

Bioterrorism: CDC's Public Health Response

Statement of
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Testimony

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Good morning, Mr. Chairman and Members of the Committee. I am Dr. Mitchell L. Cohen, Director, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention (CDC). Thank you for the invitation to update you on CDC's public health response to the threat of bioterrorism. I will update you on CDC's response to recent anthrax exposures, and I will discuss the status of implementing the overall goals of our bioterrorism preparedness program.

As has been highlighted recently, increased vigilance and preparedness for unexplained illnesses and injuries are an essential part of the public health effort to protect the American people against bioterrorism. Prior to the September 11 attack on the United States, CDC was making substantial progress toward defining, developing, and implementing a nationwide public health response network to increase the capacity of public health officials at all levels—federal, state, and local—to prepare for and respond to deliberate attacks on the health of our citizens. The events of September 11 were a defining moment for all of us, and since then we have dramatically increased our levels of preparedness and are implementing plans to increase it even further.

Recent Anthrax Exposures

As you are aware, many facilities in communities around the country have received anthrax threat letters. Most were received as empty envelopes; some have contained powdery substances. However, in some cases, actual anthrax exposures have occurred. On Wednesday, October 3, the Florida Department of Health notified CDC of a positive anthrax laboratory test result in a Florida resident who had recently visited North Carolina. Samples were sent overnight to CDC for confirmatory testing, and CDC dispatched two investigative teams—to Florida and North Carolina—on October 4. By

Sunday, October 7, test results confirmed that a second person—a coworker of the first individual—had been exposed to anthrax and that traces of the bacteria had been found in their workplace. A decision was made to close the building, and additional CDC staff were sent to help the state and local public health department manage notification, health evaluations of other coworkers, and provision of prophylactic antibiotics after the National Pharmaceutical Stockpile was deployed.

As CDC was continuing to receive clinical specimens and environmental samples from Florida, we became aware of a possible case of cutaneous anthrax in New York City. This person, an NBC employee in Rockefeller Plaza, had opened envelopes containing powder on September 18 and 25 and subsequently developed a skin lesion. A biopsy of the lesion yielded evidence of anthrax. The diagnosis was confirmed by immunohistochemistry on a skin biopsy specimen in CDC's laboratory in the early morning of October 12. The New York City Department of Health and CDC immediately implemented appropriate public health actions, including restricting access to two floors of 30 Rockefeller Plaza and evaluating workers for the need for prophylactic therapy. CDC sent additional personnel to New York, joining the more than 30 epidemiologists and other CDC staff assisting with worker injury and enhanced syndrome surveillance following the September 11 terrorist attack. Laboratory studies on the powder from the September 25 letter were negative for the organism causing anthrax. Subsequent investigation identified the letter that had arrived on September 18, which was found to be contaminated with *Bacillus anthracis*, the organism that causes anthrax.

On October 15, CDC was notified of a possible anthrax exposure on Capitol Hill. A letter, which has now been confirmed to have contained *B. anthracis*, was opened by a Senate staff member. This person took appropriate action, notifying emergency personnel, and public health measures were promptly implemented. Certain areas of the office building were closed, and employees were screened by history for exposure and started on antibiotic prophylaxis after a nasal swab was obtained to assess the extent of the exposure zone. CDC has sent over 70 epidemiologists, laboratorians, environmental health experts, industrial hygienists, and other public health professionals to Washington, DC, to assist local, state, and federal authorities in the investigation.

Environmental specimens have tested positive from the initial area of exposure as well as several other locations in Congressional office buildings. In addition, mail rooms in the U.S. Capitol complex have had positive environmental samples. Environmental specimens have also tested positive from mail facilities servicing the Departments of State and Justice, the CIA, the Walter Reed Army Institute of Research, and the U.S. Supreme Court.

