Anthrax Disease, Vaccine and Recommendations

Clinical Characteristics of Anthrax

Cutaneous Anthrax (most common):

- Local skin involvement after direct contact with spores or bacilli
- Localized itching followed by:
  1) Papular lesion that turns vesicular, and
  2) Subsequent development of black eschar within 7-10 days of initial lesions

Gastrointestinal Anthrax:

Initial Phase

- Nausea, vomiting, anorexia, and fever progressing to severe abdominal pain, hematemesis, and diarrhea that is almost always bloody
- Rebound abdominal tenderness may develop
- Mesenteric adenopathy on CT scan likely
- Mediastinal widening on chest x-ray reported

Subsequent Phase

- 2-4 days after onset of symptoms, ascites develops as abdominal pain decreases
- Shock, death within 2-5 days of onset; 25—60% fatality rate

Inhalation Anthrax:

Initial Phase

- Non-specific symptoms such as low-grade fever, nonproductive cough , malaise, fatigue, myalgias, profound sweats, chest discomfort (upper respiratory tract symptoms are rare)
- Maybe rhonchi on exam, otherwise normal
- Chest X-ray shows mediastinal widening, pleural effusion (often), infiltrates (rare)

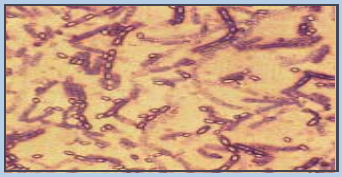
Subsequent Phase

- 1-5 days after onset of initial symptoms. May be preceded by 1-3 days of improvement
- Abrupt onset of high fever and severe respiratory distress (dyspnea, stidor, cyanosis)
- Shock, death within 24-36 hours; 89% fatality rate

Prevention With Vaccine

- Anthrax Vaccine Absorb (AVA), Biothrax ®
- AVA is the only human anthrax vaccine licensed in the USA
- AVA is indicated for active immunization for the prevention of disease caused by Bacillus *anthracis* , for persons aged 18 to 64 years of age whose occupation or other activities place them at high risk of exposure
- Duration of protection after the priming series is unknown
- The Academy Committee of Immunization Practices (ACIP) recommends a 5-dose pre-event and pre-exposure priming series administered Intramuscularly (IM)

Anthrax... The Basics



The Agent

Bacillus anthracis, gram positive, spore forming, non-motile bacillus

Transmission

Skin contact with infected animal / products , by breathing in anthrax spores from infected animal / products (e.g. wools), or eating undercooked meat from infected animals or dairy products

Incubation

Cutaneous: 5-7 days (range 1-2 days)
Gastrointestinal: 1-7 days
Inhalation: 1-7 days (range up to 44 days)

Communicability

Not known to spread from one person to another. Infection with anthrax occurs from contact with infected animal products and exposure when used as a weapon as such occurred in the USA in 2001

Potential bioterrorism agent (Category A as classified by CDC):

- **Stable spore form**
- **One deep breath may result in 8,000-40,000 spores being inhaled**
- **High fatality rate**
- **Illness with high fatality**

Anthrax Disease and Vaccine Recommendations

Anthrax Vaccine Recommendations

Pre-Exposure Primary Immunization Schedule for Persons 18—64 Years of Age:*

First Dose	0.5mL IM at 0 day
Second Dose	0.5mL IM at 4 weeks
Third Dose	0.5mL IM at 6 months
Fourth Dose	0.5mL IM at 12 months
Fifth Dose	0.5mL IM at 18 months

NOTE: When medically indicated (i.e. persons with coagulation disorders), administer AVA by the subcutaneous route

Pre-Exposure Vaccination Recommendations:

- Persons that come in contact in the workplace with imported animal hides, furs, bone meal, wool, animal hair, or bristles for whom industry standards and import restrictions are insufficient to prevent exposure from anthrax spores
- Veterinarians and other persons considered to be at high risk for anthrax exposure if they handle potentially infected animals in research settings or in areas with a high incidence of enzootic anthrax cases
- Military personnel who is determined by the Department of Defense (DoD) to have risk for exposure to intentional release of *B. anthracis* spores
- Environmental investigators and remediation worker who are at high risk for exposure to anthrax spores

NOTE: Currently pre-exposure vaccination is not recommended for emergency first responders, federal responders, medical personnel, or the general public

Post-Exposure Recommended Immunization Schedule

First Dose	0.5mL SC at 0 day
Second Dose	0.5mL SC at 2 weeks
Second Dose	0.5mL SC at 4 weeks

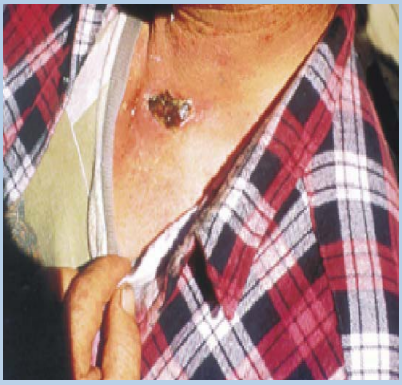
Vaccination regimen should be given in conjunction with 60 days of oral antibiotics. Review the 2009 ACIP Recommendations* for specifics on antimicrobial therapy.

Post-Exposure Vaccination and Antimicrobial Treatment Recommendations:

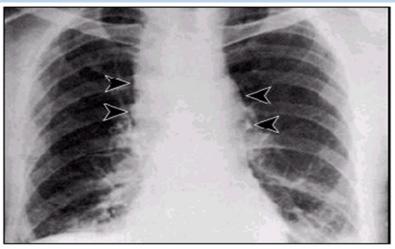
- Pregnant women at risk for exposure to inhalation anthrax spores
- Children 0-17 years of age at risk for exposure to inhalation anthrax spores
- Persons exposed to potentially aerosolized *B. anthracis* spores
- AVA, not licensed for post-exposure use (likely given through IND/EUA)**

**Use of Anthrax Vaccine in the United States: Recommendations from the Advisory Committee on Immunization Practices (ACIP)* . MMWR 2009; 59; 1-36. www.cdc.gov/vaccines/pubs/ACIP-list.htm#Anthrax

** IND– Investigational New Drug, EUA– Emergency Use Authorizations



Cutaneous Anthrax



Inhalation Anthrax

Contraindications: Severe allergic (anaphylactic) reaction to vaccine component or following a dose of AVA vaccine

Precautions: latex allergies, history of anthrax disease, immunocompromised conditions, pregnancy, moderate to acute illness

Adverse Events:
Local: Tenderness, pain, Erythema, arm motion limitation
Systemic: Muscle aches, headaches, fatigue

Storage and Handling:
Store Vaccine at 35-46° F
Do Not Freeze

Reporting information: Report anthrax disease immediately by telephone to the Communicable Disease Reporting System at (888) 397-3993