



Great horse health care programs include a strong focus on prevention of infectious diseases and control of internal parasites. These topics should be discussed with your veterinarian at least annually to optimize vaccination and deworming schedules for your horse and your farm.



Figure 1. Vaccinating a Horse

Conventional strategies for vaccinating horses have been recently reviewed and updated by the American Association of Equine Practitioners (AAEP). The current recommendations will be available to horse owners in early 2008 on their website: www.aaep.org. All horses should be vaccinated against sleeping sickness (Eastern and Western Equine Encephalomyelitis), West Nile virus, tetanus and rabies (see Table 1). Once a horse has been through an initial series, booster vaccines are ideally administered annually in the spring before mosquitoes emerge at the time of the annual physical examination. If mosquito populations are high in the late summer, veterinarians may recommend an additional booster for EEE, WEE and WNV. Rabies vaccination is recommended once a year. Tetanus is also once a year, unless a horse sustains a wound more than 6 months after the last tetanus vaccination, at which point it should receive another tetanus booster. If the vaccination

history is unknown at the time of injury, a dose of tetanus anti-toxin should be given as well as a tetanus toxoid.

Table 1. Core Vaccinations for Horses in Minnesota

Vaccine	Frequency
Eastern and Western Equine Encephalomyelitis	Annually (booster maybe required if mosquito populations are high)
West Nile	Annually (booster maybe required if mosquito populations are high)
Tetanus	Annually (unless an injury is sustained)
Rabies	Annually

Beyond these core vaccines, many vaccines are available for other equine infectious diseases. Discuss your plans for your horse in the year ahead with your veterinarian, and realistically look at the degree of traffic on the farm where the horse lives. This information determines the risk of exposure to the respiratory diseases, to decide if vaccination is warranted, which vaccine product would be best, and how often it should be given. This disease discussion should include influenza, rhinopneumonitis (herpes 1 & 4), strangles and equine viral arteritis (EVA) (Table 2). If you are planning to show or race the horse, there may be specific vaccination requirements at the show venue or racetrack that must be followed as well.

Table 2. Additional Vaccines for Horse who Travel*

Vaccine	Frequency
Influenza	Annually
Rhinopneumonitis (herpes 1 and 4)	Annually
Strangles	Annually
Equine Viral Arteritis (EVA)	Annually

*Discuss options with your veterinarian

If a horse will be bred or is currently pregnant, additional vaccines during pregnancy are recommended to reduce the risks of abortion and to boost the mare’s immunity that can be transferred to the newborn foal via colostrum. Examples of common strategies are to vaccinate a mare in an open herd or barn against equine herpesvirus-1 abortion at 5, 7 and 9 months of gestation, and to time her spring vaccinations for 4-6 weeks before her due date (Table 3). Horse owners should remember that intranasal vaccination (Eg. Influenza, strangles) does not provide strong immunity through the colostrum

for the newborn foal, so a switch to intramuscular vaccines may be needed in the broodmare. Breeding stallions are candidates for vaccination against equine viral arteritis, but should be tested for the disease before vaccination for the first time.

Table 3. Vaccines for Pregnant Mares*

Vaccine	Frequency
Equine herpesvirus	5,7, and 9 months of gestation
Spring Vaccinations (See Tables 1 and 2)	4 to 6 weeks before foaling

* Discuss options with your veterinarian

Foal vaccinations are challenging because the immunity the foal acquires from colostrum may block the effects of vaccines that are given before it is weaned. This has led to a trend towards initiating foal vaccines at 6 months of age or later, if the risk of those diseases is not huge on that farm. Studies on this age group have also suggested that an initial series of 3 vaccines garners the highest measurable protection in the foals, yet annual boosters should begin at one year of age.

In some regions, the risk of a less common disease may be great enough for your veterinarian to recommend additional vaccines, such as Potomac Horse fever (*Neorickettsia risticii*), leptospirosis, and anthrax (Table 4). Your veterinarian can determine if these are needed for your horse.

