

Arboviral Disease

Provider Information Sheet

What arboviruses may occur in West Virginia?

Four major arboviruses are enzootic in the Eastern United States:

- Eastern equine encephalitis (EEE),
- La Crosse encephalitis (LAC),
- St. Louis encephalitis (SLE), and
- West Nile virus (WNV).

Any of these may occur in West Virginia.

LAC occurs predominantly in children under age 15. Our state reports 15 to 50 cases per year; a substantial proportion of all cases reported in the United States.

Virtually all counties in West Virginia have found birds that are positive for WNV. West Virginia has reported 0 to 3 cases of WNV in humans and 0 to 4 cases in horses every year since 2002. Clinical cases of West Nile virus infection predominantly affect the elderly and persons with underlying medical conditions.

While West Virginia has not identified human cases of EEE, the virus has been identified in birds. Similarly, no human cases of SLE have been identified in our state in the recent past, but the virus has previously been identified in our state.

What are the signs and symptoms of arboviral infection?

The hallmark of arboviral illness is acute onset of fever plus neurological signs and symptoms during mosquito season (June to October). Hospitalized patients with encephalitis should always be considered for arbovirus testing during mosquito season.

Mild illness is characterized by fever and headache. Vomiting, arthritis, rash or lymphadenopathy have also been reported with this milder syndrome, especially in persons with WNV.

Other syndromes that have been associated with arboviral infection include:

- Parkinsonism and other movement disorders
- Tremors
- Acute flaccid paralysis
- Neuritis
- Aseptic meningitis

Infectious Disease Epidemiology

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Encephalitis may be very severe and result in altered mental status, seizures, coma and death. EEE is by far the most serious arboviral infection with a case-fatality rate estimated at 36%. Mortality among hospitalized persons is estimated at 3-30% for SLE; 12% for WNV; and 1% for LAC. WNV and SLE primarily affect the elderly whereas symptomatic LAC disease is most common in children under age 15.

Survivors of arboviral encephalitis may have long-term neurological deficits. Three to 12% of hospitalized children with LAC have some residual neurological or cognitive abnormality after recovery. Up to 50% of hospitalized WNV patients continue to have symptoms at one year. Thirty-five percent of surviving EEE patients have neurological sequelae.

How can I make the diagnosis?

Diagnosis is confirmed only by the presence of clinical illness and:

- a four-fold rise in serum antibody, OR
- virus-specific immunoglobulin M (IgM) in serum or CSF, OR
- isolation of virus or detection of viral antigen in blood, CSF, or brain tissue.

Since the arboviral encephalitides are clinically indistinguishable, providers should insist that their patients are tested for EEE, LAC, SLE and WNV and that all positive tests are confirmed at the Office of Laboratory Services (OLS: 304-558-3530).

Confirmed cases are required to be reported to the local health department so that an environmental investigation can be performed. The primary purpose of the investigation is to identify potential breeding sites for disease-carrying mosquitoes and recommend action to abate these sites.

Where can I get laboratory testing for my patients?

Testing of serum or CSF is available free of charge through the Office of Laboratory Services (OLS) at WVDHHR. Call 304-558-3530 to arrange.

OLS will routinely perform serological testing for LAC, WNV, SLE and EEE.

What other diagnoses should be considered?

While a full listing is not possible here, the major differential considerations include:

- Herpes simplex encephalitis (HSE),
- Enterovirus infection, and

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- Partially treated meningitis.

HSE should be considered in persons presenting with focal neurologic or EEG findings because early therapy with acyclovir improves prognosis.

What therapy is recommended for arboviral encephalitis?

In mild cases, treatment is supportive. Persons with focal findings should be considered for treatment for presumed herpes simplex encephalitis (HSE) until the diagnosis is ruled out. Practitioners caring for a patient with seizures, hyponatremia, or disorientation should consider transfer to intensive care for close monitoring. Persons with seizures, hyponatremia, or deterioration in mental status should be managed in consultation with an expert. Even children with very severe disease can improve markedly with aggressive management.

Websites

<http://www.cdc.gov/ncidod/dvbid/arbor/index.htm>

<http://www.wvdep.org/AZIndexofInfectiousDiseases/EncephalitisArboviral/tabid/1500/Default.aspx>

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