

Plague Fact Sheet
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Q: What causes plague?

A: Plague is an infectious disease of animals and humans caused by *Yersinia pestis*, a bacterium.

Q: What species are typically at risk for developing plague infection?

A: Wild rodents (eg, rats, ground squirrels, and prairie dogs) are the reservoir species for the disease. Other mammals, such as rabbits, dogs, coyotes, raccoons, skunks, goats, llamas, and especially cats, may also become infected. Domestic cats appear to have increased susceptibility, and nearly 60% of cats affected will eventually die of the disease.

Q: How can humans acquire plague?

A: Humans may develop bubonic, primary septicemic, or pneumonic plague after becoming infected with *Y. pestis* from the bite of infected fleas; by handling tissues of infected animals, especially rodents and rabbits; or by contact with airborne droplets from human patients or household pets (especially cats) with plague pharyngitis or pneumonia.

Q: How can animals acquire plague?

A: Fleas are a major vector for transmission of the disease-causing bacteria. In addition to fleas, animals may be exposed to plague from direct contact with infected animals or their tissues (eg, eating infected prey or carrion), eating feed contaminated with excretions from infected animals, inhalation of aerosolized *Y. pestis* in respiratory droplets from infected animals, or even digging in soil contaminated with the bacteria. Raptors may assist in the spread of plague through transport of infected fleas or prey. Carnivores are effective transporters of infected fleas to other rodent populations as well as to humans and are most often the direct source of human infection. Infection of

carnivores is most likely due to ingestion of infected animals rather than fleabites. Similarly, ingestion appears to be the source of the disease in goats, sheep, and camels.

Q: What are the signs of plague in humans?

A: Clinical signs in humans usually develop within 2 to 6 days after infection and include sudden onset of headache, fever, chills, and weakness. An acutely swollen and painful lymph node (bubo) can appear approximately 24 hours after the start of clinical signs. Some individuals may develop septicemia without a bubo (primary septicemic plague), or septicemia may occur as a result of bubonic plague. Gangrene (hence the name 'black death'), clotting problems, and multiple organ failure may result from advanced plague septicemia.

Secondary pneumonic plague develops in approximately 10% to 15% of patients with bubonic or primary septicemic plague by spread of *Y. pestis* to the lungs. Clinical signs in patients with pneumonic plague include cough, chest pain, bronchopneumonia, and hemoptysis. Primary pneumonic plague caused by inhalation of *Y. pestis* is rare but has been reported after handling of cats with pneumonic plague.

Q: What are the signs of plague in animals?

A: The disease symptoms in animals vary and are dependent on many factors, especially route of exposure and susceptibility of the host. Some animals, such as cats, seem to be much more susceptible or at risk than others, such as cattle and horses. The term bubonic plague means that bubos (enlarged lymph nodes) are present with the disease; however, plague can occur without causing them. Plague can also occur in septicemic and pneumonic forms in animals. An ocular form has also been documented in deer. Signs in animals, especially cats, may include lethargy, signs of depression, anorexia, vomiting, diarrhea, dehydration, fever, enlarged or abscessed lymph nodes, mouth lesions, muscle soreness, coughing, and weight loss. If the disease progresses to septicemic plague, the animal may also have signs of shock, have trouble breathing (likely from pulmonary edema), or develop disseminated intravascular coagulation. Animals may develop septicemic plague or pneumonic plague without developing a bubo.

Q: How deadly is plague?

A: The case fatality rate for untreated bubonic plague in humans is approximately 50% and in cats is nearly 60%. Untreated primary septicemic plague and pneumonic plague are always fatal. Modern treatment with antibiotics has markedly reduced the number of fatalities from bubonic plague. Pneumonic and septicemic plague also respond if recognized and treated early.

Q: Where can plague be found?

A: Areas of plague exist on all continents, with the exception of Australia and Antarctica. In North America, plague is found in animals and their associated fleas from the Pacific Coast to the Great Plains and from southwestern Canada to Mexico. According to the CDC, most human cases within the United States occur within 2 regions:

- Northern New Mexico, northern Arizona, and southern Colorado.
- California, southern Oregon, and far western Nevada.

Q: How is plague diagnosed?

A: *Yersinia pestis* may be identified microscopically by examination of stained tissue, blood, saliva or cerebrospinal fluid. Plague infection may also be diagnosed through culture or laboratory testing.

Q: How is plague treated?

A: If diagnosed in time, bubonic, septicemic, and pneumonic plague are usually responsive to treatment with certain antibiotics. In suspected cases of plague, appropriate treatment by doctors or veterinarians should be sought out immediately. Diagnosis and treatment regimens require professional medical judgment and may need to be adjusted for the patient (human or animal) based on many factors.

Q: How can plague be prevented?

A: Prevention of plague is multifaceted and is based on avoidance and control of the disease reservoir species (rodents) and its vectors (fleas). Appropriate flea and rodent control are essential—consult your veterinarian for products that can be used on or around your pets or livestock. Avoidance depends on the situation and may include simple steps such as ensuring feeds for livestock and pets are stored in rodent-proof containers or areas; avoiding areas where there are prairie dog colonies; not feeding wild chipmunks or other wild rodents; not allowing pets to roam freely outdoors; rodent-proofing as much as possible residences, farms, workplaces, and recreational areas; and staying away from sick or dead rodents.

If you notice any suspicious signs in your pet, please contact us immediately. Suspicious signs include fever, lethargy, enlarged lymph nodes, coughing or vomiting. An accurate diagnosis and early treatment is very important to your pet's survival. If you find any dead rodents or small mammals, please contact our clinic or the Delta County Health Department. Keep your pets away from any dead animals you may find.