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### G92-1095 Equine Internal Parasites

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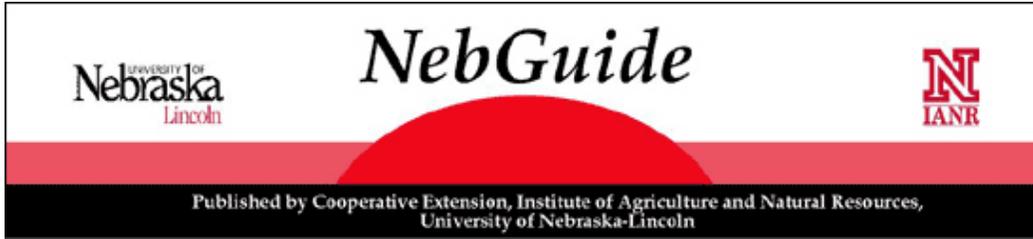
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## Equine Internal Parasites

Effective control programs for equine internal parasites.

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All horses have internal parasites. Ninety percent of all the colic cases may be related to blood vessel damage caused by the migrating larvae of *Strongylus vulgaris* (blood worms). Fifty percent of the deaths in horses may be related to internal parasites.

Internal parasites have adapted themselves to the internal environment of their host animal and have become host-specific. Horse parasites can only exist in horses and cattle parasites only in cattle. If a cow eats the eggs or larvae of a horse parasite (or vice versa), the life cycle of the parasite is broken. This can be a factor in developing parasite control programs.

### Major Parasites

There are five major kinds of equine internal parasites: large and small strongyles, ascarids, bots, and pinworms.

#### Large and Small Strongyles

The most common and most destructive of all internal parasites in the equine are the large strongyles (blood worms). Strongyles can be seen in horses of all ages, except in very young foals. Strongyles range in length from 1/2" to 2".

The sexually mature strongyles are found, for the most part, in the large intestine. The larval stages travel via the blood vessels to the heart, liver, and lungs, leaving damaging tracks or scar tissue behind by destroying healthy tissue. The mature female lays her eggs which are passed in the manure. The eggs hatch into infective larvae that contaminate grass and hay, and when ingested, the cycle starts again. When horses are kept on the same pasture year after year, the number of infective larvae accumulate and multiply.

The large strongyle group contains three main species: *Strongylus vulgaris*, *Strongylus equinus*, and *Strongylus edentatus*. *Strongylus vulgaris*, the most destructive, migrates via the arteries of the intestine,

creating a thickening in the wall of the anterior mesenteric artery where it attaches to the aorta. The resultant thrombi (blood clot in bloodstream) or aneurysm (ballooning of vessel wall) create a significant reduction in blood flow to a large portion of the bowel. Periodic bouts of colic shortly after feeding or exercise are common due to showering or movement of thrombi into small vessels of the intestines. Severity of the colic episodes depends on the amount of circulatory damage. Total blockage or rupture of an aneurysm can result in death of the horse.

There are about 40 species of small strongyle (cyathostome) and they are increasing in numbers due to drug resistance. In many areas, the small strongyle may be more of a problem than the large strongyle. Migration is limited to the intestinal lining. Numerous encysted small strongyles emerging from the intestinal wall can induce colic.

The life cycle of strongyles is continuous; therefore, horses may need to be dewormed every 8 to 10 weeks year round to control these blood sucking parasites.

### **Ascarids**

*Parascaris equorum* (large roundworms) are the largest internal parasite affecting horses, ranging in length from 5" to 15". Ascarids reach up to 1/2" in diameter when mature and look much like a white earthworm. These parasites are common in young horses and are usually not found in horses more than five years old. Immunity normally develops following exposure to these large roundworms during adolescence.

The female roundworm deposits eggs in the intestine and the eggs pass out in the manure. The larvae develop to infective stage within the eggs, which are swallowed by the horse with contaminated feed or water. The eggs hatch in the intestine, releasing larvae that penetrate the intestinal gut wall. They migrate through the liver, then through the lungs, and then to the alveoli where they are coughed up to the windpipe to the pharynx where they are reswallowed. The roundworms then develop to maturity in the small intestine and the cycle repeats itself. The life cycle is completed in 10 to 13 weeks. Respiratory problems in young horses can be started and intensified due to larval migration of roundworms. Worm impactions of this worm species can be seen in heavily infested young horses not on a routine worming program.

### **Bots**

Bots come in three types: *Gastrophilus intestinalis*, the most common; *Gastrophilus haemorrhoidalis*, the nose bot; and *Gastrophilus nasalis*, the throat bot.

The buzzing of the hairy, brown bot fly is very annoying to the horse and owner. It is about the size of a honey bee, does not bite but lays yellow eggs on the hair of the forelegs, shoulders, and flanks of the horse. These eggs are stimulated, hatched, and ingested by the horse when they try to lick off the eggs.

