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The New Truths of Deworming: A Mandate for Change

The standard deworming treatment (every horse on the premises, every six to eight weeks, with rotating dewormers) NO LONGER represents an acceptable standard of practice for parasite control.

Although highly successful for many years, the rotational approach was based on research conducted in the 1960's. At that time, large strongyles, such as *Strongylus vulgaris*, was the most pathogenic equine parasite targeted. Since the development of new easily obtainable dewormers large strongyles have practically been eradicated. The abundant overuse of dewormers in the past few years has consequently led to a major shift in parasite species. Currently, small strongyles (cyathostomes) are now considered the biggest threat and are the major focus of parasite control in mature horses. Further complicating matters, current deworming practices have contributed to wide spread parasite drug resistance. Consequently, dewormers are no longer as effective as they use to be.

20% of horses harbor 80% of all the worms.

Not all horses are created the same and parasite loads among individuals are varied. Most horses have a natural ability to maintain relatively low levels of parasites. However, some horses are more susceptible and therefore shed many more eggs into the environment. Parasite shedding can be determined by conducting a fecal egg count (FEC) on every horse. Horses can be classified as low, moderate, or high egg shedders based on the results of a FEC. Horses with FECs over 200 eggs per gram (EPG) generally require additional anthelmintic treatments to keep their FEC to a susceptible level. Although FEC are not correlated with luminal worm burdens, they are a good measure of contamination potential.

Deworming protocols therefore need to be tailored to each individual horse. Since 80% of horses maintain a low FEC, they can usually be managed successfully with only two strategically placed dewormings and two FECs a year. Over time, horses have evolved with parasites. In fact, a small parasite load actually helps to stimulate immunity that protects the horse from the establishment of an even

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The New Truths of Deworming: A Mandate for Change cont.

heavier parasite burden. Additionally, the low levels of eggs shed by these untreated horses are critical for slowing the development of

The objective of parasite control is to optimize the health of horses by preventing contamination of the environment with eggs. It's NOT to kill adult worms.

anthelmintic resistance. Although it is the adult worm that sheds the eggs, it is the immature larval stage of small strongyles that causes the majority of the damage to its host. The majority of dewormers on the market only target the adult form of parasite. Therefore, a successful deworming program must also target the encysted larval stages of parasites. **Removing feces from the environment before eggs become infective provides parasite control that is superior to deworming.**

The direct source of infection is larvae on the pasture, which develop from eggs deposited in feces by grazing horses. If given adequate grazing area, horses will typically not eat near where they defecate. Infected strongyle larvae are only capable of moving short distances from where the egg was deposited. Overcrowded pastures or over grazed pastures can force horses to graze closer to areas where they normally would not, leading to more larvae ingested. Once strongyle eggs become infected larvae the only factors that can diminish the risk of future infections are hot weather, time, and keeping horses off pasture. Leaving horses with low FECs untreated will help to dilute the contribution to pasture contamination made by treated horses that may be shedding eggs produced by resistant worms. Luckily, stalls and dirt turn outs are generally not favorable for developing strongyles.

Which parasites are we targeting?

Cyathostomes (small strongyles) are the principal parasitic pathogen of adult horses, but tapeworms (*Anoplocephala perfoliata*), bots (*Gasterophilus* spp.), and large strongyles (*Strongyle* spp) are also considered significant pathogens and need to be targeted in a parasite control program. Other less common and minor parasites such as stomach spirurid worms (*Draschia*, *Habronema*), pinworms (*Oxyuris equi*), *Onchocerca*, *Trichostrongylus axei*, *Dictyocaulus arnfeldi*, and *Strongyloides westeri* are targeted by default by treating for the more pathogenic species. In foals, the same parasites are important, but *Parascaris equorum* is the most important parasite to target in a deworming protocol.

The TIMING of a treatment is just as important as which drug is used.

Each species of parasite has a different life cycle, host interaction, and prepatent period. Therefore a traditional rotational deworming strategy does not make much biologic sense. Parasites are transmitted seasonally (ex. Tapeworms and Bots in the Summer and Fall) or with a particular life stage (ex. *Strongyloides* transmitted through the milk of the mare). **Therefore,**

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optimal worm control demands that the most appropriate drug be administered at the appropriate time. Conversely, over deworming at the inappropriate time can select for resistance. Timing and frequency of treatments must be based on a variety of factors including the time of the year, the parasite species being targeted, the age of the horse, the level of immunity of a particular horse to cyathostomes (as revealed by FEC), and which drugs were used previously.

Currently three major classes of dewormers are available to treat parasites in horses: benzimidazoles (fenbendazole, oxfendazole, oxibendazole), tetrahydropyrimidines (pyrantel salts), and avermectin/milbemycins (ivermectin, moxidectin). Each dewormer has a different spectrum of activity against different parasites and different parasite stages. For example, encysted, larval cyathostomes are only susceptible to either moxidectin or five days of double-dosed Fenbendazole. Resistance to the benzimidazole class is the most wide spread, while the avermectin/milbemycin class has the least drug resistance.

Although the traditional rotational deworming system was very successful and easy to manage, the program was developed 50 years ago when parasite species were different and parasite drug resistance was not a concern. It's time to change. Strategic selective deworming and FECs must be viewed as a necessary expense for maintaining optimal horse health.

Kleinpeter Equine's Newest Evidence-Based Deworming Strategy

Month	Deworm	Fecal Egg Count (FEC)	Treat With
January	All Horses	All Horses	Ivermectin/Praziquantel (Equimax) or Moxidectin/Praziquantel (Quest Plus)
April	Only horses with high FEC in January		Oxibendazole, Pyrantel, or Panacur Power Pak
May-Sept.	Not necessary		No treatment necessary- Too Hot!
October	All Horses	All Horses-very important	Ivermectin or Moxidectin (Quest)
December	Only horses with high FEC in October	Only horses with elevated FEC in October	Oxibendazole, Pyrantel, or both

*In the majority of cases, all of the important parasites can be satisfactorily controlled with only two treatments a year. Parasite burdens vary by the horse. It is estimated that 20% of horses harbor 80% of the worms. Therefore, horses with elevated FECs (> 200 eggs per gram) require additional treatments throughout the year to limit shedding.