



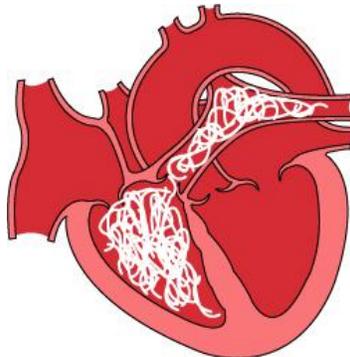
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Heartworms

-Dr. Wes Sperry

Heartworms are exactly what the name says: they are a worm that lives in the heart of the definitive host. The host is most often dogs, but cats can be affected as well. For this article, we will mostly be discussing Heartworm Disease in Dogs, but don't worry; we will address our feline friends as well.

What is Heartworm Disease?



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Heartworm disease is the illness caused by the Heartworm Parasite, *Dirofilaria immitis*. The parasite lives in the heart, mainly the right ventricle. Many worms can live there at the same time, and the female (which is larger than the male) can be anywhere from 6 to 14 inches long! These worms clog up the heart and main arteries, and lead to heart failure. They also restrict blood flow to the lungs, liver, and kidneys, causing these organs to fail as well. Heartworm disease is the clinical presentation of these problems caused by the parasites.

What are the Symptoms of Heartworm Disease?

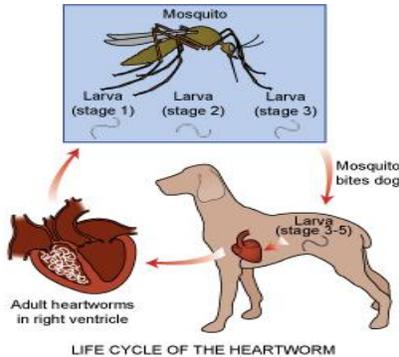
The symptoms of Heartworm disease are similar to the symptoms of heart failure. These include:

- Coughing- soft dry cough
- Loss of energy/stamina
- Weight Loss
- Weakness/restlessness

- Severe signs include swollen, fluid filled abdomen and cyanosis (blue lips/tongue due to lack of oxygen).

How are heartworms spread?

Heartworms are a vector borne parasite, meaning they are transmitted by an insect to the host. Heartworms are transmitted by everyone's favorite pest...MOSQUITOS. They have to live inside a mosquito to be infective, and are **not** transferred directly from dog to dog. Here is their lifecycle in a nutshell:



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1. A dog has adult heartworms in the heart and pulmonary vessels. These heartworms produce baby larva (L1 stage) which are released into the dog's blood.
2. A mosquito bites this dog, and while it is ingesting the blood, it ingests the larva.
3. The larva grows in the stomach of the mosquito from L1 stage to L3 stage larvae. L3 is the infective stage. The larva then moves to the mosquito's mouth.
4. The mosquito bites another dog, and the larva travels from the mouth of the mosquito into the blood of the new dog.
5. The larva travels in the blood stream for about 5-6 months while growing, then it settles into the heart and pulmonary blood vessels as an adult. Adult heartworms live on average 2-3 years, but can live up to 5-6 years.

Now, if you live in Texas, you have mosquitos. They are active almost year round here thanks to our lack of a true winter. Therefore, we have heartworm exposure year round as well.

There are many myths and false beliefs out there. Here are a few:

Myth 1- My dog only goes outside to use the restroom, and is only outside for a few minutes; therefore he/she can't get heartworms.

FALSE! FALSE! FALSE! Did I mention this was **false**? 1)- If your dog is outside for one second, it can be bitten by a mosquito. Mosquitos do not wait for a certain amount of time before biting. 2)- Mosquitos can and do come inside your house when you open your doors, and can then bite your pet.

Myth 2- My dog only goes outside in my yard, so he/she can't get heartworms.

This is also false. Mosquitos have a long range and will travel to find food. The mosquito that bites your dog may come from miles away, and fences are no barrier to them.

Myth 3- My dog has long hair, so mosquitos can't bite him.

This is false. While long hair offers some protection from mosquitos, they can still bite the dog, and have no trouble finding an area around the nose, eyes, or belly with thinner hair to bite.

Testing for heartworms

Testing for heartworms is very easy, and involves a simple blood test that can be run in 8-10 minutes. We highly recommend testing once a year, and require this to purchase prevention. There are several reasons for this. The main reason is that the prevention is an anti-parasitic drug, and no anti-parasitic drug is 100% effective. I have seen breaks with every type of preventative where an owner has given it but the dog still has contracted heartworms. This is very very rare, but does happen. There have also been pockets (mostly in Mississippi and Georgia) of heartworms becoming resistant to certain preventatives.

Another reason we test yearly is that by the time you see the clinical signs of heartworm disease, the damage is done. We cannot reverse heart failure or liver failure caused by the disease. The disease, however, does not occur quickly, and your dog can have heartworms for several years before the disease manifests. If we catch it early, we can treat the dog before the damage is permanent and prevent the severe disease.

My dog tested positive for Heartworms, what do I do?

