Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

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West Nile Virus - Interpreting Serology Results - Update

To Health Care Providers:

West Nile Virus (WNV) Testing

Screening tests
The WNV IgM and IgG Enzyme–Linked Immunosorbent Assays (ELISA) are used as screening tests:

- a reactive IgM antibody response using ELISA is specific for WNV and is rarely due to cross-reaction with other flaviviruses
- a reactive IgG antibody response using ELISA may be due to infection with WNV or other flaviviruses which may cross react (e.g. Dengue, St. Louis Encephalitis, Japanese Encephalitis or Yellow Fever).

Confirmation tests
All IgM and/or IgG Reactive samples will be further tested using the Plaque Reduction Neutralization Test (PRNT) which is highly specific for WNV.

Indeterminate results for any of the WNV assays may be due to the presence of low-level antibodies or non-specific reactions. Therefore, as with all laboratory tests, the results should be interpreted in the context of the clinical history.

The following table is provided to aid in the interpretation of WNV laboratory tests.

IgM ELISA	IgG ELISA	PRNT	Interpretation of WNV Tests
Non-reactive	Non-reactive	Not tested	No serological evidence of recent or past West Nile Virus infection.
Non-reactive	REACTIVE	REACTIVE ≥1:40	Evidence of past West Nile Virus infection. The West Nile Virus PRNT is highly specific for West Nile Virus, indicating definitive evidence of West Nile Virus infection.
REACTIVE or Indeterminate	REACTIVE	REACTIVE ≥1:40	Possible recent or past West Nile Virus infection. IgM antibodies may persist for >1 year in 60% of patients at low levels and may be indicative of a

IgM ELISA	IgG ELISA	PRNT	Interpretation of WNV Tests
			previous infection.
REACTIVE	Non-reactive or Indeterminate	Non-reactive or REACTIVE ≥1:40 or Indeterminate	Possible recent or acute West Nile Virus infection. A follow-up serum sample in two weeks is recommended to demonstrate the development of IgG antibodies. The failure to develop IgG antibodies suggests a non-specific IgM reaction.
REACTIVE	REACTIVE	Non-reactive	Possible recent or past West Nile Virus and/or other flavivirus infection or vaccination. A follow-up serum sample in two weeks is recommended, as well as consideration for testing for other flaviviruses, depending on the clinical history.
Non-reactive or Indeterminate	REACTIVE	Non-reactive or Indeterminate	Possible past flavivirus infection or vaccination. The IgG ELISA cannot differentiate between members of the Flavivirus Family. A follow-up serum sample in two weeks is recommended, as well as consideration for testing for other flaviviruses, depending on the clinical history.
Indeterminate	Indeterminate	Not tested	West Nile Virus antibody status inconclusive. A follow-up serum sample in two weeks is recommended. Persistent indeterminate results for West Nile Virus IgM and IgG antibodies suggest a non-specific reaction.

Specimen Requirements

Serum is the preferred sample for serology. CSF is not recommended for Arbovirus serology (including WNV and other flaviviruses) because tests have not been validated on this type of specimen.

Under special circumstances, serum and/or cerebral spinal fluid (CSF) samples for WNV polymerase chain reaction (PCR) testing will be sent to the National Microbiology Laboratory in Winnipeg, Manitoba. Contact the West Nile Virus laboratory at the CPHL to make arrangements.

For Further Information:

- Contact the West Nile Laboratory at **416-235-6092**
- Refer to the Specimen Collection Guide at http://www.oahpp.ca/services/specimen-collection-guide.html
- Ministry's website www.health.gov.on.ca