

Plague

What is the plague?

Plague is a disease that affects humans and other mammals. It is caused by the bacterium, *Yersinia pestis*. Humans usually get plague after being bitten by a rodent flea that is carrying the plague bacterium or by handling an animal infected with plague. Plague is infamous for killing millions of people in Europe during the Middle Ages. Today, modern antibiotics are effective in treating plague. Without prompt treatment, the disease can cause serious illness or death. Presently, human plague infections continue to occur in the western United States, but significantly more cases occur in parts of Africa and Asia.

What kind of germ is plague?

The bacteria that cause plague, *Yersinia pestis*, maintain their existence in a cycle involving rodents and their fleas. In urban areas or places with dense rat infestations, the plague bacteria can cycle between rats and their fleas. The last urban outbreak of rat-associated plague in the United States occurred in Los Angeles in 1924-1925.

Since that time, plague has occurred in rural and semi-rural areas of the western United States, primarily in semi-arid upland forests and grasslands where many types of rodent species can be involved. Many types of animals, such as rock squirrels, wood rats, ground squirrels, prairie dogs, chipmunks, mice, voles, and rabbits can be affected by plague. Wild carnivores can become infected by eating other infected animals.

Scientists think that plague bacteria circulate at low rates within populations of certain rodents without causing excessive rodent die-off. These infected animals and their fleas serve as long-term reservoirs for the bacteria. This is called the enzootic cycle.

Occasionally, other species become infected, causing an outbreak among animals, called an epizootic. Humans are usually more at risk during, or shortly after, a plague epizootic. Scientific studies have suggested that epizootics in the southwestern United States are more likely during cooler summers that follow wet winters. Epizootics are most likely in areas with multiple types of rodents living in high densities and in diverse habitats.

Diagnosis

Plague is a plausible diagnosis for people who are sick and live in, or have recently traveled to, the western United States or any other [plague-endemic area](#). The most common sign of bubonic plague is the rapid development of a swollen and painful lymph gland called a bubo. A known flea bite or the presence of a bubo may help a doctor to consider plague as a cause of the illness.

In many cases, particularly in septicemic and pneumonic plague, there are no obvious signs that indicate plague. Diagnosis is made by taking samples from the patient, especially blood or part of a swollen lymph gland, and submitting them for laboratory testing. Once plague has been identified as a possible cause of the illness, appropriate treatment should begin immediately.

Treatment

Plague is a very serious illness, but is treatable with commonly available antibiotics. The earlier a patient seeks medical care and receives treatment that is appropriate for plague, the better their chances are of a full recovery.

People in close contact with very sick pneumonic plague patients may be evaluated and possibly placed under observation. Preventive antibiotic therapy may also be given, depending on the type and timing of personal contact.

How can humans get plague?

The plague bacteria can be transmitted to humans in the following ways:

Flea bites. Plague bacteria are most often transmitted by the bite of an infected flea. During plague epizootics, many rodents die, causing hungry fleas to seek other sources of blood. People and animals that visit places where rodents have recently died from plague are at risk of being infected from flea bites. Dogs and cats may also bring plague-infected fleas into the home. Flea bite exposure may result in primary bubonic plague or septicemic plague.

Contact with contaminated fluid or tissue. Humans can become infected when handling tissue or body fluids of a plague-infected animal. For example, a hunter skinning a rabbit or other infected animal without using proper precautions could become infected with plague bacteria. This form of exposure most commonly results in bubonic plague or septicemic plague.

Infectious droplets. When a person has plague pneumonia, they may cough droplets containing the plague bacteria into air. If these bacteria-containing droplets are breathed in by another person, they can cause pneumonic plague. Typically, this requires direct and close contact with the person with pneumonic plague. Transmission of these droplets is the only way that plague can spread between people. This type of spread has not been documented in the United States since 1924, but still occurs with some frequency in developing countries. Cats are particularly susceptible to plague, and can be

Prevention

1. Reduce rodent habitat around your home, work place, and recreational areas. Remove brush, rock piles, junk, cluttered firewood, and possible rodent food supplies, such as pet and wild animal food. Make your home and outbuildings rodent-proof.
2. Wear gloves if you are handling or skinning potentially infected animals to prevent contact between your skin and the plague bacteria. Contact your local health department if you have questions about disposal of dead animals.
3. Use repellent if you think you could be exposed to rodent fleas during activities such as camping, hiking, or working outdoors. Products containing DEET can be applied to the skin as well as clothing and products containing permethrin can be applied to clothing (always follow instructions on the label).
4. Keep fleas off of your pets by applying flea control products. Animals that roam freely are more likely to come in contact with plague infected animals or fleas and could bring them into homes. If your pet becomes sick, seek care from a veterinarian as soon as possible.
5. Do not allow dogs or cats that roam free in endemic areas to sleep on your bed.

