

Some Potential Biological Agents

Disease	Incubation	Symptoms	Signs	Diagnostic Tests	Transmission and Precautions	Treatment (adult dosage)	Prophylaxis
Anthrax (inhaled and cutaneous)	2-6 days Range: 1 day to 8 weeks	Inhalation: Flu-like symptoms, nausea, vomiting, abdominal pain, fever, respiratory distress, respiratory compromise Cutaneous: Initial itching papule, fever	Inhalation: fever, followed by abrupt onset of respiratory failure, confusion, widened mediastinum on chest X-ray (adenopathy), bloody pleural effusions, atypical pneumonia Cutaneous: Initial itching papule, 1-3 cm painless ulcer, then necrotic center, lymphadenopathy	Gram stain ("boxcar" shape); Gram positive bacilli in blood culture; ELISA for toxin antibodies to help confirm; Chest CT	Aerosol inhalation <i>No person-to-person transmission</i> Standard precautions	Mechanical ventilation; Antibiotic therapy (inhalation); Ciprofloxacin 400 mg IV q 8-12 hr OR Doxycycline 200 mg IV initial, then 100 mg IV q 8-12 hr PLUS Rifampin 10 mg/kg/d po (up to 600 mg day) OR Clindamycin 1200-2400 mg/day IM or IV	Ciprofloxacin 500 mg or Doxycycline 100 mg po q 12 hr - 8 weeks Amoxicillin in pregnancy and children (if susceptible) Vaccine if available
Botulism	12-72 hours Range: 2 hrs - 8 days	Difficulty swallowing or speaking (symmetrical cranial neuropathies); Symmetric descending weakness; Respiratory dysfunction; No sensory dysfunction; No fever	Dilated or un-reactive pupils; Drooping eyelids (ptosis); Double vision (diplopia); Slurred speech (dysarthria); Descending flaccid paralysis; Intact mental state	Mouse bioassay in public health laboratories (5-7 days to conduct); ELISA for toxin	Aerosol inhalation Food ingestion <i>No person-to-person transmission</i> Standard precautions	Mechanical ventilation; Parenteral nutrition Trivalent botulinum antitoxin available from State Health Departments and CDC	Experimental vaccine has been used in laboratory workers
Plague	1-3 days by inhalation	Sudden onset of fever, chills, headache, myalgia Pneumonic: cough, chest pain, dyspnea, fever Bubonic: Painful lymph nodes	Pneumonic: Hemoptysis, radiographic pneumonia -- patchy, cavities, confluent consolidation, hemoptysis, cyanosis Bubonic: typically painful, enlarged lymph nodes in groin, axilla, and neck	Gram negative coccobacilli and bacilli in sputum, blood, CSF, or bubo aspirates (bipolar, closed "safety pin" shape on Wright, Wayson's stains) ELISA, DFA, PCR	<i>Person-to-person transmission in pneumonic forms</i> Droplet precautions until patient treated for at least three days	Streptomycin 30 mg/kg/day in two divided doses x 14 days; Gentamicin 3-5 mg/dg/day IV/IM q 8 hr dosage; Tetracycline 2-4 g per day; Ciprofloxacin 400 mg IV q 12 hr	Asymptomatic contacts or potentially exposed Doxycycline 100 mg po q 12 hr; Ciprofloxacin 500 mg po q 12 hr; Tetracycline 250 mg po q 6 hr All x 7 days Vaccine production discontinued
Tularemia "pneumonic"	2-5 days Range: 1-21 days	Fever, cough, chest tightness, pleuritic pain Hemoptysis rare	Atypical pneumonia Radiographic: bilateral patchy pneumonia with hilar adenopathy (pleural effusions like TB); Diffuse, varied skin rash; May be rapidly fatal	Gram negative bacilli in blood culture on BYCE (Legionella) cysteine- or S-H-enhanced media; Serologic testing to confirm: ELISA, microhemagglutination; DFA for sputum or local discharge	Inhalation of agents <i>No person-to-person transmission but laboratory personnel at risk</i> Standard precautions	Streptomycin 30 mg/kg/day IM divided bid for 14 days; Gentamicin 3-5 mg/kg/day IV in three equal divided doses x 10-14 days; Ciprofloxacin possibly effective 400 mg IV q 12 hr (change to po after clinical improvement) x 10-14 days	Ciprofloxacin 500 mg po q 12 hr; Doxycycline 100 mg po q 12 hr; Tetracycline 250 mg po q 6 hr All x 2 wks Experimental live vaccine
Smallpox	12-14 days Range: 7-17 days	High fever and myalgia; itching; abdominal pain; delirium; Rash on face, extremities, hands, feet; confused with chickenpox which has less uniform rash	Maculopapular then vesicular rash -- first on the extremities (face, arms, palms, soles, oral mucosa); Rash with hard, firm pustules ("intra-dermal blisters"); Rash is synchronous on various segments of the body.	Electron microscopy of pustule content; PCR; Public health lab for confirmation; Rule out chicken pox with DFA	<i>Person-to-person transmission</i> Airborne precautions; Negative pressure; Clothing and surface decontamination	Supportive care; Vaccinate care givers Experimental: cidofovir (useful in animal studies)	Vaccination (vaccine available from CDC)

Biological Agents: General Guidance*

Diagnosis: Be Alert to the Following:

- Groups of individuals becoming ill around the same time
- Sudden increase of illness in previously healthy individuals
- Sudden increase in the following non-specific illnesses:
 - Pneumonia, flu-like illnesses, or fever with atypical features
 - Bleeding disorders
 - Unexplained rashes, and mucosal or skin irritation, particularly in adults
 - Neuromuscular illness, like muscle weakness and paralysis
 - Diarrhea
- Simultaneous disease outbreaks in human and animal or bird populations
- Unusual temporal or geographic clustering of illness (for example, patients who attended the same public event, live in the same part of town, etc.)



Confirmation and Technical Support

- To confirm cases, contact in-house or consulting infectious disease specialist
- Alert local diagnostic laboratory
- Department of Justice Domestic Preparedness National Response Hotline (800) 424-8802
- If you need further help in clinical diagnosis, call CDC hotline (770) 488-7100
- Information about clinical diagnosis and management
 - CDC website for bioterrorism: <http://www.bt.cdc.gov>
 - Center for Biosecurity at University of Pittsburgh Medical Center: <http://www.upmc-biosecurity.org>
 - Army Handbook of Medical Management of Biological Casualties (available at <http://www.usamriid.army.mil/education/bluebook/bluebook.doc>)

Decontamination Considerations

- Decontamination of patients usually not required for biological agents
- Clothing removal and biosafety bagging is recommended
- Handle equipment used according to standard infection control practices (see infection control practitioner or APIC website at <http://www.apic.org>)

Institutional Reporting

- If a reasonable suspicion of biological warfare agent exposure, contact hospital leadership (Chief of Staff, Hospital Director, etc.)
- Immediately discuss hospital emergency planning implications

Public Health Reporting

- Contact local public health office
- If unable to reach local public health officer, contact CDC: (770) 488-7100
- If needed, contact the FBI (for location of nearest office, see <http://www.fbi.gov/contact/fo/fo.htm>)

* The information in this card is not meant to be complete, but to be a quick guide. Please consult other references and expert opinion and check drug dosages, particularly for pregnancy and children.

Information source: the Employee Education System for the Office of Public Health and Environmental Hazards, Department of Veterans Affairs

