Illinois Department of PUBLIC HEALTH

Fact Sheet for Emergency Evaluation and Treatment

POISON Help 1-800-222-1222 ILLINOIS POISON CENTER

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN
Illinois Chapter

SEPTICEMIC PLAGUE

Background:

Plague is caused by *Yersinia pestis*, a naturally occurring pathogen with a long history of profound impact on human life. Septicemic plague can occur as a primary infection without buboes or as a secondary process from other forms of plague infection. When the disease occurs from natural infections, it is usually associated with poor sanitary conditions, overcrowding, and rodents affected by fleas which bite both humans and rodents. As a biological weapon, plague can potentially be distributed by aerosol of *Y. pestis* or by airborne dispersion of fleas infected with plague.

Clinical syndromes of plague include:

1) **Bubonic Plague** - characteristic buboes in the femoral area, groin, axillary or cervical lymph nodes
2) **Septicemic Plague** - occurs as a primary disease or secondary to bubonic plague with purpura, DIC and necrosis (perhaps the "Black Plague" of medieval times)
3) **Pneumonic Plague** -primarily from inhalation of aerosols
4) **Plague Meningitis** - found mainly in children
5) **Pharyngeal Plague** - asymptomatic carriers occur in contacts of plague patients
6) **Cutaneous Plague** - ulcer or pustule at inoculation site from flea bite

Incubation Period:

Adults: Usually 1 to 8 days after exposure to pathogen

Pediatrics: Usually 3 to 4 days, with a range of several hours to 10 days

Signs/Symptoms:

1) Initial presenting symptoms are non-specific and may include sudden high fever, chills, headache, malaise, nausea, vomiting, mental status changes, abdominal pain, cough or chest pain.
2) Purpura, DIC and necrosis; the purpura may be widespread and cover most of the body. Necrosis is usually on digits, extremities and nose.

Laboratory and Diagnostic Testing:

Call the local department of public health and IDPH to inform the state of a possible plague-infected patient and to obtain additional instructions for testing, treatment and isolation. Specimen collection should occur before the administration of antibiotics.

1) CXR may show infiltrates or consolidation if respiratory symptoms are present.
2) CSF if meningeal symptoms are present.
3) Multiple blood cultures from different sites 10 to 30 minutes apart.
4) Material from affected bubo should be sent for culture and microscopic examination.
5) Sputum and throat specimens for microscopy for specialized stains (gram negative bacilli on Wright, Giemsa or Wayson stains) and fluorescent antibody tests.
6) Skin scraping of cutaneous lesions.
7) Tracheal/bronchial washings may be necessary as an inpatient.
8) Serum for serologic testing to include *Yersinia pestis* F1 antigen and antibody to F1 antigen. Acute and recovery phase will be needed.

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Treatment:

Infected patients with respiratory signs and symptoms should be kept in isolation. Health care workers should wear masks because of the potential of transmission of concommitant pneumonic plague by aerosolized droplets.

Recommended Therapy for a Contained Casualty Setting — One antimicrobial agent should be selected. Therapy should be continued for 10 days.

Adults: *Preferred Choices* Streptomycin: 1 g IM twice daily ***or*** Gentamicin: 5 mg/kg IM or IV once daily or 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily	*Alternative Choices* Doxycycline: 100 mg IV twice daily or 200 mg IV once daily ***or*** Ciprofloxacin: 400 mg IV twice daily ***or*** Chloramphenicol: 25 mg/kg IV 4 times daily
Children: *Preferred Choices* Streptomycin: 15 mg/kg IM twice daily (maximum daily dose, 2 g) ***or*** Gentamicin: 2.5 mg/kg IM or IV 3 times daily	*Alternative Choices* Doxycycline: If ≥45 kg, use adult dosage If <45 kg, 2.2 mg/kg IV twice daily (maximum dose 200 mg/d) ***or*** Ciprofloxacin: 15 mg/kg IV twice daily ***or*** Chloramphenicol: 25 mg/kg IV 4 times daily
Pregnant women and adolescents: *Preferred Choices* Gentamicin: 5 mg/kg IM or IV once daily or 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily	*Alternative Choices* Doxycycline: 100 mg IV twice daily ***or*** 200 mg IV once daily ***or*** Ciprofloxacin: 400 mg IV twice daily

Mass Casualty Setting and Post-Exposure Prophylaxis — Duration of treatment of plague in mass casualty setting is 10 days. Duration of post-exposure prophylaxis to prevent plague infection is 7 days.

Adults: *Preferred Choices* Doxycycline: 100 mg orally twice daily ***or*** Ciprofloxacin: 500 mg orally twice daily	*Alternative Choice* Chloramphenicol: 25 mg/kg orally 4 times daily
Children: *Preferred Choices* Doxycycline: If ≥45 kg, use adult dosage If <45 kg, 2.2 mg/kg orally twice daily ***or*** Ciprofloxacin: 20 mg/kg orally twice daily	*Alternative Choice* Chloramphenicol: 25 mg/kg orally 4 times daily
Pregnant women and adolescents: *Preferred Choices* Doxycycline: 100 mg orally twice daily ***or*** Ciprofloxacin: 500 mg orally twice daily	*Alternative Choice* Chloramphenicol: 25 mg/kg orally 4 times daily