

# Leptospirosis

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## What is leptospirosis?

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Leptospirosis is a contagious and potentially life-threatening bacterial infection caused by a spiral-shaped microorganism called *Leptospira interrogans*. Over the past several decades, routine vaccination against its two most common strains had practically eradicated the disease in small animals. By the 1990s, however, the disease had reemerged with different strains (also called *serovars*) of the bacteria. The resurgence of this infection is probably due to changes in the disease transmission associated with increased direct and indirect contact opportunities with wildlife, even in urban and suburban areas.

Leptospirosis occurs in the following:

- ✿ A wild range of wildlife species (e.g., small rodents, raccoons, foxes, opossums, skunks, deer, moose, large cats, and sea lions)
- ✿ Domestic animals (swine, cattle, horses, and **dogs**)
- ✿ Humans

Some animals act as asymptomatic carriers and shed bacteria in their urine, while others become ill and die. Domestic (pet) cats are apparently naturally protected against infection. *Leptospira* organisms are transmitted through contact with infected animals, their urine, or contaminated soil and water. Canine leptospirosis is widespread in the United States and it occurs more commonly in spring and early fall when the wet soil conditions and moderate temperatures dominate in most areas and allow the organism to survive in the environment. The infection can, however, be diagnosed year-round in temperate regions like coastal areas.



## What are the symptoms of leptospirosis?

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Affected dogs can remain apparently healthy and shed *Leptospira* organisms in their urine, increasing the risk of transmission to other dogs or to humans. Some of these dogs develop chronic progressive kidney disease, leading to chronic renal failure.

Most dogs with leptospirosis develop the following symptoms within 4 to 12 days of exposure:

- ✿ Fever
- ✿ Muscle pain
- ✿ Stiff gait
- ✿ Weakness
- ✿ Conjunctivitis
- ✿ Vomiting
- ✿ Loss of appetite

Early after the onset of these nonspecific symptoms, some dogs develop severe kidney failure and in some cases liver failure. The disease can then manifest itself as follows:

- ✿ Decreased (or rarely increased) urine production
- ✿ Discolored urine
- ✿ Malodorous breath
- ✿ Severe gastrointestinal disturbances
- ✿ Vomiting and diarrhea
- ✿ Breathing difficulties
- ✿ Bleeding tendencies
- ✿ Jaundice

Death can occur rapidly after this point, if not treated.



### What tests are needed?

Early recognition and treatment are important to avoid rapid deterioration and life-threatening complications. Suspicion is initially based on learning that your pet has had possible wildlife exposure, suggestive symptoms, and the presence of acute kidney failure. The diagnosis is confirmed by blood and urine tests and by the presence of antibodies against *Leptospira* in the blood. Laboratory tests must usually be repeated 2 to 4 weeks after the onset of symptoms for a final confirmed diagnosis. Until the infection is confirmed, precautionary measures to avoid transmission to other dogs and to humans should be taken. Most dogs suspected of having leptospirosis should be treated.



### What treatment is needed?

Early antibiotic therapy is efficient in shortening the duration of the disease and decreasing the severity of kidney and liver damage. At later stages of the infection, additional supportive therapy is critical to ensure survival of the dog and organ recovery while the antibiotics are stopping the infection. Most dogs

need intensive care. Dogs with complete kidney shutdown may benefit from temporary kidney therapy, such as dialysis.



### What is the prognosis?

The prognosis depends on the stage of the infection at the time of diagnosis and mostly on the level of care that can be provided. Even in severe cases, the prognosis is very good if dialysis can be provided. Most dogs (80% to 90%) will leave the hospital with mild to moderate impairment of kidney function that will normalize over the following weeks to months.



### What can be done to prevent leptospirosis?

As they usually have been exposed to the same environment, other dogs living with an infected dog should also be tested for leptospirosis. The current strains of *Leptospira* should be included in vaccination schedules, especially in high-risk areas. However, the effectiveness of these vaccines is not clear. Currently available vaccines probably do not offer complete protection against infection. Vaccination sometimes causes mild reactions (fever, decreased appetite, allergic reactions), but the benefit of protecting against this potentially life-threatening infection seems to outweigh the risks of the side effects. Leptospirosis can also be transmitted to humans through direct and indirect contact with infected animals. Leptospirosis is considered the most common infectious disease transmitted from animals to humans worldwide. One to two hundred people are infected with leptospirosis yearly in the United States, half of them acquiring the infection in high-risk professions, such as the following:

- ✿ Farmers
- ✿ Veterinarians
- ✿ Pet shop staff
- ✿ Slaughterhouse workers
- ✿ Military personnel

Manifestation of the disease in humans varies from mild flu-like symptoms with fever to signs of severe liver, brain, kidney, and lung damage. Owners of infected dogs should be aware of this risk and should consult their physician about the need to take particular precautions. Good sanitation when handling infected animals and potentially contaminated soil and water can minimize the risk of transmission.