



## West Nile virus in horses: diagnostic guidance for veterinarians



### Protecting Animal and Human Health through Diagnostics

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Summer is when the West Nile virus poses the greatest threat to the health of horses in the United States. It's important for veterinarians to work with horse owners this time of year to prevent, detect and accurately diagnose a potential infection.

In 2012, there were 627 confirmed cases of equine West Nile Virus across 41 states -- the highest number of cases in five years, according to the U.S. Department of Agriculture. Texas was hit the hardest, with 120 confirmed cases. The death rate among U.S. horses ranges from 30 to 40 percent for West Nile disease. Of horses that recover from the disease, up to 40 percent may exhibit neurological signs for six months or more after the initial diagnosis.

TVMDL has documented a recent and significant increase in the percentage of horses that test positive for exposure to the West Nile virus. During the 2010-11 fiscal year, TVMDL diagnosed West Nile virus in 2 percent of the horses we tested (18 out of 916). That increased to 13.4 percent of horses we tested (132 out of 985) during the 2011-12 fiscal year. Data from fiscal year 2012-13 shows 15.9 percent of horses tested were positive (203 out of 1277).

Though these early data represent a small subset of affected horses, TVMDL recommends that veterinarians:

- Educate horse owners about the West Nile virus, especially on how it is transmitted.
- Alert them to the clinical signs of West Nile disease.
- Select the best available test for the virus, because an accurate diagnosis requires more than an interpretation of the clinical signs.
- Advise owners to vaccinate their horses against the West Nile virus.

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**About TVMDL:** The Texas A&M Veterinary Medical Diagnostic Laboratory protects animal and human health through diagnostics.

An agency of the Texas A&M University System, TVMDL comprises two full-service laboratories, in College Station and Amarillo, and two poultry laboratories, in Center and Gonzales.

TVMDL is among 12 core laboratories in the National Animal Health Laboratory Network, a group of state and regional laboratories designed to provide a nationwide surge testing, response, and recovery capacity in the event of an animal disease outbreak.

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## Transmission

West Nile virus is a worldwide pathogen that is commonly found in Africa, Asia and the Middle East. First detected in the United States in 1999, the virus is now considered endemic to North America. Nature maintains the virus through a transmission cycle between mosquitoes and wild birds.

The virus uses the birds as reservoir hosts and the mosquitoes as the vectors to move from host to host.

Periodically, mosquitoes spread the virus to horses and humans. Thus mosquito control is essential around barns, stables and homes to reduce the risk of exposure. There is no evidence of horse-to-horse or horse-to-human transmission.

## Clinical signs

All equids appear to be susceptible to West Nile virus, which can affect any age group. The incubation period averages between three and 15 days in horses. In the United States, clinical signs develop in 10 to 39 percent of infected horses.

Clinical signs usually include neurological signs such as depression, ataxia (including stumbling, staggering or wobbly gait), a weakness of the legs, lameness, partial paralysis, muscle twitching, recumbency, or the inability to stand. The horse may also exhibit an altered mental state, a reduced appetite, grinding of teeth, blindness or a fever.

Diagnosis of West Nile disease cannot be based solely on clinical signs. Other diseases that may cause similar signs in horses include rabies, equine protozoal myeloencephalitis, equine herpes virus-1, botulism, bacterial meningitis, wobbler syndrome, and Eastern, Western and Venezuelan encephalomyelitis.

## Diagnostic tests

Though several serological tests may be used to diagnose West Nile virus, the most reliable test for clinically ill horses is the IgM capture ELISA. The IgM capture ELISA can confirm recent exposure to the virus. The IgM antibody rises quickly after exposure but is relatively short lived. A positive result indicates infection likely occurred within the previous three months. Data indicates that little IgM is detected as a result of recent West Nile vaccination.

## Vaccination

This remains the primary method of reducing the risk of infection in horses. It involves an initial administration of two doses at an interval of three to six weeks, followed by an annual or semi-annual booster. It is unknown whether a horse that recovers from a West Nile virus infection can become re-infected.

The American Association of Equine Practitioners suggests that recovered horses should be vaccinated one year after the acute illness and thereafter included in a routine vaccination program. Horse owners should consult their veterinarians to create a vaccination protocol.