Test Definition: WNVCI

West Nile CSF Interpretation

Overview

Useful For

Interpretation of testing for a laboratory diagnosis of infection with West Nile virus using spinal fluid specimens

Aids in diagnosis of central nervous system infection with West Nile virus

Method Name

Only orderable as part of a profile. For more information see WNC / West Nile Virus Antibody, IgG and IgM, Spinal Fluid.

Technical Interpretation

NY State Available

Yes

Specimen

Specimen Type

CSF

Reject Due To

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	7 days	
	Frozen	30 days	

Clinical & Interpretive

Clinical Information

West Nile virus (WNV) is a mosquito-borne flavivirus (single-stranded RNA) that primarily infects birds and can also infect humans and horses. WNV was first isolated in 1937 from an infected person in the West Nile district of Uganda. Until the viral infection was recognized in 1999 in birds in New York City, WNV was found only in the Eastern Hemisphere, with wide distribution in Africa, Asia, the Middle East, and Europe.(1-3) Most recently, in 2012, a total of 5674 cases of WNV were reported to the Centers for Disease Control and Prevention, among which 2873 (51%) were classified as neuroinvasive disease (eg, meningitis or encephalitis) and 286 (5%) cases resulted in death.(2)

Most people who are infected with WNV will not develop clinical signs of illness. It is estimated that about 20% of those

who become infected will develop West Nile fever with mild symptoms, including fever, headache, myalgia, and occasionally a skin rash on the trunk of the body. Case fatality rates among patients hospitalized during recent outbreaks have ranged from 4% to 14%. Advanced age is the most important risk factor for death, and patients older than 70 years of age are at particularly high risk.(1)

Laboratory diagnosis is best achieved by demonstration of specific IgG and IgM class antibodies in serum specimens. Polymerase chain reaction (PCR) (WNCSF / West Nile Virus, RNA, PCR, Molecular Detection, Spinal Fluid) can detect WNV RNA in specimens from patients with recent WNV infection (ie, 3-5 days following infection) when specific antibodies to the virus are not yet present. However, the likelihood of detection is relatively low as the sensitivity of PCR detection is approximately 55% in spinal fluid and approximately 10% in blood from patients with known WNV infection.

Reference Values

Only orderable as part of a profile. See WNC / West Nile Virus Antibody, IgG and IgM, Spinal Fluid.

An interpretive report will be provided.

Interpretation

IgM:
A positive result is consistent with the acute phase of West Nile virus (WNV) meningitis or encephalitis. In the very early stages of acute WNV infection, IgM may be detectable in spinal fluid (CSF) before it becomes detectable in serum.

A negative result may indicate absence of disease. However, specimens collected too early in the acute phase may be negative for IgM-class antibodies to WNV. If WNV central nervous system infection is suspected, a second specimen should be collected in 1 to 2 weeks and tested.

IgG:
A positive result may indicate recent or past central nervous system (CNS) infection with WNV. Clinical correlation is necessary.

This assay is unable to distinguish between intrathecal antibody synthesis and serum antibodies introduced into the CSF at the time of lumbar puncture or from a breakdown in the blood-brain barrier. Positive results should be interpreted with other laboratory and clinical data prior to a diagnosis of CNS infection.

Cautions

Test results should be used in conjunction with clinical evaluation, exposure history and other available diagnostic procedures.

The significance of negative test results in immunosuppressed patients is uncertain.

False-negative results due to competition by high levels of IgG, while theoretically possible, have not been observed.

False-positive results may occur in patients infected with other flaviviruses, including dengue virus, St. Louis virus, and Zika virus and in persons previously infected with West Nile virus.

Because closely related arboviruses exhibit serologic cross-reactivity, it sometimes may be epidemiologically important to attempt to pinpoint the infecting virus by conducting plaque reduction neutralization tests using an appropriate

battery of closely related viruses. Such testing is available through the Centers for Disease Control and Prevention and select public health laboratories.

West Nile virus antibody results for spinal fluid (CSF) should be interpreted with caution. Complicating factors include low antibody levels found in CSF, passive transfer of antibody from blood, and contamination via a traumatic lumbar puncture.

Clinical Reference

1. Petersen LR, Marafin AA. West Nile Virus: a primer for the clinician. Ann Intern Med. 2002;137:173-179
2. Centers for Disease Control and Prevention (CDC). West Nile virus and other arboviral diseases--United States, 2012. MMWR Morb Mortal Wkly Rep. 2013;62(25):513-517
3. Brinton MA. The molecular biology of West Nile Virus: a new invader of the western hemisphere. Ann Rev Microbiol. 2002;56:371-402
4. Habarugira G, Suen WW, Hobson-Peters J, Hall RA, Bielefeldt-Ohmann H. West Nile virus: an update on pathobiology, epidemiology, diagnostics, control and one health implications. Pathogens. 2020;9(7):589

Performance

Method Description

Automated interpretation of IgM and IgG antibody results for West Nile virus.

PDF Report

No

Day(s) Performed

Monday, Wednesday, Friday

Report Available

Same day/1 day

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Definition: WNVCI

West Nile CSF Interpretation

Test Classification

Not Applicable

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
WNVCI	West Nile CSF Interpretation	69048-7

Result ID	Test Result Name	Result LOINC® Value
WNVCI	West Nile CSF Interpretation	69048-7