



## **Mountain Pointe's Disease and Vaccine Series**

By Amber Rieser

**Equine Herpes Virus (EHV)/Rhinopneumonitis** – Rhinopneumonitis, often referred to as 'rhino', is a disease caused by EHV. There are three distinct forms of the herpes virus based upon the anatomical organ it affects; respiratory, neurologic, and reproductive. These varying types of herpes virus are capable of causing a wide range of illnesses. Symptoms that are most commonly seen in horses targets the respiratory system, creating clinical signs consisting of fever, nasal discharge, coughing and enlarged glands (lymph nodes). The neurologic form of EHV in horses is referred to as Equine Herpes Myeloencephalopathy and causes damage to blood vessels in the brain and spinal cord as well as to the central nervous system. Clinical signs of this form are weakness in the hind legs and decreased fitness performance. There are a few diagnostic methods in which to identify an Equine Herpes Virus infection; nasal swabs and blood collection to isolate the virus and detect the virus by PCR assay (polymerase chain reaction).

The reproductive form of the disease causes abortions in pregnant mares. It is recommended that these mares are vaccinated at 3, 5, 7 and 9 months of gestation. Certain vaccines are approved for use in pregnant mares. There is no specific treatment for EHV other than supportive care.

Vaccinating with Rhinopneumonitis (Herpes Virus), which is a killed vaccine, is done in both the fall and spring and is usually paired with influenza. The EHV vaccination is generally administered IM (intramuscular) but can also be vaccinated IN (intranasally). This vaccine exists to control the respiratory and reproductive form of EHV-1. The vaccine however, does not protect against the neurological form of the disease. Vaccination recommendations often vary depending on a horse's age and lifestyle. Mountain Pointe can assist you in the best vaccine schedule for your individual horse.

**Equine Influenza** – Equine Influenza is considered one of the most common infectious diseases of the horse's respiratory tract. This disease is highly contagious and will spread rapidly among susceptible horses. Transmission of equine influenza occurs through inhalation of respiratory secretions. The incubation of this disease is approximately 1-3 days. Clinical signs consist of high fever, nasal discharge, submandibular lymphadenopathy (swollen lymph nodes), and dry, harsh coughing. Mildly affected horses may only experience signs for two to three weeks, whereas severely affected horses may experience signs for up to six months. Fortunately, equine influenza is rarely fatal. There are numerous vaccines available for prevention of equine influenza. This disease is generally vaccinated for twice yearly, and can be administered more regularly for horses travelling more consistently. Equine Influenza is also often combined with the vaccination for "rhino". The equine influenza vaccination is generally administered IM, but can also be administered IN (intranasal). Mountain Pointe can assist you in the best vaccine schedule for your horse.

**Encephalitis/Tetanus** – There are numerous strains of encephalitis, but the most commonly seen ones in the United States are Eastern and Western encephalitis. There is also a Venezuelan form



of encephalitis that is found in Central American and South American countries. Encephalitis is a mosquito-borne disease that is transmitted from horse to horse. Symptoms of encephalitis include unsteadiness, erratic behavior, and a marked loss of coordination which is due to swelling in the brain. The vaccination for encephalitis is often combined with tetanus forming the commonly used “three-way” vaccine; Eastern and Western encephalitis and tetanus (EWT).

Tetanus is caused by bacteria named *clostridium tetani* found throughout a horse’s everyday environment. Horses are constantly acquiring scrapes and cuts allowing entry of the tetanus bacteria into the body. Therefore, annual tetanus vaccinations are crucial. The tetanus toxin attacks the horse’s nerves controlling the muscles of the body. This in turn, causes progressively worsening muscular stiffness and spasms. Other symptoms of tetanus include a rigid posture, tightening of muscles, trouble eating, holding their tail straight out, the horse has an anxious facial expression, as well as the potential protrusion of the third eyelid.

Encephalitis and tetanus can be vaccinated for semi-annually, however in regions with shorter mosquito seasons, annual vaccinations will suffice. These vaccines are administered IM. Contact Mountain Pointe for a vaccination schedule regarding EWT.

