



NEW YORK CITY DEPARTMENT OF  
HEALTH AND MENTAL HYGIENE  
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*Commissioner*

## 2017 DOHMH Alert 20: West Nile Virus

July 26, 2017

*Please distribute to staff in the Departments of Internal Medicine, Pediatrics, Family Medicine, Neurology, Infection Control, Infectious Disease, Emergency Medicine, Critical Care, Obstetrics and Gynecology, Oncology and Laboratory Medicine*

- **West Nile virus has been detected in 134 mosquito pools collected from all five boroughs. Mosquito season in New York City (NYC) usually peaks in July.**
  - **To date, no human cases have been reported in NYC this year.**
- **West Nile viral disease should be suspected in patients presenting with viral meningitis or encephalitis, acute flaccid paralysis, and/or symptoms compatible with West Nile fever, particularly from July 1 - October 31.**
- **The most sensitive screening test for West Nile virus in humans is IgM enzyme immunoassay (EIA) on cerebrospinal fluid and/or serum. Testing is widely available at commercial laboratories. PCR testing, while confirmatory, is less sensitive.**
- **Report all cases of encephalitis or any laboratory evidence of current or recent infection with West Nile virus or other arboviral infection to the Health Department.**

Dear Colleagues,

West Nile virus activity is rapidly increasing in New York City; the virus has already been detected in 134 mosquito pools collected from all five boroughs. The majority of positive pools were in Staten Island and Queens. No human cases have been reported in NYC so far this year, historically most cases are identified from late July through October. You can monitor West Nile virus activity in NYC at <http://www1.nyc.gov/site/doh/health/health-topics/west-nile-virus-activity.page>.

The Health Department reminds medical providers to be alert for possible cases of West Nile viral disease from July 1 through October 31, the peak adult mosquito season. Consider West Nile viral disease in any patient with unexplained encephalitis, viral meningitis, or acute flaccid paralysis as well as in patients with symptoms compatible with West Nile fever which can include fever, maculopapular rash, headache, fatigue, weakness, joint and muscle pain as well as nausea, vomiting and diarrhea)

Specimens for serologic testing for West Nile virus should be sent to a commercial laboratory or at your hospital laboratory, if available. The most sensitive screening test for West Nile virus in humans is IgM enzyme immunoassay (EIA) on cerebrospinal fluid (CSF) and/or serum. WNV-specific IgM antibodies are usually detectable within 8 days of symptom onset. Viral RNA testing using polymerase chain reaction (PCR) can be done on CSF and serum. It is less sensitive than the immunoassay, but positive results confirm infection. *Always attempt to submit serum for serology when submitting specimens for PCR as a negative PCR does not necessarily rule out infection.* Health care providers wishing to submit CSF from patients with encephalitis to the New York State Wadsworth Center for the viral encephalitis PCR panel must adhere to the submission guidelines, which are available online (links listed below). In special cases, the NYC Health Department can assist with testing or transporting specimens to

Wadsworth, e.g., cases potentially due to an unusual source of transmission, such as transfusion, transplant or laboratory exposure.

Encephalitis should be reported routinely throughout the year, as required by law. Arboviral infections, including West Nile virus, with laboratory evidence of recent or current infection should be reported immediately, as required by law.

Updated “Guidelines for West Nile Virus Testing and Reporting Cases of Encephalitis and Viral Meningitis, West Nile and other Arboviral Infections” are attached and also available online at: <http://www1.nyc.gov/site/doh/providers/health-topics/west-nile-virus.page>. This document includes a list of commercial laboratories that provide West Nile virus serologic testing, viral PCR or viral isolation testing, and links to the Wadsworth Center guidance for submitting CSF and serum for the PCR Viral Encephalitis\* and Arboviral Serology\* panels.

#### Viral Encephalitis PCR Panel\* and Arboviral Serology Screen\* testing at Wadsworth Center’s Viral Encephalitis Laboratory (VEL)

Always attempt to submit serum for serology along with specimens submitted for the Arboviral PCR panel. Instructions, forms and information for submitting specimens to the Wadsworth Center VEL for viral encephalitis PCR testing 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

#### For consultation or to report a case to the NYC Health Department

- Call 866-692-3641 OR
- Fax the completed Universal Reporting Form to 347-396-2632 OR
- Complete the electronic Universal Reporting Form at:  
<http://www1.nyc.gov/site/doh/providers/reporting-and-services/reporting-central.page>.

