



## Main Street Veterinary Services

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# Leptospirosis in Dogs

## What is leptospirosis?

Leptospirosis is a bacterial disease of dogs and other mammals that primarily affects the liver or kidneys. *Leptospira* are known as "aquatic spirochetes": the organism thrives in water and they have a helical or spiral shape with a characteristic hook on one or both ends. There are many species and serovars of *Leptospira*, some of which cause disease in dogs. In the past, the usual serovars that affected dogs were *Leptospira canicola* and *Leptospira icterohemorrhagiae*. In recent years, other species have become important in some areas. These include *L. pomona*, *L. grippityphosa*, *L. australis*, and *L. bratislava*. The most common causes of Leptospirosis in dogs in the United States are *L. grippityphosa* and *L. pomona*. There are other serovars that may infect dogs without apparently causing any signs or disease. There is no evidence that Leptospirosis causes clinical disease in cats.

## How common is leptospirosis?

Infections of dogs with *L. icterohemorrhagiae* and *L. canicola* are uncommon in areas where widespread vaccination of dogs is routine. Outbreaks of the disease are still seen from time to time. As mentioned above, these may now involve newer serovars of *Leptospira*. New vaccines have been recently developed to protect dogs against the four most prevalent serovars.

## How are dogs infected?

*Leptospira* bacteria are carried mainly by rats and other rodents, but can be carried by almost any mammalian species, including people. Infected or recovered "carrier" dogs may act as a source of the infection.

*"Ingestion of infected urine or rodent-contaminated garbage is the most important means of transmission..."*

Ingestion of infected urine or rodent-contaminated garbage is the most important means of transmission, but some forms of the bacteria can penetrate damaged or thin skin. For instance, when dogs swim in contaminated water, they may become infected through their skin. The incubation period (from infection to onset of clinical signs) is usually four to twelve days.

## What are the signs of leptospirosis?

Many *Leptospira* infections go undetected, but other cases can be life-threatening. Certain strains (serovars) of *Leptospira* are more likely to be associated with disease than other strains, and the *icterohemorrhagiae* serovar is perhaps the most dangerous.

There are three main forms of the disease:

1. Hemorrhagic (bleeding)
2. Icteric or jaundice (liver)
3. Renal (kidney)

- In **hemorrhagic disease** there is high fever with lethargy and loss of appetite. Multiple small hemorrhages occur in the mouth and on the whites of the eyes. Bloody diarrhea and vomiting may occur. This form is often fatal.
- The **icteric or jaundice form** begins much like the hemorrhagic form and many of the clinical signs are the same. An additional clinical sign is the presence of a yellow color (jaundice or icterus) in the mouth and whites of the eyes. In severe cases, the skin will turn yellow.
- The **renal form** causes kidney failure. These dogs are very lethargic, anorectic, and may vomit. Their breath may have a very offensive odor, and ulcers often develop on the tongue. Other signs include diarrhea, excessive drinking (polydipsia) and excessively frequent urination (polyuria). There may be red staining of the urine (blood). The dog may be reluctant to move and show abdominal discomfort. Fever is variable and temperature may actually be subnormal in the more advanced stage. Dogs that survive the acute renal form may be left with chronic kidney disease.

Many dogs with mild leptospirosis infections never show any symptoms at all. Generally speaking, young dogs tend to get sicker than older dogs. Clinical signs depend on the age and health of the dog, environmental factors affecting the bacteria, and the virulence of the particular species (serovar) of bacteria that is present.

When symptoms do occur they usually appear between 4 and 12 days after exposure to the bacteria, and can include fever, muscle pain, vomiting and diarrhea, loss of appetite, lethargy, depression, and blood in the urine.

## How is leptospirosis diagnosed?

Because the clinical signs are variable and easily confused with other diseases, definitive diagnosis can be difficult. There are no readily available rapid and definitive laboratory tests. Taking blood samples during infection and again in the recovery period and showing an increase in antibodies to *Leptospira* in the blood serum (at least a four-fold increase in antibody titer) is supportive of the diagnosis.

*"Single test finding of Leptospira antibody...may not mean that the dog has Leptospiriosis..."*

A single test finding of *Leptospira* antibody, even if the blood level (titer) is high, may not mean that the dog has Leptospirosis because infection with less harmful serovars can still result in high antibody.

### **What is the treatment?**

Antibiotics such as penicillin, ampicillin and amoxicillin, are reasonably effective if begun early. Most affected dogs require intensive care in the veterinary hospital. An extended course of antibiotics, typically doxycycline, may be prescribed in the recovery period to ensure that all the *Leptospira* organisms are cleared and the dog does not become a chronic carrier.

### **How can leptospirosis be prevented?**

*Leptospira* bacteria love warm humid climates and are often found in stagnant water. Wild animals can also harbor the bacteria, so dogs exposed to potentially contaminated water sources or wild animals are at much greater risk of developing an infection than city dogs. Infection is most common in the summer months, the early fall, and during periods of flooding.

At home you can reduce the risk of infection by safely controlling the rodent population in and around your home. If you happen to live where lepto infections are very common, it's important to keep your pet away from ponds, slow moving water, and standing or stagnant water.

The vaccine for leptospirosis is not always part of the routine vaccination program for all dogs. Your veterinarian will consider the risks and options for your pet. The duration of immunity for this vaccine has been shown to be approximately one year. Re-vaccinating annually is often needed to maintain best immunity. **The Merial Recombitek vaccine is recommended due to purity (safety) and prevention of disease.**

### **Can the vaccine cause side-effects?**

Of the components of a dog's vaccination program, the portion for leptospirosis has been reported to be one of the more likely to cause a reaction. This usually takes the form of lethargy for a few days and possibly loss of appetite. In some dogs (Miniature Dachshunds and West Highland White Terriers seem to have slightly increased risk) a more general shock-like reaction may occur shortly after vaccination. Other dogs may develop a skin rash (urticaria), apparent on hairless areas. These reactions can be controlled medically, so if you are concerned call your veterinarian immediately. Modern vaccine production methods, such as the use of "sub-unit" or genetically manufactured vaccines may reduce the incidence of side effects.

**"Leptospirosis can be transmitted to people..."**

**NOTE:** Leptospirosis can be transmitted to people, so owners of dogs that may have the disease should avoid contact between the owner's bare skin and their dog's urine, and wear rubber gloves when cleaning up any areas the dog may have soiled. Any areas where the dog has urinated should be disinfected. **The organism is readily killed by household disinfectants or a dilute bleach solution.**

*This client information sheet is based on material written by: Ernest Ward, DVM & Karen Becker DVM  
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