



# Controlling Common Internal Parasites of the Horse

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## Controlling Common Internal Parasites of the Horse

Internal parasites represent a significant health threat to horses. Internal parasites (worms) are organisms that live a portion of their life cycle in a host animal. They live in internal organs, body cavities, and tissues and gain their nutritive source by feeding on the host animal. The horse is affected by many different species of parasites. The nature and extent of damage varies with the parasite.

Parasites cost the horse owner several ways.

- It is expensive to feed parasite burdened horses
- Parasites rob the horse of intended nutrients
- Parasites can cause anemia
- Parasitized youngsters grow slower
- Parasites can reduce reproductive and athletic performance.

## Signs of Parasitism

The signs of parasitism are not specific for the individual parasites infecting the horse. Signs include:

- Weight loss
- Rough Hair Coat
- Pot Belly
- Coughing
- Diarrhea
- Colic
- Lethargy

There are numerous internal parasites that can infect a horse, but only a few commonly cause significant health problems. It is important to understand the life cycle of these parasites. Successful prevention and control programs are effective because they interrupt the life cycle of parasites. The primary class of internal parasites that cause health problems for horses are: nematodes (such as large and small strongyles), roundworms and tapeworms. Other internal parasites perhaps of minor significance, such as threadworms, pinworms and botfly larvae, are often considered when designing a parasite control program.

## Common Horse Internal Parasites

### Strongyles

Strongyles are grouped as either large or small. The adult form of all strongyles (large or small) will live in the large intestine. Adult strongyles produce eggs that are passed in the feces, thus contaminating the environment. These eggs then develop into infective larvae that exist on the pasture vegetation. Consuming grass, feed, or water contaminated with infective larvae infects the horse. These larvae are very resistant to harsh environmental conditions because of a protective sheath. These parasites can survive freezing weather, but a hot and dry environment will often kill them. The infective larvae survive up to 31 weeks at winter temperatures, compared to up to seven weeks at summer temperatures.

The larvae of large strongyles migrate through various parts of the body. One large strongyle species will burrow into and migrate in the walls of the arteries that are the primary blood supply to the small and large intestines. This migration can result in disruption of blood flow to the intestines by the formation of blood clots, resulting in colic. After approximately 120 days, the larvae move to the lumen of the large intestine where maturation is completed. As adults, these parasites will lay several thousand eggs each day completing the life cycle. The entire life cycle takes six to seven months.

Other species of large strongyles have similar life cycles, except their larval migration is primarily in the liver. This migration results in damage to this organ, but it is not as dangerous as the migration through the intestinal blood supply. These strongyle larvae also return to the large intestines where they mature into adults but their life cycle is approximately eight to 11 months.

The use of effective chemical (dewormers or anthelmintic) compounds has dramatically reduced the prevalence of large strongyles. Today, because of the reduction to near elimination of clinical diseases caused by the large strongyle, the small strongyle is considered to be the number one nematode and most common intestinal parasite of horses. Horses severely infected with small strongyles may exhibit clinical signs such as sudden onset of diarrhea and colic. But horses can be infected with small strongyles and not show overt signs of disease. Small strongyles have been implicated to cause subclinical effects such as decreased feed efficiency, rate of gain, and performance.

The life cycle of the small strongyle (cyathostomes) is very similar to large strongyles, except the larvae do not migrate beyond the wall of the intestines. The larva will burrow in or encyst in the wall of the large bowel for several months before becoming adults (mature worms). As you might expect clinical signs, (such as diarrhea, and the negative impact on growth performance) occur when large numbers of the encysted cyathostomes emerge from the gut wall resulting in significant inflammation and severe injury to the intestinal mucosa. The severity of clinical signs is related to the degree of damage to the intestines, which varies with the level of infection. Female adult small strongyles produce a tremendous number of eggs and are typically the primary parasite egg seen in the feces of the horse. There are only a few types of chemical dewormers that can effectively treat the encysted larval stage. Unfortunately, many small strongyle populations have developed resistance to the common chemical dewormers, making control more difficult in certain situations.

### **Ascarid (Roundworm)**

The horse roundworm is a very large (females may be up to 15 inches long), yellowish white nematode (worm) that may pass in the feces of foals and young horses. Typically, adult horses develop immunity to this parasite; therefore, roundworms primarily infect young horses less than two years of age. The life cycle of the roundworm starts when the foal or yearling consumes grass, feed, or water contaminated with the infective eggs. The eggs hatch larvae that burrow into the small intestines migrating through veins to the liver, heart, and eventually the lungs. After migrating in the air spaces of the lungs, the parasite larvae are coughed up and swallowed. The roundworm larvae are returned to the small intestine where they mature to egg producing adults, completing the life cycle. The life cycle takes about three months. Physical damage such as inflammation and scarring of liver and lung tissue occur in the horse during migration. Adult roundworms can cause physical damage, ranging from mild digestive upset and lower feed absorption, to severe colic, due to intestinal blockage or intestinal rupture. Clinical signs of roundworm infection may include unthriftiness, potbelly, rough hair coat, and slow growth. Some young horses develop nasal discharge accompanied by a cough as a result of larvae migration. Many ascarids have developed resistance to the common chemical dewormers, which is a significant issue in the control of roundworm infections in young horses.