**Rabies** – Rabies is a life-threatening, neurologic disease that can affect any warmblooded animal including humans. Rabies is zoonotic, which means it can be passed from animal to human, increasing the threat tremendously. Rabies is caused by a lyssavirus, which targets the nervous system and salivary glands. Horses can contract the rabies virus if they are exposed to an infected animal and are bitten. There is a wide range of clinical signs for rabies, which makes it hard to diagnose. The most common signs of rabies are profound disturbances of the central nervous system. Horses infected will also appear dull and depressed and in more serious cases, even become aggressive or fearful. Clinical signs may not appear for 2-6 weeks after contracting the disease, and in some cases up to 12 weeks. The only way to form a definite diagnosis for rabies is post-mortem by submitting the horse’s head to a local public health laboratory to identify the rabies virus. This is done using a test called the fluorescence antibody where nuclear inclusion bodies are found in a specific section of the brain. There is no treatment for rabies; therefore, yearly vaccination of your horse is extremely important. Rabies is highly fatal in most species. The human health risks of the disease dictate a routine vaccination schedule for all domestic species. The rabies vaccination is administered IM, and must be administered by a veterinarian. Contact Mountain Pointe for a vaccination schedule for rabies.

**Potomac Horse Fever** – Potomac Horse Fever (PHF) is an acute enterocolitis syndrome (inflammation of the intestines) which produces mild colic, fever, and diarrhea in horses of all ages, as well as abortion in pregnant mares. There is no conclusive evidence regarding how PHF is transmitted. The disease is not generally known to be spread from horse to horse; therefore it is not considered contagious. The possibility of infection to an unborn foal through the mare’s blood supply is the only exception to the hypothesis of PHF being an infectious, not contagious disease. It has been found that PHF is spread through biting insects (mosquitoes, black flies) or arthropods (ticks). The infection of enterocytes (intestinal absorptive cells) of the small and large intestines results in a colitis, or inflammation of the colon. This colitis is one of the principle signs of PHF, along with fever and lethargy. If diagnosed early, PHF can be successfully treated with antibiotics such as tetracycline. A response to treatment should be seen in 12-24 hours and will be associated with an improvement in the horse’s demeanor, decrease in fever, and appetite. The PHF is vaccinated for yearly, and depending on location, sometimes



semi-annually. PHV vaccine is administered IM. Contact Mountain Pointe for specific suggestions based on your location.

**Botulism** – Botulism, also referred to as “lock-jaw”, is caused by an anaerobic bacterium, *clostridial botulinum*, which forms spores that are most commonly distributed in the soil, and standing water throughout the Northeast and Mid-Atlantic regions. Both foals and adults infected with the botulinum toxin, experience neurologic symptoms due to the toxin’s interference with the nervous system’s ability to signal muscular contraction by binding to the target tissue. Early in the stages of infection, the muscles that are most affected tend to be the ones in which the horse uses most often. These include the eyelids, tail, and tongue. Due to this, horses show an early sign of dysphagia (inability to swallow) or difficulty eating. This occurs because the horse’s tongue becomes paralyzed and the muscles controlling the jaw permanently contract and “lock up”. Consequently, the horse cannot move the hay and grain to the back of their mouth. Affected horses will also show a shuffling gate, often accompanied by muscle tremors (fasciculations), or an increase in lying down. In foals, signs may vary slightly and can include drooling, dribbling milk from their mouth, as well as increased time lying down. When they do try to stand, they will display muscle tremors and often fall back down to the ground, hence the term Shaker Foal Syndrome, which has been used to describe Botulism. The onset of clinical signs is often quick and the diagnosis can be made by the demonstration of clinical signs and ruling out other disorders with similar signs. The most common clinical test to diagnose a potential botulism infection is the tongue stress test. This is an assessment of the horse’s tongue strength and the horse’s ability to retract their tongue into their mouth. A healthy horse will resist when their tongue is withdrawn from their mouth, whereas, a horse affected with botulism may not be able to resist at all. While blood tests are available in diagnosing a horse with botulism, they are very time consuming and the results are often not available before a horse has either recovered or died from the disease. The only known treatment for a horse diagnosed with botulism is the administration of the botulinum antitoxin. Once the antitoxin is administered, it will neutralize the free floating toxin in the horse’s body, but will not stop the toxins which have already bound to the target tissue causing the clinical signs. Vaccination of a horse in a high-risk area is strongly recommended by your veterinarian yearly, as well as horses with exposure to the round bales and other silage where bacteria can be found in high concentrations. Botulism vaccine is administered IM. Contact Mountain Pointe to discuss a vaccination schedule for Botulism.

