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**Department of Health**  
Vermont Department of Health  
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June 21, 2024

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

Dear Vermont Veterinarian:

Arboviruses have infected various species of large animals throughout Vermont. The risk for arbovirus transmission to humans and animals is highest during late summer and early autumn. Eastern equine encephalitis virus (EEEV) has historically been detected in northwestern Vermont and portions of Addison and Rutland Counties and West Nile virus (WNV) has been found throughout the state. In 2023, [EEEV was detected](#) in northwestern Vermont [among mosquitoes and in a horse](#) that died from its infection. **The risk is considered elevated for EEEV transmission again this year, especially in Franklin and Grand Isle counties.**

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 brain tissue from highly susceptible species**. If antemortem testing is desired, please submit serologic 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](#) and [veterinary arboviral 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.<sup>1,2</sup>

### 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 for 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:

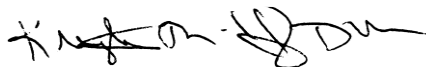
- Reduce mosquito breeding habitats by removing standing water in outdoor items (e.g., tires, planters).
- Keep mosquitoes from entering homes and barns by using screens and fans.
- Prevent mosquito bites by using EPA-registered mosquito repellants on yourself and approved veterinary products for animals.
- Talk with your veterinarian about animal vaccine recommendations for these diseases.

Please remember that WNV and EEE in animals are reportable in Vermont. 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:

- [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.



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<sup>1</sup> Tengelsen, LA et al., "Response to and efficacy of vaccination against eastern equine encephalomyelitis virus in emus" JAVMA Vol. 218, No. 9, 2001

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