

Worming protocols in cats and dogs

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MAGGIE FISHER BVetMed, CBiol, MIBiol, DipEVPC, MRCVS considers effective procedures to combat worm infections in cats, dogs, puppies and kittens

WORMING protocols are essentially worming regimens that take into consideration the animal, available treatments, and spectrum of anthelmintic activity, together with the helminths present in the animal, or those likely to be there, or where there is a substantial risk of infection.

The majority of worming protocols are standardised for the majority of pets and circumstances, though, occasionally, it may be necessary to customise husbandry, management and a worming protocol for a particular clinical problem such as an outbreak of *Trichuris* species infection in a kennel. Worming protocols are one part of worm control, which should also include other aspects such as food sources, access to prey and keeping environmental contamination low by removing faeces wherever possible ([Figure 1](#)).

Background considerations

Commonly, worming protocols are recommended to prevent the establishment of adult worms or remove worms that may be present, hence they are administered in the absence of a diagnosis of the presence of a worm infection. Moreover, since there are no tests for immature worms, protocols aimed at preventing adult worm development will inevitably treat animals without detectable signs of worm infection. Detection of even adult infections may be unreliable, particularly for cestode infections where eggs may not be detected consistently.

In the event of treatment without diagnosis it should be possible to justify scientifically the basis for the treatment, its spectrum of activity and its treatment frequency. Such a justification may be based on concern for animal or human health, with animal health for the animal itself, others of the same species – or in the case of cestode infections – other intermediate host species. The justification should also contain an element of knowledge of the worm infections prevalent locally. This could be achieved by conducting faecal egg or larval counts or, in the case of *Angiostrongylus vasorum*, conducting a blood test where infection is suspected, or monitoring surveillance data such as that provided on the Idexx website for *A vasorum*.

Worming protocols aimed at the control of *Echinococcus granulosus* infection will normally involve treatment with a product containing praziquantel at six-weekly intervals, while those for control of the continental *E multilocularis* will repeat the praziquantel treatment at monthly intervals since the prepatent period for *E multilocularis* is shorter than that of *E granulosus*. Where these infections are endemic then such a regular suppressive treatment is justified on the basis of the zoonotic risk posed by these infections.

Worming protocols for *Toxocara canis* and *T cati* are justified on both animal and human health concerns, with treatments of young puppies and kittens predominantly focused on control of these worms. The assumption is the majority of puppies and kittens are infected and so treatment protocols commence when the worms are still immature, with two weeks being the normal age for a puppy's first treatment as worms will have migrated across the placenta of the bitch into the pup to infect it prenatally. Three weeks is the start of treatment for kittens as transmission begins in the milk from the queen, with no prenatal component.

These types of suppressive treatment regimens are anathema to sheep or equine practitioners who have experienced anthelmintic resistance – reducing the efficacy, hence value, of anthelmintic treatment. It is believed repeated treatments are one of the factors that can lead to resistance. Where suppressive worming protocols are used in companion animals it is important the correct dose rate is used for the weight of the pet and that other management strategies are utilised to reduce the intensity of worm challenge. Fortunately, to date there have been very few instances of verified anthelmintic resistance in helminths of cats and dogs, with oxantel resistance in hookworms in Australia the most investigated case. Nonetheless, where there is a population of dogs or cats in a kennel or cattery that are treated at regular intervals, monitoring at intervals to check the treatments are effective is recommended (European Scientific Counsel Companion Animal Parasites; ESCCAP, 2010).

Choosing the spectrum of activity

Typically, anthelmintics will treat either gastrointestinal nematode infections, gastrointestinal cestode infections or both, with some treatments also indicated for extra-intestinal worms such as lungworms. Old therapies tended to treat either nematodes or cestodes, with the next generation of anthelmintics covering both nematodes and cestodes, usually by combining active ingredients.

Some newer therapies, particularly endectocides, treat only nematode infections and so a decision must be made where such therapies are chosen, and whether cestode treatment at intervals is also indicated.

Cestode treatment should be considered where:

- There is a *Taenia* species infection. Treatments may need to be continued as part of a worming protocol if access to prey cannot be prevented (for example, a cat that hunts).
- There is a *Dipylidium caninum* infection, which should be accompanied by flea or louse control to eliminate the intermediate host.

