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Public health in America: Still vulnerable

More progress needed to defend U.S. homeland from bioterrorist attack, epidemic

The enemies of the United States have clearly stated their mission of executing an attack that will rival the assaults of September 11, 2001. In attempting to prepare for the next onslaught, the nation's leaders have turned their attention toward previously unthinkable—yet potentially devastating—methods of attack, such as agents of biological warfare. To this end, the U.S. Congress has appropriated \$1.8 billion to help boost the country's public health system.

How effective have these funds been in fortifying the public health system against a catastrophic attack? In many respects, the nation has made significant progress in developing its bioterrorism defense program. National stockpiles of vaccines and antibiotics have increased dramatically, and all 50 states and Washington, D.C., have developed plans with their hospitals for managing mass-casualty incidents. Even so, much work remains: Many of the public health initiatives—such as those that provide funding and training for additional staff—are still in the planning stage. Once executed, these efforts will bolster the public health system, but in the meantime, severe vulnerabilities continue to expose the American population to both natural and manmade health crises.

Threats: Natural and not

The deadly anthrax mailings of 2001 demonstrated the country's inability to handle a biological attack. The still-unknown assailant distributed samples of superfine, pure anthrax via the postal system—an exceptionally crude delivery method for such a sophisticated substance. Even this delivery vehicle, however, produced widespread consequences: killing five people and sickening 17 others, placing more than 10,000 people on prophylactic antibiotics, and shutting down one postal facility for more than two years. To date, the Federal Bureau of Investigation (FBI) has interviewed more than 5,000 people in connection with this case. Although the Bureau has identified at least 20 “persons of interest,” the attacker remains at large more than two years later.

The February 2004 discovery of ricin in the mail-room of Senate Majority Leader Bill Frist (R-Tenn.) reminded Americans of their vulnerability to a bio-

logical attack. No casualties resulted from the incident, although it succeeded in disrupting U.S. Senate proceedings for several days—again sowing fear and uncertainty as decontamination crews and law enforcement agents searched for more poison and for clues to the identity of the perpetrator.

Beyond the relatively recent danger of biological terrorism, naturally occurring biological dangers continue to threaten the global population, such as West Nile Virus and SARS (severe acute respiratory syndrome). Just last month the Chinese government confirmed a new mini-outbreak of the respiratory disease that launched a worldwide health crisis last year, killing 774 people and infecting thousands.

Additionally, known bacteria and viruses continue to evolve, overcoming the antibiotics and vaccines that have kept them at bay. Manufacturers miscalculated the demand for influenza vaccine last winter; and vaccine stores were quickly depleted, prompting a government stockpile of flu shots for children in future seasons. An average of 36,000 people die each year from the common illness, but no one knows when the next strain of “superflu” will emerge, such as the Spanish flu that killed 30 million people in 1918. In its current state, the U.S. public health system would not be prepared for such a crisis.

An infusion of funding

In the aftermath of the September 11 attacks, the U.S. government provided the Centers for Disease Control and Prevention (CDC) with \$940 million in FY 2002 and \$870 million in FY 2003 to strengthen state and local public health agencies. The Health Resources and Services Administration (HRSA) received \$124.5 million in FY 2002 and \$498 million in FY 2003 to improve the preparedness levels of health care facilities. This appropriation of resources to the federal, state and local health agencies that make up the U.S. public health system demonstrates awareness by federal officials of this critical vulnerability.

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Recipients of this funding must submit applications demonstrating that the money will support specific benchmarks. For instance, the CDC has identified 16 “critical capacities” that recipients must address in their preparedness efforts. Some of these key criteria include the following:

- integrated assessments of public health system capacities related to public health threats and emergencies;
- detection of a terrorist event through a disease surveillance system;
- investigation and response to a potential terrorist event through a comprehensive, practiced plan that addresses mass immunizations and antibiotic distribution; and
- education and training of public health officials, infectious disease specialists, emergency department personnel and other health care providers.

