Terrestrial Animal Health Standards Commission Report February 2015

CHAPTER 15.X.

INFECTION WITH *TAENIA SOLIUM*

Article 15.X.1.

General provisions

Infection with *Taenia solium* is a zoonotic parasitic *infection* of pigs. *T.~~aenia~~ solium* is a cestode (tapeworm) that is endemic in large areas ~~major parts~~ of Latin America, Asia and sub-Saharan Africa. The adult ~~worm~~ cestode occurs in the small intestine of humans (definitive host) causing taeniosis. The larval stage (cysticercus) occurs in striated muscles, subcutaneous tissues and central nervous system of pigs (intermediate hosts), causing cysticercosis. Other suids and dogs can be infected but are not epidemiologically significant. Humans may also become infected with ~~harbour~~ the larval stage ~~when~~ through the ingestion of eggs shed in faeces of infected humans ~~are ingested~~. The most severe form of the infection by the larval stage in humans is neurocysticercosis which causes neurological disorders including seizures (epilepsy) and sometimes death. Cysticercosis, although normally clinically inapparent in pigs, is associated with significant economic losses due to carcass condemnation and decreased value of pigs, and causes a major *disease* burden in humans~~, especially epilepsy~~.

~~For the purposes of the *Terrestrial Code*, infection with *T. solium* is defined as a zoonotic parasitic *infection* of pigs.~~

In humans, taeniosis occurs following ingestion of pig *meat* containing viable cysticerci and can be prevented by avoiding consumption of raw or undercooked contaminated pig *meat*. In humans, cysticercosis occurs following ingestion of *T. solium* eggs and can be prevented by avoiding exposure to *T. solium* eggs through detection and treatment of human tapeworm carriers, community health education, appropriate sanitation, personal hygiene, and good food hygiene. Collaboration between the *Veterinary Authority* and the public health authority is ~~an~~ essential ~~component~~ in preventing and controlling *T. solium* transmission.

In pigs, cysticercosis occurs by ingestion of *T. solium* eggs from faeces, or environments contaminated with faeces~~, from~~ of humans harbouring adult *T. solium*.

The aim of this chapter is to reduce the risk of *infection* with *T. solium* of humans and pigs and to minimise the international spread of *T. solium*. The chapter provides recommendations for prevention, control, and *surveillance* of infection with *T. solium* in pigs.

This chapter should be read in conjunction with the Codex Alimentarius Code of Hygienic Practice for Meat (CAC/RCP 58-2005).

When authorising the import or transit of the *commodities* covered in this chapter, with the exception of those listed in Article 15.X.2. *Veterinary Authorities* should apply the recommendations in this chapter.

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

Article 15.X.2.

Safe commodities

When authorising import or transit of the following *commodities* of pigs, *Veterinary Authorities* should not require any *T. solium* related conditions regardless of the status of the animal population of the *exporting country* ~~or zone~~:

1) processed fat;

2) casings;

3) semi-processed skins which have been submitted to the usual chemical and mechanical processes in use in the tanning industry;

4) bristles, hooves and bones;

5) embryos~~, oocytes~~ and semen.

Article 15.X.3.

Measures to prevent and control infection with *T. solium*

The *Veterinary Authority* ~~or~~ and other *Competent Authorities* ~~and the public health authority~~ should carry out community awareness and education programmes on the risk factors associated with transmission of *T. solium* emphasising the role of pigs and humans.

The *Veterinary Authority* or other *Competent Authorities* should promote ~~also implement~~ the following measures:

1. Prevention of infection in pigs

   Transmission of *T. solium* eggs from humans to pigs can be avoided by ~~preventing~~:

   a) preventing the exposure of pigs to environments contaminated with human faeces;

   b) preventing the deliberate use of human faeces as pig feed or the use of pigs as a means of human faeces disposal;

   c) preventing the use of untreated sewage effluent to irrigate or fertilise land to be used by pigs for forage and food crops;

   d) providing adequate toilet and sanitation facilities for people in pig rearing *establishments* ~~the involvement of human tapeworm carriers in pig rearing~~.

2. Control of infection in pigs

   a) The *Veterinary Authority* should ensure that all slaughtered pigs are subjected to post-mortem *meat* inspection in accordance with Chapter 6.2., and with reference to Chapter 2.9.5. of the *Terrestrial Manual*.

   b) When cysticerci are detected during post-mortem *meat* inspection:

      i) if ~~the carcass of a pig has~~ 20 or more cysticerci are detected in a carcass of a pig, that carcass and its viscera, as well as all pigs from the same *establishment* of origin should be disposed of in accordance with Article 4.12.6.;

      ii) if ~~the carcass of a pig has~~ ~~less~~ fewer than 20 cysticerci are detected in a carcass of a pig, the meat from that carcass and from all pigs from the same *establishment* of origin should be treated in accordance with Article 15.X.6. or disposed of in accordance with Article 4.12.6.;

      iii) an investigation should be carried out by the *Veterinary Authority* and the public health authority to identify the possible source of the *infection* in order to target an intervention~~.~~;

      iv) post-mortem examination of pigs ~~for~~ at *slaughter* from known infected *establishments* should be intensified until sufficient evidence has been obtained indicating that the *infection* has been eliminated from the *establishment*.

An optimal control programme should include detection and treatment of human tapeworm carriers.

Article 15.X.4.

Surveillance for infection with *T. solium* in pigs

Communication procedures on the occurrence of *T. solium* should be established between the *Veterinary Authority* and public health authorities.

The *Veterinary Authority* should use information from public health authorities and other sources on human cases of taeniosis or cysticercosis in the initial design and any subsequent modification of *surveillance* programmes.

Surveillance can be conducted by:

1) *meat* inspection at *slaughterhouses/abattoirs*;

2) tongue inspection of live pigs at markets provided that the methods used do not cause injury and avoid unnecessary suffering;

3) other diagnostic tests on live pigs.

The data collected should be used for investigations and for the design or amendment of control programmes as described in Article 15.X.3.

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

Article 15.X.5.

Recommendations for the importation of meat and meat products of pigs

Veterinary Authorities of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat* or *meat products*:

1) has been produced in accordance with the Codex Code of Hygienic Practice for Meat (CAC/RCP 58-2005);

AND

2) comes from pigs which have been slaughtered in an approved *slaughterhouse/abattoir*;

AND

3) either

   a) comes from pigs born and raised in a country, *zone* or *compartment* demonstrated to be free from *T. solium* in accordance with Article 1.4.6.;

   or

   b) comes from pigs which have been subjected to post-mortem inspections for *T. solium* cysticerci with favourable results;

   or

   c~~b~~) has been processed to ensure the inactivation of the *T. solium* cysticerci in accordance ~~conformity~~ with one of the procedures referred to in Article 15.X.6.

Article 15.X.6.

Procedures for the inactivation of *T. solium* cysticerci in meat of pigs

For the inactivation of *T. solium* cysticerci in *meat* of pigs, one of the following procedures should be used:

1) heat treatment to a core temperature of at least 80 ~~60~~°C; or

2) freezing to minus 10°C or less ~~below~~ for at least ten days or any time~~/~~ and temperature equivalent.

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