

INFORMATION FOR VETERINARIANS AND CLINICS

Giardiasis in dogs and cats

Key facts

- Globally, one of the most common infectious concerns in dogs and cats
- Protozoal pathogen with variety of assemblages (or genotypes):
 - Dogs typically A1, C, D
 - Cats mainly A1, F
- Largest concern in young animals, outdoor lifestyle, high-density housing (e.g., kennels), dog group settings (e.g., dog park)
- Subclinical infections are common (no or mild signs of gastro-intestinal disease) or gastro-intestinal disease (diarrhea), which can be acute or chronic, small, large or mixed bowel
- Zoonotic (human) concern typically low, but potential risk with *Giardia* assemblages A & B (specifically A1, A2, B)¹⁻³
- Preventive care (AAHA), companion animal parasite council (CAPC), Canadian Parasitology Expert Panel (CPEP) evidence and expert based fecal guidelines for puppies, kittens, adult dogs and cats
- Zoonotic (human) health concern, *Giardia* assemblages.
- KeyScreen™ GI Parasite PCR: *Giardia* diagnosis and identification of zoonotic potential, along with 20 other parasite-pathogens and hookworm resistance marker
- One Health, drug stewardship considerations

What is it and who gets it?

Giardia spp. are protozoal pathogens with a variety of assemblages (or genotypes): A through H.

- Dogs are typically infected with assemblages A1, C, D
- Cats are usually infected with assemblages A1, F

How common is it?

Prevalence varies with population, i.e., pet-store > vet clinic > shelter, age (dogs <1-year higher risk) and geography regional differences).¹⁻³

One global meta-analysis reported a prevalence of 15.2% in dogs and 12% in cats.³ A more recent US publication reported *Giardia* as the most common GI parasite detected in dogs (10 to 12%) presenting to vets for wellness or other.⁴

Giardiasis is most common (and of greatest concern) in young animals. Risk factors for infection in dogs and cats are age (younger more common), outdoor lifestyle, high-density housing (e.g., kennels, cattery), and for dogs in group settings (e.g., dog park).

Where is it?

Giardia spp. are global pathogens; however, regional prevalence can vary.

Regional prevalence (CAPC maps):

USA: capcvet.org/maps/#/2022/all-year/giardia/dog/united-states

Canada: capcvet.org/maps/#/2022/all-year/giardia/dog/canada

How is it transmitted (spread)?

Pathogenesis

Giardia is transmitted through fecal-oral infection, either by direct contact (infected animal) or indirect contact, e.g., drink contaminated water, food, grooming.

Giardia spp. trophozoites can damage and inflame the host's (dog or cat) intestinal wall, causing subclinical infection or clinical signs of diarrhea. The trophozoites and cysts are shed in feces, which re-establishes the cycle of transmission. Cysts are immediately infective once they are shed, are very hardy, and can survive in the environment for months.

What are the clinical signs in dogs and cats?

Common clinical signs in dogs and cats are gastro-intestinal, notably, diarrhea, which can be acute or chronic and either small, mixed or large bowel. Weight loss and dehydration may also be present.

Subclinical infection (no or mild signs gastro-intestinal signs) is very common.

How is it diagnosed?

Diagnosis is made by a combination of history, clinical signs and fecal testing (fecal centrifugal flotation, coproantigen ELISA, KeyScreen™ GI Parasite PCR).

Laboratory testing (CBC, serum biochemistry) may be indicated in patients with systemic signs to determine protein loss and prompt additional therapy, or to assess for alternate differentials as many dogs may be subclinically infected, i.e., *Giardia* may not be cause of clinical signs.

What is the treatment?

Treatment options for patients with clinical signs (not labelled in the US) include the benzimidazoles, (fenbendazole and febantel), metronidazole, praziquantel, and tetrahydropyrimidines (pyrantel). The therapy goal in *Giardia* positive patients with clinical signs is improvement of diarrhea.¹⁻³

Treatment is not indicated in the absence of clinical signs. It is important to be aware (and convey to pet-owners) that for animals with subclinical *Giardia* infections (carrier state) elimination of infection is not indicated, is challenging, and that not treating healthy animals upholds One Health drug (pharmacological) stewardship.

