing of "competent" public health practitioners.

***Examples of these key organizations include: The Council on Linkages Between Academia and Public Health Practice; schools of the health professions; Federal, State, and local governments; professional organizations; MCOs; The Robert Wood Johnson and W.K. Kellogg Foundations; and the Pew Charitable Trust.

DISTANCE LEARNING

All partners in the effort to strengthen the public health workforce should make maximum use of evolving technologies such as distance learning. A structure should be established to develop an integrated distance learning system building on existing public and private networks and making information on best practices readily available.

Distance learning presents tremendous potential to accelerate and expand training opportunities, but it also represents a paradigm shift in most agencies' training strategies. Therefore, public health leaders must drive this change in their organizations.

Proposed Action Steps

A. Establish a formal structure to advocate for the integration of distance learning techniques into practice and academic entities involved in public health strategies for training, education, and communication. Actions necessary for this to proceed include:

- Evaluate previous studies that document distance learning resources among partners.
- Develop a strategy for participant registration that is compatible across agencies and that is supported by a technology that allows for orders of magnitude expansion and comparability of data.
- Establish a standard practice and methodology for stakeholder's evaluation of distance learning results.
- Institute a common practice for program promotion and marketing.
- Develop a strategy to facilitate sharing resources across organizational lines (e.g., interagency agreements, cooperative agreements, grants, memorandums of understanding).
- Initiate standards for distance learning technology that permit system integration across agencies.
- Encourage and support the use of public/private assignments to promote collaboration in training.
- Share innovative and effective procurement mechanisms for distance learning services (e.g., task order contracts and other procurement mechanisms).
- Assist in identifying and developing distance learning faculty and subject matter experts and establishing incentives for their support.
- Provide grant assistance for development of distance learning programs at regional and local levels.

B. Directly link distance learning systems and program development priorities to the information generated by the Workgroups on Workforce Composition and Competency-Based Curriculum.

C. Routinely gather input from key partners regarding training needs and technological capabilities.

D. Develop agency expertise in distance learning; participate in relevant organizations such as the United States Distance Learning Association (USDLA) and Government Alliance for Training and Education (GATE).

E. Provide access to information about public health distance learning programs and resources through mechanisms such as FedWorld Training Mall and the Public Health Training Network web site.

F. Organize a mechanism for pooling and accessing resources and expertise on distance learning across all of public health.

IMPLEMENTATION

Due to the multiplicity of responsibilities within public health, no single agency or organization has the responsibility of addressing the workforce composition, training, and education needs of a diverse public health workforce. **Focusing the attention of a broad array of organizations on the priority issues presented in this paper will be critical to the success of any proposed followup. Enhancing the feedback loop between public health employers, communities, and training institutions will be one of the most important links in responding to the need for a well-trained workforce.** Harnessing the varied interests of governmental, private, and voluntary public health organizations and creating a body with appropriate levels of resources allocated to this activity will be critical to the success of any proposed public health workforce initiative. The agenda presented in these recommendations only partially fulfills the original charge to the Subcommittee. In its continuing leadership role, the Steering Committee should identify other tasks needing continued attention and make plans for their completion. With the energetic and sustained attention of the Public Health Functions partners, the public health workforce will contribute even more to the health of communities in the 21st century.

Appendix A:
The Public Health Functions Project

Background: Several recent analyses of the status of public health activities in the United States indicate the fragility of the public health infrastructure (Public Health Foundation, 1994; Prevention Report, 1995; Schade, 1995). The Public Health Functions Project was created to help clarify the issues and develop strategies and tools to address the matters identified. Special emphasis will be given to: marshaling consensus on the essential services of public health; quantifying the investment in those services at the Federal, State, and local levels; assessing the current capacity and needs for public health workforce in various areas; developing guidelines for sound practices in public health; linking with activities to characterize the information system elements necessary for the conduct of public health services, including the relationship of those elements to the personal health services information systems; and developing strategies for enhancing public and professional awareness of the nature and impact of public health activities.

Project: To address these issues, the following tasks will be undertaken as part of the Public Health Functions Project:

1. Develop a taxonomy of the essential services of public health that can be readily understood and widely accepted for use by the public health community.
2. Using the taxonomy developed, assess the public health infrastructure and document the Federal, State, and local expenditures on essential services of public health.
3. Propose a mechanism to ensure account ability for outcomes related to the delivery of essential public health services at the State and local levels, in return for greater flexibilty in administration of Federal grants to support public health.
4. Develop a strategy for communicating to the general public and key policymakers the nature and impact of essential public health services.
5. Document and publish analyses of the health and economic returns on investments in essential public health services.
6. Identify the key categories of public health personnel necessary to carry out the essential services of public health, assess the Nation's current capacity and shortfalls, and establish a mechanism for ongoing monitoring of workforce strength and capability.
7. Develop and publish a full set of evidence-based guidelines for sound public health practice.
8. Collaborate with the PHS Data Policy Committee to identify the information and data needs for the effective implementation of the essential services of public health and develop a strategy for the interface between the personal services and population-wide systems, ensuring the availability of information necessary to both.
9. Develop a process to ensure the appropriate collaboration of the public health community and adequate inclusion of public health perspectives in the development of national health goals and objectives for the year 2010.
10. Develop a strategy for regular communication among interested parties at the national, State, and local levels on progress related to these activities.

Project Coordination: The project will be coordinated by a Steering Committee chaired by the Assistant Secretary for Health and the Surgeon General, and composed of the PHS agency heads and the presidents of the American Public Health Association, the Association of Schools of Public Health, the Association of State and Territorial Health Officials, the Environmental Council of the States, the National Association of County and City Health Officials, the National Association of Local Boards of Health, the National Association of State Alcohol and Drug Abuse Directors, the National Association of State Mental

Health Program Directors, Partnership for Prevention, and the Public Health Foundation.