The first thing you need to do is relax. Testing positive for heartworms is not a death sentence. The treatment for heartworms has improved dramatically over the past 20 years. There used to be serious side effects associated with the treatment of heartworms. That is no longer the case. While there might some minor transient side effects (coughing, etc), most healthy dogs come through the treatment without any problems (again, this is why we test yearly, to catch the cases early while the dog is healthy).

Treatment consists of several steps:

1. Start your dog on a monthly preventative if it is not on one. Some of the heartworm preventatives are safe to give a heartworm positive dog (we will recommend one if your dog is positive). The heartworm experts recommend starting your dog back on an appropriate preventative for 1-3 months before treating the adults. One month prior to treatment, we will start your dog on the antibiotic Doxycycline. These steps weaken the adults, and kill any babies in the blood stream.
2. We run bloodwork and take an x-ray of the chest to make sure the dog is healthy enough for the treatment.
3. Treatment to kill the adults consists of two or three injections of a drug into the dog's back. The dog will stay with us for one or two nights during the treatment. The decision to use 2 or 3 injections is based on the dog's

health. Healthy dogs get two injections 24 hours apart. If we think there is a medical risk, we will give 1 injection, then have the dog return one month later for the 2 injections 24 hours apart. This longer treatment kills the worms slower, and lowers the risk of side effects.

4. After his stay with us, the dog will go home with medication for a month on severe activity restriction.
5. One month later the dog returns for an oral medication to kill the remaining microfilaria (babies). The dog stays with us only for the day to make sure there is no reaction to the drug.

This treatment is considered to be safe, with no long term side effects. After this treatment the dogs recover and lead normal lives.

Side effects:

While the treatment is considered safe, there are a few side effects. The immediate side effect is pain at the injection site. Many dogs don't show any signs of pain, but some will be sore in their back for a few days.

About 7-10 days after the treatment, the worms begin to die in earnest. As they die, they break up and float away in the blood stream. If they break up into too large of chunks (gross, huh), they can cause clots in the lungs. This leads to inflammation and coughing. To limit this, your dog is placed on severe activity restriction for one month. This is to keep the heart rate down so the worms break up in smaller particles, thus reducing the risk of severe clots to the lungs. The medication we send home also helps with the inflammation caused by the worms dying.

What are the drawbacks to the treatment?

The treatment is very safe, but that doesn't mean there aren't any drawbacks.

- Cost - The drug we inject to kill the adults is very expensive, and is also available in limited supply (thus driving up the price). A small dog (10-20 pounds) can expect to spend \$300 at least, and bigger dogs are much more.
- Activity Restriction - When we say restrict your dog's activity, **we mean it**. Short leash walks to go to the bathroom only. No running, jumping, no playing ball, no roaming or chasing squirrels. Now, we are realistic in that we know the dog is going to jump on the couch, but he/she must be kept calm. This can sometimes mean crating the more hyper ones for the entire month post treatment.

How can I prevent my dog from getting Heartworms?

Heartworm prevention is now very easy. There are numerous preventatives out there, some tablets, some flavored chews, others are topicals to apply to the back. Some are just heartworm and intestinal parasites (very important), while others also control fleas. Heartworm preventatives work by killing the babies before they become adults. They are all given or applied once a month, and are much more cost effective than having to treat your dog for adults (the monthly preventatives do not kill the adults in the heart). If you want to discuss which one you should use we will be happy to discuss the different options with you, just call us or come by.

There are some places in the north (Colorado, Michigan, the cold places) that only need heartworm preventative in the summer months. That is not us. We strongly recommend heartworm preventative year round.

One other reason to give a monthly heartworm preventative: the preventatives also take care of intestinal parasites. Why is this important? Heartworms are not transmissible to humans, but intestinal parasites like hookworms and roundworms are, especially to little children. Giving the dogs a monthly preventative helps prevent this as well.

What about mosquito repellants?

In short...NO. There are no effective mosquito repellants for our pets. Some products claim to do it, but if they work at all, they work for maybe one day (or until the dog gets wet), and not for the month they claim to work. Do not use OFF, etc. on your pet. Also, the incidence of failure for mosquito repellants can be high (people still get bit while wearing OFF), but the incidence of failure of the preventatives is much much lower.

Okay, what about our feline friends?

We are not going to forget about the cat lovers out there. The subject of cats and heartworms is hotly debated right now.

Cats do get heartworms, but the number of cats with them is up for debate. The incidence of heartworm disease in cats is much less than dogs, but the experts are beginning to suspect that it is underdiagnosed. Cats do not get a large quantity of worms in their hearts like dogs, they only get 2-3 worms. The clinical signs are often coughing, labored breathing, and vomiting (oddly enough). The disease in cats usually results from the worms migrating through the lungs rather than clogging up the heart.

Testing in cats is debatable. The tests are not as reliable, and there is not a consensus on whether it is worth it to test or not.

There is no treatment for heartworms in cats. The shots we give the dogs has severe side effects in cats. Fortunately, there are preventatives for cats, both oral and topical. We carry a topical, and can special order the oral. If your cat spends time outdoors, we strongly recommend using a topical flea/heartworm preventative combination product for your cat. These have the added bonus of treating intestinal worms and many skin parasites as well.