INFORMATION FOR VETERINARIANS AND CLINICS

Tapeworms in dogs and cats

Key facts

- The cestode tapeworms (*Taenia* spp. and *Dipylidium caninum*) are common global infectious concerns in dogs and cats. Additionally, fleas are the vector for *Dipylidium caninum* and identification of this tapeworm should prompt flea treatment for all household pets
- Largest concern in young pups or kittens, animals with an outdoor lifestyle, hunting behavior, or living in high-density housing, e.g., kennels, particularly those with dirt floors, hygiene concerns
- Disease is commonly subcinical (no or mild gastro-intestinal signs), with occasional 'scooting'
- Zoonotic (human) concerns are uncommon; however, there is severe zoonotic risk with *Echinococcus multilocularis* and it is essential to differentiate this tapeworm from *Taenia spp*
- Preventive care (AAHA), companion animal parasite council (CAPC), Canadian Parasitology Expert Panel (CPEP) evidence and expert based fecal guidelines exist for puppies, kittens, adult dogs and cats (See resource section below)
- KeyScreen™ GI Parasite PCR for tapeworm diagnosis, identification, and differentiation from *Echinococcus*, along with 20 other parasites, *Giardia* zoonosis and hookworm resistance marker
- One Health, drug stewardship considerations

What is it and who gets it?[1]

Taenia spp. and *Dipylidium caninum* are cestode tapeworms that infect dogs and cats. Cats are typically infected with *T. taeniaeformis*. *Dipylidium caninum* has a flea vector and can be found in both dogs and cats.

How common is it?

Prevalence is likely underestimated and varies with population, it has been reported as ranging between 1.6 to 60% in dogs and 4.4 to 50% in cats.[1-3]

Risk factors for tapeworm infection in dogs and cats are age (younger more common), outdoor lifestyle, hunting behavior, and high-density housing (e.g., kennels, cattery).[1]

Where is it?

Tapeworms are global pathogens; however, regional prevalence can vary.

How is it transmitted (spread)?

Pathogenesis[1]
Tapeworms are transmitted through direct ingestion (infected feces, tissue cysts) and environmental contamination. The eggs and worm proglottids are passed in feces and are immediately infective. After ingestion, by an intermediate host, they hatch in the small intestine and develop into 2nd stage larvae. Some species may migrate to other body tissues where they then develop into cyst like structures. Adult worms can be large, in some species up to a meter in length.

What are the clinical signs in dogs and cats?

Subclinical disease (no or mild gastro-intestinal signs) is most common, with occasional 'scooting' and worm segments observed.[1]

How is it diagnosed?

Diagnosis is made by a combination of history, clinical signs, and fecal testing (direct fecal, fecal centrifugal flotation, KeyScreen™ GI Parasite PCR). Pet-owners may assist diagnosis (to their horror) by discovering worm segments.

A combination of test methodologies may be needed for diagnosis, i.e.., a single fecal test is less likely to be reliable

What is the treatment?[1]

Treatment is indicated in all patients, despite an apparent lack of clinical signs, to reduce spread and environmental contamination. Flea control (for all household pets) is indicated with *Dipylidium caninum infection*. Routine tapeworm treatment is advised for hunting dogs and outdoor cats due to lifestyle risk.

Environmental decontamination and removal of feces to reduce risk of re-infection is needed.

Other goals of patient management include easing pet-owner concerns surrounding zoonosis (and raising awareness of risk if present), along with potentially reducing veterinary liability concerns by providing zoonotic risk information.[4]

Monitoring?

Re-testing fecal samples
Fecal re-testing (either through direct fecal, fecal centrifugal flotation or the KeyScreen™ GI Parasite PCR) is important for tapeworm positive cases to assess for continued infection or confirm resolution, determine if further therapy and flea treatment is indicated, identify zoonotic risk and communicate this to pet-owners, and identify environmental re-infection.

At the clinic level, efforts to quickly identify re-infection (e.g., KeyScreen™ GI Parasite PCR) may assist in limiting environmental contamination, subsequent zoonotic risk, and aid in drug selection for treatment.

