

Animal Health Fact Sheet

August 22, 2013

Eastern Equine Encephalomyelitis

What is Eastern Equine Encephalomyelitis (EEE)?

EEE is a mosquito-borne, viral infection that can cause severe encephalitis (neurologic disease) in horses and rarely in humans. Although horses are the animals most susceptible to EEE, the virus can also cause disease occasionally in birds such as emu and other mammals such as camelids (llamas and alpacas).

How is EEE transmitted to animals?

Wild birds are the reservoir species for EEE, meaning that the virus can circulate in wild bird populations without causing clinical disease in those birds. Horses, llamas, alpacas and emus may become infected via the bite of a mosquito that has previously fed on an infected wild bird. The EEE virus cannot survive on environmental surfaces such as buckets, barn floors or pastures.

Can sick animals transmit EEE to people?

Mammals: Horses, llamas and alpacas are generally not able to transmit EEE to humans; mammals are considered to be dead-end hosts for this reason.

Birds: Emu and game birds infected with EEE can shed the virus in feces, blood or vomitus. Humans can pick up the disease through contact with the virus through mucous membranes and/or open wounds, so caution must be used when handling sick live birds and infected bird carcasses.

What signs will an animal infected with the EEE virus exhibit?

Early clinical signs associated with EEE can be nondescript and can mimic other less serious diseases. Approximately two days after susceptible mammal species (horses and camelids) are infected with EEE, they develop a low-grade fever which may not be readily apparent. The first visible signs generally become apparent at four to five days post-infection. At that time, the animal generally has a fever and rapid heart rate and is showing signs of anorexia (poor appetite), depression, and variable other neurological signs.

As the illness progresses, more consistent neurologic signs develop. Muscle weakness becomes apparent and there are behavioral changes and dementia. Susceptible mammal species may also develop aggression, head pressing, wall leaning, compulsive circling, and blindness. Other signs might include uncontrolled twitching of the eyeball, facial muscle paralysis and seizures.

As the disease progresses even further, a semi-comatose and convulsive state occurs. Death usually follows two or three days later. If the animal survives, residual nervous system problems are likely to result. The reported mortality rate for EEE in equine animals is 75-90 percent.

Signs of EEE in emu include sudden onset of weakness, staggering, bloody diarrhea and rapid death, usually within 24 hours of first onset of symptoms.

How can I protect my animals from EEE?

There is a vaccine available for use in horses that does an excellent job of protecting them from EEE. The frequency of vaccination is based on the horse, the environment, and several other factors. All horse owners should consult with their veterinarian in order to determine the most appropriate vaccination schedule. Emu and camelids can also be vaccinated for EEE. EEE causes severe disease in susceptible animals and often results in death. Vaccination is the best tool that exists to protect your animals and should definitely be utilized for susceptible species at an interval recommended by your veterinarian. To protect your animals from mosquito bites, you should consider using mechanical barriers such as fly sheets and face nets, consider using an acceptable insect repellent seasonally, and consider altering the environment to limit mosquito populations. These steps may include emptying water troughs regularly and removing items that hold water in order to reduce mosquito breeding areas.

Does EEE infect wildlife?

EEE can infect deer, but it does not appear to be a significant cause of illness in these animals. Some other types of wild animals can be infected such as rodents.

Mosquito Spraying

Will the Vermont Agency of Agriculture (VAAFAM) be spraying for mosquitos this year?

Yes, VAAFAM will be spraying to control adult mosquitos between 8 and 11 PM on Thursday, September 6th **only in some parts of the state**, weather permitting. Please refer to the VAAFAM website at www.vermontagriculture.com for the most up to date information on this process, a map of the intended aerial application, and other resources

What is the product that will be used in the spraying?

The product that will be utilized is called Anvil 10+10 (sumithrin). Sumithrin is a synthetic pyrethroid insecticide with an active ingredient that is similar to pyrethrins, which are derived from chrysanthemum plants. Pyrethrins are used in many insect repellents that can be purchased in hardware and feed stores. It is likely that the fly repellent that you use on your horses on a regular basis is a pyrethrin-based product. When used properly by professionals trained to conduct mosquito control, Anvil 10+10 should effectively control adult mosquitoes without severely affecting non-target wildlife. Sumithrin is short-lived in the environment, breaks down rapidly in sunlight, and is less toxic to aquatic species than other alternatives that have been considered for these applications.

Will this product hurt my animals and how can I protect them?

Again, this product is similar to the insect repellents that you likely use regularly on yourself and on your animals, so it is not expected that the product will cause any harm to your animals. Regardless, if you live in a spray zone and would prefer to eliminate your animals' exposure to the product all together, then you can take the following steps:

- Move your animals into the barn or into the house prior to the spraying and leave them in until the following morning
- Provide water only in a covered area for your livestock, or empty and turn upside down your water troughs and do not refill them until the morning. If this is not possible, you might also consider covering your water troughs with an impermeable material for the night. Please note: if you have to withhold water from your livestock for this purpose, you must provide a fresh source of water for them the morning following the spraying. Withholding of water from your livestock for more than the overnight period is not recommended.

- Prevent your livestock from grazing on exposed pastures during the night of the spraying. Grazing can resume the following morning.

Are there steps I can take over the winter to reduce the population of mosquito larvae around my house and barn?

C. melanura is the mosquito species that is most closely associated with maintaining EEE in the wild bird population. The larvae of this type of mosquito generally overwinter in acidic hardwood swamps so you will not find the larvae of *C. melanura* in your stock tanks or water troughs or other areas around most barns. Therefore, it is not productive to use mosquito dunks or other similar tools in these water containers to control mosquito larvae over the winter.

For up to date information on steps being taken to mitigate the risks of EEE in Vermont, please monitor the following websites regularly:

www.vermontagriculture.com

www.healthvermont.gov

For additional information on EEE, please consult your veterinarian or the Agency of Agriculture animal health office at (802)828-2421. The following document also provides more detailed information about EEE:

http://www.cfsph.iastate.edu/Factsheets/pdfs/easter_wester_venezuelan_equine_encephalomyelitis.pdf