

Equine Encephalomyelitis Viruses

DISEASE IN ANIMALS

Reporting: Eastern Equine Encephalomyelitis (EEE) and Venezuelan Equine Encephalomyelitis (VEE) are reportable animal diseases in Ohio and all suspected cases must be reported to the Ohio Department of Agriculture (ODA), Division of Animal Industry at (614) 728-6220 or (800) 300-9755 or the USDA APHIS Veterinary Services at (614) 856-4735 or (800) 536-7593. Reporting horses with Western Equine Encephalitis (WEE) and West Nile Virus (WNV) to ODA is also encouraged. Voluntary reporting of EEE and WNV positive horses to the [local health department](#) (LHD) is encouraged because they are sentinels for the virus in mosquitoes and often precede human cases.

Clinical Signs: These arboviruses cause very similar illnesses in horses, though EEE may have a shorter course with more fatalities. Initial signs include fever, anorexia, and depression followed by encephalitis induced involuntary muscle movements, aimless wandering, head pressing, circling, ataxia and paresis. Recumbant horses demonstrate a characteristic paddling motion. Neurologic horses that recover may have permanent damage.

Transmission: These viruses can also infect a number of wild and domestic mammals. WNV, WEE and WNV cycle in birds and VEE has a rodent-mosquito cycle. While many infections are asymptomatic, some develop clinical signs and may die from the disease. Deaths in corvids (crows) for example, have been used as a sentinel event for early detection of WNV activity in mosquitoes.

Diagnostics:

- Virus isolation: tissue and sometimes blood
- Antigen detection: CF, HI, PRN or IFA
- Serology for antibody (PRN, IgM ELISA, HI, and CF): Cross-reactions can occur. IgG antibody can persist over a year so may reflect previous exposure and not current infection

Case classification:

- Suspected: a clinical case with signs consistent with encephalitis during a time when mosquitoes are active.
- Probable: a clinically suspect case with laboratory evidence from a screening or unvalidated test.
- Confirmed: a case that meets confirmatory testing criteria determined by a state or federal diagnostic laboratory.

DISEASE IN HUMANS

Reporting: Report by the end of the business day any suspected human illness or positive laboratory result to the LHD where the patient resides. If unknown report to the LHD of the health provider or laboratory.

Human illness: EEE prodromal signs include fever, myalgia, and arthralgia followed, in some, by neurologic signs. There is a high mortality rate for those that develop encephalitis. WNV and WEE can follow a similar course to EEE, but symptoms are less severe in adults and recovery.

Most arboviral infections are asymptomatic. Arboviral disease cases are often categorized as neuroinvasive disease and non-neuroinvasive. Symptoms of non-neuroinvasive disease include febrile headache, possibly with nausea and vomiting; Symptoms of neuroinvasive disease includes fever and stiff neck, possibly with other symptoms of meningeal irritation, altered level of consciousness (disorientation, lethargy, stupor, coma) and signs of neurological dysfunction (tremor, rigidity, convulsion).

Transmission: Both people and horses acquire these diseases from the bite of infected arthropods, primarily mosquitoes. There is no direct transmission from animals to humans, though transmission can occur via blood transfusion.

Personal protection: The virus can be found in blood, CSF, and other body fluids of viremic animals. Precautions should be taken to avoid direct contact infectious materials. EEE and WEE viruses do not persist in the environment, but VEE may be found in dried blood and exudates. All are susceptible to many common disinfectants including 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde and formaldehyde. They can also be destroyed by moist or dry heat, as well as by drying.

FOR MORE INFORMATION

Reportable Animal Diseases in Ohio

[ODA Division of Animal Industry](#)

[OAC Chapter 901:1-21 Dangerously Contagious or Infectious and Reportable Diseases](#)

[USDA Animal and Plant Health Inspection Service](#)

Disease in Animals

[USAHA Foreign Animal Diseases "Gray Book"](#)

[Iowa State University Center for Food Security and Public Health Animal Disease Factsheets](#)

Disease in Humans

[CDC Arbovirus Diseases](#)

[ODH Infection Control Manual](#)