### **Cestodes (Tapeworms)**

Tapeworms are a member of a class of internal parasites called cestodes. The adult equine tapeworm is a flatworm approximately three inches in length. The life cycle of this parasite requires an intermediate host which is a tiny pasture mite that feeds on horse feces. When the mite consumes tapeworm eggs in an infected horse's feces, the egg will develop for several months inside the mite into the infective cysticercoid stage of the tapeworm. Another horse can then become infected with tapeworms by consuming grass or hay contaminated with mites containing this infective stage. There are typically millions of these pasture (oribatid) mites on a pasture. Adult tapeworms live or attach to a horse's intestines at the ileocecal junction and the cecum. Heavy infections of tapeworms can cause inflammation, ulceration and thickening of this area of the intestines. The injury to the intestines

can be severe enough to cause obstruction or other serious intestinal abnormalities, which may result in acute intestinal pain and may require surgery.

### **Strongyloides (Threadworm)**

Strongyloides is an intestinal parasite that can infect foals as early as four days of age. A foal becomes infected by ingestion of larvae in the dam's milk or by penetration of the foal's skin by infected larvae in the bedding. However, the larvae are not present in colostrum. The larvae migrate through the lungs and the small intestine. The life cycle can be completed in less than two weeks. This creates the potential for severe infestations in a relatively short time. Foals will quickly develop immunity to these parasites and the intestinal infection of adult parasites will disappear by 60 to 90 days of age. The primary medical problem a strongyloides infection may cause is diarrhea that may not respond to treatment. Some foals will become dehydrated and develop other problems related to chronic diarrhea. Treatment of mares with an anthelmintic effective against strongyloides within 24 hours of birth significantly reduces transmission of this parasite to foals.

### **Stomach Bots**

Stomach bots are not worms, but rather the larvae of the botfly. Female botflies lay their eggs by attaching them to the hairs of the horse. Different species lay their eggs on different parts of the horse's body (legs, jaw, lips, etc.). These eggs are tiny yellow/orange and attached to the hairs of the legs or throat. The eggs on the legs are stimulated to hatch by the lip action and warm saliva as the horse licks its leg. The eggs around the nostrils and lips hatch in one to one and a half weeks spontaneously. Larvae attach and burrow into the tongue and gums of the mouth and incubate there for three weeks. Bot larvae can cause small ulcers on these areas of the mouth. After incubation, they are swallowed and attach to the lining of the stomach. Bots spend approximately nine months attached to the stomach lining before passing in the manure. These larvae pupate into adult flies. The life cycle depends on the parasite larvae overwintering in the stomach, then passing out in the manure in spring and subsequently developing into adult flies.

The adult flies are active from late spring to the killing frost in the late fall and can be very annoying to the horses. Botfly larvae probably cause minimal damage to the stomach, but may cause problems such as obstruction or damage to lining of stomach. However, until these parasites are proven not to cause damage, their control should be considered in any parasite control program. It is recommended to routinely remove bot eggs from the horse's hair coat.

### **Oxyuris equi ( pinworms)**

Pinworms are one of the causes of tail rubbing in horses. The female crawls out of the anus and lays her eggs on the skin in this region. As a consequence of rubbing, horses can spread pinworm eggs throughout the horse's environment; transmission can occur in stalls and from contact with grooming materials, tail wraps, fence posts, etc. Furthermore, pinworm eggs are rather hardy and can persist on the perianal region and in the environment for relatively long periods of time. Use of dewormers should always be followed by a thorough cleansing of the area under and around the tail and anus to prevent reinfection.

## Parasite Prevention and Control

The true goal of parasite control in horses is to limit parasite infections so animals remain healthy and clinical illness does not develop. It is impossible to eradicate all parasites from an individual. Prevention of contamination of the environment with infective stages of parasites when environmental conditions are ripe for egg and larval development and survival is critical. The treatments should be timed to kill adult worms before they pass large numbers of eggs into a fertile environment for development.

Goals are summarized as follows:

1. Minimize risk of parasitic disease
2. Control shedding of eggs into the horses' environment
3. Maintain drugs (dewormers) that continue to be effective and avoid further development of resistance as much as possible.

Parasite fecal egg counts are useful to establish the shedding status of a horse. Provide your veterinarian with a fresh sample (at least two manure balls) in a plastic baggie with as much of the air removed as possible before sealing the baggie. Maintain sample in refrigerator until delivered to veterinarian. All horses should be sampled because horses differ in their susceptibility to infection and level of shedding of parasite eggs.

Many variables effect the selection of a specific parasite prevention and control programs. For example, type of environment in which the horse lives (climate), age of the horse, stocking rate, amount of time spent at pasture and land type. Management choices regarding pasture rotation, cross-grazing and manure removal can also impact decisions regarding a parasite control program. Internal parasite prevention programs can be divided into two basic areas—environmental control and chemical treatment.

