# Equine Parasite Control

HORSE COUNCIL BC

WWW.HCBC.CA

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#### Overview

- \* Parasite control terminology
- \* Important equine parasites
- \* Parasite prevention and control





**Parasiticide** - Medication that has antiparasitic activity, killing internal and/or external parasites

**Anthelmintic** - Parasiticide that controls internal parasites

**Dewormer** or **Wormer** - Common terms for anthelmintics

Boticide - Medicine that destroys or kills bots





Active Ingredient - The chemical ingredient in the dewormer that kills the parasites

Some active ingredients may come from the same class of products, but do not have the same spectrum of control or efficacy





**Parasiticide** - Medication that has anti-parasitic activity, killing internal and/or external parasites

Anthelmintic - Parasiticide that controls internal parasites

Product Class	Active ingredients contained in products available in Canada
Benzimidazoles	Fenbendazole, oxfendazole, oxibendazole
Macrocyclic lactones	Ivermectic, moxidectin
Pyrimidines	Pyrantel



#### Indications or Spectrum of Activity:

The parasites that the product kills or treats and/or diseases that the product controls

Identified by species and stages

#### Species :

Basic category of biological classification, referring to related individuals, in this case parasites

The type of parasite that the deworming product controls





#### Stage

Phase in life cycle or development of parasite that parasiticides control

Embryonic or egg

Larval

**Encysted larval** 

Adult

Most deworming products control adult stages; some reach larval stages; few control eggs

#### Resistance

When a species becomes immune to a previously effective dewormer



#### Rotation

The practice of methodically alternating active ingredients within the same year or from year to year





# Health Effects of Parasite Infections

Equine parasite infections can cause serious health problems

- Colic
- Diarrhea
- Dermatitis
- Lung damage
- Liver damage

Consult with the veterinarian when a horse is showing signs of heavy infection, such as:

- Poor haircoat
- Weight loss
- Recurrent colic
- Sloppy, often fetid, manure

Parasite infections are a serious threat to horses' health



#### Transmission of Equine Endoparasites





#### Large strongyles (bloodworms)

The most destructive and damaging internal parasites

*Strongylus vulgaris* moves through the blood stream damaging arteries and causing blood clots and aneurysms

*S. equinus* produces cysts in the liver, pancreas and intestine

*S. edentatus* locates in veins and causes swelling of the liver and the abdominal lining

Adults attach to the lining of the large intestine which leads to bleeding ulcers, weakened blood vessels and possibly death if the intestinal walls rupture





#### Small strongyles (cyathostomes)

Found in cecum and large intestine

Cause damage to the wall of the intestine

Larvae invade wall of large intestine to molt

Can become encysted and inactive for many months, after which they reactivate and cause clinical signs (weight loss, diarrhea & colic)

Resistance to benzimidazoles and pyrantel is documented - no proven resistance to macrocyclic lactones





#### Strongyloides westeri (threadworm)

Causes foal diarrhea - larvae peak in mare's

milk 10 days after birth

Foals quickly develop immunity (60-90 days)

Larval migration can cause lung hemorrhage and respiratory distress

#### Rarely a problem in adult horses but can cause

Dermatitis and irritation because of skin penetration

Acute diarrhea, weakness, emaciation





#### Roundworms (ascarids) - Parascaris equorum

Roundworms produce millions of eggs which can remain a threat in pastures for years.

Foals are particularly susceptible to roundworms, but, by the time they're adults, most horses have developed an immunity to roundworms.





#### Roundworms (ascarids) - Parascaris equorum

The larval migration damages lung and respiratory tract tissue

They also can cause

Digestive irritation

Decreased feed absorption

Constipation & foul smelling diarrhea

Lethargy & weight loss

Colic





#### Oxyuris equi (pinworms)

Inhabit large intestine and the anus

Cause intense itching around the anus and loss of hair (rat-tail)





#### Bots (Gasterophilus spp.)

Life cycle of a bot takes one year to complete

Bot flies lay eggs on horses' forelegs, chin and throat.

Licking the affected area stimulates hatching and larvae. burrow into the tongue, gums or other areas of the mouth.

Larvae migrate to the stomach and attach to the stomach lining, irritating the stomach wall and possibly causing gastric ulcers or colic. Larvae migrate to the stomach and attach to the stomach lining, irritating the stomach wall and possibly causing gastric ulcers or colic.





#### Summer sores

Result of flies depositing stomach worm larvae in existing wounds on a horse or on lips, nostrils, eyes and other moist areas of the horse

Larvae cause severe itching and inhibit the healing process

Lesions may heal spontaneously in winter, but frequently recur in spring and summer





Young horses are especially at risk from parasite infections

\*Roundworms or ascarids

\*Pinworms

\*Threadworms

\*Large and small strongyles





Management practices that reduce the risk of contamination:

\*Regularly remove manure from stalls and pastures

\*Feed hay and grain in elevated buckets or mangers

\*Use appropriate insecticides during fly season





Management practices that reduce the risk of contamination:

\*Use disposable towels or sponges when removing eggs such as those from bots

\*Drain water from pastures, or avoid wet pastures altogether

\*Avoid overcrowding





Management practices that reduce the risk of contamination:

\*Group horses by age to reduce exposure to certain species

\*Avoid spreading manure in areas where horses can come in contact with it

\*Pasture rotation when possible





To reduce transmission of worms through the milk and environment:

Deworm mares regularly during pregnancy

Deworm mare 2-3 days after foaling





Situations of Increased Risk of Contamination:

\*Horses on pasture with other horses with different or unknown deworming programs

\*Horses that visit other stables or public horse facilities (at shows, rest stops, fairgrounds, etc.)