As a result, the nation has achieved significant advances in upgrading its ability to respond to a large-scale public health emergency. According to the U.S. Department of Health & Human Services (HHS), all 50 states have developed bioterrorism response plans, which include procedures for mass vaccinations and for receiving and distributing “push packages” from the CDC. These 50-ton packages are caches of pharmaceuticals, antidotes, and medical supplies designed to deliver a wide range of medical resources in the early hours of crisis. Part of the Strategic National Stockpile (SNS), the number of push packages has increased from eight to 12 since 2001, and they are strategically positioned for immediate deployment to any site in the United States within 12 hours.

In addition, the increased funding has expanded U.S. ability to protect Americans from bioterrorism attacks. The supply of smallpox vaccine, for instance, has increased from 15.4 million available doses in 2001 to more than 300 million full doses today, and the SNS currently includes adequate antibiotic to treat 20 million people for anthrax

exposure. The U.S. Food and Drug Administration (FDA) has approved new medical countermeasures to protect Americans from such dangers as anthrax, radiation exposure and even nerve agent poisoning, and a new initiative called BioShield will provide \$5.6 billion over the next decade to purchase new vaccines or treatments.

Still vulnerable

While these advancements represent considerable progress in the U.S. preparedness effort, serious weaknesses exist throughout the public health system. Last year the Institute of Medicine identified several systemic vulnerabilities in the public health infrastructure, including inadequately trained staff, outdated health information systems and technologies, and communities that lacked access to essential public health services. Likewise, a report published by the U.S. General Accounting Office (GAO) that same year described several preparedness and response deficiencies, such as communication and coordination problems, workforce shortages, inadequate disease surveillance and laboratory capabilities, lack of regional coordination, and incompatible communications systems.

Last December, a nonprofit public health advocacy group published an assessment of 10 indicators of state public health preparedness. The Washington, D.C.-based organization concluded that, despite the additional federal funding, the state health systems are only modestly better prepared to manage health crises now than before the September 2001 terrorist attacks. The published report cited several deficiencies that undermine the public health system. First, state budget cuts jeopardize the ability to respond to bioterrorism and other health crises. Nearly two-thirds of states reduced funding for public health services from FY 2002 to FY 2003. Second, some of the federal bioterrorism funding is tied up in state bureaucracy. A survey by the Association of State and Territorial Health Officials found that only half the states have spent at least 90 percent of the federal bioterrorism preparedness funds for FY 2002,

which ended in September 2002. Only 17 states have directly distributed at least 50 percent of the funding to local health departments. Additionally, state public health agencies face a shortage of workers and insufficient laboratory support.

Slow, steady gains

Many public health experts have expressed optimism at recent gains in national preparedness efforts. All states, for instance, have a CDC-approved initial bioterrorism response plan. Although state-level plans are not detailed enough for implementation at the local level, they establish a critical framework to manage a statewide response, with local plans governing incidents at the community level. At present, no scientific measures have been established to assess the effectiveness of these state and local response plans, but the CDC is consulting with experts to develop measurable standards that will help analyze state preparedness efforts—a challenging task, given the subjective nature of the matter. “It’s almost like you’re choosing something for your family,” said CDC spokesperson Von Roebuck. “It’s a very personal issue. Your concept of preparedness may be different from someone else’s.”

A top priority for state health departments has been to improve the ability to detect, identify and respond to both natural and intentional threats, and the new focus on bioterrorism has enabled significant progress in this area. Texas used the federal funding to create eight regional epidemiology response teams that cover the entire state geographically. Each team includes an epidemiologist, a public health nurse and a public health technician. “These three people have as their duties to improve our capability through the building of relationships with hospitals, doctors’ offices and local health departments that have jurisdiction over their own cities and counties to better have our finger on the pulse of the community,” said state epidemiologist Dr. Dennis Perrotta.

