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# Heartworm Disease



by Erin Quigley, DVM



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Heartworm disease is a serious and potentially fatal condition caused by worms living in the arteries of the lungs or the right side of the heart in dogs, cats and other species of mammals such as wolves, foxes and ferrets.

## **How does my pet get heartworms?**

It begins with an infected animal that is carrying the baby heartworms called microfilariae, through its bloodstream. A mosquito bites an infected animal and takes a blood meal and the microfilariae with it. During the next 10-14 days, the microfilariae matures into the infective stage within the mosquito, so that when the mosquito bites a dog or cat, it injects the heartworm through the bite wound. Over the next six months the heartworms mature, without any external evidence or symptoms, into adult worms within the infected animal.

## **What are the signs of heartworm disease?**

Heartworm disease in the early stages can be undetectable with no evidence of any symptoms. Your pet may appear to be healthy for months to years. In fact, not until significant damage has already been done to the heart and lungs will any symptoms appear, and they could be as insignificant as a cough or decreased desire to exercise. Most of us wouldn't become too alarmed if our aging pet coughed from time to time or acted a little lazy.

If the disease is allowed to progress to the later stage, then the dog may experience difficulty in breathing, syncope (fainting from lack of blood supply to the brain), heart arrhythmias, ascites (fluid accumulation in the belly), and sudden death.

In cats, clinical signs of heartworms (for example, vomiting, lethargy, lack of appetite, weight loss) can be very nonspecific, as well, and can also mimic many other feline diseases such as asthma when cats exhibit difficulty in breathing. Diagnosing by clinical signs alone is nearly impossible. It is easy to misdiagnose a cat in the first stage of heartworm disease as having asthma or allergic bronchitis, when actually it is heartworm-associated respiratory disease (HARD).

## **If heartworms are so hard to find in early stages, how do we discover whether our pet is infected or not?**

Since heartworm disease can be hidden and can cause damage without symptoms, it is very important to test your dog once a year. In fact, it may take six months or longer for the heartworms to first be detected because the infected bite occurred with current diagnostic testing. Your veterinarian will take as little as two drops of blood, and



use what is called an antigen test to detect evidence of adult worms in your dog. It takes as little as two to 10 minutes for results.

Heartworm disease detection in cats is extremely difficult. The reason is that heartworms don't multiply or reproduce in cats as they do in dogs. While a dog can have hundreds of heartworms circulating in its system, a cat may only have one to three total. This makes it difficult to discover the disease with the current antigen test. The diagnostic plan for heartworm disease in cats can include a combination of tests, such as X-rays, ultrasounds of the heart, and antigen testing all together, in an attempt to give a presumed diagnosis. Finding an actual worm is difficult due to the low number and the unique ability some cats have to rid themselves of infection.

### **What is the treatment if my pet does contract heartworms?**

There is currently one drug approved for the treatment of the elimination of adult heartworms in dogs. Immiticide is an arsenic-like compound. It is a very harsh chemical that is currently in short supply in the United States. Depending on what stage of heartworm disease your dog is in (i.e. how much damage has been done to the heart, lungs, kidneys, etc.), your veterinarian may require diagnostic testing (blood work, x-rays) prior to administration of this chemical to see if your pet is likely to withstand the effects of Immiticide. Not only will all this add up financially, but your pet will be required to be under strict and constant physical rest (no playful exertion) for one to two months. Your pet is at risk of sudden death from a blood clot that may form from the dying heartworms.

Currently, there is no treatment for heartworms in cats. If respiratory disease is present, supportive care can be provided.

### **I've personally never known a pet with heartworm disease? Is it common in my area?**

Heartworm disease has been reported in all 50 states. The map below reflects how many dogs are tested positively each year per veterinary clinic. Remember, this just refers to pets that have tested positively. There are many untested positive-dogs. Think about how many veterinary clinics are in your area.

As you can see the prevalence of heartworms follows where mosquitos are most common. You can see that the Mississippi River Valley is a hot-bed for heartworm cases. The spread of the disease has been moving northward each year, and this map is seven-years old. According to the American Heartworm Society, the highest infection rates (up to 45%) in dogs (not maintained on heartworm preventatives) are observed within 150 miles from the Atlantic and Gulf Coasts, from the Gulf of Mexico, to New Jersey, and along the Mississippi River and its major tributaries.

The current 2014 statistics for Missouri, according to the Companion Animal Parasite Council, are that one out of 68 dogs will test positively for heartworms. Visit [www.capcvet.com](http://www.capcvet.com) for current statistics by county.

Since most feline heartworm cases go undiagnosed, recent data has shown that the distribution of feline heartworm infection in the United States seems to parallel that of dogs, but with lower total numbers. These findings were based on heartworms found within cats after death. A president of the American Heartworm

Society recently gave a lecture stating that one cat tests positively for every 10 positive dogs.

### Is your pet at risk? Yes!

But my dog and cat are indoor? They only go outside to go to the bathroom?

I hear this all the time. Even in this sentence, you stated that they go outside. Pardon me for just a second. Though we humans live in doors the majority of the time, we still spend time outdoors and our exposed to insects... Your pet shares a similar exposure. Unfortunately, your pets are not in a protective bubble when they exit your home. I wish they were.