The successful detection and control of West Nile virus in NYC has been due in large part to our Health Department’s ongoing excellent partnership with the city’s medical and laboratory communities. Thank you for your continuing efforts.

#### Zika, Dengue and Chikungunya

Zika, dengue, and chikungunya are three other types of arboviruses commonly diagnosed among NYC residents. These viruses are associated with travel to an endemic area or, for Zika virus, unprotected sex with a person who has traveled to an endemic area. None are associated with encephalitis, but can result in illness similar to West Nile fever in which patients present with fever and rash. For information on recognizing, diagnosing, and reporting these diseases, visit our website at [www.nyc.gov/health](http://www.nyc.gov/health) and search by disease.

Sincerely,

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\*The PCR Viral Encephalitis Panel includes; arboviruses (West Nile, St. Louis encephalitis, Eastern equine encephalitis, California serogroup (including La Crosse and Jamestown Canyon), and Cache Valley viruses) adenovirus, cytomegalovirus, Epstein-Barr virus, enterovirus (all serotypes including echovirus and Coxsackie virus, poliovirus and others), herpes simplex viruses 1 and 2, human herpes virus 6, and varicella zoster virus. Powassan virus is only included upon request. The Arboviral Serology Screen includes; West Nile, Powassan, Eastern equine encephalitis, Western equine encephalitis, St. Louis encephalitis, California serogroup encephalitis. Testing for chikungunya and Zika viruses is only available upon request and in consultation with the health department.

## WEST NILE VIRUS:

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

(Revised July 2017)

- 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/mm<sup>3</sup>] 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/mm<sup>3</sup>] 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.

### 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)*

**ARUP Laboratories Associated Regional and University Pathologists** - 1-800-522-2787

[www.aruplab.com](http://www.aruplab.com)

**LabCorp** - 1-800-788-9091

[www.labcorp.com/wps/portal/provider/testmenu](http://www.labcorp.com/wps/portal/provider/testmenu)

**Mayo Clinic** - 1-800-533-1710

[www.mayomedicallaboratories.com](http://www.mayomedicallaboratories.com)

**Quest Diagnostics** - 1-800-631-1390

[www.questdiagnostics.com/testcenter/TestCenterHome.action](http://www.questdiagnostics.com/testcenter/TestCenterHome.action)

### WADSWORTH CENTER - SEROLOGY AND THE PCR VIRAL ENCEPHALITIS PANEL

Wadsworth Center offers both traditional arboviral serology on serum and CSF at the Diagnostic Immunology Laboratory, as well as a viral encephalitis PCR panel on CSF through the Viral Encephalitis Laboratory. The PCR panel is **only available for currently hospitalized patients with encephalitis**, and serum for arboviral serology must also be submitted with CSF. All specimens should be sent to the Viral Encephalitis Laboratory; serum will be forwarded to the Diagnostic Immunology laboratory. CSF specimens from patients who do not have encephalitis or are not hospitalized will not be tested. Clinicians wishing only to test for HSV or enterovirus should consider referring specimens to a hospital or commercial laboratory for a quicker turn-around time.

The PCR Encephalitis Panel includes *arboviruses (West Nile, St. Louis encephalitis, Eastern equine encephalitis, California serogroup (including La Crosse and Jamestown Canyon), and Cache Valley viruses) adenovirus, cytomegalovirus, Epstein-Barr virus, enterovirus (all serotypes including echovirus and Coxsackie virus, poliovirus and others), herpes simplex viruses 1 and 2, human herpes virus 6, and varicella zoster virus*. Please note, Powassan virus testing is only available upon request. The Arboviral Serology Screen includes *West Nile, Powassan, Eastern equine encephalitis, Western equine encephalitis, St. Louis encephalitis, California serogroup encephalitis*.

Testing for *chikungunya* and *Zika* viruses is only available upon request and in consultation with the health department.

**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 Permanent Facility Identifier (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

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.