

Tularemia (Rabbit Fever)

What is Tularemia?

Tularemia (also known as rabbit fever or deerfly fever) is an infectious disease in ticks and rabbits that is caused by a bacterium (*Francisella tularensis*). The disease was first described in Japan in 1837. Its name relates to the description in 1911 of a plague-like in ground squirrels in Tulare county, California (hence the name tularemia) and the subsequent work done by Dr. Edward Francis.

Tularemia occurs throughout North America and in many parts of Europe and Asia. *Francisella tularensis* is found worldwide in over a hundred species of wild animals, birds and insects. Some examples of animals, other than rabbits, that carry tularemia are meadow mice, ground hogs (woodchucks), ground squirrels, tree squirrels, beavers, coyotes, muskrats, opossums, sheep, and various game birds.

There are two common ways that humans can contract tularemia:

- * From the bite of an infected tick, deerfly (*Chrysops discalis*), or mosquito. When transmitted to humans by insects, exposed body surfaces are bitten, and the on set of pain and fever is sudden.
- * When broken skin (cuts, abrasions) comes into direct contact with an infected rabbit carcass (namely rabbit species of the genus *Sylvilagus* which are the cottontails).

Less common means of spreading the disease are drinking contaminated water, inhaling dust from contaminated soil, or handling contaminated pelts or paws of animals. Human-to-human transmission of tularemia is uncommon.

What are the clinical features or symptoms of tularemia?

In humans, tularemia may appear in two forms depending on how a patient contracted the disease. The most common form is usually acquired through the bite of an infected tick (especially wood ticks and deer ticks) or from contact with infected rabbits. Patients will develop an ulcer at the site of infection (photo at left) and lymph glands become inflamed and swollen. Severe fever and flu-like

symptoms may accompany the ulcer or lesion. Symptoms start to show within 1–14 days after contracting the disease, with 3–5 days being most common. The fever generally lasts for 3 to 6 weeks if no type of antibiotic therapy is used to combat the bacteria. Patients with the less common form of tularemia, which occurs mainly after inhalation of bacteria, typically experience sudden chills, fever, weight loss, abdominal pains, tiredness, and headaches. Patients with this form of tularemia may develop an unusual pneumonia that can be fatal.

Symptoms of the disease in a rabbit are a white spotted liver, swollen spleen, and an ulcerated or raw area about 1/4 inch in diameter which is where the animal was bitten by a tick or deer fly and thus infected.

How is tularemia transmitted to humans through wild game? Reports of tularemia outbreaks indicate two primary modes of disease transmission. An increase in the number of reported cases in the eastern and midwestern United States during fall and winter coincides with hunting season when hunters are skinning rabbits. In the southwestern and western United States, the incidence of tularemia is highest during summer months due to tick bites.

The risk of contracting tularemia from rabbits is greatest when handling rabbits after the hunt during the cleaning process. Hunters skinning rabbits are advised to wear protective rubber gloves to reduce the risk of contracting the bacteria that cause tularemia when broken skin (cuts, scratches, openwounds, abrasions) comes into contact with an infected carcass or alive, infected rabbit.

Other than hunters, who else may be at risk for illness from tularemia?

Approximately 150–300 tularemia cases are reported in the United States annually, with a majority of those from Alaska, Arkansas, Illinois, Oklahoma, Missouri, Tennessee, Texas, Utah, and Virginia. The frequency of tularemia has dropped markedly over the last 50 years and there has been a shift from winter disease (usually from rabbits) to summer disease (more likely from ticks). The bacteria *F. tularensis* is a hazard to laboratory staff that work closely with rabbits. Matter of fact, nearly all cases reported each

year are by people that receive the bacterial disease from a tick bite rather than from cleaning rabbits. Note: as few as 5–10 bacteria can result in disease. Others at risk may include timber industry personnel, outdoor enthusiasts, as well as those who work, play, or live in tick-infested regions during summer months.

As recently as 1984, 20 people from the Crow Creek and Lower Brule Indian reservations in west-central South Dakota were diagnosed with tularemia. Tularemia was spread through these two reservations by dog ticks (*Dermacentor variabilis*) that carried the bacteria.