

# Anthrax

## Quick Information for Public Health Officials

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Agent: Spore-forming gram-positive bacteria

- Spores can
  - Spread by through the air over wide distances
  - Reactivate within the lungs up to 100 days after inhalation and result in disease
- Bacterial toxins
  - Responsible for tissue destruction, edema (swelling) and rapid development of intractable shock
  - Antibodies against toxin subunit -- 'protective antigen' or 'PA' -- are protective
    - Anthrax vaccine adsorbed ('AVA' or 'BioThrax') mechanism of action includes development of antibodies against PA
    - Passive antibodies against PA are available on an experimental basis

### Unique epidemiological characteristics

- No natural reservoir in West Virginia
- A newly reported case should be urgently investigated considering possible:
  - Laboratory artifact
  - Travel to endemic areas
  - Unusual exposure to animal or animal products imported from endemic areas (hides, wool, yarn, bone meal, improperly processed meat)
  - Injection drug use
  - Bioterrorism
- Incubation: 1-60 days; with most cases occurring within the first week. Incubation period varies with route of exposure
- No person-to-person transmission
- Mortality: 60 - 100% for inhalational anthrax and 20% for cutaneous anthrax without therapy - *dire emergency*
- Environmental: hardy for decades in the spore form; secondary aerosolization is possible

Laboratory confirmation Screening tests should be completed by the hospital laboratory. Office of Laboratory Services (OLS) confirmation is mandatory.

### Occupational health considerations

- Personal protective equipment and training is required for persons doing environmental investigation or mitigation activities in contaminated environments
- Prophylaxis is required for employees who have been exposed.
- Standard precautions are required for routine interactions with infected individuals

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### **Division of Infectious Disease Epidemiology**

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### Life-saving interventions - in order

1. Recognition / reporting / case-finding + early and appropriate therapy for systemic anthrax
  - a. Effective antibiotic (multi-drug) treatment reduces mortality if begun early.
  - b. Passive antibodies (anthrax immune globulin) and monoclonal antibodies against PA are recent experimental innovations that improve outcome.
  - c. Intensive medical monitoring in ICU
  - d. Expert consultation and reference to current treatment guidelines is highly recommended
  - e. Vaccination
2. Risk factor and environmental investigation to establish source of exposure AND define the population at risk PLUS rapid initiation of prophylaxis for the population at risk
  - a. Prophylaxis (Ciprofloxacin, doxycycline) is effective in preventing disease
  - b. Vaccine is also recommended for inhalation exposure because retained spores can reactivate up to 100 days and cause disease. Secondary aerosolization is possible in contaminated environments.
3. Antibiotic sensitivity testing of the isolate is extremely important. Results should be shared urgently with physicians and used to guide therapy and prophylaxis recommendations

### Training and communication considerations

- Physicians: recognition / treatment / reporting
- Infection Preventionists: reporting, active surveillance procedures
- Laboratories: screening tests and procedure for referral of specimens to OLS / reporting procedures
- Local health departments: case and outbreak investigation
- OEPS / BPH / incident command: investigation strategies / priorities and methods for control /occupational health

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