



Prevention of West Nile Virus Infection in Horses

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West Nile Virus

West Nile encephalitis (inflammation of the brain) is caused by a mosquito-borne virus. This virus was first recognized in the U.S. in August of 1999. Since then, more than 25,000 cases of WNV encephalitis have been reported in U.S. horses. The virus has been identified in the continental U.S. as well as much of Canada and Mexico. Several Central and South American countries have also identified WNV within their borders.

Transmission

Mosquitoes (carriers) become infected with the West Nile Virus (WNV) by feeding on infected wild birds. Occasionally, infected mosquitoes can transmit the virus to people and horses when biting to consume blood. Humans and horses are considered to be dead end hosts for WNV; the virus is not directly contagious from horse to horse or horse to human. Infection with this virus does not always lead to disease.

Clinical Signs

The West Nile Virus infects the central nervous system of animals and people. Most humans infected with WNV have no symptoms. Infected horses showing clinical signs of disease will eventually show neurological signs relating to encephalitis or inflammation of major nerves. The clinical course of the disease will progress from non-specific signs such as fever, loss of appetite, and depression to severe neurological signs. Neurological signs are related to damage to the central nervous system. These signs may include behavioral changes, ataxia (unsteadiness), head pressing, excitability, teeth grinding, uncoordination, muscle tremors of face or neck, blindness, inability to swallow, seizures, and coma. It is important to remember that other serious diseases like Eastern Equine Encephalitis, Western Equine Encephalitis, and rabies can cause similar symptoms in a horse. A blood test is necessary to confirm a diagnosis of WNV infection in the live horse.

Treatment

Only supportive therapy can be used to treat horses infected with WNV, because there is no specific treatment for this viral infection. It is critical to accurately diagnosis the



cause of the symptoms because the disease can appear like rabies in the horse. The occurrence of West Nile encephalitis indicates there are mosquitoes in the area that are infected with the virus. The case fatality rate for horses exhibiting clinical signs of WNV infection is approximately 33 percent. Data has indicated that 40 percent of horses surviving the acute illness caused by WNV still exhibit residual effects, such as gait and behavioral abnormalities, six months post-diagnosis.

Prevention

Ideally, prevention programs should include vaccination and mosquito control and reducing exposure of horses to mosquitoes. Mosquito control and vaccination of horses may significantly reduce the incidence of this disease. Vector (mosquito) control is the most important step that can be taken to prevent the spread of this virus to people and other animals.

Vaccination

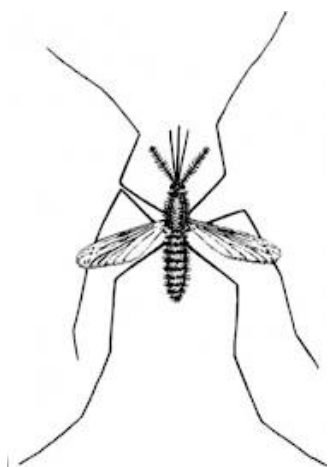
Vaccination for West Nile virus is recommended as a core vaccine and is an essential standard of care for all horses in North America. See Fact Sheet VTMD-9119. If a horse develops symptoms of illness suggestive of West Nile encephalitis, titers may not be possible to differentiate between a vaccinated horse and a horse naturally infected with WNV. Therefore, it is

critical that accurate vaccination records are maintained for each horse receiving the vaccine. The vaccine is restricted to veterinary use only. Contact your local veterinarian about using the WNV vaccine to protect your horses.

Mosquito Prevention and Control

Stable owners can most effectively reduce the number of mosquitoes around farms by eliminating the standing water in which mosquitoes grow and breed.

- Dispose of anything that can hold water, such as tin cans, containers, and in particular, used tires. Tires have become the most important mosquito-breeding sites in the country.
- Drill holes in the bottoms of recycling containers and check uncovered junk piles.
- Clean clogged roof gutters every year, and check storm drains, leaky outdoor faucets, and window wells.
- Empty accumulated water from wheelbarrows, boats, cargo trailers, pet dishes, toys, and ceramic pots. If possible, turn these items over when not in use.
- Change the water in stock tanks once a week. The use of mosquito fish in tanks may be useful in controlling the population of larvae.
- Do not allow water to stagnate in birdbaths, ornamental pools, water gardens, and swimming pools or their covers. Ornamental pools can be aerated or stocked with fish. Swimming pools should be cleaned and chlorinated when not in use. Change water every three days.
- Alter the landscape of your property to eliminate standing water. *Keep in mind that during warm weather, mosquitoes can breed in any puddle of water.*
- Larvicides are highly effective in controlling immature mosquitoes and should be considered when standing water cannot be eliminated. Visit the American Mosquito Control Association for up to date information on controlling mosquitoes in and around your farm. <http://www.mosquito.org/>



Reduce Exposure of Horses to Mosquitoes

Another aspect of mosquito control is reducing exposure of horses to mosquitoes. There are several steps that can be taken to minimize exposure.

- Topical application of insect repellants, applied according to manufactures' label instructions should reduce exposure.
- If possible, horses should be stalled at night in barns with well-maintained insect window screens and fans.
- During evening and night hours, avoid using yellow incandescent lights because mosquitoes are attracted to this type of lighting.
- Fogging horse premises in the evening may help minimize the adult mosquito population.
- There are numerous wild bird species that are potential reservoirs for the West Nile Virus, so another aspect of prevention is to eliminate areas where birds might roost around horse housing.

Public Health

WNV infected horses are not considered to be a source of infection for other horses, animals, people, or mosquitoes. The only way WNV has been transmitted in the U.S. so far is through the wild-bird-mosquito-cycle. People are exposed to the WNV from the bite of a mosquito infected with the virus. As in horses, human infection with the WNV does not always cause clinical illness. Some people with a WNV infection will experience, fever, body aches, headache, skin rash, and swollen lymph nodes lasting two to four days. People older than 50 years of age are at greater risk of the severe form of WNV infection. Severe human cases of WNV may include additional signs such as neck stiffness, convulsions, disorientation, paralysis, and coma.

For more information on West Nile encephalitis contact your local veterinarian or county health personnel.

References

- Bradley, Kristy DVM. Oklahoma State Department of Health, Communicable Disease Division, West Nile Virus Public Health Fact Sheet. www.health.state.ok.us.
- Fact sheet. CDC Division of Vector-Borne Infectious Diseases, West Nile Virus. www.cdc.gov/ncidod/dvbid/westnile/cycle
- Fact Sheet. United States Department of Agriculture, Animal and Plant Health Inspection Service, West Nile Virus, April 2000. www.aphis.usda.gov/oa/wnv/prv.
- American Association of Equine Practitioners, Vaccination Guidelines for Horse Owners, www.aaep.org

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, the Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0614 Revised GH.