Execution of activities will be overseen by a Staff Working Group co-chaired by the Deputy Assistant Secretary for Health (Disease Prevention and Health Promotion) and the Director of the Centers for Disease Control and Prevention, and composed of designees from each of the organizations represented on the Steering Committee.

Each specific activity undertaken within this project will have identified leadership and staff support from PHS. Wherever possible, existing structures and communication devices will be used as the basis for Public Health Functions efforts (e.g., the Public Health Service Data Policy Committee, the Joint Council of Governmental Public Health Agencies, the Council on Linkages between Academia and Public Health Practice).

PUBLIC HEALTH IN AMERICA

Vision:

Healthy People in Healthy Communities

Mission:

Promote Physical and Mental Health and Prevent Disease, Injury, and Disability

Public Health

- Prevents epidemics and the spread of disease
- Protects against environmental hazards
- Prevents injuries
- Promotes and encourages healthy behaviors
- Responds to disasters and assists communities in recovery
- Assures the quality and accessibility of health services

Essential Public Health Services

- Monitor health status to identify community health problems
- Diagnose and investigate health problems and health hazards in the community
- Inform, educate, and empower people about health issues
- Mobilize community partnerships to identify and solve health problems
- Develop policies and plans that support individual and community health efforts
- Enforce laws and regulations that protect health and ensure safety
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable
- Assure a competent public health and personal health care workforce
- Evaluate effectiveness, accessibility, and quality of personal and population-based health services
- Research for new insights and innovative solutions to health problems

Adopted: Fall 1994, Source: Public Health Functions Steering Committee, Members (July 1995):
American Public Health Association • Association of Schools of Public Health • Association of State and Territorial Health Officials • Environmental Council of the States • National Association of County and City Health Officials • National Association of State Alcohol and Drug Abuse Directors • National Association of State Mental Health Program Directors • Public Health Foundation • U.S. Public Health Service—*Agency for Health Care Policy and Research* • *Centers for Disease Control and Prevention* • *Food and Drug Administration* • *Health Resources and Services Administration* • *Indian Health Services* • *National Institutes of Health* • *Office of the Assistant Secretary for Health* • *Substance Abuse and Mental Health Services Administration*

Appendix C:
Revision of the Federal Standard Occupational Classification (SOC) System: New Occupational Categories Recommended for the Field of Public Health

(Still pending, August 1997)

Definitions are provided for each new occupational category; examples of job "titles" (i.e., "index" items) are provided in parentheses

(1) **Epidemiologist**
Investigates and describes the determinants and distribution of disease, disability, and other health outcomes and develops the means for their preven tion and control.

(2) **Environmental Engineer** (e.g., Water Supply/Waste Water Engineer, Solid Waste Engineer, Air Pollution Engineers, Sanitary Engineer)
Applies engineering principles to control, eliminate, ameliorate, and/or prevent environmental health hazards.

(3) **Environmental Engineering Technician and Technologist** (e.g., Air Pollution Technician, Water/Waste Water Plant Operator and Testing Technician)
Assists Environmental Engineers and other environmental health professionals in the control, elimination, amelioration, and/or prevention of environmental health hazards. May collect data and implement procedures or programs developed by Environmental Engineers and other environmental health professionals.

(4) **Environmental Scientist and Specialist** (e.g., Environmental Researcher, Environmental Health Specialist, Food Scientist, Soil and Plant Scientist, Air Pollution Specialist, Hazardous Materials Specialist, Toxicologist, Water/Waste Water Solid Waste Specialist, Sanitarian, Entomologist)
Applies biological, chemical, and public health principles to control, eliminate, ameliorate, and/or prevent environmental health hazards.

(5) **Environmental Science Technician and Technologist** (e.g., Air Pollution Technicians, Vector Control Workers)

Assists Environmental Scientists and Specialists and other environmental health professionals in the control, elimination, and/or prevention of environ mental health hazards.

(6) **Occupational Safety and Health Specialist** (e.g., Industrial Hygienists, Occupational Health Specialists, Radiologic Health Inspectors, Safety Inspectors)
Reviews, evaluates, and analyzes workplace envi ronments and exposures and designs programs and procedures to control, eliminate, ameliorate, and/or prevent disease and injury caused by chemical, physical, biological, and ergonomic risks to workers.

(7) **Occupational Safety and Health Technician and Technologist**
Collects data on workplace environments and exposures for analysis by Occupational Safety and Health Specialists. Implements programs and conducts evaluation of programs designed to limit chemical, physical, biological, and ergonomic risks to workers.

(8) **Health Educator** (e.g., Public Health Educator, Community Health Educator, School Health Educator)
Designs, organizes, implements, communicates, provides advice on and evaluates the effect of educational programs and strategies designed to support and modify health-related behaviors of individuals, families, organizations, and communities.

(9) **Public Health Policy Analyst**
Analyzes needs and plans for the development of health programs, facilities, and resources; analyzes and evaluates the implications of alternative policies relating to health care.

(10) **Health Service Manager/Health Service Administrator**
Plans, organizes, directs, controls, and/or coordinates health services, education, or policy in establishments such as hospitals, clinics, public health agencies, managed care organizations,industrial and other types of businesses, or related entities.

(11) **Public Health and Community Social Worker** (e.g., Community Organizer, Outreach and Education Social Worker, Public Health Social Worker)
Identifies, plans, develops, implements, and/or evaluates programs designed to address the social and interpersonal needs of populations in order to improve the health of a community and promote the health of individuals and families.

