



Developing a Vaccination and Deworming Program for the Adult Horse¹

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Vaccination

Routine vaccination is a critical component of developing a health maintenance program for horses. It is important to emphasize that there is no standard vaccination program that is suitable for every horse, and that individual programs should be developed with your veterinarian. Vaccinations help to prime the immune system to respond quickly when a horse is exposed to an infectious agent. Although vaccinations cannot guarantee disease prevention in all circumstances, they help minimize the risk of infection and aid in the prevention of certain diseases.

Vaccination is not a substitute for other good management practices, and should be used in conjunction with proper nutrition, deworming, pasture management and minimizing stress and overcrowding for optimal results in each horse and herd. Ideally, all horses in a group should receive vaccinations and be on the same schedule when possible.

The vaccination program appropriate for an individual horse or herd needs to take into account things such as age, sex, geographic location, use of

the horse, pregnancy status and risk for developing the disease. Currently, there are vaccines available for tetanus, encephalomyelitis, West Nile virus, rabies, rhinopneumonitis (equine herpes virus), influenza, strangles, Potomac horse fever, botulism, equine viral arteritis, anthrax, and rotavirus. The vaccines are administered by an intramuscular or intranasal route depending on the disease. Influenza and strangles have both intramuscular and intranasal vaccines available. Adverse reactions to vaccination are not common but are a potential risk of vaccination. Signs of an adverse reaction may include muscle soreness, swelling, fever, anorexia, and lethargy. If the signs are severe or are not self-limiting, your veterinarian should be informed and may want to initiate additional therapy.

When considering a vaccination program for your horse, it is important to remember that each horse's immune system will respond a little differently to vaccination. Not every horse will be protected to the same degree or for the same amount of time following vaccination. A primary series of the vaccines with booster doses will be required for an appropriate immune response before exposure to

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1. This document is VM170, one of a series of the Veterinary Medicine-Large Animal Clinical Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date May, 2008. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.
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the disease. It will take 1-2 weeks after a completed vaccine series for your horse to be protected against the disease. After the initial vaccine series, most horses will require annual or semi-annual booster vaccinations.

An overview of basic vaccination guidelines and the diseases follows. This is only a guideline, and a specific plan for your horse should be developed in conjunction with your veterinarian. Generally, vaccination is recommended for all horses for tetanus, encephalomyelitis, rabies, and West Nile virus. Rabies is an uncommon occurrence, but is fatal in all cases; therefore, vaccination is advised. Vaccination for influenza and equine herpes virus (EHV) is recommended in most cases, especially in performance horses and horses exposed to a transient or young equine population. Broodmares and weanlings have specific vaccination recommendations tailored for their needs, and will not be covered in detail here. The information presented herein is a program targeted for the adult pleasure or performance horse. Tetanus is caused by *Clostridium tetani*, an anaerobic, spore-forming bacterium. The bacteria are present in the intestine and manure of horses, as well as in the soil. *Clostridium tetani* produces spores that can survive for years in the environment. The spores can gain access to the horse through wounds or lacerations, or the umbilicus in foals. The clinical signs of tetanus are a result of toxin production, and include muscle stiffness and rigidity, third eyelid prolapse, stiff legs and "sawhorse" stance, nostril flare, and lockjaw. Horses with severe disease are unable to eat, and may be down and unable to get up; many progress to death or require euthanasia. All horses should be revaccinated annually for tetanus, and boosted immediately if they sustain a wound or undergo surgery more than 6 months after their previous vaccine. Tetanus antitoxin can be administered to horses that sustain a wound (increasing their risk of disease) and that have not previously been vaccinated with tetanus toxoid. Tetanus antitoxin rarely can cause fatal liver disease, and should be discussed with your veterinarian prior to administration.

The equine encephalomyelitis viruses (eastern equine encephalomyelitis (EEE), western equine encephalomyelitis (WEE), and Venezuela equine

encephalomyelitis (VEE)) are transmitted by mosquitoes to horses and humans from wild birds or rodents. Horses and humans are considered dead-end hosts for the disease, and cannot pass it to others. Infection with these viruses can cause fever and neurological symptoms such as depression, difficulty walking/staggering gait, changes in behavior/mentation (profound depression, abnormal mental responses), and seizures. VEE is a reportable foreign animal disease, and has not been seen in the U.S. for many years. The death rate is 70-90% for horses with EEE or VEE, and about 50% for horses with WEE. All horses should be vaccinated for EEE/WEE in the spring, prior to mosquito season, and potentially again in the fall in warm climates such as Florida (every 6 months).

West Nile virus is another virus transmitted by mosquitoes that can cause neurological symptoms such as muscle tremors, loss of coordination, hypersensitivity to being touched, and recumbency (a horse with recumbency cannot stand up). The death rate for infected horses is about 33%. Three vaccines are available for use, and horses should be vaccinated annually.

