



## Lyme Disease

Lyme disease was first reported in humans in 1977 in Lyme, Connecticut, when a group of young children developed arthritis. The first case of Lyme disease in dogs was reported in 1985. The causative agent of Lyme is a spirochete bacteria (*Borrelia burgdorferi*).

The Lyme organism (*B. burgdorferi*) requires the Deer tick (*Ixodes scapularis*) for completion of its life cycle. The deer tick feeds on the White-Tailed Deer but will use other hosts including dogs and humans. Ticks live on the ground or up to 3 ½ feet off the ground. The two life stages of the tick that can transmit Lyme disease are the nymph tick (an immature tick about the size of a pin head) and the adult tick. Ticks are most active from spring until early fall, but are not killed over winter, rather they hibernate. The tick must be attached 48-72 hours for transmission of the disease.

The two main manifestations of Lyme disease are arthritis (often characterized by a shifting leg lameness) and nephropathy (kidney disease). Clinical signs may not develop for 4-8 months following exposure to an effected tick. Some dogs will display mild lameness and lethargy (decreased energy) for less then 24 hours. This is often overlooked as an acute injury the dog consequently recovers from. The concern is these dogs may develop a chronic form of the arthritis or kidney failure. The chronic form of arthritis is much more difficult to treat. The immune-complexes formed from the *Borrelia* organism can punch holes' in the kidneys causing them to leak proteins. This can then develop into acute renal (kidney) failure, which has a rapid fatal progression. Currently, researchers are unsure of the prevalence of renal failure associated with Lyme disease.

According to the Center for Disease control, there has been a 40% increase in the reported human cases of Lyme disease from 2001 to 2002. It is then reasonable to assume that cases in dogs are also increasing (this data is not currently documented). Researchers have not been able to prove that treatment for Lyme disease will ever clear the infection completely from the dog's system. Therefore, prevention

is key. We recommend year round use of Frontline and annual Lyme vaccines.

### **Recommendations for Lyme positive dogs**

Your dog has tested positive for Lyme Disease on our in-house snap test. This means your dog has the Lyme organism (*Borrelia burgdorferi*) in his/her body prompting the immune system to produce antibodies. The two major clinical signs observed with Lyme Disease are: arthritis (often characterized by shifting leg lameness) and kidney damage possibly leading to irreversible kidney failure. Some dogs will become lame for less than a 24 hour period. This is often mistaken as an acute injury the animal quickly recovered from. The concern is that your dog can develop a chronic state of infection that is much more difficult to treat, often never cured completely.

After observing a positive result for Lyme Disease on our in-house test, the next step is to send out a blood serum sample for a C6 Antibody titer. This test will quantify (gives us a numeric value for) the antibody titer. Antibodies are formed by the body in response to infection. This new test will help us to determine if treatment with antibiotics is necessary. If the titer is high, we will recheck the antibody titer in 4-6 months following treatment. This second titer ensures success of treatment and helps identify possible re-infection.

The second test we recommend is the ERD (Early Renal Disease) test. Lyme Disease can potentially cause a severe nephritis (inflammation of the kidney) which will cause the kidneys to 'leak' protein not normally passed into the urine. The ERD test tells us if the smallest protein (albumin) produced by the body is 'leaking' through the kidneys. The ERD test is not specific for Lyme Disease, but is useful in determining if the kidney function should be monitored more closely for damage. We will recheck the ERD in 6 months.

Lyme Disease is a complex disease. Researchers are continuing to discover information about the nature of the *Borrelia* organism. Medicine is constantly evolving to provide the best diagnostics and treatment available. By staying current with the information we are able to provide your pet with the highest standard of care.