



## Vaccination Equi-Planner - Vaccination Guidelines

**Vaccines are an important part of your horse's preventive health program.**

The Vaccination Equi-Planner is an educational resource of Equine Guelph and the University of Guelph, in partnership with Intervet/Schering-Plough. This tool will give you a customized immunization schedule for your horse as well as other critical vaccination guidelines. **Please note:** that this information provides guidelines only and should never replace information from your veterinarian.

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### General Horses (Risk Factor: Geographic Location)

Horses maintained on rural properties with little or no contact with other horses have minimal risk of coming in contact with these agents. However, if they do, they often exhibit severe signs of disease since their immune systems are relatively naive (little or no immunity). It is recommended that horses exposed to minimal risk are vaccinated with the basic or core vaccines.

It is also important to recognize that different disease agents have different geographic distributions. This can be related to;

- the ecology of the vector, e.g., *Culiseta melanura*, the mosquito vector of EEE, seems to be confined to some swamps and is probably related to the migration of birds from infected areas in the Southern USA to the same general summer ranges.
- Potomac horse fever is generally reported from Eastern Ontario. This may be related to the complex aquatic ecosystem associated with the insect vectors (caddisflies, damselflies, dragonflies, and stoneflies). Horse owners report very large hatches of these insects at certain times of the year in these areas.

Approaches used to control the highly contagious respiratory diseases will depend on the circumstances of the individual horse or horse farm, but all people involved with horses need to maintain constant vigilance. These approaches involve a combination of knowledge of the history of individual animals and their source of origin, general hygiene, quarantine, and immunization, with appropriate action if an outbreak occurs. For further reading, refer to the OMAFRA Factsheet Biosecurity for Horse Farms, Order No. 00-091, available on the horse section of the Ontario Ministry of Agriculture and Food's web site [www.omafra.gov.on.ca/english/livestock](http://www.omafra.gov.on.ca/english/livestock).



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### **Broodmares (Risk Factor: Pregnancy)**

Pregnant mares are definitely at the greatest risk of being affected by an infectious agent such as bacteria and viruses. The agent can either kill the fetus in utero directly or cause hyperthermia, which can also result in abortion. In either case, the financial loss is tremendous.

Some infectious agents, such as herpesvirus can lay dormant (latent) in horses until they are stressed by circumstances such as shipping. The virus becomes active again and results in virus shedding. Pregnant mares become infected and abortion storms can ensue.

It is for this reason, management practices, such as separation of all mares from the “in and out traffic” to the farm, are the number one tool in preventing abortions. The use of vaccines is a small part of the overall management strategy.

### **Foals (Risk Factor: Age)**

Passive immunity (protective immunoglobulins absorbed from the mare’s colostrum) provides virtually all of the foal’s antibody protection for the first 9-12 weeks of age. Foals begin to produce protective immunoglobulins (active immunity) immediately after birth when they are first exposed to antigens. However, a protective concentration of these immunoglobulins (active immunity) may not be reached until the foal is two months of age.

To maximize the foal’s protection to the common pathogens, mares should be vaccinated 4-6 weeks prior to foaling. Vaccination of the foal usually should not start until six months of age. Foal vaccination is delayed until six months of age when maternal antibody concentrations are waning and less likely to interfere with the foal’s ability to produce active immunity to vaccines. For tetanus (tetanus toxoid), Eastern equine encephalitis (EEE) and West Nile virus (WNV);

- Foals from non-vaccinated mares should receive their first vaccination between 3 and 4 months of age; the second between 4 and 5 months of age; a third between 5 and 6 months of age.
- Foals from vaccinated mares should receive their first vaccination at 6 months of age, followed by boosters at 4 to 6-week intervals, e.g., booster vaccinations at 7 and 8 to 9 months of age.
- Foals vaccinated with the live West Nile virus Flavivirus vaccine only require one vaccination at 5-6 months of age followed by a booster at 10-12 months of age prior to the next mosquito season



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### Traveling Horses (Risk Factor: In and Out Traffic)

Barns and stables where there is a lot of “in and out traffic” significantly increase the risk of exposure to the viral and bacterial agents. It is recommended that mobile horses exposed to maximum risk – such as racehorses and show horses – are vaccinated for influenza, rhinopneumonitis (ie. Equine herpesvirus) and strangles.

### Basic or Core Vaccines

The basic or core vaccines are those vaccines that provide protection against the diseases that have significant health risk to the horse and/or to humans through contact. These are the “no-brainers.” All horses should be vaccinated with these vaccines. They include rabies, tetanus and West Nile virus. It could be easily argued that Eastern equine encephalitis should be added to this list, based on the occurrence of eleven cases of this disease in the mosquito season of 2003.