Fortunately, rabies is an uncommon disease in the horse. However, in any areas where rabies is endemic in the wildlife population, horses can be exposed through a bite from an infected animal. Rabies results in progressive neurological disease and is fatal in all cases. It can be transmitted from infected horses to humans. Vaccination is recommended followed by a yearly booster.

Equine influenza is one of the most common infectious respiratory diseases in the horse. The virus is highly contagious and can be transmitted through the air from horse to horse as a result of coughing. The most common signs of infection are fever, cough, nasal discharge, and reduced appetite. Young horses (<5 years) and horses exposed to large numbers of other horses through showing or transport seem to be most susceptible to infection. Most horses recover from infection in about 10-14 days, and treatment consists of supportive care. Vaccination is available in intramuscular (killed virus, and canary pox vectored vaccine) and intranasal (modified live virus) formulations. Discuss the best option for your

horse with your veterinarian. Vaccination is recommended every six months, and is done more frequently (every 3-4 months) in some horse populations.

Equine herpesvirus type 1 (EHV-1) and equine herpesvirus type 4 (EHV-4) can both cause respiratory infections (rhinopneumonitis) in horses, generally affecting the upper respiratory tract and causing fever, nasal discharge, and sometimes cough. However, EHV-1 can also result in neurological disease, abortion, and foal death. EHV-1 and EHV-4 are transmitted through the air or by direct contact with secretions from the nose, on equipment, or in drinking water. It is likely that initial infection with EHV-1 and EHV-4 first occurs in foals, but clinically apparent infections are seen as they get older and are exposed to new horses. Vaccination is recommended for prevention of abortion in pregnant mares (with a killed vaccine product licensed for prevention of abortion) and for reduction in signs and spread of respiratory disease in foals, weanlings, yearlings, young performance, and show horses that have a higher risk of exposure. Vaccination does not prevent the neurological form of EHV-1. Adult horses determined to be at risk for infection are usually vaccinated every 6 months.

Additionally, vaccines for strangles (*Streptococcus equi* infection) and Potomac horse fever (PHF) are available and their use should be discussed with your veterinarian. Potomac horse fever is not typically seen in Florida, but vaccination may be considered in horses that are traveling to the northeast and mid-Atlantic regions. The vaccine for PHF is not completely protective, and additional study on this vaccination and disease is warranted. Vaccinations for botulism, rotavirus, and equine viral arteritis are used more commonly in breeding populations. The American Association of Equine Practitioners has recently updated their guidelines for vaccination of the horse, and is an excellent resource for owners at www.aaep.org. That website has an excellent chart available for download on vaccination of foals and adults.

Parasite Control

Establishing a deworming program for equine parasites has become a somewhat controversial topic of discussion. Due to the emergence of resistant parasites (worms that are not killed by traditional dewormers), some of the emphasis is shifting to prevention and control, rather than just routine rotational treatment with anthelmintics. The American Association of Equine Practitioners (AAEP) recommends establishing a program with your veterinarian that works best for your horse and/or herd, in conjunction with these suggestions for environmental management:

1. Clean and dispose of manure in the pasture at least twice weekly.
2. Mow and harrow pastures regularly to break up manure and expose parasite eggs to the sun.
3. If possible, rotate pastures by allowing other livestock to graze them.
4. Group horses in a pasture by age to reduce exposure to certain parasites, and maximize the deworming program geared to that group.
5. Prevent overgrazing and reduce fecal contamination by keeping the number of horses per acre to a minimum.
6. Feed horses in a feeder for hay and grain rather than on the ground.
7. Remove bot eggs from the hair routinely to prevent ingestion.

Individual horses can be monitored for parasites with a fecal examination and egg count. In Florida, the peak worm season is fall, winter, and spring. Treatment should be focused around these times. The effectiveness of different dewormers can be measured using a fecal egg count reduction test, which involves performing a fecal egg count before and after deworming your horse. Although it is critical to target the large and small strongyles in adults, as well as roundworms in foals, rotation of dewormers should not be done as often as every 4-8 weeks, because this may promote resistant worms. Ideally, a dewormer can be used for several

treatments prior to rotation to a new drug. It is important to remember that treatment with ivermectin is done at 2-month intervals, while moxidectin is done at 3-month intervals. Equine tapeworms are difficult to identify in fecal examinations, and deworming for tapeworms is recommended biannually or annually with a product containing praziquantel (Zimectrin Gold®, Equimax®, Quest Plus®), or double dose pyrantel pamoate or tartrate. A blood test has been developed that identifies antibodies to tapeworms in horses. This test is only available at one lab in the United States at the University of Tennessee's College of Veterinary Medicine. However, there are likely horses with tapeworms that this test will not identify, and it is more practical to be sure horses are dewormed annually to biannually for tapeworms. Consult your veterinarian for a deworming strategy that works best for your horse and/or herd.

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