

# Vaccination and Deworming Basics

**Dana Zimmer**

Assistant Professor  
College of Veterinary Medicine  
UF/IFAS  
Gainesville, FL

Routine vaccination and deworming are the basis for disease prevention. There are vaccines that can prevent life-threatening diseases and vaccines that can help minimize or eliminate contagious diseases that can affect performance. A heavy burden of parasites can cause weight loss, a rough haircoat, and colic. Strategic deworming plans may be implemented to minimize cost and maintain a healthy horse.

## Vaccination for Prevention of Fatal Diseases

The most important vaccines to administer are those that prevent a fatal disease such as tetanus, encephalomyelitis (Eastern Equine Encephalomyelitis, western equine encephalomyelitis, West Nile virus), and rabies.

- **Tetanus** is caused by bacteria (*Clostridium tetani*) that live in the soil. Horses are at risk of contracting tetanus if they receive a puncture wound to the foot, laceration or any surgical procedure such as castration. Tetanus can be prevented by an annual vaccination with tetanus toxoid. If a horse becomes injured and has not received a tetanus shot in the last six months, a booster shot is recommended at the time of injury.
- **Encephalomyelitis** is a disease that affects the central nervous system resulting in clinical signs such as lethargy, ataxia, blindness, and seizures. Eastern Equine Encephalomyelitis (EEE) and Western Equine Encephalomyelitis (WEE) have also been called “sleeping sickness” because the initial signs of the disease can be as simple as lethargy, depression, inappetence, and fever. The disease is transmitted by mosquitoes and can be fatal

(93% die that contract EEE). West Nile Virus (WNV) is a similar disease that can affect the central nervous system of the horse. It emerged in the United States in 1999. It is now endemic in Florida with over several hundred horse deaths. In 2004, thousands of horses died nationwide from the disease. West Nile Virus is not as lethal as EEE, but infected horses may require several days of intensive care by a veterinarian to survive. The mortality rate for horses that contract WNV is approximately 32-35%. Vaccination for EEE, WEE, and WNV in Florida should be four times a year. If an adult horse has never been vaccinated for WNV it must receive two shots three to four weeks apart in order to develop a protective antibody level.

- **Rabies** is a fatal neurological disease of humans and animals. Horses can be bitten by a rabid animal and develop rabies. Rabies is transmitted through the saliva of infected animals. Although the incidence of rabies is low in horses, they can be a source of infection for humans. Thus vaccination of horses is prudent not only for the health of the horse but the safety of all the people working with the horse. Horses should be vaccinated annually for rabies.

## Vaccination to Minimize Illness

There are several vaccines available to prevent infection of respiratory diseases such as influenza, equine herpes virus (rhinopneumonitis), and Strangles (*Streptococcus equi*). These diseases can cause severe illness that may require veterinary care and definitely will result in lost days of productivity. For example, a horse that contracts influenza may be sick

for three to seven days and may take two to three weeks to recover before returning to work.

- **Influenza** is a common respiratory disease that is transmitted by nose to nose contact. The incubation period is very short; one to three days. The common clinical signs include serous (clear) nasal discharge, coughing, anorexia and fever (103-105°F). Vaccination for influenza is important for horses that travel frequently or are exposed to many horses. The intranasal vaccines are more effective than the intramuscular vaccines. Influenza can be self-limiting often requiring only supportive nursing care (anti-inflammatory medication, oral or intravenous fluids, and potentially antibiotics to prevent secondary bacterial infection). If the horse contracts influenza and is forced to continue to work or travel long distances, severe life-threatening pneumonia can develop. Horses that compete or travel frequently should be vaccinated two times a year with the intranasal vaccine or four times a year with the intramuscular vaccine. A horse that remains on the farm requires annual vaccination only.
- **Equine Herpes Virus (EVH-1, EVH-4), also known as rhinopneumonitis**, is a respiratory virus that can be contracted in a similar fashion as influenza. The clinical signs are comparable to influenza. The incubation period is three to ten days. Vaccination should be two to four times a year if the horse travels frequently or annually if the horse only works on the farm. Equine herpes virus can also cause abortion in pregnant mares. All broodmares should be vaccinated at the beginning of the 5<sup>th</sup>, 7<sup>th</sup>, and 9<sup>th</sup> month of pregnancy.
- **Strangles (*Streptococcus equi*)** is a common bacterial infection that usually affects only young horses. The clinical signs include yellow nasal discharge, swollen lymph nodes under the jaw, and fever (102-105°F). This disease is rarely fatal but may require veterinary care for several days with severe infection. Vaccination for Strangles is necessary if

Strangles has ever occurred on the farm or if there is contact with young stock. Horses should be vaccinated annually after they receive the initial booster series consisting of three vaccinations two to three weeks apart.

## Parasite Control

Horses are commonly affected by internal parasites that can cause weight loss, a poor haircoat, and colic. The groups of parasites that are most devastating to the horse are the small strongyles (bloodworms or cyanthostomes), large strongyles, and ascarids (roundworms). Less important, but not to be ignored are the tapeworms, bots, pinworms and threadworms. Strongyles are seasonally transmitted, so deworming schedules should be coordinated with the time of year to eliminate these parasites.

- **Small Strongyles (Cyanthostomes)** are the most common and abundant parasite of horses with infections exceeding 100,000 worms per horse. Small strongyles can cause colic, diarrhea, and ill thrift. Horses become infected by grazing pasture that is heavily infected with worm larvae. Horses shed small strongyle eggs in their manure. The larvae feed on bacteria in the manure for one to two weeks and then emerge onto a blade of grass where they are consumed by the horse. The larvae are swallowed and then migrate through the wall of the gut for four to six weeks before emerging as adult and lay eggs.

