



Introduction

The events of September 11, 2001, and the subsequent anthrax attacks, brought the role and responsibility of the public health workforce in emergency response efforts to the forefront in public understanding. We can only be prepared if we have an experienced workforce that is qualified to carry out our mission. — Richard A. Raymond, MD, Nebraska State Health Official

Public health agencies are juggling an ever increasing number of responsibilities despite the growing threat of a workforce shortage. In November and December 2003, the Association of State and Territorial Health Officials and the Council of State Governments (CSG) surveyed ASTHO members and reported the results in State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis.

One section of this report focused on the job categories most affected by personnel shortages. The four top categories were nurses, epidemiologists, laboratory workers, and environmental health specialists. This issue brief provides an overview of the importance of laboratory scientists and technicians and the challenges facing states as they work to build and maintain an adequate public health laboratory workforce.

Laboratory Scientists and Technicians

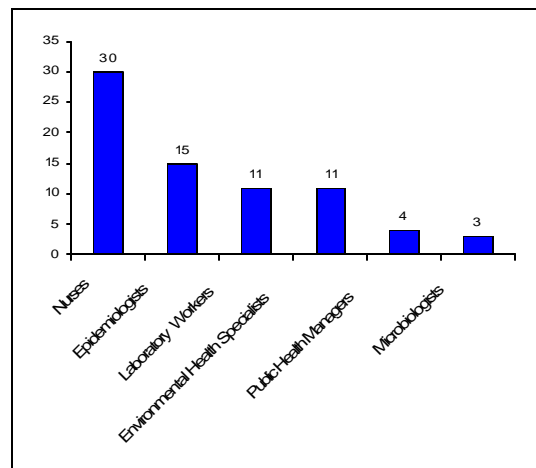
Public health laboratories are part of the first line of defense against terrorist events, emerging infectious diseases, and other public

health threats and emergencies. The scientists and technicians who work in these laboratories are experts in diagnostic testing, disease surveillance, and applied research. Specific examples of activities undertaken by laboratory scientists and technicians include:

- Testing for infectious diseases, such as West Nile virus, HIV, tuberculosis, foodborne disease, and bioterrorism agents.
• Testing for carcinogens in the environment.
• Testing for bacteria and parasites in the public drinking water.
• Testing radon, asbestos, lead and mercury in our homes and work sites.

As shown below, 11 of the 37 responding states that participated in the ASTHO/CSG survey identified laboratory scientists and technicians as a job category expected to be most affected by future workforce shortages in their state.

State Public Health Occupational Classes Most Affected by Workforce Shortages



Source: ASTHO/CSG Survey (n=37 respondents could choose more than one profession)

A Critical Job

The following examples illustrate just a few of the many tasks that call for an adequately staffed, well-trained workforce of laboratory scientists and technicians.

Animal Testing. “In one year rabies animal testing conducted by public health laboratories prevented the pain, trauma, and expense of rabies shots in more than 71,000 people, and saved over \$100 million.”ⁱⁱⁱ

Potentially exposed animals are sent to public health laboratories on a daily basis to test for rabies. If the animal is found to be infected, the laboratory staff works with other public health staff to notify people who may have been exposed to the animal and provide appropriate treatment if necessary.

Newborn Screening. Public health laboratory staff screen for various newborn disorders. These screens determine if a newborn has an inborn error of metabolism associated with any number of diseases, including phenylketonuria (PKU), sickle cell disease, or cystic fibrosis.

“Screening newborns for sickle cell anemia can reduce deaths from the disease by up to 84 percent. For every \$1 spent on newborn screening, \$9 in medical care and treatment costs is saved – resulting in a national savings of \$36 million every year.”ⁱⁱⁱ

Influenza. During the annual flu season, the public health laboratory staff collects and tests specimens from influenza patients. The findings from these tests determine the type of vaccine that will be needed to protect those at risk for influenza in the upcoming year.

During 1990-1993, for every \$1 spent on the vaccination of older adults, \$30 to \$60 in hospitalization costs was saved and deaths related to influenza were reduced by up to 54 percent.^{iv} — Association of Public Health Laboratories (APHL)

The Looming Shortage

One of the greatest challenges facing public health laboratories is a shortage of skilled laboratory scientists that, if not reversed, could impact laboratories’ ability to safeguard the nation’s health’. — (APHL)

The current workforce crisis could be described as a “perfect storm” that has created an enormous leadership void in public health policy development, program implementation, and fiscal responsibility.

