



INTRODUCTION TO CLINICAL MANAGEMENT OF ANTHRAX

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CLINICAL PRESENTATION

Cutaneous Anthrax	Inhalational Anthrax	Gastrointestinal Anthrax
<p>The most common and least dangerous form of infection. Occurs most commonly on the head, neck, forearms, and hands when spores get into the skin through a cut. The tissue around infection site develops symptoms 1-7 days after exposure. Symptoms can include small blisters or bumps, swelling, a painless skin sore with a black center.</p> <p>Without treatment, roughly 80% of patients will survive.</p>	<p>The most deadly form of infection. Anthrax spores are inhaled, affecting the lymph nodes before spreading throughout the rest of the body. This form of infection cannot be spread person to person. Infection develops within 1 week to 2 months of exposure. Symptoms include fever and chills, chest discomfort, shortness of breath, dizziness, confusion, cough, nausea, headache, sweats, extreme fatigue, and myalgias.</p> <p>Without treatment, only 10-15% of patients infected will survive. With aggressive treatment as much as 55% of patients may survive.</p>	<p>A rarer form of infection occurring when a person eats raw or undercooked meat from an animal infected with anthrax. Commonly affects the upper gastrointestinal tract, stomach, and intestines. Infection develops 1-7 days after exposure. Symptoms include fever and chills, swelling of neck, sore throat, dysphagia, hoarseness, nausea, diarrhea, headache, red eyes, stomach pain, fainting, and ascites.</p> <p>Without treatment, half of patients infected will die, however with treatment 60% of patients can survive.</p>

DIAGNOSIS

The only two ways to confirm an anthrax diagnosis are:

- To measure antibodies or toxins in the blood
- To test directly for *Bacillus anthracis* in a sample (blood, skin lesion swab, spinal fluid, or respiratory secretions)

POST-EXPOSURE PROPHYLAXIS

Full PEP regimen is 60 days: Ciprofloxacin, Doxycycline, Levofloxacin, Amoxicillin.

Anthrax vaccine adsorbed (AVA): 6 dose series and effective against inhalational anthrax if given with antibiotics

TREATMENT

Mild, uncomplicated cutaneous anthrax	5-7 days of PCN G or amoxicillin (doxycycline and ciprofloxacin can be alternatives)
Complicated cutaneous or systemic anthrax	10-14 days of PCN G or amoxicillin, doxycycline or ciprofloxacin
Severe cases or internal organ anthrax	Initial antibiotic choice should be combined with one or two of the following antibiotics: penicillin, ampicillin, ciprofloxacin, imipenem, meropenem, vancomycin, rifampin (rifampicin), clindamycin, linezolid or aminoglycoside.
Biological weapon or bioterrorism related anthrax	Ciprofloxacin and doxycycline are the first-choice agents with treatment duration of 42-60 days.

DECONTAMINATION

Any person coming in direct physical contact with a substance alleged or confirmed to contain *B. anthracis* should thoroughly wash the exposed skin and articles of clothing with soap and water and start PEP.

INFECTION PREVENTION

There is no data to suggest patient-to-patient transmission of Anthrax. Standard barrier isolation precautions are recommended for hospitalized patients, however there is no indication that N95 masks or PAPRs are necessary.

The associated training video to this document was published on 05/30/2024. The training can be viewed on Youtube at Mountain Plains RDHRS. The MPRDHRS JIT Learning Series is funded by Award Number 6 HITEP200043-01-03 from the Administration for Strategic Preparedness and Response (ASPR).

References: <https://www.cdc.gov/anthrax/bioterrorism/threat.html> Emerg Infect Dis. 2002 Oct; 8(10): 1015–1018. <https://www.cdc.gov/anthrax/basics/index.html> <https://www.cdc.gov/vaccines/vpd/anthrax/photos.html> <https://www.cdc.gov/anthrax/pdf/evergreen-pdfs/anthrax-evergreen-content-english.pdf> Doganay M, et al. Diagnostics 2023, 13, 1056. <https://www.cdc.gov/vaccines/vpd/anthrax/photos.html> Caspian J Intern Med. 2013 Spring; 4(2): 672–676. Ingelsby TV, et al. JAMA 2002. 288(17): 2236-2252.

