

exercise flea control for their dogs and cats, and avoid rodent burrows and dead rodents found or brought in by pets. Do not feed or attract wild rodents - feeding increases both rodent populations and human contact with fleas. In special circumstances, the disease can be prevented through the administration of a plague vaccine.

Pets

Dogs are generally resistant to plague but may carry plague infected fleas.

Cats are highly susceptible to the disease and commonly die if not treated promptly.

Flea powder is effective if used continually on animals that may be exposed. The effectiveness of flea collars, however, is doubtful.



Outbreak Factors

The most common outbreak factor is the feeding of rodents, which results in rodent over-population and increases the potential for human contact with rodents and their fleas.

The following animals **have** been the source of infective fleas for most human infections in the western United States:

- Rock Squirrels (slightly larger and grayer than a tree squirrel, these animals inhabit Colorado between the hog-back and the front range. Their fleas are aggressive and readily bite other animals and people.)
- Chipmunks
- Prairie dogs (Jefferson County has had numerous outbreaks of plague in prairie dogs)
- Fox Squirrels (tree squirrels)

The following animals **are not** usually implicated as the source of infective fleas for human infections:

- House or field mice
- Rats (commonly associated with plague in some parts of the world but not in the U.S.A)
- Other animals, such as muskrats, beavers and coyotes.

References:
Control of Communicable Diseases in Man, 17th Ed, 2000

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Plague



**Environmental Health
Services**
1801 19th Street
Golden, Colorado 80401
303-271-5700
www.jeffco.us/health

Plague, also known as bubonic plague or "The Black Death", has been responsible for a number of worldwide epidemics. The "Black Death" of the 14th century caused the estimated loss of 25 million lives, one fourth of the entire population of Europe. Although improved sanitation and modern medicine and pesticides make it unlikely that the epidemics of the past will ever be repeated, plague remains a serious disease.

Plague is caused by bacteria, and was introduced into the United States in 1900 when infected rats escaped from ships docking in San Francisco. Since then, plague has become established in the wild rodent population of the western United States, with human cases occurring in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Texas, Utah, Washington and Wyoming. Most modern cases have originated from wild rodents and their fleas. Humans may be infected with plague through bites from infected fleas, or by direct contact with blood or tissues of infected rodents, rabbits, wild carnivores or domestic cats and dogs.

Types of Plague

Bubonic plague is the most common form of the disease. Symptoms develop after an incubation period of 2-6 days and usually include a sudden onset of severe discomfort, headache, chills, fever, and pain in the affected lymph nodes. The nodes often swell, becoming hot and very painful. The swollen nodes, called buboes, are normally in the groin, armpit, or on the neck. Internal bleeding may occur, with the blood

under the skin turning black, hence the name "Black Death"



Buboe

Septicemic Plague occurs when plague bacteria enter the bloodstream and produces a type of "blood poisoning", a condition known as septicemia. In this form buboes do not develop. Patients frequently run high fevers, and some may lose consciousness. Secondary plague septicemia may follow bubonic plague, especially if treatment is delayed or not given.



Septicemic Plague

Pneumonic plague typically occurs as a secondary infection when plague bacteria

spread to the lungs and is the most dangerous form of the disease. The dangers are two-fold. First, it is dangerous to the patient because it develops rapidly into an overwhelming pneumonia characterized by coughing, bloody sputum, high fever, and chills, followed by death within 1-3 days unless treatment is given early in the course of the illness. Second, pneumonic plague is a threat to the entire community because it can be spread from person to person by infective droplets expelled by coughing, causing primary plague pneumonia. Primary plague pneumonia may also result from inhalation of droplets expelled by an animal with pneumonic plague, such as a domestic cat.

Treatment

With the appearance of the first signs of any form of plague, the patient must be completely isolated and given immediate medical care since any delay may lead to death.

Prevention and Control

Flea control and selective rodent control are essential in areas where risk of human exposure is high. The use of insecticidal dusts such as carbaryl (Sevin) or permethrin in animal burrows can control fleas for up to three weeks. People can protect themselves from plague by rodent-proofing their homes, maintaining a litter and trash free environment to reduce rodent harborage in yards, and by storing food and garbage properly to prevent rodent access. In high-risk exposure areas they should guard against insect bites by using repellents,