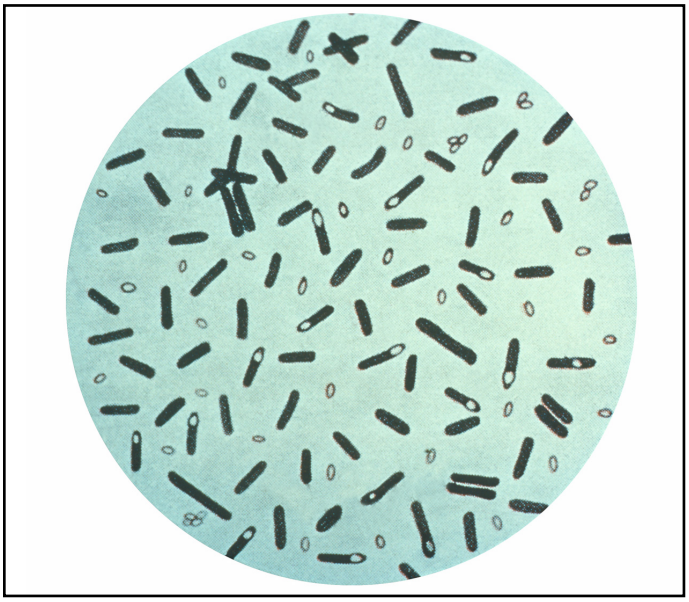
Developing a Faster Method for Measuring Botulinum Toxin in People

Botulinum toxin is a neurotoxin and is one of the most poisonous substances known. This toxic agent is near the top of the terrorism-threat list. Prompt diagnosis is essential, because the antitoxin is effective in reducing the severity of symptoms, if administered early. The test for measuring botulinum toxins requires injecting samples into mice and waiting two to three days to see if the mice die. Mice must be carefully selected and monitored continuously. In an emergency, this days-long test would consume critical hours, time that could determine whether people who were exposed to the toxin would receive the help they need.

Using mass spectrometry technology, scientists at CDC's Environmental Health Laboratory developed a much faster method for detecting botulinum toxin in people. This method reduces testing time to about three to four hours, and it can identify all seven types of botulinum toxins. This method also can be used to measure botulinum toxin in environmental samples such as milk, food, and water. By providing more rapid identification of botulinum toxin, this new CDC method enables faster treatment and more rapid public health action to prevent additional people from being exposed.



A photomicrograph of *Clostridium botulinum* stained with Gentian violet.

The Environmental Health Laboratory building where the botulinum toxin detection method was developed.

CDC's work with botulinum toxin is just one example of how laboratory scientists at CDC's Environmental Health Laboratory use advanced laboratory science and innovative techniques to help change and improve environmental public health. By preventing disease from exposure to toxic chemicals in the environment; responding to terrorism and public health emergencies involving chemicals; and advancing laboratory methods to diagnose and prevent disease, the laboratory has improved people's health across the nation and around the world.

For more information about CDC at Work, please contact us at (202) 245-0600 or go to http://www.cdc.gov/washington/.

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