

## *Hydatid Cyst*

### *Echinococcosis (Tapeworm)*

#### Key facts:

- Human echinococcosis is a parasitic disease caused by tapeworms of the genus *Echinococcus*.
- The two most important forms of the disease in humans are cystic echinococcosis (hydatidosis) and alveolar echinococcosis.
- Humans are infected through ingestion of parasite eggs in contaminated food, water or soil, or after direct contact with animal hosts.
- Echinococcosis is often expensive and complicated to treat, and may require extensive surgery and/or prolonged drug therapy.
- Prevention programmes focus on deworming of dogs, which are the definitive hosts. In the case of cystic echinococcosis, control measures also include, slaughterhouse hygiene, and public education campaigns. Vaccination of lambs is also being used as an additional intervention.
- More than 1 million people are affected with echinococcosis at any one time.
- WHO is working towards the validation of effective cystic echinococcosis control strategies by 2020. (WHO)

Echinococcosis is a parasitic disease one of Neglected tropical diseases, caused by infection with tiny tapeworms of the genus echinococcosis and is classified as either cystic echinococcosis or alveolar echinococcosis.

Cystic echinococcosis (CE), also known as hydatid disease, is caused by infection with the larval stage of *Echinococcus granulosus*, a ~2-7 millimeter long tapeworm found

in dogs (definitive host). While the sheep, cattle, goats, and pigs (intermediate hosts). Although most infections in humans are asymptomatic, CE causes harmful, slowly enlarging cysts in the liver (50-70%), lungs (20-30%), and other organs that often grow unnoticed and neglected for years.

Alveolar echinococcosis (AE) disease is caused by infection with the larval stage of *Echinococcus multilocularis*, a ~1-4 millimeter long tapeworm found in foxes, coyotes, and dogs (definitive hosts). Small rodents are intermediate hosts for *E. multilocularis*. Although cases of AE in animals in endemic areas are relatively common, human cases are rare. AE poses a much greater health threat to people than CE, causing parasitic tumors that can form in the liver, lungs, brain, and other organs. If left untreated, AE can be fatal.

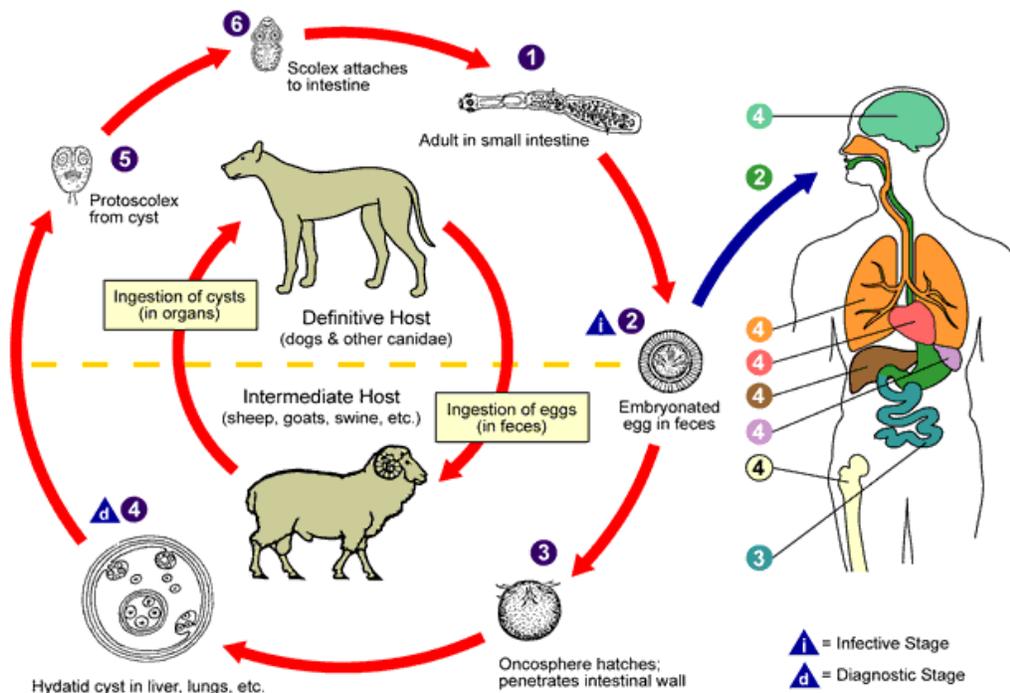
### Epidemiology & Risk Factors

Cystic echinococcosis (CE) is caused by infection with the larval stage of *Echinococcus granulosus*. CE is found in Africa, Europe, Asia, the Middle East, Central and South America, and in rare cases, North America. The parasite is transmitted to dogs when they ingest the organs of other animals that contain hydatid cysts. The cysts develop into adult tapeworms in the dog. Infected dogs shed tapeworm eggs in their feces which contaminate the ground. Sheep, cattle, goats, and

pigs ingest tapeworm eggs in the contaminated ground; once ingested, the eggs hatch and develop into cysts in the internal organs. The most common mode of transmission to humans is by the accidental consumption of soil, water, or food that has been contaminated by the fecal matter of an infected dog.

