

# Heartworm Disease in Cats

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## BASIC INFORMATION

### Description

Heartworms (HWs) are parasites (*Dirofilaria immitis*) that live primarily in the lungs of dogs and wild canines; however, domestic and wild cats are also susceptible. Mosquitoes spread the HWs from dogs to cats. The changes caused by HWs in the lungs of cats are different from the problems they cause in dogs.

### Causes

HWs are found in most parts of the world and in every state of the United States. HWs molt in mosquitoes to their infective form and are spread to cats when mosquitoes are present. Once a cat is bitten by an infected mosquito, the HWs molt again and travel to the lungs, where they develop into adults. Since the cat is not the natural host of HWs, some of the immature worms die and irritate the lungs, about 2½ to 5 months after the cat is infected. Some cats have clinical signs from this lung irritation.

About 6 months after the cat is infected, a few HWs mature to adults, but they live only 1-3 years. Adult HWs release substances that irritate the lungs and other organs of the body. The death of HWs can cause sudden lung injury. Unlike in the dog, HW disease in the cat is only a respiratory problem and does not affect the heart.

Some of the adult females may produce larvae (microfilariae), but they do not survive long in the cat, and their death can also irritate the lungs or other tissues. Because cats rarely have circulating microfilariae, cats do not serve as a source of HW infection for other animals.

### Clinical Signs

Affected cats may be asymptomatic and may not be tested routinely for HWs. Signs of HW disease include coughing; intermittent heavy, labored breathing; sporadic vomiting; weight loss; and lethargy. Occasionally, sudden death occurs from the death of HWs and blockage of the arteries in the lungs (pulmonary embolism).

### Diagnostic Tests

Commonly recommended tests include chest x-rays, routine laboratory tests, and tests for both HW proteins (antigens) and HW antibodies. If the HW antigen test is positive, then your cat has or recently had adult HWs. Because of the low number of HWs in most cats, this test can be falsely negative. If the HW antibody test is positive, your cat was exposed to HWs but may not have any adults present. Because the diagnosis of HW disease can be

difficult in cats, an echocardiogram (heart ultrasound), and a radiologic contrast study of the lungs may be done to detect any HWs and rule out other causes of lung disease.

## TREATMENT AND FOLLOW-UP

### Treatment Options

Treating adult HWs with melarsomine (*Immiticide*) is rarely done in cats, because the death of adult HWs can be fatal to the cat if too many HWs die at once. One dose of *Immiticide* typically kills 30% of the HWs, which may cause no problems; however, the safety of *Immiticide* has not been proven in the cat. The cat's lungs cannot handle more than 1-2 HWs dying at once, so if large numbers of HWs die at the same time, they could kill the cat.

Surgical removal of adult HWs has had only limited success, so most often the recommendation is to treat the cat's symptoms and allow the adult HWs to die naturally (which may take 1-3 years). A steroid, prednisolone, may be used to decrease lung irritation and reduce vomiting. Because of its side effects, it is used for only a short time and discontinued after the symptoms are controlled. Bronchodilators, such as theophylline, help relieve respiratory signs. Antileukotriene drugs have been used for life-threatening respiratory crises, which are rare in cats.

Because cats do not have circulating microfilariae, they do not require therapy for them. HW-preventive medications, such as ivermectin, milbemycin oxime, or selamectin, are usually given so the cat does not become reinfected. It is rare for cats to have a reaction to any of these drugs. Preventive medications are often recommended for uninfected cats, especially in areas with a high incidence of HW disease in dogs.

### Follow-up Care

Periodic monitoring (laboratory tests, chest x-rays) is needed, especially for cats with respiratory problems. Once your cat is stable, chest x-rays may be done every few months until the problem resolves.

### Prognosis

The majority of cats do well with symptomatic treatment. A few cats continue to have chronic respiratory disease even after the HWs have died. Occasionally, a cat has several HWs die at once, which can result in sudden death. Unfortunately, sudden death cannot be prevented in these cats.