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Current Vaccine Protocols by Gregory Dowd, BVetMed, MRCVS

What vaccine protocol do you recommend for my horse? How come some vaccines need to be boosted, and others don't? Is there a vaccine that protects against the EHV-1 form that's been in the news lately?

No vaccine can guarantee your horse will be free of disease, but many have been proven to offer very significant protection. Deadly diseases, such as Rabies, which has no known cure, can be prevented with proper vaccination. Other less deadly, but potentially debilitating diseases such as Influenza, can have their clinical impact minimized with appropriate vaccination.

Different types of vaccines stimulate the immune system in different ways. The length of time a vaccine offers protection before it needs to be boosted depends on the type of vaccine and the degree to which it stimulates the immune system. Vaccines are often classified as either **live** or **dead**. "Attenuated live" or "modified live" vaccines contain a weakened but live form of the virus or bacteria. This type of vaccine confers excellent protection due to its ability to stimulate a strong immune response. The drawback of these live vaccines is that sometimes a horse, particularly ones with a weakened immune system, can actually suffer some of the symptoms associated with the disease. "Recombinant" vaccines utilize gene manipulation, altering the ability of the microorganism to cause disease, but leaving it intact enough to allow appropriate immune stimulation. "Killed" vaccines, as the name suggests, contain the organism in a killed state, which is desirable in that the host is exposed to a very low level of pathogenicity, but unfortunately it does not stimulate the immune system to the same extent that live vaccines do. As a result, this type of vaccine generally needs to be boosted more frequently. "Toxoid" vaccines, like Tetanus, contain toxins produced by the bacteria *Clostridium tetani* and *C. botulinum*. These toxins are what ultimately cause disease in the body. The toxoid vaccine contains an altered, non-pathogenic form of the toxin, thereby stimulating the immune system to build antibodies against the toxoid.

In New England, most pleasure horses are vaccinated in the spring for protection against Eastern Equine Encephalitis (EEE), Western Equine Encephalitis, Equine Influenza ("flu"), Tetanus (these 4 make up the "4-way" combo vaccine), Equine Herpes Virus (EHV, also called Rhinopneumonitis), West Nile Virus, and Rabies. Vaccines for Potomac Horse Fever and *Strep. equi* (Strangles) are also commonly used depending on exposure.

As mentioned, there is variation in the length of time a vaccine offers protection. Which vaccines get boosters is determined by the duration of protection of each individual vaccine and on the degree of exposure. Research has shown that Rabies and Tetanus vaccines carry sufficient protection for a full year, whereas the upper respiratory viruses like Influenza and EHV (often grouped as "Flu/Rhino"), need to be boosted at least once during the year to maintain sufficient protection. Potomac Horse Fever is boosted in endemic areas, or in those horses traveling South where the disease is more prevalent. EEE, WEE, and WNV are spread by mosquitos, and are boosted in parts of New England with particularly heavy mosquito populations from spring through fall. (It is important to remember that even if your horse never leaves the property, or comes in contact with any other horse, it can still contract the disease. Wherever there are mosquitos, there is potential for disease transmission!) Strangles vaccines are more common in bigger barns where horses are constantly coming and going, and are boosted depending on degree of exposure.

Most vaccines are given intramuscularly, but some are available intranasally as well. Intranasal vaccines for Flu and Strangles are modified live vaccines, producing a strong local immunity in the mucosa of the upper respiratory tract. These modified live intranasal vaccines tend to provide a longer window of protection than the killed type. Typical of live vaccines, these stimulate a very good immune response, but it is not uncommon to see mild clinical signs after administering one (particularly Strangles vaccines).

Efficacy of the EHV vaccines has been a hot topic as of late. Recent EHV-1 outbreaks have heightened our awareness as to the vulnerability of our horse's health, and also reminds us that we must always respect the inherent ability of certain diseases to redefine themselves, (or mutate), much like the flu does in humans.

EHV is a very complex and contagious virus that can cause upper respiratory disease, abortion, and neurologic disease. Several different vaccinations have been effective at limiting the outbreaks of respiratory disease and abortions, but none have shown convincing evidence that they can provide protection against the mutated strain that causes neurologic symptoms. There is a commercially available modified live EHV vaccine that has the potential to elicit greater immune stimulation than a killed EHV vaccine, however it cannot specifically claim to target the neurologic form.

Many vaccines today are very effective at limiting disease outbreaks and severity, and should be an important part of every horse owner's preventative medicine plan for their horse. Several factors are taken into account when developing an appropriate vaccination protocol for your horse, including identification of specific exposures (i.e. shows, clinics, breeding barns, or just a pasture pet!) and region-specific factors (i.e. history of specific diseases in your area, mosquito challenge, etc...) Work with your veterinarian to help customize and implement a plan that's best for your horse.

*(For quick reference, The American Association of Equine Practitioners has a very useful, easy to read chart containing vaccine recommendations for all scenarios, www.aaep.org/vaccination_guidelines.htm)

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