

## The 7 Symptoms of Lyme Disease – Is Your Dog Infected?

Lyme disease has become prevalent in many areas of the US, and all it takes is one tick bite for your dog to become infected. While not every dog will show clinical symptoms, one form of Lyme can be fatal. Know the seven symptoms of Lyme disease so you can get your dog the help he may need.

Reviewed by Dr. Becker

### STORY AT-A-GLANCE

- While many dogs are exposed to the *Borrelia burgdorferi* bacteria that cause Lyme disease, most have no clinical symptoms of infection
- In the 5% to 10% of dogs who develop symptoms of Lyme disease after exposure to *Borrelia burgdorferi*, Lyme arthritis may develop if not diagnosed and treated in a timely manner
- Lyme bacteria may evade the immune system and persist in the body even after treatment, causing ongoing symptoms
- Once a tick grabs on to your dog, it takes hours for disease to be transmitted; if you're meticulous about checking your dog for ticks after he's spent time outdoors, you can often find and remove them before any damage is done
- An annual screening test for tick-borne diseases is recommended for dogs in the U.S., and twice a year for dogs in high-risk areas

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Lyme disease is caused by *Borrelia burgdorferi* (Bb) bacteria. Dogs can become infected if they're bitten by a tick carrying it. While four species of ticks transmit Lyme disease, most infections are due to tiny deer ticks, also known as black-legged ticks.<sup>1</sup>

If your dog spends time in grassy, wooded or marshy areas, he could easily pick up a tick or two, however cases of Lyme disease tend to be most common in southern New England, eastern Mid-Atlantic states, the upper Midwest, including Wisconsin and Minnesota and the West Coast, particularly northern California.<sup>2</sup>

### Most Dogs Show No Symptoms of Infection

In areas of the U.S. where Lyme is prevalent, veterinarians regularly screen for the disease even in healthy dogs. The results show that a large percentage of dogs are seropositive, meaning they have Lyme-related antibodies in their blood from exposure to the disease. However, they often have no clinical symptoms of infection.

As noted by an American College of Veterinary Internal Medicine consensus update, "Most Bb-seropositive dogs and cats show no clinical signs of illness, neither experimentally (using the natural tick exposure model) nor in the field."<sup>3</sup>

In fact, in some areas of New England, the vast majority of healthy dogs carry high Lyme antibodies, which means they've been exposed to the bacteria that causes the disease, yet they're healthy, not sick. This simply means their bodies mounted a successful immune response and cleared the pathogen before it could cause any serious damage.

It's ideal to screen for tick-borne diseases once a year, or every six months in high-risk areas, using an Accuplex, or 4DX, screening test. This screens for heartworm, Lyme disease and two strains each of ehrlichia and anaplasma. However, if your dog tests positive, it doesn't mean your dog automatically needs an antibiotic.

Instead, it means your dog has been exposed. The next step is to test for infection using a quantitative C6 (QC6) test, which discerns exposure from true infection. Over 90% of dogs who test positive on the 4DX screening test do not need treatment.

If you live in a tick-infested area and your pet tests positive on the SNAP 4Dx Plus or the Accuplex4, in addition to adding on the C6 test to differentiate infection versus exposure, ask your vet for additional screening for Babesia exposure. Babesiosis is a disease caused by some ticks carrying multiple potential pathogens, which can be serious if left undetected.

The best way to detect exposure to this parasite is with a PCR (polymerase chain reaction) test that checks for the presence of Babesia DNA.

## What Are the Symptoms of Lyme Disease?

In the 5% to 10% of dogs who develop symptoms of Lyme disease after infection with *Borrelia burgdorferi*, Lyme arthritis may develop, if immediate treatment isn't successful.<sup>4</sup> Symptoms include:

- Lethargy
- Lameness in one or more limbs
- Fever
- Swollen joints
- Enlarged lymph nodes
- Lack of appetite
- Decreased thirst

Some cases of Lyme arthritis can respond to antibiotic treatment, and fortunately, many of the brain and heart-related symptoms that unaddressed Lyme disease may trigger in humans are rare in dogs and cats. However, facial paralysis and seizure disorders can occur if the disease affects the nervous system.<sup>5</sup>

There is also a more serious form of Lyme disease in dogs called Lyme nephritis, which affects the kidneys and can be fatal. It's less common than Lyme arthritis. As noted by Whole Dog Journal:<sup>6</sup>

*"Dogs with Lyme nephritis may show a chronic history of weight loss, lethargy, vomiting, and inappetance. Their water intake gradually increases over a period of two or more weeks and they urinate more often. In advanced stages, dogs may develop edema (puffiness) of their limbs."*

*... Lyme nephritis is a condition that is not well understood. It is suspected that, in a valiant attempt to clear B. burgdorferi from the body, the immune system causes irreparable damage to the kidneys."*

Treatment of Lyme nephritis typically involves hospitalization, while dogs with Lyme arthritis usually improve rapidly after antibiotic treatment. However, some Lyme bacteria may evade the immune system and persist in the body even after treatment, causing ongoing symptoms.

These bacteria can enter a "stationary phase" in humans characterized by cells that divide slowly or not at all, called "persister" cells. These cells appear during periods of "nutrient starvation" or stress and are more resistant to antibiotics. In these cases, certain essential oils may work better than drugs to rid the persister forms of bacteria.<sup>7</sup>

Obviously, identifying subclinical infections early, before any symptoms are noticed, is the best way to prevent any long-term consequences of undiagnosed infection (including Lyme arthritis and kidney disease), which is why frequent screenings to detect early infections are so important.

## **It Takes Hours for Ticks to Transmit Lyme Disease**

Ticks can transmit not only Lyme disease but a number of other tick-borne diseases. The important thing to remember is it's not instantaneous. Once a tick grabs on to your dog, Whole Dog Journal notes, it "spends 30 minutes to two hours or more walking all over their new host's body, looking for the perfect spot to insert their mouthparts and begin taking a blood meal."<sup>8</sup>

This means that if you're meticulous about checking your dog for ticks after he's spent time outdoors, you can often find and remove them before any damage is done. Using a flea comb on your animals for this purpose will reduce the chance of any unwanted tagalongs.

Prevention is also important. For a natural pet deterrent for dogs, mix 8 ounces of pure water with 4 ounces of organic, **unfiltered apple cider vinegar** and 20 drops of neem oil (especially annoying to mosquitoes and fleas).

If you live in an area with ticks, you can also add five drops of lemon, lemongrass, eucalyptus or geranium essential oil for added punch. For those in high-risk areas, you can often alternate chemical preventives with natural deterrents and regular flea-combing to cut down on pesticide usage.

## **Sources and References**

<sup>1,5</sup> [Merck Manual, Lyme Disease \(Lyme Borreliosis\) in Dogs, September 2024.](#)

<sup>2</sup> [AVMA, Lyme Disease in Dogs](#)

<sup>3</sup> [J Vet Intern Med. 2018 Mar 22;32\(3\):887-903.](#)

<sup>4,6,8</sup> [Whole Dog Journal, May 29, 2023](#)

<sup>7</sup> [Antibiotics 2018, 7\(4\), 89](#)

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