

TRAINING

Since 1951, CDC's fellowship and training opportunities have prepared thousands of students and professionals through applied, hands-on training experience in epidemiology and public health. Many people in our programs have participated in activities such as the following:

- Complete epidemiologic analyses and research, public health interventions, and field investigations.
- Travel domestically and internationally to respond to requests for epidemiologic assistance within the United States and throughout the world.
- Conduct epidemiologic investigations, research, and public health surveillance.
- Serve the epidemiologic needs of state health departments.
- Present epidemiologic papers at scientific and medical conferences; publish their work in the scientific literature.
- Establish mentorships with recognized experts from CDC and other national and international health agencies.

At CDC, no matter where we find ourselves or in what role we operate, one common purpose links us all—we work on the frontlines in a collective effort to make people safer and healthier. This has been our charge since 1946. At CDC, our mission of preventing disease and injury and promoting healthy lifestyles incorporates the most fundamental and groundbreaking epidemiological approaches. The public depends on the results of our work behind the scenes: studying the incidences, distribution, and control of diseases in populations. We pride ourselves in educating and training students and public health professionals to serve the public.

CAREER EPIDEMIOLOGY FIELD OFFICERS

WHAT IS THE PUBLIC HEALTH ISSUE?

- The nation has a growing need for trained epidemiologists to address current public health problems, as well as problems with emerging and re-emerging infectious diseases.
- As the events of fall 2001 have demonstrated, the nation needs “rapid response” capabilities to meet the real and ongoing threats of terrorism and bioterrorism.
- CDC needs an available cadre of trained epidemiologists to ensure frontline protection of the public’s health.

WHAT HAS CDC ACCOMPLISHED?

In response to the HHS Secretary’s conviction that CDC should assign an Epidemic Intelligence Service (EIS) officer or EIS graduate to every state, CDC created the Career Epidemiology Field Officer (CEFO) Program to compliment the EIS program. The goal of this program is to develop a national cadre of EIS-trained CEFOs who will work with states and large local health departments to build epidemiologic and emergency response capacity. Twelve CDC CEFOs are currently assigned to various locales across the country; these officers are on the ground, familiar with the local landscape, and ready to respond to any public health emergency, especially those relating to terrorism. The CEFOs’ activities include

- Giving epidemiologic expertise to state terrorism preparedness and emergency response planning and policy.
- Providing leadership, training, planning, and technical support for building local epidemiologic capacity.
- Building partnerships with state and local agencies responsible for terrorism preparedness and emergency response activities.
- Recruiting and supervising new epidemiologists, including EIS officers.

Examples of Program in Action

- During the West Nile virus epidemic in fall 2002, a CEFO led the development of virus surveillance of mosquitoes, dead birds, and humans.
- Several CEFOs have helped their health departments develop and write response plans for smallpox and other threats; several CEFOs are emergency response team members.
- One CEFO assigned to a county health department has partnered with a local school of public health to develop bioterrorism training for district health officers, hospital employees, and medical and public health educational institutions.

WHAT ARE THE NEXT STEPS?

Gaps in state and local epidemiologic and emergency response capacity will continue to be filled by the assignment of CEFOs. CEFOs will receive important training in terrorism preparedness and emergency response activities; syndromic and terrorism-related surveillance; and secure communications.

INTERNATIONAL TRAINING PROGRAMS FOR APPLIED EPIDEMIOLOGY AND GLOBAL HEALTH LEADERSHIP

WHAT IS THE PUBLIC HEALTH ISSUE?

Every day around the world, foreign ministries of health are making life and death decisions regarding health emergencies, disasters, disease outbreaks, and emerging health problems. The lack of informed decision-making has caused numerous inefficiencies in the management, evaluation, and delivery of health services that ultimately results in a lower quality of life for many of the world's citizens. To address complex public health issues quickly and efficiently, there must be central and frontline staff who are trained in both leadership skills and applied epidemiology (the use of quantitative methods to define, solve, and evaluate public health problems). Unlike the public health workforce in the United States, however, the majority of international public health staff rarely has access to public health training. Making programs that provide training in leadership and applied epidemiology available internationally is essential to building public health systems and improving global health.

WHAT HAS CDC ACCOMPLISHED?

Over the last 20 years, CDC has collaborated with international partners to build 27 long-term applied public health training programs outside of the United States. These Field Epidemiology Training Programs (FETPs) are modeled after CDC's Epidemic Intelligence Service. The 2-year training and service programs are intended to build national and regional capacity in applied epidemiology and to enhance public health practice. During their training and service assignments, participants conduct epidemiologic investigations and field surveys to strengthen their skills in conducting public health surveillance; evaluate disease control and prevention measures; and train other health workers.

- Seven programs are under development in Brazil, China, India, Jordan, and Central Asia.
- About 1,200 persons have graduated to date, and 600 are in training.
- Over 95% of the graduates still work in public health, managing surveillance and public health intervention programs.

