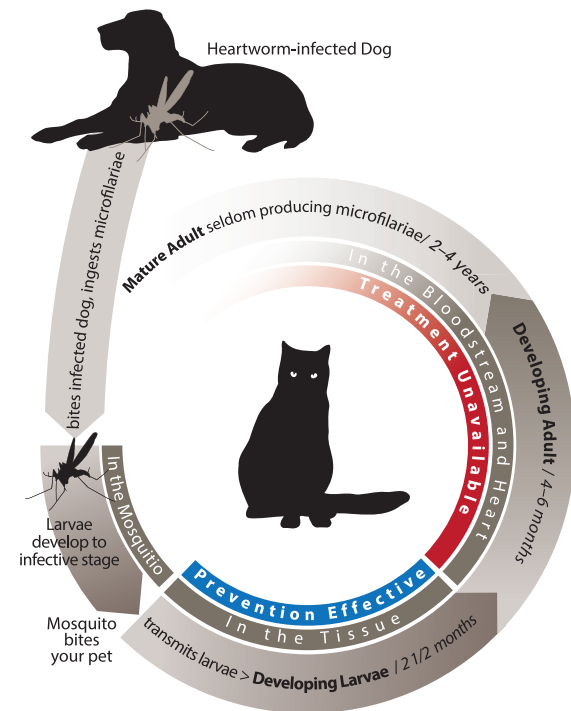


Although easy to prevent, heartworm disease continues to be a major health problem throughout the United States and wherever mosquitoes live. If you ever see or get bitten by mosquitoes, your cat is at risk!

HEARTWORM LIFE CYCLE

Adult female heartworms release their young, called microfilariae, into the bloodstream of an infected animal, typically a dog or other suitable host. When mosquitoes bite these animals, they also ingest these tiny larvae. The larvae develop inside the mosquito into an infective stage within 10 to 14 days. When the mosquito bites a cat, it deposits the infective larvae, which enter the bite wound and begin to migrate. In the cat, it takes 6 to 8 months for heartworm larvae to mature into adult worms. Adult heartworms can live 2 to 4 years in cats.



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Wilmington, DE

A MESSAGE TO TAKE TO HEART

While the risk of infection in cats varies from one region of the country to another and even from one community to another, one fact remains: heartworm disease is a threat to unprotected cats in every state, even some parts of Alaska. Unprotected dogs, foxes, coyotes, and wolves act as reservoirs, or sources, for the spread of this serious disease. The relocation of pets—as with humanitarian efforts following natural disasters, such as hurricanes along the Gulf and Atlantic coast, as well as for adoption—can introduce heartworm disease to parts of the country where it may not normally be found. Furthermore, unprotected pets traveling with their owners to areas where heartworms exist will be at risk for heartworm exposure. Heartworm disease is a complicated and deadly illness—the best approach is prevention.

This brochure highlights many general aspects of heartworm disease but cannot address every detail. Comprehensive guidelines providing the most up-to-date information have been prepared to assist you and your veterinarian. Please visit the website of the American Heartworm Society (heartwormsociety.org) for more in-depth information regarding prevention, diagnosis, and management of heartworm disease.



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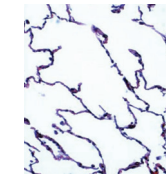
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Heartworm Disease in Cats

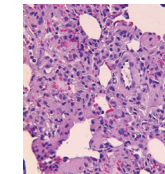


WHAT IS HEARTWORM DISEASE?

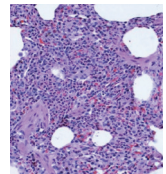
Feline heartworm disease develops when a cat is bitten by a mosquito carrying microscopic larvae of a parasite called *Dirofilaria immitis*. As a mosquito feeds on the cat, the larvae quickly enter the cat's skin, molt into juvenile (immature) worms, and eventually reach the bloodstream. The juvenile worms are then swept in venous blood flow to and through the heart to the pulmonary arteries, which then almost immediately become enlarged and inflamed. After 3 or 4 months the juvenile worms, which are now about 2 inches long, usually die. The dead worms cause severe inflammatory respiratory responses that can lead to severe lung disease. This syndrome in cats is known as *heartworm-associated respiratory disease* (HARD). Unlike dogs, in which heartworms develop to maturity most of the time, adult worms are found in cats only occasionally.



Normal cat lung



Disease caused
by juvenile worms



Disease caused
by adult worms

Unfortunately, even a single heartworm can have fatal consequences in a cat. Once thought to be only a disease of dogs and wild canids (foxes, wolves, and coyotes), recent studies indicate that heartworm disease in cats is more common than ever believed. Even indoor cats are at risk of infection because mosquitoes are often found inside homes and some indoor cats go outside for short periods.

