

TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION  
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CHAPTER 8.4.

**ECHINOCOCCOSIS / HYDATIDOSIS**

Article 8.4.1.

**Introduction**

*Echinococcus* is a genus of parasitic zoonotic cestodes (tapeworms) found worldwide in which the adult stages occur in the intestines of canids and felids, and the larval stages in tissues of various organs of other mammalian hosts, including humans. Transmission of parasites from this genus occurs in a predator/prey interaction between canids and less commonly to felids (definitive hosts) and a range of domestic and wildlife species of herbivores (intermediate hosts). Intermediate hosts may also include omnivores (humans and pigs). Infection with the larval stage (hydatid) of the parasite in the intermediate host, referred to as hydatidosis or hydatid disease, is associated with major economic losses and causes severe clinical disease in humans.

Echinococcosis is a zoonotic infection caused by larval (metacestode) stages of cestodes belonging to the genus *Echinococcus*. At present, four zoonotic species of *Echinococcus* are recognised, namely *Echinococcus granulosus*, *E. multilocularis*, *E. oligarthrus* and *E. vogeli*. *E. shiquicus* has recently been identified but its zoonotic status is not known.

*Echinococcus granulosus* has a global distribution and *E. multilocularis* which occurs in wide areas of the Northern Hemisphere are the two most important causes of human hydatid infection. There are at least ten genetic variants of *E. granulosus* of which six have been shown to be infective for humans.

At present, four species of *Echinococcus* are recognised, namely *E. granulosus*, *E. multilocularis*, *E. oligarthrus* and *E. vogeli*. *E. granulosus* and *E. multilocularis* are recognised to be infective for humans, while the zoonotic status of *E. shiquicus* which has recently been identified is not known.

The two most important causes of human hydatid disease are *Echinococcus granulosus*, that has a global distribution and *E. multilocularis* which occurs in wide areas of the Northern Hemisphere. There are at least ten genetic variants of *E. granulosus* of which seven (sheep strain G1, Tasmanian sheep strain G2, buffalo strain G3, cattle strain G5, camel strain G6, pig strain G7 and cervid strain G8) have been shown to be infective for humans. (NOTE: A recent proposal divides *E. granulosus* into several species, i.e., *E. granulosus* s.s. [G1-3], *E. equinus*, *E. ortleppi*, *E. canadensis* [G6-G10] and *E. felidis*). However, a broad consensus on this has not yet developed, and for the purposes of this chapter, the target species are *E. granulosus* and *E. multilocularis*, the most important causes of hydatid disease in important livestock.

Hydatidosis is not a foodborne disease in the classical sense. Infection occurs by ingestion of eggs via contact with infected dogs and/or by consumption of food (mainly vegetables) or water contaminated with infected (egg-contaminated) dog faeces. Prevention of human infection is achieved by preventing infection of dogs and intermediate hosts (mainly ruminants and especially sheep).

The long term goal should be the prevention of human and ruminant infection through prevention and control programmes.

## Article 8.4.2.

**Purpose and scope**

This chapter deals with methods for the prevention of *Echinococcus* infection in dogs, hydatidosis in livestock and *slaughterhouse / abattoir* security.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

## Article 8.4.3.

**Definitions**

**Owned dog:** means a dog with a person that claims responsibility.

**Responsible dog ownership:** means the situation whereby a person (as defined above) accepts and commits to perform various duties according to the legislation in place and focused on the satisfaction of the behavioural, environmental and physical needs of a dog and to the prevention of risks (aggression, *disease* transmission or injuries) that the dog may pose to the community, other *animals* or the environment.

**Stray dog:** means any dog not under direct control by a person or not prevented from roaming. Types of stray dog:

1. free-roaming owned dog not under direct control or restriction at a particular time;
2. free-roaming dog with no owner;
3. feral dog: domestic dog that has reverted to the wild state and is no longer directly dependent upon humans for successful reproduction.