## Environmental Control of Equine Parasites

Management programs which interrupt the life cycle of the parasite before infestation occurs are the key to successful control. Eggs hatch and develop into infective larvae under conditions of moderate temperature and moisture. Sanitation in the stall areas is essential.

Manure should be removed and placed in a compost pile. Properly composted manure will destroy both fly larvae and parasite eggs and larvae. See Extension Fact Sheet BAE-1729 for information on effective composting.

Spreading manure by dragging pastures is generally not recommended. It will ONLY decrease incidence of infective larvae if the climate allows for drying of manure.

Alternative grazing with ruminants and pasture rotation schemes will aid in disrupting the parasite life cycle. Grazing ruminants in rotation with horses will reduce parasite infestation since most internal parasites are host specific. Pasture rotation may also help by decreasing incidence of overgrazing, thus decreasing ingestion of parasites.

When feasible, turn your pasture into a hay field and recover the forage.

Vacuuming or collecting fecal material in the pasture is expensive, but it can be very effective. It should be done twice weekly for effective control.

Grouping horses in pastures according to age will help minimize young horses coming in contact with roundworms and heavy larval infestations. For example, pasture mares and foals away from other horses less than two years of age. Yearling horses often need a different control program than a broodmare. It can be more difficult to control parasites in a herd if all ages and classes of horses are in a pasture together.

Be sure to isolate all new arrivals and have your veterinarian perform a fecal egg count on them.

When feeding horses, always provide hay mangers and feed bunks. Feeding horses on the ground instead of containers increases the risk of becoming infested with parasites. All feeders, buckets, and water troughs should be routinely cleaned to help prevent fecal contamination of feed or water.

## Chemical Treatment

Effective deworming requires not only selection of the correct dewormer but also correct timing of the treatment. Your veterinarian can advise you on the correct chemical dewormer and the ideal scheduling for treatment. It is important to concentrate drug treatments when the local climate favors parasite transmission. Do not under- or over-dose horses and foals. Use weight tapes or scales to determine body weights. An essential component of a parasite control program is a fecal egg count, which is microscopically evaluating fecal sample from your horse(s) for parasite eggs. Ideally, samples will be evaluated before and after deworming to be sure that the chemical treatment is effective and that resistant worms are not present.

Various types of chemicals called dewormers or anthelmintics have been developed to eliminate parasites. There are several commercial chemical dewormers currently on the market to remove internal parasites from horses and most are broad spectrum (labeled as effective against most parasites).

These chemical dewormers are available in different physical forms, administered as feed additives, oral paste, or stomach tube and are sold under several trade names. These chemical compounds are effective by all routes given, if an appropriate dose is administered based on the horse's weight, and the entire dose gets into the horse.

Some of the common chemical treatment (deworming) programs include daily (or continuous) treatment (along with administering a boticide at least twice a year) and strategic treatments. There is not a deworming program that fits all horses. Factors such as climate, humidity, season, stocking rate, age of the horse, and financial resources of the owner all affect the selection of a parasite control program. To complicate matters, parasites have developed resistance to some of the dewormers, making them ineffective. It is critical to consult a veterinarian to establish an effective parasite control program for your horse(s).

## Overview of Parasite Prevention and Control Practices

Internal parasite control is a long-term continuous program. Control of internal parasites in the horse is achieved by combining management practices with chemical (dewormer) treatment. In recent years, parasites that are resistant to dewormers have been increasingly identified in horses. Your veterinarian can recommend the best dewormer for your

particular situation and evaluate the horses before and after treatment to be sure the product chosen is effective.

### **Suggested Practices:**

1. Regular rotation of pastures. Small pastures from one to ten acres can be divided into smaller areas, so horses can be rotated. This will help lower the worm burden, as well as give forage a chance to recover.
2. If possible, pasture cattle, sheep, or goats behind the horse(s). These species will consume the infective larvae of the horses' parasites. These larvae will be inactivated.
3. Clean stalls on a regular basis and compost manure.
4. Feed horses grain and hay from some type of rack or trough. This includes pastured horses.
5. Avoid overstocking pasture(s) as this prevents overgrazing and reduces risk of exposure to infective parasite larva and eggs. Grouping horses in pastures according to age will help minimize young horses' exposure to ascarids (roundworms) and other parasites.
6. Have your veterinarian set up a deworming program to control internal parasites in your horse(s) and perform fecal egg counts to evaluate the effectiveness of the parasite control program.

Always refer to and follow the label instructions of a dewormer when administering it to a horse.

### **Summary**

Internal parasites are a serious horse health problem. It is essential that proper management techniques be combined with proper administration of chemical dewormers. There is not a single parasite control program that is effective for all horses in all management or environmental situations. Consult a local veterinarian — they are the experts on equine internal parasites in the environment in which you live. As animal health experts, they can design an effective parasite control that fits in a total preventive health plan to maximize each horse's health. Ultimately, each farm with veterinary guidance should develop its own program tailored to the specific needs of the farm and each animal.

### **Reference**

American Association of Equine Practitioners, AAEP Parasite Control Guidelines.

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