

## Heartworm Disease

**Heartworm Disease** is a potentially life-threatening parasitic infection. Found worldwide, it infects wild and domestic dogs, sea lions, ferrets, and cats. In rare cases it can infect other animals and humans.

### How Pets Get Heartworms

Heartworm Disease is caused by a worm, *Dirofilaria immitis*, and spread by mosquitoes. When a mosquito feeds on an infected animal, usually a dog, it ingests microscopic larvae in the blood. These microfilaria mature in the mosquito for about two weeks. When the mosquito bites a susceptible animal the infectious larvae are injected into its tissues. They migrate through the animal's body, maturing into adult worms over a period of months. The adult worms live in the heart and major blood vessels where they reproduce to create new microfilaria. The time from infection to appearance of microfilaria is about six months.

Dogs are highly susceptible to heartworm infection, while it is much less common in other domestic animals such as cats and ferrets.

In the United States, heartworms are found in all 50 states but are most common along the Atlantic and Gulf coasts and near the Mississippi River.

### What the Disease Does

The severity of the disease is related to the number of adult worms present. Adult worms cause inflammation of the blood vessels and the lungs. The disease can progress to heart failure, liver failure, and rupture of major blood vessels. Dogs with heartworms do not always show symptoms, especially in the early stages of the disease or if only a few adult heartworms are present. When symptoms do occur, they include coughing, tiring easily during exercise, difficulty breathing, fluid in the abdomen, fainting, and death.

Symptoms in ferrets resemble those in dogs. Symptoms in cats include coughing, difficulty breathing, vomiting, loss of appetite, lethargy, and seizures. Cats and ferrets may die without exhibiting any symptoms.

### How Heartworm Disease is Diagnosed

Adult heartworms can be detected with a simple blood test. Pets that test positive should undergo additional testing to determine the stage of the disease. Recommended procedures include a blood screen for microfilaria and chest x-rays. Prior to initiating treatment, dogs should have a complete blood panel. EKGs, echocardiograms, and angiograms may also be recommended.

### Treatment for Heartworm Disease

Dogs are treated with drugs that are able to kill the adult heartworms, but are also potentially fatal for the dog. Therefore, treatment is performed in the hospital where the dog can be carefully monitored and treated for toxicity if necessary. Treatment may need to be repeated more than once, and can be quite costly. Dogs that initially test positive for microfilaria undergo a second

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stage of treatment. Treatment for microfilaria is not as dangerous and is usually given on an outpatient basis, three to six weeks after treatment for adult worms.

Successful treatment is confirmed by testing again for adult worms and for microfilaria. Complications are more common in cats and ferrets treated for adult heartworms, so it is sometimes safer to wait for the worms to die naturally. Anti-inflammatories and other medications may be used to control symptoms. These pets rarely develop microfilaria, but those that do can be treated similarly to dogs.

### **Preventing Heartworm Disease**

Fortunately, effective preventive medications are available to protect dogs, cats, and ferrets. Most are given monthly and can be started as early as 4-6 weeks of age. Pets started on preventive medications before six months of age are tested after they have been on the medication for at least six months. Pets that begin heartworm prevention after six months of age should be tested before the preventive is given the first time, and again after six months. Annual retesting is recommended by most veterinarians. Preventive is given seasonally in some parts of the U.S., but year-round in temperate areas. If a dose is missed, its best to give it as soon as possible and check with your veterinarian about the need for a heartworm test.

