



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
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Commissioner

2016 DOHMH Alert #23: West Nile Virus

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 identified so far this season in mosquito pools from Staten Island, Queens and the Bronx.**
 - 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.**

July 27, 2016

Dear Colleagues,

West Nile virus has been detected in positive mosquito pools collected from the Prince's Bay and Rossville areas of Staten Island. No human cases have been reported in NYC so far this year. You can monitor whether the virus is present in your part of the city 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 and in patients with symptoms compatible with West Nile fever.

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, which is commercially available. 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. Health care providers wishing to submit CSF from patients with encephalitis to 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 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 for the viral encephalitis PCR-panel.

Viral Encephalitis PCR Panel testing at Wadsworth Center’s Viral Encephalitis Laboratory (VEL)
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 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. For information on recognizing, diagnosing, and reporting these diseases, visit our website at www.nyc.gov/health and search by disease.

Sincerely,

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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.