



4 common questions

? Is my dog likely to get infected?

Your dog can be exposed to these infections in almost any outdoor location where deer ticks, black-legged ticks, brown dog ticks and mosquitoes can be found. Risk varies from region to region. **You might not even know when it happens.**

? How are these infections diagnosed?

Diagnosing can be difficult because signs aren't often present. However, we can run a very simple blood test to see if your dog has been exposed. If that test is positive, we will often run additional tests to identify the extent of infection and other related health conditions. **We recommend a parasitic disease screen at every annual checkup.**

? What can I do to prevent these diseases?

Good tick control and heartworm prevention are vital. We can offer a vaccine for Lyme disease and a number of pills and topical products to help with the other diseases. **If you find a tick on your dog, go to dogsandticks.com for a description of proper removal procedures. Or call us for assistance and to schedule a follow-up visit.**

? Could I possibly contract these diseases from my pet?

These diseases **cannot** be transmitted directly from your pet to you or your family. However, if ticks are found in your area, your family can be at risk, just like your dog. To reduce the risk, inspect your dog and every family member for ticks several times a day when enjoying outdoor activities.

3 ways to help avoid tick- and mosquito-borne diseases

At Home:

1. Inspect your dog's coat daily for ticks.

- Feel for ticks or hard bumps
- Remove ticks immediately* and call us
- Bring your dog to see us if testing is recommended

*Visit dogsandticks.com for removal procedures

2. Watch for these signs of infection.

Call us immediately if any of these symptoms develop in your pet.

- Lameness
- Swollen or painful joints (your dog yelps when touched)
- "Just not himself/herself"
- Lack of energy/depression
- Loss of appetite or weight loss
- Vomiting
- Diarrhea
- Runny nose or eyes
- Mild, persistent cough
- Reluctance to move or exercise
- Tiredness after only moderate exercise

At the clinic:

3. Include a screening test during your dog's annual visit.

Your next appointment

References:

1. Breitschwerdt E, Ford RB, Lappin M, Levy SA, Phillip M. Testing for ehrlichiosis and Lyme disease. *Compendium on Continuing Education for the Practicing Veterinarian*. 2001;23(4)(suppl).
2. Bowman D, Little SE, Lorentzen L, Shields J, Sullivan MP, Carlin EP. Prevalence and geographic distribution of *Dirofilaria immitis*, *Borrelia burgdorferi*, *Ehrlichia canis* and *Anaplasma phagocytophilum* in dogs in the United States: Results of a national clinic-based serologic survey. *Vet Parasitol*. In press.
3. Hoskins JD. Seroprevalence of *Ehrlichia* in dogs. *Vet Forum*. 2000;18(10).
4. Verdon DR. Heartworm survey: No change in 10 years. *DVM Newsmagazine*. 2002;33(7).

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TICKS AND MOSQUITOES

Could they be secretly infecting your dog?

Together, we can be the best defense against diseases carried by ticks and mosquitoes.



-  LYME DISEASE
-  ANAPLASMOSIS
-  EHRLICHIOSIS
-  HEARTWORM DISEASE

These diseases are infecting dogs throughout North America, including in your own neighborhood.

We recommend following a rigorous prevention program to help keep these pests from infecting your dog.

Learn more at dogsandticks.com

Your guide to understanding canine parasitic diseases

What you can do

- **Watch for the most common signs associated with these diseases**, which may be hard to detect in the early stages.
- **Work with us to find infections early**, because early intervention is important for a lifetime of good health.
- **Ask for a simple screening test**—it can be performed in just minutes during your visit. You'll know immediately if your dog has been exposed to these diseases...or if treatment is needed.

What you should know

- **Lyme disease** can be found in every U.S. state and Canadian province and dogs are 50% more likely to get Lyme disease than humans.¹
- **Anaplasmosis**, an emerging disease, is surpassing Lyme disease in some areas of North America.²
- **Ehrlichiosis** is the second most common canine infectious disease in the U.S. (after parvovirus).³
- **Heartworm** infection rates remain unchanged over the past 10 years, despite tremendous awareness of the disease.⁴

What we can do together

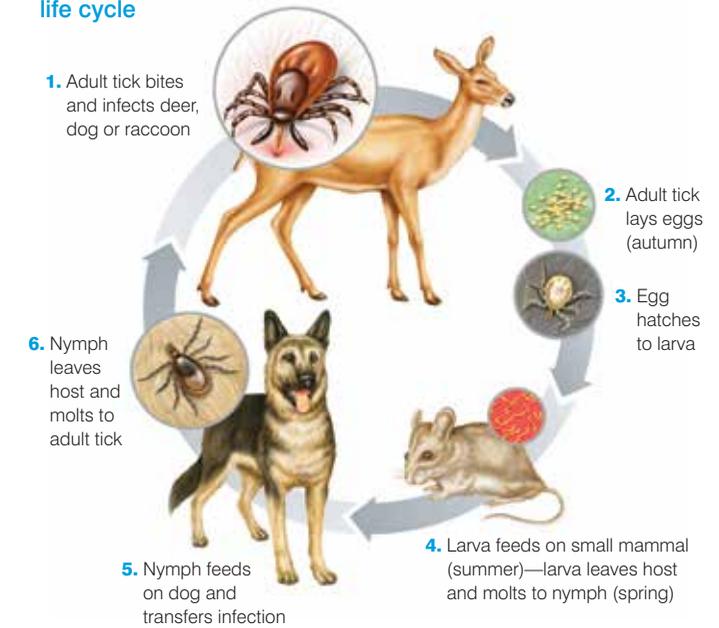
You know your dog better than anyone else. That's why your role as the "watchdog" for these infections is critical. The information in this brochure can help you understand your role and how we can work together to provide the best care. Call us any time you have questions.