Late Friday evening, October 19, enhanced regional surveillance activities—a collaborative effort between the Washington, DC, Department of Health (DCDOH), the Maryland Department of Health and Mental Hygiene, and the Virginia Department of Health—identified a patient with an acute respiratory illness who was an

employee of the U.S. Postal Service's Washington, DC, Processing and Distribution Center (the Brentwood facility). The patient's illness progressed, and on Sunday, October 21, the illness was confirmed as inhalational anthrax. Between October 20 and 22, three additional postal workers at the Brentwood facility were hospitalized for what was determined to be inhalation anthrax. On Thursday, October 25, a mail handler for diplomatic pouch mail at an off-site mail facility servicing the Department of State was hospitalized and subsequently confirmed as having inhalational anthrax. Two of these five workers have died.

On Saturday, October 20, CDC and DCDOH initiated an investigation of the Brentwood facility, based on the clinical presentation of illness in the index case. Although no specific exposure event was identified, the contaminated tightly sealed letter that was mailed to the Senator's office was processed at this facility on October 12 before entering the Capitol mail distribution system. The Brentwood facility was closed on October 21, and antibiotic prophylaxis was recommended to employees working there. In addition, business visitors to nonpublic operations areas of this facility also were offered antibiotics. Subsequently, antibiotic therapy has been recommended to all mail handlers in facilities receiving mail directly from the Brentwood facility pending results of ongoing epidemiologic and environmental investigation.

The first patient also worked at a second postal facility. On October 21, this facility also was closed. Antimicrobial prophylaxis also was recommended for workers at this facility pending further epidemiologic and environmental testing.

As of this morning—October 30—2 cases of inhalational anthrax have been identified in Florida, 5 cases of inhalational anthrax have been identified in Washington, DC, 1 case of inhalational anthrax and 6 cases of cutaneous anthrax have been identified in New York City, and 2 cases of inhalational anthrax and 4 cases of cutaneous anthrax have been identified in New Jersey.

CDC is working with U.S. Postal Service employees and managers on strategies to protect workers in mail-handling and processing facilities from exposure to anthrax. These strategies include administrative controls to limit the number of workers potentially exposed, engineering and house-keeping controls to prevent exposure, and personal protective equipment for workers handling mail.

The best defense against such biologic threats continues to be accurate information regarding how to recognize a potential threat and knowledge of appropriate actions. In the *Morbidity and Mortality Weekly Report (MMWR)* and in multiple health advisories distributed via the Health Alert Network, CDC has issued several updates on the investigations as well as interim guidelines for health departments with recommended procedures for handling such incidents. These guidelines include advice to the public and state and local health officials dealing with suspicious incidents, as well as guidance to clinical laboratory personnel in recognizing *Bacillus anthracis* in a clinical specimen. The guidelines also outline post-exposure prophylaxis and anthrax treatment

recommendations. In persons exposed to *Bacillus anthracis*, disease can be prevented with antibiotic treatment. Early antibiotic treatment of all forms of anthrax is essential. The *Bacillus anthracis* strains in this outbreak are susceptible to doxycycline and fluoroquinolones. Ciprofloxacin or doxycycline is recommended as the antibiotic for initial use for prophylaxis. Copies of the October 26, 2001, *MMWR*, which addresses these issues, have been provided to the Committee.

This is the first bioterrorism-related anthrax attack in the United States, and the public health ramifications of this attack continue to evolve. In collaboration with state and local health and law enforcement officials, CDC and the FBI are continuing to conduct investigations related to anthrax exposures. During this heightened surveillance, cases of illness that may reasonably resemble symptoms of anthrax will be thoroughly reviewed. The public health and medical communities continue to be on a heightened level of disease monitoring to ensure that any potential exposure is recognized and that appropriate medical evaluations are given. This is an example of the disease monitoring system in action, and that system is working.

Public Health Leadership

The Department of Health and Human Services' (DHHS) anti-bioterrorism efforts are focused on improving the nation's public health surveillance network to quickly detect and identify the biological agent that has been released; strengthening the capacities for medical response, especially at the local level; expanding the stockpile of pharmaceuticals for use if needed; expanding research on disease agents that might be released, rapid methods for identifying biological agents, and improved treatments and vaccines; and preventing bioterrorism by regulation of the shipment of hazardous biological agents or toxins.

