

How to Interpret Acute West Nile Virus Test Results (2009 update)

IgM	IgG	EDTA blood WNV NASBA/PCR	CSF WNV PCR	Interpretation
any result	any result	POSITIVE		This patient has viral RNA in blood (viremic) and is a confirmed case of WNV infection. There is no cross-reactivity with other flaviviruses in the ProvLab WNV NAT (NASBA/PCR) and two separate tests are undertaken before reporting a positive result.
			POSITIVE	Viral RNA present in the CSF. This is a confirmed case of WNV infection. There is no cross-reactivity with other flaviviruses in the Provincial Lab WNV NAT (NASBA/PCR)
			negative	Viral RNA not detected in the CSF. This test has very low sensitivity and does not rule out WNV infection. Please refer to WNV blood tests and ensure CSF is tested for other relevant targets.
POSITIVE	negative	negative or not submitted		Probable acute WNV infection. Non-specific IgM is seen occasionally. If the diagnosis appears doubtful, a follow-up serum in two weeks is recommended to demonstrate IgG seroconversion or rising titres. There is little cross-reactivity with other flaviviruses in IgM tests but it has been reported (e.g. dengue cases).
POSITIVE	POSITIVE, low avidity	negative or not submitted		Probable acute WNV infection. IgG antibody takes 3-6 months to mature to the high avidity level. A follow-up serum in two weeks is recommended to demonstrate changing titres and confirm acute infection
POSITIVE	POSITIVE, medium or high avidity	negative or not submitted		Likely past West Nile virus infection. IgM persists into the following season in 60% of patients, and does not always indicate acute infection. IgG antibody takes 2-3 months to mature to the high avidity level, although a small proportion of cases have high avidity IgG in the first few weeks, probably due to previous exposure to a flavivirus. Recent WNV infection cannot be ruled out.
negative	POSITIVE	negative or not submitted		Past flavivirus exposure. IgG assays cannot differentiate WNV from Dengue, St Louis encephalitis, Japanese encephalitis or yellow fever. Result could be due to vaccination. IgG does not reliably indicate immunity to WNV.
negative		negative		Not a WNV case. Data from 2003 showed that an IgM test and blood NAT, performed together on the initial blood sample, detect >95% of cases. Follow-up serology is recommended only for critical cases.

PCR: polymerase chain reaction, NASBA: nucleic acid sequence based amplification. (Both are nucleic acid amplification tests (NAT) with similar clinical roles). Contact the Virologist-on-call: (403) 944-1200 or (780) 407-8822 for further advice and consultation.

How to Interpret West Nile Virus Acute and Convalescent Serology Results (2009 update)

Acute	Convalescent	Interpretation
IgM negative	IgM POSITIVE	Probable WNV case. IgM is relatively specific for WNV, and a seroconversion indicates that infection is recent (<3 weeks).
IgM POSITIVE IgG negative	IgM POSITIVE IgG POSITIVE, significant rise in IgG level	Probable WNV case. Rising IgG levels, or rising WNV HI titres, or low avidity IgG indicate recent flavivirus exposure. WNV IgM is relatively specific for WNV, indicating recent infection is WNV.
IgM POSITIVE IgG POSITIVE	IgM POSITIVE IgG POSITIVE, significant rise in IgG level	
IgM POSITIVE IgG POSITIVE	IgM POSITIVE IgG POSITIVE, Fourfold rise in WNV HI titre	
IgM POSITIVE IgG POSITIVE	IgM POSITIVE IgG POSITIVE, Low avidity IgG	
IgM POSITIVE IgG POSITIVE	IgM POSITIVE IgG POSITIVE, Stable IgG level, High avidity IgG	
IgM negative IgG negative	IgM negative IgG POSITIVE, significant rise in IgG level	Acute flavivirus infection, probably not WNV. WNV IgG tests also detect St Louis encephalitis, Japanese encephalitis, dengue and yellow fever, including vaccine responses. Neutralization titres undertaken at National Microbiology Lab required.
IgM negative IgG POSITIVE	IgM negative IgG POSITIVE, Stable IgG level, High avidity IgG	Past flavivirus exposure. WNV IgG tests also detect St Louis encephalitis, Japanese encephalitis, dengue and yellow fever, including vaccine responses. Not a reliable indicator of WNV immunity.
IgM negative IgG negative	IgM negative IgG negative	Not WNV. Lack of antibody to WNV by 21 days after onset of illness is extremely unusual.