

The Future of Public Health Education: Curriculum, Training and Funding

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Abstract

After the tragic events of September 11, 2001 and the subsequent anthrax attacks, an increased focus on public health and bioterrorism preparedness occurred. This increased focused and attention on bioterrorism preparedness caused a major problem for graduate schools and program of public health. This paper examines the balance between core public health skills and bioterrorism preparedness in graduate public health education. The purpose of the paper is to underscore the need for revitalizing public health curricula, training and funding for bioterrorism preparedness; and to suggest changes in public health curricula, training, and funding that emphasize more strongly the core public health skills needed to protect the nation's health on a daily basis. The health of America's communities hinges not solely on bioterrorism preparedness but rather on a competent workforce capable of delivering the essential public health services in response to current and emerging public health threats and emergencies.

Purpose

The purpose of this paper is to examine the future of graduate public health education in the coming decades. It specifically examines the balance between core public health skills and bioterrorism preparedness. The following issues are addressed throughout the paper: 1) the current graduate public health education curriculum; 2) current training needs; and 3) resources needed to reconstruct the current public health educational system.

Introduction

The beginning of the twenty-first century provided a preview of the health challenges that the United States will face in the coming decades.¹ The systems and entities that protect and promote the public's health, while already challenged by problems like obesity, toxic environments, a large uninsured population, and health disparities, must now also confront emerging threats, such as bioterrorism.² This poses a large problem for the public health educational system. Deans of graduate public health schools and programs will need to reconstruct their curriculum to ensure a strong student knowledge base in the core public health skills and bioterrorism preparedness. The challenges of the coming decades and the need for core public health skills bring up many questions that must be addressed when looking to balance core public health skills and bioterrorism preparedness. Some questions that arise are: 1) what is currently being taught in graduate public health schools and programs; 2) who is receiving training; 3) who else should be trained that may not currently be receiving training; and 4) what resources are available to increase and/or reconstruct public health education.

Background

In 1998 the Institute of Medicine (IOM) defined the mission of public health as “fulfilling society’s interest in assuring conditions in which people can be healthy.”³ This mission is carried out through organized efforts that address the physical, mental and environmental health concerns of communities and populations at risk for disease or injury.⁴ In order to carry out the mission, there are three core public health functions: assessment and monitoring of the health of communities and populations at risk; formulating public health policies in collaboration with community and government leaders; and assuring that all populations have access to appropriate and cost-effective care.⁵ The Council on Education for Public Health (CEPH) ensures that all graduate public health students attending accredited schools and programs receive training of this nature by requiring five basic areas of knowledge be taught (biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences).⁶ With the accreditation requirements in place, there is sufficient evidence to ensure that all graduates from accredited public health schools and programs receive training in these five basic areas of knowledge. The five basic areas prepare students with the core public health skills but do they prepare them for responding to a bioterrorist attack?

Bioterrorism can be “described as the use, or threatened use, of biological agents to promote or spread fear or intimidation upon an individual, a specific group, or the population as a whole for religious, political, ideological, financial or personal purposes”.⁷ A bioterrorism agent maybe disseminated by various methods including aerosolization, specific blood-feeding insect, or food and water contamination.⁸ The

Centers for Disease Control and Prevention (CDC) is currently in the process of developing specific competencies for bioterrorism preparedness. In the meantime, CDC has requested that health professionals and state and local health departments utilize the emergency preparedness competencies developed by the Columbia University School of Nursing in September 2001.⁹ The emergency preparedness competencies developed by Columbia University indicate a need for all public health workers to be competent in nine basic functions. These include:

1. Describe the public health role in emergency response;
2. Describe the agency chain of command in emergency response;
3. Identify and locate the agency emergency response plan;
4. Describe his/her functional role(s) and responsibilities in emergency response and demonstrate his/her role(s) in regular drills;
5. Demonstrate correct use of all communication equipment used for emergency communication;
6. Describe his/her communication role(s) in emergency response;
7. Identify limits to his/her own knowledge, skills and authority;
8. Apply creative problem solving and flexible thinking to unusual challenges;
9. Recognize deviations from the norm that might indicate an emergency.

Source: Centers for Disease Control and Prevention and Columbia University School of Nursing, “Emergency Preparedness: Core Competencies for All Public Health Workers,” September 2001.

The nine competencies listed above are based upon the essential services of public health and provide a basis for determining the competencies of public health systems to respond to emergency situations.

