

# Feline and Canine Internal Parasites



**Internal parasites** are a very common problem among dogs. Almost all puppies are already infected with roundworm when still in the uterus, or get the infection immediately after birth, through their mother's milk (roundworm, hookworm). Moreover, dogs of all ages are continuously exposed to potentially harmful parasites through mosquito bites, which can transmit heartworm infection, or through soil contaminated by infective parasite eggs or larvae in the backyard and parks. Though some of these parasites are very dangerous, they can be easily controlled and prevented.

## Why Parasites are a Problem

Being life-threatening, heartworms are among the most dangerous parasites, but hookworms, roundworms, whipworms and tapeworms can also seriously affect a dog's health and well-being.

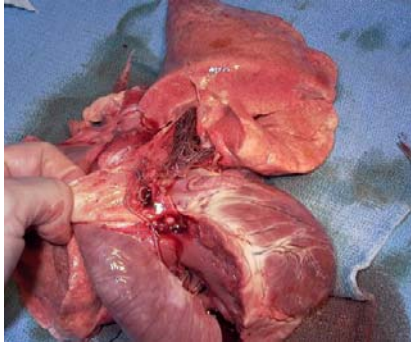
## How to Examine Your Pet

Only a veterinarian can examine your pet for parasites. Almost all puppies have parasites, so it is essential to have any puppy checked and to maintain ongoing prevention. Detection is done through a microscopic examination of the feces and should be repeated on a yearly basis.

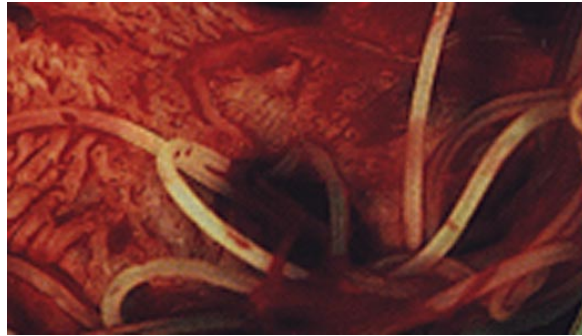
## Treating and Preventing Internal Parasites

Since many puppies are already infected at birth or immediately after birth, and are continuously re-infected through their mother's milk or through the environment, it is important to initiate the de-worming treatment once the puppies are old enough. Mothers of infected pups should be treated concurrently. This will prevent puppies to develop the disease and to shed parasite eggs through the feces, thus avoiding environmental contamination. Because of the prevalence of parasites and the ease of transmission, adult dogs should be placed on a monthly parasite preventative throughout their lives.

## Parasitic Worms



Canine  
Heartworms



Feline  
Heartworms

### **Heartworm**

Heartworms are the most life-threatening canine parasites. They reside in the dog's heart and pulmonary arteries, causing heart failure and eventually death. Adult worms are 10 to 30 cm in length and about 1 mm in diameter.

### **Transmission and life cycle**

Heartworms are transmitted by mosquitoes. When an infected mosquito bites a dog, it passes him the parasite's larvae to the dog. These larvae migrate until they reach their final site (heart and pulmonary arteries) in about 3-4 months; here they grow to maturity (macrofilariae) within 3 months and start producing larvae (microfilariae) which can survive for about 2 years in the bloodstream. When a mosquito bites an infected dog, it picks up these larvae and can transmit the infection to other dogs.

### **Heartworm Disease**

Over time, the presence of the adult worms in heart and pulmonary arteries causes an inflammation and thickening of the walls of the blood vessels which leads to an increase in blood pressure and in the cardiac effort to push the blood in these vessels. As a consequence, the dog may develop heart failure, which can eventually cause death. Clinical symptoms usually appear only when the disease has reached a very severe stage. Initial signs include sporadic coughing and tiredness. With time, this cough becomes chronic and is accompanied by difficult respiration, particularly during and after exercise, and mild anemia. In advanced cases, the dog may collapse after even light physical exertion. Most dogs eventually develop congestive heart failure.

