

STARTING OFF ON THE RIGHT PAW – DVGRR TIPS FOR ADOPTERS

Lyme Disease in Dogs – Understanding the Basics

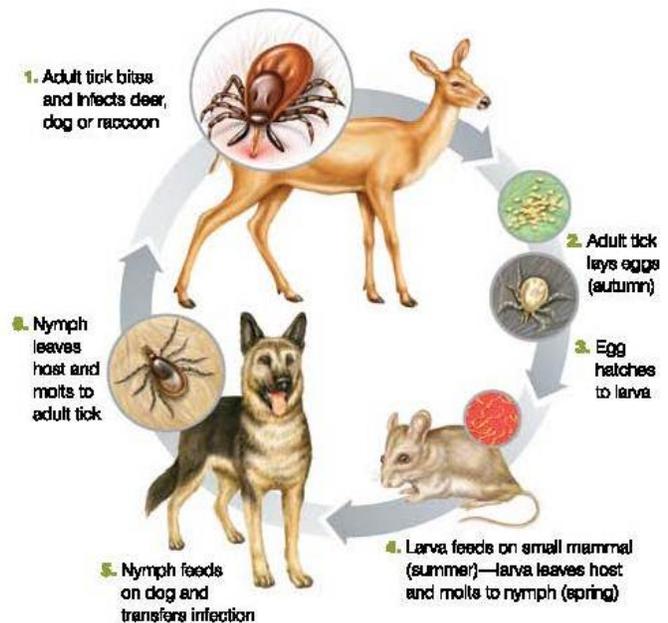
Perhaps somewhere there is a legitimate reason for ticks to exist, but if so, dog lovers have yet to identify it! Most people are aware that among the many unpleasant aspects of ticks is their ability to transmit Lyme disease to both humans and dogs. These unwelcome creatures also carry other tick-borne diseases with less common names and lower incident rates, such as canine ehrlichiosis and canine anaplasmosis. For this article, we will focus on Lyme disease, the most common of the tick-borne diseases in dogs.

Named for the Connecticut city in which it was first identified in the 1970s, Lyme disease is most commonly found in the Northeast, Mid-Atlantic, and upper Midwest states but is known to occur in other areas as well. This [map](#) highlights the incidence of infected ticks throughout the United States. It is an infection caused by the *Borrelia burgdorferi* bacterium and is carried by ticks of the Ixodes species (commonly known as deer ticks).

Transmission

The life cycle of a tick (shown in this image from IDEXX) includes several stages, that of egg, larva, nymph, and adult. The tick feeds on the blood of various hosts (i.e., other animals) throughout this life cycle, and if one of them is a human, dog, or other mammal, it may result in Lyme disease being transmitted. The tick bites the host and begins sucking the blood through the bite, often increasing its body size dramatically as it becomes engorged.

A key aspect of this process is that for the bacteria to be transmitted from tick to host, the tick must bite the host *and remain attached for a significant period of time* – generally 36-48 hours. If the tick dies or is removed from the host earlier than this, transmission of the bacteria will not occur. In dogs, even if a bacteria-carrying tick is attached to the dog for more than 48 hours, the dog will not automatically become infected – only a relatively small percentage will contract the disease. Others may harbor the bacteria but never get sick. Nonetheless, one critical part of preventing Lyme disease is to carefully monitor your dog for evidence of ticks and remove them as soon as possible when found (see more under Prevention).



Deer ticks can become infected during the larval and nymph phase by feeding on small mammals that harbor bacteria that cause Lyme disease or anaplasmosis.

Symptoms

Although Lyme disease affects both humans and dogs, the symptoms are quite different in each species. For example, many people know that a “bull’s eye” rash at the site of a tick bite is a characteristic symptom of Lyme disease in two-legged victims. Not so with our four-legged, canine friends. In addition, symptoms of Lyme disease in dogs generally take much longer to manifest themselves than they do in people. Clinical signs of the infection do not typically appear in dogs until two to five months after the bite from an infected tick.

A dog infected with Lyme disease may show few, if any, symptoms at all, but if symptoms appear they generally include:

- Acute or recurring lameness due to inflammation of the joints
- Reluctance to move
- Loss of appetite
- Lethargy or depression
- Fever

In a smaller percentage of cases, dogs may present with a far more serious form of the disease known as canine Lyme nephritis. In this situation, the disease attacks the renal system (kidneys) and may lead to devastating kidney failure resulting in eventual death. Fortunately, the less serious form of Lyme disease is the one more frequently seen and diagnosed.

Diagnosis

The diagnosis of Lyme disease is generally made by reviewing a medical history in combination with the results of blood tests that detect antibodies made by the dog’s system in response to the bacteria. Key factors in the medical history would include evidence of tick exposure/bite, clinical signs of Lyme disease (see previous section), and a response to antibiotic therapy.

The most common blood test used by veterinary hospitals is the IDEXX “SNAP® 4Dx® Plus” test that can be run in-house and provides results within a very short time (approximately ten minutes). These tests also screen for additional tick-borne diseases as well as for heartworm disease.

One of the interesting aspects of testing is that many dogs show positive results on a SNAP test but are not actually infected with the disease. They may have been exposed to the bacteria at some point in the past but fought off the infection on their own. Therefore, they have the antibodies in their system but do not actually have Lyme disease.

