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Feline Heartworm Disease

CAN BE POTENTIALLY FATAL

Historically, heartworm disease has been overlooked in cats, yet it has proved to be serious and potentially fatal. Because there is no approved treatment for heartworm infection in cats as there is in dogs, prevention of infection is the best protection. Other differences between feline and canine heartworm disease make it important for cat breeders and owners to be aware of the risk of the disease and how to prevent it.

Alice Lee, DVM, the Novartis clinical resident in veterinary parasitology at Cornell University, attributes the prior lack of awareness about feline heartworm disease to the fact that mature heartworm infection can be difficult to diagnose in cats. “Until recently, it was not known that heartworms cause disease in cats even before they’re fully grown,” she says. “This lack of awareness translated into low rates of heartworm preventive use in cats.”

Dr. Lee cites other factors that may contribute to a lack of the use of heartworm preventives by cat owners. “Some people think that if their cats don’t go outside, they won’t be bitten by mosquitoes and they won’t get infected. In reality, infected mosquitoes can enter homes, so both outdoor and indoor cats are at risk,” she says. “Cats also are not brought to the veterinary clinic as often as dogs, thus there are fewer opportunities for the veterinarian to educate cat owners about the risk of heartworm.”

In recent years, feline heartworm disease has been diagnosed more frequently,

says Patricia A. Payne, DVM, PhD, a veterinary parasitologist and member of the board of directors of the [American Heartworm Society](#). “With increased testing for heartworms in cats by veterinarians, new ‘hot spots’ for the disease are being found in previously nonendemic places such as southern Michigan and northern California,” she says. “Heightened awareness of the disease in cats and improved diagnostic methods play a role as well.”

Every year, heartworm disease spreads to new regions of the country, with the disease now having been [diagnosed in all 50 states](#). Environmental changes can trigger spread. This occurred following Hurricane Katrina when 250,000 pets, many infected with heartworms, were adopted and shipped throughout the country.

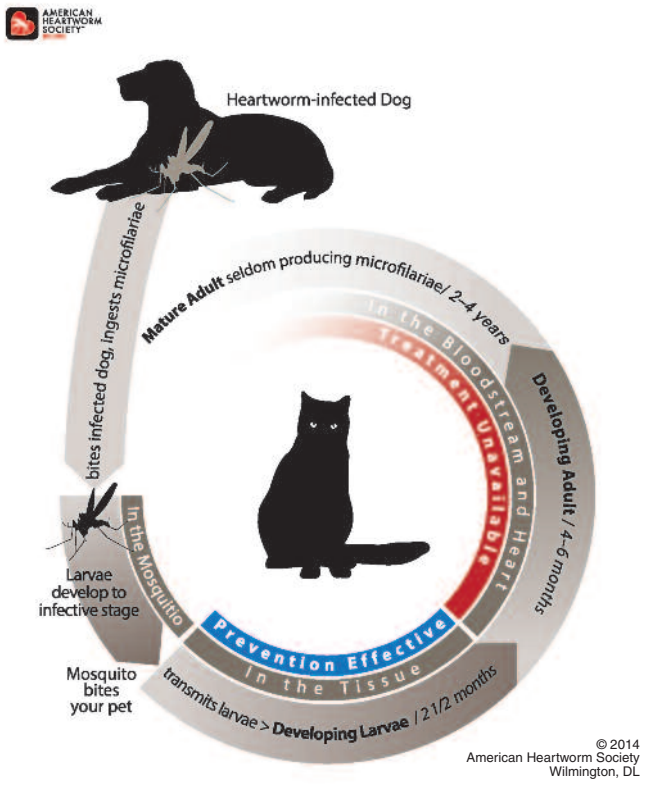
Urban sprawl creates “heat islands” as buildings and parking lots retain heat during the day and as water drainage is altered, thus fostering a microenvironment that supports the development of heartworm larvae and thereby lengthening the transmission season. Mosquitoes blown great distances by the wind also contribute to the spread of disease to previously uninfected areas.