Leading up to the events of September 11, 2001 and thereafter, there was a push for more health professionals to receive training in public health in order to provide a stronger public health workforce. In 2003 the IOM released a report on public health education titled “Who Will Keep the Public Healthy: Educating Public Health Professionals for the 21st Century.” The report redefined a public health professional to be “a person educated in graduate level public health or a related discipline who is employed to improve health through a population focus”.¹⁰ For the first time not only individuals with a graduate degree in public health but also nurses, doctors, and numerous other health professionals were encompassed under the definition of a public health professional. It is not feasible to argue that the new definition does not encompass other health professionals, but to what extent should they be trained in the core public health skills and bioterrorism preparedness? Who will train these new health professionals and will their training include the same basic public health skills? What is currently being covered in graduate public health education?

Results

The United States currently has 34 accredited schools of public health and 55 accredited graduate programs in public health, preventive medicine and community health.¹¹ CEPH, the accrediting body for schools and programs of public health, requires that schools and programs meet the same curricula criteria. However there are two major differences between schools and programs. The schools of public health are separate institutional entities and are required to offer concentrations in all five basic areas of knowledge. The graduate programs are generally located within another institution such as a medical school, nursing school, or allied health professions school. The graduate

programs also tend to be much smaller than schools and therefore they are not required to offer the opportunity to concentrate in all five basic areas of knowledge.¹² Nevertheless, the schools and programs offer additional concentrations such as health education, international health, nutrition, urban health, genetics, and others.

The schools and programs have experienced a tremendous growth in the interest of public health education. In 2002, the schools and programs graduated approximately 6,460 students into the field.¹³ The schools are increasing enrollment by approximately 10 percent and the 27 new programs have developed in the last five years.¹⁴ The increased growth in attention and focus on graduate public health education is important to decreasing the deficit in the number of public health professionals in the field.

It is guaranteed through CEPH that all students attending accredited schools and programs receive knowledge in the five basic areas of knowledge. The areas of knowledge are defined below:

- Biostatistics – collection, storage, retrieval, analysis and interpretation of health data;
- Epidemiology – distributions and determinants of disease, disabilities, and death in human populations;
- Environmental health sciences – environmental factors including biological, physical and chemical factors which affect the health of a community;
- Health services administration – planning, organization, administration, management, evaluation, and policy analysis of health programs; and
- Social and behavioral sciences – concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

Source: Council on Education for Public Health, “Accreditation Criteria,” January 2002.

CEPH ensures the five basic areas of knowledge but what type of training do graduate public health education students receive in bioterrorism preparedness?

A survey conducted in the fall of 2003 found that a majority of the programs address the issue of bioterrorism preparedness. Some of the schools and programs are addressing the issue through required courses and elective courses however most schools and programs are only offering bioterrorism education through guest lectures and group discussion.¹⁵ A majority of the schools and six graduate programs offer some form of certification in bioterrorism and/or emergency preparedness. The certificate programs require 15 – 18 credit hours in course work topics such as epidemiology, environmental health, crisis management, and biostatistics.¹⁶ In review of the current emergency preparedness competencies, should graduate public health education be required for all public health workers and if so, who will bear the costs?

Between FY 1999 and FY 2002, the federal government allocated approximately \$180 million of the total appropriations (\$462 million) for bioterrorism to state and local health departments.¹⁷ A majority of these funds were for the Health Alert Network, and smaller amounts were allocated for public health laboratory infrastructure and other needs, such as staff development and epidemiology and detection systems.¹⁸ Following the events of September 11, 2001 the states were supplemented with \$915 million for seven “capacity areas” deemed necessary for bioterrorism preparedness.¹⁹ Of the \$915 million, 10 percent of the funding (\$91.5 million) was allocated specifically for education and training.²⁰ A majority of these funds have been filtered through CDC for the development of fourteen Centers for Public Health Preparedness.²¹ The purpose of these centers is “to improve the competency of frontline public health workers and the capacity to respond to current and emerging public health threats and emergencies”.²²

Discussion

Curriculum

Graduate public health schools and programs are required to provide required courses in the five CEPH-identified areas of knowledge. The public health community reviewed and commented on the CEPH accreditation requirements in 2001 and 2002, and agreed that these five basic areas of knowledge remain on the forefront of public health education.²³ In the report “Who Will Keep the Public Healthy?” the IOM recommends that graduate public health schools and programs begin to utilize a more ecological approach to the teaching of public health. The ecological model proposed is a model of health that emphasizes linkages and relationships among multiple determinants affecting health.²⁴ The determinants include “broad social, cultural, health and environmental conditions; living and working conditions; social, family, and community networks; individual behavior; individual factors such as age, sex, race, and biological factors; and the biology of disease”.²⁵

Utilizing the ecological model, the IOM committee recommended eight new content areas to be integrated into graduate public health education. The eight recommended content areas are: global health, informatics, communication, community participatory research, genomics, policy and law, ethics, and cultural competency.²⁶ The integration of the eight new content areas has been widely accepted by the graduate public health schools and programs. Educating new public health professionals using the ecological model and recommended content areas will enable them to be prepared to face future challenges such as health disparities, obesity, and toxic environments, but what about bioterrorism?

