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Major Parasitic Zoonoses Associated with Dogs and Cats in Europe

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Summary

Some of the most important zoonotic infectious diseases are associated with parasites transmitted from companion animals to man. This review describes the main parasitic zoonoses in Europe related to dogs and cats, with particular emphasis on their current epidemiology. Toxoplasmosis, leishmaniosis, giardiosis, echinococcosis, dirofilariosis and toxocariosis are described from the animal, as well as from the human host perspectives, with an emphasis on parasite life cycle, transmission, pathogenicity, prevention and identification of knowledge gaps. In addition, priorities for research and intervention in order to decrease the risks and burden of these diseases are presented. Preventing zoonotic parasitic infections requires an integrated multidisciplinary 'One Health' approach involving collaboration between veterinary and medical scientists, policy makers and public health officials.

Keywords: companion animal; Europe; parasite; zoonotic disease

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Introduction

Parasites are responsible for some of the most important and well recognized zoonotic infectious diseases transmitted from companion animals to man globally. The CALLISTO (**C**ompanion **A**nimal multisectoria**L** interprofessiona**L** and interdisciplinary **S**trategic **T**hink tank **O**n zoonoses) project, an EU Framework 7-funded project, was established to discuss and investigate infectious diseases transmitted between companion animals, man and food producing animals, aiming to focus on these diseases in Europe. Expert Advisory Group (EAG) V in the CALLISTO project discussed the most important parasitic zoonoses in Europe, describing their epidemiology and identifying priorities for research and intervention to decrease the burden of these infections. This review by the members of EAG V includes descriptions of the parasitic diseases considered as most relevant for CALLISTO, with further insights into their epidemiology, diagnosis and prevention, with identification of gaps in knowledge of these infections and recommendations for further research.

Toxoplasmosis

Aetiology

Toxoplasma gondii is a tissue cyst-forming coccidium (Protozoa, Apicomplexa) with a complex life cycle. The asexual phase of *T. gondii* development takes place in various tissues of herbivorous or omnivorous intermediate hosts and is linked to a sexual phase of development in the intestine of felids, the definitive hosts. There are three infectious stages in the life cycle of the parasite: tachyzoites, bradyzoites contained in tissue cysts and sporozoites contained in sporulated oocysts. The parasite can invade the gut, become systemic and localize in vital organs such as muscle and the nervous system. In most cases infection is subclinical, but devastating disease can occur (Cenci-Goga *et al.*, 2011). The virulence of *T. gondii* strains is highly variable and dependent on the genotype of the