# Bioterrorism as a Public Health Threat

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In addition to meeting the continuing threat of new and reemerging infectious diseases, public health officials must also prepare for the possible use of infectious agents as weapons by terrorists to further personal or political agendas. These were the conclusions of session panelists Scott Lillibridge, Centers for Disease Control and Prevention (CDC); Michael Skeels, Oregon State Public Health Laboratory; Marcelle Layton, New York City Department of Public Health; David Franz, U.S. Army Medical Research Institute of Infectious Diseases; and Randall Murch, Federal Bureau of Investigation (FBI).

The potential spectrum of bioterrorism ranges from hoaxes and use of non–mass casualty devices and agents by individuals and small groups to state-sponsored terrorism that employs classic biological warfare agents and can produce mass casualties. The agents of anthrax, plague, brucellosis, smallpox, viral encephalidites, and viral hemorrhagic fevers are of particular concern: they are relatively easy and inexpensive to produce, cause death or disabling disease, and can be aerosolized and distributed over large geographic areas. If released under ideal environmental circumstances, these agents can infect hundreds of thousands of persons and cause many deaths. Such scenarios would present serious challenges for patient management and for prophylaxis of exposed persons; environmental contamination could provide a continuing threat to the population (especially those exposed at the beginning of the crisis) and generate panic in the community.

Bioterrorist attacks could be covert or announced and could be caused by virtually any pathogenic microorganism. The case of the Rajneeshee religious cult in The Dalles, Oregon, is an example (1). The cult planned to infect residents with *Salmonella* on election day to influence the results of county elections. To practice for the attack, they contaminated salad bars at 10 restaurants with *S.* Typhimurium on several occasions before the election. A communitywide outbreak of salmonellosis resulted; at least 751 cases were documented in a county that typically reports fewer than five cases per year. Although bioterrorism was considered a possibility when the outbreak was being investigated by public health officials, it was considered unlikely. The source of the outbreak became known only when FBI investigated the cult for other criminal violations. A vial of *S.* Typhimurium identical to the outbreak strain was found in a clinical laboratory on the cult's compound, and members of the cult subsequently admitted to contaminating the salad bars and putting *Salmonella* into a city water supply tank. This incident, among other recent events, underscores the importance of improving preparedness at all levels.

A bioterrorist attack may be difficult to distinguish from a naturally occurring infectious disease outbreak. Investigators must first examine the etiology and epidemiology of an outbreak to identify its source, mode of transmission, and persons at risk. Certain clues may indicate whether an outbreak is the result of purposeful release of microorganisms. Naturally occurring diseases are endemic to certain areas and involve traditional cycles of transmission; some diseases occur seasonally, and sentinel cases are not uncommon. In contrast, a disease outbreak due to bioterrorism could occur in a nonendemic-disease area, at any time of year, without warning, and depending on the etiologic agent and mode of transmission, in large numbers—thousands of cases might occur abruptly. Public health officials must be appropriately sensitized to the possibility of bioterrorism when investigating disease outbreaks. Suspected bioterrorism should be reported promptly to FBI, which is responsible for coordinating interagency investigations of such episodes. FBI scientists are also well trained in forensic methods for criminal investigations and are prepared to react quickly and effectively.

Maintaining effective disease surveillance is an essential first step in preparedness and is important in helping law enforcement officials to react swiftly. Ensuring adequate epidemiologic and laboratory capacity nationwide are prerequisites to effective surveillance systems. Preparations also must include plans for rapid identification and characterization of agents involved and for emergency distribution of large quantities of medical supplies, especially antibiotics and vaccines. Coordination and communication links also need to be strengthened to minimize response time, especially at first when exposed but asymptomatic persons may still be treated prophylactically. Also, when response time is shortened, the possibility of apprehending perpetrators increases. Education and training in bioterrorism and its potential consequences must become national priorities.

Many agencies and organizations must work collaboratively to ensure national preparedness against bioterrorist attacks. CDC is well positioned to provide leadership in several areas. In partnership with state health departments, the agency maintains infectious disease surveillance systems and provides reference laboratory diagnosis and epidemiologic support, especially during outbreak investigations; disseminates public health recommendations and other information, issues quarantine measures, and provides expert advice on worker health and safety; and is the logical bridge between the public health community and FBI's scientific and response capabilities. Enhancing the public health infrastructure will improve U.S. ability to respond to any infectious disease outbreak and provide added value in the event of a bioterrorist event.

## References

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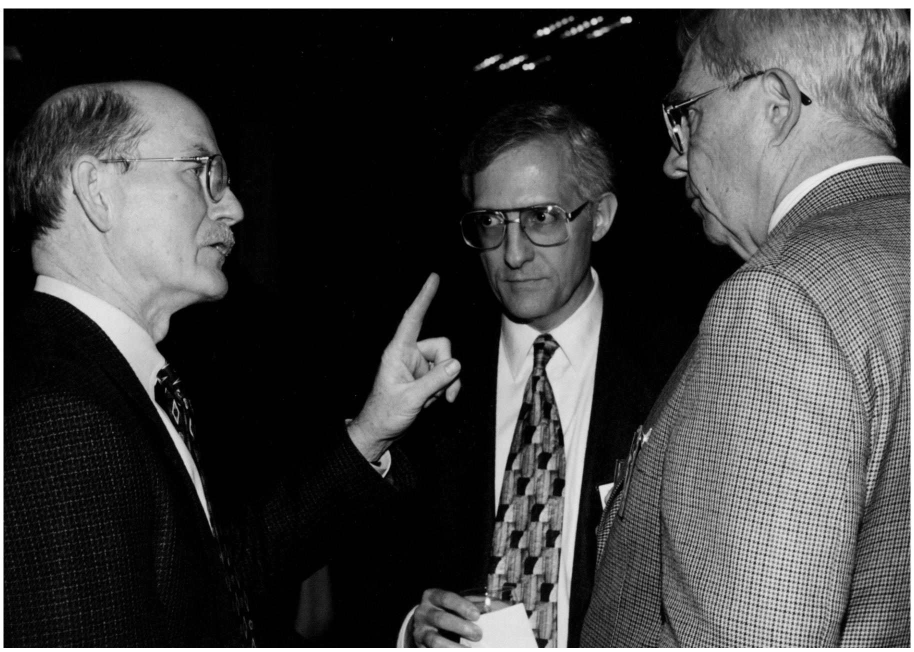

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