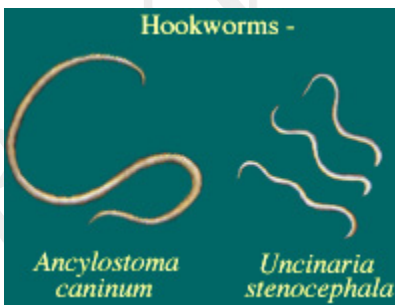
## Treating Heartworm Infection

Treatment of heartworm infection is a long and dangerous process. Dying heartworms as well as their larvae may cause shock and embolism. During therapy, dogs have to be monitored for side effects, and their activity restricted for a few weeks. Moreover, in advanced cases, health may not be restored even after effective treatment. For all these reasons it is now clear why prevention is so important.

## Heartworm Prevention

In contrast to treatment, heartworm prevention is safe, easy and effective. Before prophylactic treatment is started, dogs should be tested for heartworm infection. Those found to be infected have to be treated against adults and microfilariae, before a prevention program is started. Preventatives are usually administered monthly on a year-round basis. Most heartworm prevention medications are also effective against all other common dog parasites (roundworm, whipworm, and hookworm) thus ensuring complete protection for your pet.

## Hookworms



**Hookworms** are common parasites of the small intestine of dogs and cats.

### How Hookworms are Transmitted

Dogs and cats can be infected through the ingestion of hookworms' larvae from contaminated soil or from larvae actively boring through the dog's skin. Puppies can also be infected immediately after birth through their mother's milk. Cats can also be infected by ingestion of infected prey (i.e. mice).

### **The Life Cycle of the Hookworm**

Adult hookworms live in the small intestine of dogs and cats, where they lay eggs that are shed in the environment through the animal's feces. Within weeks, larvae hatch from the eggs, ready to infect the dog or cat. After infecting a host, larvae start migrating until they reach the intestine of the dog or cat, where they develop into adult, egg-laying worms. Some larvae do not reach the gut: they remain encysted in various organs until a stimulus such as pregnancy, reactivates them and causes them to restart migrating.

### **Hookworm Disease**

Larvae boring through the skin cause a strong, itchy inflammation. Migration through the respiratory system may cause inflammation and cough. Adult worms attach to the intestinal wall with hook-like teeth and feed on blood and tissues, causing lethargy, bloody diarrhea and anemia. When hookworms migrate on the internal gut surface, they leave behind bleeding wounds that are particularly dangerous to puppies and kittens. The presence of 500 worms can cause a 2 kg puppy to lose half its total blood volume in one day causing death.



Hookworms

### **Treating Hookworm Infection**

Since many puppies/kittens are infected soon after birth, and are continuously re-infected through their mother's milk or through the environment, it is important to initiate the de-worming treatment when the puppies are old enough. Mothers of infected puppies/kittens should be treated concurrently. This will prevent them from developing the disease and shedding parasite eggs in the feces, thus avoiding environmental contamination. Adult dogs should be placed on a parasite preventative to deter transmission throughout their lifetime.

## Roundworms



**Roundworms**, also called ascarids, are the most common internal parasites of dogs and cats. The adult worms are found in the intestine and live on gut content. They resemble spaghetti-in the appearance, being 2-3 mm thick and up to 20 cm long.

### How Roundworms are Transmitted

Many puppies and kittens are already infected while still in the uterus or acquire the infection immediately after birth, through their mother's milk. In addition, roundworms can be acquired from the environment, by accidentally ingesting the infective eggs in contaminated soil or by eating infected rodents.

### The Life Cycle of the Roundworm

Adult roundworms live in the small intestine of dogs and cats, where they lay up to 80,000 eggs per day. These eggs are shed in the environment through the animal's feces and, within a few weeks, an infective larva develops inside. When a dog or cat picks up the infective eggs, they hatch in its stomach and the larvae penetrate the stomach wall. They start migrating to several organs before coming back to the intestine and developing into adult, egg-laying worms. Some larvae do not go back to the gut: they remain encysted in the various organs until a stimulus such as pregnancy, encourages them to start migrating and develop to adult worms in the intestine.