In Florida, larvae survive poorly on grass during the summer months due to the extreme heat. Most horses develop infection by ingesting eggs shed onto the pasture from September to March. The small strongyles have a very short life cycle and have developed resistance to many dewormers. In Florida, treatment at two-month intervals with ivermectin (Eqvalan<sup>®</sup>) or three-month intervals with moxidectin (Quest<sup>®</sup>) from September through March is the most efficient method to eliminate these worms.

- **Large Strongyles (*Strongylus vulgaris*)** are

the most deadly worms that effect horses. These worms can form a blockage in the major blood supply going to the intestinal tract. The migrating stage of this parasite can cause severe colic. Year round treatment (at least six-month intervals) with ivermectin or moxidectin is recommended.

- **Ascarids** (Roundworms) can be deadly to foals in the first year of life. Adult horses develop immunity to provide strong protection. Transmission occurs by shedding large numbers of eggs in the manure. The eggs can live for several years in the environment. Foals should be dewormed every 30-60 days until they are nine months old. These parasites are sensitive to pyrantel (Strongid®), ivermectin, moxidectin, and benzimidazoles (Safeguard®, Panacur®, Anthelcide®).
- **Tapeworms** (*Anoplocephala perfoliata*) can cause colic in horses by affecting the motility of the gastrointestinal tract in the area of the ileo-cecal valve. Specific lesions include spasmodic colic, ileal impactions, and intussusception (telescoping of one section of intestine into another). Studies have indicated that 82% of horses in Florida are infected with tapeworms. Young horses (less than five years) and older horses appear to have the highest infection rates. One study in the United Kingdom detected a significant tapeworm problem in the weanlings of a large breeding farm, but not the adults. The lifecycle of the tapeworm includes the oribatid mite as an intermediate host. Infection is acquired when the horse swallows the mite that contains tapeworm eggs. It is difficult to detect tapeworm eggs in the feces. Special fecal tests (centrifugation/flotation) or an ELISA test performed on the blood are the best diagnostic tests to identify the parasite. The parasite can only be eliminated by deworming twice a year with:
  - o Quest Plus® (moxidectin/praziquantel).
  - o Equimax® (ivermectin/praziquantel).
  - o Zimecterin Gold® (ivermectin/praziquantel).

- o Double dose of Strongid T® (pyrantel pamoate) or daily Strongid C® (pyrantel tartrate).

- **Bots** are flying insects that lay their eggs on the leg hairs of horses. The horse will inadvertently swallow the eggs and the larvae hatch and attach in the stomach. The only drugs that kill these larvae are ivermectin or moxidectin. Removal of the bot eggs from the horse's legs can reduce infection. Be careful not to rub your eyes when removing bot eggs because hatched bot larvae can infect the eyes of humans.
- **Pinworms** do not cause serious disease in the horse but are a common reason for horses to rub the base of their tail. These parasites can easily be killed by any of the dewormers mentioned above.

In summary, mature horses should be dewormed every two months with ivermectin or every three months with moxidectin from September through March to control small strongyles. Horses should receive ivermectin in June to kill bots and large strongyles. Deworm with a product containing praziquantel at least once a year to kill tapeworms. Foals should be dewormed every two months starting at 30 days of age until they are at least nine months old to control ascarids (roundworms).

## Other Parasite Control Measures

- Perform fecal egg counts to determine the severity of parasites on the farm.
- Remove manure from small paddocks twice a week.
- Do not spread manure on pastures in Florida during the winter months.
- Composted manure may be placed on pastures during the summer.
- Deworm all new horses before placing them in the herd.
- Deworm foals every 60 days until they are

- nine months old. Start at 30 days of age.
- Get an accurate weight; under dosing is an ideal way to develop resistant parasites.
- If the horse will not swallow the paste dewormer, have the veterinarian administer the medication via nasogastric tube.
- Avoid overgrazing and overcrowding (more than one horse per two acres).
- Keep mares and foals separate from other horses.

Sample Vaccination Schedule.

Disease/vaccine	Working horses that travel	Working horses that stay on the farm
Tetanus toxoid	Annual	Annual
EEE/WEE/WNV	Every 4 months	Every 4 months
Rabies	Annual	Annual
Influenza	Every 4-6 months	Annual
Equine Herpes	Every 4-6 months	Annual
Strangles	Optional	Optional

Drug	Common Brand Name Products	Comments
Ivermectin	Eqvalan <sup>®</sup> , Zimectrin <sup>®</sup> , Equimectrin <sup>®</sup> , Rotation 1 <sup>™</sup> , Iver Care <sup>™</sup>	
Moxidectin	Quest <sup>®</sup>	Must be > 6 months old
Oxibendazole	Anthelcide EQ <sup>®</sup>	Many parasites resistant
Fenbendazole	Panacur <sup>®</sup>	Many parasites resistant
Pyrantel pamoate	Strongid P <sup>®</sup> , Strongid T <sup>®</sup> , Rotation 2 <sup>™</sup>	
Pyrantel tartrate	Strongid C <sup>®</sup> , Strongid C2X <sup>®</sup>	
Ivermectin/praziquantel	Equimax <sup>®</sup> , Zimecterin Gold <sup>®</sup>	
Moxidectin/praziquantel	Quest Plus <sup>®</sup>	Must be > 6 months old

**Notes:**

## Notes: