Pasture Related Equine Health Issues

Harold C. McKenzie III, DVM, MS, DACVIM
Assistant Professor of Equine Medicine
Marion duPont Scott Equine Medical Center
VA/MD Regional College of Veterinary Medicine
Leesburg, VA

Areas of Concern

- Nutrition
- Poisonous plants
- Colic
- Parasitism

Nutrition

- Horses are meant to be grazing animals
  - Do not require additional feed intake if good quality pasture is constantly available
  - Optimal gastrointestinal function is achieved by slow, steady intake of roughage
  - Horse’s GI tract is designed to ferment and absorb nutrients from roughage

Overfeeding

- Concentrates
  - Additional calorie/protein intake predisposes to obesity, colic and musculoskeletal problems
  - Lush pasture growth in spring and fall may exceed calorie density of grain
    - Yet we continue the feeding of grain
- Lack of Exercise
  - We feed like horses still work for a living
    - But many horses are ‘couch-potatoes’
Feeding

- For proper digestive tract function horses require 1-2% of body weight in long stem dry matter per day

- Pasture is the ideal source of this dry matter
  - When pasture is not available hay is the next most desirable source
  - Hay must be of high quality to fulfill its dietary role
  - Type of hay dependent on region

Pasture or Playpen?

- First decision in pasture management
- Is pasture a source of:
  - Exercise
  - Nutrition
    - If the stocking rate exceeds one horse per acre pasture is primarily useful for exercise
    - Most forage crops will not perform well or attain their full production

Pasture Stocking Densities

- One horse per 0.5 acres of pasture
  - Turnout time < 3 hours per day

- One horse per 1 acre of pasture
  - Turnout time 3-8 hours per day

- One horse per 1.5 acres of pasture
  - Turnout time 8-12 hours per day

- One horse per 2 or more acres of pasture
  - Unlimited turnout time

Seasonal Variation

- Cool season pasture grasses produce little during summer
  - Highly productive pasture might support 3 horses per acre in the spring
  - But only 0.5 horses per acre in summer
  - Exceeding appropriate stocking rate can cause permanent damage to pasture
Timing is Everything

- Keep horses off saturated and rain-soaked soils and dormant or frozen pastures
  - Critical if you want to have a healthy pasture next summer
- Soggy soils and dormant plants cannot survive continuous grazing and trampling in winter
  - Pounding hooves compact the soil and suffocate plant roots

Sacrifice Areas

- Drylot
  - Primary function is exercise
  - Allows for higher animal density on the farm
  - Need to be properly designed
  - Adequate drainage
  - ‘Bluestone’ base is ideal
  - Manure management

Hay Quality

- Green (not brown or bright green)
- No obvious dust or mold
- No weeds
- Lots of leaf with less stem
- No blister beetles
- Kept out of the weather

Types of Hay

- Square baled
- Round baled
- Chopped bagged forage
  - Dengie, etc.
- Haylage
**Hay Feeding Styles**

- Spread
- Feeder

**Concentrates**

- Feeding of concentrates in horses that are not in heavy work or under metabolic stress is not necessary
- When concentrates are fed they can alter the flora of the gastrointestinal tract and predispose to GI upset
- Concentrates make a poor substitute for roughage

**Poisonous Plants in Hay**

- Often easy to find
  - But rarely consumed
    - Pokeweed
    - Horsenettle
    - Jimsonweed
- Can be insidious
  - Switchgrass
  - Liver toxicity

**Poisonous Plants in Pasture**

- Can be found in any pasture
  - This does not mean horses will eat them!
- Problems I have encountered
  - Fescue Toxicosis (dystocia, agalactia)
  - Maple trees (hemolytic anemia)
  - Cherry trees (cyanide)
  - Yew (taxine alkaloids)
  - Black Locust (robin)
  - White Snakeroot (trematone)


http://plants.usda.gov/index.html
Colic

- Number one cause of death in horses
  - Uncommon in feral horses as it is primarily the product of human management
- The equine GI tract is designed for roughage digestion, not for highly soluble carbohydrate intake
  - Ideal feed intake is slow, steady intake of a roughage based diet

Nutrition and Colic

- Predisposing factors for colic
  - Dietary change
  - Feeding of poor quality roughage
  - Changes in management
    - Introduction to new farm/pasture
    - Alteration of herd makeup in pasture
    - Feeding of large amounts of concentrates
    - Usually correlated with heavy showing/training/competition

Horses HATE Change!

