

**What is Tularemia?**

Tularemia is a zoonotic disease caused by infection with the intracellular bacterium *Francisella tularensis*. Humans and a wide range of animals, including small mammals and birds may be infected. The causative agent (*Francisella tularensis*) exists in an enzootic cycle involving wild mammals (mainly rodents and lagomorphs) and arthropod vectors. Hunters, hikers, and people in rural settings are more likely to come into contact with infected rabbits or ticks, mosquitoes, fleas, and tabanid (horse and deer) flies that have fed on an infected animal. Tularemia, also called rabbit fever and deerfly fever, is spread to people by insect bites, direct contact from skinning or dressing infected animal carcasses, or by eating uncooked meat. Less commonly, humans may be infected following exposure to contaminated water sources. Finally, there are several reports of tularemia in humans following bites from infected domestic cats. Occurrence of the disease follows a bimodal cycle with higher numbers of humans infected by ticks in July and contact exposures in December. Inhalation exposure can occur if large numbers of the organism are aerosolized in a confined space.

**What are the clinical signs and lesions associated with tularemia?**

In animals, clinical signs often are associated with tick infestation and may include high fever, anorexia, weight loss, and death. Dogs appear to be fairly resistant to the disease and the only signs may be loss of appetite, listlessness, and a low fever. Cats are more susceptible, and may develop systemic signs clinically resembling FIP, plague, or other diseases. Sheep have been noted to abort. Affected animals may develop abscesses at the site of the arthropod bite with progression to regional or generalized lymphadenopathy, hepatosplenomegaly, pneumonia, or enterocolitis. At necropsy, the most striking lesions include multifocal or disseminated necrosis (white or red/white spots) in the liver, spleen, lungs, lymph nodes, and possibly the gastrointestinal tract. Puppies and kittens are often more severely affected than older animals. The organism incubates for 1-14 days in humans and symptoms vary with the site of infection. Most humans will present with lymphadenitis and ulcers ("ulceroglandular" disease), if inoculated through direct contact or by arthropod bite. Less commonly, humans may develop ocular, oropharyngeal, pneumonic, or septic forms of disease. If infected meat was consumed, oropharyngeal and gastrointestinal disease may follow. It is also important to note that humans and animals may be infected with *Francisella tularensis* yet have subtle or no signs of infection.

**How can infection with *Francisella tularensis* be diagnosed?**

Serologic testing is the standard method of identifying infection. Culture of the bacterium can also be performed, but poses a health risk for laboratory personnel. The fluorescent antibody (FA) test specific for *Francisella tularensis* can also be performed on tissues from animals with suspicious lesions or any animal that died under suspect conditions. Necropsy of suspect animals may demonstrate characteristic lesions, but should only be performed by qualified personnel at a veterinary diagnostic laboratory (Wyoming State Veterinary Laboratory, WSVL). Serum samples can be sent to the WSVL and will be tested by the Wyoming Game & Fish Laboratory. Swabs of ulcers, tissue biopsies, or animal carcasses can also be sent to WSVL for culture and FA (contact WSVL for prices, 307-742-6638). Diagnostic specimens can be submitted to WSVL at 1174 Snowy Range Rd, Laramie, WY 82070.

Wyoming Department of Health  
08/01

Wyoming State Veterinary Laboratory  
Wyoming Game and Fish Department

### **How is tularemia treated?**

The first step is removal of any ticks as soon as possible. The best way is to use tweezers to grab the tick as close to the skin as possible and pull it straight out. Do not squeeze the tick's body when removing it, do not handle ticks with bare hands, and properly wash your hands after removal. An antiseptic may be applied on the bite. Streptomycin, an aminoglycoside antibiotic, is the drug of choice for humans and animals. Tetracycline may be used in animals, but there is a risk of relapse.

### **How can tularemia be prevented?**

Tick and insect repellents should be used when walking in the outdoors. For animals there are many repellents available including baths, collars, dips, sprays, and dusts. Additionally, there are topical 'spot on' and oral medications available (i.e. Frontline, Bio Spot, Program, Advantage, Capstar, etc.). A thorough tick check of humans and their pets should be performed often and upon returning inside. All ticks should be removed as soon as possible. Skinning wild rabbits should be performed in a properly ventilated area and protective gloves should be worn. *Francisella tularensis* is killed by heat, yet not by freezing. Thorough cooking of rabbit and game bird meat will render it safe for consumption.

### **What animals have been diagnosed with tularemia in Wyoming?**

Domestic: sheep

Wild: beaver, porcupine, muskrat, jumping mouse, Uinta ground squirrel, pine squirrel, fox squirrel, least chipmunk, white-tailed prairie dog, white-tailed jackrabbit, cottontail rabbit, mink, badger, mule deer, sage grouse

Evidence of tularemia has been found in all areas of Wyoming.

### **Contact for suspect cases:**

Wyoming State Veterinary Laboratory

307-742-6638

### **Submission of veterinary diagnostic specimens:**

Wyoming State Veterinary Laboratory  
1174 Snowy Range Rd  
Laramie, WY 82070

### **For more information:**

Wyoming Department of Health:

307-777-7172

Wyoming State Veterinary Laboratory:

307-742-6638

Wyoming Game and Fish Department

307-742-6638

(Wildlife Disease Laboratory):

307-745-5865