

Pinworms can be treated successfully with many of the same drugs that are effective against strongyles and ascarids.

Bots

Bots are the larvae (immature flies) of the botfly. Since these flies are common in the horse's environment, it is likely that most horses will become infested.

During the late summer and early fall, adult botflies lay eggs on the hair of horses, especially around the chest, forelimbs, throat and nose. When the horse licks the eggs as it is grooming or scratching itself, the warmth of the horse's saliva and the skin-rubbing action of its lips stimulate the larvae to hatch and enter the horse's mouth, where they settle in the tissues of the gums, cheek and tongue. After about a month, the larvae emerge and are swallowed. Once they reach the stomach, they attach to the stomach lining and mature. Bot larvae attach to the stomach wall and can cause irritation, interfere with digestion, and obstruct the opening to the small intestine. After 8 to 10 months, the bot larvae are passed in the feces and burrow into the ground, eventually maturing into adult flies and beginning the cycle again.

Diagnosis and treatment

The presence of botfly adults and eggs is a strong indication that horses have been exposed to and may be infected with bots. The eggs are small, round, yellow, and generally in clusters on the horse's chest, forelimbs, throat and nose. They can be difficult to remove, but can usually be scraped off with a special comb or grooming tool.

Since it is likely a horse will become infested, treatment should be scheduled from the time botflies are seen in the environment or eggs are observed on the horse until a month after the first hard frost. Your veterinarian can recommend the appropriate products and deworming schedule as part of an overall parasite control program.

Important points about parasite prevention

Environmental measures that break the life cycle of internal parasites can be as important as deworming for the control of internal parasites in horses. Follow good management practices to control the frequency and spread of internal parasites.

- Remove manure daily from stalls and run-ins and weekly (or more frequently) from paddocks and pastures.
- Be sure pastures and paddocks are well-drained and not overpopulated.
- Compost manure rather than spreading it on fields where horses graze.
- Use a feeder for hay and grain and avoid feeding on the ground.
- Implement fly control programs.
- Keep water troughs and feed bins clean.
- Routinely examine horses for telltale signs of infestation.
- Establish a parasite prevention and monitoring program with your veterinarian. This may include regular manure checks and a deworming program tailored to the needs of your horses.

For more information, visit,

American Veterinary Medical Association
www.avma.org

American Association of Equine Practitioners
www.aaep.org



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Internal Parasites In Horses



*Brought to you by your veterinarian and the
American Veterinary Medical Association*

Internal parasites are a primary cause of colic (abdominal pain) in horses and can cause or contribute to many respiratory, digestive, and performance problems. The severity of colic that results from parasites can vary from mild, intermittent colic to colic that needs surgery to correct the problem, and it can even be fatal. Heavy parasite loads deprive horses of essential nutrients, and heavily infested horses often have poor quality haircoats, poor condition, and poor performance.

Though parasites are a constant concern for horse owners, the severity of the problem can be reduced by following a regular preventive deworming program formulated with help from your veterinarian. Although a number of parasites can infest horses, there are a few that are more common — bots, strongyles, ascarids (roundworms), tapeworms and pinworms. Large and small strongyles, ascarids and tapeworms can present the greatest health risks.

Strongyles

Large Strongyles

There are several species of large strongyles that infest horses (*Strongylus vulgaris*, *Strongylus edentatus*, and *Strongylus equinus*). The adult large strongyles live inside the horse's intestine. Eggs laid by the adults are passed in the manure and hatch into larvae that are consumed by the same horse or by other horses when they graze. The larvae mature in the intestinal tract and burrow out into blood vessels where they migrate throughout various internal organs and eventually back to the intestine. As *S. vulgaris* larvae migrate, they can cause extensive damage to the lining of blood vessels and can also damage the organs. *S. edentatus* and *S. equinus* can cause liver damage as the larvae migrate through the liver, but their larvae are less likely to cause damage to the blood vessels.

Horses with large strongyle infestations may show weight loss, anemia, or colic. In extreme cases, the blood supply to the intestine may become completely blocked by the strongyles—when the blood supply to an intestinal segment is cut off, the segment will die, resulting in severe (and possibly fatal) colic. In heavily infested horses, blood vessels may become distended and may even rupture, leading to sudden death.

Small Strongyles

Small strongyles (cyathostomes) are the most common internal parasite of horses. They differ from large strongyles in several ways. First, small strongyles do not migrate through tissues like large strongyles do. Second, small strongyle larvae may become encysted—this means that they burrow into the intestinal wall and lay dormant waiting for the proper conditions to emerge and lay eggs. During this encysted period small strongyle larvae are not susceptible to most dewormers.

If large numbers of small strongyles emerge from the intestinal wall simultaneously, severe damage to the intestinal lining may result. Colic and diarrhea may be seen. Other signs of small strongyle infestation include loss of condition, weight loss, poor coat condition and slowed growth.

Diagnosis and Treatment

Your veterinarian may suspect strongyle infestation based on the signs your horse is showing, but infestation is confirmed by the observation of eggs in the manure when viewed with a microscope. Blood tests may be used to help assess the seriousness of an infestation.