According to several experts, greater communication and awareness have enhanced public

health preparedness. Infectious disease specialist Dr. Catherine Hart of New York points to the mini SARS outbreak in China last month as evidence of this progress. The cases were quickly recognized, announced and disseminated to the public health agencies—a marked improvement from the previous year. “Communication is better,” said Dr. Hart. “People are aware that they are much closer to all potential pathogens because of the global nature of our lives, and we have to rely on each other to communicate and to help each other.”

Heightened awareness has opened communication lines that will prove invaluable in the event of a crisis, either natural or manmade. “Doctors and hospitals are now calling and talking to us about issues that they might not have in the past,” said Dr. Perrotta. “While none of those [cases] have been bioterrorism, it is important that we have those well-worn communication pathways.”

Protecting the public health

Initial steps have yielded positive results; now, the various agencies responsible for the public health infrastructure need to build on this progress. Additional actions that will strengthen this effort include the following:

Ensure accountability. The government needs to make certain that federal money supplements—not replaces—state and local funding for public health initiatives. The study cited above found that the majority of states have reduced the budgets for public health agencies, undermining the federal government’s efforts to strengthen the national health infrastructure.

Work with the private sector. While many public health agencies at local levels have made considerable progress in developing emergency response plans that address the bioterrorist threat, few have reached out to build partnerships with the business community. Sharing expertise with corporate risk management and security departments will help private businesses

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incorporate public health threats in their facility response plans, enabling them to provide assistance in the event of a public health emergency.

The private sector plays a crucial role in both protecting the American people from a bioterrorist attack and supplementing the limited resources of public health agencies and emergency responders. Entities can embrace this role by taking the following actions:

Follow strict physical security procedures.

Excellent physical security includes denying access to unauthorized individuals and monitoring authorized individuals. Organizations such as hospitals or research facilities that use, store or create dual-use products should recognize their vulnerability to theft and enact strict access control procedures and video monitoring of these areas. In addition, implement procedures for accountability and use of these materials.

Protect sensitive areas. Water supplies, food storage and preparation areas, heating, ventilation and air conditioning (HVAC) systems, mail-room operations, and receiving docks should receive special attention lest a saboteur distribute a biological agent through these routes.

- Lock doors to these areas and enforce proper key control measures. Physical barriers such as locking grates can protect intake vents and mechanical systems.
- All access points to these areas should be monitored by closed-circuit television around the clock, with intrusion alarms installed on all doors leading to service areas.
- Security officers should escort vendors at all times and inspect service vehicles. Firms need to evaluate and screen vendor employees who repair and maintain these systems, approving any changes in service personnel.

The response of private citizens will have an important impact on the effectiveness of the public

health system during a crisis. Families and individuals can prepare by assembling emergency supplies, as recommended by the U.S. Department of Homeland Security website at www.ready.gov. After an emergency, the general public needs to listen to and follow the instructions of their local public health and emergency response agencies. These organizations will provide specific information regarding which individuals are believed to be at risk and where to go for vaccinations or antibiotics. People not in danger of exposure should stay away from vaccination and antibiotic distribution sites because they will only hinder the response. "The success of these efforts really rests in the hands of the public," says Dr. Perrotta. "The entire response system could be bogged down and overloaded by the 'worried well.'"

Almost three years after the devastating terrorist attacks of September 11, 2001, the U.S. Congress has budgeted billions of dollars for improving the nation's public health system. Such upgrades are critical in defending the country against a bioterrorism attack or even a naturally occurring epidemic. As a result, the United States is more prepared today than we were in 2001 to manage a biological assault and certain other health crises: greater vaccine and antibiotic stockpiles, funding for training and additional personnel, and initial bioterrorism response plans. Much progress has been made, yet much more is needed. Federal, state and local agencies must join forces with the private sector and continue their efforts to bolster the public health infrastructure because time is running out. Each day gives America's enemies new opportunity to wreak their mayhem, and Mother Nature can strike at any moment.



The Lipman Report Editors