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June 28, 2019

RE: Availability of Eastern Equine Encephalitis and West Nile virus testing

Dear Vermont Veterinarian:

In recent years, various species of large animals in Vermont have been infected with Eastern equine encephalitis (EEE) virus or West Nile virus (WNV). While risk for WNV infection appears to be widespread throughout the state, northwestern Vermont and portions of the Addison and Rutland County region are thought to be at elevated risk for EEE. Both diseases are reportable in Vermont and usually cause severe illness in unvaccinated, susceptible animals. It is recommended that susceptible animals be vaccinated, and that owners take precautions to prevent mosquito bites.

This summer, the Vermont Department of Health and the Vermont Agency of Agriculture, Food & Markets will again be offering **free testing of highly susceptible species** until November 15 through the Vermont Department of Health Laboratory. Specimens that meet the criteria for testing will be tested for both EEE virus and WNV at the New Hampshire Public Health Laboratories.

The criteria for testing through the Vermont Department of Health Laboratory are:

1. Onset of illness:
 - June through November 15 (unless animal has compelling travel history)
2. Species:
 - Equids
 - Camelids (i.e. alpacas, llamas)
 - Ratites (i.e. 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)

Note: 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.



Submitting a Sample to be Tested

Before submitting samples for arbovirus testing, please call **the Vermont Department of Health (802-863-7240)** to confirm that the animal meets the testing criteria and to provide the following information critical for accurate interpretation of test results:

- Date of onset of clinical signs
- Date(s) of specimen collection
- Address where animal is stabled/housed
- Vaccination history
- Travel history
- Illness history
- Description of clinical illness/neurologic signs

1. Animals that died or were euthanized (equids, camelids, and ratites):

- Brain tissue is the preferred sample, especially for non-equids and vaccinated animals.
- All mammals will be tested for rabies first at the Vermont Department of Health Laboratory. If the sample is negative for rabies, the brain tissue sample will be sent for EEE virus and WNV testing by molecular assay (PCR) to the New Hampshire Public Health Laboratories.¹
- Brain tissue samples should be sent to the Vermont Health Department Laboratory with a completed [rabies test request form](#). Tissue samples should be refrigerated and kept cold using icepacks during transport.

2. Animals that are alive:

- If the criteria for testing are met, a serum or CSF sample can be sent to the Vermont Department of Health Laboratory. Please submit with the [Clinical Test Request Form](#).
 - Check the box next to “Other” in the Serology Tests section and write “WNV/EEE” next to it.
 - Also write the species of the animal in the “Comments” section found on page 2 of the form.
- **Serum (equids only)**
 - Submit ≥ 3 ml of serum. IgM-capture ELISA for both EEE virus and WNV will be performed on this sample.²
 - Serum should be collected within the first 14 days of illness.
 - In some cases, follow-up (convalescent) specimens will be requested. These should be collected about 10 to 14 days after acute serum sample was collected.

¹ Unlike an arbovirus, rabies can be transmitted to humans through the bite of an infected animal. Animals testing positive for rabies will not be sent for WNV and EEE virus testing.

² IgM testing can only be performed on equine specimens. It may not distinguish previous vaccination from a disease response or acute disease from a past infection. A convalescent sample may be necessary to confirm the diagnosis. Commercial diagnostic laboratories can perform serologic tests on non-equine specimens for a fee.

- **CSF (equids and camelids)**
 - Submit ≥ 1 ml of CSF. IgM-capture ELISA testing for both viruses will be performed on this sample.
 - CSF should be collected within the first 14 days of illness.
 - CSF may also be tested by PCR.

About EEE Virus in Animals

EEE virus is a mosquito-borne viral disease that causes a progressive neurologic condition in horses and other equids. Alpacas, llamas and emus are also known to be susceptible to illness. The mortality 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 infection with the EEE virus.^{3,4}

The following precautions can be used by owners 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 out where mosquitoes live and breed and keep them from entering your home or barns.
- Protect yourself and your animals from mosquito bites by using EPA-registered mosquito repellants and approved veterinary products.
- In addition to the above preventive measures, veterinarians should talk with their clients about an animal vaccine program for these diseases.

Please remember that WNV and EEE in animals are reportable in Vermont. If you have any questions, please call the State Veterinarian’s Office at 802-828-2421 or the Health Department’s Infectious Disease Epidemiology Program at 802-863-7240.

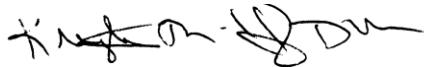
³ Tengelsen, LA et al., “Response to and efficacy of vaccination against eastern equine encephalomyelitis virus in emus” JAVMA Vol. 218, No. 9, 2001

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

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

- www.healthvermont.gov/disease-control/mosquito-borne-diseases
- <https://agriculture.vermont.gov/public-health-agricultural-resource-management-division/plant-health-and-pest-management/mosquitoes>
- [Eastern Equine Encephalitis case definition](#) (PDF)
- [West Nile Virus case definition](#) (PDF)

We thank you for your continued cooperation and support.



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