As the nation's disease prevention and control agency, it is CDC's responsibility on behalf of DHHS to provide national leadership in the public health and medical communities in a concerted effort to detect, diagnose, respond to, and prevent illnesses, including those that occur as a result of a deliberate release of biological agents. This task is an integral part of CDC's overall mission to monitor and protect the health of the U.S. population.

In 1998, CDC issued *Preventing Emerging Infectious Diseases: A Strategy for the 21st Century*, which describes CDC's plan for combating today's emerging diseases and preventing those of tomorrow. It focuses on four goals, each of which has direct relevance to preparedness for bioterrorism: disease surveillance and outbreak response; applied research to identify risk factors for disease and to develop diagnostic tests, drugs, vaccines, and surveillance tools; infrastructure and training; and disease prevention and control. This plan was developed with input from state and local health departments, disease experts, and partner organizations such as the American Society for Microbiology, the Association of Public Health Laboratories, the Council of State and

Territorial Epidemiologists, and the Infectious Disease Society of America. It emphasizes the need to be prepared for the unexpected – whether it is a naturally occurring influenza pandemic or the deliberate release of anthrax by a terrorist. It is within the context of these overall goals that CDC has begun to address preparing our nation's public health infrastructure to respond to acts of biological terrorism. Copies of this CDC plan have been provided previously to the Committee. In addition, CDC presented in March a report to the Senate entitled *Public Health's Infrastructure: A Status Report*. Recommendations in this report complement the strategies outlined for emerging infectious diseases and preparedness and response to bioterrorism. These recommendations include training of the public health workforce, strengthening of data and communications systems, and improving the public health systems at the state and local level.

CDC's Strategic Plan for Bioterrorism

CDC outlined necessary steps for strengthening public health and healthcare capacity to protect the nation against bioterrorist threats in its April 21, 2001, *MMWR* release of *Biological and Chemical Terrorism: Strategic Plan for Preparedness and Response - Recommendations of the CDC Strategic Planning Workgroup*. This report reinforces the work CDC has been contributing to this effort since 1998 and lays a framework from which to enhance public health infrastructure. In keeping with the message of this report, five key focus areas have been identified which provide the foundation for local, state, and federal planning efforts: Preparedness and Prevention, Detection and Surveillance, Diagnosis and Characterization of Biological and Chemical Agents, Response, and Communication. These areas capture the goals of CDC's Bioterrorism Preparedness and Response Program for general bioterrorism preparedness.

Preparedness and Prevention

CDC has been working to ensure that all levels of the public health community – federal, state, and local – are prepared to work in coordination with the medical and emergency response communities to address the public health consequences of biological and chemical terrorism.

CDC is creating diagnostic and epidemiological guidelines for state and local health departments and will help states conduct drills and exercises to assess local readiness for bioterrorism. In addition, CDC, the Food and Drug Administration (FDA), the National Institutes of Health (NIH), the Department of Defense (DOD), and other agencies are supporting and encouraging research to address scientific issues related to bioterrorism. In some cases, new vaccines, antitoxins, or innovative drug treatments need to be developed, manufactured, and/or stocked. Moreover, we need to learn more about the pathogenesis and epidemiology of the infectious diseases which do not affect the U.S. population currently. We have only limited knowledge about how artificial methods of

dispersion may affect the infection rate, range of illness, and public health impact of these biological agents.

Detection and Surveillance

As was evidenced in Florida, New York, and Washington, DC, the initial detection of a biological terrorist attack occurs at the local level. Therefore, it is essential to educate and train members of the medical community – both public and private – who may be the first to examine and treat the victims. It is also necessary to upgrade the surveillance systems of state and local health departments, as well as within healthcare facilities such as hospitals, which will be relied upon to spot unusual patterns of disease occurrence and to identify any additional cases of illness. CDC is providing terrorism-related training to epidemiologists and laboratorians, infection control personnel, emergency responders, emergency department personnel and other front-line health-care providers, and health and safety personnel. CDC is providing educational materials regarding potential bioterrorism agents to the medical and public health communities on its website for Public Health Emergency Preparedness and Response at www.bt.cdc.gov. CDC is working with partners such as the Johns Hopkins Center for Civilian Biodefense Studies (www.hopkins-biodefense.org) and the Infectious Diseases Society of America to develop training and educational materials for incorporation into medical and public health graduate and post-graduate curricula. With public health partners, CDC is spearheading the development of the National Electronic Disease Surveillance System, which will facilitate automated, timely electronic capture of data from the healthcare system.

