

Can heartworm disease be prevented?

Heartworm disease is almost 100% preventable by administration of oral (daily or monthly), topical (monthly), or injectable (twice-yearly) medications.

Prior to beginning a prevention program, your veterinarian will conduct a blood test for the presence of heartworms. He or she will then prescribe an appropriate preventative and advise you as to how often and how long that preventative should be administered. Your veterinarian will determine your pet's risk for heartworm disease on the basis of its species, lifestyle and geographic location.

Retesting

For dogs and cats, compliance with a prevention program helps to ensure that heartworms are destroyed soon after they infect your pet. Periodic testing for the presence of heartworms will help maintain your pet's continued good health.

The AVMA appreciates the assistance of the
American Heartworm Society (www.heartwormsociety.org)

And Now A Note On Your Pet's

General Good Health

A healthy pet is a happy companion. Your pet's daily well-being requires close attention to any hint of ill health. Regular physical examinations are important. Pets age more rapidly than people and can develop disease conditions that can go unnoticed, even to the most attentive pet owner. Veterinarians are skilled in detecting conditions that have gradual onset and subtle signs. Early detection allows problems to be treated most easily and affordably. Your pet's exam is also a great time to ask questions. Help foster early detection and treatment by scheduling regular examinations.



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Revised 1/04

What You Should Know About HEARTWORM DISEASE



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What is heartworm disease?

Heartworm disease (also called dirofilariasis) is a preventable, but serious and potentially fatal parasitic disease that primarily affects dogs and cats. The heart and lungs are the major organs affected by heartworms in dogs. Adult heartworms (*Dirofilaria immitis*) can be up to 14 inches long, and live in the right side of the heart and the pulmonary

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arteries, which connect the heart to the lungs. Blockage and injury caused by heartworms may lead to heart failure and may damage other organs, such as the liver and kidneys.

A dog may harbor several hundred heartworms, but in most cases the number is much lower. Cats usually have smaller and fewer heartworms than dogs, and often do not exhibit clinical signs until the disease is considerably advanced. Occasionally, heartworms are found in other animals such as foxes, wolves and ferrets. Heartworms can also lodge in the lungs of people and form nodules, but their presence has not been associated with clinical disease.

How is heartworm disease transmitted?



Heartworms are transmitted by mosquitoes. Adult female heartworms release their young (microfilariae) into the bloodstream of infected animals. When a mosquito bites an infected animal, it takes up blood containing these microfilariae. The microfilariae incubate in the mosquito for 10 to 14 days, during which time they become infective larvae. When the mosquito bites another animal, the infective larvae are passed on to the second animal through the wound. Infective larvae migrate through the tissues of the body for 2 to 3 months, and then enter the heart and pulmonary arteries where they reach adult size in another 3 months. If both sexes are present, the mature worms will mate and produce new microfilariae and the cycle begins again. Adult heartworms may survive for 5 to 7 years in dogs. The mosquito is the only natural agent of transmission for heartworms. Microfilariae cannot mature into adult heartworms without passing through a mosquito.

Cats rarely develop microfilaremia. When present, microfilariae are usually short-lived. Some cats rid themselves of heartworm infections spontaneously, whereas infective larvae in other cats may mature into adult heartworms that can cause serious disease.

Geographically, heartworms are considered to be a potential threat in each of the 48 contiguous United States, as well as in Hawaii, Puerto Rico, Central and South America, Canada, Europe, Japan, Australia, the Virgin Islands and Guam. All dogs, regardless of age, sex or living environment, are susceptible to heartworm infection. Indoor and outdoor cats are also at risk for acquiring the disease. The distribution of heartworm infection in cats in the United States appears to parallel that of dogs, but in fewer numbers. If you plan to travel with your pet to a different part of the country, be sure to ask your veterinarian about the relative risk of heartworm disease.

How can I tell if my dog or cat has heartworm disease?

Pets recently or lightly infected with heartworms may show no signs of disease. In later stages, dogs with heavy or persistent infection may cough, become lethargic, lose their appetite, or have difficulty breathing. Owners may first notice that their dog seems to tire rapidly after only moderate exercise. Fluid may accumulate in the abdomen (ascites) as a result of advanced heartworm infection. Another serious, but less common, manifestation is caval syndrome (a form of liver failure). Animals affected by caval syndrome rapidly become weak and their urine turns dark brown. Caval syndrome requires prompt surgical removal of the heartworms.

Your veterinarian can detect heartworm infection in its early stages by examining your dog's blood for the presence of circulating microfilariae or by performing laboratory tests to look for heartworm antigen (a protein produced by adult heartworms). Radiography of the chest and electro- or echocardiography are also helpful in making a diagnosis, and may give some indication of the severity of the infection.

Clinical signs in cats are similar; however, most cats never show signs of disease and heartworm infection may be a postmortem (after death) diagnosis. While the diagnostic approach to heartworm disease in cats is similar to that used for dogs, because cats usually harbor very few adult worms, diagnosis is much more difficult.

Can infected pets be treated?

Most dogs can be treated successfully if heartworm disease is detected early. Your veterinarian will perform blood tests to confirm the presence of heartworms, and may conduct other diagnostic tests (e.g., additional blood tests, radiography, electro/echocardiography) to help determine whether your pet can safely undergo treatment.

Adult heartworms are killed with a drug called an adulticide, which is given through a series of carefully administered injections. A few days after treatment, the adult heartworms die and are carried by the bloodstream to the lungs where they lodge in small vessels, decompose and are absorbed by the body over a period of several months. Following treatment with the adulticide, complete rest is needed. Excitement and exercise should be avoided for at least one to two months to prevent adverse effects associated with partial or complete blockage of blood flow through the lungs by dead worms. A gradual return to normal activity follows. In addition to the adulticide, affected dogs are given a heartworm preventative to destroy microfilariae.

There is always some risk involved in treating a dog for heartworms; however, serious complications are rare among dogs that are otherwise in good health.

There are no approved products in the United States for treating heartworm infection in cats. Cats are more resistant to heartworms than dogs and many rid themselves of infection spontaneously. In severe cases where the lungs and blood vessels are affected, supportive treatments are available and, in emergency cases, surgery can be performed.