To support the strengthening of health services, CDC has also implemented training for sub-national health staff and decision-makers. Major areas of emphasis are communication, management, and evidence-based public health. These programs enhance local level capacity to prevent and control health problems.

WHAT ARE THE NEXT STEPS?

In the past year, China and India, which together represent almost half of the world's population, have formally requested CDC's assistance in developing FETPs. In addition, CDC intends to continue providing assistance through TEPHINET, a network of International Training Programs. CDC will also continue to develop training programs and materials to support the strengthening of international health services.

PREVENTIVE MEDICINE RESIDENCY AND FELLOWSHIP PROGRAMS

WHAT IS THE PUBLIC HEALTH ISSUE?

Physicians have always ensured the public's health, whether focusing on the individual patient through the traditional practice of clinical medicine or by focusing on the larger community in the context of public health practice. To address the new challenges of emerging infectious diseases, worsening chronic diseases, terrorism, and advances in technology, ensuring a well-educated, competent public health workforce is of paramount importance. Preventive medicine-trained physicians combine clinical medicine skills with public health practice expertise (e.g., epidemiology, health services management, environmental health). Given their ability to bridge medicine and public health, they are poised to assume executive-level responsibilities and leadership roles in which they can influence programs and policies. Despite the critical role preventive medicine-trained practitioners can play in overcoming the public health challenges facing the nation, the Third Report of the Council on Graduate Medical Education, *Improving Access to Health Care through Physician Workforce Reform: Directions for the 21st Century*, found that shortages exist in the specialty of preventive medicine.

WHAT HAS CDC ACCOMPLISHED?

CDC sponsors one of the nation's largest Public Health and General Preventive Medicine Residencies (PMRs), training 10 to 12 residents a year. These residencies are each accredited for 1 year of practical, hands-on experience and didactic training for physicians. Training focuses on leadership, management, policy development, and program evaluation. Similar educational opportunities are provided for those with a veterinary medicine background through the Preventive Medicine Fellowship (PMF).

Residents/fellows who are admitted with experience at the state or local level are assigned to a CDC headquarters assignment during the PMR/PMF program. Those with headquarters experience are assigned to the field, thus guaranteeing that each graduate will have trained at least 1 year each in a state or local health department and at CDC headquarters. Participants are then able to maximize their public health practice experience and better prepare themselves to assume leadership roles at the local, state, or federal levels. Since 1972, CDC has trained about 390 general preventive medicine and public health practitioners who link skills in clinical medicine with population-based health. Graduates have assumed various leadership positions at CDC (including graduates serving as director and deputy director of the agency), as well as leadership roles at state or local health departments, universities, and in private settings.

Participants in the PMR/PMF programs have enjoyed various leadership opportunities. One resident served as chair of a state Severe Acute Respiratory Syndrome (SARS) Task Force, guiding the development of the preparedness plan, including the establishment of a SARS surveillance system, and updating the governor's advisory committee about SARS preparedness. Another participant managed the implementation and evaluation of the use of chlorhexidine soap to reduce endemic methicillin-resistant *Staphylococcus aureus* infections in a county jail.

WHAT ARE THE NEXT STEPS?

The PMR/PMF program will continue to support the public health workforce by educating high-quality graduates to meet new public health challenges. The training will include new or revised content areas for public health practitioners such as emergency response, genomics, and informatics. New training technologies and delivery methods will also be developed.

For additional information on this or other CDC programs, visit www.cdc.gov/program

January 2004

PUBLIC HEALTH LEADERSHIP AND MANAGEMENT DEVELOPMENT PROGRAMS

WHAT IS THE PUBLIC HEALTH ISSUE?

Leadership development for public health officials is important for several reasons:

- Public health leaders often lack formal academic preparation to deal with management and leadership challenges which occupy the majority of work time.
- Demographic trends, along with reduced resources and the lack of organizational succession plans, have increased the need for new skills for our leaders.
- Complex issues and problems confronting the public health system have increased the need for strong communication, collaboration, team building, and planning skills by public health leaders.

WHAT HAS CDC ACCOMPLISHED?

CDC supports several national, state, and international efforts to develop public health leaders. In partnership with academic institutions and national organizations, CDC supports the National Public Health Leadership Institute (PHLI), the Public Health Leadership Society, the Management Academy for Public Health (MAPH), the National Public Health Leadership Development Network, 18 state and regional leadership institutes, and the CDC/ATSDR Leadership and Management Institute. Our partners leverage CDC funds many times over with support from other sources.

