

WORMS, WORMS, WORMS

There are 4 major internal parasites that we need to be concerned about in dogs in the Pacific Northwest: roundworms, whipworms, hookworms, and tapeworms. They all have their own unique life cycle and effect on our pets, and methods of control may vary. Except for tapeworms, we typically diagnose their presence by detecting the ova, or eggs, on a microscopic fecal examination. Tapeworms are most commonly noted by the owners finding segments in the dog's feces.

ROUNDWORMS

Roundworms are the most common of the canine digestive parasites. Dogs become infected in multiple ways. Most commonly, they acquire the parasite through the uterus during fetal development or during nursing as newborns. Adult dogs can ingest the roundworm eggs contained in contaminated soil. Ingesting a prey animal, usually a rodent, that is carrying developing worms, can create an infestation in the dog as well.

After the dog ingests roundworm eggs, the eggs hatch and larvae develop in the walls of the small intestine. The young worm burrows out of the digestive tract and encysts in other body tissues, mostly the liver. At some point, the larvae can excyst and migrate to the lungs and travel to the upper airways. The dog then coughs and the worms are swallowed to enter the intestines again. In a pregnant dog, the larvae travel to the uterus and infect unborn puppies. In a nursing mother, the larvae can travel to the mammary glands and pass into the milk.

The adult worms lay eggs which are passed in the feces. Once the eggs are in the environment for a month, they become infective and the cycle continues. The eggs are very resistant to environmental conditions and can remain infective for months to years. Note that a dog does not become infected with roundworms by contact with *fresh* feces.

Roundworms may have an adverse effect on your dog's health. They can cause diarrhea, and if the infestation is heavy enough, vomiting and poor body condition. Roundworms are long, white, and resemble spaghetti. Rarely do these pass in the feces, and this is why your vet may want to do a microscopic exam looking for eggs.

In deworming, the medicine only eradicates worms in the digestive tract. It does not affect the encysted larvae and therefore routine dewormings do not prevent transmission to puppies. Several deworming medications are effective for roundworms. Also many flea control and heartworm preventatives include monthly deworming which help to control environmental contamination. Medication needs to be repeated in 2 to 4 weeks to interrupt the life cycle of the roundworm.

An important fact about roundworms is that they have zoonotic potential. This means that they can cause disease in humans. A human can ingest eggs from soil contamination- children and people with poor hygiene are most prone. If ingested, the resulting larvae migrate through the person's tissues, especially

liver, lungs, brain, and eyes. It may sound far-fetched, but thousands of people in the US are diagnosed yearly. For this reason, the CDC and veterinary organizations are recommending routine fecal testing and dewormings.

WHIPWORMS

Whipworms are blood sucking parasites that reside in the large intestine, or colon, of dogs. Dogs become infected by consuming eggs from contaminated soil. The eggs enter the small intestine, hatch, and the larvae ultimately are carried to the large intestine. There, they embed in the lining of the colon and develop to adults.

Generally, a dog with a light infection is asymptomatic but if the worm load becomes heavy enough, serious bloody diarrhea can result. The dog can become anemic and lose weight dramatically.

Testing can be difficult because the female worms only intermittently shed eggs. Therefore a microscopic fecal test can be negative. Veterinarians will commonly deworm for whips if there is a suspicion of an infection.

Many deworming drugs are ineffective against whipworms. Treatment is frequently repeated in 3 weeks and 3 months due to the life cycle of this parasite.

Soil contaminated by eggs can remain infective for years. This can make long term control difficult. Feces need to be rechecked and a long term plan should be initiated. Fortunately, whipworms are not transmissible to humans.

HOO KWORMS

Hookworms live in the small intestine of the dog, adhering to the intestine by sharp teeth and drinking its host's blood. The adults mate and the female passes its eggs into the feces. The egg hatches in the environment and develops into the larval stage. The larvae may be ingested by the dog licking contaminated soil. In addition, the larvae can penetrate the skin of the host through the feet or whatever part of the body is touching the ground. Puppies can contract hookworms in the uterus and the dam can infest the pups through nursing, similar to the process discussed with roundworms.

Dogs with hookworm have the potential to become very ill, especially puppies and geriatric pets. Signs may include weight loss, diarrhea, lethargy, and anemia. Different types of medications may be used to treat for hookworms, and some require retreatment in several weeks because of the larvae that migrate through the body.

Hookworms are of zoonotic risk as they can infect people. The larvae in the environment can penetrate the skin and cause a disease called Cutaneous Larval Migrants.

TAPEWORMS

Tapeworms are transmitted to dogs who ingest fleas or who hunt and eat wildlife infested with tapeworms or fleas. The flea gets the tapeworm in its system by swallowing the larval worm stage. The dog sheds segments of the tapeworm containing eggs in the feces. These segments are flat and move about shortly

after excretion. They resemble tiny grains of rice when dried and can be found either in the dogs stool or stuck in the hair around its anus.

Tapeworms are not a significant cause of disease in our pets. Most animals do not even show any clinical signs. Treatment may be by injection or oral tapeworm medication. Keep in mind that the dog can easily reinfect itself by ingesting more fleas- proper flea control is essential.

IMPORTANT REMINDERS

Regarding parasites in your dogs., one of the most important things you can do is to have routine fecal examinations performed by your veterinarian. We are always amazed how many positive samples we may see in otherwise healthy pets. We recommend yearly or biyearly checks. Also, it is essential to dispose of your dog's feces, be it in your yard or at the park. There is a current trend to keep dogs on monthly deworming medicine year round, or to treat periodically throughout the year.

Leslie Kovar, DVM
Bothell Pet Hospital