Heartworm disease can occur in cats anywhere dogs are infected, though the [prevalence of infection in cats](#) is from 5 to 20 percent of the level in unprotected dogs in the same geographical location. The prevalence rate in cats is believed to be [underrepresented due to diagnostic limitations](#) related to cats exhibiting



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Feline Heartworm Life Cycle

Mosquitoes become infected when they bite a dog with immature worms called microfilariae. In the mosquito, the microfilariae develop into larvae. When the infected mosquito bites a cat, the larvae enter through the bite and develop in tissues under the skin. The immature worms go through several developmental stages, eventually finding their way to a blood vessel where they are carried to the arteries in the lungs. Many immature worms die at this point, causing intense inflammation. Worms that survive to adulthood primarily live in the pulmonary artery, though sometimes they can be found in the right side of the heart as well. From the time the mosquito bites and infects the cat to the development of adult worms takes about eight months. Cats rarely produce microfilariae because they have few adult worms and because their immune system inhibits the development of microfilariae. Thus, cats rarely transmit heartworms to other species via mosquitoes.

short-term clinical signs and often dying without confirmation of infection.

Heartworms, known by the scientific name *Dirofilaria immitis*, are parasites. The bite of a mosquito carrying a larval form of the heartworm sets in motion the process that causes lung disease and heart failure that can lead to death. (See “Feline Heartworm Life Cycle,” left) Unlike dogs, cats are not a typical host for heartworms, and thus most worms in cats do not survive to the adult stage. When worms do survive, cats typically have one to eight worms compared to dogs that can have 30 or more.

Adult heartworm(s) die, plugging the blood vessels in the lungs, resulting in respiratory distress and death. In cats, adult heartworms are more likely to be found in atypical locations such as the brain, causing neurological problems.

A definitive diagnosis of feline heartworms is based on blood antigen and antibody tests and in some cases cardiac ultrasonography. The antibody test detects whether an infection has occurred as early as two months post-infection, and the antigen test picks up the presence of adult worms. Positive tests should be followed up with cardiac diagnostic imaging tests to help visualize the worms.

Recognizing Heartworms in Cats

Signs of heartworm disease in cats can be subtle or dramatic.

Coughing, asthma-like attacks, periodic vomiting, lack of appetite, and weight loss are signs. Occasionally an infected cat may have difficulty walking, experience fainting or seizures, or suffer from abdominal fluid accumulation.

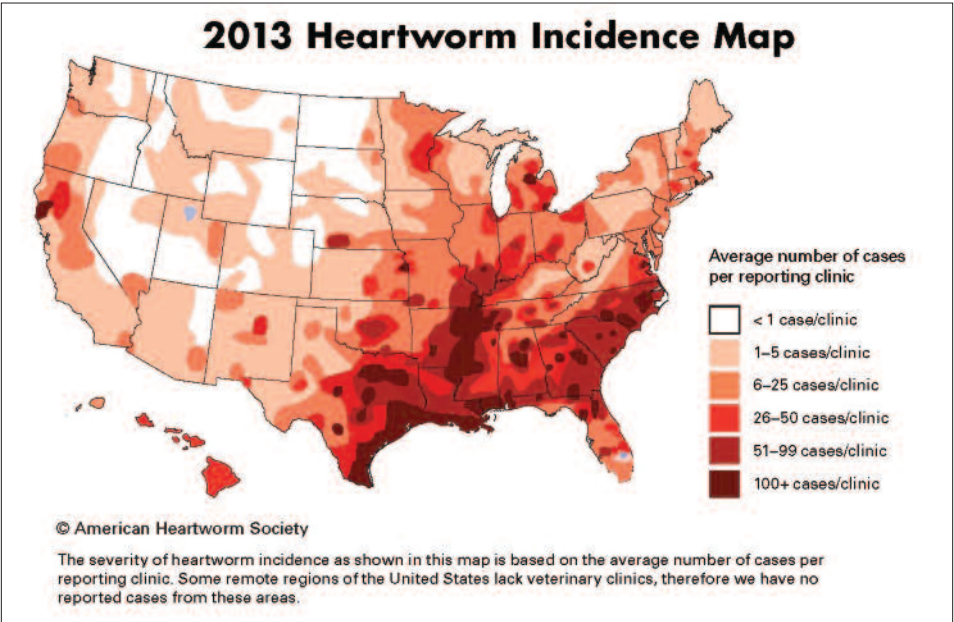
Two phases of an infection are particularly dangerous. They occur when:

- Immature heartworms reach the pulmonary system three to four months


post-infection, causing inflammation in the lungs, a condition known as heartworm-associated respiratory disease (HARD).