Example of Program in Action

Since 1990, over 750 senior public health officials have participated in PHLI and over 1,550 have participated in one of the 18 state and regional leadership institutes. Additionally, over 600 state and local health officials have completed management training in the MAPH. Last year, state and local public health officials from Nevada and Utah met to begin developing a regional leadership development program that will provide advanced training to senior level officials in the Great Basin region, which stretches from the Rocky Mountains to the Sierra Nevada. In 2004, the Kansas Public Health Leadership Institute began the recruitment process for its first class of scholars.

WHAT ARE THE NEXT STEPS?

CDC will continue to support the existing network of leadership development programs at the national, state, and regional level. Additional state-based leadership programs are being developed in Nebraska and Minnesota. Through the development of new learning techniques and technologies, opportunities for leadership development will be offered to new audiences such as emerging leaders, workers in underserved rural and urban areas, and those whose work intersects with public health, such as representatives of faith based organizations, tribal communities, and community-based leaders.

PUBLIC HEALTH PREVENTION SERVICE

WHAT IS THE PUBLIC HEALTH ISSUE?

The expanding mission of public health requires a public health workforce capable of applying a range of disciplines and strategies to programs for the prevention of disease and injury and the promotion of health. Currently, there is a workforce gap in public health management positions at the federal, state, and local levels. This shortage is the result of the expansion of public health programs, competition for trained professionals, and the aging of the current workforce. Although there are accredited schools of public health across the United States, these programs provide their graduates with little practical public health experience. In response to this problem, CDC has developed and implemented a program designed to train and prepare tomorrow's public health program managers.

WHAT HAS CDC ACCOMPLISHED?

In 1997, CDC established the Public Health Prevention Service (PHPS), a 3-year training and service program for master's level public health professionals. About 25 prevention specialists enter the program annually. The program focuses on public health program management and provides prevention specialists with experience in program planning, implementation, and evaluation through specialized hands-on training and mentorship at CDC and at state and local health agencies. In addition to on-the-job training, the PHPS program provides formal instruction in program management, epidemiology, surveillance, emergency response, and project evaluation. Prevention specialists participate in various activities, including seminars, evaluation projects, Web-based training, temporary duty assignments, and conferences that are designed to provide them with essential public health program management skills.

- As of September 2003, 89 prevention specialists have completed the program. Half have returned to federal service and half are in other public health settings.
- Currently, there are 88 prevention specialists: 54 assigned to state and local health agencies; 25 to CDC Centers, Institutes, or Offices; and 9 to CDC's Global AIDS Program (GAP).

Example of Program in Action

As prevention specialists strengthen their skills in public health program management, they work in various public health program areas. Some of the management activities that prevention specialists perform include developing strategies for asthma prevention in collaboration with community partners; developing and implementing HIV/AIDS action plans for GAP in other countries; developing partnerships with faith-based communities to combat HIV/AIDS; planning and developing state Healthy Aging programs; conducting community health needs assessments for public health initiatives; and, evaluating programs, such as tobacco-free initiatives.

WHAT ARE THE NEXT STEPS?

The PHPS Program will continue to support the public health workforce by training public health program managers to meet new public health challenges. New training technologies and delivery methods will be developed to address these challenges.

For additional information on this or other CDC programs, visit www.cdc.gov/program

January 2004

TRAINING FOR PUBLIC HEALTH AND PRIVATE CLINICAL LABORATORY PROFESSIONALS

WHAT IS THE PUBLIC HEALTH ISSUE?

- Public health and private clinical laboratories must be capable of responding effectively to various public health threats, including emerging infectious diseases, foodborne diseases, environmental hazards, bioterrorism, and chemical terrorism events.
- Laboratory personnel require training for increased rapid recognition and prevention of the spread of communicable disease and environmental threats.
- Laboratorians must be capable of using state-of-the-art testing systems and new technology to more effectively deal with significant public health threats.

WHAT HAS CDC ACCOMPLISHED?

CDC and the Association of Public Health Laboratories co-sponsored the National Laboratory Training Network (NLTN) which provides clinical, environmental, and public health laboratory training. NLTN conducts training exercises on topics of public health significance for laboratory professionals throughout the United States providing the nation's laboratory workforce with training in cutting-edge technology, such as that used to detect bioterrorism agents. The training includes hands-on training in state-of-the-art laboratory settings.

NLTN developed the “Newborn Screening Symposium—Collection, Reporting, and Follow-up,” training program, to address the high rejection rate of improperly collected heel stick specimens from newborns. In one case, an analysis of data collected 3 months prior to the training and 3 months following the training showed a 7% reduction in the heel stick rejection rate. As a result, more than 4,000 newborns were not subjected to additional painful heel sticks and their newborn screenings for genetic disorders were not delayed.