- Make any changes in diet or management gradually where possible
  - Transition hay by gradually increasing percentage of new hay in diet over several days
- Pay close attention to horses at risk due to changes

Dietary Control

- Optimal diet can enable horses to weather mild stresses with less likelihood of dysfunction
  - Lush cool weather growth which has been killed by the first freezing weather has been implicated in some colic cases
- Improper diet is closely followed by parasitism as a predisposing factor in development of colic
Parasite Control

- Poor parasite control increases the incidence of colic
- Heavy stocking densities increase the level of contamination of the pasture
- A good deworming program combined with effective pasture management can greatly improve herd health

Parasite Infestation

- Parasite eggs are shed in the fecal material of infected horses
  - Eggs hatch and larvae are ingested by horses
  - Migration of larvae through tissues leads to damage and dysfunction
  - May predispose horses to colic in response to stresses or challenges which would otherwise not affect them

Why worry?

- For 30 years we have been complacent regarding parasite management
- Unfortunately this has led to a number of problems
  - New types of parasites are becoming a problem
  - Parasites that we have considered as ‘controlled’ are emerging as problems again
  - Some that we never regarded as a serious problem are turning out to be associated with disease

Historical Perspective

- Forty years ago the primary parasite problem was with large strongyles
  - These were known as ‘blood worms’
  - *Strongylus vulgaris* was the worst
    - Invaded the blood vessels supplying the large intestine resulting in clots which interrupted blood flow
    - This resulted in severe colic +/- death
- Readily controlled by ivermectin
Other Parasites

- Did not seem to be a major problem back then...
  - Tapeworms
    - Seen occasionally at post-mortem, but did not seem to be causing much damage
  - Small strongyles
    - Rarely present in large numbers, did not seem to cause problems
  - Ascarids
    - Only present in younger animals

Equine Tapeworms

- Began to see more horses with obstructions of the small intestine at the ileum
  - Large numbers of tapeworms were often present at this site
  - In some cases the wall of the intestine was very thickened, perhaps secondary to the tapeworms
  - Some evidence of a link between tapeworm infestation and colic

Tapeworm Treatment

- Even as the appreciation of the potential importance of tapeworms increased there were few treatments available
  - The primary therapy was pyrantel pamoate (Strongid™)
    - Only effective at twice the normal dosage
  - A newer therapy is the drug praziquantel
    - This treatment is highly effective
    - Single dose of 1 mg/kg
    - Marketed in combination with ivermectin
      - Zimectrin Gold™, Equimax™
      - Quest Plus™ (moxidectin and praziquantel)

Small Strongyles

- Cyathostomes
  - Probably were not a major problem when they were competing with large strongyles
  - But they have a complex life cycle
    - Includes a stage where the larvae are ‘protected’ from deworming drugs
Do small strongyles cause a real problem?

