How to Interpret Acute West Nile Virus Test Results (2015)

IgM	IgG	EDTA blood WNV RT-PCR	CSF WNV RT-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 NAAT (RT-PCR).
			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 NAAT (RT-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 antibodies usually take 3 months to mature to high avidity IgG, although up to one third of samples will display high avidity earlier. 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 antibodies persist into the following season in 60% of patients, and may persist for up to 500 days; thus a positive IgM test does not always indicate acute infection. IgG antibody usually takes 3 months to mature to high avidity IgG, although a proportion of cases have high avidity IgG in the first few weeks. Recent WNV infection cannot be ruled out.
negative	POSITIVE	negative or not submitted		Past flavivirus exposure. The WNV EIA IgG assay is fairly specific but there is some degree of cross reactivity with other flaviviruses including Japanese Encephalitis, Yellow Fever (including vaccination), Dengue and St Louis Encephalitis. 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.

RT-PCR: reverse transcription polymerase chain reaction. NAAT: nucleic acid amplification test.
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 (2015)

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 response occurs at the time of the acute infection and disappears with time, although WNV IgM persists for a prolonged period (up to 500 days).
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	Likely past WNV 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 up to one third of samples display high avidity IgG in the first few weeks. Recent WNV infection cannot be ruled out.
IgM negative IgG negative	IgM negative IgG POSITIVE, significant rise in IgG level	Acute flavivirus infection, probably not WNV. WNV EIA IgG tests show some cross reactivity with St Louis Encephalitis, Japanese Encephalitis, Dengue and Yellow Fever, including vaccine responses. Neutralization titres undertaken at National Microbiology Laboratory required.
IgM negative IgG POSITIVE	IgM negative IgG POSITIVE, Stable IgG level, High avidity IgG	Past flavivirus exposure. WNV EIA IgG tests show some cross reactivity with 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.

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