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SIGNS OF HEARTWORM-ASSOCIATED RESPIRATORY DISEASE (HARD)

Signs of feline HARD can mimic many common diseases of cats, such as hairballs, asthma, or pneumonia, and range from mild and subtle in appearance to severe and life threatening. Signs of disease can include loss of appetite, sluggishness, intermittent vomiting (not associated with eating), coughing, wheezing, and respiratory distress. These clinical signs are often associated with death of immature, as well as adult, heartworms, but can become chronic. Clinical disease in cats can occur during any stage of heartworm infection, but experts agree that most signs are associated with the following three events:

1 Immature heartworms in the blood vessels of the lungs may lead to sluggishness, loss of appetite, vomiting, and respiratory disease. These signs may begin as early as 3 or 4 months after infection while the worms are still extremely small. Even if all worms die before becoming adults, respiratory symptoms may develop and continue for the remainder of the cat's life.

2 Worms may continue to develop to adult stages and earlier symptoms may persist. Some infected cats will show no symptoms, however, and might appear clinically normal.

3 As adult worms eventually die, cats will often have violent reactions to the dead worms, causing very rapid signs of respiratory distress that can lead to sudden death.

DETECTING HEARTWORM INFECTION

Two blood tests are currently available to assist in diagnosing heartworms in cats; however, test results do not always produce clear answers. An **antibody test** is used to detect infection from larval stages and immature worms. A positive antibody test indicates the cat was recently infected but does not necessarily mean the cat is still infected. There is also an **antigen test**, which detects mature adult female worms, that is routinely used in dogs and cats. A positive antigen test indicates adult heartworms *are* present. If either test is positive, antigen or antibody, it means a cat is at risk of having or developing HARD. A negative result on either test does not rule out the possibility of heartworm infection or disease because false-negative tests are common. Even when heartworm disease is highly suspected, confirming a diagnosis can be difficult in cats. Multiple blood tests along with chest x-rays and ultrasound imaging of the heart and lungs are often needed to make the diagnosis.



TREATMENT

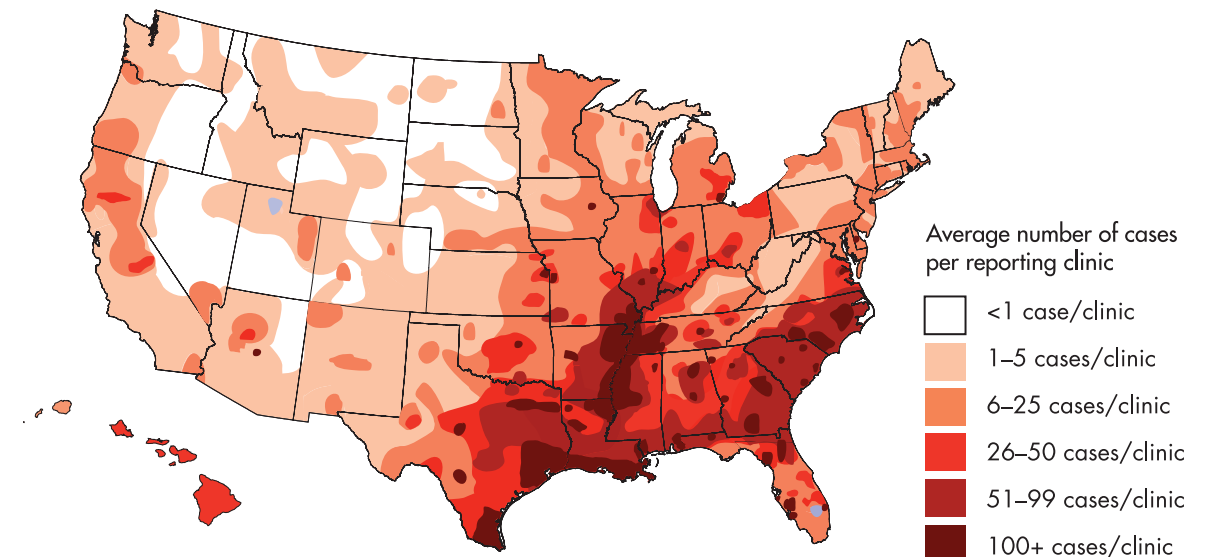
Unfortunately, no medications exist for the safe treatment of adult heartworms in cats. In some circumstances, surgical removal of heartworms has been successful; however, this surgical procedure is difficult and risky. The best option is the routine use of heartworm preventives to inhibit development of infection.

The best way

to eliminate the risk of heartworm infection in your cat is to give the preventive medication year-round.

PREVENTION

Various heartworm preventives are available including oral and topical formulations given once a month. These products are highly effective, safe, easy to use, relatively inexpensive, and often provide treatment for additional parasites. It is your responsibility to faithfully maintain the preventive program as prescribed. All heartworm preventive medications for cats work by killing heartworm larvae acquired during the previous month and do not continue to protect cats from future infection without continued monthly dosing. Therefore, the best way to eliminate the risk of heartworm infection in your cat is to give the preventive medication year-round.



HEARTWORM INCIDENCE 2016

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The severity of heartworm incidence as shown in this map is based on the average number of cases in dogs and cats from reporting clinics in 2016. Some remote regions of the United States lack veterinary clinics; therefore, we have no reported cases in these areas.