

FAQs: Diagnosing Lyme Disease

Unless otherwise noted, the information source for this document is the ACVIM Small Animal Consensus Statement on Lyme Disease in Dogs: Diagnosis, Treatment, and Prevention.*

What is the difference between Lyme disease in humans and Lyme disease in canines?

Most people, approximately 90%, exposed to *Borrelia burgdorferi* (Bb), the organism that causes Lyme disease, show clinical signs. In contrast, 95% of Lyme-positive dogs remain asymptomatic. (Sec. 1, pg. 423)

Although most dogs will test positive for exposure in Lyme-endemic areas, most people will not be exposed. While it's true that human exposure to Bb frequently results in disease, Bb exposure will rarely develop into disease in dogs. To view the reported cases of Lyme disease in the U.S., please visit the CDCP at www.cdc.gov/ncidod/dvbid/lyme/ld_incidence.htm.

How common is canine Lyme disease in clinical practice?

This question is difficult to answer because:

- a. There are so many seropositive dogs in endemic areas;
- b. There is no test result that proves illness from Bb infection; and
- c. Some dogs thought to be infected could be ill from another cause.

For example, there are Lyme-endemic areas where 70–90% of all healthy and clinically-ill dogs are seropositive, making the diagnosis of Lyme disease in individual dogs problematic. (Sec. 2, pg. 423)

Is there an in-clinic test that diagnoses Lyme disease?

No. The presence of Lyme disease can only be determined by clinical diagnosis. No individual test result documents clinical illness from Lyme infection. The diagnosis of Lyme disease should include (Sec. 8, pg. 425):

1. Evidence of exposure (Note: most Lyme-positive dogs remain asymptomatic)
2. Clinical signs consistent with Lyme disease (transient fever, anorexia, and arthritis)
3. Consideration of other differentials
4. Response to treatment

In one study, 4.8% of seropositive dogs showed signs of lameness/fever/anorexia but so did 4.6% of seronegative dogs. (Meryl P. Littman, Canine borreliosis. *Vet Clin North Am Small Anim Practice* 2003; 33(4):827-862)

So, if the in-clinic Lyme test does not diagnose Lyme disease, what do the results tell me?

Positive results in currently available in-clinic *B. burgdorferi* antibody tests document exposure to the organism but do not document Lyme disease. Thus, the positive predictive value of the test is poor.

"The negative predictive value of *B. burgdorferi* antibody tests is very good because most dogs with Lyme disease will test positive. Thus, an antibody-negative, clinically-ill dog usually does NOT have Lyme disease. When testing clinically-ill dogs, I hope for a negative result so I can take it off my differential list and keep going with my work-up."

—Dr. Michael R. Lappin, DVM, Ph.D., DACVIM, *Teleseminar on Lyme Disease, Diagnosis, Testing, and Treatment, June 15, 2006.*

Should I be testing healthy dogs for Lyme disease?

Whether healthy dogs should be screened for antibodies against Lyme disease is controversial. (Sec. 18, pg. 428)

The benefits to screening are that you will know if a dog has been exposed to Bb and other tick-borne organisms, and that you may detect Lyme disease before clinical illness develops.

NOTE: Seropositive dogs should always be screened and monitored for proteinuria (Fig. 3, pg. 427). This gives you a more complete picture for your diagnosis.

- If negative for proteinuria, recheck periodically (every 3-6 months)

- If positive for proteinuria:
 - conduct a full urinalysis, including a microalbuminuria (E.R.D.) test
 - monitor UP/C ratio
 - perform a urine culture
 - monitor CBC, blood chemistry, and blood pressure
 - treat proteinuria
 - If a dog is known to be seropositive, one might want to check for proteinuria more frequently than annually, especially in retrievers and Shelties.

The primary argument against serologically screening healthy dogs (or treating them) is that:

- Routine testing often results in overdiagnosis and overtreatment of dogs on the basis of a test that does not diagnose Lyme disease nor predict whether Lyme disease will ever occur; and
- Most seropositive dogs will never become ill with Lyme disease and do not need to be treated.

In addition, false positive test results involve expense for the owner, unnecessary distress, and potential induction of drug reactions in animals that do not need to be treated. (Sec. 18, pg. 428)

I'm located in a Lyme-endemic area. Shouldn't I be regularly testing for Lyme disease?

Lyme-endemic areas are already well-known, and tick control and public health information should be recommended in all Lyme-endemic areas regardless of blood tests. (Sec. 18, pg. 428)

In short, if you regularly test for Lyme disease in a Lyme-endemic area, you will regularly get positive test results for *Bb* exposure, because exposed dogs will develop antibodies against *Bb* and in most cases will never develop clinical signs.

However, the best way to treat Lyme disease is to prevent it through aggressive tick control. Tick control in Lyme-endemic areas is not only important to prevent Lyme disease but also to prevent Rocky Mountain Spotted Fever, ehrlichiosis, anaplasmosis, babesiosis, bartonellosis, and other infections. (Sec. 27, pg. 431)

When is it necessary to test and what tests should I use?

Symptomatic?	Endemic Area?	Screen for Lyme Disease?	Lyme Test Result	Screen for Proteinuria?	Proteinuria Test Result	Next Steps
No	No	Not necessary		Not necessary		None, no need to worry about Lyme disease
No	Yes	Optional, but will likely be positive	Negative	Optional		Screen for proteinuria
No	Yes	Optional, but will likely be positive	Positive	Yes	Negative	<ul style="list-style-type: none"> • Note Lyme test results • Follow-up with proteinuria testing
Yes	No	Yes	Negative	Yes	Negative	<ul style="list-style-type: none"> • Note both test results in patient record • Look for other causes of clinical signs
Yes	No	Yes	Positive	Yes	Negative	<ul style="list-style-type: none"> • Follow protocol to make clinical diagnosis for Lyme disease, or • Look for other causes of symptoms • Follow up with proteinuria testing
Yes	No	Yes	Positive	Yes	Positive	<ul style="list-style-type: none"> • Follow protocol to make clinical diagnosis for Lyme disease • Follow up with proteinuria testing
Yes	Yes	Yes	Positive	Yes	Positive	<ul style="list-style-type: none"> • Follow protocol to make clinical diagnosis for Lyme disease • Follow up with proteinuria testing

For additional support materials on the subject of Lyme disease testing and the importance of Microalbuminuria testing (E.R.D.), call Heska at 800.464.3752.

- Audio Recording: *Lyme Disease: Diagnosis, Testing, and Treatment—Clinical lecture and discussion via teleconference with Michael Lappin, DVM, Ph.D., DACVIM, Colorado State University, and Meryl Littman, VMD, DACVIM, University of Pennsylvania—Thursday, June 15, 2006.* (Note: Both DVMs were members of the ACVIM Consensus Panel for Lyme Disease.)
- Technical Brief: *Routine Screening for Canine Lyme Disease*
- Technical Brief: *Dipsticks, Urine Protein Creatine Ratio Assays, and Microalbuminuria Tests—Which Do I Use?*
- Client Brochures: Education for pet owners on heartworm testing and microalbuminuria testing.

*ACVIM Small Animal Consensus Statement on Lyme Disease in Dogs: Diagnosis, Treatment, and Prevention, MP Littman, RE Goldstein, MA Labato, MR Lappin, and GE Moore, *J Vet Intern Med* 2006;20:422-434. The entire ACVIM Consensus Statement on Lyme Disease can be found online at: www.acvim.org.



For further assistance, please call Heska's Technical Support Services at 800.464.3752, option 3.