

Heartworm Disease

This article is intended to educate the reader in the development, testing, treatment and prevention of Heartworm Disease in dogs. It is recommended you visit the American Heartworm Society ([website](#)) and seek professional advice from a veterinarian if you wish to learn more about this disease.

Please bare in mind that, although, this article mentions only Heartworm Disease in dogs, animals such as cats and other species of mammals, including wolves, foxes, ferrets, sea lions, are all susceptible to contracting heartworms.

What is Heartworm Disease and how is it transmitted?

Heartworm disease is a potentially fatal condition caused by parasitic worms living in the arteries of the lungs and in the right side of the heart, they are one of many species of roundworms (or nematodes). *Dirofilaria immitis* is the specific species of roundworm responsible for Heartworm Disease and dogs are considered to be the definitive or preferred hosts of this disease.

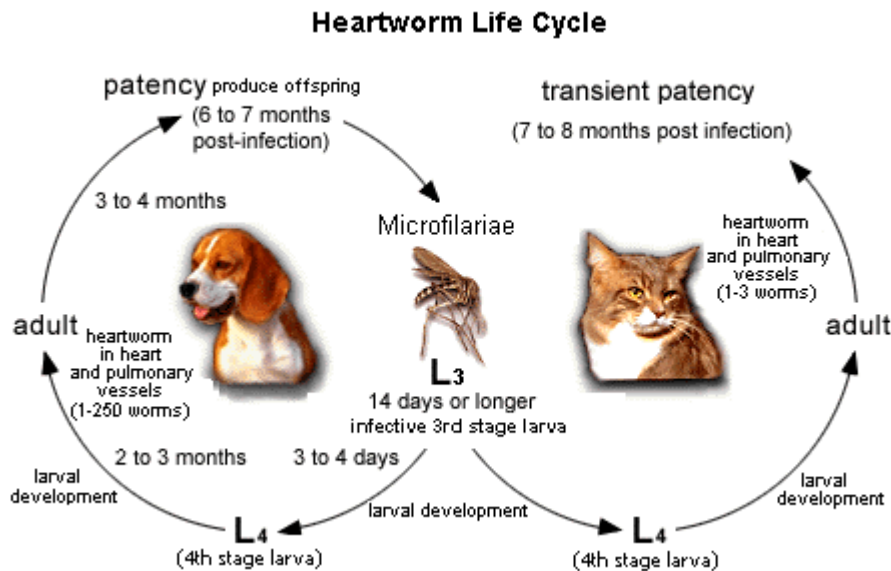


Image courtesy of the American Heartworm Society

Adult female heartworms produce offspring called microfilariae that float freely in the blood of an infected dog. When a mosquito feeds on the blood of a heartworm infected dog it ingests the microfilariae, now making it a carrier of Heartworm Disease. Within 10-14 days the microfilariae mature inside the mosquito to the infective larval stage known as L3. When an infected mosquito feeds on the blood of a dog then the L3 heartworm larvae are transmitted to that dog. Once inside the dog within 3-4 days the L3 larvae have progressed to the next stage in their development known as L4 (4th stage larva). Larval development continues for the next 2-3 months at the end of which the immature heartworms have now matured into adults living in the heart and pulmonary vessels. Adult heartworms begin to produce offspring 3-4 months after maturation and 6-7 months after the initial bite of the infected mosquito. Male heartworms can grow up to six inches in length and the females up to 12 inches. They are fully grown (reaching their maximum length) about one year after infection and can survive up to 7 years. The adult heartworms if allowed to continue to develop and reproduce can cause extensive damage to the heart and pulmonary vessels.

Are all dogs at risk?

The short answer: Yes, all dogs are at risk of being infected with heartworms. There are states where the incidence of heartworm infection is lower than others, but dogs living in those states can still be infected by heartworms. Texas has one of the highest rates of Heartworm Disease in dogs and dogs not given heartworm preventative will be infected no matter how safe you think your dog maybe. Even if your dog rarely goes outside, you have to ask yourself “How many times have I been bitten by a mosquito inside?” or gone to bed at night only to be awakened by the buzzing of a mosquito in the room.

How do I know if my dog has Heartworm Disease?

In most incidences you won't. Heartworm Disease isn't immediately fatal, your dog may live for a number of years showing no outward signs of this disease. By the time the disease has progressed to the point of your dog exhibiting outward signs then they will be in the moderate to severe stage of Heartworm Disease. Below is a list of clinical symptoms of Heartworm Disease:

You may observe

Coughing
Exercise intolerance
Difficulty breathing
Loss of consciousness

Your vet may observe

Abnormal lung sounds
Enlargement of the liver
Fluid accumulation in the abdomen
Abnormal heart sounds.

Your veterinarian can perform a number of tests to determine if your dog has Heartworm Disease, the two most common are and relatively simple tests are;

1. **Ocult Test (test for antigens to adult heartworms)** – this test requires a blood sample and is the most widely used as it detects the presence of antigens (proteins) produced by adult heartworms. A dog can test positive even if there are no microfilariae in the blood. There must be at least one adult female worms present in the heart as it is only the female that produces this antigen. The amount of antigen in the circulation has a direct, but inexact, relationship to the number of adult female heartworms. To date, antigen testing is the most sensitive and most preferred test.
2. **Microfilariae Test** – a blood sample is examined under a microscope for the presence of microfilariae, if they are there then the test is positive. The number observed can give an indication of the severity of the infection. There is another microfilarial parasite common in dogs that on a blood smear, these can be hard to distinguish from heartworm microfilariae.

There are several other tests that can be performed to detect heartworm, but the two above are the most common and the only two that will be discussed in this article.

What treatment is available for a dog with Heartworm Disease?

Firstly, most dogs can be successfully treated for heartworm. A thorough examination and pre-treatment evaluation by your vet will determine if your dog is a candidate for treatment. Heartworm Disease treatment is both expensive and distressing for your dog. Treatment involves the killing of adult worms (adulticide) and the killing of larval stages of heartworm (microfilaricide). The adulticide part of heartworm treatment involves the intra-muscular injection of melarsomine, usually two injections 24 hours apart. This treatment can be very hard on the dog and they must be kept extremely quiet for a period of several weeks to avoid post-treatment complications. The microfilaricide part of the treatment involves high doses of ivermectin to kill of the circulating microfilariae.

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The above treatment is the preferred method of treatment by most veterinarians, but there is an alternative in certain situations. To find out more about the available treatments please visit:

<http://www.heartwormsociety.org/AHS%20Guidelines-Canine.htm#canine>

Can I prevent Heartworm Disease?

You most certainly can!! Heartworm Disease is preventable through the strict administering of monthly preventatives or a bi-annual injection administered by your vet, and is more economical and safer for your dog than treatment for Heartworm Disease. In the case of Heartworm Disease (and most other diseases) prevention is better than cure. The most effective monthly preventatives are those that contain both Ivermectin and Pyrantel, as found in Heartgard[®]. If you are not currently giving a preventative then you should have your dog examined by a veterinarian prior to starting a preventative program.

For further information visit the [American Heartworm Society](#) or consult with your veterinarian.