(12) **Mental Health and Substance Abuse Social Worker** (e.g., Alcoholism Worker, Clinical Social Worker, Community Health Worker, Crisis Team Worker, Drug Abuse Worker, Marriage and Family Social Worker, Psychiatric Social Worker, Psychotherapist Social Worker)
Provides services for persons having mental, emotional, or substance abuse problems. May provide such services as individual and group therapy, crisis intervention, and social rehabilitation. May also arrange for supportive services to ease patients' return to the community.

NOTE: Social Worker occupations proposed (#11 and #12) are distinct from, and in addition to, social worker occupations already proposed, including "Medical Social Worker"; "Child, Family, and School Social Worker"; and "Social Worker, other."

(13) **Psychologist, Mental Health Provider** (e.g., Clinical Psychologist, Counseling Psychologist, Marriage Counselor Psychologist, Psychotherapist)
Diagnose and treat mental disorders by using individual, child, family, and group therapies. May design and implement behavior modification programs. (Requires doctoral degree.)

NOTE: Psychologist occupation proposed (#13) is distinct from, and in addition to, Psychologist occupations already proposed, including "School Psychologist"; "Industrial/ Organizational Psychologist"; and "Psychologists, except Mental Health Providers."

(14) **Alcohol and Substance Abuse Counselor, including Addiction Counselor** (e.g., Substance Abuse Counselor, Certified Substance Abuse Counselor, Certified Alcohol Counselor, Certified Alcohol and Drug Counselor, Certified Abuse and Drug Addiction Counselor, Drug Abuse Counselor (Associates Degree or higher), Drug Counselor (Associates Degree or higher), Alcoholic Counselor (Associates Degree or above)
Assesses and treats persons with alcohol or drug dependency problems. May counsel individuals, families, or groups. May engage in alcohol and drug prevention programs.

(15) **Mental Health Counselor** (e.g., Clinical Mental Health Counselor, Mental Health Counselor)
Emphasizes prevention and works with individuals and groups to promote optimum mental health. May help individuals deal with addictions and substance abuse; family, parenting, and marital problems; suicidal tendencies; stress management; problems with self-esteem; and issues associated with aging, and mental and emotional health. Excludes psychiatrists, psychologists, social workers, marriage and family therapists, and substance abuse counselors.

Revision of the Federal Standard Occupational Classification (SOC) System: Public Health Occupational Categories Already Listed Under Pre-Existing Occupational Subcategories (e.g., Physician, Nurse, Dentist, Veterinarian, Attorney, Statistician)

- **Public Health Physician** (e.g., General Preventive Medicine/Public Health, Occupational Medicine, Epidemiologist, Physician Executive, Clinician)
- **Public Health Nurse** (e.g., Occupational Nurse, School Nurse, Community Health Nurse, Nurse Practitioner, Clinician)
- **Public Health Dentist** (e.g., Dental Public Health Clinician)
- **Public Health Dental Worker** (e.g., Dental Hygienist, Dental Assistant)
- **Public Health Veterinarian**
- **Public Health Nutritionist** (e.g., Community Nutritionist, Registered Dietician, Nutrition Scientist, Clinician)
- **Public Health Pharmacist**
- **Public Health Laboratory Scientist** (e.g., Microbiologist, Chemist, Physicist, Entomologist)
- **Public Health Laboratory Technician and Technologist** (e.g., Medical Laboratory Technician, Medical Technologist, Histologic Technician and Technologist, Cytotechnologist)
- **Public Health Attorney or Hearing Officer**
- **Health Information System/ Computer Specialist**
- **Public Relations/Public Information/ Health Communications/Media Specialist**
- **Biostatistician**

Appendix D:
Descriptions of Selected Public Health Workforce Assessment Studies

Investigator(s)	Study Objectives	Methods	Type of Information
Public Health Foundation, 1992	Provide information on workforce engaged in public health activities within State health agencies Analyze trends in staffing patterns	FTE data collected by occupational categories in all 50 States by survey mailed to State Health Agency	Number and types of vacancies by occupational categories Perceived workforce recruitment problems
Environmental Health Data Workshop (ASPH, L.J. Gordon, 1991)	Provide estimate of number of professional and technical staff employed in environmental health Identify areas of personnel shortages Examine educational and training levels of environmental health workforce	Available data, estimates by workshop participants	Number of personnel in environmental health positions Level of formal education in field Areas of personnel shortages in environmental health
Bureau of Health Professions, Report to Congress, 1992 & 1994	Provide detailed report on status of health personnel in the United States	Available data, expert panels and focus groups	Shortages of public health personnel in specific categories
National Association of City and County Health Officials (NACCHO), 1990 & 1995	Gain a comprehensive, accurate description of activities, capacities, and needs of local health departments	Survey of local health departments	Estimates of number of professionals in health departments
National Association of State Mental Health Program Directors, 1994 & 1996	Obtain comparable data about mental health systems	Survey of State Mental Health Authorities	Staffing levels of State-operated or State-funded mental health provider organizations Information on minority workforce issues Client/staff ratios Recruitment, training, and staff retention data Salary levels FTE physicians in State hospitals

Descriptions of Selected Public Health Workforce Assessment Studies
(continued)

