

Zoonotic Potential of Giardia Species

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Infection with *Giardia* species is very common in wildlife, agricultural animals, pets, and people. *Giardia* species are now considered the most common intestinal parasite in dogs and cats worldwide. In a recent Canadian study, the prevalence of *Giardia* species in dogs and cats was approximately 8% and 4% respectively, and similar prevalence levels are likely in the United States. *Giardia* organisms are also considered the most common intestinal parasites of people, especially in the developed world, with prevalence rates worldwide estimated to be between 5% and 7%. The elevated prevalence stems from the fact that *Giardia* organisms do not always cause illness, so it is unrealistic to think that the prevalence of the organism will decrease significantly in the general public or in the pet population.

The subject of zoonotic potential is complicated. *Giardia intestinalis* organisms are usually species specific, and those species that affect animals are not usually infectious to humans. *Giardia lamblia* is much less species specific and many genetic types, but not all, are infectious to humans. Since *Giardia* organisms in veterinary medicine are not often identified to species, all species identified in pets should be considered potentially zoonotic.

Giardia cysts can be difficult to identify in fecal samples, but veterinarians now have access to additional testing methods that have facilitated diagnosis. The most common test utilized in veterinary practice, other than direct or concentrated fecal exam, is an antigen capture ELISA test. Studies have demonstrated that this test is both sensitive and specific. Nevertheless, diagnosis of *Giardia* as the causative agent of intestinal problems remains difficult. Many dogs and cats that exhibit diarrhea and are found to be positive for *Giardia* on antigen-capture ELISA, are actually exhibiting diarrhea from other causes. Veterinarians are urged to utilize both fecal exams and antigen testing simultaneously. Since fecal examination alone is not very sensitive due to inconsistent shedding of *Giardia* cysts, assessing the results of both tests may aid in establishing a definitive diagnosis. Cornell University College of Veterinary Medicine offers the following pet treatment guidelines to veterinarians (<https://ahdc.vet.cornell.edu/sects/Paras/tests/giardia.cfm>):

Testing Results	Recommendation
Giardia ELISA Positive/Flotation Positive	The animal is infected with Giardia...treatment is recommended
ELISA Positive/Flotation Negative	The animal may be infected with Giardia but is shedding cysts below the limits of detection by flotation. Alternatively, the ELISA is a false positive that may be seen most frequently when the results are in the low positive range. To resolve the issue, collect a second sample for analysis.

Giardia ELISA Negative/Flotation Positive	The animal may be infected with Giardia but is producing antigen below the limits of detection by ELISA. Alternatively, the ELISA is a false negative. To resolve the issue, collect a second sample for analysis.
Giardia ELISA Negative/Flotation Negative	The animal is not infected with Giardia.

Confirmed cases of giardiasis in pets should be treated for both the benefit of the animal and for the benefit of the pet owning public. Drugs such as fenbendazole and metronidazole are commonly available and remain generally effective.

The presence and abundance of *Giardia* in the intestinal tract of pet species is greatly influenced by immunity and stress. For this reason the prevalence of *Giardia* in non-residential, concentrated pet environments (e.g. large breeding operations, animal shelters, pet shops, etc.) is frequently much higher than in the general pet population. Persons who adopt or purchase pets from these facilities should visit a veterinarian immediately and request screening for giardiasis, as well as for other diseases of importance to pets and humans.

In human medicine, treatment of asymptomatic carriers is not recommended. The avoidance of treatment is likely due to recognition that the organism cannot be realistically eliminated from all people and the environment, and the risks of widespread use of effective pharmaceuticals would likely be more of a public health problem than the disease. Treatment is, however, recommended for asymptomatic household contacts of immunosuppressed patients.