

West Nile Virus

The West Nile virus (WNV) is a mosquito-borne virus that can cause swelling and inflammation of the brain and spinal cord in horses, birds and humans. The virus is named after the West Nile region of Uganda, where the virus first appeared in 1937. Since the discovery of WNV, it has become widespread in Africa and Eurasia. WNV was identified in the New York area in 1999, and has since become established across the North American continent. In Alberta, it was first detected in July 2003, in a wild bird. WNV is related to the viruses that cause St. Louis encephalitis and Japanese encephalitis.

Mosquitoes spread the virus after feeding on infected birds

Only specific species of mosquitoes spread WNV. In Alberta, the species of mosquito of concern is *Culex tarsalis*, which becomes infected when feeding on infected wild birds. Wild birds are the primary reservoir of WNV. Most wild birds are not affected by the virus, but rather just carry the virus for a variable period of time. However, members of the *Corvidae* family, including crows, grey and blue jays, magpies and ravens, are very susceptible to the effects of WNV. So too are some species of raptors. Often, dead crows are indicators of the arrival of WNV in a geographic area. There is no evidence that WNV can be spread from birds to humans or animals, or from horse to horse or to humans.

Birds and animals are susceptible to WNV

Over 140 species of wild and domestic birds are susceptible to WNV. As well, a wide range of wild and domestic animals can also be infected with WNV, including bears, mountain sheep and goats, horses, mules, donkeys, cattle, alpaca, dogs and cats. However, it is important to

understand that disease is rare in the majority of these species. Only domestic geese, horses, mules and donkeys appear to be severely affected by WNV, and may develop clinical disease.

West Nile Virus in Canada

WNV was first confirmed in Canada in August 2001 in a wild bird in Ontario. Exposure of horses to WNV was confirmed in 2002 in Manitoba, Saskatchewan, Ontario and Quebec, coinciding with the first human cases reported in Canada (Quebec and Ontario). In the same year, Alberta reported two travel-related human cases. In 2003, the WNV outbreak reached its peak in Canada with multiple cases in both humans and horses. In this year, WNV was extensively detected in mosquito pools and wild birds.

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West Nile Virus in Alberta

The first confirmed cases of the virus in humans in Alberta occurred in 2002. However, it is believed those patients contracted the virus while travelling outside of the province.

Alberta Health is the lead agency for monitoring and Alberta Health Services is the lead agency for advising the public about WNV (www.fightthebite.info). Alberta Agriculture and Rural Development monitors for the presence of WNV in horses. Statistics are available at: <http://www.agric.gov.ab.ca/chiefvet>

Symptoms in horses

Most horses bitten by a mosquito infected with WNV will not develop clinical disease. They develop an asymptomatic infection, eliminate the virus and continue performing as usual. Symptoms

in those horses that do become sick can include listlessness, a change in demeanor becoming less active and isolated, reduced appetite, inability to swallow, drooping lips, muscle twitching, a lack of co-ordination, weakness in the limbs, partial paralysis or an inability to get up. A fever is not always present. A veterinarian should examine infected horses because these clinical signs are similar to those caused by Western Equine Encephalitis, Eastern Equine Encephalitis and Rabies.

To prevent handlers from being hurt, caution must be exercised when handling horses affected by nervous disorders, such as WNV.

There is no specific treatment for horses affected with WNV. Up to 35 per cent of horses showing clinical disease may die or have to be euthanized because of complications of the disease. Some recovered horses may exhibit permanent neurological deficits.

WNV – a provincially notifiable disease in Alberta

WNV infection in horses, mules and donkeys is a provincially Notifiable Disease under the Reportable and Notifiable Diseases Regulation under the *Animal Health Act*. This legislation requires anyone suspecting or knowing of a horse (and mule or donkey) infected with WNV to report that fact to the Chief Provincial Veterinarian's office at 780-427-3448 (M-F 8:15 a.m. to 4:30 p.m.) and 1-800-524-0051 (after business hours). The federal government has made WNV in any species of animal or bird an Immediately Notifiable Disease under Canada's *Health of Animals Act*. This requires diagnostic laboratories to report the diagnosis of WNV to the Canadian Food Inspection Agency within 48 hours.

Testing horses

Horses are incidental hosts and the level of virus in their blood is very low for a short period of time. Mosquitoes feeding on infected horses are not likely to become infected. There is no scientific evidence to indicate that WNV can be transmitted directly from horses to other species, including humans. Therefore, quarantine of affected horses is not necessary. Detection of exposure to WNV in most horses is restricted to a blood test that identifies antibodies to WNV. Routine testing of horses is not recommended, even if the virus has been confirmed in the area. Specialized laboratory tests can confirm the presence of WNV in the brain or spinal cord of horses dying or being euthanized and are available to your veterinarian.

Treatment for horses

There is no specific therapy for WNV infection. Veterinarians use supportive therapy such as intravenous fluids and good nursing care to prevent secondary infections.

Protecting horses from infection with WNV

Although the risk of disease in any individual horse is very low, the consequences for some affected horses can be severe. Preventive measures should be discussed with your local veterinarian. These measures include minimizing exposure to *Culex tarsalis* mosquitoes. This species of mosquito breeds in small, warm, still puddles of water. These puddles of water include those found in poorly drained eaves troughs, bird baths, discarded rubber tires and even hoof prints formed in mud. Consideration must be given to providing screened housing and avoiding outdoor activities during peak times of mosquito feeding, such as dawn and dusk. Using topical insect repellents and/or smudges may also be useful. Reduce potential mosquito breeding sites by eliminating standing water, cleaning water troughs weekly and keeping grass levels short around buildings.

Vaccines against WNV are licensed in Canada for use in horses and are available from veterinarians. Horse owners should contact their veterinarian for information about the vaccines available and recommendations about their use as part of a comprehensive disease prevention program. Vaccinated horses intended for export to the European Union or Japan will require certification of vaccination. Consult with the nearest district office of the Canadian Food Inspection Agency for up-to-date export requirements.

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For more information

Visit Alberta Agriculture and Rural Development's Ropin' the Web website: <http://www.agric.gov.ab.ca>

See the WNV fact sheet and update on the Chief Provincial Veterinarian's website: <http://www.agric.gov.ab.ca/chiefvvet>

Contact Alberta Agriculture and Rural Development's Ag-Info Centre (toll free) at 1-866-882-7677.