

Agency of Human Services
Department of Health
108 Cherry Street, PO Box 70
Burlington, VT 05402
www.HealthVermont.gov

Agency of Agriculture, Food & Markets
116 State Street
Montpelier, VT 05620
www.VermontAgriculture.com

August 1, 2023

RE: Eastern Equine Encephalitis and West Nile Virus Testing in Animals

Dear Vermont Veterinarian:

Arboviruses have infected various species of large animals throughout Vermont. Though Eastern equine encephalitis virus (EEEV) has historically been detected in northwestern Vermont and portions of the Addison and Rutland County region, West Nile virus (WNV) has been found throughout the state. The risk for arboviral transmission is highest during late summer and autumn.

Both EEEV and WNV infections are reportable in Vermont, and can cause severe illness and death in unvaccinated, susceptible animals. It is recommended that susceptible animal species be vaccinated, and that owners take precautions to prevent mosquito bites.

Each year, the Vermont Department of Health offers **free postmortem testing of highly susceptible species**. Antemortem IgM serologic testing is no longer available through this program. If antemortem testing is desired, please submit specimens to your normal reference laboratory. Both postmortem and antemortem testing of clinically ill animals will help improve arbovirus surveillance in Vermont.

All brain tissue samples submitted from neurological animals are first tested for rabies at the Vermont Department of Health Laboratory. If the sample is negative for rabies, it will be sent to the New Hampshire Public Health Laboratories for EEEV and WNV testing by molecular assay (PCR).

The Vermont Department of Health Laboratory testing criteria are:

1. Onset of illness:
 - June through November 15 (unless animal has compelling travel history)
2. Species:
 - Equids
 - Camelids (e.g., alpacas, llamas)
 - Ratites (e.g., emus)
3. One or more of the following clinical signs*:
 - Ataxia or stumbling and incoordination
 - Inability to stand
 - Acute paralysis or limb weakness
 - Sudden death with no other diagnosis
 - Severe hemorrhagic enteritis (emus)



*These signs may be indistinguishable from those caused by other encephalitides, including rabies, equine herpesvirus-1, equine protozoal myeloencephalitis, and Western or Venezuelan equine encephalomyelitis.

Instructions for Sample Submission

Please call **the Vermont Department of Health (802-863-7240)** to provide the following information:

- Date of onset of clinical signs
- Date(s) of specimen collection
- Address where animal is stabled or housed
- Vaccination history
- Travel history
- Illness history
- Description of clinical illness or neurologic signs
- Whether humans were exposed to the animal's saliva (e.g., through bites or mucous membranes) for human rabies risk assessment

After approval, brain tissue samples should be sent to the Vermont Health Department Laboratory according to [packaging and shipping instructions for rabies](#) with a completed [rabies test request form](#). Tissue samples should be refrigerated and kept cold using icepacks during transport.

About EEE in Animals

EEE is a mosquito-borne viral disease caused by an *Alphavirus* of the family *Togaviridae*. It causes a progressive neurologic condition in horses and other equids. Alpacas, llamas, and emus are also susceptible to illness. The case fatality rate in affected horses is 75–90%. Clinical signs of EEE in horses include fever, depression, loss of appetite, weakness, ataxia, chewing movements, head pressing, circling, “sawhorse” stance, paddling, seizures, irritability, excitability, blindness, and abnormal sensitivity to light and sound. However, illness in horses can also be peracute, and some die suddenly without showing obvious signs or symptoms.

These signs and symptoms are not unique to EEE. Other conditions to consider include West Nile virus encephalitis, tetanus, rabies, equine herpesvirus-1, equine protozoal myeloencephalitis, and western or Venezuelan equine encephalitis.

In emus, infection typically results in a rapid onset of clinical signs, often resulting in death. Common manifestations include disseminated intravascular coagulation, severe hemorrhagic enterocolitis, and blood-tinged vomitus. Emus develop high levels of viremia, and unlike horses and humans, they may act as a reservoir for the virus. There is evidence that the vaccines available for horses may protect emus and alpacas from EEEV infection.^{1,2}

¹ Tengelsen, LA et al., “Response to and efficacy of vaccination against eastern equine encephalomyelitis virus in emus” JAVMA Vol. 218, No. 9, 2001

² Bedenice, D et al. “Humoral response to an equine encephalitis vaccine in healthy alpacas: JAVMA Vol. 234, No. 4, 2009

About WNV in Animals

WNV is a mosquito-borne viral disease caused by a *Flavivirus* of the family Flaviviridae. The incubation period is estimated to be three to 15 days in horses. Ten to 39 percent of unvaccinated horses infected with WNV will develop clinical signs including fever, ataxia, circling, hind limb weakness, recumbency or inability to stand, teeth grinding, inability to swallow, muscle tremors, head pressing, excessive sweating, and behavior changes. Other common clinical signs include colic, lameness, anorexia, and fever. The case fatality rate for horses exhibiting clinical signs of WNV infection is approximately 33%.

Prevent EEE and WNV

Animal owners can take the following steps to prevent EEE and WNV in humans and animals:

- Reduce mosquito breeding habitats by removing standing water in outdoor items (e.g., tires, planters).
- Find where mosquitoes live and breed and keep them from entering the home or barns.
- Protect themselves and their animals from mosquito bites with EPA-registered mosquito repellants and approved veterinary products.
- Talk with their veterinarians about animal vaccine programs for these diseases.

Please remember that WNV and EEE in animals are reportable in Vermont. Please call the State Veterinarian's Office at 802-828-2421 or the Health Department's Infectious Disease Epidemiology Program at 802-863-7240 to report cases.

For more information on arboviruses, mosquitoes, and USDA case definitions please visit these websites:

- [Vermont Department of Health: Mosquito-borne Diseases](#)
- [Vermont Agency of Agriculture, Food and Markets: Animal Health](#)
- [Eastern Equine Encephalitis case definition](#) (PDF)
- [West Nile Fever case definition](#) (PDF)

We thank you for your continued cooperation and support.



Kristin Haas, DVM
State Veterinarian
Vermont Agency of Agriculture



Natalie Kwit, DVM, MPH
State Public Health Veterinarian
Vermont Department of Health