Veterinary advisory: *Echinococcus multilocularis* risk in Ontario

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Echinococcus multilocularis (EM) is a zoonotic wildlife associated tapeworm that has become endemic in Ontario. Fecal EM shedding was identified in 23% of wild canids tested in southern Ontario in 2015-2017. The prevalence of shedding was highest in areas along the northern shore of Lake Erie.

Foxes, coyotes and other canids (including domestic dogs), and rarely cats, can carry adult EM in their intestinal tracts and shed tapeworm eggs in their feces. The eggs are normally ingested by rodents or other small mammals. The eggs hatch in the intestine, and the larvae then migrate primarily to the liver and form budding cysts that behave like a malignant tumour, causing a condition known as alveolar echinococcosis (AE). Consumption of infected rodents by canids then completes the normal life cycle. However, if a person ingests the eggs from the feces of an infected dog or wild canid, then AE can develop in the person. The parasitic cysts grow slowly, so the clinical incubation period can be very long (5-15 years), but AE can be very difficult to treat by the time it is detected due to the invasive growth of the cysts.

In addition to being a definitive host for EM (i.e. intestinal infection with adult worms and shedding of eggs in feces), dogs can also occasionally be intermediate hosts for EM and develop AE. This is thought to happen when dogs are exposed to very large numbers of parasite eggs (e.g. exposure to heavily contaminated environment, directly consuming feces from other infected canids). Some dogs with AE will have concurrent intestinal infection and also shed tapeworm eggs in their feces.

Veterinarians are reminded and encouraged to educate pet owners about the animal and human health risks of EM , particularly those who own dogs that live in or frequently visit higher risk areas of southern Ontario, and whose dogs exhibit other high-risk behaviours such as hunting and consuming small rodents, and consuming or having other contact with feces of coyotes, foxes or other dogs. Routine fecal examination (floatation) has poor sensitivity for detecting eggs from EM ; fecal PCR testing is recommended instead if needed and is available from commercial diagnostic laboratories. Dogs shedding eggs or at high risk of exposure should be dewormed monthly with praziquantel. Prompt removal of dog and other canid feces from the environment, with close attention to hand hygiene, is also important to reduce exposure of people, intermediate hosts (e.g. small rodents) and other canids to parasite eggs.

Veterinarians should also consider EM as a differential diagnosis for compatible hepatic lesions and unusual cysts elsewhere in body, particularly in high-risk animals. The diagnosis can be confirmed using tissue PCR testing, as well as histopathology. Dogs

with AE may require lifelong antiparasitic treatment, and should also be immediately treated with praziquantel in case of concurrent intestinal infection.

Since 2018, infection by *Echinococcus multilocularis* is classified as a disease of public health significance in Ontario; cases in either animals or people are therefore immediately reportable to public health. Cases of both fecal shedding and AE in dogs in Ontario have been detected periodically since 2012, and most recently in 2022. Confirmed cases of human infection in Ontario remain rare (1 case since 2018) but have been more commonly detected in other jurisdictions in Canada where this parasite has become endemic (Alberta).

Additional information:

- OAHN infographic - Emerging risk: *Echinococcus multilocularis* in Ontario
- OAHN anti-parasitics table for dogs and cats (Canada, 2022)
- *Echinococcus multilocularis* infection, southern Ontario, Canada
- *Echinococcus multilocularis* in Ontario
- *Echinococcus* infosheet for pet owners

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