

Ehrlichiosis in Dogs

What is ehrlichiosis?

Ehrlichiosis is a tick-borne infectious disease that occurs in dogs and is usually carried by the brown dog tick. It first gained attention as a significant disease when military dogs returning from Vietnam during the 1970s were found to be infected. The disease seems to be particularly severe in German shepherds and Doberman pinschers.

The organism responsible for this disease is a rickettsial organism. *Rickettsiae* is a specific group or “genus” of bacteria. *Ehrlichia canis* (*E. canis*) is the most common rickettsial species involved in ehrlichiosis in dogs, but other strains of the organism will occasionally be found.

Because of its origin in military dogs in Vietnam, it has also been called tracker dog disease and tropical canine pancytopenia.

How is a dog infected with *Ehrlichia*?

Ehrlichiosis is a disease that develops in dogs after they are bitten by an infected tick. In the United States, *E. canis* is considered endemic (regularly occurring) in the southeastern and southwestern states, though the brown dog tick can be found throughout the United States and Canada. Though the brown dog tick is the main carrier of the *E. canis* in North America, other tick species have also been shown to transmit the disease in other areas and may carry other subspecies of *Ehrlichia*.

What are the signs of ehrlichiosis?

Signs of ehrlichiosis can be divided into three stages: acute (early disease), subclinical (no outward signs of disease), and clinical or chronic (long-standing infection).

In areas where ehrlichiosis is common, many dogs are seen during the **acute phase**. In this stage, infected dogs may have a fever, swollen lymph nodes, respiratory distress, weight loss, and bleeding disorders (spontaneous hemorrhage or bleeding). Occasionally, dogs may have neurological disturbances, such as unsteadiness or the development of meningitis. This acute stage may last two to four weeks. Some dogs eliminate the infection and others progress to the subclinical phase.

In the **subclinical phase**, the organism is present but not causing any outward signs of disease. Sometimes a dog will pass through the acute phase without its owner being aware of the infection. These dogs may become subclinical and have no apparent signs of illness, but will develop changes that can be observed through laboratory testing, such as low platelets. The subclinical phase is often considered the worst because there are no clinical signs, and so the disease goes undetected. During this phase, the only hint that a dog may be infected is if the dog shows prolonged bleeding from a puncture site where a blood sample was drawn. Dogs that are infected sub-clinically may eliminate the infection or may progress to the next stage: clinical ehrlichiosis.

Clinical ehrlichiosis occurs if the immune system cannot eliminate the *E. canis* organism. Dogs are likely to develop a host of problems, such as anemia, bleeding episodes, lameness, eye problems (including hemorrhage or blindness), neurological problems, and swollen limbs. If the bone marrow fails (the site of blood cell production), the dog becomes unable to manufacture any of the blood cells necessary to sustain life.

How is ehrlichiosis diagnosed?

Ehrlichia may first be detected on a screening test, which looks for evidence of exposure to the organism by measuring a dog's antibody level. Dogs that are newly infected haven't had a chance to create many antibodies, so they may initially test negative, but if the test is repeated a few weeks later, the antibody level will be higher and the test will be positive.

The following tests are recommended for any sick dog; however, if your dog tests positive but has no clinical signs, your veterinarian may recommend additional baseline blood tests including a complete blood cell count and chemistry. Infected dogs will have a low platelet count (called thrombocytopenia), anemia, and/or high levels of globulin (a protein) in the blood. Urinalysis should also be performed to determine if the infection is affecting the kidneys, causing protein loss in the urine.

To confirm an infection, a PCR (polymerase chain reaction) test may be used to detect *Ehrlichia* DNA. This test can also define the specific species of *Ehrlichia* that is infecting your dog. PCR is most reliable in the acute phase of disease and may be negative if your dog has already started on antibiotics. In that case, a positive diagnosis needs two serial antibody tests (described above), done a few weeks apart.

Rarely, the organism itself may be seen in blood smears or in samples of cells taken from the lymph nodes, spleen, and lungs.

How is ehrlichiosis treated?

Certain antibiotics are quite effective, such as doxycycline. A long course of treatment is needed — generally four weeks. Antibiotics are the treatment of choice, as they are accessible and generally well tolerated. Your veterinarian will discuss treatment options with you, as some supportive medications, such as steroids, may be needed depending on the clinical state of the patient.

When treatment starts early in the acute phase, prognosis is generally good. The prognosis for dogs with chronic Ehrlichiosis and bone marrow involvement is less certain. Dogs in the subclinical phase who test positive for antibodies but are otherwise healthy may not need treatment. Not all these dogs will progress to the chronic phase of disease, and treating them can promote antimicrobial resistance. Talk to your veterinarian about the best treatment plan for your dog.

Dogs experiencing severe anemia or bleeding problems may require a blood transfusion; however, blood transfusions do not treat the underlying disease.

How can I protect my dog from ehrlichiosis?

The most effective way to prevent ehrlichiosis in your dog is to get rid of ticks in the dog's environment and apply flea and tick preventives. Topical options include Advantix®, Frontline Plus®, Vectra 3D® or Bravecto®. Oral chewable options include Nexgard®, Simparica®, Credelio®, or Bravecto®. There is also the Seresto® collar, which can be effective for up to eight months.

As new products are constantly being developed, your veterinarian will help you determine which preventive is best for your dog. Dogs in areas where this disease is endemic should be treated year-round with preventives.

Can I get ehrlichiosis from my dog?

No, you cannot get ehrlichiosis from your dog. However, you can get canine ehrlichiosis from tick bites. Ehrlichiosis is only transmitted through tick bites, so infected dogs provide warning that infected ticks are in the area, and are a sign that humans in the area should also be careful to avoid bites.