Feline heartworm disease can be challenging to diagnose. “It may be confused with other diseases that have similar signs. For example, HARD may be confused with feline asthma or allergic bronchitis,” says Dr. Lee. “Many cats show no signs at all, and the infection remains undetected until a worm dies triggering respiratory failure and sudden death in a cat previously presumed to be healthy.”

Cats diagnosed with heartworms are treated using medications, such as prednisone, a steroid, to manage the clinical



Comparing Feline & Canine Heartworm Disease

Cats are more resistant to heartworms (<i>Dirofilaria immitis</i>) than dogs. It is estimated that cats are infected at a rate of 5 to 20 percent of the rate in dogs.	Mature heartworm infection in cats usually consists of one to eight adult worms, which is considered a heavy, potentially life-threatening infestation due to cats' small size. On the other hand, dogs may have 30 or more worms.
Cats with mature heartworm infection rarely show microfilariae (baby worms) circulating in their bloodstream compared to 70 to 80 percent of dogs that do.	Although heartworms do not grow as long in cats as in dogs, they migrate into other body tissues, such as the nervous system, blood vessels and body cavities, at a much higher proportion than in dogs.
Heartworms can live two to four years in cats, compared to five to seven years in dogs.	Heartworm disease is harder to detect in cats than in dogs, usually requiring a combination of blood antigen and antibody tests and cardiac ultrasonography.
	Clinical signs of heartworm infection are not always observed in cats but usually are recognizable in dogs. In cats, heartworm-associated respiratory disease is often misdiagnosed as asthma or allergic bronchitis.

signs. In rare cases, surgery can be performed to remove worms though this procedure is expensive and can be risky. Guided by ultrasound, a surgeon makes an incision in the neck to pull a worm(s) out of the pulmonary artery and/or heart.

Heartworm prevention is the best way to prevent an infection. “Cats should be tested before starting on a heartworm preventive,” advises Dr. Payne. “Because there is no approved treatment for heartworm infection in cats, prevention is critical. The American Heartworm Society recommends testing cats every 12 months for heartworms and giving heartworm preventive 12 months a year.”

Topical and oral heartworm preventives have been available commercially in the U.S. since the 1990s, though they have not been used widely by cat owners. Gradually, their use is increasing, thanks to greater awareness about heartworm disease. Monthly preventives, such as the

oral preventives Heartgard® and Interceptor® and topical preventives Revolution® and Advantage Multi®, require a veterinary prescription. Some preventives also are effective against parasites, such as roundworms, hookworms, fleas, and ear mites.

Due to the difficulty diagnosing heartworms in cats, Dr. Payne advises breeders to have a necropsy performed when there is an unexplained death in the cattery. “A necropsy can alert you to a problem such as heartworms, which potentially could devastate your breeding stock,” she says. “Still, the most important thing is to practice using preventives and testing annually. It is well worth the effort.” ♦

Purina appreciates the support of the Winn Feline Foundation, and particularly Glenn A. Olah, DVM, PhD, DABVP (feline), president, in helping to identify this topic for the *Cat Update* newsletter.



Breeder Perk: Kitten Starter Kits

Do you have a new litter of kittens? Take time to order Kitten Starter Kits from *Purina Pro Club*. Starter Kits contain important information for new owners on caring for kittens with space provided for adding breed information and veterinary records. Kits also come with a coupon for kitten food from *Purina Pro Plan* or *Purina Kitten Chow* so you can redeem it and send samples home with new kitten owners.

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Are you ready to redeem all those weight circles you've been clipping from bags of participating *Purina* brand cat and kitten foods? Weight circles are valuable. They turn into Purina Points that are automatically redeemed for \$6 checks good toward the purchase of any 6-pound or larger bag of *Purina* cat or kitten food.

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Purina Pro Plan Introduces Shredded Blend for Cats

Purina Pro Plan recently launched *SAVOR* Shredded Blend adult cat foods. Combining a crunchy kibble and tender, meaty piece, *Purina Pro Plan SAVOR Shredded Blend* Chicken & Rice Formula and Salmon & Rice Formula are receiving rave reviews from cat owners. Made with 40 percent protein and real chicken or real salmon as the first ingredient, these cat foods also have a prebiotic fiber to help promote digestive health and omega fatty acids for healthy skin and coat.

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