### Roundworm Disease

Roundworms are especially harmful to puppies and kittens. The migrating larvae can cause liver, lung and brain damage. The presence of the adult worms in the intestine leads to a gut inflammation, which affects digestion, development, and growth. Common symptoms of heavy infections include vomiting, diarrhea, colic, anemia, poor growth and a "pot-bellied" appearance. A heavy accumulation of roundworms in a puppy or kitten can lead to death.

## Treating Roundworm Infection

Since many puppies and kittens are already infected at birth, and are continuously re-infected through their mother's milk or through the environment, it is important to initiate the de-worming treatment when the puppies are old enough. Mothers of infected puppies and kittens should be treated concurrently. This will prevent them from developing the disease and shedding parasite eggs in the feces, thus avoiding environmental contamination. Adult dogs should be given a monthly preventative to deter transmission of these parasites throughout their lives.

## Whipworms



**Whipworms** are common parasites of the large intestine of dogs; they are thin and 5-7 cm long. Using their mouths as a spear-like sword, whipworms slash and puncture the intestine wall and feed on the released blood and tissue fluids.

### How Whipworms are Transmitted

A dog may acquire whipworms by accidentally ingesting the infective eggs in contaminated soil. The extreme resistance of these eggs makes the environmental control very difficult.

### The Life Cycle of the Whipworm

In the intestine of the dog, the eggs hatch and, in a few weeks, the larvae develop into adult, egg-laying worms. Since the eggs are not shed regularly, diagnosis can be difficult and several stool examinations may be required.



### **Whipworm Disease**

Because of their feeding habits, whipworms can cause bloody diarrhea, weight loss, anemia and dehydration, especially in case of heavy infestation.

### **Treating Whipworm Infection**

Once whipworm is detected in your pet's stool, your veterinarian should prescribe a de-worming medication specific for that parasite. Your pet should also be given a monthly parasite preventative to deter transmission of these and other internal parasites in the future.

## **Tapeworms**



**Tapeworms** are common parasites of the small intestine of dogs and cats. They are flat and can measure from a few millimeters (*Echinococcus*) up to 2.5 meters (*Taenia hydatigena*) in length. They attach to the gut wall and live off of the intestinal contents.

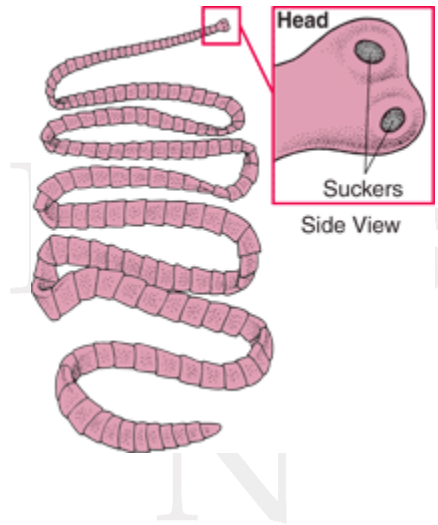
### **How Tapeworms are Transmitted**

Adult tapeworms live in the intestine of dogs and cats. They produce eggs, which are shed in the environment through the animal's feces. These eggs contain a first stage larva and when eaten by an intermediate host, like an

arthropod (flea or lice), the development proceeds up to the formation of the second larval stage. These larvae are infective for the dog or cat and attach to the wall of the intestine to become adults in a few weeks.

### **Tapeworm Disease**

Adult tapeworms are aesthetically unpleasant. Severe infections may cause intestinal damage due to the physical presence of the worms.



### **Treating Tapeworm Infection**

A few de-worming products are marketed for the treatment and control of tapeworm infections. These medications can be prescribed by your veterinarian. The most important thing to do is to kill the fleas that are on your pet and in the environment to prevent the continued transmission of tapeworm. Topical, monthly products such as Advantage and Frontline Plus are effective flea control products and can be purchased from your veterinarian.