

USACHPPM Information Paper

Transportation of Anthrax Samples

18 October 2001



1. Background. Anthrax derives from the bacterial agent, *Bacillus anthracis*. *Bacillus anthracis* is a gram-positive, encapsulated, spore-forming, nonmotile rod. There are three forms of anthrax transmission --- cutaneous (skin), inhalation and intestinal. Anthrax is spread to humans through animals infected with the bacilli and through direct and deliberate exposure. Human anthrax is rare.

2. Symptoms. Exposure to *Bacillus anthracis* can initially cause fever, malaise, cough, mild chest discomfort, and swollen lymph nodes. Most cases occur within 48 hours of exposure. The incubation period can stem from a few hours to 7 days. There may be a short recovery phase followed by difficulty breathing, sweating, wheezing, bluish skin then death within 24-36 hours after onset of severe symptoms. Boillike lesions (about 1-3 centimeters in diameter) covered with black crusts are indicative of cutaneous and intestinal anthrax. Cutaneous anthrax occurs through direct skin exposure with the bacterium. Intestinal anthrax may follow consumption of contaminated meat and result in nausea, loss of appetite, vomiting, fever, abdominal pain, vomiting of blood and severe diarrhea. Death occurs in 25%-60% of untreated intestinal anthrax cases. Inhalation anthrax occurs when personnel breathe in the anthrax spore. Inhalation anthrax is most severe and generally 100% fatal if left untreated.

3. Transmission - Transmission occurs from contaminated articles, soil and animals. Anthrax spores remain virulent in soil, on articles and in dead animals for decades. Blood, skin lesion exudates, cerebrospinal fluid, pleural fluid, sputum, feces and urine from an infected person may contain the agent. However, person-to-person transmission of anthrax is extremely rare and highly unlikely.

4. Protective Measures - Centers for Disease Control and Prevention (CDC) Biosafety Level 2 containment is required for anthrax. (Laboratory facilities working with *Bacillus anthracis* should use Biosafety Level 3 standards.) Personnel handling suspected anthrax contaminated products should wear personal protective equipment (PPE). Minimal PPE is a full-face respirator, impermeable gloves, closed-toe footwear, and a full-length, long-sleeved, fully fastened laboratory coat or gown over street attire. (Exact PPE is determined based on risk assessment.) Never open a suspected anthrax specimen on a bench top.

5. Transportation of Suspected Anthrax - Package articles containing suspected anthrax the same as any infectious substance. Use a primary watertight container, wrap it in absorbent material, place in a secondary watertight container. The CDC recommends placing this entire packaging in a third leak proof container with a tight cover (e.g. a plain paint can). Place an OSHA biohazard label on this third container then place the entire package in a UN-approved outer packaging marked and labeled for 6.2 materials. (Triple packing provides added protection.) Use of a technical escort, chain of custody and security personnel is strongly recommended for safe transport. Do not transport a specimen until advance arrangements are made between the shipper, the transporter and the receiver to ensure expeditious carriage and delivery of the specimen. Until transported, store materials in a cool, dry and secure location. Refrigeration is not necessary. A shipping paper containing the following shipping description should accompany the shipment --- Infectious substance, affecting humans (*Bacillus anthracis*), 6.2, UN 2814, ____ (total number & quantity of samples). Notify the CDC using EA Form 101 prior to transporting a known anthrax specimen from one facility to another. (CLIA certified laboratories are exempt from this requirement.) A CDC Import Permit is required to import specimens from outside the continental United States. (Use of diplomatic pouches and/or the United States Postal Service to transport anthrax or infectious substance samples are prohibited!) Monitor transport of anthrax specimens within a facility at all times. (Follow established institutional procedures for internal transport of specimens.)

6. Decontamination - Wash exposed skin with soap and water. Use sodium hypochlorite solution 0.5% for 10-15 minutes maximum contact time on grossly contaminated skin. Autoclave, steam sterilize or irradiate all infectious and contaminated material. Formaldehyde solution in at least 8% and sporicidal agents like iodine and 0.5% sodium hypochlorite solution are effective against killing the anthrax spore. Thoroughly wash, disinfect or sterilize hair, wool and any animal feed or the article from which the anthrax originated.

7. Disposal - Dispose of decontaminated articles in a regular waste container. Deeply bury any dead animals at the site of death if possible.

8. Treatment - Seek professional medical advise immediately after a suspected exposure. Medical personnel will test personnel exposed to anthrax spores per established medical protocols. Qualified personnel should use rayon nasal swabs moistened with sterile distilled water or saline to preliminarily test for exposure. (Nasal swabs do not confirm that a person is infected with anthrax.) Use of blood cultures is also recommended. Treatment of patients exposed to anthrax is with antibiotic therapy. Ciprofloxacin (400 mg iv q 8-12hr), Doxycycline (200mg

iv initial, then 100mg iv q 8-12hr), or Penicillin (2 mil units iv q 2 hr) or Gentamicin is recommended for an adult exposure. Therapy is a full 60-day course of prophylaxis. Start therapy only when directed by a physician or other competent medical personnel. Use of antibiotics without physician approval may mask symptoms and delay proper therapy. It may also contribute to spore antibiotic resistance. Patient isolation and quarantine is not required.

9. **References** - 42 CFR Part 72; 49 CFR Parts 171-180; CDC Biosafety in Microbiological and Biomedical Laboratories, 4th Ed., May 1999; DA Pamphlet 385-69, Biological Defense RDTE Safety Standards (2000 Revised Draft); FM 8-33 Control of Communicable Diseases Manual, 16th Ed.; International Air Transport Association Dangerous Goods Code, 42nd Ed, dtd 1 January 2001; Memorandum, MCHO-CL, 16 Oct 2001, SUBJECT: Management of Patients with Potential Exposure to Anthrax Spores; USAMRIID Biological Warfare and Terrorism Medical Issues and Response Student Material Booklet, September 2000.

10. **Contacts** -

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- SBCCOM Chem/Bio Response Hotline - (877) 269-4496
- CDC Hotline - (800) 311-3435
- Infectious Substance Accidents - (800) 232-0124/(404) 633-5313
- CDC Transportation Issues - (404) 639-4418/(404) 639-3883
- CDC Import Permit - 1-888-CDC-FAXX (<http://www.cdc.gov/od/ohs/biosfty/imprtper.html>)

Our point of contact is Ms. Annjanette T. Ellison or Mr. Michael Diem at DSN 584-3651/(410) 436-3651. Address additional questions or concerns to Ms. Linda L. Baetz, USACHPPM Hazardous and Medical Waste Program Manager at DSN 584-5234/(410) 436-5234.

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