## Article 8.4.4.

**Prevention of *Echinococcus* infection in canids**

Both *owned dogs*, *stray dogs* and wild canids are important in the transmission of hydatid disease to humans and livestock because of the close inter-relationship between humans, dogs and livestock. The prevention of *Echinococcus* infection in dogs is the key element in breaking the transmission pattern of this parasite and is a fundamental aspect in the success of a hydatid control programme.

1. Owned dogs

To prevent echinococcosis in *owned dogs*, the following measures should be undertaken:

- dogs should be dewormed at least every 4-6 weeks with praziquantel (5 mg/kg);
- dogs should not be fed raw offal from any animal species;
- dogs should not be allowed to roam freely;
- dogs should not have access to dead animals or offal of any animal species, including wildlife species. All dead animals and offal should be disposed of in accordance with provisions in Chapter 4.12. Disposal of animals;
- dogs should be prevented access to carcasses, offal and waste at *slaughterhouses / abattoirs*;
- people, and especially farmers and farm workers should be made aware of the risk factors of transmission and the importance of the disease in animals and humans, the role of dogs and wild

canids in transmission, the need to implement control measures, and the importance of responsible dog ownership.

## 2. Stray dog populations

To prevent echinococcosis in stray dog populations, the following measures should be undertaken:

- compliance with relevant aspects of Chapter 7.7. Stray dog population control;
- where possible, dogs should be dewormed at least every 4-6 weeks with praziquantel (5 mg/kg);
- stray dogs should not be fed raw offal from any species;
- stray dogs should be prevented access to carcasses, offal and waste at *slaughterhouses/abattoirs*;
- stray dogs should not have access to dead animals or offal of any animal species, including wildlife species;
- community health education programmes should be carried out regarding the risk factors of transmission and the importance of the disease in animals and humans, the role of dogs (including stray dogs) and wild canids in transmission, the need to implement control measures, and the importance of responsible dog ownership.

## 3. Wild canid populations

To prevent echinococcosis in wild canid populations, the following measures should be undertaken:

- wild canids should be prevented access to dead animals or offal of any animal species;
- wild canids should be prevented access to carcasses, offal and waste at *slaughterhouses/abattoirs*;
- wild canids should be prevented from entering areas of human habitation and farms, and contaminating the environment with eggs of *Echinococcus*;
- community health education programmes should be carried out regarding the role of wild canids in the transmission of hydatid disease to humans and animals.

In addition, the *Veterinary Authority* or other *Competent Authority* should ensure that *slaughterhouses/abattoirs* have in place measures that prevent access of dogs and wild canids to animal carcasses, offal and waste.

Article 8.4.5.

## **Surveillance for the prevention of hydatid disease**

### 1. In slaughterhouses/abattoirs

The *Veterinary Authority* should carry out surveillance for hydatid infection in livestock species in *slaughterhouses/abattoirs*. When hydatid infection is detected an investigation should be carried out by the *Veterinary Authority* to identify the origin of the infection and appropriate remedial actions to be implemented.

### 2. In dogs

Surveillance of *Echinococcus* infection in dogs using the copro-antigen test is a useful tool for monitoring the effectiveness of prevention programmes. The *Veterinary Authority* should use the copro-antigen test for surveillance in dogs. Positive results indicate failure of a control programme. In such a case, the *Veterinary Authority* should identify aspects of the prevention programme that should be reviewed and those for which remedial actions should be implemented.

An *animal identification and traceability* system should be implemented in accordance with the provisions of Chapters 4.1. and 4.2.

Article 8.4.6.

### **Recommendations for the importation of dogs, cats and wild canids**

*Veterinary Authorities of importing countries* should require the presentation of an *international veterinary certificate* attesting that the *animal* has been treated, in accordance with the manufacturer's instructions, between 24 and 48 hours prior to export with a praziquantel-based product (5mg/kg) that is effective against *Echinococcus granulosus* and *E. multilocularis*.