

New York City Department of Health and Mental Hygiene
Guidelines for West Nile Virus Testing and
Reporting Cases of Encephalitis and Viral Meningitis, West Nile and other Arboviral
Infections

(Revised June, 2011)

- Providers are urged to test all suspected cases of West Nile (WN) viral disease, and especially those with suspect WN neuroinvasive disease (WNND), see below.
- Currently, the most sensitive screening test for WN virus in humans is the IgM enzyme immunoassay (EIA) on cerebrospinal fluid and/or serum.
 - Commercial testing is widely available; a partial list of laboratories offering WN viral testing is included in these guidelines.
 - The Wadsworth Center Viral Encephalitis Laboratory (VEL) performs the polymerase chain reaction (PCR) test for a panel of encephalitic viruses and collaborates with the Diagnostic Immunology Laboratory for testing of CSF for WN IgM antibodies for currently hospitalized patients with encephalitis. See below for submission criteria. CSF specimens should be sent directly to the Wadsworth VEL.
 - The DOHMH is available for consultation regarding any unusual or concerning cases (e.g., suspected transfusion, transplant or laboratory-related transmission) or clusters and may be able to offer limited testing at the PHL or shipping to Wadsworth for these circumstances. During business hours, call the Bureau of Communicable Disease at 347-396-2600 and ask to speak with the Doctor of the Week.
- Encephalitis and viral meningitis, as well as all laboratory-diagnosed arboviral infections, including WN virus infections, are reportable conditions in New York City.

Guidelines for WNV Testing and Reporting Cases of Encephalitis and Viral Meningitis

1. When to Consider WN Viral Testing for your patient

During peak adult mosquito season (July through October) consider and test for WN virus in patients suspected to have any of the following clinical syndromes:

(A) **Encephalitis**, characterized by:

- Fever $>38^{\circ}\text{C}$ or 100°F and,
- CNS involvement, including altered mental status (altered level of consciousness, confusion, agitation, or lethargy) or other cortical signs (cranial nerve palsies, paresis or paralysis, or convulsions) and,
- An abnormal CSF profile suggesting a viral etiology (a negative bacterial Gram stain and culture with a pleocytosis [WBC between 5 and 1500 cells/mm^3] and/or elevated protein level $[\geq 40\text{ mg/dl}]$).

(B) **Viral meningitis**, characterized by:

- Fever $>38^{\circ}\text{C}$ or 100°F and,
- Headache, stiff neck and/or other meningeal signs and,
- An abnormal CSF profile suggesting a viral etiology (a negative bacterial Gram stain and culture with a pleocytosis [WBC of 5-1500 cells/mm^3] and/or elevated protein level $[\geq 40\text{ mg/dl}]$).

(C) **Poliomyelitis-like syndromes**: acute flaccid paralysis or paresis, which may resemble Guillain-Barré syndrome, or other unexplained movement disorders such as tremor,

myoclonus or Parkinson's-like symptoms, especially if associated with atypical features, such as fever, altered mental status and/or a CSF pleocytosis. Afebrile patients with asymmetric weakness, with or without areflexia have also been reported in association with WN virus.

(D) **Unexplained febrile illness**, especially if accompanied by headache, fatigue, myalgias, stiff neck, or rash.

2. Diagnosis of WN Virus Infection

Currently, the most sensitive screening test for WN virus in humans is IgM enzyme immunoassay (EIA) on CSF and/or serum. Because WN IgM may not be positive until up to 8 days following onset of illness, specimens collected less than 8 days after onset may be negative for IgM. A positive WN IgG in the absence of a positive WN IgM is consistent with past infection with a flavivirus and does not by itself suggest acute WN virus infection. If acute WN virus infection is suspected, it is best to collect both acute and convalescent sera. Convalescent specimens should be collected 2-3 weeks after acute specimens.

Other methods, including PCR testing on CSF and immunohistochemical (IHC) staining of brain tissue can also be helpful, but are significantly less sensitive than antibody tests. These methods may be useful in diagnosing WN virus infection in immunocompromised individuals.

Alternative causes of encephalitis and aseptic meningitis (e.g., herpes simplex virus (HSV), enterovirus) should be considered, and can be diagnosed via PCR testing or viral culture of CSF or other specimens.

3. Commercial Testing for WNV

We encourage physicians to seek WN virus antibody testing at commercial laboratories, or at your hospital laboratory if available. Providers may also arrange for commercial PCR testing or viral isolation for patients with aseptic meningitis or if a specific agent other than WN virus is suspected (e.g., HSV, varicella zoster virus, enterovirus, or other).

Commercial laboratories offering testing for WN virus by EIA and for common encephalitis viruses by PCR include:

Associated Regional and University Pathologists (ARUP)

www.aruplab.com

1-800-522-2787

Focus Diagnostics

www.focusdx.com/focus/1-reference_laboratory/index.asp

1-800-445-4032

LabCorp

<https://www.labcorp.com/wps/portal/provider/testmenu>

1-800-788-9091

Mayo Clinic

www.mayomedicallaboratories.com

1-800-533-1710

Quest Diagnostics
www.questdiagnostics.com/hcp/topics/featured_tests.html
1-800-631-1390

ViroMed Laboratories
www.viromed.com/services/services.htm
1-800-582-0077

(Laboratories listed above regularly report test results to the DOHMH; this is not a complete list of all laboratories that perform WN serologic and PCR testing.)

