



Indiana State Department of Health

Indiana Health Alert Network Notification – Sept. 12, 2019

Eastern Equine Encephalitis Virus Activity Detected in Northern Indiana

Eastern equine encephalitis virus (EEEV) is a reportable mosquito-borne virus that can be transmitted in Indiana by mosquitoes of the genera *Aedes*, *Coquillettia*, and *Culex*. While it is a rare disease, EEEV can cause serious illness, and approximately one-third of all cases are fatal. Many people who recover will have severe long-term effects from the infection.

Since mid-August of this year, three horses and one group of mosquitoes from Elkhart County have tested positive for EEEV. No human cases of EEEV disease have been reported in Indiana in 2019; however, three human cases have been reported in southwestern Michigan this year, one of which was fatal.

Epidemiology

Most cases of EEEV disease are found in the Atlantic and Gulf Coast states and the Great Lakes region. As with other mosquito-borne diseases, infection can occur anytime during mosquito season (May to October), but it is most common in the late summer months.

Equine cases of EEEV disease are occasionally detected in Indiana, but human EEEV disease is rare. In the United States, 5-10 cases are typically reported annually. However, because the disease is considered endemic in Indiana (especially in the northern counties) and recent virus activity has been detected, providers should consider EEEV disease in patients with compatible exposures and clinical presentations. People who are younger than 15 years and older than 50 years are at the greatest risk of severe disease if infected with EEEV.

Clinical presentation

Signs and symptoms of EEEV disease appear within 4-10 days of a bite from an infected mosquito. Infection with EEEV may be asymptomatic or can result in systemic or encephalitic illness. Systemic infection is characterized by an abrupt onset of chills, fever, malaise, arthralgia, and myalgia. Some patients will recover from this illness after 1-2 weeks, while others will develop encephalitis several days into the illness. In infants, the encephalitic form can have an abrupt onset. Encephalitic patients may present with fever, headache, irritability, restlessness, drowsiness, anorexia, vomiting, diarrhea, cyanosis, convulsions, or coma.

Diagnosis

Suspicion for EEEV disease is often based on the patient's clinical features, activities, and EEEV epidemiology in the location where the patient may have been exposed. The ISDH recommends testing for all endemic mosquito-borne viruses in patients with a clinically compatible illness. Laboratory diagnosis of mosquito-borne infections is generally accomplished by testing of serum or cerebrospinal fluid (CSF) to detect EEEV-specific IgM and neutralizing antibodies.



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Plaque reduction neutralization tests (PRNTs) can help confirm acute infection. The ISDH recommends sending serum and/or CSF to the Indiana State Public Health Laboratory for confirmatory testing on all patients with positive or equivocal IgM tests for any mosquito-borne virus, including EEEV. This confirmatory testing will be performed at the Centers for Disease Control and Prevention (CDC).

Viral cultures and tests to detect viral RNA (e.g., reverse transcriptase-polymerase chain reaction [RT-PCR]) can also be performed on serum, CSF, and tissue specimens collected early in the course of illness.

Treatment

No human vaccine or specific antiviral treatment is available for EEEV disease. Patients with suspected EEEV disease should be evaluated by a healthcare provider for diagnosis and supportive treatment.

Recommendations

- Healthcare providers should consider EEEV disease in patients with febrile illness or encephalitis during mosquito season.
- Confirmatory testing should be performed for patients with positive or equivocal IgM tests for EEEV. Specimens should be sent to the ISDH Laboratories to be forwarded to CDC.
- Suspect cases of EEEV disease are reportable to the local health department of the county where the patient resides (410 IAC 1-2.5-75). Local health departments are requested to report suspect cases of EEEV disease immediately to the ISDH.

For more information

EEE virus ISDH web page: <https://www.in.gov/isdh/28258.htm>

EEE virus CDC web page: <https://www.cdc.gov/easternequineencephalitis/index.html>

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