Investigator(s)	Study Objectives	Methods	Type of Information
The George Washington Medical Center, Center for Health Policy Research, (Solloway et al., 1996)	Develop methodology and assess size and composition of public health workforce in 5 States Examine changing patterns of public health practice and link workforce to the essential public health services. Identify educational and training needs of public health personnel as well as barriers to meeting needs Recommend approaches to address educational training needs of State public health workers	Using personnel data from States, organizational charts were used to identify workers by job title, organizational unit, and department. Job titles were matched to workforce typology developed by the Bureau of Health professions. Study also conducted site visits, key-informant interviews, and focus groups and examined 3 training and education models to identify education and training needs and barriers.	Classification in public health workforce in these 5 States Level of formal education or training in the field of public health Training and educational needs of workforce in the 5 States Methods of delivering educational and training programs to public health personnel
University of Texas, School of Public Health, Center for Health Policy Studies (Kennedy et al., 1996)	Estimate size of professional public health workforce in Texas Describe workforce composition Identify personnel shortages by occupation as well as perceived education and training needs	Two-stage mailed survey; first stage surveyed employers of professional public health workers; second stage focused on individual employees Utilized methodology developed by APHA Workgroup in mid- 1980's that classifies workforce by 3 criteria: type of work setting, type of work performed, and type of position	Estimate of supply of public health professionals in Texas Identified shortage areas Assessment and identification of employee perceived education and training needs Classification of public health workforce by work activity Assessment of capacity and geographic distribution of workforce
An Update on Human Resources in Mental Health (Peterson et al., 1996)	To update information from previous Mental Health, United States reports To add information on disciplines incorporated in the work groups since 1990 To present comparable information on the size and characteristics of each of the eight disciplines	Data sources include: AMA's Physician Characteristics and Distribution in the United States (1996); the 1996 membership records of the APA; the 1994 APA Membership Directory Survey; the 1988-89 APA Professional Activities Survey; NASW membership; ANA's national certification program	Number of personnel in eight select disciplines and professional activities Level of education Information on minority workforce issues Recruitment, training, and staff retention data

Appendix E:
Competencies for Providing Essential Public Health Services

Essential Service #1: Monitor health status to identify community health problems.

Competencies:

Analytic Skills

- Define a problem
- Determine appropriate use of data and statistical methods for problem identification and resolution and program planning, implementation, and evaluation
- Select and define variables relevant to defined public health problems
- Evaluate the integrity and comparability of data and identify gaps in data sources
- Understand how the data illuminate ethical, political, scientific, economic, and overall public health issues
- Understand basic research designs used in public health
- Make relevant inferences from data

Communication Skills

- *Communicate effectively both in writing and orally (unless a handicap precludes one of these forms of communication)
- Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences
- Solicit input from individuals and organizations
- Advocate for public health programs and resources
- Lead and participate in groups to address specific issues
- Use the media to communicate public health information

Policy and Development/Program Planning Skills

- Collect and summarize data relevant to an issue

Basic Public Health Sciences Skills

- Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- Apply the basic public health sciences, including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries

New

- Understand risk assessment and risk communication skills
- Understand how to use public health software packages such as Epi-Info to track, analyze, and present findings of community health problems

(continued)

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

- Design and operate a surveillance system
- Understand analytic skills for survey development and administration
- Understand the role and importance of vital statistics
- Understand computer/information technology applications
- Know existing sources of data
- Describe problems in terms of time (persistence), magnitude/severity (scope), dispersion/location (place), and co-occurrence/co-morbidity
- Demonstrate ethical (including sensitive, confidential) conduct in practice, research, data collection and storage, and program management
- Effectively function in culturally diverse settings, assess cross-cultural relations, adapt professional behavior to unique needs, assess and promote cultural competence of employee/organization

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #2: Diagnose and investigate health problems and health hazards in the community.

Competencies:

Analytic Skills

- Define a problem
- Determine appropriate use of data and statistical methods for problem identification and resolution, and program planning, implementation, and evaluation
- Select and define variables relevant to defined public health problems
- Evaluate the integrity and comparability of data and identify gaps in data sources
- Understand how the data illuminate ethical, political, scientific, economic, and overall public health issues
- Understand basic research designs used in public health
- Make relevant inferences from data

Communication Skills

- *Communicate effectively both in writing and orally (unless a handicap precludes one of these forms of communication)
- Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences
- Solicit input from individuals and organizations
- Lead and participate in groups to address specific issues
- Use the media to communicate public health information

Policy and Development/Program Planning Skills

- Collect and summarize data relevant to an issue
- State policy options
- Articulate the health, fiscal, administrative, legal, social, and political implications of each policy option
- State the feasibility and expected outcomes of each policy option

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

Basic Public Health Sciences Skills

- Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- Understand research methods in all basic public health sciences

(continued)

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

- Apply the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries

New

- Understand environmental health issues and environmental morbidity factors
- Establish ties with nontraditional public health providers such as school health clinics and occupational safety office in industry
- Utilize risk assessments (i.e., identifying hazardous exposure and health effects)
- Apply laboratory science skills
- Understand study design, including outbreak/cluster investigation
- Facilitate interview (including cultural competence) and qualitative survey methods
- Utilize public relation skills
- Know existing network of consultants and technical assistance and community-based assets to collect and analyze community health data
- Understand relevant legal and regulatory information
- Identify the scientific underpinnings and ascertain strength of evidence from literature, including effectiveness of interventions
- Prepare and interpret data from vital statistics, census, surveys, service utilization, and other relevant special reports

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #3: Inform, educate, and empower people about health issues.

Competencies:

Communication Skills

- *Communicate effectively both in writing and orally (unless a handicap precludes one of these forms of communication)
- *Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences (i.e., risk communication)
- Solicit input from individuals and organizations
- Advocate for public health programs and resources
- Lead and participate in groups to address specific issues
- *Use the media and advanced technologies to communicate public health information

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

New

- Understand psychosocial and behavioral theories (e.g., health belief model)
- Establish measurable goals/objectives
- Understand how public and private agencies within a community operate
- Understand risk assessment and health risk assessment methodologies
- Translate education information into compelling sound “bites”
- Know how to use the legal and political system to effect change
- Understand different theories on education and learning

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #4: Mobilize community partnerships to identify and solve problems.