What is the prognosis?

Prognosis with treatment is excellent in most cases. Clients should be counselled that re-infection (environmental, e.g., dog parks, etc.), and as related to hunting behaviour, or lapse of flea treatment is a risk, as animals do not develop immunity after infection.

What is the prevention? What can I do to stop this happening to dogs?

Following existing evidence- and expert-based guidelines (CAPC, CPEP) for prevention testing, monitoring and therapy is indicated for puppies, kittens, and adult animals. Puppies and kittens should have 3-4 fecals in their first year of life, and adult dogs twice annually (as determined based on risk assessment), and routine deworming schedules followed as per CAPC and CPEP.

Environmental cleaning (pick up poop), decontamination (infection control) and provision of good nutrition, clean water sources and appropriate housing (i.e., low stress) can reduce infection (and re-infection) risk and limit the development and geographic spread.

"An ounce of prevention is worth a pound of cure" – Ben Franklin

Is this a One Health concern- 1) zoonotic (human), 2) drug stewardship and 3) environment?

1. Yes, tapeworms are potentially zoonotic for humans, although disease is uncommon. However, *Echinococcus* is a severe zoonotic threat and the species of all taeniid tapeworm eggs should be confirmed.[1] This can be done through testing with the KeyScreen™ GI Parasite PCR test.[5]

2. Maybe – at this time there are no reported concerns of resistance; however, due to the rising concern of benzimidazole resistance this concern cannot be dismissed.

3. Yes – this is an environmental concern as we work to reduce the parasite burden by ensuring parasite clearance (re-testing and effective treatment) and 'pick up the poop' messaging.

Your preventive care contribution in the clinic assists:
- The individual pet (puppy, kitten, adult dog or cat)
- Pet-owner
- One Health
- Education of self, staff, and pet-owner to follow appropriate fecal and deworm plan supported by CAPC, CPEP and AAHA evidence – and expert-based guidelines

How does Antech provide veterinary and clinic support?

Follow existing evidence – and expert-based guidelines (CAPC, CPEP, AAHA-AAFP, Infectious disease in dogs in group setting (Stull, 2016).

KeyScreen™ GI Parasite PCR[5] is a stable, single sample test with a fast turnaround time (TAT), provides reliable and accurate results, and is backed by scientific support (publications, internal data).

- Quickly identifies tapeworms and differentiates *Echinococcus*
- Reduce zoonotic risk to humans
- Limits environmental contamination and subsequent worsening of re-infection concern
- Allows for infectious disease surveillance, identification of 'hot spots' and risk mapping
- Environmental stewardship-reduce burden due to parasite clearance re-assessment, supports pick up poop messaging

Provision of medical support

Internal Medicine Consultant team access, clinical pathologist, radiologist, other specialists

Vet team and pet-owner resources, technician training.

Webinar (RACE approved), case studies, FAQ on disease, pathogen, etc.

Resources

Companion Animal Parasite Council (CAPC),
As accessed August 2022.

Canadian Parasitology Expert Panel (CPEP),
As accessed August 2022.

Canine (2019) and Feline (2021) Life stage Guidelines, AAHA, AAHA/AAFP, as accessed August 2022.

American Animal Hospital Association (AAHA) Infectious disease in dogs in group setting (Stull, 2016, As accessed August 2022.

References

1. Weese JS, Evason ME. 2020. A Colour Handbook, Infectious Diseases of the Dog and Cat. CRC Press.
2. Conboy G. Cestodes of dogs and cats in North America. Vet Clin North Am Small Anim Pract. 2009 Nov;39(6):1075-90.
3. Villeneuve A, et al. Parasite prevalence in fecal samples from shelter dogs and cats across the Canadian provinces. Parasites Vectors 2015, 8, 281.
4. Marsh AE, et al, 2015. Legal implications of zoonotic disease transmission for veterinary practices. Vet Clin North Am Small Anim Pract. 2015 Mar;45(2):393-408.
5. Leutenegger CM, 2022. How molecular testing is reshaping the way parasites can be detected. Vet Pract News. March.