

DELAWARE HEALTH ALERT #504: First West Nile Virus (WNV) Human Cases in Delaware

The Delaware Division of Public Health (DPH) is sending this health alert to advise of the first three cases of human West Nile Virus (WNV) in Delaware residents this year.

Summary

- The Delaware Division of Public Health is reporting the first three cases of human WNV infection this year in Delaware Residents.
- All three human cases of WNV reside in New Castle County. However, WNV has been detected in all three counties in Delaware in sentinel chickens.
- WNV disease should be suspected in patients presenting with viral meningitis or encephalitis, acute flaccid paralysis, or symptoms compatible with West Nile fever, particularly now through October 31.
 - Laboratory diagnosis is generally accomplished by testing of serum or cerebrospinal fluid (CSF) to detect WNV-specific IgM antibodies. Immunoassays for WNV-specific IgM are available commercially and through state public health laboratories. Serologic testing should always be done concurrently with PCR.
- Encourage patients to utilize personal protective measures include use of mosquito repellents, wearing long-sleeved shirts and long pants, and limiting outdoor exposure from dusk to dawn.

Reporting

Report any suspected cases of WNV or any laboratory evidence of current infection with West Nile virus or other arboviral infection to DPH by completing the Morbidity Report Form [here](#) or calling the Office of Infectious Disease at 1-888-295-5156.

Background

DPH is reporting the first three cases of human West Nile virus (WNV) infection this year in Delaware residents. The patients were all males 50 years of age and older residing in New Castle County. All three individuals were hospitalized due to illness.

Clinical Characteristics

Most people (eight out of 10) infected with WNV do not develop any symptoms.

Febrile illness (fever) in some people. About one in five people who are infected develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash. Most people with febrile illness due to WNV recover completely, but fatigue and weakness can last for weeks or months.

Serious symptoms in a few people. About one in 150 people who are infected develop a severe illness affecting the central nervous system such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord).

- Symptoms of severe illness include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis.

- Severe illness can occur in people of any age; however, people over 60 years of age are at greater risk for severe illness if they are infected (one in 50 people). People with certain medical conditions, such as cancer, diabetes, hypertension, kidney disease, and people who have received organ transplants, are also at greater risk.
- Recovery from severe illness might take several weeks or months. Some effects to the central nervous system might be permanent.
- About one out of 10 people who develop severe illness affecting the central nervous system die.

Laboratory Testing

Laboratory diagnosis is generally accomplished by testing of serum or cerebrospinal fluid (CSF) to detect WNV-specific IgM antibodies. Immunoassays for WNV-specific IgM are available commercially and through state public health laboratories.

WNV-specific IgM antibodies are usually detectable three to eight days after onset of illness and persist for 30 to 90 days, but longer persistence has been documented. Therefore, positive IgM antibodies occasionally may reflect a past infection. If serum is collected within eight days of illness onset, the absence of detectable virus-specific IgM does not rule out the diagnosis of WNV infection, and the test may need to be repeated on a later sample.

The presence of WNV-specific IgM in blood or CSF provides good evidence of recent infection but may also result from cross-reactive antibodies after infection with other flaviviruses or from non-specific reactivity. According to product inserts for commercially available WNV IgM assays, all positive results obtained with these assays should be confirmed by neutralizing antibody testing of acute- and convalescent-phase serum specimens at a state public health laboratory or Centers For Disease Control and Prevention (CDC).

WNV IgG antibodies generally are detected shortly after IgM antibodies and persist for many years following a symptomatic or asymptomatic infection. Therefore, the presence of IgG antibodies alone is only evidence of previous infection and clinically compatible cases with the presence of IgG, but not IgM, should be evaluated for other etiologic agents.

Plaque-reduction neutralization tests (PRNTs) performed in reference laboratories, including some state public health laboratories and CDC, can help determine the specific infecting flavivirus. PRNTs can also confirm acute infection by demonstrating a fourfold or greater change in WNV-specific neutralizing antibody titer between acute- and convalescent-phase serum samples collected two to three weeks apart.

Viral cultures and tests to detect viral RNA (e.g., reverse transcriptase-polymerase chain reaction [RT-PCR]) can be performed on serum, CSF, and tissue specimens that are collected early in the course of illness and, if results are positive, can confirm an infection. However, the likelihood of detecting a WNV infection through molecular testing is fairly low.

Prevention

No WNV vaccines are licensed for use in humans. In the absence of a vaccine, prevention of WNV disease depends on community-level mosquito control programs to reduce vector densities, personal protective measures to decrease exposure to infected mosquitoes, and screening of blood and organ donors. Personal protective measures include use of mosquito repellents, wearing long-sleeved shirts and long pants, and limiting outdoor exposure from dusk to dawn. Using air conditioning, installing window and door screens, and reducing mosquito breeding sites around the home, can further decrease the risk for WNV exposure.

Blood and some organ donations in the United States are screened for WNV infection; healthcare professionals should remain vigilant for the possible transmission of WNV through blood transfusion or organ transplantation. Any suspected WNV infections temporally associated with blood transfusion or organ transplantation should be reported promptly to the appropriate state or local health department. People with confirmed WNV infections should not donate blood for four months after their illness.

Treatment

There is no specific treatment for WNV disease; clinical management is supportive. Patients with severe meningeal symptoms often require pain control for headaches and antiemetic therapy and rehydration for associated nausea and vomiting.

Patients with encephalitis require close monitoring for the development of elevated intracranial pressure and seizures. Patients with encephalitis or poliomyelitis should be monitored for inability to protect their airway. Acute neuromuscular respiratory failure may develop rapidly, and prolonged ventilatory support may be required.

What Public Health is doing:

- Statewide surveillance program conducted by DNREC's Mosquito Control Section and Delaware Public Health utilizing sentinel chickens for WNV and EEE detection.
- Utilizing surveillance data to guide mosquito control efforts.
- Encouraging reporting for arboviral infections.
- Educating the public and healthcare providers.

Reporting

All human arboviral infections, including but not limited to California serogroup viruses, Chikungunya, Eastern equine encephalitis, Dengue Fever, Powassan, St. Louis Encephalitis Virus, West Nile Virus, Western equine encephalitis, and Zika Virus are reportable to DPH. DPH encourages provider reporting by:

- Completing the Morbidity Report Form [here](#); or
- Calling the Office of Infectious Disease at 1-888-295-5156.