

Lyme Disease (Borreliosis)

Information for Dog Owners



Key Facts

- Signs of disease in infected dogs are uncommon but some dogs develop mild lameness and rarely some develop kidney disease.
- A positive Lyme disease blood test detects antibodies in the blood that are produced after a dog is bitten by an *Ixodes* (black-legged) tick that is infected with the bacterium *Borrelia burgdorferi*. The bacterium is transferred to the dog after a minimum of 24 hours of tick attachment and the dog's body makes antibodies against the bacterium. Most often, this occurs without the dog getting sick.
- Dogs living in areas with Lyme (*Borrelia*)-infected ticks will frequently test positive for Lyme but not have signs of disease.
- Tick prevention is critical for preventing Lyme disease.
- Lyme disease is becoming more common (emerging) in different parts of the USA and in Canada.

What is it?

Lyme disease (or borreliosis) is caused by a type of bacteria called *Borrelia burgdorferi*. The bacterium is transmitted to dogs through the bite of an infected tick. Only certain ticks (*Ixodes* or blacklegged ticks) can harbor the bacterium. Ticks must be attached to the dog and feeding for a minimum of 24-48 hours to transmit the bacterium. The majority of dogs that test positive for Lyme disease (or more accurately, develop antibodies against *B. burgdorferi*) never develop illness or get sick.

When Lyme disease does occur in a dog, it is typically a mild lameness (that may shift from leg to leg) and fever. Lameness most commonly develops 2 to 6 months after the dog is bitten by an infected tick.

Lyme disease is most common in the northeastern coastal states and the upper Midwest of the USA. It is considered an emerging disease in many other parts of the U.S.A. and Canada.

Who gets it?

Dogs with a lifestyle that increases their chance of tick exposure (e.g. those that spend time in grassland or wooded areas) are at greater risk of

being exposed. Sporting, field trial and hunting dogs are at greatest risk due to the amount of time they spend outdoors in tick infested areas. Dogs are most likely to get infected when they live in or travel to areas where Lyme is regularly found (called "endemic areas"), especially when appropriate tick prevention measures are not used. See the Resources for a map of human Lyme endemic areas (these areas are also of greatest risk for dogs).



Can people get sick with it?

Yes. However, Lyme disease in people is very different than what occurs in dogs. People can use the information about dogs becoming Lyme positive on veterinary testing to help remember to apply appropriate tick prevention for themselves in order to avoid human Lyme disease and reduce risk. People get infected the same way dogs do, from the bite of an infected tick. Infected dogs cannot infect people.

How is it spread? (Transmission & Infection Risk)

Ixodes ticks (black-legged or deer ticks) are the ticks that can be infected with *Borrelia burgdorferi*. After the tick bites and attaches to the dog one of the following may occur:

1. Nothing. The dog doesn't get infected with *Borrelia*.
2. Positive test result for Lyme. The dog is infected with *Borrelia*, but the dog's immune system gets rid of the bacteria and the dog doesn't get sick. These dogs usually are Lyme positive on a blood test since they have been exposed/infected by the Lyme bacteria and have developed antibodies - which is what the test looks for and makes it positive.
3. Lyme disease The dog is infected with *Borrelia* and gets sick with Lyme disease. These dogs are usually positive on a blood test since they have been exposed to the Lyme bacteria and are making antibodies in an attempt to fight the infection.



What should I look for? (Signs of Disease)

Most infected dogs do not show any signs of disease, but may be positive on a Lyme blood test for all of their life. It is estimated that only 3-10% of dogs exposed to an infected tick will develop illness associated with Lyme disease.

The most common signs of illness are:

- Fever (103° to 105°F; 39.5° to 41°C), listless or lethargy, loss of appetite and interest in drinking.
- Lameness (polyarthropathy) that may shift from leg to leg. Swelling near joints and painful legs.
- Lymph node enlargement

Uncommonly

Kidney (renal) disease called protein losing nephropathy (PLN) or Lyme nephritis may be linked to Lyme disease. Signs may consist of vomiting, drinking and urinating more than usual, not eating, listless or lethargy.

How is it diagnosed?

Unfortunately, Lyme disease is not easy to diagnose, since many dogs will test positive on a blood test (whether they are sick or not). Results of the blood test alone do not indicate whether Lyme disease is present and treatment is needed.

The following are guidelines that help your veterinarian figure out if a dog has Lyme disease:

1. Is there history of being in a Lyme endemic area?
2. Are there clinical signs (i.e. lameness, fever)?
3. Is there a history of tick exposure/attachment?
4. Is there another infection or disease that may be the cause of your dog's signs?
5. Is the dog positive for *Borrelia burgdorferi* (Lyme) on a blood test?

Testing for other tickborne diseases (*Anaplasma*, *Ehrlichia*, *Rickettsia*, *Babesia*) may be recommended by your veterinarian to try and make sure these diseases aren't causing your dog's illness.

What is the treatment? Will my dog recover?

Healthy dogs with a positive Lyme antibody test and no signs of disease do not require treatment. In some cases veterinarians may wish to periodically run blood and similar tests to ensure your dog remains free of disease and that complications such as kidney disease are not present.

Antibiotics prescribed by a veterinarian are used to treat dogs with lameness or other signs of illness if Lyme disease is determined to be the likely cause of their illness. Fever and lameness from Lyme disease respond rapidly to antibiotic treatment (within 1-3 days), but a full treatment course is necessary to eliminate the infection. In the extremely rare case of kidney disease (Lyme nephritis) the prognosis (chance of full recovery) is variable, and will depend on how sick the dog becomes and how they respond to treatment.

How can I stop this from happening to my dog and other dogs?

The risk of tick-transmitted infections such as Lyme disease can be decreased by limiting a dog's access to tick-infested areas. Tick prevention products (collars, topicals and orals) that repel ticks or prevent attachment are highly effective for preventing Lyme disease (and other infections carried by ticks) in dogs when used according to label directions. Your veterinarian can recommend specific tick prevention products best for your dog's risks. Prompt removal of any ticks on your dog is important as ticks need to feed for at least one day to pass the bacteria (see the Resources below for instructions on how to safely remove ticks).

Lyme disease vaccination is another method that may help decrease infection in dogs that spend time outdoors in areas where Lyme disease is known to occur. Vaccination should not be used instead of effective tick prevention methods.

Information to help you and your veterinarian make decisions on vaccines, vaccine schedules, and whether your dog is adequately protected from Lyme disease can be found in the Resources below.

In addition to individual dog tick prevention, other methods may be indicated for locations with high risk; for example, altering areas to create "tick-free zones" (e.g. removing excessive vegetation, keeping grass short, use of mulch as a tick barrier) or scheduling events for times when Lyme risk is lowest. Canine group event coordinators should consult with someone with experience in veterinary infectious disease risk assessment to increase awareness and attention to tick prevention. Dogs can act as indicators for human Lyme disease risk; similar prevention recommendations should be made to people coming into these areas.

Risk Prevention

Ixodes ticks are very common in certain regions of the USA. Knowledge of increased risk of exposure and high levels of ticks in a given area/event location, will be important information for you and your dog to help reduce and manage risk of infection.

Additional Resources

[Infectious Disease in Dogs in Group Settings \(includes information on vaccines and other prevention methods\)](#)

[How to Safely Remove Ticks From Your Dog \(Humane Society of the United States\)](#)

[Human Lyme Disease Maps \(Centers for Disease Control and Prevention\)](#)

[Worms and Germs Blog](#)

