



# Equine West Nile Encephalitis

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In 1999 West Nile Virus (WNV) was first discovered in the North Eastern United States. Clinical disease caused by the virus was first identified in birds, followed by humans and equines. By 2002 over 15,000 horses were diagnosed in over 41 different states. Now WNV is throughout the United States and is here to stay. Birds are the primary reservoir for WNV in which the disease is usually fatal.<sup>1</sup> In the United States crows, blue jays, and magpies have been the biggest reservoir populations.<sup>3</sup> West Nile Virus is transferred between birds by mosquitos. When a bird is infected with WNV, it serves as an amplifying host of the virus. This means that the virus replicates quickly and results in large amounts of virus in the bloodstream resulting in a profound viremia. A viremic bird is then bitten by a mosquito which then transfers WNV to horses, humans, and other mammals. Infected mammals typically experience a low viremia. As a result, mammals are generally considered dead end hosts<sup>2</sup> and mosquitos are unable to transmit WNV from an infected mammal to an uninfected mammal. Additionally, WNV infection can be transmitted through blood transfusions.

Horses can exhibit clinical signs when they become infected by WNV. As is common with many viral infections, many horses will not experience any clinical illness after becoming infected. However, WNV can cross over the blood-brain barrier and cause disease in the brain and spinal cord. This disease is referred to as WNV encephalomyelitis and can vary in range and severity. The most common signs of disease include ataxia in the hindlimbs as well as twitching of the muzzle and neck muscles. Other signs that may be seen include fever, wandering, impaired vision and generalized weakness. More severe signs can include depression, stumbling, paralysis, recumbency and death.

Geriatric horses or any horse that becomes recumbent (unable to get up) have a much higher risk of death as a result of WNV infection.

West Nile Virus affects humans as well as other mammals and birds. Local health organizations monitor bird and mosquito populations to be able to predict when human and horse cases will begin to show up. Weekly updates for Utah can be found at <http://health.utah.gov/epi/diseases/WNV/surveillance/>.

In horses, diagnosis of WNV disease is made by the presence of clinical signs plus the detection of antibodies in the bloodstream. In horses, the clinical signs of WNV encephalomyelitis cannot be distinguished from other equine neurologic diseases. Therefore, a blood test is required to look for antibodies specific for WNV. Other equine neurologic diseases, such as Equine Herpes Virus (EHV), can also be fatal and can be spread from horse to horse. This makes it important to distinguish WNV infection from other neurologic diseases.

Treatment of WNV encephalomyelitis is mainly supportive. There is no specific cure for infection from WNV. Controlling pain and inflammation with anti-inflammatories and fluid therapy is most often utilized. Initiation of supportive care at an early onset of the disease does lead to a more favorable outcome.<sup>3</sup> The mortality rate for infected horses is estimated to be 35%. Approximately two-thirds of infected horses will recover. However, 40% of those that survive will continue to show clinical signs.<sup>2</sup> Caution and safety must be exercised around horses with lingering neurological symptoms.

Prevention is the key to reducing your horse's risk of contracting WNV. Since 2003 equine WNV vaccines have been available. Broodmares should receive this vaccine 4-6 weeks prior to their due date to ensure adequate antibody concentrations are in the colostrum for the foal. If the dam was given her pre-foaling vaccine, foals should start their vaccine series for WNV at six months of age. It is important that you follow the manufacturer's label recommendation for dosing frequency when starting the primary series. In heavily affected areas, the vaccine can be administered as often as every 4 months.<sup>1</sup> It is vital that you visit with your veterinarian when determining a vaccination schedule for your horse.

In addition to vaccinating your horse, the American Association of Equine Practitioners has given recommendations to help eliminate mosquitos from

horse areas.<sup>4</sup> These steps include: eliminating standing water (old tires, buckets, etc.), thoroughly cleaning water troughs at least monthly, using larvicides to control mosquito populations, keeping your horse inside during the peak mosquito times of dusk to dawn, using insect repellants on your horse specific for mosquitos, remove birds from the stall area and protect yourself with proper clothing and mosquito repellent.

In conclusion, it is critical that you work with your veterinarian to determine the customized vaccination schedule that your horse needs. You can also decrease your horse's exposure to WNV by taking steps to decrease numbers of mosquitos. Finally, if you see any clinical signs of WNV infection in your horse, call a veterinarian immediately.

### Fast Facts

- Birds are the primary reservoir for WNV
- WNV is mostly spread from an infected bird to an uninfected horse
- WNV causes an encephalomyelitis in horses
- Clinical signs can include fever, ataxia, twitching, weakness, stumbling, paralysis, recumbency, coma and death
- Diagnosis is made by observation of clinical signs and blood test
- Treatment is mainly supportive care
- Mortality rate is approximately 35%
- Vaccination is vital for protection against WNV
- Reducing mosquito numbers helps prevent WNV infection

## References

<sup>1</sup>American Association of Equine Practitioners: West Nile Virus. Retrieved from <https://aaep.org/horsehealth/west-nile-virus>

<sup>2</sup>Kansas State University: West Nile Virus Fact Sheet June 2014. Retrieved from <https://www.vet.k-state.edu/vhc/services/equine/timely-topics/wnv-fact-sheet.pdf>

<sup>3</sup>Merck Veterinary Manual: Overview of Equine Arboviral Encephalomyelitis. Retrieved from <https://www.merckvetmanual.com/nervous-system/equine-arboviral-encephalomyelitis/overview-of-equine-arboviral-encephalomyelitis>

<sup>4</sup>American Association of Equine Practitioners: West Nile Virus. Retrieved from <https://aaep.org/horsehealth/10-tips-reducing-your-horses-west-nile-risk>

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