The recent surveys revealed that most graduate public health institutions do not separate bioterrorism preparedness from the core public health skills. The emergency preparedness competencies developed by Columbia University are fundamentally more administrative than basic public health skills. The graduate public health schools and programs tend to construct their curriculum in a way that will provide public health graduates with the knowledge that will enable them to assess and monitor the health of communities, formulate public policy, and assure that all populations have access to appropriate and cost-effective care.²⁷ The graduate public health schools and programs believe that specific training on bioterrorism is not necessary for all public health professionals. In an essence, public health professionals remain to be committed to the core public health skills and will integrate bioterrorism training into the current curriculum when possible. If the graduate public health schools and programs believe bioterrorism preparedness is to be encompassed by the core public health skills, then who is being trained specifically for bioterrorism preparedness?

Training

In the event of a bioterrorist attack, the first responders are not whom one would consider public health professionals. First responders are those which are the first to arrive on a scene such as firefighters, emergency medical technicians, and police. In the case of a single outbreak occurring in one individual, the frontline would be a health clinic physician/nurse or a primary care physician/nurse. Given the situation, there is a definite need for nurses, physicians, and emergency responders to be able to identify a bioterrorist attack and report it through the appropriate channels. The IOM committee has called for an increase in the number of nurses and physicians with dual degrees

(MD/MPH and MSN/MPH) in order to ensure a better prepared public health workforce.²⁸ Currently, 63 of the 126 accredited medical schools offer the joint MD/MPH degree and a majority of graduate public health schools and programs are offering the joint MSN/MPH degree.²⁹ The new degree programs will supply a stronger workforce for the future, but are they addressing the current needs?

In September 2000, CDC's National Bioterrorism Training Plan identified a lack of formal public health training in 80% of the 500,000 frontline public health workers.³⁰ One year later, the nation was faced with a biological attack. As a result of the biological attack, a mandate was placed on CDC to activate and implement the Bioterrorism National Training Plan immediately. As a result of the mandate, CDC has developed and trained approximately 200,000 public health workers through the Centers for Public Health Preparedness.³¹ CDC has also developed and provided on-line continuing education courses for health professionals and informational courses for the community. The courses offer specific demonstrations on the known possible biologic agents and symptoms as well as instructive courses on what steps should be taken if a biological attack is identified.³² The on-line courses have been successful with approximately 1.4 million viewers utilizing the on-line series.³³ Nevertheless, the Centers for Public Health Preparedness ad on-line series are not enough. There still remain approximately 200,000 frontline workers who are ill prepared to respond to a biological attack.³⁴ CDC is currently reviewing other cost-effective means for attracting current nurses and physicians to the courses and demonstrations available.

Funding

The current funding for public health education is decreasing due to the enormous flows of funding for bioterrorism training. No one will argue that there is a need to provide resources for bioterrorism preparedness. However, the federal government should allocate funding to protect the public from emerging and re-emerging infectious diseases, including bioterrorism, which does not divert resources allocated for other human needs of adequate social well being and health care.³⁵ In the United States alone, there are an estimated 76 million cases of food-borne illness each year, with 5,000 deaths and yet there has been no legislation allocating millions of dollars to provide security from food-borne illness nor is that what the public health community desires.³⁶ Allocation of public funds for public health programs should not be a “zero-sum” game.³⁷ Instead, public health funding should be allocated to provide for additional education and training of the core public health skills that may be used for dual-action of responding to current and emerging public health threats and biological attacks.

The public health community supports more funding and efforts for bioterrorism preparedness, however they caution that such funding should not compromise financial support for other important public health efforts.³⁸ Allowing the public health community to be guided by a “perspective that focuses on bioterrorism as a main concern while relegating to the background as ‘other’ the monumental issues of infectious diseases, obesity, food borne illness, and chemical accidents would be disastrous to the health and well-being of the nation”.³⁹ The road to bioterrorism preparedness may be

paved with good intentions, but it will become a disastrous detour if the core public health skills and infrastructure are not the main focus.⁴⁰

Conclusion

The issue of balancing core public health skills and bioterrorism has been an item of discussion for numerous years. It was not until the events of September 11 and the anthrax attacks occurred that the public health community took on a more serious role in responding to bioterrorist attacks. Questions remain regarding how much focus should be placed on bioterrorism preparedness in graduate public health education. It is clear from the competencies produced by Columbia University that a full required course in bioterrorism preparedness may not be the best educational means for ensuring a competent public health workforce.

The public health workforce no longer includes only those trained in public health. It also includes numerous other health professionals who bring various skill sets which are necessary for responding to a bioterrorism attack. Should every health professional be trained in the core public health skills? No. There are not adequate resources to train all health professionals. However, the opportunity for dual training should be offered and should continue to be offered through all the schools and programs of public health and the sufficient competencies required for response should be met.