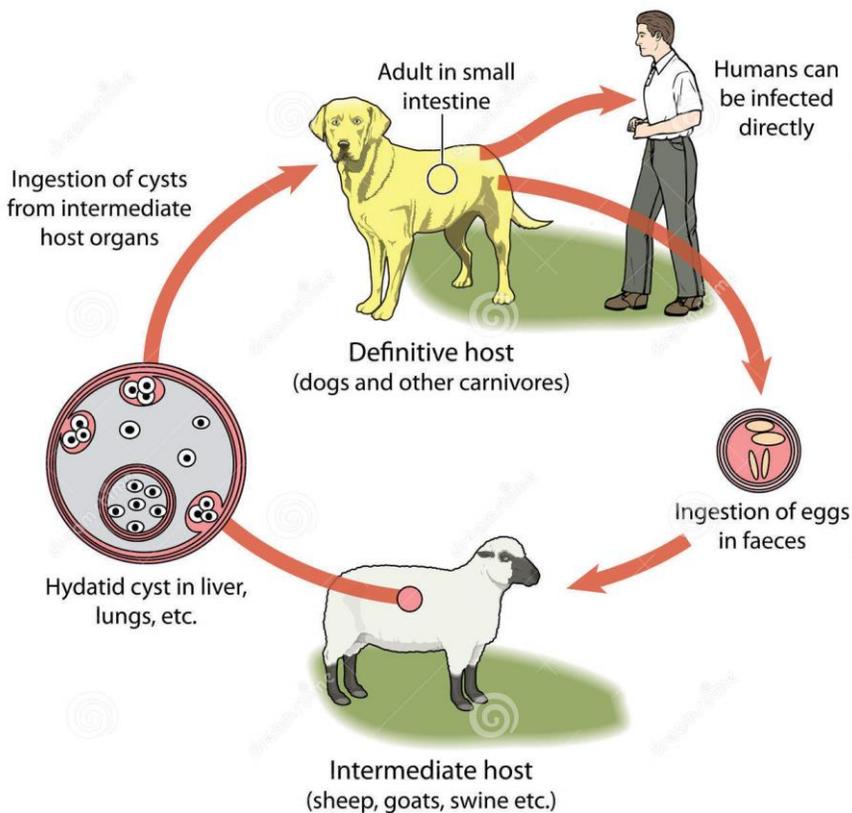
Echinococcus eggs that have been deposited in soil can stay viable for up to a year. The disease is most commonly found in people involved in **raising sheep**, as a result of the sheep's role as an intermediate host of the parasite and the presence of working dogs which eat the fecal of infected sheep.