Larvae of all three types of bots enter the mouth and embed themselves in the mucous lining of the gums. After about a month, they migrate to the stomach and become attached, leaving the stomach lining inflamed and ulcerated. After 8 to 10 months of development, the larvae pass out in the manure. Once outside, the bot hatches into an adult fly, and the cycle begins again. The bot fly population is most active in the late summer and fall.

Bot flies do not feed. Control is directed at egg removal from the hair and a dewormer to kill the bots in the stomach. One month after a killing frost which will kill the remaining eggs on the hair, a boticide dewormer is administered.

### **Pinworms**

*Oxyuris equi* (pinworms) are found in the cecum, colon, large intestine, and rectum. Female worms are

normally full of eggs which pass out in the feces. Additional female pinworms crawl out the anal opening and deposit their eggs on the surrounding skin, causing irritation and itching to the host. For relief, the horse usually rubs against a fence post or other solid object, resulting in hair loss near and on the tail and occasionally producing a secondary infection.

The mature female has a slate-grey or brownish color and a narrow tail which may be more than three times as long as the rest of the body. Females are 3" to 6" in length. The life cycle is completed in five months.

Pinworms are actually less damaging to the equine system than any other internal parasite group. Yet the constant annoyance and irritation can spoil the looks and action of an otherwise attractive horse. Pinworms can sometimes be seen in the manure of heavily infected animals.

### Control and Treatment

Horse owners need to understand that an internal parasite control program is a continual battle. Management practices include:

1. Feeding hay in bunks or mangers; avoiding feeding on the ground.
2. Regular cleaning of stables and paddocks.
3. Avoiding overcrowding of pastures.
4. Avoiding wet pastures--rain, dew, flooding--especially with young animals.
5. Not spreading manure where horses can come in contact with it.
6. Working dirt lots with a harrow, springtooth harrow, or disk to bury manure and destroy weed growth.
7. Periodical grazing of cattle in horse pastures decreases exposure as equine parasites do not mature in cattle and breaks the life cycle.

Treatment programs consist of:

1. Proper drugs at the proper dosage and proper time (*Figure 1*).
2. Deworming all animals in the group or lot.
3. Deworming pregnant mares within 30 days of foaling to minimize passage to foal.
4. Keeping lactating mares and their foals on a rigid treatment schedule (every 6 to 8 weeks).
5. Rotating anthelmintic classes of drugs to prevent development of parasite resistance. Resistance generally develops with repeated usage over time (*Figure 1*).

Number of horses, space allotted per horse, age of horses, contact between horses, type of feed (i.e. pasture or dry lot) all have a bearing on frequency of deworming. Your veterinarian should evaluate each individual circumstance and determine the proper drug and frequency needed. Veterinarians can also provide fecal examinations 7 to 10 days post treatment to evaluate efficacy of a control program.

**Figure 1. Three Classes of the Most Commonly Used Wormers**

| <b>I. BENZIMIDAZOLES</b> |                          |                      |                                    |
|--------------------------|--------------------------|----------------------|------------------------------------|
| <i>Brand Name</i>        | <i>Active Ingredient</i> | <i>Distributor</i>   | <i>Worms Affected</i>              |
| Cutter Paste Wormer      | febantel                 | Cutter Animal Health | ascarids<br>strongyles<br>pinworms |
| Panacur                  | fenbendazole             | Hoechst              | ascarids<br>strongyles<br>pinworms |
| Safe-Guard               | fenbendazole             | Hoechst              | ascarids                           |

|  |               |                    |  |
|--|---------------|--------------------|--|
|  |               |                    | strongyles<br>pinworms                     |
| Telmin                                 | mebendazole   | Pitman-Moore       | ascarids<br>strongyles<br>pinworms         |
| Benzelmin                              | oxfendazole   | Syntex             | ascarids<br>strongyles<br>pinworms         |
| Anthelcide EQ                          | oxibendazole  | SmithKline Beecham | ascarids<br>strongyles<br>pinworms         |
| Equipar                                | oxibendazole  | Cooper             | ascarids<br>strongyles<br>pinworms         |
| Equizole                               | thiabendazole | Merck              | ascarids<br>strongyles<br>pinworms         |
| <b>II. TETRAHYDROPYRIMIDINES</b>       |               |                    |  |
| Strongid T                             | pyrantel      | Pfizer             | ascarids<br>strongyles<br>pinworms         |
| Strongid P                             | pyrantel      | Pfizer             | ascarids<br>strongyles<br>pinworms         |
| Strongid C<br>(for continuous feeding) | pyrantel      | Pfizer             | ascarids<br>strongyles<br>pinworms         |
| <b>III. AVERMECTINS</b>                |               |                    |  |
| Eqvalan                                | ivermectin    | Merck              | bots<br>ascarids<br>strongyles<br>pinworms |
| Zimecterin                             | ivermectin    | Farnam             | bots<br>ascarids<br>strongyles             |

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