Test Definition: WNGS

West Nile Virus Antibody, IgG, Serum

Overview

Useful For

Detection of IgG antibodies in West Nile virus infections

Method Name

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

Enzyme Linked Immunosorbent Assay (ELISA)

NY State Available

No

Specimen

Specimen Type

Serum

Specimen Required

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

Supplies: Sarstedt Aliquot Tube 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

0.4 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject
Heat-inactivated specimen	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	14 days	
	Frozen	14 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) (WNVS / West Nile Virus, RNA, PCR, Molecular Detection, Serum) can detect WNV RNA in serum 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 cerebrospinal fluid and approximately 10% in blood from patients with known WNV infection.

Reference Values

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

Negative
Reference values apply to all ages

Interpretation

The presence of IgG-class antibodies to West Nile virus (WNV) in serum indicates infection with WNV at some time in the past. By 3 weeks postinfection, virtually all infected persons should have developed IgG antibodies to WNV. If acute-phase infection is suspected, serum specimens collected within approximately 7 days postinfection should be compared with a specimen collected approximately 14 to 21 days after infection to demonstrate rising IgG antibody levels between the 2 serum specimens.

Cautions

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

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

Positive test results may not be valid in persons who have received blood transfusions or other blood products within the past several months.

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

False-positive results may occur in persons vaccinated for flaviviruses (eg, yellow fever, Japanese encephalitis, dengue).

False-positive results may occur in patients infected with other arboviruses, including flaviviruses (eg, dengue virus) and alphaviruses (eg, LaCrosse [California] encephalitis virus, Eastern or Western equine encephalitis virus, St. Louis virus) and in persons previously infected with West Nile virus (WNV). Because closely related arboviruses exhibit serologic cross-reactivity, it sometimes may be epidemiologically important to attempt to pinpoint the infecting virus by conducting cross-neutralization tests using an appropriate battery of closely related viruses.

West Nile virus antibody results for cerebrospinal 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, Marfin AA. West Nile Virus: a primer for the clinician. Ann Intern Med. 2002;137(3):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

Polystyrene microwells are coated with recombinant West Nile virus antigen. Diluted serum specimens and controls are incubated in the wells to allow specific antibody present in the specimens to react with the antigen. Nonspecific reactants are removed by washing, and peroxidase-conjugated antihuman IgG is added and reacts with specific IgG. Excess conjugate is removed by washing. Enzyme substrate and chromogen are added, and the color is allowed to develop. After adding the Stop reagent, the resultant color change is quantified by a spectrophotometric reading of optical density (OD). Specimen OD readings are compared with reference cutoff readings to determine results.(Package insert: West Nile Virus IgG DxSelect. Focus Diagnostics; 05/08/2018)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Friday

Test Definition: WNGS

West Nile Virus Antibody, IgG, Serum

Report Available
Same day/1 to 4 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Jacksonville Clinical Lab

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 Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
86789

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
WNGS	West Nile Virus Ab, IgG, S	29566-7

Result ID	Test Result Name	Result LOINC® Value
WNGS	West Nile Virus Ab, IgG, S	29566-7