Public Health Emergency Response: The CDC Role

Strengthening the nation's public health system to protect Americans during public health emergencies

CDC's responsibility, on behalf of the Department of Health and Human Services (DHHS), is 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 could occur as a result of bioterrorism or any other deliberate attempt to harm the health of our citizens. This task is an integral part of CDC's overall mission to monitor and protect the health of the U.S. population.

A strong and flexible public health infrastructure is the best defense against any disease outbreak -- naturally or intentionally caused. CDC's on-going initiatives to strengthen disease surveillance and response at the local, state, and federal levels complement efforts to detect and contain diseases caused by the biological agents that might be used as weapons.

Unlike an explosion or a tornado, a bioterrorist attack could be invisible and silent, and thus would be difficult to detect at first. The release of a biological agent or chemical toxin might not have an immediate and visible impact because of the delay between exposure and onset of illness, or incubation period. The initial responders to such a biological attack would include local, county, and city health officers, hospital staff, members of the outpatient medical community, and a wide range of response personnel in the public health system.

CDC and the public health community at large is not involved in assessing the likelihood of a bioterrorism threat. Our responsibility in the overall federal counterterrorism response is to improve the public health community's preparedness to detect illness that may be related to a bioterrorism threat, and develop the appropriate public health structure and contingency plans to respond effectively in the event of a bioterrorism incident.

In recent years, it has become more common for public health disease outbreak investigators to consider the possibility of a terrorist event when they investigate the cause of an outbreak. It is not always clear in the first stages of an epidemiologic investigation whether an outbreak has a natural or man-made cause. The investigative skills, diagnostic techniques, and physical resources required to detect and diagnose a disease outbreak are the same ones required to identify and respond to a silent bioterrorist attack

CDC has a strategic plan to improve our preparedness for responding to any threat or actual act of bioterrorism. 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.

The effort to upgrade public health capabilities locally and nationally to respond to biological and chemical terrorism is underway. CDC, working in collaboration with State and local health departments, many other public health partners, and other Federal agencies, is leading the effort.

Four areas of preparedness are featured in CDC's strategic planning: 1) reinforce systems of public health surveillance to ensure rapid detection of unusual outbreaks; 2) build epidemiologic capacity to investigate and control health threats from such events; 3) enhance public health laboratory capability to diagnose the illness and identify etiologic agents most likely to be used in bioterrorist events; and, 4) develop and coordinate communications systems with other government agencies and the general public to disseminate critical information and allay unnecessary fear.

An improved public health infrastructure that can detect disease outbreaks early and provide treatment and disease control is important not only for issues related to bioterrorism but for all infectious diseases. In the best-case scenario, an observant, well trained health worker would recognize that something out of the ordinary has occurred and alert public health authorities through prearranged channels. For some infectious disease agents, we might have only a short window of opportunity -- between the time the first cases are identified and a second wave of people become ill -- to determine that an attack has occurred, to identify the organism, and to prevent further spread. Protection against bioterrorism requires a strong public health system at the local, state, and national levels.

Training disease detectives

First and foremost, local communities must have a coordinated response plan to a possible bioterrorist attack. These response plans should include law enforcement, medical first responders and public health officials. The FBI has jurisdiction for terrorism response. If bioterrorism is suspected, the local emergency response system should be activated.

CDC's Epidemic Intelligence Service (EIS) trains personnel to respond to outbreaks and other disaster situations to aid state and local officials in the identification of potential causes and implement appropriate solutions. It is interesting to remember that the EIS was established during the Cold War in response to the threat of biological warfare.

In addition, CDC trains Public Health Prevention Service (PHPS) specialists who can provide on-site programmatic support to extend the manpower of state and local public health staff.

Another HHS program, the Metropolitan Medical Response System, also helps communities prepare for coordinated response. So far, 97 cities nationwide have received assistance.

Laboratory capacity

In the event of a bioterrorist attack, rapid diagnosis will be critical to the

immediate implementation of prevention and treatment measures. Future events possibly even could involve organisms that have been genetically engineered to increase their virulence, manifest antibiotic resistance, or evade natural or vaccine-induced immunity.