NOTE: Competencies needed to identify and solve problems are included in essential services #1, 2, and 5. Therefore, the competencies listed below reflect those needed to mobilize community partnerships.

Competencies:

Communication Skills

- *Communicate effectively and persuasively both in writing and orally (unless a handicap precludes one of these forms of communication)
- Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences
- Solicit input from individuals and organizations
- Advocate for public health programs and resources
- Lead and participate in groups to address specific issues
- Use the media to communicate public health information

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

New

- Establish ties with nontraditional health providers (such as businesses, managed care organizations and other health care providers, schools, other government agencies, volunteer, and nonprofit organizations, advocacy groups, community groups, hospitals, physicians, insurers, faith and church groups)
- Understand the existing network of consultants and technical assistance and community-based assets to collect and analyze community health data
- Utilize leadership, team building, negotiation, and conflict resolution skills to build community partnerships
- Foster community empowerment, involvement, and power sharing whenever possible in the design, implementation, and research aspects of programs and systems

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #5: Develop policies and plans that support individual and community health efforts.

Competencies:

Communication Skills

- Use the media and advanced technologies to communicate public health information

Policy and Development/Program Planning Skills

- *Collect and summarize data relevant to an issue and test its reliability
- State policy options
- Articulate the health, fiscal, administrative, legal, social, and political implications of each policy option
- State the feasibility and expected outcomes of each policy option
- *Utilize current techniques in decision analysis
- Write a clear and concise policy statement
- Develop a plan to implement the policy, including goals, outcome and process objectives, and implementation steps
- Translate policy into organizational plans, structures, and programs
- Identify public health laws, regulations, and policies related to specific programs
- Develop mechanisms to monitor and evaluate programs for their effectiveness and quality

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

Financial Planning and Management Skills

- Develop and present a budget
- Manage programs within budgetary constraints
- Develop strategies for determining budget priorities
- Monitor program performance
- Prepare proposals for funding from external sources
- Apply basic human relations skills to the management of organizations and the resolution of conflicts
- Manage personnel
- Understand the theory of organizational structure and its relation to professional practice

New

- Utilize and integrate strategic planning processes, including assessment methodology and modeling when developing policies or community-health plans
- Conduct cost-effectiveness, cost-benefit, and cost-utility analyses

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #6: Enforce laws and regulations that protect health and ensure safety.

Competencies:

Communication Skills

- *Communicate effectively both in writing and orally (unless a handicap precludes one of these forms of communication)
- *Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences (i.e., risk communication)
- *Use the media and advanced technologies to communicate public health information

Policy and Development/Program Planning Skills

- *Collect and summarize data relevant to an issue, including adequate interpretation of historical experiences, activities, and outcomes
- *Identify, interpret, and implement public health laws, regulations, and policies related to specific programs

Cultural Skills

- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences

New

- Utilize creative methods for achieving enforcement and regulation of laws that protect health
- Collaborate with other public agencies and organizations (e.g., law enforcement)
- Manage and monitor the enforcement process (including enforcement personnel, compliance, and development of inspection indicators)
- Understand risk assessment and health risk assessment methodologies

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #7: Link people to needed personal health services and ensure the provision of health care when otherwise unavailable.

Competencies:

Analytic Skills

- Define a problem
- Make relevant inferences from data

Policy and Development/Program Planning Skills

- Collect and summarize data relevant to an issue
- State policy options
- Articulate the health, fiscal, administrative, legal, social, and political implications of each policy option
- State the feasibility and expected outcomes of each policy option
- Decide on the appropriate course of action
- Write a clear and concise policy statement
- Develop a plan to implement the policy, including goals, outcome and process objectives, and implementation steps
- Translate policy into organizational plans, structures, and programs
- Develop mechanisms to monitor and evaluate programs for their effectiveness and quality

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

Basic Public Health Sciences Skills

- Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services

Financial Planning and Management Skills

- Develop and present a budget
- Manage programs within budgetary constraints
- Develop strategies for determining budget priorities
- Monitor program performance
- Prepare proposals for funding from external sources
- Apply basic human relations skills to the management of organizations and the resolution of conflicts
- Manage personnel
- Understand the theory of organizational structure and its relation to professional practice

(continued)

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

New

- Negotiate contracts for personal health services
- Identify health needs of special and vulnerable populations
- Utilize case management skills to coordinate care
- Coordinate public health and medicine for optimal care
- Provide or ensure provision of comprehensive personal health services, including primary and specialty medical and dental care and clinical preventive services
- Prepare and implement emergency response plans

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #8: Assure a competent public health and personal health care workforce.

Competencies:

Analytic Skills

- Determine appropriate use of data and statistical methods for problem identification and resolution and program planning, implementation, and evaluation

Policy and Development/Program Planning Skills (policy = privileging, licensing, quality assurance, credentialing, and accreditation of health professionals and health professions education)

- Collect and summarize data relevant to an issue
- State policy options
- Articulate the health, fiscal, administrative, legal, social, and political implications of each policy option
- State the feasibility and expected outcomes of each policy option
- Decide on the appropriate course of action
- Write a clear and concise policy statement
- Develop a plan to implement the policy, including goals, outcome and process objectives, and implementation steps
- Translate policy into organizational plans, structures, and programs

Cultural Skills

- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Develop and adapt approaches to problems that take into account cultural differences

Basic Public Health Sciences Skills

- Understand the historical development and structure of State, local, and Federal public health agencies

Financial Planning and Management Skills

- Understand the theory of organizational structure and its relation to professional practice

New

- Persuasively express to organizational leaders the value and need for training and education
- Know and use contemporary learning technologies
- Understand different theories on education and learning

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #9: Evaluate effectiveness, accessibility, and quality of personal and population-based health services.

