



PREVENTIVE MEDICINE

Understanding and Preventing Internal Parasites

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Abstract

Internal parasites remain a pervasive threat to companion animals despite the availability of effective preventives. This article highlights the essential role of veterinary nurses in preventive medicine, particularly in the education and communication needed to ensure pet caregivers understand parasite risks and comply with prevention protocols. The article reviews the most common internal parasites affecting dogs and cats—roundworms, hookworms, whipworms, tapeworms, and heartworms—detailing transmission, diagnosis, treatment, and prevention. Special emphasis is placed on heartworm disease as a critical parasitic threat. The article underscores the importance of veterinary nurse involvement in proactive parasite control, client education, and year-round prevention strategies to protect pets and public health.



Take-Home Points

- Veterinary nurses play a critical role in educating caregivers on internal parasites, zoonotic risks, and the importance of routine preventive care, often serving as the primary communicators of medical recommendations.
- Roundworms and hookworms are common, particularly affecting puppies and kittens through several routes of transmission (maternal transfer, ingestion, and skin penetration).
- Roundworms and hookworms are of zoonotic concern.
- Whipworms primarily affect dogs, and while less common in cats in North America, they remain a concern in worldwide tropical areas, requiring fecal flotation or a fecal antigen test for diagnosis and anthelmintic treatment.
- Tapeworm infections arise from ingestion of intermediate hosts such as fleas or rodents; an antigen test can be performed for a definitive diagnosis, but diagnosis is often based on visual identification of proglottids, as traditional fecal testing has low sensitivity.
- Heartworm disease, transmitted by mosquitoes, is life-threatening and best prevented through prescribed year-round administration of heartworm preventives.

Internal parasites continue to pose a significant threat to dogs and cats throughout the United States. Despite the availability of effective preventives, many pets remain susceptible due to inconsistent compliance caused by financial constraints or medication administration difficulties, as well as lack of caregiver awareness of zoonotic disease.

Veterinary nurses are crucial in educating caregivers about how they and their pet can be affected by internal parasites. This article explores some of the most common internal parasites of concern in small animal practice and the veterinary nurse's role in preventive medicine. It also offers practical guidance for veterinary nurses to engage clients in prevention conversations that lead to action.

COMMON INTESTINAL PARASITES IN DOGS AND CATS

Intestinal parasitism is a zoonotic concern in veterinary medicine. The most diagnosed intestinal parasites in domestic pets are roundworms, hookworms, whipworms, and tapeworms. Each parasite has its own mode of transmission, diagnostic testing protocol, and treatment options.

Roundworms

Roundworms (*Toxocara* species) are among the most common intestinal parasites found in dogs and cats. The 2 species of greatest importance, *Toxocara canis* (canine roundworm) and *Toxocara cati* (feline roundworm), are also zoonotic.¹ Roundworms are most

often found in puppies and kittens but can be present in older animals as well. Puppies often acquire roundworms from their mother in utero (transplacental transmission) or while nursing (transmammary transmission). Other routes of transmission are less common in puppies. Kittens are infected via ingestion of larvated eggs from contaminated environments and ingestion of other vertebrate hosts that have consumed larvated eggs.²

Roundworms are diagnosed by observing adult worms during fecal evaluation or performing fecal flotation or antigen testing. A deworming protocol should be established at 2 weeks of age for all puppies and kittens, regardless of current infection status, and repeated every 2 to 3 weeks until regular broad-spectrum parasite control begins.³ The oral solution pyrantel pamoate is commonly used every 2 weeks for initial deworming in puppies and kittens. Multiple anthelmintics are available for lifelong treatment and prevention programs.

Hookworms

Hookworms (*Ancylostoma* species and *Uncinaria stenocephala*) are another common parasite of puppies and kittens, and multiple species infect small animals. Some species of hookworms that infect cats and dogs are zoonotic to humans. A hookworm infection is often acquired from ingestion of infective larvae from the environment and/or nursing from an infected mother; however, some species of hookworms infect the host via skin penetration. In tropical and subtropical areas, *Ancylostoma caninum* is the most common cause of



hookworm disease in dogs.⁴ Cats can be infected by a variety of species of hookworms, including *Ancylostoma braziliense*, *Ancylostoma tubaeforme*, and *Ancylostoma ceylanicum*.

Hookworm infection is diagnosed by performing fecal flotation and observing the eggs using a microscope. A variety of oral, topical, and injectable drugs (e.g., moxidectin, fenbendazole) are approved for the treatment of hookworms.