Table 4. Additional Vaccines for Special Circumstances*

Vaccine	Frequency
Potomac Horse Fever	Annually
Leptospirosis	Annually
Anthrax	Annually

*Your veterinarian can determine if these vaccines are needed for your horse.

All vaccines have the potential to cause adverse reactions which could harm the horse. These negative effects can be minimized by selecting only the necessary vaccines, and scheduling their use for optimum protection. The duration of immunity and likelihood of reactions vary between products and horses, so vaccination schedules should be individualized. Vaccines should be properly stored until used. Good hygiene is important in both mixing and administering the vaccine. Lot numbers and expiration dates should be recorded and included in any reports of unexpected reactions, even if the vaccine was administered by a non-veterinarian.

Deworming programs are another important arm of health care programs for horses and foals. In some studies, 80% of colic cases are associated with parasites. Traditionally, deworming programs for adult horses have focused primarily on strongyles (bloodworms), with one post-frost deworming targeted against bots. More recently, attention has been focused on the potential role

of tapeworms. New data from Pfizer suggests that at least 60% of pleasure horses are seropositive for tapeworms, but only 5% of positive horses have positive fecals, as tapeworm segments are most often shed, not eggs. The rate of positive horses is higher in Minnesota than in any other state. This strongly suggests that dewormer products that target tapeworms should be included in a horse's schedule. Horse owners should learn what active ingredients are in deworming products and select ones that target each parasite group at least once a year. How frequently a horse needs to be dewormed depends on their husbandry, and that of the horses that they live with. Ideally, a balance is found between keeping parasites at bay, and not over deworming which can promote resistant strains of parasites that are no longer killed by the products available.

Most farms deworm at least quarterly and try to use a double dose of pyrantel (Strongid) or a product containing praziquantel at least once a year for tapeworm elimination. Some elect to

Table 5. Deworming Products and Parasites they Control

Name	Ascarids	Adult Strongyles	Larval Strongyles	Tapes	Bots
Benzimidazoles	x	sometimes	no	no	no
Pyrantel	x	x	no	yes at 2X	no
Ivermectin	x	x	x	no	x
Moxidectin	x	x	x	no	x
5X Fenbendazole two days in a row (or 2X x 5d)	x	x	x	no	no
Daily pyrantel	x	x	x	x	no
Ivermectin + praziquantel	x	x	x	x	x

use ivermectin at the other 3 dewormings, or may chose to rotate product groups. Killing larval strongyles is important because this is the life stage that is most responsible for colic in adult horses. This can be achieved with ivermectin, moxidectin or larvacidal doses of fenbendazole (Panacur): double dose for 5 days or 5X dose for 2 days, called “Power Pack”. Veterinarians concur that deworming for bots should be targeted after the first hard frost, using ivermectin or moxidectin. Rarely, adverse reactions to moxidectin have lead to its disuse by some veterinarians. Farms with high stocking rates may want to deworm more often than quarterly or choose daily dewormers if horses are fed individually. Mares are often dewormed post foaling to minimize transmission of *Strongyloides* through the milk. Foals should start on a deworming program targeting ascarids prior to weaning, often at around 2 months of age.

Assessment of how well a deworming program is working is important. Yearly or targeted fecal flotation is useful to monitor parasite loads and anthelmintic (dewormer) efficacy. Counting how many parasite eggs per gram of manure helps determine if a horse is a heavy egg shedder or if parasites have become resistant. An effective strategy developed for cattle is finding support amongst equine veterinarians, wherein only the horses with high egg counts are dewormed.

Even if a farm follows a good anthelmintic schedule, pasture contamination must also be addressed. Horse caretakers need to pick up manure or at least drag pastures to break up fecal balls to allow destruction of eggs and parasite larvae by dessication, exposure to sunlight, or freezing. Frequent mowing is also useful in diminishing parasite load as it leads to better sunlight penetration. If the horse is housed inside, avoid feeding hay on soiled ground, especially in a box stall setting.

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