Regular deworming is recommended to reduce the risk of serious problems from these parasites. An appropriate prevention program should be discussed with your veterinarian. If one horse is found to be infested, it is generally assumed that all horses exposed to or housed with that horse are infested, and all horses should be dewormed at the same time. There are many equine dewormers that adequately control large strongyles when used on a regular basis. Small strongyles can be more difficult to treat because the encysted form is relatively resistant to dewormers—effective deworming for small strongyles may require the use of higher doses of dewormer for a number of consecutive days.

Ascarids

Ascarids (roundworms) affect young horses (usually less than 2 years old) more often than mature horses. Horses become infested with ascarid eggs from water, grass or feed contaminated by the eggs passed in the manure from an infested horse. The eggs hatch in the intestinal tract. The larvae burrow through the intestinal wall and into the bloodstream, migrating through the liver and heart on their way to the lungs. From there, the young worms enter the airways and travel up (or are coughed up) the trachea to the mouth to be swallowed a second time and return to the intestines. They mature to become adults in the intestine in 2 to 3 months, and then lay eggs that are passed in the manure and the cycle is repeated in the same horse or started in another horse that eats the eggs. Female ascarids can lay up to 200,000 eggs per day.

The 6-to15-inch long worms can number in the hundreds in the horse's small intestine and can deprive the horse of nutrients from the feed it eats. Colic, coughing, rough hair coat, poor growth (or weight loss), and diarrhea are clinical signs that can be associated with ascarid infestation. Infested foals can look "pot-bellied." Ascarids may cause blockage of the intestine (causing colic and possibly intestinal rupture and death) or migrate through the lungs, causing pneumonia.

Diagnosis and treatment

Your veterinarian may suspect ascarid infestation based on the horse's age, medical history, and the signs your horse is showing, but infestation is confirmed by the observation of eggs in the feces when viewed with a microscope or by observation of adult worms in the manure or coughed secretions. Blood tests may be used to help assess the seriousness of an infestation. Severe ascarid infestations may be detected during emergency surgery for colic or during necropsy (an autopsy performed on an animal).

If one horse is found to be infested with ascarids, it is generally safe to assume that all horses exposed to our housed with that horse should be considered infested, and all horses should be dewormed at the same time. There are many dewormers that effectively treat ascarids. Because foals and young horses are at the highest risk of infestation, they should be regularly dewormed. Consult your veterinarian for an appropriate deworming program for your horse. Colic sometimes results when young foals are dewormed for the first time.

Tapeworms

Tapeworms, or cestodes (*Anoplocephala perfoliata*, *Anoplocephala magna*, and *Paranoplocephala mamillana*), are fairly common in horses—some studies have found nearly 60% of horses in an area to be infested with tapeworms.

Adult tapeworms live in the horses' intestine. Tapeworm eggs are passed in the infested horse's manure. Mites (small insects) that live on the pasture swallow the eggs. The eggs mature inside the mite for about 2-4 months. The mites are very small, and the horses cannot see them; as the horses graze, they swallow mites with the grass. If a horse swallows a mite with infective tapeworms (this is very likely to occur), the tapeworms enter the horse's intestine and attach themselves to the intestinal wall using suckers. As the tapeworms mature, they steal nutrients away from the horse by absorbing the nutrients from food as it passes through the intestine. Adult tapeworms tend to attach and stay in one area of the intestines—the ileocecal valve, which is the junction of the horse's small intestine and cecum (the horse's cecum is similar to a person's appendix, but it is very large and plays a bigger role in digestion than the appendix does).

Diagnosis and treatment

Tapeworm infestation in horses may lead to varying degrees of colic, poor growth (or weight loss), lethargy, rough haircoat, and poor performance. Examining the horse's manure with a microscope is not likely to detect tapeworm eggs, making confirmation of infestation more difficult. Heavy infestations can cause ulcers, intestinal blockage, or even intestinal rupture.

It is important to include treatment for tapeworms in your deworming plan. Because many commonly used dewormers do not kill tapeworms, a specific product may need to be added to your deworming program. Consult your veterinarian for the most effective treatment plan for your horse.

Pinworms

Though less dangerous than other internal parasites, pinworms are annoying to the horse because they cause severe itching around the anus and under the tail.

Horses become infested by the parasite when they drink or eat water, grain, hay or grass contaminated by the eggs passed in the feces of an infested horse. Young worms mature in the large intestine in 3 to 4 months, then crawl part way out of the anus to deposit their eggs on the skin surface around the anus. The eggs hatch outside of the horse's body and become infective in a few days, although they can survive unhatched for several months.

Diagnosis and treatment

Pinworm-infested horses do not show the signs seen with the other internal parasites described in this brochure. In general, they are harmless other than causing itching. A typical sign of pinworm infestation is rubbing of the tail and the anal region, causing broken tail hairs and bare patches around the tail. If the itching is severe enough, scratching horses can damage the skin of their tail or hindquarters by rubbing and causing scrapes and abrasions that can become infected. A diagnosis of pinworm infection may be made based on the signs observed, and it can often be confirmed by observing the adult worms or eggs on or around the horse's anus.