Whipworms

Whipworms (*Trichuris* species) can affect small animals—most commonly dogs—of all ages. In fact, *Trichuris vulpis* is recognized as one of the most common intestinal parasites of adult dogs worldwide.⁵ Cats can be infected with *Trichuris felis*; however, whipworms are more commonly diagnosed in cats in tropical areas than in North America.

Whipworm infection is diagnosed by performing fecal flotation and microscopically evaluating for the presence of whipworm eggs. PCR and fecal antigen tests are also available to diagnose whipworm infection. A variety of oral and topical anthelmintics are used for treatment and prevention of whipworms.

Tapeworms

Tapeworms can be found in small animals of all ages, and infection is acquired by ingesting an infected intermediate host, most often a flea or small rodent. *Dipylidium*, *Echinococcus*, and *Taenia* are the most common species of tapeworms diagnosed in small animals.⁶

Tapeworm infection is diagnosed by grossly evaluating a stool sample and seeing tapeworm segments, known as proglottids. Fecal flotation has low sensitivity, and it can be difficult to identify the species of tapeworm via microscopic examination. However, PCR testing is a reliable tool for diagnosing tapeworm infection.

A variety of oral, topical, and injectable anthelmintics can be used to treat and prevent tapeworm infections. Treatment of tapeworms does depend on the species, but fenbendazole and praziquantel are most often used. The most common way of preventing future infection is ensuring the pet is on year-round flea protection.

HEARTWORMS: ONE OF THE MOST DEVASTATING INTERNAL PARASITES

Heartworms (*Dirofilaria immitis*) are the cause of heartworm disease (dirofilariasis) in dogs and cats. Mosquitoes are the intermediate host that transmit heartworms to the animal. Adult heartworms can live as long as 5 to 7 years in dogs and 2 to 3 years in cats and can cause complications such as pulmonary and cardiac remodeling. Immature heartworms do not develop into adults in cats as often as in dogs; however, cats can develop heartworm-associated respiratory disease, which is characterized by vascular, bronchial, and interstitial changes in the lungs caused by inflammation.⁷ Most clinical signs of heartworm disease in cats mimic those of diseases such as asthma and cardiac dysfunction.

Both dogs and cats should be screened for heartworm disease using serologic testing on an annual basis. Antigen and antibody tests are recommended for cats, while antigen testing is the gold standard in dogs.⁸

Treatment of heartworm disease in dogs using adulticide protocols must be performed with extreme caution, and caregivers must understand the importance of restricting exercise. Doxycycline can be used as an adjunct treatment in dogs. There is no current FDA-approved treatment for heartworm disease in cats, as the adulticide protocols used in dogs carry a high risk of severe pulmonary inflammation and death in cats.⁷ Cats should receive supportive therapy, including corticosteroids.⁸

Year-round preventive administration is the most effective way to prevent heartworm disease in dogs and cats. The American Heartworm Association recommends that veterinarians prescribe year-round administration of FDA-approved preventive drugs to prevent heartworm infection and enhance compliance, especially since drug resistance has been documented in some heartworms.^{8,9}



SCAN THE QR CODE

to access a client handout on the risks of internal parasites and how clients can protect their pets.



Into Practice

- ☑ Share the provided client handout with clients at your clinic.
- ☑ Create a cost-comparison chart of recommended preventives.
- ☑ Provide online pharmacy information with autoship options for ease of supply.
- ☑ Create medication administration demos and provide caregivers links to review.
- ☑ Create instructional sheets to treat and care for the home environment.
- ☑ Create an informational handout for recommended routine annual parasite screenings and their costs.

THE VETERINARY NURSE'S ROLE IN PREVENTIVE MEDICINE

Veterinary nurses often have more touchpoints with caregivers than any other team member, placing them in the best position to discuss the importance of preventive medicine and help overcome any potential obstacles. AAHA recognizes that effective use of credentialed veterinary technicians in such roles improves both patient care and access to veterinary services, as well as team efficiency and staff retention.¹⁰ Therefore, utilization of veterinary nurses is essential to the success of any veterinary hospital in providing quality patient care.

Caregiver education is vital to addressing concerns about internal parasites; therefore, conversations about parasite prevention should begin at the pet's very first appointment and continue with each visit. Veterinary nurses should discuss zoonotic risks, transmission modalities, treatment options provided by the veterinarian, and preventive options with the caregiver.

To help ensure success with treatment, it is important to equip caregivers with stress-free medicating techniques and confirm that they can medicate their pet. Some products, such as injectable medications, may be more expensive but can decrease caregiver burden. When caregivers understand medical recommendations for treatment and the importance of preventives, their pet is more likely to be protected. **TVN**

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