Competencies:

Analytic Skills

- Evaluate the integrity and comparability of data and identify gaps in data sources
- Understand how the data illuminate ethical, political, scientific, economic, and overall public health issues
- *Understand basic research methodologies used in public health and health services research
- Make relevant inferences from data

Communication Skills

- *Communicate effectively both in writing and orally (unless a handicap precludes one of these forms of communication)
- Present accurately and effectively demographic, statistical, programmatic, and scientific information for professional and lay audiences
- Solicit input from individuals and organizations
- Advocate for public health programs and resources

Policy and Development/Program Planning Skills

- Collect and summarize data relevant to an issue
- Identify public health laws, regulations, and policies related to specific programs
- Develop mechanisms to monitor and evaluate programs for their effectiveness and quality
- Understand analytic skills for survey development and administration

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

Basic Public Health Sciences Skills

- Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- Understand research methods in all basic public health sciences
- Apply the basic public health sciences, including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
- Understand the historical development and structure of State, local, and Federal public health agencies

(continued)

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Financial Planning and Management Skills

- Monitor program performance

New

- Understand analytic skills for survey development and administration
- Monitor quality of personal health services provided
- Conduct cost-effectiveness, cost-benefit, and cost-utility analyses

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Essential Service #10: Research for new insights and innovative solutions to health problems.

Competencies:

Analytic Skills

- Define a problem
- Determine appropriate use of data and statistical methods for problem identification and resolution and program planning, implementation, and evaluation
- Select and define variables relevant to defined public health problems
- Evaluate the integrity and comparability of data and identify gaps in data sources
- Understand how the data illuminate ethical, political, scientific, economic, and overall public health issues
- Understand basic research designs used in public health
- Make relevant inferences from data

Communication Skills

- *Use the media to communicate and disseminate results of research findings

Cultural Skills

- Understand the dynamic forces contributing to cultural diversity
- Interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds and with persons of all ages and lifestyle preferences
- Identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and medical service organization and delivery
- Develop and adapt approaches to problems that take into account cultural differences

Basic Public Health Sciences Skills

- Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- Understand research methods in all basic public health sciences
- Apply the basic public health sciences, including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
- Understand the historical development and structure of State, local, and Federal public health agencies

New

- Identify specific research methodologies relevant to each of the previous nine essential services
- Conduct collaborative research across multiple disciplines
- Understand budget processes in order to lobby for resources to investigate innovative approaches to health problems

(These lists of organizational competencies for providing essential public health services were done by the Competency-Based Curriculum Work Group of the Subcommittee on Public Health Workforce, Training, and Education. The Work Group began with the universal competencies developed by the Faculty/Agency Forum, divided them into the 10 essential services of public health framework, and added new competencies. Those marked with a * are universal competencies that have been modified.)

Appendix F:
HEALTHY PEOPLE 2000 Consortium

Organizations:

Academy of General Dentistry
Aerobics and Fitness Association of America
Alcohol and Drug Problems Association
Alliance for Aging Research
Alliance for Health
Amateur Athletic Union of the United States
American Academy of Child and Adolescent Psychiatry
American Academy of Family Physicians
American Academy of Nursing
American Academy of Ophthalmology
American Academy of Orthopedic Surgeons
American Academy of Otolaryngology, Head and Neck Surgery, Inc.
American Academy of Pain Management
American Academy of Pediatric Dentistry
American Academy of Pediatrics
American Alliance for Health, Physical Education, Recreation and Dance
American Art Therapy Association
American Association for Clinical Chemistry
American Association for Dental Research
American Association for Health Education
American Association for Marriage and Family Therapy
American Association for Respiratory Care
American Association for the Advancement of Science
American Association of Certified Orthoptists
American Association of Colleges of Nursing
American Association of Colleges of Osteopathic Medicine
American Association of Colleges of Pharmacy
American Association of Dental Schools
American Association of Family and Consumer Services
American Association of Health Plans
American Association of Homes for the Aging
American Association of Occupational Health Nurses
American Association of Pathologists' Assistants
American Association of Public Health Dentistry
American Association of Public Health Physicians
American Association of Retired Persons
American Association of School Administrators
American Association of Suicidology
American Association of University Affiliated Programs
American Association on Mental Retardation
American Cancer Society, Inc.
American College Health Association
American College of Acupuncture
American College of Cardiology
American College of Clinical Pharmacy
American College of Emergency Physicians
American College of Gastroenterology
American College of Health Care Administrators
American College of Health Care Executives
American College of Nurse-Midwives
American College of Nutrition
American College of Obstetricians and Gynecologists
American College of Occupational and Environmental Medicine
American College of Physicians
American College of Preventive Medicine
American College of Radiology
American College of Sports Medicine
American Correctional Health Services Association
American Council on Alcoholism, Inc.
American Council on Exercise
American Counseling Association
American Dental Association
American Dental Hygienists' Association
American Diabetes Association
American Dietetic Association
American Federation of Teachers
American Geriatrics Society
American Heart Association
American Highway Users Alliance
American Hospital Association
American Indian Health Care Association
American Institute for Preventive Medicine
American Kinesitherapy Association
American Liver Foundation
American Lung Association
American Meat Institute
American Medical Association
American Medical Student Association
American Nurses Association

