

# Plague

## Reporting Obligations

Plague is designated as a disease of public health significance and is reportable under the Ontario Health Protection and Promotion Act. Report all suspect and confirmed cases within **one business day** to the health unit.

### REPORTING FORM

## Epidemiology

### Aetiologic Agent:

The causative agent of plague is *Yersinia pestis* (*Y. pestis*), a gram-negative coccobacillus.

### Clinical Presentation:

Clinical illness is characterized by fever, chills, headache, malaise, prostration, and leukocytosis manifesting in one or more of the three main forms of plague in humans.

Bubonic plague is the most common form of human plague, resulting from the bite of an infected flea that has fed on an infected rodent, such as a rat. It presents as acute lymphadenitis in lymph nodes that drain the site of the fleabite (forming a bubo) and occurs more often in inguinal nodes and less commonly in axillary and cervical nodes. Lymph nodes become swollen and tender and may suppurate; fever is present.

Septicemic plague: All forms of plague, including those without lymphadenopathy may progress to septicemic plague, with dissemination of the bacillus by the bloodstream to diverse parts of the body.

Pneumonic plague: An infection of the lungs caused by the plague bacillus. Secondary involvement of the lungs results in pneumonia; mediastinitis or pleural effusion may develop. Secondary pneumonic plague is of special significance since respiratory droplets may serve as the source of person-to-person transfer with resultant primary pneumonic plague.

Untreated bubonic plague has a fatality rate of 50%; pneumonic and septicemic plagues are fatal if not treated.

### Modes of transmission:

**Bubonic:** Bite from an infected flea, which is the most common mode of transmission, or by handling tissues of an infected animal.

**Pneumonic:** Inhalation of droplets or contact with sputum from an infected person or animal.

**Septicemic plague:** All forms of plague may progress to septicemic plague.

### Incubation Period:

From 1-7 days for bubonic plague and 1-4 days for primary plague pneumonia.

### Period of Communicability:

Bubonic plague is not usually transmitted directly from person to person; pneumonic plague can be highly communicable under appropriate environmental conditions. Fleas may remain infective for months.

## Risk Factors/Susceptibility

Susceptibility is general and immunity after recovery is relative and may not protect against a large infective dose. Risk factors include: a bite from an infected flea within the last 4 weeks, contact with animals, wild carnivores or rodents and travel outside the province in the last 7 days to an endemic area.

## Diagnosis & Laboratory Testing

Laboratory confirmation of infection with clinically compatible signs and symptoms: Isolation of *Yersinia pestis* from an appropriate clinical specimen (e.g., body fluids) or a significant (i.e., fourfold, or greater) rise in serum antibody titre to *Y. pestis* fraction 1 (F1) antigen by enzyme immunoassay (EIA) or passive hemagglutination/inhibition titre.

### TESTING INFORMATION & REQUISITION

## Treatment & Case Management

Treatment is under the direction of the attending health care provider. Rapid diagnosis and treatment is essential to reduce complications and fatality.

Untreated bubonic plague has a fatality rate of 50%. Several antibiotics can effectively treat plague along with supportive therapy.

Provide education about the infection and how it is spread. Advise on the use of insecticides on clothing and luggage of infected persons.

For contacts of pneumonic plague (household members or those that have been within 2 meters of a coughing patient in the previous 7 days): provide antibiotic prophylaxis (doxycycline or ciprofloxacin) and place under surveillance for 7 days.

Contacts of bubonic plague are those that have had direct contact with infected body fluids or tissues (e.g., fluids from buboes).

Public Health staff will be involved in case and contact follow up.

### Patient Information

#### PATIENT FACT SHEET

### References

1. [Ministry of Health, Infectious Diseases Protocol - Ontario Public Health Standards, 2022.](#)

### Additional Resources

1. [Public Health Ontario. "Plague". December 2022.](#)
2. [Centers for Disease Control and Prevention. "Plague Information."](#)
3. Heymann, D.L. Control of Communicable Disease Manual (21st Ed.). Washington, American Public Health Association, 2022.
4. [Public Health Agency of Canada, The Plague, 2022](#)