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.⁵

Drug resistance concerns emerging?

In human giardiasis, drug resistance is a concern. It is not known whether this is a concern in veterinary medicine; however, *Giardia* infections that are refractory to therapy have been reported and this may be related to re-infection or drug resistance to benzimidazoles and metronidazole.⁶

When to suspect re-infection, drug resistance? How determine?

Fecal testing for re-infection and potential resistance can be done through reassessment fecal testing (fecal centrifugal flotation, coproantigen and PCR). The KeyScreen™ GI Parasite PCR identifies multiple (20) GI parasites, including *Giardia*, and detects potential zoonotic concern related to *Giardia* assemblages A and B⁷, along with the hookworm resistance marker.

Drug resistance may be suspected when re-assessment fecal testing reveals that *Giardia* have not been killed by treatment and persistent infection is unrelated to environmental re-infection.

Monitoring?

Fecal testing for re-infection and potential resistance can be done through reassessment fecal testing (fecal centrifugal flotation, coproantigen and PCR). The KeyScreen™ GI Parasite PCR identifies multiple (20) GI parasites, including *Giardia*, and detects potential zoonotic concern related to *Giardia* assemblages A and B⁷, along with the hookworm resistance marker.

What to do in cases of suspected resistance?

There is no simple or easy answer.

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

Please call the Antech consultation team to discuss patients with potential *Giardia* resistance or that are refractory to therapy.

What is the prognosis?

Prognosis with treatment is excellent in most cases. Patients with systemic signs or malabsorptive concerns may need more intensive supportive care. Similarly, persistently infected animals (i.e., environmental re-infection, refractory to treatment or suspected resistance) can require repeated therapy and additional monitoring for parasite clearance. Concurrent disease should be suspected in some patients and clients should be counselled that environmental re-infection (e.g., dog parks, etc.) 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 fecal parasite screens 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 (zoonotic (human), animal, drug stewardship and environment)?

Yes – some assemblages (A/B) of *Giardia* are potentially zoonotic for humans, and *Giardia* should be considered a potential zoonosis until confirmed to be of a non-zoonotic assemblage. This can be done through testing with the KeyScreen™ GI Parasite PCR test.⁷ Humans can develop gastro-intestinal signs as related to infection.

Yes – this is an antimicrobial (pharmacologic) stewardship concern due to concerns of refractory treatment and potential resistance that impacts animals and humans.

Yes – this is 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?

Provision of diagnostic options that:

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

KeyScreen™ GI Parasite PCR 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 *Giardia* and potential zoonotic concern
- Aids drug selection for therapy (if needed)
- Reduce zoonotic risk to humans
- Limits environmental contamination and subsequent worsening of MDR concern
- Allows for infectious disease surveillance, identification of ‘hot spots’ and risk mapping for MDR
- Drug stewardship (MDR)
- 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, others.

Vet team and pet-owner resources (visual aids graphs of labs, lifestage, breed, parasite and protocol, tidbits that are fun and individualized), technician training (Preventive care modules).

Webinar (RACE approved), case studies, FAQ on disease, pathogen, etc. (IM consultants), visual aids for prevention (trends of labs, parasite checks, body weight based on species-breed and lifestage).

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

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3. Bouzid M, et al, 2015. Prevalence of *Giardia* infection in dogs and cats, a systematic review and meta-analysis of prevalence studies from stool samples *Vet Parasit.* 207:181-202.
4. Sweet S, et al, 2021. A 3-year retrospective analysis of canine intestinal parasites: fecal testing positivity by age, U.S. geographical region and reason for veterinary visit. *Parasites Vectors* 14, 173.
5. 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.
6. Eppler ME, et al, 2022. Survey of U.S. based veterinarians’ knowledge, perceptions and practices about canine giardiasis. *Vet Parasit.* 34:1-7.
7. Scorza, Leutenegger CM, et al 2022. Differentiating *Giardia duodenalis* assemblages with a novel beta-giardin qPCR assay. Pending publication. *ACVIM Proceedings.*