

## Role of NPHL in Responding to Bioterrorism

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Last fall, the CDC began a program for developing stronger public health preparedness for bioterrorism. They encouraged communities to develop or enhance public health capacities at the local and state level. Specifically, CDC funded projects for the following: a) to develop laboratory expertise for the identification of biological or chemical agents that would be involved in bioterrorist acts, b) to expand state and local laboratory capacity to identify organisms from acts of bioterrorism, c) to access planning activities among local and state health officials, d) to develop surveillance capability for detecting outbreaks of diseases that might have been caused by terrorists, and e) to improve the electronics communications network. [1] The CDC selected 43 laboratories to help rebuild the nation's public health infrastructure. The NPHL was one of the laboratories selected to provide diagnostic services regarding potential exposure of the public to infectious organisms from accidents or acts of bioterrorism. CDC Director Jeffrey P. Koplan, M.D., M.P.H., commented that "Every dollar we spend on preparing public health locally for even the possibility of a biological or chemical release among the civilian population is also a dollar that helps reinvigorate our

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public health infrastructure. The medical expertise, laboratories, and communication network needed to counter bioterrorism are the same resources that are needed to detect diseases in the community from any source, whether natural or deliberate." [1]

The CDC and APHL established a laboratory response network for bioterrorism (LRNB) that designated a four-tier nationwide laboratory infrastructure. The LRNB structure is as follows:

a) **Level A laboratories:** Most existing state and hospital laboratories are designated at this level. They will function to both "rule-out" organisms and to provide the transportation link to forward organisms to the Level B/C laboratories. Additional information

regarding the CDC's role and Level A laboratory procedures can be found at the following website, [www.bt.cdc.gov](http://www.bt.cdc.gov).

b) **Level B laboratories:** These laboratories operate at a Biosafety Level (BSL) 2/3 and have confirmation tests available to "rule-in" or "rule-out" organisms. These tests include specialized reagents for Bacteriophage assays and Direct Fluorescent Antibody staining. In addition, these laboratories have the reference capacity and transportation function to forward organisms to the Level C/D laboratories.

c) **Level C laboratories:** These laboratories which operate at a BSL-3, have additional confirmation tests including molecular assays, animal testing, and the reference capacity and transportation function to forward organisms to the Level D laboratory.

d) **Level D laboratories:** This is the highest level of the LRNB where definitive identification of bioterrorist agents would take place. This facility consists of a BSL-4 laboratory located at the CDC.

The Nebraska Public Health Laboratory has been designated as a level B/C facility. The NPHL uses a BSL-3 laboratory at UNMC for handling high risk specimens or isolates involved in accidental exposure or bioterrorist acts. When a local health officer is informed of a bioterrorist incident or threat, or suspects that cases of illness may be due to a bioterrorist incident they should proceed to a) notify their local law enforcement officers, b) notify their local FBI office, or the state FBI office at 1-402-493-8688 and, c) notify either county epidemiologists in Lincoln or Douglas County, or contact Dr. Tom Safranek at NHHS (1-402-471-0550).

The LRNB has developed diagnostic protocols that can be used to either "rule-in" or "rule-out" certain biological agents that represent a threat to the public. Each of the four LRNB laboratory levels has a specified list of diagnostic tests and procedures to identify the bioterrorism agents. This list is based on the bio-safety level classification of each agent, and the capacity of each laboratory to meet the biosafety level guidelines specified by the CDC and NIH for each organism. Several different scenarios could occur

anywhere in the state. An accident may occur with a truck carrying biological wastes, a threatening act may occur associated with a potential biological agent as seen in Lincoln on March 30th of this year, or an unusual organism may be encountered by a diagnostic laboratory. If a clinical specimen is encountered that contains a high-risk biological organism, a discussion should occur with personnel at the NPHL. A telephone call to the NPHL laboratory alerting them of the specimen may also be helpful in providing specific shipping instructions (1-402-559-7774 or 1-402-559-3032). Personnel at the NPHL have been trained in the handling and identification of *Bacillus anthracis*, *Brucella* spp., *Francisella tularensis*, *Yersinia pestis*. Persons at the NPHL can also forward any of these or other high-risk agents through the LRNB infrastructure to the CDC for diagnostic testing not available at NPHL. In addition to providing the diagnostic capacity to "rule-out" or "rule-in" certain bacterial agents of potential bioterrorist acts, the NPHL will be working with the appropriate agencies to provide training and educational material for the law enforcement agencies and the Level A laboratories in our state in the coming year. This material will be available in a multi-media format and focus on "ruling-out" specified agents. The training will emphasize bench-level safety issues regarding the handling of bacterial agents, viruses, and fungi since they will probably enter community laboratories as routine clinical specimens. More information on educational materials will follow through a separate mailing from NPHL.

James W. Snyder, director of the Microbiology Department at the University of Louisville School of Medicine, commented recently that "we must be prepared to accept the fact that it is impossible to fully protect against biological weapons and that people will die in spite of efforts to quickly recognize, detect and identify biological agents and their associated disease syndromes. Clinical microbiologists are encouraged to

meet the challenges of bioterrorism by preparing themselves and their laboratories for the inevitable day when they are called upon to examine either environmental or human samples for the presence of a biological agent. By creating and supporting an infrastructure comprised of training and education, surveillance, early warning, and communication networks, the frontline responders will be better prepared to recognize and respond to acts of terrorism involving the use of biological agents." [2]

In conclusion, the function of the NPHL is to serve as Nebraska's resource for diagnostic procedures related to high-risk biological organisms due to accidental exposure or from acts of bioterrorism. These functions include: a) to provide training for Level A laboratories to "ruleout" these high-risk organisms, b) to coordinate the transportation of suspected bioterrorism agents to the NPHL at UNMC through local law enforcement officers and the FBI, and c) to provide the diagnostic services and consultation necessary regarding potential exposure of the public to infectious organisms. Questions concerning isolates dealing with an agent involved in a natural disease process as a result of accidental exposure or any suspected bioterrorist agent, should be directed to Dr. Steven Hinrichs at (402) 559-4116, Tony Sambol at (402) 559-3032 or Peter Iwen at (402) 559-7774 at the NPHL.

References:

1. CDC Office of Communication-Media Relations press release, September 15, 1999.
2. James W. Snyder. Responding to Bioterrorism: The role of the Microbiology laboratory. American Society of Microbiology News, Volume 65, November 8, 1999, Pg 524-525.

**Protocols**

**Interim Recommended Notification Procedures for Local and State Public Health Department Leaders in the Event of a Bioterrorist Incident**