### Rabies

Rabies is a well-known cause of fatal disease in many mammals. The virus is transmitted through bite wounds by affected animals such as foxes, skunks, racoons and bats, though other mammals may transmit the virus.

In 2001, five cases of rabies in horses were diagnosed in Ontario. In 2002, one case of rabies in a horse occurred. Rabies is a rapidly progressive disease that is preventable by vaccination. Rabies vaccines are licensed for use annually in horses and must be administered by a licensed veterinarian.

### Tetanus

Tetanus or lockjaw is an often fatal disease caused by the anaerobic bacteria (grows in low oxygen conditions), *Clostridium tetani*. The spores of *Cl. tetani* are commonly present in the soil and can contaminate puncture wounds, crushing wounds, open lacerations, surgical incisions and the umbilici of foals.

Upon gaining entrance to the body, *Cl. tetani* produces a powerful neurotoxin, which blocks neurotransmission, resulting in unopposed muscle contraction and spasm (tetany). Horses of all ages can be affected. Horses are the most susceptible of all of the animal species.



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All adult horses should initially be vaccinated for tetanus twice, three to six weeks apart, using tetanus toxoid and boosted annually or as recommended by their veterinarian. Tetanus antitoxin (technically not a vaccine) is administered to non-immunized horses (or ones where their immune status is unknown) that sustain a wound that has become contaminated. It is prepared from the blood of healthy, hyperimmunized horses and provides immediate passive immunity lasting 7-14 days.

### **West Nile virus (WNV)**

West Nile virus (WNV) is spread by mosquitoes and causes encephalitis in humans and horses. It is present in mosquito pools and birds in every county of the province of Ontario. In 2002, 108 confirmed or probable cases of WNV in horses were reported. In 2003, only ten equine cases were diagnosed. Since WNV is a fatal disease in 30% of horses that show neurological signs and up to 40% of survivors can have residual neurological deficits for a period of months to permanent disability, it is important to protect horses against this virus. Depending on which vaccine is utilized, one or two vaccinations are required for primary immunization with a yearly booster recommended. In high exposure areas, depending on which vaccine is chosen, some veterinarians recommend booster vaccinations every 4-6 months during the mosquito season. One modified live vaccines only requires a yearly booster to provide 12 months of protection. Three pharmaceutical companies now manufacture a WNV vaccine.

### **Eastern equine encephalitis (EEE)**

Eastern equine encephalitis (EEE) virus is spread by a mosquito that normally feeds on birds. People, horses, pigs and birds may become infected during periods of high mosquito populations.

The EEE virus has a range from southeastern Canada to the southeastern United States as well as the Caribbean and South and Central America. Eighty to ninety percent of infected horses develop acute and lethal neurologic disease, with survivors often having persistent neurologic signs.

From 1938 to 2002, there were five outbreaks of EEE diagnosed in Ontario. During 2003, eleven equine cases were diagnosed in five locations. EEE occurs sporadically from year to year but is thought to reoccur in the same general areas associated with its mosquito vector.

There are vaccines available to prevent EEE. Horses in eastern Ontario and the Muskoka-Bracebridge area would be at a higher risk based on the previous history of this disease in Ontario. (Check on the incidence rate in your province).



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### Optional Vaccines

Diseases for which the vaccines are optional are those that;

- have variable impacts on the health of the animal.
- often have low risk of causing life-threatening disease.
- the vaccine(s) is less than perfect in its ability to prevent disease (due to the biology of the agent).
- occur primarily in a specific regional or geographic area.
- a management factor significantly increases the risk of developing the disease, e.g., botulism and feeding silage.

### Equine influenza

Equine influenza is an acute, contagious, respiratory disease caused by two distinct subtypes (subtype 1: H7N7 and subtype 2: H3N8) of influenza A viruses. Only influenza subtype AE-2 has been isolated over the last 20 years worldwide. Vaccination with an AE-2 vaccine (with the most up-to-date North American strains) is recommended for use;

- especially in horses 1 to 5 years of age, since they seem to be more susceptible to the disease and
- in situations where there are frequent contacts with large numbers of horses, e.g., new arrivals to the barn/track, attendance at shows. While vaccination does not necessarily prevent influenza, the disease in vaccinated horses is less severe and the signs last a shorter period than when horses are unvaccinated. A modified live equine AE-2 influenza vaccine for is now commercially available.

### Equine herpesvirus

Equine herpesvirus is also known as equine viral rhinopneumonitis. There are numerous strains of Equine Herpesvirus (EHV) that are passed between horses by body fluids, including nasal secretions. Horses commonly have antibody titres to EHV subtypes 1, 2 and 4. This indicates that they have been exposed to the viruses at some time in their life. Subtypes 1 and 4 can cause central-nervous-system disease, respiratory disease and abortion. Neurologic disease may occur after a herpesvirus respiratory disease infection.