- Not usually in healthy horses that are well nourished and maintained at low stocking densities
- Many horses suffer from sub-clinical disease
  - Poor feed efficiency, decreased performance
- Severe infestations cause clinical disease
  - Cyathostomiasis
  - Weight loss, hypoproteinemia, anemia, poor growth, colic
- Many horses suffer from sub-clinical disease
- Poor feed efficiency, decreased performance
- Severe infestations cause clinical disease
  - Cyathostomiasis
  - Weight loss, hypoproteinemia, anemia, poor growth, colic
- Severe infestations cause clinical disease
  - Cyathostomiasis
  - Weight loss, hypoproteinemia, anemia, poor growth, colic

Small Strongyle Treatment

- The adult parasites are sensitive to all commonly used drugs
  - But the adults are not the problem
  - Treatment of encysted stages requires drugs that can penetrate cyst wall
- Only two effective drugs are available
  - Moxidectin
    - Quest® – 0.4 mg/kg moxidectin
    - Fenbendazole is only effective at higher doses and when given daily for five days
    - Panacur® ‘Powerpack’ – 10 mg/kg once daily for 5 days

Ascarids

- ‘Roundworms’
- An emerging problem in young horses
  - Typically weanling age
    - Horses normally develop natural immunity by 2-3 years of age
  - Clinical signs
    - Infected animals are usually in good condition and are growing well
    - Primary sign is typically acute colic
- Can be an incidental finding
- Gastroscopy or ultrasound
- Can cause subclinical disease
- May cause poor growth, poor hair coat, pot belly
- Can cause severe or even fatal colic
- Especially following deworming
Ascarid Ivermectin Resistance

- Increasingly common
  - Usually resistant to moxidectin as well
- Only a few drugs appear to be effective
  - Oxibendazole (Anthelcide EQ)
  - Panacur PowerPak for the full five days
  - Pyrantel (Strongid) - variable
- Monitor response to treatment with fecal egg counts
  - This will ensure that treatment is effective

Manage to Minimize Parasitism

- Do not overstock pastures
- Rotate pastures
- Pick up manure from paddocks
- Do not allow overgrazing
- Avoid feeding from the ground
- Compost manure for at least one year
- Graze pastures with other species of livestock
  - Cattle and sheep

How do we figure out how to deworm?

- As few as 20-30% of the horses in the herd are responsible for harboring the majority of parasites
  - Therefore responsible for most of the pasture contamination
- Use fecal egg counts to identify them
  - Perform fecal egg counts on all members of herd after a pause in deworming
    - High counts > 500 eggs per gram
    - Medium = 200-500 eggs per gram
    - Low < 200 eggs per gram

Deworming Program Suggestions
First Year of Life

- Do not deworm foals before 60 days
- Treat at 8 week, rather than 4 week, intervals
- Rotate among all effective drugs
  - If ivermectin resistance is not present then continue to use it and/or moxidectin as part of the rotation
  - Also include:
    - Oxibendazole (Anthelcide EQ)
    - Fenbendazole (Panacur PowerPak)
    - Strongid (pyrantel pamoate)

Adult Horses

- All horses
  - Larvacidal therapy in spring and fall
    - Quest (moxidectin)
    - Panacur PowerPak (5 day fenbendazole)
  - Ivermectin (least effective)
  - Combine a tapeworm therapy with these in the fall (+/- spring)
    - Praziquantel
    - Double-dose Strongid

Medium Shedders

- Same as above for all horses
- Add an additional treatment in the early summer to minimize the spread of cyathostomes
  - Pyrantel pamoate (Strongid)
  - Oxibendazole (Anthelcide)
- Ideally fecal egg counts should be monitored to ensure effective treatment
  - Combining these two drugs may increase effectiveness

Heavy Shedders

- Same as for moderate shedders
- Add one more treatment in the late summer period
  - This will minimize the degree to which they contaminate the environment
  - Best to use a different drug than earlier summer treatment
    - Ivermectin (effective against adults)
    - Moxidectin
## Monitoring Response

- Remember, a negative fecal egg count does NOT mean the horse is free of intestinal parasites.
  - Larval stages do not produce eggs
- That is why it is important to test as many horses in the herd as possible
- Test before AND after treatment at each deworming for the first 1-2 years
  - Can assess response to treatment and identify ‘high shedders’ over time
  - Cost of testing should be recouped in savings on deworming products (average savings of 75%)