\*Horses on pasture that is fertilized with horse manure



Equine deworming products belong to one of three classes:

- Benzimidazoles (Fenbendazole, oxfendazole, oxibendazole)
- Macrocyclic lactones (Ivermectin, moxidectin)
- Pyrimidines (Pyrantel)

Timing and frequency of deworming product is based on manufacturer's directions and information provided to you by you veterinarian

Unless instructed otherwise by a veterinarian, recommended manufacturer's doses should always be used.

Treat all horses on the same pasture with the same product and at the same time



It is important to establish a clear treatment schedule and to adhere to it throughout the year.

Regular fecal examinations should be performed; they allow veterinarians to monitor the horse's parasite status and detect problems.





Anthelmintic resistance is developed by the parasites through genetic changes that allow them and their offspring to become unaffected by the active ingredient of a product.

At first, only a few parasites are resistant, but as the non-resistant ones are eliminated by successive dewormings, they can become an important proportion of the worm burden of the horse





\*Apparition of resistance often involves improper use of a dewormer:

\*Using products not fully effective against parasites or using reduced dosing.

\*Allows the 'stronger' individuals to survive and reproduce .

\*Overuse (too frequent) of products.

\*Allows more frequent contact with the product, promoting development of characteristics leading to resistance.

\*Poor deworming programs that do not treat optimally every time.





- Prevention and control of resistance involves deworming the horse appropriately and frequently enough to avoid disease, but not enough to allow resistant parasites to take-over.
- It is not desirable to try to keep pastured horses completely parasite-free.
- Presence of non-resistant worms for periods long enough in the horse to produce eggs that will contaminate the environment increases competition for resistant forms to establish themselves.

The following 6 animation slides illustrate this.





Lefty and Righty, two horses living on separate pastures, are given a dewormer on the same day. All the worms (blue dots) die, as they are all sensitive to the dewormer.

This is an example only and does not reflect the mechanism of action of any one product against any specific parasite – it does not take into consideration other parasite control measures either.





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Both re-contaminate themselves from their respective pasture, each picking up two worms that are resistant to the dewormer (red dots). Lefty is dewormed again after two weeks, but not Righty

Lefty Righty Treated every 2 weeks Treated every 8 weeks ()()()()()()() $\bigcirc$ () $\bigcirc$  $\bigcirc$   $\bigcirc$   $\bigcirc$ ()()()()) ()() $\bigcirc \bigcirc \bigcirc$ ()



Lefty is re-contaminated from the pasture, picking up more resistant worms. Righty still has only two resistant worms. Lefty is dewormed again after two weeks (third treatment in four weeks).

Lefty Righty Treated every 2 weeks Treated every 8 weeks ()()()()()() $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$  $\bigcirc$  $\bigcirc$  $\bigcirc \bigcirc \bigcirc \bigcirc$ ()()()()()()



Lefty is re-contaminated again, picking up even more eggs from resistant worms, as they contaminate the pasture more and more. Lefty is dewormed again after two weeks, killing all the non-resistant worms; the resistance will soon take over, with the help of the dewormer.

Lefty Treated every 2 weeks Treated

Righty Treated every 8 weeks



By now, many of the worms in Lefty are resistant, because of the great number of resistant eggs the horse contaminates the field with. Both Lefty and Righty are dewormed eight weeks after the initial dose. Lefty has received 5 treatments in all and Righty gets a second one.





Lefty is now infected only by resistant worms; so is the pasture. Righty's resistant worm burden and pasture contamination are minimal.

Lefty Righty Treated every 2 weeks Treated every 8 weeks () $\bigcirc$  $\bigcirc$  $\bigcirc$ () $\bigcirc \bigcirc \bigcirc$  $\bigcirc$  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$ ()()())



- As of April 30th 2005, only macrocyclic lactones (ivermectin, moxidectin) have had no confirmed resistance reported in horses.
- Appropriate use, including avoiding overuse, of these products is the best precaution to take in order to avoid resistance.
- Dewormer rotation is thought by some to be another way to avoid resistance by benefiting from unique advantages of various actives.
- **Fast rotation:** different products, from different classes, used in sequence during the year
- Slow rotation: one product from one class used for one year, a second one, from a different class, the following year





Switching within an active ingredient class, e.g. macrocyclic lactones, is **NOT** an effective rotation program.

Opinions vary about rotation; clients should consult with their veterinarians.



### Congratulations

You have completed the Equine Parasite Control Course

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