4. Testing CSF at Wadsworth Center VEL by the Viral Encephalitis PCR Panel

The Wadsworth Center VEL offers free testing of CSF by the viral encephalitis PCR panel **only for currently hospitalized patients with encephalitis**. Serum can also be submitted along with CSF for these patients, and will be forwarded to Wadsworth's Diagnostic Immunology laboratory for arbovirus serology. CSF specimens from patients who do not have encephalitis or who have recovered will not be tested by PCR. If CSF is to be tested for only HSV or enterovirus, specimens should be referred to hospital or private pathology laboratories approved for this testing. The Wadsworth Center VEL performs PCR testing for a summer panel of viruses including arboviruses, adenovirus, enterovirus, herpes simplex viruses 1 and 2, Epstein-Barr virus, cytomegalovirus, varicella zoster virus, and human herpes virus 6. **CSF must be frozen and shipped overnight on at least 5 lbs (2+Kg) of dry ice, or more for multiple samples.** If CSF specimens arrive thawed, testing will not be performed. **It is critical that the Infectious Diseases Requisition form be filled in completely and legibly for each specimen submitted. Include laboratory PFI, name and direct phone number for both the laboratory contact and treating physician, and any known travel and/or arthropod contact, with location and dates.**

The following instructions, forms and information for submitting specimens to the Wadsworth Center VEL can be found at <http://www.wadsworth.org/divisions/infdis/enceph/form.htm>:

1. Collection and Submission of Specimens for Viral Encephalitis Testing Instructions (June 2010 version)
2. Viral Encephalitis/Meningitis Case Report Form
3. Infectious Diseases Requisition Form
4. The Wadsworth Center VEL shipping address for viral PCR panel specimens

To obtain results for testing performed at the Wadsworth Center, facilities that submit directly to the Wadsworth Center must have access to the Health Provider Network (HPN). Information for obtaining HPN accounts, which can be used for numerous other functions, can be obtained by calling the Electronic Clinical Laboratory Reporting System (ECLRS) Help Desk at 1 (866) 529-1890. Positive results will also be communicated to the treating medical provider or the submitting laboratory by telephone, not by FAX.

5. Reporting

Encephalitis and viral meningitis, as well as all laboratory-diagnosed arboviral infections, including WN virus infections, are reportable conditions in New York City.

What is Reportable:

Providers are required to report:

- Encephalitis
- Viral meningitis
- All arboviral infections with laboratory evidence of current or recent infection.

How to Report:

Report the above conditions directly to the Bureau of Communicable Disease electronically via NYC DOHMH's Reporting Central Home Page (you must have a NYCMED account to access Reporting Central at <http://nyc.gov/health/nycmed>; instructions for setting up a NYCMED account are available at: <http://www.nyc.gov/html/doh/html/hcp/hcp-urf1.shtml>). You may also report using the "Universal Reporting Form" September 2009 version (downloadable form at <http://www.nyc.gov/html/doh/html/hcp/hcp-urf.shtml>); fax to the Bureau of Communicable Disease at 347-396-2632. You may also call in reports directly to the Bureau of Communicable Disease by phone at 347-396-2600.

6. FATAL ENCEPHALITIS CASES

Cases of fatal encephalitis whose etiology is unknown, but suspected to be due to an arboviral infection should be reported to the Bureau of Communicable Disease. If an autopsy is conducted, tissue samples, including brain, brainstem, and spinal cord can be submitted to the NYSDOH and the Centers for Disease Control and Prevention (CDC) for viral testing.

7. QUESTIONS?

During regular business hours, contact the:

- NYC DOHMH Bureau of Communicable Disease at 347-396-2600,
- NYSDOH Viral Encephalitis Laboratory at 518-474-4177 for questions about the PCR panel, or
- NYSDOH Diagnostic Immunology Laboratory at 518-474-4177 for questions about serologic testing.

To report a cluster of cases, or an individual urgent case, such as a suspected WN virus case due to transfusion or organ transplantation, call the:

- Bureau of Communicable Disease at 347-396-2600, during regular business hours, or
- After hours, contact the New York City Poison Control Center at 212-POISONS (212-764-7667) or 1-800-222-1222, and ask for the doctor on call.

All cases of encephalitis, aseptic meningitis, West Nile virus and other laboratory-diagnosed arboviral infections must be reported to the New York City DOHMH Bureau of Communicable Disease!

Report electronically via NYC DOHMH's Reporting Central Home Page (you must have a NYCMED account to access Reporting Central) at <https://a816-healthpsi.nyc.gov:443/ReportingCentral/main.action>. To get a NYCMED account, go to <http://nyc.gov/health/nycmed>; instructions for setting up a NYCMED account are available at: <http://www.nyc.gov/html/doh/html/hcp/hcp-urf1.shtml>.

To report via facsimile, fax the "Universal Reporting Form" to 347-396-2632. The Universal Reporting Form (URF) is available from your infection control practitioner, and/or can be downloaded from <http://www.nyc.gov/html/doh/html/hcp/hcp-urf.shtml>.

To report by telephone, call the Bureau of Communicable Disease at 347-396-2600 during business hours.