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Only killed-virus vaccines are available in Canada. These vaccines are labeled for the prevention of respiratory disease and abortion. The manufacturers do not make claims about the prevention of neurologic disease. Performance horses, which are continually in contact with new horses and stable mates, should be protected using an EHV-1 or EHV-4 vaccine. A vaccine for intranasal now commercially available.

Pregnant mares should be vaccinated with a killed EHV-1 vaccine prior to breeding if they have never received an EHV vaccine, and in the 5<sup>th</sup>, 7<sup>th</sup>, and 9<sup>th</sup> months of pregnancy. Herdmates in contact with pregnant mares should follow the same vaccination protocol. Mares may still abort despite being vaccinated as per the manufacturer's recommendations. Some horses will be chronic shedders of the virus and spread the virus to other herd mates when stressed.

### **Strangles**

Strangles is a highly contagious and serious infection of horses and other equids caused by the bacterium, *Streptococcus equi*. The disease is characterized by severe inflammation of the mucosa of the head and throat, with extensive swelling and, often, rupture of the lymph nodes, which produces large amounts of thick, creamy pus.

Strangles is most common in animals less than five years of age and especially in groups of weanling foals or yearlings.

There is currently only an intranasal attenuated live Strangles vaccine available in Canada. This vaccine has the potential to cause adverse reactions.

### **Potomac horse fever (PHF)**

Potomac horse fever (PHF) is caused by the bacteria *Neorickettsia risticii*. It is maintained in nature in a complex aquatic ecosystem. Transmission to horses can occur through accidental ingestion of insects, such as caddisflies, damselflies, dragonflies, and stoneflies, containing infected *E. risticii*. There are thought to be at least six strains of the agent. The vaccine is made from a single strain. Fully vaccinated horses have developed Potomac horse fever.

PHF seems to be most prevalent in two areas of the province (Brighton, Cannington). A primary two-shot immunization, followed by an annual booster, should be considered for horses in areas where PHF has previously been diagnosed. There is varied data in the field regarding the effectiveness of this vaccine, so please discuss this with your veterinarian.



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### Botulism

Botulism is a disease that occurs when toxins produced by the bacterium, *Clostridium botulinum*, enter the horse's body causing weakness, which may progress to paralysis. The botulism bacterium is a spore-forming anaerobic bacteria (grows in the absence of oxygen) which can occur in decaying plant material. The bacteria may also grow in wounds or in the intestinal tract, releasing toxins.

Horses are the most sensitive of the domesticated animals to botulism. Hay and especially hay silage can be contaminated with the bacteria during the raking and baling process. Hay silage can be a great feed when preserved properly but carries the danger of botulism.

A toxoid vaccine should be used three times initially, one month apart, followed by an annual booster if hay silage is going to be fed. The vaccine protects against type B botulism only. Foals can be especially vulnerable. Discuss the need for this vaccine on your farm with your veterinarian.

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### References

1. Guidelines for Vaccination of Horses. Guelph; Dr. Bob Wright (OMAFRA) and Dr. Dan Kenney (Ontario Veterinary College), 2004  
[http://www.omafra.gov.on.ca/english/livestock/horses/facts/info\\_vaccine.htm](http://www.omafra.gov.on.ca/english/livestock/horses/facts/info_vaccine.htm)
2. Guidelines for The Vaccination of Horses. Lexington; AAEP, 2008  
[http://www.aaep.org/vaccination\\_guidelines.htm](http://www.aaep.org/vaccination_guidelines.htm)

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### Additional Resources - (For links to these resources go to

[http://www.equineguelph.ca/education/equiplanner\\_resources.php](http://www.equineguelph.ca/education/equiplanner_resources.php))

- Information on Equine Infectious Diseases (Equidblog)
- Horse Health Check (pdf)
- Horse Health Check (flash)
- Horse Health Check (diagram)
- Horse Management and Biosecurity Check



## Vaccination Equi-Planner - Vaccination Guidelines

- Equine Bio-Security Calculator
- Equine Guelph Education Programs

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### **THESE GUIDELINES ARE A TOOL AND SHOULD NEVER REPLACE INFORMATION FROM YOUR VETERINARIAN.**

Vaccination guidelines are simply guidelines. They are neither mandatory nor legally binding. They are a starting point for horse owners and veterinarians to discuss the appropriate use of vaccines as part of a disease prevention program. There is no such thing as a standard protocol for all farms. There will be individual farm differences and risk factors, including: age, use, sex, exposure to outside horses and geography, which will impact on the decision making. Horse owners will also need to determine the amount of risk that they want to assume when deciding on whether or not to vaccinate. Vaccines and vaccination programs are only a small part of the disease prevention program. Managerial practices to minimize exposure and decrease stress will have major impacts on the health, productivity and performance of horses

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