Laboratory Error, Irradiation Effectiveness Problem With Anthrax Sample Shipments

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Failure of an irradiation procedure to inactivate Bacillus anthracis spores performed led to shipment of viable spores to 70 labs in 20 U.S. sites and 5 foreign countries. The spores were prepared at the U.S. Army’s Life Sciences Testing Facility (LTSF), Dugway Proving Ground, Utah and shipped on April 29, 2015 by commercial courier as part of a Department of Defense (DoD) effort to develop new diagnostic tests to identify the agents of bioterrorism. All samples associated with the failed inactivation were recalled by DoD. After one of the commercial laboratories involved in the study grew small amounts of B. anthracis from one of the samples, the Centers for Disease Control and Prevention (CDC) confirmed that the irradiation process did not completely inactivate the spores and that low levels of viable organism were present in the samples. CDC reported that the risk to laboratory workers who handled these samples was low, but not zero. Workers that manipulated samples outside of appropriate containment equipment and utilized procedures that may have created an aerosol which could cause inhalation anthrax were offered prophylaxis. Thirty-one personnel including 8 U.S. citizens and 23 DoD employees received postexposure prophylaxis. No suspected or confirmed cases of anthrax have been reported in the potentially exposed lab workers. Facilities that received sample shipments were instructed to destroy the samples by autoclaving, transfer them to a select agent-registered laboratory for destruction or retain the samples if the facility is registered as a select agent laboratory for B. anthracis. The Federal Select Agent Program is working with affected sites and state and local authorities to account for all samples. Laboratories that received B. anthracis samples from LTSF after June 1, 2014 were instructed to clean and decontaminated their facility. Recommendations for decontamination varied based on the lot number of samples received. The Environmental Protection Agency (EPA) suggested use of products currently registered for use against B. anthracis, but several agents including ethylene oxide, paraformaldehyde, hydrogen peroxide, peracetic acid, and sodium hypochlorite are not registered for use against B. anthracis. Use of unregistered products for anthrax (continued on next page) ➤
It’s not just PKUs anymore and newborn screening is no longer just blood spot testing. The Newborn Screening Laboratory has been testing dried blood spots since 1965! The initial test for phenylketonuria (PKU) was an inexpensive bacterial inhibition assay developed by Dr. Robert Guthrie. In the past 50 years, the number of disorders screened on Michigan newborn blood spots has increased to 53. Point of care testing has expanded the definition of newborn screening to include newborn hearing screening and critical congenital heart diseases. The Michigan Department of Health and Human Services Bureau of Laboratories and follow-up programs have worked closely with birthing hospitals, midwives, primary care providers and medical specialists to provide families the support needed to ensure a successful comprehensive newborn screening system. This 50 year achievement will be celebrated on September 16, 2015 from 8:00 am – 4:30 pm in Lansing. Laboratory tours will be available by registration only in the morning (at 8:00 am or 9:00 am), special recognition of birthing hospitals that have exceeded expectations in newborn screening responsibilities will be held at the Capitol at 10:00 am. Educational programs will be presented a few blocks away at the Lansing Center from 11:00 am – 4:30 pm. More details can be found at http://www.michigan.gov/mdch0,4612,7,132-2942,4911-4916-308666--.00.html. Interested parties can register for the event at https://

50 Years of Newborn Screening in Michigan
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Chemical Threat Preparedness: Northern Exposure Full-Scale Exercise
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The Michigan Department of Health and Human Services Bureau of Laboratories (MDHHS BOL) in partnership with Kent County Health Department, Region 6 Healthcare Coalition, and the Community Health Emergency Coordination Center participated in the National Guard Northern Exposure June 2015 Full Scale Exercise. MDHHS BOL would like to thank the 24 hospital/health departments that participated in the exercise. Participating laboratories received telephone calls from the CHECC asking for specific information found in their Chemical Threat Response Kits. The newly updated kits were provided to laboratories that received on-site training for “Laboratory Response and Hospital Preparedness in a Chemical Exposure Event.” Funding for training and kits is provided through the Public Health Emergency Preparedness Cooperative agreement. These funds are awarded to the Bureau of Laboratories for meeting all requirements as a level 1 laboratory in the Centers for Disease Control and Prevention (CDC) Laboratory Response Network—Chemical (LRN-C). Congratulations to the 20 laboratories scoring at least 80% or better in the exercise!

In addition, we would like to offer a special thank you to Spectrum Health of Grand Rapids who scored a 100% for their participation in this exercise. They performed a simulated specimen collection along with a full scale packaging and shipping exercise. Once the simulated specimens were received by the Bureau of Laboratories LRN-C level 1 laboratory, scientists were called to respond to the chemical exposure emergency for sample receipt, analysis, and submission of specimen result reports to Spectrum Health and the CHECC.

The Bureau of Laboratories appreciates our Michigan laboratory partners for their effort and response in public health threat exercises. If your laboratory has not been the recipient of a Chemical Threat Response kit and training since July 2014, please call Teresa Miller at (517) 241-0925 or email millert28@michigan.gov to arrange training for your facility.
Bacteria that are not routinely associated with human specimens often are difficult for the Clinical Microbiology Laboratory to identify. One such isolate, a Gram negative rod, was submitted to our laboratory for identification from Southeastern Michigan. The patient was a 74 year old male with a history of Myiasis. Fly larva from wounds on his leg had previously been submitted to the hospital for identification. This isolate grew from multiple blood cultures one week later. The initial Gram stain contained regular Gram negative bacilli. The 5% sheep blood agar grew small opaque colonies that were non-hemolytic, non-pigmented, and circular with a smooth texture. Growth on MacConkey was negative at 24 hours, but after four days incubation at 35°C grew small lactose negative, entire, circular colonies.

Conventional testing did not identify this isolate. MALDI-TOF did not yield a good identification but the best choice was Pseudomonas putida. Initial Identification by 16s sequencing was poor with the using a commercial library, however after checking http://blast.ncbi.nlm.nih.gov/blast/Blast.cgi Web site an identification of Ignatzschineria indica with a score of 99% was obtained.

Ignatzschineria species is not commonly found in human cultures, it was first described by Toth et al. (2001, 2007) and belongs to the class Gammaproteobacteria. It was isolated and is associated with the first and second larval stages of an obligate parasitic fly, Wohlfahrtia magnifica (Diptera: Sarcophagidae). It is noteworthy that after review we found that this organism is not included in either the commercial 16s sequencing or MALDI-TOF organism libraries and may have been the reason for the poor initial identification. This organism was sent to CDC and their laboratory confirmed the identification as Ignatzschineria indica.

Figure 1. Gram stain of Ignatzschineria indica by Steve Haskell (2015).

Figure 2. Ignatzschineria indica on blood agar media after 48 hours incubation at 35° by Steve Haskell (2015).

Figure 3. Ignatzschineria indica on MacConkey agar at 72 hours by Steve Haskell (2015).

Figure 4. Image of Wohlfahrtia magnifica from https://en.wikipedia.org/wiki/Wohlfahrtia_magnifica.
Ignatzschineria indica is an aerobic Gram-negative, non-sporulating, non-motile, regular-shaped Rod. Its cell wall contains the following fatty acids: C18:1, C16:0 and C14:0:6, the predominant respiratory Quinone is Q-8. The G+C content of its DNA is 42 mol%. Biochemical reactions for Ignatzschineria are as follows: positive for Oxidase, Catalase and PDA and Negative for Motility, Nitrate, Urease, Simmons’ Citrate, fermentation of Dextrose, oxidation of Dextrose, LDC, ODC, ADH, Indole, TSI was N/N.

References: