

Plague and Bioterrorism

What is plague?

Plague is an infectious disease caused by the bacterium *Yersinia pestis* (*Y. pestis*) that is found in rodents and their fleas. In people, plague has three forms:

- Bubonic, an infection of the lymph glands;
- Pneumonic, an infection of the lungs; and
- Septicemic, an infection of the blood.

Plague is an ancient disease that can be found throughout the world. It occurs occasionally in the United States, particularly in the western and southwestern areas of the country including Texas.

How is plague spread?

Infected fleas spread plague organisms to humans and other animals. Fleas become infected by feeding on rodents such as chipmunks, prairie dogs, ground squirrels and mice that have the bacteria in their bloodstream. Bubonic plague, the most common form, results from flea bites or by exposure to infected materials through a break in the skin. Pneumonic plague is caused when a person breathes in plague bacteria then can spread from person to person in air-borne droplets released when coughing. Septicemic plague occurs when plague bacteria multiply in the blood; this type of plague does not spread person to person.

Can plague be used as a bioterrorism threat?

Several terrorist groups and some nations are believed to have or are experimenting with biological weapons programs. Plague could be used in an aerosol attack causing the pneumonic type. Once people have the disease, the bacteria can spread to others in close contact. A bubonic plague attack could be caused by releasing plague-infected fleas or animals. The *Y. pestis* bacterium occurs in nature and also is widely available in microbiology laboratories around the world. Thousands of scientists are working with plague organisms. However, manufacturing an effective weapon using *Y. pestis* would require advanced knowledge and technology.

What are the symptoms?

- Signs of bubonic plague are swollen, tender lymph glands, headaches, fever, chills, exhaustion and a history of possible exposure to infected rodents, rabbits or fleas.
- Symptoms of pneumonic plague include fever, headache, weakness and rapidly developing pneumonia with shortness of breath, chest pain and cough. The pneumonia progresses for 2 to 4 days and may cause respiratory failure and shock.
- People with septicemic plague have fever, chills, abdominal pain, shock and bleeding into skin and other organs.

How long does it take for a person to become sick?

A person usually becomes ill from 1 to 6 days after being exposed to the plague bacteria. About half of all people with untreated plague die.

How is plague treated?

People who have had close contact with an infected person can greatly reduce the chance of becoming sick if they begin treatment within 7 days of exposure and continue taking antibiotics for 7 days. Several types of antibiotics are used to prevent and treat plague. Oral medications are a tetracycline such as doxycycline or a fluoroquinolone such as ciprofloxacin. Sometimes streptomycin or gentamicin antibiotics are used. These antibiotics must be taken according to directions for as many days as directed, usually from 10 to 14 days. All the medication must be taken. People with suspected plague should be hospitalized and kept away from other people.

Is there a vaccine?

A plague vaccine is not available for use in the United States.

Would enough medication be available in the event of a bioterrorism attack?

Public health officials have large supplies of drugs, including any antibiotics needed in the event of a bioterrorism attack. These supplies can be sent anywhere in the United States within 12 hours.

How long can plague bacteria exist in the environment?

Yersinia pestis is easily destroyed by sunlight and drying. When released into the air, the bacterium will survive for up to one hour.

How can I protect myself?

Control rodent and flea populations. Avoid contact with rats, prairie dogs and other rodents. Avoid flea bites by using insect repellents. Treat pets for flea control regularly. Rat-proof buildings, store food appropriately and dispose of garbage. Wear gloves when hunting or handling wildlife. If you suspect you or others have been exposed to plague, get immediate medical attention.

What is the public health system doing about the possibility of an outbreak?

Local, state and federal public health agencies are actively working with local health care providers, hospitals, emergency response teams, laboratories, veterinarians and others to prepare for large outbreaks and biological disasters of all types, including plague. If bioterrorism is suspected, the Department of State Health Services notifies the CDC, FBI and other appropriate authorities.

Where can I get more information?

Contact your local health department. Plague information can be found on the Department of State Health Services Web site at www.dshs.state.tx.us and the CDC Web site at www.bt.cdc.gov/agent/plague.