



Leptospirosis

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Leptospirosis is a potential serious illness caused by the bacteria *Leptospira* which affects both people and animals. In the state of Oklahoma, Leptospirosis is a reportable human disease but human cases are rare. However, it is generally felt that more human cases occur but are not identified due to low suspicion of this disease and challenges in diagnosis. There are typically 100 to 200 human cases annually in the U.S. The *Leptospira* bacteria are present worldwide, with more than 200 known serovars (types) infecting mammals. People and animals are usually infected with this bacteria from drinking or swimming in contaminated water or direct contact with fluids or tissues of infected animals.

Transmission

Leptospirosis is spread through contact with water, soil, vegetation or any part of a moist environment contaminated by urine or tissue of infected animals or humans. This bacteria can be inactivated by drying, but can survive in a moist environment for weeks or months. Humans and animals can become infected through direct contact with infected urine or other body tissues. The *Leptospira* organism can enter the body through broken skin (cut or scratch) or mucous membranes (lining of the mouth, eyes, nose or genitalia). Infection can also occur through ingestion of contaminated water or food. If an animal is infected with a serovar or type of *Leptospira* that is adapted to that species of animal, then the animal will not show clinical signs of illness, but will excrete the bacteria in its urine for months or even years contaminating the environment. This serovar adaptation often occurs in rats, mice and wildlife like raccoons, opossums and skunks. Animals will show clinical signs of leptospirosis when infected with a serovar to which it is not adapted.

Clinical Signs

Clinical signs of leptospirosis vary and are relatively nonspecific with different degrees of severity. In people, the symptoms are typically sudden onset of fever, headache, chills, red eyes and severe muscle aches or cramps—especially in the calves and thighs. Sometimes leptospirosis can develop into a life-threatening situation causing severe damage to the kidneys, liver, brain and heart.

Clinical signs of leptospirosis in livestock like cattle, sheep and horses can vary from fever and loss of appetite to signs of kidney and liver damage. An eye problem called periodic ophthalmia (reoccurring severe inflammation of the eye) may

occur in horses. The symptoms include increased tearing, conjunctivitis, photophobia (intolerance to light) and keratitis (inflammation in the cornea) with eventual blindness. All mammals can become infected with *Leptospira*; although it is rare in cats. In pets, the disease has been diagnosed more frequently in dogs.

Clinical signs of leptospirosis in dogs can vary in severity from asymptomatic (no clinical signs) to fever, lethargy, depression, vomiting, muscle pain, weakness and anorexia.

Clinical signs may progress to more severe symptoms such as abdominal pain, jaundice (yellowing of skin and eyes) and kidney failure. The progression and severity of the disease depends on the type of *Leptospira* causing the infection. In the 1980s, *Leptospira* serovars associated with the more severe forms of the disease (liver infections, gastrointestinal disease and renal failure) are Grippotyphosa and Pomona.

Treatment

Leptospira infection is confirmed by clinical signs and laboratory tests performed on blood and urine. Starting proper antibiotic therapy early in the course of leptospirosis will reduce the spread of the disease and minimize the severity of liver and kidney damage. The antibiotics commonly used to treat leptospirosis are penicillin and doxycycline. Pets may have to be hospitalized to receive intensive or supportive care, especially in the moderate to severe stages of leptospirosis.

Appropriate antibiotic treatment will shorten the length of illness and time the pet is contagious. Antibiotics reduce the length of time the dog will spread the disease in their urine, but the dog may be infectious until a four to eight week course of antibiotics has been completed. If a dog is diagnosed with leptospirosis, take the following precautions advised by the Oklahoma State Department of Health:

- Always wear gloves when handling the dog, cages, bowls or other items that may be contaminated with urine. It is recommended to wash and disinfect any urine or fluid stained areas or items with a 10 percent household bleach (1 part bleach to 9 parts warm water). But remember, even diluted bleach may permanently discolor wood laminate floors, carpet and upholstery.
- Segregate the infected dogs so they are isolated from other animals. Test all other dogs in the household & property for leptospirosis.

- Take the dog to an isolated and confined area to urinate. This area should not be accessible to other dogs or children and should be away from ponds, creeks or pools.
- Wash hands thoroughly with soap and water after handling or playing with the dog.
- If any person in the household develops flu-like symptoms, consult a physician as soon as possible and inform them of possible leptospirosis exposure.

Prevention

There are approved vaccines available for pigs, cattle and dogs to protect against some of the most common serovars of *Leptospira*. Research screening of wildlife and domestic canines indicated that *L. grippityphosa* and *L. pomona* are more prevalent than *L. icterohaemorrhagiae* and *L. canicola* and are the primary cause of leptospirosis in the U.S. There is a vaccine available that immunizes dogs against *L. grippityphosa* and *pomona* as well as *L. icterohaemorrhagiae* and *L. canicola*. This newer vaccine uses a technology where a subunit component of the *Leptospira* organism is utilized to manufacture the vaccine instead of the entire organism. This subunit technique

has reduced the vaccine-reaction side effects that occurred with the older vaccines and provides protection for more of the disease causing serovars of leptospirosis. Vaccination program recommendations may vary, but typically include a series of injections for the primary vaccination protocol with at minimum a yearly booster. A veterinarian can recommend the appropriate vaccination schedule for your animals. Another step to take in prevention of leptospirosis is rodent (rats, mice, or other animal pests) control. These pests and other wildlife can carry and spread the *Leptospira* bacteria.

Reference

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 Center for Disease Control, Division of Bacterial and Mycotic Diseases, Disease Information, web site. Leptospirosis and Your Pet.
- Ronald Welch, Dana Dirato, Kristy Bradley. Canine Leptospirosis in Oklahoma: Oklahoma Animal Disease Diagnostic Laboratory Data 1995-2000. Animal Health Update, Vol 8, No. 2, July 2001.