

West Nile Virus is transmitted by mosquitos and causes swelling and inflammation in the brain and spinal cord...

Burwash Equine Services - West Nile Virus is transmitted by mosquitos and causes swelling and inflammation in the brain and spinal cord. It primarily cycles in wild birds, carried between birds by blood sucking mosquitos... < [more](#) >

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West Nile Virus (WNV), Eastern Equine Encephalitis (EEE) and Western Equine Encephalitis (WEE)

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All it takes is one bite!!

Don't put your horses at risk, protect them against mosquito-borne diseases

Horse owners need to remain vigilant about **West Nile Virus (WNV)**, but they also must not forget about **Eastern**

Equine Encephalitis (EEE)

and

Western Equine Encephalitis (WEE)

! These three viral diseases share much in common, in that they all are endemic neurologic diseases in which the virus is propagated in wild bird species and transmitted via mosquito vectors to the same terminal mammalian hosts, that being the horse and human. The symptoms created by these diseases are also similar, with all having significant mortality rates and often having permanent, residual neurologic deficits in those that survive. The viruses are different, however, each requiring their own vaccine to provide protection.

When I speak with horse owners about the threat posed by these three diseases, there are two distinct reactions. First, just the mention of West Nile Virus results in recognition and immediate concern. This is to be expected as horse owners are very aware of West Nile Virus because of its recent occurrence and the extensive publicity and public information that have surrounded it. However, bring up the names Eastern Equine Encephalitis and Western Equine Encephalitis and you will draw a blank look from most horse owners! This is to be expected as these diseases made their entrance into the equine world in Canada over eighty years ago and there was virtually no incidence for over twenty years, that is until the return of EEE in Eastern Canada in the early 90's at very low incidence, which escalated significantly in 2003, receded over the next five years, then escalated again in 2008 and 2009. (1) There still has been no recorded incidence of WEE in Western Canada but there has been a recent increase in the west central states where they consider it to be an evolving disease threat. This sporadic incidence is typical of endemic diseases with the epidemiology of these diseases.

Let's briefly review these three diseases. The transmission of WNV, EEE and WEE occurs via mosquitoes, which contract the virus by feeding on infected birds, then passing it on to another bird or to a mammalian host, for example, a horse. All three are neurologic diseases that incubate in the horse for one to three weeks before they can affect the central nervous system of the horse.

With WNV, the clinical course of the disease will progress from non specific signs such as fever, loss of appetite and depression to severe neurologic signs including incoordination, muscle fasciculations, grinding of the teeth, recumbency, possible convulsions and death. (2) With EEE and WEE, horses typically show fever, weakness, depression, walking in circles, grinding of the teeth and loss of appetite, which can progress to incoordination, recumbency and death. (3)

These diseases do vary in their degree of severity, with the mortality rate for WNV being approximately 30%, whereas WEE and EEE are in fact even deadlier, with mortality rates up to 50% and 90% respectively! (4) Should the horse recover, they are often left with residual neurologic deficits due to the damage the viruses have done to their nervous system, often rendering the horse unfit for it's intended use prior to the disease. One study of WNV survivors showed that 40% of these horses were left with neurologic deficits! (5)

That's why horse owners should treat all three diseases as serious potential threats against which their horses should be vaccinated. In fact, as of January, 2008, the American Association of Equine Practitioners now classifies all three diseases as "core vaccines", that meaning they are vaccines that should be administered to all classes of horses. (6)

It has been thought by many that the risk of WNV, as well as EEE and WEE, has past and is of no further significance. We must remember that these are all endemic diseases and by their nature tend to be cyclic and very unpredictable. Typically, when an endemic disease virus enters a naive population, that initial year will be the epidemic year during which peak incidence will occur. The next few years will have reduced incidence, then there will be another epidemic, after which this wave pattern will continue on into the future. The initial epidemic years in most of Canada were 2002 and 2003 (British Columbia did not record any WNV incidence until 2009), with the subsequent epidemic occurring in 2007, at which time the provinces of Saskatchewan and Alberta recorded incidence that exceeded the initial epidemic year, a phenomenon that has not occurred anywhere else in North America! The fact that wild bird populations are the reservoir and amplifier of the virus certainly tells us that these viruses are here to stay, then throw in the unpredictable nature of the weather and it's impact on mosquito populations and you can see where it is virtually impossible to predict what the next year will bring! The mosquito that is the main culprit for transmission of WNV and WEE, *Culex tarsalis*, is a heat loving mosquito so a summer with higher than normal heat with reasonable amounts of rain is ideal to propagate numerous mosquito vectors! This fact helps to explain the impact that Climate Change can play in the impact of mosquito borne diseases as increased temperatures and length of the annual warm period will increase the geographical area and duration of mosquito activity. It has been recorded that WNV cases have occurred both earlier and later in the summer as well as further north than has been recorded for WEE. This would indicate that our risk of these mosquito borne diseases could escalate in the future.

As a veterinarian, I am often asked by horse owners whether it's truly necessary to vaccinate against diseases like WNV, EEE and WEE. My answer is an emphatic yes! My reasons are many, with the first being the fact that it is virtually impossible to control the risk of exposure to these diseases and the extent of the annual risk is also totally unpredictable so the logical solution is to protect your horse annually through vaccination. Next, these diseases can be very severe, requiring extensive, expensive treatments, the outcome of which can be very unpredictable and even if your horse should survive, it may not be the same horse you knew, due to residual neurologic deficits. The vaccines available to protect against these diseases generate a high level of protection, are very safe vaccines, have been well proven in the field and are a modest expense compared to the possible consequences.

All it takes is one bite! So why take the chance?

As summer approaches, so does the risk of disease for your horse. The year of 2007 was our last endemic peak, which occurred four years after the initial epidemic. Will 2010 be the next epidemic, and in the case of British Columbia, who recorded their first incidence in 2009, will

this be your epidemic year? I urge you to speak with your veterinarian about spring vaccinations to help protect your horse from WNV, as well as EEE and WEE!

Here's wishing you a great summer with your equine partner and to good health in 2010!

References:

1. Ontario Ministry of Agriculture Files
2. 3. & 4. The Merck Veterinary Manual, 2008 – Nervous System – Equine Encephalomyelitis
5. Proceedings of NAVC, 2004, Dr Julia Wilson, University of Minnesota
6. Vaccination Guidelines AAEP