Diagnosis and Characterization of Biological and Chemical Agents

To ensure that prevention and treatment measures can be implemented quickly in the event of a biological or chemical terrorist attack, rapid diagnosis is critical. CDC has developed guidelines and quality assurance standards for the safe and secure collection, storage, transport, and processing of biologic and environmental samples. In collaboration with other federal and non-federal partners, CDC is co-sponsoring a series of training exercises for state public health laboratory personnel on requirements for the safe use, containment, and transport of dangerous biological agents and toxins. CDC, also in cooperation with the Association of Public Health Laboratories (APHL) and the National Laboratory Training Network (NLTN) have sponsored a “hands-on” laboratory course for public health microbiologists. In conjunction with the course, CDC produced two videos that were distributed to the participants as well as to members of the NLTN. The participants in this course are now using these videos and the other materials developed by CDC to train other laboratorians in their states. CDC is also enhancing its efforts to foster the safe design and operation of Biosafety Level 3 laboratories, which are required for handling many highly dangerous pathogens. Furthermore, CDC is

developing a Rapid Toxic Screen to detect people's exposure to 150 chemical agents using blood or urine samples.

Response

A decisive and timely response to a biological terrorist event involves a fully documented and well rehearsed plan of detection, epidemiologic investigation, and medical treatment for affected persons, and the initiation of disease prevention measures to minimize illness, injury and death. CDC is addressing this by (1) assisting state and local health agencies in developing their plans for investigating and responding to unusual events and unexplained illnesses, and (2) bolstering CDC's capacities within the overall federal bioterrorism response effort. CDC is formalizing current draft plans for the notification and mobilization of personnel and laboratory resources in response to a bioterrorism emergency, as well as overall strategies for vaccination, and development and implementation of other potential outbreak control strategies such as quarantine measures. In addition, CDC is developing national standards to ensure that respirators used by first responders and by other health care providers responding to terrorist acts provide adequate protection against weapons of terrorism.

Communication Systems

Rapid and secure communications are crucial to ensure a prompt and coordinated response to an intentional release of a biological agent. Thus, strengthening communication among clinicians, emergency rooms, infection control practitioners, hospitals, pharmaceutical companies, and public health personnel is of paramount importance. To this end, CDC is making a significant investment in building the nation's public health communications infrastructure through the Health Alert Network (HAN). HAN is a nationwide program to establish the communications, information, distance-learning, and organizational infrastructure for a new level of defense against health threats, including bioterrorism. Currently, 13 states are connected to all of their local health jurisdictions; 37 states have begun connecting to local providers as well; and CDC is also directly connecting to groups, such as the American Medical Association, to cast a broad net of coverage. CDC has also established the Epidemic Information Exchange (Epi-X), a secure, Web-based communications system that provides information sharing capabilities to state and local health officials. CDC also provides timely satellite broadcast and web-broadcast training through the Public Health Training Network. For example, CDC experts recently shared information on anthrax with physicians, hospitals, and other healthcare providers across the country.

Ongoing communication of accurate and up-to-date information helps calm public fears and limit collateral effects of the attack. CDC communicates with the public directly through its website on emergency preparedness and through a public inquiry telephone and email system, which, since the recent attacks, has responded to hundreds

of questions daily. In addition, CDC communicates to the public by releasing daily updates to the news media, answering inquiries from the press and providing medical experts for interviews.