CDC should continue to produce and look for more cost-effective means for providing health professionals with competencies including instructions on who to contact in the case of a bioterrorism attack and what steps should be taken. It would be constructive for professional societies such as the American Medical Association and American Nurses Association to support CDC in its efforts of distributing valuable

information by providing continuing education credits and mandates for public health and bioterrorism preparedness training.

The lessons learned from these events have made it clear that it is imminent to improve the public health workforce through improved education, increased training, and more appropriate allocation of funding in preparation for a bioterrorism attack and more importantly, for the everyday needs and service that public health must provide.⁴¹ To place more weight on bioterrorism preparedness than core public health skills would be a regretful mistake. Individuals trained in the core public health skills will provide the nation with a more competent public health workforce. A competent public health workforce is the first step to ensuring bioterrorism preparedness.

ENDNOTES:

¹ Institute of Medicine. "The Future of the Public's Health in the 21st Century," The National Academy Press, Washington, DC 2003: page 1.

² Ibid, page 1.

³ Institute of Medicine. "Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century," The National Academy Press, Washington, DC 2003: page 4.

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⁵ Ibid.

⁶ "Accreditation Criteria," Retrieved from website: www.ceph.org/ on November 2, 2003.

⁷ "Definition of Bioterrorism," Retrieved from website: <http://www.hs.state.az.us/phc/edc/edrp/es/bthistor1.htm> on November 2, 2003.

⁸ Ibid.

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¹¹ “Accredited Schools and Programs,” Retrieved from website: www.ceph.org/accredited on November 2, 2003.

¹² Evans, Patricia, “Accreditation Responses to IOM Recommendations,” presented at the ATPM/CDC MPH Program Directors’ Workshop on November 14, 2003.

¹³ Lai, Catherine and Stacia Hall, “ATPM Council of Graduate Programs in Preventive Medicine and Public Health 2003 Data Report,” November 2003.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Institute of Medicine, “The Future of the Public’s Health,” p. 145.

¹⁸ Ibid. p. 146.

¹⁹ Ibid. p. 146.

²⁰ Ibid. p. 147.

²¹ “Centers for Public Health Preparedness,” Retrieved from website: www.phppo.cdc.gov/owpp/cphp/ on November 13, 2003.

²² Ibid.

²³ Evans, Patricia, “Accreditation Responses to IOM Recommendations”.

²⁴ Institute of Medicine, “Who Will Keep the Public Healthy?” p. 31.

²⁵ Ibid. p. 31.

²⁶ Ibid. p. 111.

²⁷ “What is Public Health?”

²⁸ Institute of Medicine, “Who Will Keep the Public Healthy?” p. 122.

²⁹ Maeshiro, Rika, “MD/MPH Dual Degree Program Survey Results”, presented to the ATPM Public Health Workforce Taskforce at the American Association of Medical Colleges annual meeting on November 10, 2003.

³⁰ “Bioterrorism National Training Plan,” Retrieved from website:
www.bt.cdc.gov/training/BTNationalTrainingPlan.pdf on November 14, 2003.

³¹ “Bioterrorism National Training Plan Executive Summary,” Retrieved from website:
www.phppo.cdc.gov/owpp/docs/BTNatTrainPlanExecSum0202.pdf on November 14, 2003.

³² “Bioterrorism National Training Plan Executive Summary”.

³³ “Bioterrorism National Training Plan Executive Summary”.

³⁴ “Bioterrorism National Training Plan Executive Summary”.

³⁵ Marmagas, Susan, Laura King, and Michelle Chuk. “Public Health’s Response to a Changed World: September 11, Biological Terrorism, and the Development of an Environmental Health Tracking Network”, *American Journal of Public Health*, Vol. 93, No. 8: page 1229, (2003).

³⁶ Sidel, Victor, Hillel Cohen, and Robert Gould. “Good Intentions and the Road to Bioterrorism Preparedness,” *American Journal of Public Health*, Vol. 91, No. 5: page 717, (2001).

³⁷ Ibid. p. 717.

³⁸ APHA’s Response. “Effective Public Health Assessment, Prevention, Response, and Training for Emerging and Re-emerging Infectious Diseases, including Bioterrorism,” *American Journal of Public Health*, Vol. 91 No. 3: page 501, (2001).

³⁹ Sidel, Victor, etal. “Good Intentions and the Road to Bioterrorism Preparedness”, p. 717.

⁴⁰ Ibid. p. 717.

⁴¹ Marmagas, Susan, etal. “Public Health’s Response to a Changed World: September 11, Biological Terrorism and the Development of an Environmental Health Tracking Network”, p. 1227.