Since the blood test is often run routinely on an annual or bi-annual basis, it can be confusing to an owner to be told that their dog’s results are positive. In addition, veterinary opinions differ with regard to whether to treat a dog that tests positive but does not have any clinical signs of the disease (see next section).

Treatment

Fortunately, the treatment protocol for dogs with Lyme disease (other than the more severe Lyme nephritis version) is very straightforward and easy to administer. Treatment typically consists of a 30-day course of oral antibiotics. The two most commonly used antibiotics are doxycycline or amoxicillin. Both of these medications are relatively inexpensive and have limited potential for side effects. (For larger dogs that require a higher dosage, the cost can be higher than for smaller dogs, of course.) In addition, these antibiotics are also the treatment of choice for other tick-borne infections that can cause similar symptoms to Lyme disease.

If the dog has been showing clinical signs of Lyme disease, obvious improvement can be expected within 48 hours. If the dog has not shown clinical signs but still tests positive for the disease, some veterinarians will still go ahead and prescribe the course of antibiotics as a precaution. This is the typical protocol used at DVGRR, i.e., any dog that tests positive for Lyme disease while in our program (whether or not they are symptomatic) is treated with doxycycline for 30 days.

Sometimes, even after treatment, the Lyme bacteria remains in the dog's system in a latent stage. This means that the organism is still present in the dog's body but is not causing any active infection.

Prevention

It's always nice when dog owners can take preventive steps to avoid an insidious condition like Lyme disease from affecting their canine companions. There are two important ways to keep your dog from contracting this disease – tick control and removal, and vaccination.

Tick control and removal – Since the disease is transmitted through the bite of an infected tick, clearly making sure that ticks do not get on your dog is the easiest and most straightforward means of avoiding infection. Of course, given their tiny size and the prevalence of ticks in our environment, this can be a challenging task. Here are some tips for all dog owners to follow:

- Avoid areas of high tick infestation, especially during those times of the year when ticks are most active. Ticks are most often found in tall grasses and wooded areas, but they can hop a ride on people and animals and turn up elsewhere as well.
- Check your dog regularly for ticks and remove them immediately if found. Remember that the tick must be attached to the dog for 36-48 hours in order to transmit the disease. If you find and remove the tick early, the risk of transmission is significantly decreased.
- Make sure you know the proper way to remove ticks so you don't inadvertently come in contact yourself with the bacteria. Use a tweezers or specially made tick removal tool to grasp the tick as close to the mouth parts as possible, then pull straight upwards with gentle but firm pressure. This [video](#) illustrates the proper techniques for removal and disposal of ticks. If your dog is wiggly or unwilling to hold still for the process, have a second person distract him with a handful of treats or some peanut butter on a spoon while you remove the tick safely.
- Treat your dog regularly with a tick insecticide product to keep the ticks at bay. The once-a-month topical treatments such as [Frontline](#) or [K9 Advantix](#) are easy to use and very effective. Tick collars are also available. Some insecticide products kill fleas and ticks, some just kill fleas, so read the label and instructions carefully.
- This [chart](#) from the [Mar Vista Animal Medical Center](#) website is an excellent comparison tool for deciding which of these insecticide products may be best for your needs.
- As with any chemical applied to a dog, there is a potential for adverse side effects with these insecticides, though the risk is generally considered low. Dog owners must balance the risk of side effects with the risk of not protecting their pet against Lyme disease and other tick-borne illnesses.
- As an alternative, you can find more natural, chemical-free products available as well, although the selection is smaller and they may not be as effective as the insecticides. Some to check into are [Ticked Off](#) from Deserving Pets, [Natural Flea and Tick Defense](#) from Mercola, or [Vet's Best Flea and Tick Spray](#).

Please note that DVGRR does not necessarily endorse or recommend any of the commercial products mentioned or referenced in this article. We have used some at Golden Gateway and can provide feedback on our experience here for those; others are listed for informational

Vaccination against Lyme disease – There are several vaccination options on the market for Lyme disease, and the decision whether or not to vaccinate your dog(s) is one that should be discussed carefully with your veterinarian. While the pros and cons of vaccination are more complex than can be covered in this article, factors to take into consideration would be your dog’s level of risk for contracting Lyme disease, the anticipated efficacy of the vaccine, and any potential side effects. If you do opt for the vaccination, your dog will need two doses given several weeks apart and then an annual booster after that.

ADDITIONAL RESOURCES

Three very good handouts from [IDEXX Labs](#):

[Pet Owner Questions and Answers](#)

[Your Guide to Understanding Canine Parasitic Diseases](#)

[Tick-Borne Disease Life Cycle](#)

[Lyme is Lame](#) – blog post from Dawg Business

[Lyme Disease in Dogs](#) – Pet MD

[Lyme Disease \(Borreliosis\) in Dogs](#) – Drs. Foster and Smith Pet Education Series

[Tick Control](#) – Drs Foster and Smith Pet Education Series

[A Lyme Disease Primer](#) – Mar Vista Animal Medical Center

[Lyme Disease in Dogs](#) – Vetstreet.com

[Dogs and Ticks.com](#)

[Dog Owner’s Guide to Lyme Disease](#) (video)