



## Common name

hydatid disease,  
hydatid cysts,  
echinococcosis, lung  
blisters

## Scientific name

a tapeworm (cestode),  
*Echinococcus cervi*

## What's Bugging Wild Critters?

Fact sheet #17:  
Hydatid tapeworm



## Significance

*The optimum habitat for these tapeworm larvae is the lungs of moose and elk (rarely mule deer and caribou). Larvae/cysts are harmless to humans but can survive in dogs that eat unfrozen cysts. People can be infected with eggs excreted from infected dogs; however, there are no documented cases of this happening in Alberta. Adults live in the intestines of canids. Persons who handle wolves, coyotes, or their scat also are at some risk of infection by eggs in canid faeces.*

## What? Where? How?

This tapeworm has two primary life-forms: a tiny white adult (<5mm long) that lives in the intestines of canids (wolves, coyotes, dogs) and a small (20-30 mm) round, white fluid-filled cyst that lives in the lungs of some cervids, particularly moose and elk. Occasionally, the cysts occur in the liver of infected cervids. Both life-forms are well suited to living in their preferred habitat without causing damage to their environment (i.e., the tissues of the infected animal). The tiny adults are too small to be seen without a microscope (and who wants to look in wolf droppings anyway!). However, if you look at the lungs of moose and elk, chances are good that you will find the large cysts.

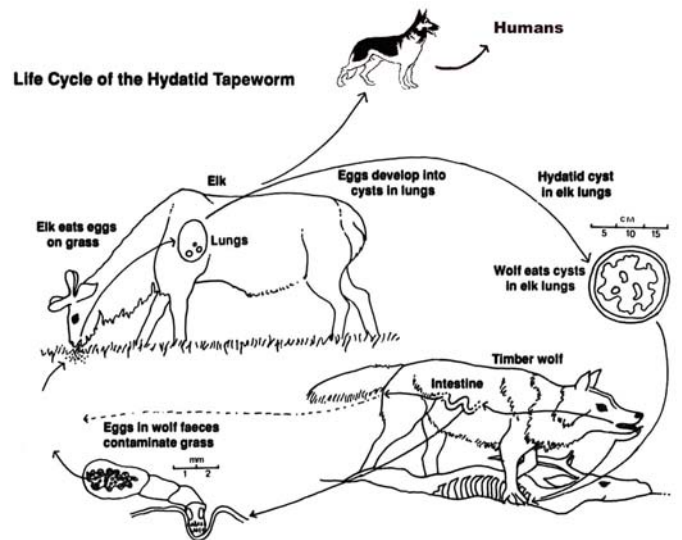
# Hydatid tapeworm

(*Echinococcus cervi*)

## in Alberta

## Transmission Cycle

Adult hydatid tapeworms commonly live in the small intestine of wolves, coyotes, and rarely in dogs and other carnivores. Each wolf or coyote may carry thousands of adult worms that produce eggs which leave the intestine in the faeces. Once on the ground, the eggs can be picked up by passing moose and elk that eat contaminated grass or shrubs. The eggs then hatch and larvae burrow through the wall of the intestine and into a blood vessel. The circulating blood carries them to the lungs, where they transform into a cyst. Cysts can differ in size from a pea to a golf ball. Each cyst contains a small amount of clear watery fluid and thousands of immature tapeworms, each about the size of a grain of sand. These tiny immature worms are at a resting stage and do not develop any further until the moose (or elk) dies and the cysts are eaten by wolves. In the gut of the wolf, the immature tapeworms mature into the tiny adults that live in the intestine.



# Hydatid tapeworm in Alberta

(*Echinococcus cervi*)

## Distribution in Alberta

In general, this tapeworm is a resident wherever wolves occur in the province. The hydatid population is well established since adults occur in a high percentage of wolves. Hunters often see cysts in the lungs of moose and elk in areas where wolves occur. This tapeworm also occurs in Elk Island National Park and in the Cypress Hills, where there are a lot of coyotes, but no wolves. Coyotes are marginal habitat for hydatid tapeworm, however, they can provide enough resources to maintain a limited population of adult worms. Dogs that eat infected lungs are likely to provide habitat for the tapeworms. No one has looked for this in dogs in Alberta. Infected dogs could be a human health risk (see below).



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## Public Significance

*Echinococcus cervi* (=granulosus) is the only tapeworm in Alberta wildlife that can be a significant health concern for humans, although human infection rarely happens in North America. When human infection does occur, it generally comes from pet dogs. Normally hydatid tapeworms cycle back and forth between moose/elk, and wolves/coyotes. However, being opportunistic, the tapeworm can survive and supplement this system in humans and domestic dogs. If a dog eats unfrozen hydatid cysts, the tapeworms can develop in its intestine and eventually produce eggs that can be transmitted to humans to eventually grow into cysts in the lungs and liver of those humans. These cysts can only be removed by surgical procedures.

Thus, trappers and other folks who handle wolves, coyotes, or their scats should be aware of the risk and take appropriate precautions (see below).

## Importance for Wildlife Management

Adult tapeworms cause little or no damage to wolves, coyotes, or dogs. There is likely some minor irritation of the gut wall but nothing that interferes with overall health of infected animals. Similarly, hydatid cysts in moose and elk grow slowly and do not cause much damage. However, when many cysts occur in the lung tissues, individuals likely have decreased stamina and may be more susceptible to predation from wolves. This actually works in favour of the tapeworm completing its life cycle.



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(*Echinococcus cervi*)



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We all know that sometimes dogs are soiled with faeces on their hair (some even roll in the stuff!). In addition, faeces from an infected dog could contaminate the backyard, particularly the sandbox, with many tapeworm eggs. Humans, certainly children, can end up eating the eggs after close and sometimes unsanitary association with dogs.

The cysts in moose and elk are NOT infective to humans. However, the eggs in wolves, coyotes, and dogs ARE.



## Prevention/Control

Trappers and field biologists should wear gloves and thoroughly clean knives and work tables after handling wolves and coyotes. Particular care should be taken when skinning around the anus or when carcasses are soiled with faecal material. Hunters and others should avoid exposure to this parasite by keeping hydatid cysts away from domestic dogs. Viscera from moose or elk should be left in the bush or destroyed by burning or burial. Regular de-worming of dogs also reduces the risk to humans.

## Summary

*Hydatid tapeworms are common residents of Alberta. They have a well-established cycle, particularly between wolves and moose. Although infections in humans are rare, care should be taken when handling wolves, coyotes and their scat. Lungs of moose and elk should not be fed to dogs. Dogs that run at large should be de-wormed regularly.*

## Additional Information

University of Alberta: <http://www.biology.ualberta.ca/facilities/safety/index.php?Page=700>

Alaska Department of Fish and Game: <http://wildlife.alaska.gov/aawildlife/disease/guide/internal4.cfm>

Health Canada: <http://www.hc-sc.gc.ca/pphb-dgsp/msds-ftss/msds54e.html>

Merck Veterinary Manual - Online: <http://www.merck.com/mrkshared/mmanual/section13/chapter161/161g.jsp>

For more information on wildlife diseases in Alberta: <http://www3.gov.ab.ca/srd/fw/diseases/index.html>