

# RAT BITE FEVER

Rat-bite fever is a zoonotic disease that can pass from rats to humans and other animals through bites, scratches, saliva, or urine. The bacteria that causes the disease is part of the normal respiratory flora in around 10% of all rats. While it does not affect the rats who carry it, infections can make people sick. Symptoms of an infection are similar to that of the flu and are easily treated with antibiotics, although in some people, serious complications can occur. If you or someone you know gets sick after handling a rat, make sure to let your doctor know so they can test for rat-bite fever.

## CAUSE

Rat-bite fever can be caused by either the *Streptobacillus moniliformis* or *Spirillum minus* bacterias. Rats are asymptomatic, or reservoir hosts, which means they can carry the bacteria without any ill effects. However, when the bacteria is passed to a human or animal that does not have the same immunity and it can cause painful symptoms.

## SYMPTOMS

Rat-bite fever usually does not negatively impact rats in any way and they show no symptoms.

Symptoms of rat-bite fever in humans can develop anywhere from 3 days to 3 weeks after the initial exposure. Initially, it can present much like a cold or the flu with a fever, chills, muscle pain, headaches, and nausea. Some, but not all, cases may develop rashes on their arms, legs, palms, and soles of the feet, or joint pain and swelling. In some cases, these symptoms may reappear for a brief time months, or even years after the illness has been treated. If the disease is not properly treated, inflammation in various organs or body parts, anemia, or blood poisoning can cause serious life-threatening complications.

If the infection originates from a bite or scratch, the wound may become a painful, ulcerated lesion, but often it completely heals before symptoms start.

There are many types of inflammatory complications that can occur, including inflammation of tendons, heart, liver, blood vessels, prostate gland, pancreas, brain, spinal cord, and lungs.



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## TRANSMISSION

The bacteria that causes rat-bite fever can be found in the respiratory tract of some rats and spread through direct contact with their saliva or urine. Breaks in the skin from scratches or bites are the most common way to become infected, but the bacteria can also be spread through licks, contact with urine, or even just handling a rat. Rat-bite fever can also be spread through other species such as mice, squirrels, and rat-eating carnivores, but not from human to human.

## DIAGNOSIS

Currently, there is no specific test for rat-bite fever. To determine if *S. moniliformis* or *S. minus* is the cause of a patient's symptoms, doctors often look at their blood, joint fluid, or pus under a microscope and search for cells with the same morphology as the bacteria.. Because both strains are slow-growing, blood antibody tests may be used instead.

Testing a rat for the bacteria is possible, but difficult and rare. These tests are often expensive and most result in a false positive. It is considered easier to treat an infection in humans with antibiotics than to test pet rats. Since rats show no signs of carrying the bacteria and it is so easily passed between them, it is often best to assume that any rat can carry rat-bite fever.

## TREATMENT

If you begin to feel ill or show signs similar to those of rat-bite fever after being around pocket pets, seek medical attention and make sure to tell your doctor that you have been around rats or other pocket pets. Since rat-bite fever is so uncommon (there have only been 200 diagnosed cases in the United States since 2004) most doctors don't test for it unless they know their patient could possibly have been exposed. Rat-bite fever is easily cured with antibiotics, but if left untreated serious complications can occur.

Rat-bite fever is treated with antibiotics, usually penicillin or tetracycline. Occasionally, it may spontaneously resolve in a few weeks, but leaving the disease untreated is much more likely to cause complications or even fatality. If complications arise, more serious treatments or hospitalization may be required.



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## PREVENTION

The best way to ensure you don't contract rat-bite fever is to thoroughly wash your hands after handling any pocket pet and to keep anything that has been near your pets away from your mouth, eyes, and nose. It is also important to practice good handling techniques to prevent getting a scratch or bite. If the rat you're working with has long nails or is prone to mouthiness, wear protective clothing such as gloves or long sleeves to prevent injuries. If a wound does occur, make sure the area is cleaned well, disinfected, and kept covered anytime you are around a pocket pet.

Rat-bite fever is extremely rare and with proper hand-washing and cage cleaning, very few people will ever contract the illness. Since there is no way to ensure 100% prevention, anyone with serious health problems or a compromised immune system may want to avoid directly handling rats to limit their possible exposure to the bacteria.



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