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College of Veterinary Medicine

Baker Institute for Animal Health

DEDICATED TO THE STUDY OF VETERINARY INFECTIOUS DISEASES, IMMUNOLOGY, GENETICS, AND REPRODUCTION

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Heartworm Disease Infographic

It's easy to protect your pet from this potentially devastating parasite.

As a service to pet owners, we've developed a Heartworm Disease infographic that will help you easily understand how heartworms are transmitted (mosquitoes), how it can infect dogs and cats, and how you can easily prevent your dog or cat from becoming infected.

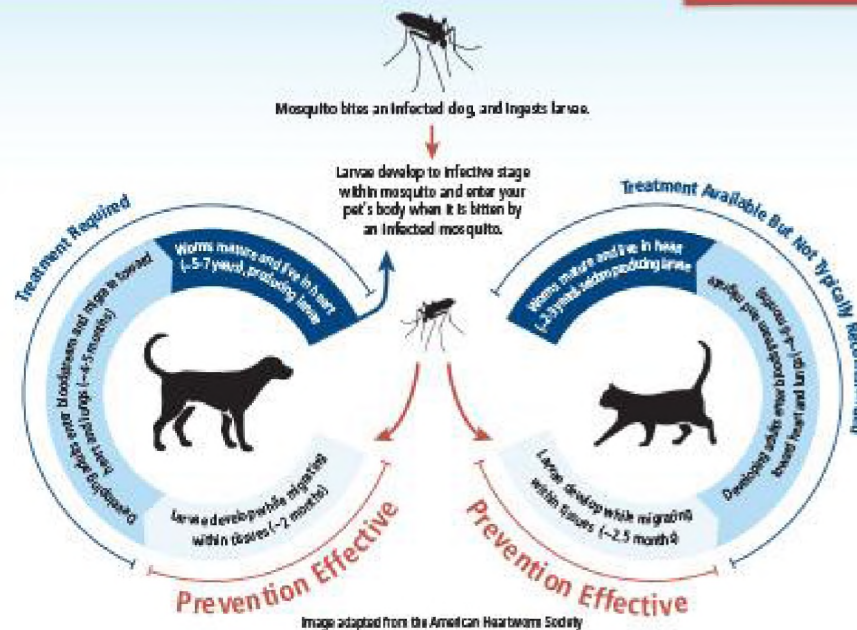
BAKER INSTITUTE
FOR ANIMAL HEALTH

HEARTWORM DISEASE

Heartworm disease, caused by a worm called *Dirofilaria immitis*, has been diagnosed in every state in the U.S.

Approximately 1.5% of dogs in the U.S. are infected with heartworms, although prevalence varies by region. The regional infection rate in cats is between 5 and 20% of that in dogs in the same locale.

It's easy to protect your pet from this potentially devastating parasite.



Transmission:

Heartworms are transmitted by mosquitoes. The mosquitoes ingest the immature larval form of the worm (*microfilaria*) from an infected dog while taking a blood meal. The *microfilaria* then mature inside the mosquito to the larval form in which they are infective for other dogs and cats.

Maturation to the infective form inside mosquitoes requires approximately two weeks of temperatures consistently above 57 degrees Fahrenheit.

When a mosquito harboring infective heartworm larvae bites another dog or cat, these larvae can be injected into that pet.

After being injected into a susceptible dog or cat, the infective heartworm larvae gradually migrate to the heart and blood vessels of the lungs and mature to adulthood. Maturation to adulthood takes between 6 and 8 months.

Adult heartworms in the heart and blood vessels of the lungs reproduce, resulting in the production of *microfilaria* that circulate in the bloodstream of the dog. This dog then becomes a source of infection for other dogs and cats through mosquito bites.

In most heartworm infected cats, adult heartworms fail to reproduce, so infected cats are not significant sources of heartworm infection for other pets.

Infection:

Once adult heartworms arrive in the heart and lungs of an infected dog or cat, they cause damage to the lining of the blood vessels that bring blood from the right side of the heart to the lungs (pulmonary arteries).

This can block blood flow to the lungs or cause the formation of blood clots, which can travel to the blood vessels in the lungs and compromise blood flow to this vital region.

The immune response to both heartworms and to a species of bacteria called *Wolbachia*, which infects the heartworms and

may promote their growth, can also cause an inflammatory response in the lungs and negatively impact the lungs' ability to oxygenate the blood of an infected pet.

Infection severity can range from affected pets not showing any signs of disease to life-threatening emergencies. Signs of heartworm disease, when seen, include difficulty/rapid breathing, coughing, weight loss, collapse, and lethargy.

Cats infected with heartworms generally have fewer adult worms that live shorter lifespans than those found in dogs. Cats also tend to show fewer signs of heartworm infections than dogs, but heartworm disease is still a serious condition in cats.



Prevention:

Prevention is key, and there are a number of effective preventive medications that can be given by mouth, as spot on treatments, or by injection. These medications prevent the maturation of migrating immature heartworm larvae to adults after a pet is bitten by an infected mosquito.

The American Heartworm Society recommends that all dogs and cats be treated with a heartworm preventative year-round. Testing for heartworm disease (via a small blood sample) is recommended prior to starting a dog or cat on heartworm preventative medications.

Consult with
your veterinarian
about the best
plan to protect
your pet from this
preventable disease.

Treatment:

There are drugs available to treat heartworm disease; however, their use is associated with risks ranging from mild to life threatening, as adult heartworm die and are flushed to the blood vessels in the lungs. Treatment can also be costly. Cats are sensitive to these drugs, and since cats usually have fewer worms that live for shorter periods of time, treatment of heartworm disease is usually not undertaken.

The Baker Institute is committed to improving animal health through scientific discovery. Visit our website to learn about our research and how you can support our mission: vet.cornell.edu/baker



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