Cestocides should be included in a worming protocol for an animal where:

- Dogs or cats are fed on, or have access to, uncooked meat or prey, which may or may not be recognised by the pet owner. This was well illustrated in a report of a *Taenia* species storm in sheep in a field near a housing estate. The farm dogs were all free of infection, so were not the source, therefore it was assumed an infected dog had been walked on footpaths in the field (Eichenberger et al, 2011). There is the possibility dogs fed on food containing uncooked meat may develop tapeworms from uncooked cysts in meat in the product.
- If the owners of a dog or cat are planning to take it abroad to areas endemic for *E multilocularis*. Monthly treatment with praziquantel is recommended while the animal is in such locations (visit www.esccap.org for a map of endemic areas) in addition to the mandatory treatment of dogs prior to their return to the UK.
- If a dog lives in, or visits, areas endemic for *E granulosus* and may have access to carcasses or raw sheep offal. It is noteworthy the infection has been detected on farms across the midlands of England and is not confined to the Welsh county Powys.

Where a pet is travelling to an area where heartworm is endemic then regular (normally monthly) treatment with a heartworm preventive should be administered during the period of transmission in a particular area. The transmission season tends to start earlier and finish later progressively as one travels south in Europe. More information can be found in the guideline *Control of Vector-Borne Diseases in Dogs and Cats* (www.esccap.org).

In the UK, in areas where the lungworm *A vasorum* is endemic, monthly treatment of dogs with an anthelmintic effective against it may be indicated, particularly where the dog is known to eat slugs or snails or has previously had the infection.

Some anthelmintics also have ectoparasiticidal activity, which may be useful where there is a justification for concomitant control of, for example, fleas and nematodes. Further advice about

ectoparasite treatment can be found in the guideline *Control of Ectoparasites in Dogs and Cats* (www.esccap.org).

Worming protocols

Puppies

Puppies are typically wormed with a product suitable for treatment of *T canis* from two weeks of age, often repeated at fortnightly intervals until weaned and then monthly until 12 weeks of age. An early start is important to ensure worms acquired prenatally do not have the opportunity to become patent. Anthelmintics indicated for the treatment of young puppies are shown in ESCCAP's UK and Ireland therapy tables (www.esccap.org/national-associations/UK+and+Ireland/11). The frequency of retreatment should be checked for the specific anthelmintic chosen since this varies with some products. For example, the fenbendazole protocol has a first treatment at two weeks of age, followed by a second at five weeks and a third at weaning.

Kittens

Kittens are typically wormed with a product suitable for treatment of *T cati* from three weeks of age, often repeated at fortnightly intervals until weaned and then monthly until 12 weeks of age. Anthelmintics indicated for the treatment of young kittens are shown in the ESCCAP's UK and Ireland therapy tables.

Dogs

Adult dogs should be wormed at intervals of between one and three months, depending on the risk of infection and whether, for example, young children are in the same household. Surveys (for example, Sager et al, 2006) have indicated treatments at frequencies of less than quarterly fail to reduce the prevalence of infection. Care should be taken to ensure treatments given to pregnant bitches are indicated for pregnancy. Most anthelmintics administered to pregnant bitches will treat only those worms present in the bitch. Fenbendazole can be administered from the 42nd day of pregnancy to prevent prenatal infection of pups with *T canis*. Regular anthelmintic treatment can be replaced by repeated faecal samples conducted at appropriate intervals, but inconsistency of tapeworm egg detection and non-detection of prepatent infections must be considered.

Cats

Adult cats should be wormed at intervals of between one and three months, depending on the risk of infection and whether, for example, there are young children in the same household. Care should be taken to ensure treatments given to pregnant queens are indicated for pregnancy. Regular anthelmintic treatment can be replaced by repeated faecal samples conducted at appropriate intervals, but inconsistency of tapeworm egg detection and non-detection of prepatent

infections must be considered.

Conclusion

Worming choices really depend on the need and risk assessment of what is likely to be present, and the need for broad-spectrum “preventive” treatment has to be balanced against this. Regular anthelmintic treatment can be replaced by repeated faecal samples; however inconsistent tapeworm egg detection and non-detection of prepatent infections are considerations.

Worming protocols should not be considered in a vacuum – feeding and other aspects of husbandry, particularly pooper-scooping for dogs and appropriate disposal of faeces, are equally important ([Figure 2](#)).

References

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- Sager H, Moret C, Grimm F, Deplazes P, Doherr M and Gottstein B (2006). Coprological study on intestinal helminths in Swiss dogs: temporal aspects of anthelmintic treatment, *Parasitology Research* **98**(4): 333-338.



Figure 1. Pooper-scooping and responsible removal of faeces from the environment is a major factor in worm control programmes – many owners only meet the requirements halfway.



Figure 2. Pet faeces should be disposed of responsibly to avoid environmental contamination. Poo bins are provided in many areas.