American Occupational Therapy Association
American Optometric Association
American Orthopedic Society for Sports Medicine
American Osteopathic Academy of Sports Medicine
American Osteopathic Association
American Osteopathic Health care Association
American Pharmaceutical Association
American Physical Therapy Association
American Podiatric Medical Association
American Psychiatric Association
American Psychiatric Nurses Association
American Psychological Association
American Public Health Association
American Red Cross
American Rehabilitation Association
American Rehabilitation Counseling Association
American Running and Fitness Association
American School Food Service Association
American School Health Association
American Society for Clinical Nutrition
American Society for Gastrointestinal Endoscopy
American Society for Microbiology
American Society for Nutritional Sciences
American Society for Parenteral and Enteral Nutrition
American Society for Pharmacology and Experimental Therapeutics
American Society of Addiction Medicine
American Society of Health System Pharmacists
American Society of Human Genetics
American Society of Ocularists
American Speech-Language-Hearing Association
American Spinal Injury Association
American Statistical Association
American Thoracic Society
American Trauma Society
American Veterinary Medical Association
Aquatic Exercise Association
Arthritis Foundation
Asian and Pacific Islander American Health Forum
Asociacion Nacional Pro Personas Mayores
ASPO/Lamaze Association
Association for Applied Psychophysiology and Biofeedback
Association for Hospital Medical Education
Association for Professionals in Infection Control and Epidemiology
Association for the Advancement of Automotive Medicine
Association for the Care of Children
Association for Worksite Health Promotion
Association of Academic Health Centers
Association of American Indian Physicians
Association of American Medical Colleges
Association of Community Health Nursing Educators
Association of Food and Drug Officials
Association of Maternal and Child Health Programs
Association of Occupational and Environmental Clinics
Association of Pediatric Oncology Nurses
Association of Rehabilitation Nurses
Association of Schools of Allied Health Professions
Association of Schools of Public Health
Association of State and Territorial Chronic Disease Program Directors
Association of State and Territorial Dental Directors
Association of State and Territorial Directors of Health Promotion and Public Health Education
Association of State and Territorial Directors of Nursing
Association of State and Territorial Health Officials
Association of State and Territorial Public Health Laboratory Directors
Association of State and Territorial Public Health Nutrition Directors
Association of State and Territorial Public Health Social Workers
Association of Teachers of Preventive Medicine
Association of Technical Personnel in Ophthalmology
Association of Women's Health, Obstetric, and Neonatal Nurses
Asthma and Allergy Foundation of America
Black Congress on Health, Law, and Economics
Blue Cross and Blue Shield Association
Boy Scouts of America
Brain Injury Association, Inc.
Business Roundtable
Camp Fire
Cardiovascular Credentialing International
Catholic Health Association of the United States
Center to Prevent Handgun Violence
Chamber of Commerce of the United States of America
Coalition for Consumer Health and Safety
College of American Pathologists
Consortium of Social Science Associations
Council for Responsible Nutrition
Council of Medical Specialty Societies
Emergency Nurses Association
Employee Assistance Professionals Association
Environmental Council of the States
Eye Bank Association of America

Federation of American Societies for Experimental Biology
Federation of Behavioral, Psychological, and Cognitive Sciences
Food Marketing Institute
Future Homemakers of America
General Federation of Women's Clubs
Gerontological Society of America
Girl Scouts of the United States of America
Grocery Manufacturers of America
Health Industry Manufacturers Association
Health Insurance Association of America
Health Ministries Association
Health Sciences Communications Association
Healthier People Network
Healthy Mothers, Healthy Babies
Institute for Child Health Policy
Institute of Food Technologists
International Hearing Society
International Lactation Consultant Association
International Life Sciences Institute
La Leche League International
Learning Disabilities Association of America
March of Dimes Birth Defects Foundation
Maternity Center Association
Midwives Alliance of North America
Migrant Clinicians Network
Mothers Against Drunk Driving
National 4-H Council
National AIDS Fund
National PTA
National Alliance for the Mentally Ill
National Alliance of Black School Educators
National Alliance of Nurse Practitioners
National Alliance of Senior Citizens, Inc.
National Asian and Pacific American Families Against Substance Abuse
National Association for Family and Community Education
National Association for Home Care
National Association for Human Development
National Association for Music Therapy
National Association for Public Health Statistics and Information Systems
National Association for Public Worksite Health Promotion
National Association for Sport and Physical Education
National Association of Biology Teachers
National Association of Childbearing Centers
National Association of Children's Hospitals and Related Institutions
National Association of Community Health Centers
National Association of Counties
National Association of County and City Health Officials
National Association of Elementary School Principals
National Association of Governor's Councils on Physical Fitness and Sports
National Association of Neighborhoods
National Association of Neonatal Nurses
National Association of Optometrists and Opticians, Inc.
National Association of Pediatric Nurse Associates and Practitioners
National Association of RSVP Directors
National Association of School Nurses
National Association of Secondary School Principals
National Association of Social Workers
National Association of State Alcohol and Drug Abuse Directors
National Association of State Boards of Education
National Association of State Mental Health Program Directors
National Association of State Nutrition Education and Training Coordinators
National Association of State School Nurse Consultants
National Athletic Trainers' Association
National Black Nurses Association
National Board of Medical Examiners
National Civic League
National Coalition Against Sexual Assault
National Coalition of Hispanic Health and Human Services Organizations
National Commission Against Drunk Driving
National Committee to Prevent Child Abuse
National Community Pharmacists Association
National Conference of State Legislatures
National Consumers League
National Council for Adoption
National Council for International Health
National Council of Community Hospitals
National Council of La Raza
National Council on Alcoholism and Drug Dependence
National Council on Patient Information and Education
National Council on the Aging

