

Leptospirosis in Dogs

What is leptospirosis?

Leptospirosis is a bacterial disease of dogs and other mammals that primarily affects the liver or kidneys. The bacteria (*Leptospira*) that cause leptospirosis, commonly called leptospires, thrive 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 (strains) of *Leptospira*, some of which cause disease in dogs. Leptospirosis in cats is very rare and is not associated with clinical disease.

How common is leptospirosis?

Leptospirosis is uncommon in areas where widespread vaccination of dogs is routine. Outbreaks of the disease are still seen from time to time however, because vaccines protect only against the four most prevalent serovars of *Leptospira*. Leptospirosis is more common in rural, wooded areas. Increased numbers of cases are seen in the South, Midwest, East Coast, and Appalachian regions.

How are dogs infected?

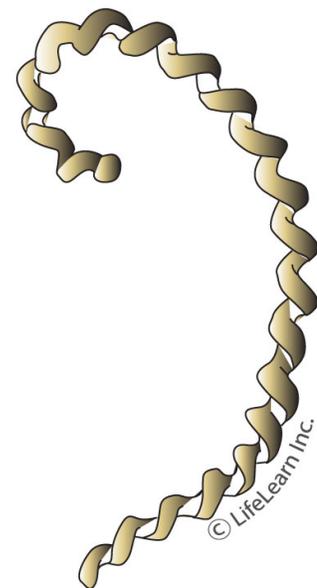
Leptospira bacteria are carried mainly by rats and other rodents, but can be carried by almost any mammal, including people. Infected or recovered carrier dogs may act as a source of the infection.

"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.



Leptospira

There are three main forms of the disease:

1. **Hemorrhagic** (bleeding). In hemorrhagic disease there is high fever with lethargy and loss of appetite. Multiple small hemorrhages (areas of bleeding) occur in the mouth and on the whites of the eyes. Bloody diarrhea and vomiting may occur. This form is often fatal.
2. **Icteric or jaundice** (liver). The icteric or jaundice form begins 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.
3. **Renal** (kidney). The renal form causes kidney failure. These dogs are very lethargic, anorectic (unwilling to eat), and may vomit. Their breath may have an 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 (caused by blood). The dog may be reluctant to move and show abdominal discomfort. Fever is variable and temperature may actually be below normal in the more advanced stage. Dogs that survive the acute renal form may be left with chronic kidney disease.

How is leptospirosis diagnosed?

Because the clinical signs are variable and easily confused with other diseases, definitive diagnosis can be difficult. There are two tests that can be used for the diagnosis of leptospirosis.

The DNA-PCR test looks for the presence of genetic material from the *Leptospira* bacteria in the blood or urine. The MAT (microscopic agglutination test) looks for the presence of antibodies that are formed against leptospirosis. Each of these tests has its own unique benefits and disadvantages.

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

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 (see handout "Leptospirosis in Dogs – The Disease and How to Test for It" for more information).

What is the treatment?

Antibiotics such as penicillin, ampicillin, and amoxicillin, are reasonably effective against the acute stages of leptospirosis if begun early. These antibiotics treat the early stages of infection, making the dog feel better, although most affected dogs require intensive care in the veterinary hospital.

An extended course of antibiotics, typically doxycycline, is then prescribed in the recovery period to ensure that all the *Leptospira* bacteria are cleared and the dog does not become a chronic carrier.



How can leptospirosis be prevented?

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. Revaccinating annually is often needed to maintain best immunity. **The four-serovar vaccine is currently the only vaccine recommended by experts.**

Can the vaccine cause side-effects?

Modern vaccines are extremely effective and safe. Many pets experience mild side effects following vaccination, similar to those that humans experience. Other less common but more serious side effects can occur within minutes to hours after vaccination. Vaccine reactions can be controlled medically, so if you are concerned call your veterinarian immediately.

Vaccine reactions are more likely to occur if many different vaccinations are given at the same time. Vaccine recommendations should always be based on individual pet lifestyle, so speak to your veterinarian to determine whether this vaccine is recommended for your pet.

Reactions to the leptospirosis vaccine usually take the form of lethargy for a few days and possibly loss of appetite. In some dogs an anaphylactic shock-like reaction may occur shortly after vaccination. Miniature Dachshunds and West Highland White Terriers seem to have slightly increased risk for this type of reaction. Other dogs may develop a skin rash (urticaria), apparent on hairless areas.

"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.**

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