The National Pharmaceutical Stockpile

Another integral component of public health preparedness at CDC has been the development of a National Pharmaceutical Stockpile (NPS), which is mobilized in response to an episode caused by a biological or chemical agent. The role of the CDC's NPS program is to maintain a national repository of life-saving pharmaceuticals and medical material that can be delivered to the site or sites of a biological or chemical terrorism event in order to reduce morbidity and mortality in a civilian population. The NPS is a backup and means of support to state and local first responders, healthcare providers, and public health officials. The NPS program consists of a two-tier response: (1) 12-hour push packages, which are pre-assembled arrays of pharmaceuticals and medical supplies that can be delivered to the scene of a terrorism event within 12 hours of the federal decision to deploy the assets and that will make possible the treatment or prophylaxis of disease caused by a variety of threat agents; and (2) a Vendor-Managed Inventory (VMI) that can be tailored to a specific threat agent. Components of the VMI will arrive at the scene 24 to 36 hours after activation. The NPS was mobilized for the first time on September 11, when a 12-hour push pack was deployed to New York City, delivering 50 tons of medical supplies to the site of the disaster in 7 hours. In addition, substantial quantities of VMI were delivered to New York City within 24 hours. Components of the VMI were deployed to Palm Beach, Florida, Montgomery County, Maryland, and Trenton, New Jersey, to provide adequate supplies of antibiotics to provide prophylaxis to individuals who were potentially exposed to anthrax. CDC has developed this program in collaboration with federal and private sector partners and with input from the states.

Core Capacities for State and Local Health Bioterrorism Preparedness and Response

CDC has been working with partners at all levels to develop core capacities needed to respond to public health threats and emergencies. CDC is also developing specific guidelines to assist public health agencies in their efforts to build comprehensive bioterrorism preparedness and response programs. This collaborative effort engages federal, state, and local partners in determining what is needed for state and local public health agencies to improve their preparedness and response to bioterrorism. This process enables health departments to more effectively target specific improvements to protect the public's health in the event of a biological or chemical terrorist event and will provide the framework for future program efforts. The core capacities effort is for dual purpose. While these capacities focus on bioterrorism events, they are also relevant to naturally

occurring infectious disease outbreaks and natural disasters.

Challenges

CDC has been addressing issues of detection, epidemiologic investigation, diagnostics, and enhanced infrastructure and communications as part of its overall bioterrorism preparedness strategies. Based on federal, state, and local response in the weeks following the events of September 11, and on recent training experiences, such as the National TOPOFF event and the *Dark Winter* exercise, CDC has learned valuable lessons and identified gaps that exist in bioterrorism preparedness and response at federal, state, and local levels. CDC will continue to work with partners to address challenges such as improving coordination among other federal agencies during a response and understanding the necessary relationship needed between conducting a criminal investigation versus an epidemiologic case investigation. These issues, as well as overall preparedness planning at federal, state, and local levels, require additional action to ensure that the nation is fully prepared to respond to acts of biological and chemical terrorism.

Disease experts at CDC are working with partners at other federal agencies and in state and local health departments to develop strategies to prevent the spread of disease during and after bioterrorist attacks. Specific components include (1) creating protocols for immunizing at-risk populations subject to the availability of suitable vaccines; (2) isolating large numbers of exposed individuals when there is risk that the disease can be spread from person to person; (3) reducing occupational exposures; (4) assessing methods of safeguarding food and water from deliberate contamination; and (5) exploring ways to improve linkages between animal and human disease surveillance networks since threat agents that affect both humans and animals may first be detected in animals.

Conclusion

In conclusion, CDC is committed to working with other federal agencies and partners as well as state and local public health departments to ensure the health and medical care of our citizens. We have made substantial progress to date in enhancing the nation's capability to prepare for and respond to a bioterrorist event. The best public health strategy to protect the health of civilians against a biological attack is the development, organization, and enhancement of public health prevention systems and tools. Priorities include strengthened public health laboratory capacity, increased surveillance and outbreak investigation capacity, and health communications, education, and training at the federal, state, and local levels. Not only will this approach ensure that we are prepared for deliberate bioterrorist threats, but it will also ensure that we will be able to recognize and control naturally occurring new or re-emerging infectious diseases. A strong and flexible public health infrastructure is the best defense against any disease outbreak.

Thank you very much for your attention. I will be happy to answer any questions you may have.