Mosquitos are everywhere! IF YOU GET BIT, SO WILL YOUR PETS, and your pets cannot tell you; you won't know it. Also, insects of all types get indoors. Everyone opens their doors to go in and out of their houses. In a clinical study, greater than 25% of cats diagnosed with heartworm disease were confirmed by their owners to be indoor only cats. (See *Atkins, C.E., DeFrancesco, T.C., Coats, J.R., Sidley, J.A., Keene, B.W., Heartworm Infection in Cats: 50 Cases, J Am Vet Med Assoc. 2000; 217(3):355-358.*) Those who have used this excuse for not protecting their pets should stop. It is not worth leaving your pet at risk. Okay, I have said my peace.

I admit I am passionate about the topic of heartworm disease; mostly because this fatal disease is preventable. I hope now you will see how important prevention is for both your dog and cat.

### How can I prevent heartworm disease in my dog and cat?

Fortunately, these days there are many options to choose from. Twenty years ago the only option was a daily oral tablet. Can you imagine that? These days there are monthly oral chews/tablets, monthly topical preventives, and six-month injectables.



### Oral preventatives

Most people are used to the chewable, yummy treat called Heartgard (dog/cat). Most dogs will take Heartgard very well, but it needs to be given every 30 days. Remember the heartworm lifecycle? Heartgard actually works backwards to kill the earliest infective stage (L3). If you go past the recommended 30-day dosing, you risk worms developing past the stage at which Heartgard will effectively kill the parasite. There are other effective generics, such as Iverheart and Triheart that work the same way, only they come in pill-form. These drugs also work to prevent against intestinal parasites (roundworms and hookworms) that are zoonotic (transmissible to people). We will discuss the dangers of these parasites next month.

A newer class of drugs to kill the L3 larval stage of heartworms is Milbemycin, which is found in Sentinel and Trifexis, and includes prevention against roundworms, hookworms and an additional intestinal parasite called whipworms. Sentinel also has a flea birth control within the tablet that prevents flea infestations, whereas Trifexis kills adult fleas quickly and prevents infestations.

### Topical preventatives

Just as flea and tick topical preventatives are applied on your dog's or cat's skin, so are the following two products.

Revolution topical prevention for dogs and cats is my personal favorite for cats because it not only prevents against heartworm disease, but also against fleas, roundworms, hookworms, and ear mites, usually for the same cost as a flea and tick topical. Only now you are preventing them from getting intestinal parasites and fleas which they can get from the family dog, even if the family cat does not go outdoors. You are protecting your family from zoonotic disease from the intestinal parasites, as well. In dogs, Revolution protects against the same parasites as it does in cats, however it only kills one species of tick.



Advantage is a multi-topical for dogs and cats that prevents heartworm disease in dogs similar to the orals, and includes prevention against round, hook and whipworms. It also is a flea preventative. In cats, it prevents against the same parasites as Revolution.

### **Injectable**

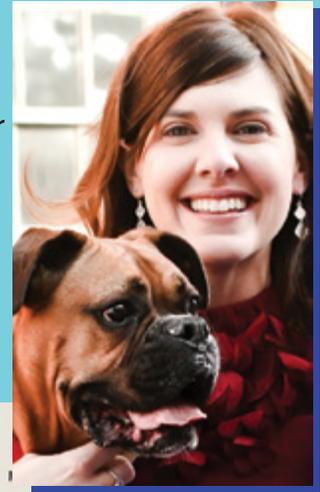
Last, but not least, there is an injectable heartworm preventative for dogs that lasts for six months. It is a great option for those of us who have a difficult time remembering to apply topically, or to give a preventative orally every 30 days. It is sustained release, so every day your dog is protected against heartworms, until the next dose is administered by your veterinarian or veterinary technician.

As you can see there are many options which make it easier for you, and your lifestyle, to protect your pet from this awful disease. Contact your veterinarian today for heartworm testing and prevention.

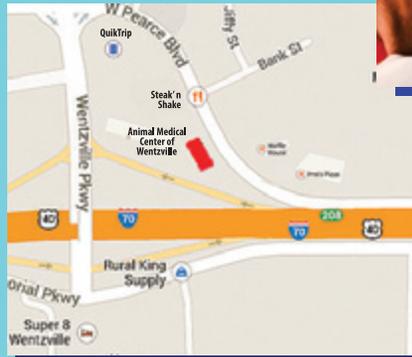
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Alissa  
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**Erin Quigley, DVM**



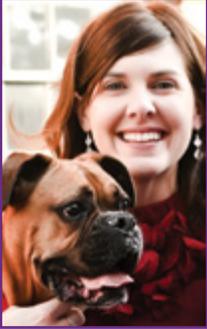
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*Erin Quigley, DVM, Member of AVMA, MVMA, grew up in Florissant, MO, and received a Bachelor's degree in Biology at Missouri State University. After college I worked as a receptionist at Rock Road Animal Hospital, a zookeeper at the St. Louis Zoo and a veterinary assistant at Howdershell Animal Hospital until attending Veterinary School at University of Missouri-Columbia. I graduated with my Doctorate of Veterinary Medicine and have lived in O'Fallon, Missouri since I graduated. I have worked as a veterinarian in Troy, Wentzville, and Florissant, MO, until purchasing Animal Medical Center of Wentzville in 2010. I married in 2011 and live with my husband Ryan and boxer dog Finnegan in Lake St. Louis/O'Fallon. When my husband and I have free time from the clinic we enjoy spending time with our dog, family and friends. Our hobbies include attending Cardinal baseball and Mizzou football games. We also enjoy the outdoors biking, boating and horseback riding.*