



Current problems and recommendations for worm control in horses

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Horses are grazing animals and even if kept on pasture only for a restricted time each day, are continuously at risk of taking up infective stages of helminth parasites. To date the most prevalent group of equine helminths are the so called small strongyles or cyathostomins (Corning 2009). These parasites occur in all age groups and several cross-sectional studies in different European countries, including the Netherlands, have demonstrated their practically ubiquitous occurrence. These parasites are comparatively well adapted to their host expressing only very limited pathogenicity with the exception of the highly pathogenic larval cyathostominosis. The latter is caused by the simultaneous reactivation and migration of great numbers (i.e. often over 100.000) of encysted larval cyathostomin stages from the mucosa of the colon or caecum into the gut lumen. This results in acute and the persistent diarrhoea, emaciation, fever, sometimes colic, oedema and often death. Although essentially all grazing animals can be expected to carry encysted larval cyathostomin stages, larval cyathostominosis is a very rare disease. It mainly occurs in younger horses up to an age of six years and during winter/spring times. The routine and highly frequent use of anthelmintics has led to the development of anthelmintic resistance (AR) in cyathostomins, particularly against benzimidazoles and pyrantel but to some degree also against the macrocyclic lactones as the most recent and often used drug class (Geurden et al. 2014; Kooyman et al. 2016; Samson-Himmelstjerna 2012; Samson-Himmelstjerna et al. 2007). This development requests to re-consider previous worm control strategies in order to prevent or at least postpone the future development of AR. To this effect recommendations which are either based on the selective use of anthelmintics (based on the individual animals intensity of worm egg excretion) or the strategic but low frequency use of anthelmintics have been suggested. In Europe most recently the European Counsel Companion Animal Parasites (ESCCAP 2018) has published a guideline describing the principles and practical procedures of both worm control strategies.

While they have been the dominant group of equine helminths up to the 1980s, the much more pathogenic large strongyles, i.e. *Strongylus vulgaris*, *S. equinus* and *S. edentatus*, have become very rare in farms which do perform regular anthelmintic treatments. However, there is evidence that these species did not become eradicated and that they can readily re-emerge if systematic worm control is not appropriately ensured. Accordingly, on horse farms where the selective treatment approach is being employed, it is compulsory to monitor the absence of large strongyles on a yearly basis. This can be done by microscopic identification of third stage larvae obtained through larval cultures or the molecular detection of DNA, which provides higher sensitivity.

In foals and young horses up to an age of approximately three years the equine roundworm *Parascaris univalens* is a serious and at least on stud farms highly prevalent pathogen. The up to 50 cm long worms reside as adult stages in the small intestine, where the females can produce hundreds of thousands of eggs per worm and day. Following the uptake of the infective larvae, which develop and persist in the egg in the environment, the somatic migration begins from the intestine via liver, heart, lung back to the small intestine. Low infection intensities usually only cause little damage and provoke subtle clinical signs, as for example increased nasal discharge during the lung phase. However, heavy infections are associated with often severe disease for example inappetence, diarrhoea, colic, weight loss or sometimes intestinal obstruction leading to small intestinal perforation and peritonitis. Unfortunately, this parasite has developed AR against the macrocyclic lactones, particularly often occurring on stud farms. Accordingly, sustainable worm control incorporating complementary procedures, including stable and pasture hygiene, to reduce infection intensity and treatment frequencies are compulsory with respect to this parasite in young horses.

In addition to the above addressed nematode helminth species also equine tapeworms, especially *Anoplocephala perfoliata* is a threat for equine health as tapeworm infections are associated with significantly increased risk for colic. Accordingly, horse owners and farm managers should be aware if these parasites occur on their farm and if so perform regular treatment with praziquantel, as the drug of choice. Diagnosis can be done either by coproscopic analysis, which should best be performed as a group or farm diagnosis, i.e. including all grazing animals of a group or on the farm, as the single animal diagnosis is not sensitive enough. Alternatively, a recently introduced commercial saliva based ELISA has shown to be more sensitive (Lightbody et al. 2018).

Finally, horses of all age groups are often infected by the pinworm *Oxyuris equi*. This parasite is mostly only causing sustained pruritus during the egg laying of the females on the sensitive anal region, leading to tail rubbing and hair loss. Successful treatment and control may be challenging requesting consequent hygienic procedures in addition to anthelmintic treatment due to the large number of expelled eggs, their high tenacity in the environment.

References

Corning S. (2009) Equine cyathostomins: a review of biology, clinical significance and therapy. Parasit Vectors. 2 Suppl 2:S1.

ESCCAP (2018) GL8: A guide to the treatment and control of equine gastrointestinal parasite infections. <https://www.esccap.org/guidelines/>

Geurden T, van Doorn D, Claerebout E, Kooyman F, De Keersmaecker S, Vercruyse J, Besognet B, Vanimisetti B, di Regalbono AF, Beraldo P, Di Cesare A, Traversa D. (2014) Decreased strongyle egg re-appearance period after treatment with ivermectin and moxidectin in horses in Belgium, Italy and The Netherlands. Vet Parasitol. 204:291-296