Examples of Program in Action

- In 2003, NLTN conducted 20 classes, which trained about 400 workers from publicly funded HIV testing and counseling sites to perform rapid HIV testing.
- CDC developed an interactive CD-ROM tutorial to assist laboratorians in selecting and using appropriate testing methods to detect antimicrobial-resistant strains of bacteria. This CD-ROM provides the most extensive information on antimicrobial resistance testing available to date.
- Training in newborn screening tests provided improved recognition, detection, diagnosis, and management of genetic disorders in newborns.
- A Bioterrorism Reference Guide was developed by CDC for use in clinical laboratories. The guide contains information on the isolation and identification of bioterrorism agents. In addition, CDC produced bioterrorism training videos, as well as the Bioterrorism “Job Aid,” which can be customized by individual states.

WHAT ARE THE NEXT STEPS?

CDC and NLTN will continue to provide updated training to the nation's laboratorians to ensure laboratory workforce competency as well as high-quality laboratory testing.

For additional information on this or other CDC programs, visit www.cdc.gov/program

January 2004

TRAINING FOR PUBLIC HEALTH PROFESSIONALS

WHAT IS THE PUBLIC HEALTH ISSUE?

- Public health professionals are responsible for protecting and maintaining the nation's health. Working in every kind of community with varied access to necessary resources, the public health professionals are called upon to deal with changes as new discoveries identify better methods for maintaining the public's health.
- The 2002 Institute of Medicine Report, *The Future of the Public's Health in the 21st Century*, finds the U.S. public health workforce "insufficient and inadequately trained." At state and local public health agencies, diminishing resources have led to smaller staffs responsible for expanding jobs, resulting in less time and money for training and professional development.

WHAT HAS CDC ACCOMPLISHED?

Over the last decade CDC has worked to develop a national distance learning system comprised of people, technology and funding to train public health workers in all disciplines. These systems include the National Laboratory Training Network (NLTN) and the Public Health Training Network (PHTN). NLTN provides clinical, environmental, and public health laboratory training exercises to laboratory professionals on over 20 topics of public health significance around the country, such as newborn screening, antimicrobial resistance, food safety, genetic testing, and quality assurance for laboratory testing.

PHTN is a public-private partnership dedicated to bringing high-quality adult learning opportunities to the learner anywhere at anytime. PHTN programs are marketed to clinicians and other public health populations and offered in multiple delivery formats, including satellite, Web-cast (live and Web-archive), phone bridge, CD-ROM, videotape, pdfs, and other downloadable print-based materials.

Example of Program in Action

Within days of recognizing Severe Acute Respiratory Syndrome (SARS) as a global threat, PHTN began a series of live satellite Web-based broadcasts presenting critical information about the diagnosis, treatment, control, and prevention of SARS. These programs were viewed by an estimated 400,000 health professionals. PHTN allows CDC to address global health issues at the point of origin as well as at home. For example, working through the Ministry of Health in Beijing, China, CDC delivered master video production tapes for rapid translation into Chinese. These programs were then rebroadcast within China and distributed as CD-ROMs to all health departments in China's 23 provinces. It is estimated that 1.8 million Chinese health professionals have received critical SARS information through translated CDC PHTN programs and CD-ROMs.

WHAT ARE THE NEXT STEPS?

CDC will continue to pursue the highest standards for laboratory training and distance learning in traditional and emerging technologies, and to identify and promote best practices in adult and technology supported learning.

TRAINING OCCUPATIONAL SAFETY AND HEALTH PROFESSIONALS

WHAT IS THE PUBLIC HEALTH ISSUE?

- In 2002, more than 4.7 million workers sustained work-related injuries and illnesses in the private sector alone, and an average of 15 workers died from work-related injuries each day.
- Efforts to prevent occupational illness and injury are hampered by the lack of trained safety and health professionals to meet the needs of a rapidly changing work environment and an increasingly diverse workforce.

WHAT HAS CDC ACCOMPLISHED?

CDC conducts a competitive training grant program aimed at increasing the number of professionals trained to work in the occupational safety and health field. CDC supports a network of 16 Education and Research Centers (ERCs) and 42 separate Training Project Grants (TPGs) around the country. These training programs produce about 600 professionals each year with specialized training in disciplines that include occupational medicine, occupational health nursing, industrial hygiene, occupational safety, and injury prevention. Because ERCs are regional, they can respond to various trends in the workplace throughout the country. ERCs and TPGs produce professionals who can protect workers in virtually every industrial sector.

Example of Program in Action

CDC estimates that about half of all U.S. occupational safety and health professionals graduate from CDC-supported programs at the masters and doctoral levels. About 80% of the professionals graduating from CDC-funded programs pursue careers in occupational safety and health.

WHAT ARE THE NEXT STEPS?

- Train occupational safety and health professionals to protect a diverse workforce in the face of rapid advances in science, medicine, and technology while still addressing age-old concerns (e.g., farming injuries, lead poisoning).
- Work to strengthen occupational safety and health training to nontraditional occupations and disciplines.
- Find new and effective methods of delivering training materials to professionals outside of the academic environment.