Because none of the biological agents considered most likely to be used as bio-weapons are currently major public health problems in the United States, we have had limited capacity to diagnose them, either at the state and local or federal level. CDC is working with state health department laboratories to increase the capacity to identify possible disease agents.

We must also prepare for the possible use of other agents as bioterrorist threats.

CDC has helped State health departments acquire the capacity to detect outbreaks of foodborne diseases, including accidental as well as possible deliberate contamination. Providing state health departments with the capacity to detect outbreaks of diseases that could be caused by terrorists can help avert possible widespread consequences.

CDC has met with public health officials of various professional societies and at state and local public health laboratory levels to develop and enhance reference laboratory activity in key geographic areas. CDC awarded cooperative agreements to health departments to help upgrade state and local surveillance capabilities.

As part of the implementation of CDC's plan for emerging infections, CDC has established the Epidemiologic and Laboratory Capacity (ELC) program to help state and large local health departments develop the skills and resources to address whatever unforeseen infectious disease challenges may arise in the twenty-first century. One of the specific aims of the ELC program is the development of innovative systems for early detection and investigation of outbreaks. State and large local health departments will receive continued support from the ELC program.

Early detection

CDC has helped establish sentinel disease detection systems that involve local networks of clinicians and other health care providers. One such network includes emergency departments at hospitals in large U.S. cities. Another includes travel medicine clinics in the United States, plus overseas. A third network includes over 500 infectious disease specialists throughout the country.

CDC is using these and other provider-based networks to alert and inform the medical community so that health workers can help recognize and assess unusual infectious disease threats.

CDC has also entered into agreements with selected State health departments, in collaboration with local academic, government, and private sector organizations, to establish Emerging Infections Program (EIP) sites that conduct

active, population-based surveillance for selected diseases, as well as for unexplained deaths and severe illnesses in previously healthy people.

Epidemiology and Laboratory Capacity cooperative agreement funds have been used to provide more than 75 public health professionals (including 24 epidemiologists and 25 laboratorians) to meet some needs in the health departments.

Rapid Communications and Information Access

One of the major objectives in CDC's emerging infections plan is to improve CDC's ability to communicate with state and local health departments, U.S. quarantine stations, health care professionals, other public health partners, and the public.

In the event of an intentional release of a biological agent, rapid and secure communications will be especially crucial to ensure a prompt and coordinated response. In the case of some infectious diseases, each hour's delay would increase the probability that another group of people will be exposed, and the outbreak could spread both in number and in geographical range.

CDC may also need to communicate with WHO and with the ministries of health of other nations, especially if persons exposed in the United States have traveled to another country. Because of the ease and frequency of modern travel, an outbreak caused by a bioterrorist could quickly become an international problem.

To ensure rapid communication and access to critical health information, CDC is implementing the national Health Alert Network (HAN), in partnership with the National Association of County and City Health Officials (NACCHO), the Association of State and Territorial Health Officials (ASTHO), and other health organizations.

The HAN will establish communications, information, distance-learning, and organizational infrastructure for a new level of defense against bioterrorism and other health threats, linking all public health agencies at the local, state, and Federal levels via 1) continuous, high-speed connection to the Internet, 2) broadcast communications, and 3) satellite- and Web-based distance-learning.

National Pharmaceutical Stockpile (NPSP)

Once the cause of a terrorist-sponsored outbreak was determined, specific drugs, vaccines, and antitoxins might be needed to treat the victims and to prevent further spread.

Depending upon the pathogen that causes the outbreak, appropriate medical supplies may not be readily available to local responders, or in the quantity needed, since these organisms are uncommon causes of disease in the United States.

CDC has developed of a stockpile of pharmaceuticals to be able to reach victims of an incident anywhere in the continental U.S. within 12 hours. This system was proven for the first time when tons of medical supplies reached New York City within seven hours of deployment following the attack on the World Trade Center. CDC is developing an infrastructure for rapid delivery of pharmaceuticals and adequate monitoring and record-keeping systems.