

Internal Parasites

Internal parasites can be a significant threat to the health of horses. The key to devising a good deworming program is understanding the different types of parasite that can infect horses and how they are transmitted. The internal parasites that most commonly affect horses are ascarids (roundworms), strongyles, bots, tapeworms and pinworms. *Parascaris equorum* is the ascid that affects horses. Ascarids are also referred to as roundworm. Horses usually become resistant to roundworms after approximately 6 months of age; therefore young horses are more often affected than mature horses. Adult roundworms are 6 to 12 inches long and can produce up to 200,000 eggs daily. These eggs are very hardy and can survive for years in the environment. Horses ingest the eggs from hay, grain or grass that is infected. In the small intestine, eggs hatch larvae that penetrate through the intestinal lining. They migrate through the liver and then into the lungs. They remain in the lungs for two to three weeks and then migrate up the trachea causing the horse to cough. Once coughed up the larvae are again swallowed and then develop into egg-laying adults in the small intestine within 2 to 3 months. The eggs are passed out in the manure and the cycle starts again. If the worm burden is heavy, they can cause significant damage to the intestinal wall, the liver, the trachea and the lungs. They can also cause colic, intestinal blockage, diarrhea, decreased feed absorption and respiratory disease. Signs of roundworm infection include a pot-bellied appearance, rough haircoat, failure to thrive and slow growth. To control roundworms, foals should be treated for the first time at 8 weeks of age and then every 6 to 8 weeks until they are two years old. Treatment of choice for roundworms is an avermectin product such as ivermectin or moxidectin.

There are three species of large strongyles that infest horses: *Strongylus vulgaris*, *Strongylus edentatus* and *Strongylus equinus*. These parasites are the most damaging since they migrate through various parts of the body. The

adults live in the large intestine and produce eggs that are passed into the manure causing environmental contamination. The eggs hatch and become larvae which infest the horse when they are ingested. The larvae are very resistant to harsh environmental conditions. *S. vulgaris* is called the bloodworm because its larvae burrows into the walls of blood vessels, mainly the vessels which serve as the main blood supply to the large and small intestines. The larvae stay in the vessels for about 3 months as they mature then move into the large intestine. As adults, they can produce several thousand eggs daily. The other two species of large strongyles (*S. edentatus* and *S. equinus*) have a cycle that is similar to *S. vulgaris* except that they migrate primarily through the liver and then into the large intestine. Horses with a large strongyle infestation may show signs of colic, weight loss and anemia. In heavy burdens, these parasites make cause a complete obstruction of the intestinal blood vessels resulting in a severe and often fatal colic or sudden death.

There are over 50 different species of small strongyles (cyathostomes) worldwide that parasitize horses. They are less pathogenic (cause less damage) than large strongyles because they do not migrate beyond the wall of the large intestine. Once ingested by the horse, the larvae reach the large intestine where they burrow into the wall and become "encysted". When in the encysted form they are not susceptible to most dewormers. If large numbers of small strongyles emerge from the encysted stage at once they can cause severe damage to the intestinal lining. Signs of small strongyle infestation are colic, diarrhea, slow growth, loss of condition, and poor haircoat. It is unclear why the small strongyles tend to emerge at once, but it is speculated that it may be associated with seasonal change; winter/spring in the northern areas and spring/summer in the southern areas. Dewormers from the avermectin family are very effective in treating both large and small strongyles; however, benzimidazoles and pyrimidines are also effective. Fenbendazole (Panacur Powerpac), given once daily for 5 days, and

Moxidectin (avast) are the only dewormer labeled to treat all forms of encysted small strongyles.

Stomach bots are the larvae of the *Gastrophilus species* of fly more commonly known as the botfly. They are not "worms". Female botflies lay their eggs on the coat of the horse, often seen as yellow "specks" on the legs and body. Different species lay their eggs in different places on the horses body. The eggs are ingested by the horse when they lick the hair coated with eggs. Once in the mouth, the larvae incubates in the issue in the mouth for about 3 weeks. After incubation, they are swallowed and attach to the lining of the stomach. There they spend about 9 months before being passed out in the manure. Once in the environment, they pupate into adult flies. They can cause damage to the stomach lining and may even cause an obstruction which does not allow food to pass from the stomach into the small intestine. Deworming products in the avermectin family are the most effective against bots.

Anoplocephala perfoliata is the horse tapeworm. Horses get tapeworms by ingesting microscopic mites that live in the pasture. These mites contain tapeworm eggs that they ingested from the manure of infested horses. Once inside the horse, the eggs hatch into adult tapeworms at a very specific part of the intestinal tract called the ileocecal junction. This junction is where the small intestine empties into the cecum. The tapeworms can cause a blockage at this site making it impossible for the intestine to function properly. The intestines try to move the blockage by increasing its motility (movement) and the intestine ends up swallowing itself because it can not move the blockage. This is called an intussusception and requires surgery. Praziquantel is the most effective drug to treat tapeworms in horses.

Oxyuris equi is the equine pinworm. Although not life-threatening in most cases, pinworms can be a constant source of annoyance for your horse. They

live near the anus and cause severe itching. A pinworm infestation is suspected if the horse rubs his tail frequently. Horses acquire pinworms by consuming the eggs from the environment. Once ingested, the larvae mature into adults in the large intestine in 3 to 4 months. They then crawl part of the way out of the anus to deposit their eggs. The eggs hatch outside the horse's body and re-infect the environment. The eggs can survive in the environment for several months. Pinworms can be treated successfully with either an avermectin or benzimidazole product.

Making decisions about which dewormers to use and when to use them can be difficult and your equine veterinarian should be consulted.

There are other things that can be done to control parasite infestation. Keep horses of different age groups separated from each other (ie: keep weanlings and yearlings separated from adults). Pick up and dispose of manure regularly. Minimize crowding of horses. Drag or mow pastures regularly to break up manure. Do not feed horses on the ground. As always, consult your veterinarian to help devise a proper deworming program that fits your horse's specific needs.

CLASSES OF DEWORMERS AND POPULAR TRADE NAMES:

Avermectins – ivermectin, moxidectin

Eqvalan, Zimecterin, Quest

Benzimidazoles – fenbendazole, oxibendazole

Panacur, Safe-guard, Anthelcide EQ

Pyrimidines – pyrantel-pamoate, pyrantel-tartrate

Strongid C, Strongid T

Avermectin/Praziquantel combinations

Zimecterin Gold, EquiMax, Quest Plus

Contact Brandon Equine Medical Center at 813-643-7177 or email

info@brandonequine.com with any questions regarding this topic.