



Mosquito-borne Diseases

West Nile Virus | Arboviruses (encephalitis)

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West Nile Virus		
Causative Agent West Nile Virus (WNV)	Background West Nile Virus is a rapidly emerging arbovirus transmitted primarily by mosquitoes. ^{2,4} The primary hosts for West Nile Virus are birds (eg, crow, Blue Jay). Mosquitoes that feed on infected birds can transmit the disease to humans. Humans and other animals (eg, horses) serve as incidental hosts. ² Approximately 1 in 5 individuals infected with WNV demonstrate symptoms, and 1 in 150 shows CNS involvement. ² A fulminant course is fatal.	Acute Clinical Features and Treatment Infections range from asymptomatic to fulminant disease. Symptoms may include general malaise, fever, chills, headache, myalgia, arthralgia, with 50% of patients presenting with maculopapular rash. Severity of disease, including CNS involvement, is correlated with age, being more severe in individuals older than 50. ¹⁻³ Peak infections occur mid-August to September. ² Flu-like symptoms occur after an incubation period of 2 to 14 days. There is no specific treatment for WNV disease. Hospitalization with supportive care is usually required in patients with severe disease.
Vector A variety of species of mosquitoes		
Geographic Distribution Worldwide, including continental US.		
Arbovirus		
Causative Agent Bunyavirus <ul style="list-style-type: none"> California/La Crosse (LAC) encephalitis Alphavirus <ul style="list-style-type: none"> Eastern equine encephalitis (EEE) Western equine encephalitis (WEE) Flavivirus <ul style="list-style-type: none"> St. Louis encephalitis (SLE) 	Background Excluding West Nile Virus, there are four main arbovirus agents of encephalitis: LAC encephalitis, EEE, WEE, and SLE. Most cases occur from June through September. SLE is the most common mosquito-transmitted human pathogen in the US. ⁵ Incidence varies with occurrence and intensity of epidemic transmission. Populations at increased risk include: <ul style="list-style-type: none"> LAC – children WEE – rural residents of the West SLE – elderly, low income areas⁵ No human vaccines are currently available.	Acute Clinical Features LAC encephalitis initially presents as nonspecific illness with fever, headache, nausea, vomiting, and lethargy. Severe disease occurs most commonly in children younger than 16. ⁵ EEE symptoms begin 4 to 10 days after infection with sudden onset of fever, general muscle pains, and a headache of increasing severity. Many patients progress to severe symptoms, such as seizures and coma. About one-third of all people with EEE die from the disease and of those who recover, many suffer permanent brain damage. ⁵ WEE infections are usually asymptomatic or present as mild, nonspecific illness. Patients with clinical illness usually have a sudden onset with fever, headache, nausea, vomiting, anorexia, and malaise, followed by altered mental status, weakness, and signs of meningeal irritation. Children, especially those younger than one year of age, are affected more severely than adults and may be left with permanent sequelae (5% to 30%). ⁵ SLE viral infections are clinically apparent less than 1% of the time, and the vast majority of infections remains undiagnosed. Illness ranges in severity from a simple fever with headache to meningoencephalitis, with an overall case-fatality rate of 5% to 15%. The disease is generally milder in children than in adults, with the elderly at highest risk for severe disease and death. ⁵
Vector Mosquito		
Geographic Distribution Worldwide		

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Laboratory Testing

West Nile Virus	
West Nile Virus Antibody, Serum 138842	CPT 86788, 86789 Specimen 0.2 mL serum Storage Instructions Refrigerate Methodology Enzyme Immunoassay
West Nile Virus Antibody, Cerebrospinal Fluid138966	CPT 86788, 86789 Specimen 0.5 mL uncentrifuged CSF in sterile container Storage Instructions Refrigerate Methodology Enzyme Immunoassay
Arbovirus Antibody Profiles*	
Arboviral Encephalitis Antibodies Profile, IgG 162008 Test Includes California/LaCrosse Encephalitis IgG Ab Eastern Equine Encephalitis IgG Ab St Louis Encephalitis IgG Ab Western Equine Encephalitis IgG Ab	CPT 86651, 86652, 86653, 86654 Specimen 1.0 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
Arbovirus IgM Antibody Panel 162305 Test Includes California/LaCrosse Encephalitis IgM Ab Eastern Equine Encephalitis IgM Ab St Louis Encephalitis IgM Ab Western Equine Encephalitis IgM Ab	CPT 86651; 86652; 86653; 86654 Specimen 1.0 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)

*Individual antibody tests are also available. See back page for test numbers.



Laboratory Testing

Individual Arbovirus Tests	
California Encephalitis Virus Antibodies, IgG 162016	CPT 86651 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
California Encephalitis Virus Antibodies, IgM 162313	CPT 86651 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
Eastern Equine Encephalitis Virus Antibodies, IgG 162024	CPT 86652 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
Eastern Equine Encephalitis Virus Antibodies, IgM 162321	CPT 86652 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
St Louis Encephalitis Virus Antibodies, IgG 162032	CPT 86653 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
St Louis Encephalitis Virus Antibodies, IgM 162339	CPT 86653 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
Western Encephalitis Virus Antibodies, IgG 162040	CPT 86654 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)
Western Encephalitis Virus Antibodies, IgM 162347	CPT 86654 Specimen 0.4 mL serum Storage Instructions Room temperature Methodology Indirect fluorescent antibody (IFA)

References

1. Hazell S, Rogers D. Mosquito-borne flaviviruses and human disease. *MLO*. May 2005; 37(5):16-20.
2. Bankowski MJ, Anderson SM. West Nile virus infection: A review for clinicians. *Adv/Lab*. 2003 Oct; 12(10):76-82.
3. *West Nile Virus*. Burlington, NC: LabCorp; 2003.
4. Centers for Disease Control and Prevention. West Nile Virus. www.cdc.gov/ncidod/dvbid/westnile/background.htm. Cited: May 1, 2005.
5. Centers for Disease Control and Prevention. Information on Arboviral Encephalitides. www.cdc.gov/ncidod/dvbid/arbor/arbdet.htm. Cited: May 31, 2005.

Cited: May 31, 2005.

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