**West Nile Virus** – West Nile is a mosquito-borne virus that causes encephalitis (inflammation of the brain), and/or meningitis (inflammation of the lining of the brain and spinal cord). WNV’s life cycle consists of a mosquito to bird to mosquito transmission cycle. Most horses bitten by carrier mosquitoes do not develop the disease. The incubation period of WNV once a horse is infected ranges from 3 to 14 days before the horse begins to show clinical signs. Clinical signs of West Nile Virus include muscle tremors, ataxia (inability to coordinate muscle movement), and other symptoms associated with neurologic diseases. Horses are most at risk of this disease in July and August, due to the climate in this practices area (Northeast US). Limiting the amount of standing water around your farm will help in limiting the amount of mosquitoes that harbor the virus. Another important prevention method is yearly vaccination of your horse against West



Nile Virus. WNV vaccine is administered IM. Unless considered a high risk area, your veterinarian will only vaccinate for WNV in the spring. Contact Mountain Pointe to discuss a vaccination schedule for WNV.

**Strangles** – Strangles is a highly contagious disease and is caused by the bacterium *Streptococcus equi*. Characteristics of this disease are severe inflammation of the mucosa of the head and throat, along with extensive swelling and often rupturing of the lymph nodes, which produce large amounts of thick, creamy pus underneath the jaw bones. Diagnosis of the disease is fairly simple and can be confirmed by culturing the pus from the horse’s nose, an abscessed lymph node, or from the throat of a clinically affected horse. An IM and IN vaccination against strangles is available, however, it is not a guarantee your horse will not still contract the disease. Mountain Pointe offers the vaccine upon request.

**Rotavirus** – Rotavirus is an infectious cause of foal diarrhea. Diarrhea is a serious condition in foals because they can become dehydrated and develop electrolyte abnormalities. While rotavirus diarrhea morbidity (sickness) is at about 50%, the mortality (death) is low at less than 1% with immediate veterinary intervention. Pregnant mares will often receive a three dose series of intramuscular vaccinations at eight, nine, and ten month’s gestation. This vaccination with help decrease a foal’s chance of contracting the rotavirus. This vaccination is administered IM. Contact Mountain Pointe to discuss vaccinating your foal against Rotavirus.

### AAEP Vaccination Protocol

| Disease/vaccine                     | Foals/weanlings   | Yearlings   | Performance Horses  | Pleasure Horses   | Broodmares   | Comments  |
|-------------------------------------|---|---|---|---|--|---|
| <b>West Nile Virus</b>              | First dose: 3 to 4 months.<br><br>Second dose: 1 month later (plus 3 <sup>rd</sup> dose at 6 months in endemic areas).  | Annual booster, prior to expected risk. Vaccinate semi-annually or more frequently (every 4 months), depending on risk. | Annual booster, prior to expected risk. Vaccinate semi-annually or more frequently (every 4 months), depending on risk. | Annual booster, prior to expected risk. Vaccinate semi-annually or more frequently (every 4 months), depending on risk. | Annual,<br><br>4 to 6 weeks prepartum (see full text in guidelines). | Annual booster is after primary series. In endemic areas, booster as required or warranted due to local conditions conducive to disease risk. Vaccinate semi-annually or more frequently (every 4 months), depending on risk. |
| <b>Tetanus toxoid</b>               | <b>From nonvaccinated mare:</b> First dose: 3 to 4 months Second dose: 4 to 5 months<br><br><b>From vaccinated mare:</b> First dose: 6 months Second dose: 7 months Third dose: 8 to 9 months | Annual  | Annual  | Annual  | Annual, 4 to 6 weeks prepartum                                       | Booster at time of penetrating injury or surgery if last dose not administered within 6 months  |
| <b>Encephalomyelitis (EEE, WEE,</b> | <b>EEE: (in high-risk areas)</b> First dose: 3 to 4 months Second dose: 4 to 5 months Third   | Annual, spring<br><br>Annual, spring  | Annual, spring<br><br>Annual, spring  | Annual, spring<br><br>Annual,   | Annual, 4 to 6 weeks prepartum<br><br>Annual, 4 to 6                 | In endemic areas booster EEE and WEE every 6 months; VEE only needed when   |



