

Human WNV infections follow in the wake of positive mosquito pools, typically beginning in mid-July, peaking around Labor Day, and disappearing around mid-September. The majority of WNV-infected persons (approximately 80%) are asymptomatic. Those who develop symptoms have an incubation period of 3-14 days. Symptoms include: fever, headache, fatigue, skin rash on the trunk of the body, swollen lymph glands, and eye pain. At the time of symptom onset, the viremia has usually resolved and the patient is seropositive for IgM antibodies. Infected persons appear to develop permanent immunity, and cannot be re-infected.

Laboratory testing:

Patients suspected of WNV infection should be tested for IgM and IgG antibodies to WNV. These tests are widely available at commercial labs. If neuroinvasive WNV is suspected, testing can be performed at the Nebraska Public Health Lab (NPHL) at DHHS’ expense, provided the following criteria are met:

- The person has signs and symptoms consistent with neuroinvasive (meningitis, encephalitis, acute flaccid paralysis, etc.) WNV disease.
- The specimen is accompanied by a completed NPHL requisition <http://www.nphl.org/documents/500005%20NPHL%20Special%20Micro%20ReqMay2018.pdf>
- The sample collection date is between June 1 and October 31.
- **The submitted specimen must include a CSF for WNV IgM antibody testing. However, it is preferred that the CSF specimen be paired with a serum specimen for WNV IgM/IgG antibody testing.**
- Testing of serum specimens without a concurrent or prior CSF specimen requires pre-authorization: call 402-471-2937.

WNV Test Interpretation Guidelines

- Testing (+) for IgM and (-) for IgG in an acute specimen is consistent with acute WNV infection.
- Testing (+) for IgG and (-) for IgM is consistent with infection in the distant past.
- CSF which tests (+) for IgM is consistent with acute meningitis/encephalitis.
- Patients testing (+) for both IgM and IgG antibodies on an initial specimen need a “convalescent” serum (collected at least 14 days following the initial specimen).
- Stable antibody titers on acute and convalescent specimens suggest infection in the distant past. Rising IgM and IgG titers between the acute and the convalescent specimens suggest acute infection. A four-fold rise in titer at the same laboratory at the same time is generally considered indicative of recent infection. Some laboratories may save acute specimens for potential paired convalescent testing. Consultation with your laboratory is recommended.

Tests	Results	Interpretation
IgM IgG	negative negative	Antibody not detected = not a case of WNV
IgM IgG	negative positive	Infection at undetermined time = past infection
IgM IgG	positive negative	Evidence of recent or current infection
IgM IgG	positive positive	Evidence of recent or current infection*; further testing necessary‡
IgM IgG	indeterminate negative	Inconclusive ‡request convalescent serum

*Note that some individuals may have persisting antibodies from the previous WNV season; ‡ Paired acute and convalescent serum samples may be useful for demonstration of seroconversion.