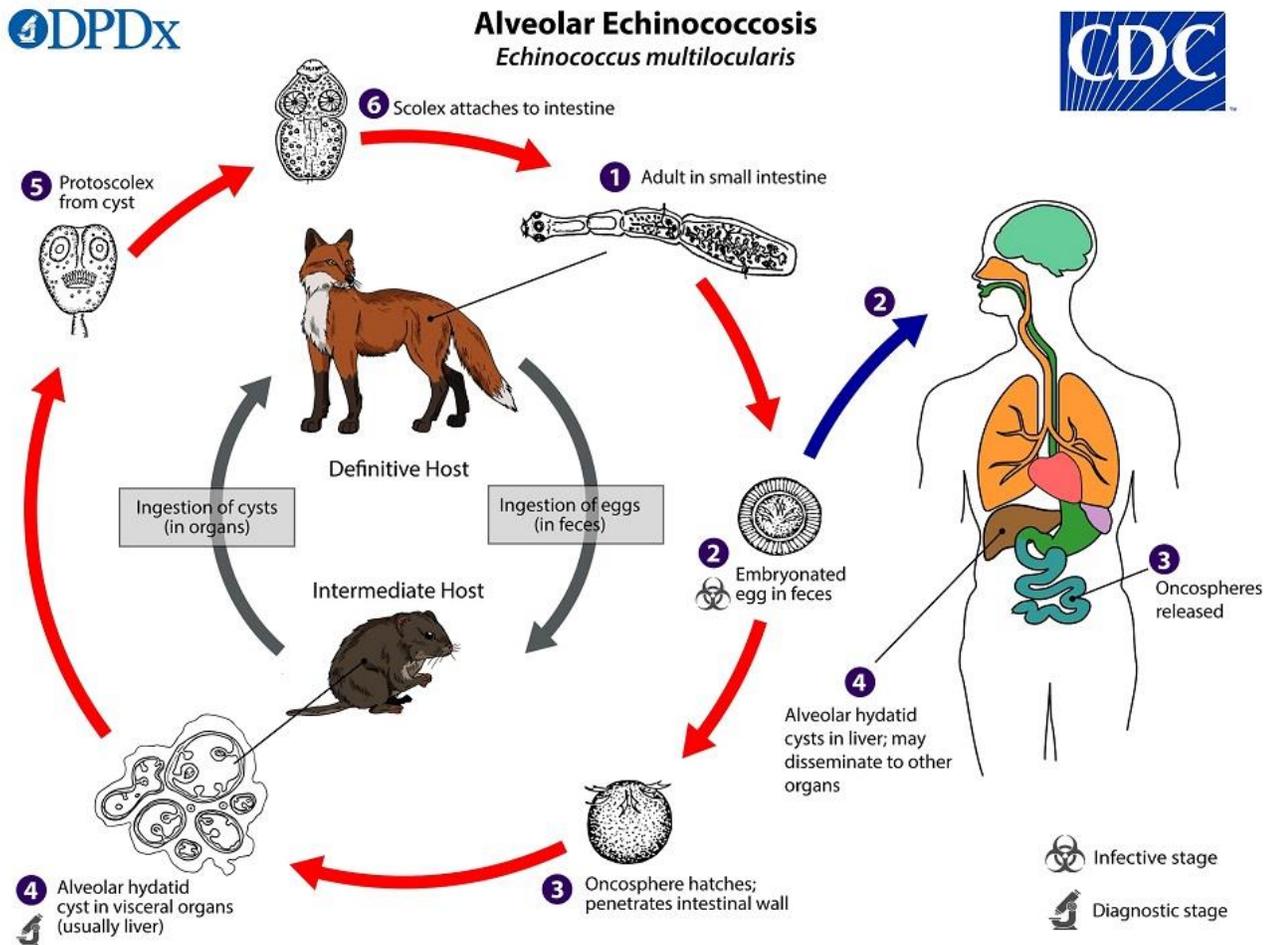
Alveolar echinococcosis (AE) is caused by infection with the larval stage of *Echinococcus multilocularis*. AE is found across the globe and is especially prevalent in the northern latitudes of Europe, Asia, and North America. The adult tapeworm is normally found in foxes and dogs. Infection with the larval stages is



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transmitted to people through ingestion of food or water contaminated with tapeworm eggs.  
eggs.

Life Cycle:





**Symptoms:**

Persons with cystic echinococcosis often remain asymptomatic until hydatid cysts containing the larval parasites grow large enough to cause discomfort, right upper hypochondrium pain, nausea, and vomiting. The cysts grow over the course of

several years before reaching maturity. The cysts are mainly found in the liver and lungs but can also appear in the spleen, kidneys, heart, bone, and central nervous system, including the brain and eyes.

Alveolar echinococcosis (AE) is characterized by parasitic tumors in the liver and may spread to other organs including the lungs and brain. In humans, the larval forms of *E. multilocularis* cause discomfort or pain, weight loss, and malaise.

### Diagnosis

-The presence of a cyst-like mass in a person with a history of exposure to sheep, dogs in an area where *Echinococcus* is endemic suggests a diagnosis of echinococcosis.

- Imaging techniques, such as CT scans, ultrasonography, and MRIs, are used to detect cysts. After a cyst has been detected, serologic tests ELISA may be used to confirm the diagnosis.

-western blot assay

### Treatment

Surgery remains the most effective treatment to remove the cyst and can lead to a complete cure. Chemotherapy, cyst puncture, and PAIR (percutaneous aspiration, injection of chemicals have been used to replace surgery.

Inoperable method use drug dose: 400 mg albendazole or mebendazole bd in 3 divided doses for years even for life improves symptoms for about(55-80%), cure rate low 29%.

Operable method: even after surgery antiparasitic drug is essential for at least 2 years.

The treatment of alveolar echinococcosis is more difficult than cystic echinococcosis and usually requires radical surgery, long-term chemotherapy, or both.

### Prevention & Control

Cystic echinococcosis is controlled by preventing transmission of the parasite.

Prevention measures include limiting the areas where dogs are allowed and preventing animals from consuming meat infected with cysts. Control stray dog populations.

Restrict home slaughter of sheep. Do not consume any food or water that may have been contaminated by fecal matter from dogs. Washing hands with soap and warm water after handling dogs, and before handling food.

Raising the standards of personal hygiene, deworming of infected dogs with praziquantel and adequate supervision of slaughterhouses. Dogs excluded from slaughterhouses. Dead animal body deeply buried.