

Middle California Region USPC
Preparing For Your C-3 Test
Health Care & Veterinary Knowledge: Parasites

For the C-3 test, The USPC C-3 Standard requires that the candidate:

- **Discuss the damage caused by the following internal parasites: bots, ascarids, strongyles, pinworms, and tapeworms.**

Some questions to consider for the C-3 test:

- What damage do strongyles do?
- Which immunizations does your horse get and when?
- What are the brand names and drug names of the dewormers you use?
- Which organism is both an internal parasite and an external parasite?
- What type of internal parasite might your horse have if he rubs his tail?
- What is another name for large strongyles?
- What are bots? What can you do to prevent them?
- Do ascarids more commonly affect young or mature horses?
- How would you detect a tapeworm infestation in your horse?

Internal Parasites and Deworming

Introduction

- **Parasites are freeloaders.** They take and, in return, provide no benefits to their hosts. The horse unwittingly hosts the parasite and can live without it while the parasite depends on the horse for survival.
- **Worms** can be found in every organ of the horse during an unchecked infestation – each species attacking a particular region or organ. No horse can escape at least some degree of parasite infestation.
- **Feeding** a parasite infested horse is money down the drain. Parasites literally rob the horse of nutrients and you are, in effect, feeding the worms rather than the horse.
- **Domestication** and confinement of horses makes it easy for parasites to reproduce and creates an interrelated system which perpetuates infection and pasture infestation.
- **Some climates** provide excellent conditions in which parasites thrive. Moist, mild weather is ideal for them.
- **Parasites have independent life cycles** from their equine hosts. They do not share a symbiotic (mutually beneficial) relationship.

All horses are exposed to internal parasites to some degree. Internal parasites live in the stomach, intestines, blood vessels, and other internal organs. They damage their host sucking blood and nutrients, causing tissue damage, obstruction of blood vessels and the digestive tract, and producing toxins. The heaviest damage is caused by larvae migrating through the intestines, liver, and arteries.

Internal parasites are a primary cause of colic in horses and can cause or contribute to many respiratory, digestive, and performance problems. Ninety percent of all cases of colic are believed to be caused by the damage done by parasites, especially large strongyles.

Very young horses, old horses, and those in poor condition are most vulnerable to parasitic damage. Outward signs of parasite infestation include colic, weight loss, lethargy, poor appetite, pot belly, rough coat, poor growth in young horses, diarrhea, constipation, and tail rubbing.

A fecal parasitic count (microscopic examination of a fecal sample) is the best way to check for the kind and number of internal parasites present. 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 by your veterinarian

Types of Parasites



Ascarids (Parascaris Equorum or Large roundworms)

Ascarids affect young horses more often than mature horses, as adult horses acquire immunity to the parasite after six months of age. The 6 to 12 inch long worms can number in the hundreds in the horse's small intestine and can adversely affect its nutrition.

Symptoms: Colic, coughing, and diarrhea are common clinical signs associated with ascarid infestation. In addition, ascarids may cause blockage of the intestine or migrate through the lungs causing pneumonia.

Transmission: Foals acquire infested ascarid eggs from feces that other horses have passed. Infested eggs, swallowed in contaminated hay or water, hatch in the intestinal tract. The young worms burrow through the intestinal wall, taking about a week to make their way to the lungs. From there, the young worms travel up the trachea to the mouth to be swallowed a second time. They mature in the intestine in 2 to 3 months, and then lay eggs that are passed in the feces and the cycle is repeated. Female ascarids can lay up to 200,000 eggs per day.

Prevention: To adequately control ascarids, foals should be first treated at 8 weeks of age and then every 6 to 8 weeks until they become 2-year-olds, or as recommended by your veterinarian. Colic sometimes results when young foals are dewormed for the first time.



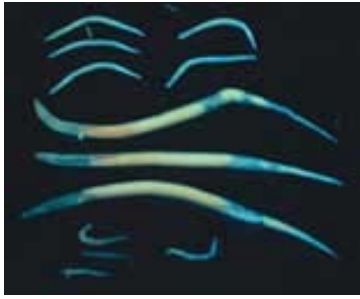
Bots (Gastrophilus)

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.

Symptoms: Large numbers of bots sometimes cause ulcers in the lining of the stomach, and sometimes interfere with passage of food through the pyloric valve into the intestines.

Transmission: During late summer and early fall, adult botflies lay eggs on the hair of various parts of horses, particularly around the chest, forelegs, throat and nose. Stimulated by the horse's licking, the larvae hatch and enter the horse's mouth, settling in the tissues of the gums, cheek and tongue. After a month, the larvae migrate and attach to the stomach lining causing irritation, interfering with digestion and obstructing the opening to the small intestine. After 8 to 10 months, bot larvae are passed in the feces and burrow into the ground, eventually maturing into adult flies and beginning the cycle again.

Treatment: Since it is likely a horse will become infested, treatment should be scheduled from the time botflies are seen in the environment or nits are observed on the horse until a month after the first hard frost. Your veterinarian will recommend the best products and frequency of treatment against bots as part of an overall parasite control program.



Pinworms

Though less dangerous than other internal parasites, pinworms are annoying to the horse because they cause severe anal itching.

Symptoms: A characteristic of pinworm infestation is rubbing of the tail and the anal region causing broken tail hairs and bare patches around the tail.

Transmission: Horses acquire the parasite by consuming contaminated water, grain, hay or grass. 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 adjacent surface. The eggs hatch outside of the horse's body and become infective in a few days, although they can survive unhatched for several months.

