Anthrax

Information for Healthcare Facilities

Last revised: July 2026

Adapted with permission from the Kansas Poison Control.

Causative Agent	Bacillus Anthracis, a gram positive, rod shaped bacteria. Anthrax is spread by contact with the bacterium spores.
Hospital Precautions	Standard Precautions
Transmission	There is no risk of human-to-human transmission. Most common route of transmission is subcutaneous contact of spores.

Decontamination- Inhalation/Dermal

Remove contaminated clothing and wash exposed area thoroughly with soap and water for 10 to 15 minutes. For exposure to skin, wash with 0.5% sodium hypochlorite solution for 10-15 minutes by mixing 1 part household bleach with 9 parts water. If skin is broken only use soap and water. Double bag clothing, then incinerate soiled clothing. For indoor decontamination, use formaldehyde gas or aerosolized disinfectants combined with surface disinfectants for decontamination. There is no experience in the use of activated charcoal after ingestion of anthrax-contaminated food.

Mechanism

B. anthracis evades the immune system by producing an antiphagocytic capsule. The spore can survive in the environment for weeks, particularly if conditions of humidity and temperature are favorable. Infection requires exposure to a reasonably concentrated aerosol of anthrax spores; exposure to a few spores is not likely to cause infection.

Routes

Ingestion, dermal, inhalation. Swallowing or inhaling the agent can cause serious illness.

Symptoms/ Onset

- INHALATIONAL ANTHRAX - After the incubation period (1 to 6 days), initial presentation is similar to a mild respiratory infection (fever, malaise, fatigue, and non-productive cough), followed by sudden progression to pulmonary edema, then severe respiratory distress within 3 to 5 days after onset. **Widened mediastinum** on chest x-ray, which is evidence of hemorrhagic mediastinitis, is a hallmark finding in severe inhalational anthrax.
- CUTANEOUS ANTHRAX - Patients present with itching for the first 2 to 3 hours, followed by a papular, then vesiculated lesion. A necrotic eschar develops that eventually falls off over 2-3 weeks without scarring. The most serious form, malignant edema, forms after the vesicle phase when the lesion forms an eschar. Lesions often present on the face, head, or neck. It is typically surrounded by grossly edematous tissue with necrosis and blistering and can lead to airway compromise.
- GASTROINTESTINAL ANTHRAX – can be associated with sore throat, difficulty swallowing, fever, ulcerative lesions in the mouth or throat, nausea, vomiting, abdominal pain, and melena

Treatment - Post Exposure Prophylaxis (PEP)

- Ciprofloxacin, levofloxacin, and doxycycline are first-line antibiotics that could be used to prevent inhalational anthrax. When inhaled, anthrax spores typically take 1 to 6 days to be activated, but some spores can remain inside the body and take up to 60 days or more before they are activated. Duration of antibiotic treatment should be given for 60 days unless the Anthrax Vaccine Adsorbed (AVA) is co-administered (duration may be shortened to 42 days in healthy, non-pregnant adults only).
- When antibiotic use is indicated, appropriate dosing for PEP includes ciprofloxacin (500 mg bid for adult or 15 mg/kg bid for pediatric), levofloxacin (500 mg daily for adult or 8mg/kg bid in pediatric) or doxycycline (100 mg bid for adult or 2.2 mg/kg bid for pediatric). Depending on the strain of anthrax and susceptibility testing and results, additional antibiotics may be appropriate, such as penicillin, amoxicillin, and clindamycin.
- Anthrax Vaccine Adsorbed (AVA) protects against anthrax. It does not contain any anthrax bacteria and cannot give people anthrax. AVA is recommended in personnel at high risk of exposure or in combination with antibiotics for PEP in healthy, non-pregnant adults. Dosing is 0.5 mL subQ or IM at 0, 2, and 4 weeks post exposure. An investigational new drug (IND) can be pursued for use in other patient populations.
- Treatment of diagnosed GI, cutaneous, or inhalational anthrax with or without meningitis varies from PEP recommendations.
- Raxibacumab and obiltoxaximab are antitoxin therapies recommended to be used in conjunction with antibiotic therapy for systemic anthrax (with or without meningitis).

REFERENCES

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