	Lyme disease	Anaplasmosis	Ehrlichiosis	Heartworm disease
Parasite	Deer tick or black-legged tick (<i>Ixodes</i> spp.) carries bacteria and bites dogs, spreading infection		Lone star tick (<i>Amblyomma americanum</i>) or brown dog tick (<i>Rhipicephalus sanguineus</i>) carries bacteria and bites dog, spreading infection	Mosquito transfers worm larvae from infected dog to your dog; larvae develop into worms that live in the heart and its vessels
Most common signs of infection	Silent infection <ul style="list-style-type: none"> • Lameness • Fever • Swollen joints • Kidney failure • "Not himself/herself" • Anorexia 	Silent infection <ul style="list-style-type: none"> • Lack of energy • High fever • Swollen, very painful joints • Loss of appetite • Vomiting • Diarrhea 	From mild to severe: <ul style="list-style-type: none"> • Loss of appetite • Depression • Fever • Painful joints • Bloody nose • Pale gums 	No sign at first, then: <ul style="list-style-type: none"> • Mild, persistent cough • Reluctance to move or exercise • Tiredness after moderate exercise • Reduced appetite • Weight loss
Disease progression if left untreated	Damaged joints, fatal kidney disease (rare)	Very low numbers of platelets and white blood cells, chronic joint pain, neurological signs (rare)	Permanent blindness, autoimmune diseases, bleeding complications, death	Heart failure, lung disease, sudden death
Coinfection	Coinfection with Lyme disease and anaplasmosis is possible. In addition, it's possible for your dog to become infected with any combination of parasitic diseases—including those not listed here.			
Diagnosis	Simple blood test: SNAP® 4Dx® Plus Test (can detect six infections in one blood sample in less than 10 minutes) Other tests: Complete blood count, chemistry profile, urinalysis, other special tests, depending on initial findings and clinical signs			
Treatment	Antibiotics: doxycycline, tetracycline	Antibiotics: doxycycline, tetracycline	Antibiotics: doxycycline, tetracycline	Adulticides (kills adult heartworms), melarsomine (Immiticide®) <small>Source: American Heartworm Society</small>
Prognosis	If caught and treated early, the outcome is usually very good for a full recovery from symptoms. Some of these infections cannot be cured completely, but early intervention usually provides the best prognosis.			
Vaccine available?	Yes	No	No	No
Other prevention	Daily tick inspection and removal, and the use of topicals and other veterinarian-dispensed products			Heartworm pills and topical preventatives (typically monthly)

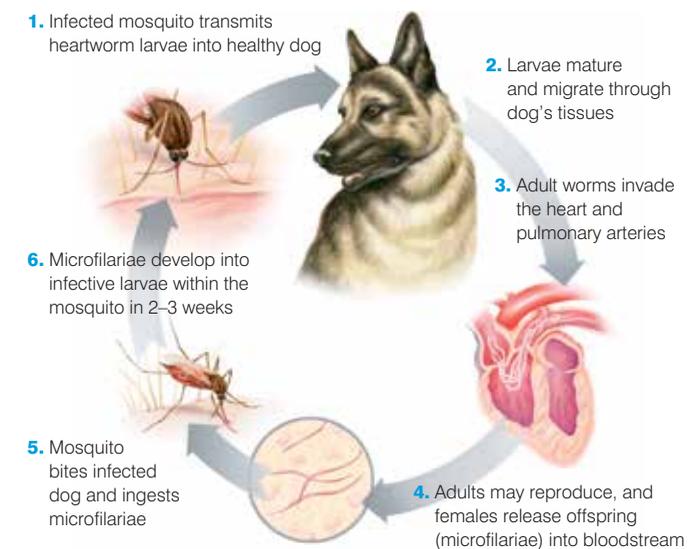
IMPORTANT: No prevention is 100% effective. Test your dog every year.

Tick-borne disease life cycle



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.

Mosquito-borne disease life cycle



Special thanks to Dr. Edward Breitschwerdt and Dr. Matt Eberts for their contributions.

Tick images supplied by the Armed Forces Pest Management Board, afpmb.org. American dog tick (*Dermacentor variabilis*) photographer: Susan E. Ellis, USDA-APHIS-PPQ. Deer tick (*Ixodes scapularis*), lone star tick (*Amblyomma americanum*) and brown dog tick (*Rhipicephalus sanguineus*) photographer: James L. Occi