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



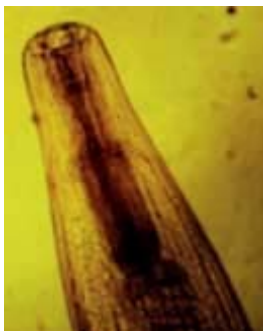
Large Strongyles (Bloodworms)

Large strongyles are a group of internal parasites also known as bloodworms or redworms. Large strongyles (especially *S. vulgaris*) cause the most serious damage of all parasites.

Transmission: Eggs in manure hatch into larvae that are consumed by the grazing horse. The larvae mature in the intestinal tract and burrow out into blood vessels where they migrate throughout various organs and eventually back to the intestine.

Symptoms: Horses with large strongyle infestations may display weight loss, anemia, or colic. In extreme cases, the blood supply to the intestine may become completely blocked by the strongyles resulting in severe colic. In heavily infested horses, blood vessels may become distended and may even rupture, leading to sudden death. The larvae can cause extensive damage to the lining of blood vessels. Damage from large strongyles is the most common cause of colic and can be fatal.

Treatment: Frequent deworming is recommended to reduce the risk of serious problems from infestation with large strongyles.



Small Strongyles (Cyathostomiae)

Small strongyles differ from large strongyles in several ways. First, small strongyles do not migrate through tissues as do large strongyles. 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. During this encysted period, unlike adult parasites, small strongyle larvae are not susceptible to most dewormers.

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

Transmission: Strongyle larvae burrow into the lining of the intestine and remain dormant until late winter or early spring, when they emerge and mature, laying their eggs in the intestines. Large numbers of small strongyle emerging at once can break down the intestinal lining, causing weight loss, loss of appetite, severe diarrhea, colic, and even death.

Treatment: Veterinarians diagnose strongyle infection from microscopic observation of eggs in the feces. Blood tests are often used to assess the seriousness of an infestation. Frequent deworming is recommended to reduce the risk of serious problems from these parasites. An appropriate prevention program should be discussed with your veterinarian.



Tapeworms

Symptoms: Tapeworms cause weight loss, anemia, colic and general unthriftiness.

Transmission: Mites living in a horse pasture may consume tapeworm eggs from the feces of infested horses. Grazing horses may then swallow the mites and become infested with tapeworms. Tapeworm infestation in horses may lead to varying degrees of colic.

Treatment: It is important to include treatment for tapeworms in your deworming plan. Because many deworming agents do not kill tapeworms (including ivermectin), a specific product may need to be added to your deworming program. Consult your veterinarian for the most effective treatment plan for your horse.



Threadworms (Strongyloides)

Strongyloides are tiny worms found in the intestines of foals.

Symptoms: Strongyloides are believed to cause diarrhea in foals as young as ten days old. They are passed from the mare to the foal as it nurses during the first days of life.

Transmission: Treating the mare with ivermectin before foaling reduces the foal's exposure to this parasite, as does good hygiene and clean bedding.

Parasite Prevention and Control

Parasite control aims at keeping horses as free from parasites as possible by breaking the parasites' life cycle. This involves regular deworming, good pasture management, and keeping feed and water free from becoming contaminated by manure and the parasite eggs it contains.

Remember that foals are born free of internal parasites. The buildup of their internal parasite infections is related to the degree of contact, either direct or indirect, with older animals carrying the infections.

All of the worm parasites discussed here use feces or manure as the means of spreading the infections by contamination of feed and water supplies or the environment.

Transfer stages of these worm parasites do not actively seek the host to complete the infection process. Instead, they rely on chance to be picked up and swallowed. Thus only a small percentage actually complete this hazardous step in the life cycle. To compensate for this, large numbers of eggs are produced by the female worms to start the transfer process.

Sanitation and management practices aid in controlling or minimizing the spread of the infections. These practices assist the natural destructive forces such as sunlight and drying during transfer stages.

A checklist of management and sanitation practices that have been found effective in reducing numbers of parasites includes the following:

Proper manure disposal

- Pick up manure from paddocks and small pastures at least once a week, and from small paddocks and corrals every few days. This is the most effective way of reducing exposure to worms.
- Compost stable manure before spreading on pasture, or spread on cropland and other ungrazed areas

Pasture management

- Avoid overgrazing. Horses will not eat grass near droppings unless the rest of the grass is gone.
- Practice frequent mowing and chain harrowing
- Avoid overstocking; heavy infestation of worms may result. Horses in very large pastures or on rangeland are less exposed.
- Rotate pastures to give them a rest from horse grazing. Horse parasites cannot live in sheep or cattle; when those animals graze in a pasture, the worms' life cycle is destroyed.
- Graze young animals separate from older horses

Feed

- Provide mangers, racks or bunks for hay and grain
- Do not feed off the ground

Water

- Provide clean water supply
- Avoid sources contaminated with feces

Practice regular deworming of horses under the supervision of a local veterinarian

- Drugs, referred to as anthelmintics, remove the parasites from the intestinal tract. The treated animal is relieved of the immediate damage or injury caused by parasites, but probably more important, removal of parasites breaks the cycle. This serves to reduce contamination of the environment with transfer stages, thereby limiting the spread of the infections and protecting animals from reinfection.

Sources:

The Unites States Pony Club Manual of Horsemanship, C Level

The Unites States Pony Club Manual of Horsemanship, B, H-A, A Level

American Veterinary Medical Association,

“What You Should Know About Internal Parasites In Horses”

http://www.avma.org/communications/brochures/parasites/parasites_faq.asp

University of Missouri Extension, “Controlling Internal Parasites of Horses”

<http://muextension.missouri.edu/explore/agguides/ansci/g02854.htm>