



## ***Alveolar Echinococcosis*** (al-VEE-oh-ler ee-keye-ni-kah-KOH-sis )

### **What is Alveolar Echinococcosis (AE)?**

AE disease results from being infected with the larval stage of *Echinococcus multilocularis*, a microscopic tapeworm (1-4 millimeters) found in foxes, coyotes, dogs, and cats. Although human cases are rare, infection in humans causes parasitic tumors to form in the liver, and, less commonly, the lungs, brain, and other organs. If left untreated, infection with AE can be fatal.

### **Where has AE been found?**

AE is found worldwide, mostly in northern latitudes. Cases have been reported in central Europe, Russia, China, Central Asia, Japan, and North America. In North America *E. multilocularis* is found primarily in the north central region from eastern Montana to central Ohio, as well as Alaska and Canada. Human cases have been reported in Alaska, the province of Manitoba, and Minnesota. Prevalence among wild foxes and coyotes is high, and may reach over 50% in some areas; however, even in these areas, transmission to humans has been low.

### **How does infection occur in foxes, coyotes, dogs, and other cats?**

Wild foxes, coyotes, and cats get infected when they eat *Echinococcus multilocularis* larvae in infected rodents, field mice, or voles. Cats are less susceptible than dogs, but because they catch and eat rodents often, may also become infected. Once the animal becomes infected, the tapeworm matures in its intestine, produces eggs, and the infected animal passes eggs in the stool. These tapeworm eggs, which are directly infectious to other animals, are too tiny to see, and will stick to anything with which they come in contact. Coyotes, foxes, dogs, and cats are not harmed by the tapeworm and do not have symptoms of AE.

### **Can animals be tested for *E. multilocularis* tapeworms?**

Routine fecal examinations are not sufficient to diagnose *E. multilocularis* infection. Infection with the *E. multilocularis* tapeworm and other tapeworms may occur at the same time. Eggs of *Taenia* species tapeworms and *Echinococcus* tapeworms are similar in shape and size and are very difficult to tell apart. If you live in an area where this parasite occurs or you are concerned about your dog or cat being infected with *E. multilocularis* or other tapeworms, see your veterinarian who can answer your questions and assess the risk of possible infection.

### **How can I be infected with AE?**

By accidentally swallowing the eggs of the *E. multilocularis* tapeworm. Humans can be exposed to these eggs in two main ways, both of which involve "hand-to-mouth" transfer or contamination:

- By directly ingesting food items contaminated with stool from foxes or coyotes. This might include grass, herbs, greens, or berries gathered from fields.
- By petting or handling household cats and dogs infected with the *E. multilocularis* tapeworm. These pets may shed the tapeworm eggs in their stool, and their fur may be contaminated. Some dogs "scent roll" in foreign material (such as wild animal feces) and may become contaminated this way.

### How likely am I to be infected with AE?

For 50 years, *E. multilocularis* was thought to be confined to the Alaskan coast and Canada. Now, because wild coyotes, foxes, and wolves are being trapped and transported to states where *E. multilocularis* has not previously been found, there is increased risk of spreading the disease to animals and humans. Wild animals carrying the tapeworm could set up the transmission cycle and expose animals not already infected. Many states prohibit this movement of wild animals, but trapping and movement of infected wild canines still occurs. If the transportation and relocation of these animals continues, the risk of human transmission will increase. Although the chances of contracting AE are low, certain groups may be at greater risk.

You may be at greater risk if you live in an area where *E. multilocularis* is found (see above). People at high risk include trappers, hunters, veterinarians, or others who contact wild foxes, coyotes, or their stool, or household cats and dogs who have the opportunity to eat wild rodents infected with AE.

### What are the symptoms of AE?

AE is caused by tumor-like or cyst-like tapeworm larvae growing in the body. AE usually involves the liver, but can spread to other organs of the body. Because the cysts are slow-growing, infection with AE may not produce any symptoms for many years. Pain or discomfort in the upper abdominal region, weakness, and weight loss may occur as a result of the growing cysts. Symptoms may mimic those of liver cancer and cirrhosis of the liver.

### How can I find out if I have AE?

See your health care provider if you think you may have been exposed to AE by one of the ways listed above. He or she can order a blood test for the presence of the parasite or antibodies to *E. multilocularis*.

### What is the treatment for AE?

Surgery is the most common form of treatment for AE, although removal of the entire parasite mass is not always possible. After surgery, medication may be necessary to keep the cyst from growing back.

### How can I prevent AE?

If you live in an area where *E. multilocularis* is found in rodents and wild canines, take the following precautions to avoid infection:

- Don't touch a fox, coyote, or other wild canine, dead or alive, unless you are wearing gloves. Hunters and trappers should use plastic gloves to avoid exposure.
- Don't keep wild animals, especially wild canines, as pets or encourage them to come close to your home.
- Don't allow your cats and dogs to wander freely or to capture and eat rodents.
- If you think that your pet may have eaten rodents, consult your veterinarian about the possible need for preventive treatments.
- After handling pets, always wash your hands with soap and warm water.
- Fence in gardens to keep out wild animals.
- Do not collect or eat wild fruits or vegetables picked directly from the ground. All wild-picked foods should be washed carefully or cooked before eating.

*This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider. If you have any questions about the disease described above or think that you may have a parasitic infection, consult a health care provider.*

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