National Dairy Council
National Education Association Health Information Network
National Environmental Health Association
National Family Planning and Reproductive Health Association
National Federation for Specialty Nursing Organizations
National Federation of State High School Associations
National Food Processors Association
National Health Council
National Health Lawyers Association
National Hispanic Council on Aging
National Institute for Fitness and Sports
National Kidney Foundation
National League for Nursing
National Lesbian and Gay Health Association
National Medical Association
National Mental Health Association
National Minority AIDS Council
National Minority Health Association
National Nurses Society on Addictions
National Organization for Women
National Organization on Adolescent Pregnancy, Parenting and Prevention
National Osteoporosis Foundation
National Pediculosis Association
National Pest Control Association
National Recreation and Park Association
National Restaurant Association
National SAFE KIDS Campaign
National Safety Council
National School Boards Association
National Strength and Conditioning Association
National Stroke Association
National Wellness Institute, Inc.
National Women's Health Network
Network of Employers for Traffic Safety
Nursing Network on Violence Against Women
Oncology Nursing Society
Opticians Association of America
Oral Health America
Partnership for Prevention
People's Medical Society
Pharmaceutical Researchers and Manufacturers of America
Physicians for a Violence-Free Society
Planned Parenthood Federation of America
Poison Prevention Week Council
Population Association of America
Prevent Blindness America
Produce for Better Health Foundation
Produce Marketing Association
Public Health Institute
Road Runners Club of America
Salt Institute
Salvation Army
Sexuality Information and Education Council of the U.S.
Society for Academic Emergency Medicine
Society for Adolescent Medicine
Society for Healthcare Strategy and Market Development
Society for Hospital Epidemiology of America
Society for Nutrition Education
Society for Public Health Education
Society of Behavioral Medicine
Society of General Internal Medicine
Society of Prospective Medicine
Society of State Directors of Health, Physical Education and Recreation
State Family Planning Administrators
The Arc
The International Health, Racquet and Sportsclub Association
The Sugar Association
The United States Conference of Mayors
Think First Foundation
Unitarian Universalist Seventh Principle Project
United States Eye Injury Registry
United Way of America
VHA, Inc.
Visiting Nurse Association of America
Washington Business Group on Health
Wellness Councils of America
Western Consortium for Public Health
Women's Sports Foundation
Wound, Ostomy and Continence Nurses Society
YMCA of the USA

State Agencies:
Public Health
Mental Health
Substance Abuse
Environment

Appendix G:
The Faculty/Agency Forum Competencies by Discipline

In addition to the Universal Competencies, competencies were developed for the following specific disciplines by the Public Health Faculty/Agency Forum:

Public Health Administration

Epidemiology and Biostatistics

Behavioral Sciences

Environmental Public Health

For details refer to:

Sorensen, Andrew A., and Ronald G. Bialek, eds. 1993. *The public health faculty/agency forum: Linking graduate education and practice*. Gainesville, FL: Florida University Press.

Appendix H:
Competencies Reviewed by the Competency-Based Curriculum Work Group

Competency Set	Lead Organization	Date
Universal Competencies	The Public Health Faculty/Agency Forum	1989
Competencies for Education in Maternal and Child Health	Association of Teachers of Maternal & Child Health Association of Schools of Public Health MCH Council	1993
Public Health Leadership Competencies for State Regional Programs	The National Public Health Leadership Development Network	Draft version 1996
Community-Based Public Health Competencies	Johns Hopkins University School of Health	1996
A Competency-Based Framework for Professional Development of Certified Health Education Specialists	The National Commission for Health Education Credentialing, Inc.	1996
Addiction Counselor Competencies	Curriculum Review Committee of the Addiction Training Center Program	1995
Educating Environmental Health Science and Protection Professionals: Problems, Challenges, and Recommendations	Association of Schools of Public Health Larry J. Gordon	1991
Competency Objectives for Dental Public Health	American Public Health Association: Dental Section	1990

Appendix I:
Public Health Functions Steering Committee and Working Group Subcommittee on Public Health Workforce, Training, and Education: Competency-Based Curriculum Work Group Distance Learning Systems Work Group Workforce Composition Work Group

Public Health Functions Steering Committee Members (March 1997)

Co-Chairs

Jo Ivey Boufford, M.D.
Acting Assistant Secretary for Health
U.S. Department of Health and Human Services

Audrey F. Manley, M.D., M.P.H.
Acting Surgeon General
U.S. Department of Health and Human Services

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President
American Public Health Association

Allan Rosenfield, M.D.
President
Association of Schools of Public Health

Jack Dillenberg, D.D.S., M.P.H.
President
Association of State and Territorial Health Officials

David Satcher, M.D., Ph.D.
Director
Centers for Disease Control and Prevention

Harold Reheis, P.E.
President
The Environmental Council of the States

David A. Kessler, M.D.
Commissioner of Food and Drugs
Food and Drug Administration

Ciro Sumaya, M.D., M.P.H.T.M.
Administrator
Health Resources and Services Administration

Michael H. Trujillo, M.D., M.P.H.
Director
Indian Health Service

Mary des Vignes-Kendrick, M.D., M.P.H.
President
National Association of County and City Health Officials

Luceille Fleming
President
National Association of State Alcohol and Drug Abuse Directors

Stuart B. Silver, M.D.
President
National Association of State Mental Health Program Directors

Edwin Pratt, Jr.
Past President
National Association of the Local Boards of Health

Harold E. Varmus, M.D.
Director
National Institutes of Health

Maurice Mullet, M.D.
Chairman of the Board
Public Health Foundation

Honorable Richard S. Schweiker
Chair
Partnership for Prevention

Nelba R. Chavez, Ph.D.
Administrator
Substance Abuse and Mental Health
Services Administration

PUBLIC HEALTH FUNCTIONS WORKING GROUP MEMBERS (MARCH 1997)

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Claude Earl Fox, M.D., M.P.H.
Deputy Assistant Secretary for Health
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MEMBERS

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Edward Baker, M.D., M.P.H.
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