

WHO/FAO/OIE guidelines for the surveillance, prevention and control of taeniosis/cysticercosis

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Millions of persons worldwide are infected with the 'pork tapeworm' (*Taenia solium*), *Taenia saginata* ('beef tapeworm') and *Taenia saginata asiatica* ('Taiwan *Taenia*'). Of these, *T. solium* is considered the most serious species because it threatens public health and reduces livestock production. Sub-Saharan Africa has received more attention recently due to reports of the extent of neurocysticercosis (larval infection of the central nervous system in humans) in epilepsy, a disease that is now the subject of a global public health campaign ('Out of the shadows'). There is a current coordinated effort in Africa to address these concerns through networking, advocacy, research and training programmes. The 'WHO/FAO/OIE Guidelines for the surveillance, prevention and control of taeniosis/cysticercosis' edited by K D Murrell and coworkers is a compilation of current information and understanding of these zoonotic tapeworm parasites and the diseases they cause. The rural poor are at greatest risk in terms of public health and livestock development. For example, numbers of free-range pigs owned by resource-poor farmers in eastern and southern African endemic countries have increased annually by 20–40 % over the past 5 years. However, potential financial gains are cancelled because these animals are often infected with porcine cysticercosis and therefore not marketable as safe pork.

These Guidelines are the successor to the 1983 'WHO Guidelines for Surveillance, Prevention and Control of Taeniosis/Cysticercosis (VPH/83.49)'. The earlier document focused on the problems caused by these zoonotic tapeworm diseases and provided practical assistance to those developing surveillance, treatment and control programmes. By contrast, the 2005 Guidelines report advances made in the last 22 years, which include a greater understanding of the epidemiology, effective control design and better diagnostic technologies. Eighteen specialists with extensive experience in surveillance, prevention and control of these diseases wrote these Guidelines. Eight of the authors form the editorial team of this intersectoral book published by the World Health Organisation (WHO), Food and Agriculture (FAO) and the World Organization for Animal Health (OIE). All aspects of the diseases affecting humans, pigs and cattle are covered as well as the biology, systematics, epidemiology, diagnosis, prevention and control. Practical knowledge for the veterinary, medical and public health worker with procedures of clinical management, risk assessment reports, prevention and control programmes, and detection and diagnosis of

infection are presented in 6 chapters. Special attention is given to the intersectoral coordination and collaboration achieved between medical and veterinary services in various countries, including sub-Saharan Africa and how it is crucial for effective sustainable surveillance and control efforts.

A Flisser, D Correa, G Avilla and P Marvilla review the biology of these zoonotic tapeworms in Chapter 1. The 3 species are compared using descriptive illustrations and diagnostic details (e.g. scolex, proglottids and eggs).

Chapter 2 focuses on the diagnosis and treatment of clinical cysticercosis. This is a common and preventable cause of neurological disease in many areas of the developing world with neurocysticercosis the greatest contributor to the disease burden. T E Nash, H H Garcia, V Rajshekhar and O H Del Brutto in their review of the natural history and disease, include correlation of imaging, pathology and chronic cysticercosis associated with brain calcifications. Their diagnosis discussion covers overall assessment, available diagnostic tools and diagnostic criteria for neurocysticercosis. Treatment of neurocysticercosis includes symptomatic and anthelmintic medication management under field conditions and screening and treatment of tapeworms.

An update on current epidemiology of taeniosis and cysticercosis by K D Murrell follows in the third chapter. This included a review of the global distribution of *T. solium* in Africa, Latin America, Europe, Asia and the USA; and of *T. saginata* and *T. s. asiatica*. Factors of transmission of the pork tapeworm from pigs to humans, from humans to pigs and from person to person; transmission of beef tapeworm from cattle to humans and from humans to cattle are discussed. Extrinsic factors affecting taeniid egg survival and dispersal, egg viability and survival; intrinsic factors such as immunological mechanisms and a summary of risk factors for taeniosis and cysticercosis are considered.

Chapter 4 focuses on detection and diagnosis of these tapeworms by P Dorny, J Brandt and S Geerts. Differential diagnosis using morphological criteria, enzyme electrophoresis, molecular techniques and survey techniques with tapeworm carriers is described. Coprological examination using conventional fecal examinations, peri-anal swabs, coproantigen detection, copro-PCR and serological tests are presented. The diagnosis of *T. solium* cysticercosis in humans using parasitological methods, imaging and serology, antibody and antigen detection methods,

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immunodiagnosis in epidemiological studies and of neurocysticercosis as well as limitations of immunodiagnosis, and diagnosis of cysticercosis in pigs and cattle are reviewed. D P McManus and A Ito contribute an additional section on the application of molecular and immunological approaches for identification of human *Taenia* spp. A useful reference list of selected laboratories experienced in using DNA techniques for identification of *Taenia* taxa has been included.

The final 2 chapters focus on prevention and control. In Chapter 5, N C Kvysgard and K D Murrell review prevention of taeniosis and cysticercosis in humans, marketing of pigs and cattle for slaughter, development of safe slaughter facilities in rural developing areas, meat inspection and treatment, preslaughter drug treatment of pigs and prevention of cysticercosis in animals and humans. There is a section on health education, training of the trainer and of the public. Z S Pawlowski, J C Allan and H Meinardi cover control measures of taeniosis and cysticercosis in Chapter 6. Active interventions as potential packages, reduction of mortality and morbidity caused by pork tapeworm infections, control with some preventive measures, implementation of control measures with a summary of research and logistic needs are highlighted. Contact details of current activities for several agencies implementing these control measures are provided.

The publication is 139 pages long and includes more than 630 references. The inclusion of current contact information for active institutions, organizations and available resources is useful to the reader. This book is essential for the animal, human and public health worker who requires current, up-to-date and pertinent information on these zoonotic parasites and the related diseases. The growing awareness and understanding of neurocysticercosis in sub-Saharan Africa makes this book an essential addition to the library of all veterinary, public health and medical workers.

This book is available from the OIE for 30 euros. Contact details to do so are: E-mail is pub.sales@oie.int; Address is: OIE, 12 rue de Prony, 75017 Paris, France, and fax number: 33 (0)1 42 67 09 87.

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