United States Department of Agriculture

Animal and Plant Health Inspection Service

Veterinary Services

January 2019

Equine encephalomyelitis (Eastern)

Case Definition

(Notifiable)

1. **Clinical Signs**

1.1 *Clinical Signs:* Eastern equine encephalomyelitis (EEE) is a mosquito-borne viral disease that primarily affects equids and occasionally humans and is caused by the Eastern equine encephalomyelitis virus (EEEV), an *Alphavirus* of the family Togaviridae. EEE, also known as sleeping sickness, is characterized by central nervous system dysfunction and a moderate to high case fatality rate. The causal virus is maintained in nature in an alternating infection cycle between mosquitoes and birds. Humans and horses serve as dead-end hosts. Although horses and humans are most often affected by the virus, birds may exhibit clinical signs, and infection and disease occasionally occurs in other livestock, deer, dogs, and a variety of mammalian, reptile, and amphibian species.

Horses infected with EEEV will initially develop fever, lethargy, and anorexia. Neurological signs usually develop 5 days after infection and include cranial nerve abnormalities, altered mentation, impaired vision, circling, head pressing, wandering, and difficulties swallowing. In its more severe form, the disease will progress to hyperexcitability, ataxia, convulsions, and death. Case fatality rate usually exceeds 90 percent and most deaths occur 2-3 days after onset of neurologic signs. The incubation period is 5-15 days.

2. **Laboratory criteria:**

2.1 *Agent isolation and identification:* Reverse transcriptase polymerase chain reaction (RT-PCR) may be performed on unfixed brain tissue. Virus isolation is performed on brain or other tissue, with virus identification by complement fixation (CF), direct immunoflourescent staining, plaque reduction neutralization (PRNT), or RT-PCR.

2.2 *Serology:* Tests include CF, or IgM capture enzyme-linked immunosorbent assay (ELISA), or plaque reduction neutralization test (PRNT), or hemagglutination inhibition (HI). Vaccination for EEE can produce positive PRNT, HI, CF, and possibly IgM test results.

3. **Case definition and Reporting Criteria**

3.1 *Suspect case:* A susceptible equid with clinical signs consistent with Eastern equine encephalomyelitis and located in or has recently visited an area with appropriate climate and active hematophagous insects.

3.2 *Presumptive positive case:* A suspect case that**:**

3.2.1 Has antibody against EEE (and is not vaccinated)

3.2.1.1 Non-negative PRNT, CF, or HI test result in the absence of vaccination

3.3 *Confirmed positive case:* Compatible clinical signs and may meet presumptive level of certainty ***AND***

3.3.1 Isolation of EEEV; ***OR***

3.3.2 RT-PCR detection of specific viral antigen or genomic sequences; ***OR***

3.3.3 Serological confirmation of EEE virus infection with a fourfold or greater change in antibody titer in paired serum samples collected 10–14 days apart (unvaccinated or known vaccination history); ***OR***

3.3.4 Positive immunohistochemistry for EEEV antigen in tissue; ***OR***

3.3.5 ELISA detection of IgM antibody (acute infection).