



Leptospirosis

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Leptospirosis is a bacterial disease that affects humans and animals. There are typically 100-200 human cases annually in the U.S. The *Leptospira* bacteria are found throughout the world, 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 through contact with fluids or tissues of infected animals. Recently in the U.S., there has been a significant increase in the number of cases of canine leptospirosis caused by uncommon serovars (types) of *Leptospira*.

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 adaption 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. Pets can be infected with *Leptospira*; although it is rare in cats.

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 of the disease and severity depends on the type of *Leptospira* causing the infection. In the 1980s, *L. icterohaemorrhagiae* and *L. canicola* were the most common serovars identified causing canine leptospirosis. Preventive vaccinations were developed to protect dogs against these serovars. Effective vaccination programs using these vaccines all but eradicated the clinical disease in canines. Recently, there has been an increased incidence of leptospirosis caused by two uncommon serovars which have no vaccination for protection, *L. grippityphosa* and *L. pomona*. With this change in serovar prevalence, we have seen a reoccurrence of canine leptospirosis. *Leptospira* serovars associated with the more severe forms of the disease (liver infections, gastrointestinal disease, and renal failure) are *Grippityphosa* 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).
- Keep infected dogs isolated from other animals. Test other dogs in the household for leptospirosis.

- Take the dog to a restricted and isolated area to urinate. This area should not be accessible to other dogs or children and away from ponds, creeks, or pools.
- Wash hands thoroughly with soap and water after handling or playing with the dog.
- If someone who had contact with the dog develops flu-like symptoms, consult a physician and inform of possible leptospirosis exposure.

Prevention

Recent research screening of wildlife and domestic canines indicates 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. The common commercial canine vaccine used to provide immunity against *L. canicola* and *L. icterohaemorrhagiae* do not have protection against *pomona* and *grippityphosa*.

Since these two serovars are increasing across the U.S., there have been research efforts to develop a more protective canine leptospirosis vaccine. Recently, a major pharmaceutical company began marketing a vaccine that immunizes dogs against *L. grippityphosa* and *pomona* as well as *L. icterhaemorrhagiae* and *L. canicola*. This new 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 an annual vaccination. A veterinarian can recommend the appropriate vaccination schedule for 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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