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| <p><b>VEE)</b></p>                               | <p>dose: 5 to 6 months</p> <p><b>WEE, EEE (in low-risk areas) and VEE:</b><br/>From nonvaccinated mare: First dose: 3 to 4 months Second dose: 4 to 5 months Third dose: 5 to 6 months<br/>From vaccinated mare: First dose: 6 months Second dose: 7 months Third dose: 8 months</p>   |  |  | <p>spring</p>   | <p>weeks prepartum</p>   | <p>threat of exposure; VEE may only be available as a combination vaccine with EEE and WEE.</p>  |
| <p><b>Influenza</b></p>                          | <p><b>Inactivated injectable:</b> From nonvaccinated mare: First dose: 6 months Second dose: 7 months Third dose: 8 months Then at 3-month intervals<br/>From vaccinated mare: First dose: 9 months Second dose: 10 months Third dose: 11 to 12 months Then at 3-month intervals</p> <p><b>Intranasal modified live virus:</b> First dose: 11 months; has been safely administered to foals less than 11 months - see comments</p> | <p>Every 3 to 4 months</p> <hr/> <p>Every 6 months</p> | <p>Every 3 to 4 months</p> <hr/> <p>Every 6 months</p> | <p>Annual with added boosters prior to likely exposure,</p> <hr/> <p>Every 6 months</p> | <p>At least semiannual, with 1 booster 4 to 6 weeks prepartum,</p> <hr/> <p>Annual before breeding (see comments)</p>  | <p>A series of at least 3 doses is recommended for primary immunization of foals. Not recommended for pregnant mares until data available. Use inactivated vaccine for prepartum booster. If first dose is administered to foals less than 11 months of age, administer 2nd dose at or after 11 months of age.</p> |
| <p><b>Rhinopneumonitis (EHV-1 and EHV-4)</b></p> | <p>First dose: 4 to 6 months<br/>Second dose: 5 to 7 months<br/>Third dose: 6 to 8 months<br/>Then at 3-month intervals</p>  | <p>Booster every 3 to 4 months up to annually</p>      | <p>Booster every 3 to 4 months up to annually</p>      | <p>Optional: semiannual if elected</p>  | <p>Fifth, seventh, ninth month of gestation (inactivated EHV-1 vaccine); optional dose at third month of gestation</p> | <p>Vaccination of mares before breeding and 4 to 6 weeks prepartum is suggested. Breeding stallions should be vaccinated before the breeding season and semiannually</p>   |
| <p><b>Strangles</b></p>                          | <p><b>Injectable:</b> First dose: 4 to 6 months Second dose: 5 to 7 months Third dose: 7 to 8 months (depending on the product used) Fourth dose: 12 months</p> <p><b>Intranasal:</b> First dose: 6 to 9 months Second dose: 3 weeks later</p>   | <p>Semi-annual</p>                                     | <p>Optional: semi-annual if risk is high</p>           | <p>Optional: semi-annual if risk is high</p>  | <p>Semi-annual with 1 dose of inactivated M-protein vaccine 4 to 6 weeks prepartum</p>                                 | <p>Vaccines containing M-protein extract may be less reactive than whole-cell vaccines. Use when endemic conditions exist or risk is high. Foals as young as 6 weeks-of-age may safely receive the intranasal</p>  |



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|                               |  |  |  |  |  | product. A third dose should be administered 2 to 4 weeks prior to weaning.  |
| <b>Rabies</b>                 | Foals born to non-vaccinated mares: First dose: 3 to 4 months Second dose: 12 months Foals born to vaccinated mares: First dose: 6 months Second dose 7 months Third dose: 12 months | Annual   | Annual   | Annual   | Annual, before breeding  | Vaccination recommended in endemic areas. Do not use modified-live-virus vaccines in horses.   |
| <b>Potomac Horse Fever</b>    | First dose: 5 to 6 months Second dose: 6 to 7 months   | Semi-annual  | Semi-annual  | Semi-annual  | Semi-annual with 1 dose 4 to 6 weeks prepartum   | Booster during May to June in endemic areas.   |
| <b>Equine Viral Arteritis</b> | Intact colts intended to be breeding stallions: One dose at 6 to 12 months-of-age  | Annual for colts intended to be breeding stallions | Annual for colts intended to be breeding stallions | Annual for colts intended to be breeding stallions | Annual for seronegative, open mares before breeding to carrier stallions; isolate mares for 21 days after breeding to carrier stallion | Annual for breeding stallions and teasers, 28 days before start of breeding season; virus may be shed in semen for up to 21 days. Vaccinated mares do not develop clinical signs even though they become transiently infected and may shed virus for a short time. |

\*\*Note: In December 2009, the AAEP has identified tetanus, Eastern and Western equine encephalomyelitis (EEE, WEE), West Nile virus (WNV), and rabies as core vaccinations for every horse.