The ASTHO/CSG survey of state public health agencies identified several trends that point to chronic shortages in public health personnel in a majority of the states over the next 5-10 years.

- The public health workforce is rapidly aging. The average age is 46.6 years.
- Public health retirement rates are as high as 45 percent in some states.
- Current vacancy rates of up to 20 percent exist in some states.
- Public health employment turnover rates are 14 percent in some parts of the country.^{vi}

A recent study by the Association of Public Health Laboratories (APHL) found that state laboratory directors anticipate an average of 13 vacancies at the director level in state public health laboratories by 2007. The size of the replacement pool is described by current directors as either “not adequate” or “only marginally adequate” to meet these future demands.^{vii}

According to APHL, “laboratory directors and senior laboratory professionals are highly-educated specialists with knowledge of one or more scientific disciplines, advanced skills in laboratory practice, and the ability to apply this expertise to the solution of complex problems affecting human health.”^{viii}

The 2001 terrorism attacks on the United States resulted in new funds from Congress to address public health laboratory staffing needs. Though the new funds provide for the hiring a skilled laboratory workforce, a workforce with the mandatory skills simply does not exist. Some states have not been able to use all of the funds available for hiring personnel, despite their demonstrated need for high-skilled professionals. Why? Because professionals who meet the criteria and are willing to work in the public sector are not available.^{ix}

The challenge is finding and training qualified professionals to fill the many public health laboratory positions that will become vacant or available as mass retirements and expanded demands on the public health laboratory system continue to grow.

Options for Addressing Shortages

Few national resources are committed to preparing future environmental public health professionals^x — APHL

According to current laboratory directors, an important barrier to recruiting and retaining laboratory workers is the inability to offer competitive salaries^{xi}. The ASTHO/CSG survey asked public health agencies to identify the keys to improving the public health professional shortage. The 37 states are investigating or trying a variety of approaches to retain and recruit environmental health specialists including:

- Revising salaries (when the budgets allow).
- Providing time and reimbursement for training and continuing education.
- Implementing flexible schedules.
- Marketing public health as an interesting career.
- Providing scholarships or loan repayment options.^{xii}

Conclusion

According to APHL, the public health laboratories workforce is as essential to our health and safety as police and fireman. State and local public health agencies must develop the capacity to respond to terrorist events, emerging infectious diseases, and other public health threats and emergencies. The highly educated and experienced professionals in public health laboratories play an important role in this through surveillance, outbreak investigations, and monitoring for new or emerging infectious diseases. A key factor is assuring that a qualified workforce continues to be available to carry out these functions.

States have already identified shortages in the public health laboratory workforce and, as the aging and experienced workforce nears retirement, the shortages will grow. A well-coordinated conscious effort must be undertaken by states, institutes of higher learning, and the federal government to develop a forward-looking plan to identify, attract, and train tomorrow's laboratory scientists and technicians. Options like providing scholarships and loan repayment; marketing public health careers to grade school, high-school, and college students; providing continuing education; and ensuring that salaries are competitive and are being examined and considered for implementation.

ⁱ *State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis*. ASTHO and CSG. (2004), p.7.

ⁱⁱ *On the Front Line: Protecting the Nation's Health*. APHL. (2000), p.3. www.phppo.cdc.gov/dls/aphl-ofl.asp#t7.

ⁱⁱⁱ *Ibid*, p. 4

^{iv} *Ibid.*, p.4

^v *Association of Public Health Laboratories 2003 Year in Review*. APHL. P.4.

^{vi} *State Public Health Employee Worker Shortage Report*, p.2.

^{vii} *Ready or Not: Findings and Recommendations of the APHL Chemical Terrorism Project*. APHL. (July 2003).

www.aphl.org/Nat'l_Center_for_PHL_Leadership/ind ez.cfm

^{viii}“*Public Health Laboratories: A First Line of Defense Against Diseases, Health Hazards*. APHL. www.aphl.org/About_APHL

^{ix} *Public Health Laboratory Issues in Brief: Bioterrorism Capacity*, APHL. (August 2003), p. 4.

^x *Ibid.*, p. 3.

^{xi} *Public Health Laboratories: A First Line of Defense Against Diseases, Health Hazards*. APHL. www.aphl.org/About_APHL

^{xii} *State Public Health Employee Worker Shortage Report*, p. 12.

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