

# Canine Heartworm Disease

## Cardiology Service



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#### **General Information**

Heartworm disease is transmitted by mosquitoes. This disease cannot be transmitted directly from one animal to another. However, animals affected with heartworm disease act as a reservoir of potential infection for other animals in the area. Although named as such, heartworms normally do not live in the heart, but actually live in the arteries inside the lungs.

#### **Diagnosis**

Heartworm disease is generally diagnosed by a blood test, which is recommended annually.

When a positive test result is obtained, thoracic radiographs are recommended to evaluate for changes to the lungs and blood vessels in the lungs. Depending on symptoms, or if heart enlargement is seen on radiographs, an echocardiogram may be recommended. Full lab work (complete blood count, biochemistry panel with electrolytes, and urinalysis) is required to evaluate overall health prior to treatment for heartworm disease, and also to evaluate for possible complications associated with heartworm disease.

#### **Symptoms**

Pets with heartworm disease often don't have symptoms. However, heartworms can cause a significant inflammatory reaction in the lungs leading to a build-up of inflammatory cells and debris in areas around the airways and even inside the airways. This can lead to coughing, wheezing, difficulty breathing, and can also contribute to making pulmonary hypertension worse.

While present, the heartworms cause irritation to the walls of the arteries in the lungs leading to increased blood pressure in the lungs known as pulmonary hypertension (PH). PH makes it more difficult for blood to flow through the lungs and pick up oxygen to be taken to the vital organs. Signs of this include difficulty breathing, cyanosis (blue gums), weakness, lethargy and collapse.

The result of poor blood flow to the kidneys and heartworm disease causing clumping of antibodies is damaging to the filtration system in the kidney. Subsequently, there can be protein in the urine which contributes to ongoing kidney damage.

Rarely, a mass of heartworms can migrate backwards from the pulmonary arteries into the heart, and obstruct blood flow through the heart. This causes sudden weakness, lethargy, intolerance to exercise, episodes of collapse, and abdominal distension. In addition, difficulty breathing and cyanosis (blue gums) can be seen. Red blood cells are damaged as blood flows through the mass of worms, which ultimately leads to anemia (low red blood cell count) and discoloration of the urine (port wine color).

#### **Treatment**

Immiticide therapy is the treatment of choice for dogs. Heartworm treatment consists of intramuscular injections (deep lumbar) that slowly kill the adult worms over 3-4 weeks. A "split protocol" is recommended to facilitate a slower kill of adult heartworms, which decreases (but does not eliminate) the risk of life-threatening complications as the worms die. The first injection is followed by a one month period of exercise restriction and cage confinement (with short leash walks only); during this time, the male adult heartworms die off and the body takes its time to clean up the debris. After one month, your dog will return for two injections given 24 hours apart. Again, this is followed by one month of exercise restriction and cage rest. Heartgard medication also causes slow kill of the microfilaria (heartworm larvae) in the bloodstream. However, this can take several years, during which time, ongoing damage to the heart, lungs and kidneys can occur. Heartgard is a preventative drug and should be continued indefinitely and without interruption.

#### **Prevention**

There are multiple heartworm preventative medications, which are given monthly, either orally or topically. Please consult with your veterinarian and/or cardiologist regarding the best preventative medication for your pet.

