

WEST NILE VIRUS:

Testing and Reporting Guidelines for Cases of West Nile Viral and Other Arboviral Infections

(Revised July 2016)

- Test all suspected cases of West Nile viral disease.
- The IgM enzyme immunoassay (EIA) on cerebrospinal fluid and/or serum is currently the most sensitive screening test for West Nile virus on specimens collected 8 days or more after illness onset
- The Wadsworth Center Viral Encephalitis Laboratory performs a PCR test for a panel of encephalitic viruses including West Nile virus, for currently hospitalized patients with encephalitis only. PCR is less sensitive than EIA but may detect West Nile virus within 2-8 days of illness onset.
- West Nile viral infections, encephalitis regardless of etiology, and all other laboratory-diagnosed arboviral infections (e.g., dengue, chikungunya, Zika) are reportable conditions in New York City.

WHEN TO CONSIDER WEST NILE VIRAL TESTING FOR YOUR PATIENT

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

(A) **Viral encephalitis**, characterized by:

- Fever >38°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,
- Abnormal CSF profile suggesting a viral etiology (negative bacterial Gram stain and culture with a pleocytosis [WBC between 5 and 1500 cells/mm³] and/or elevated protein level [≥40 mg/dl]).

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

- Fever >38°C or 100°F and,
- Headache, stiff neck and/or other meningeal signs and,
- Abnormal CSF profile suggesting viral etiology (negative bacterial Gram stain and culture with a pleocytosis [WBC of 5-1500 cells/mm³] and/or elevated protein level [≥40 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 illness with asymmetric weakness, with or without areflexia, has also been reported in association with West Nile virus.

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

DIAGNOSIS OF WEST NILE VIRUS INFECTION

The IgM enzyme immunoassay (EIA) on CSF and/or serum is currently the most sensitive screening test for West Nile virus in humans. Because West Nile 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, and testing should be repeated. A positive West Nile IgG in the absence of a positive West Nile IgM is consistent with past infection with a flavivirus and does not by itself suggest acute West Nile virus infection. If acute West Nile 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 can also be helpful, but are significantly less sensitive than antibody tests and should be done in conjunction with serology. PCR on serum or CSF may be positive within 2-8 days of illness onset.

PCR testing on CSF, or serum or plasma may be useful, and for severely **immunocompromised** patients, the only way to diagnose West Nile virus infection in individuals who are unable to mount a detectable immune response. Immunohistochemical (IHC) staining is also available when brain tissue is available.

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

COMMERCIAL TESTING FOR WEST NILE VIRUS

Physicians are encouraged to seek West Nile virus antibody testing at commercial laboratories, or at your hospital laboratory if available. Providers may also arrange for commercial PCR testing for patients with aseptic meningitis or if a specific agent other than West Nile virus is suspected (e.g., HSV, varicella zoster virus, or enterovirus). Commercial laboratories offering testing for West Nile virus by EIA and for common encephalitis viruses by PCR include:

(This is not a complete list of all laboratories that perform West Nile virus serologic and PCR testing)

Associated Regional and University Pathologists (ARUP)

www.aruplab.com

1-800-522-2787

LabCorp

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

1-800-788-9091

Mayo Clinic

www.mayomedicallaboratories.com

1-800-533-1710

Quest Diagnostics

<http://www.questdiagnostics.com/testcenter/TestCenterHome.action>

1-800-631-1390

ViroMed Laboratories – testing services available through LabCorp

www.viromed.com

1-800-582-0077

WADSWORTH CENTER - SEROLOGY AND THE PCR VIRAL ENCEPHALITIS PANEL

In addition to traditional serology, the Wadsworth Center Viral Encephalitis Laboratory offers free testing of CSF by the viral encephalitis PCR panel. This service is **only available for currently hospitalized patients with encephalitis**. Serum must also be submitted with CSF. Serum will be forwarded to Wadsworth's Diagnostic Immunology laboratory for arbovirus serology. CSF specimens from patients who do not have encephalitis or are not hospitalized will not be tested. The PCR panel includes *arboviruses (West Nile, St. Louis encephalitis, Eastern equine encephalitis, California serogroup (including La Crosse and Jamestown Canyon), and Cache Valley viruses) adenovirus, enterovirus (including echovirus, coxsackie virus, poliovirus and others), herpes simplex viruses 1 and 2, Epstein-Barr virus, cytomegalovirus, varicella zoster virus, and human herpes virus 6*. Clinicians wishing only to test for HSV or enterovirus should refer specimens to a hospital or commercial laboratory.

CSF must be frozen at -70°C and shipped overnight on at least 5 lbs. (2+Kg) of dry ice. If CSF specimens arrive thawed, testing will not be performed. It is critical that the Wadsworth Center Infectious Diseases Requisition form be filled in completely and legibly for each specimen submitted. Include laboratory PFI, name and direct phone number for the laboratory contact, treating physician, date of illness onset, and any known travel, animal 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/programs/id/virology/services/encephalitis>

1. Collection and Submission of Specimens for Viral Encephalitis Testing Instructions
2. Infectious Diseases Requisition Form
3. 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 should 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. Results will not be transmitted by FAX.

REPORTING

All cases of encephalitis (regardless of etiology) and West Nile virus and other laboratory-diagnosed arboviral infections must be reported to the New York City Health Department.

What is Reportable:

Providers are required to report:

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

How to Report:

Report the above conditions directly to the Health Department electronically via our Reporting Central Home Page (you must have a NYCMED account to access Reporting Central at <http://nyc.gov/health/nycmed>).

You may also report using the “*Universal Reporting Form*” *September 2013 version* (downloadable form at <https://www1.nyc.gov/site/doh/providers/reporting-and-services/hcp-urf.page>; fax to 347-396-2632. You may also call in reports directly by phone to the Provider Access Line at 866-692-3641.

FATAL ENCEPHALITIS CASES

Cases of fatal encephalitis of unknown etiology but suspected to be caused by an arboviral infection, should be reported to the Health Department. If an autopsy is conducted, tissue samples, including brain, brainstem, and spinal cord can be submitted to the New York State Department of Health (NYSDOH) and the Centers for Disease Control and Prevention (CDC) for viral testing.

QUESTIONS?

During regular business hours, contact the:

- NYC Health Department’s Provider Access Line at 866-692-3641 to report a cluster of cases or an individual urgent case, such as a suspected West Nile virus case due to transfusion or organ transplantation.
- NYSDOH Viral Encephalitis Laboratory at 518-474-4177 for questions about the PCR panel
- NYSDOH Diagnostic Immunology Laboratory at 518-474-4177 for questions about serologic testing.