



Update on West Nile Virus and Encephalitis: Reporting and Laboratory Testing

In 2000, West Nile virus (WNV) activity was widespread in Connecticut. A statewide avian surveillance system confirmed WNV infected dead birds in 110 towns and in all eight counties. From July 5 through November 2, 1095 positive crows were collected (Figure 1, see page 8). The percentage of dead crows testing positive increased quickly in August and was over 80% from September through mid-October. West Nile virus was also isolated from 7 horses and 14 pools of mosquitoes.

To monitor for WNV infection in people, the Department of Public Health (DPH) encouraged submission of appropriate CSF and serologic specimens from persons hospitalized with specified neurologic syndromes. No hospitalized patient was identified with WNV infection in Connecticut.

A total of 166 specimens, including 102 sera and 64 CSF specimens, from 93 persons hospitalized with neurologic disease were tested for WNV by the State Laboratory and the Centers for Disease Control and Prevention (CDC). Of these, 49 (53%) were from persons with encephalitis or meningoencephalitis, 43 (46%) from persons aged > 17 years with aseptic meningitis, and 1 (1%) from a person with fever and Guillain-Barré syndrome. None had positive WNV IgM antibody tests indicating recent infection. Specimens from an additional 153 patients diagnosed with a variety of clinical syndromes were also tested. One patient with a history of headaches for several days was found to have acute WNV infection on testing of acute and convalescent sera.

With the re-emergence of WNV in 2000 and spread of the virus in a widening geographic area of the northeastern United States (U.S.), there is concern that WNV will continue to pose a threat to human health beginning with mosquito activity this spring.

<i>In this issue...</i>	
West Nile Update	5
Reporting	5
Testing	6
Reporting Form	7

In response to this threat, surveillance will again be conducted for WNV in wild birds, domestic animals, mosquitoes, and people. The goals of continuing these systems are to determine whether WNV is present and amplifying, guide activities to limit its impact on human health, and determine its human and animal health impact.

In New York and New Jersey in 2000, 19 of 20 persons with acute illness attributed to WNV were hospitalized with encephalitis or aseptic meningitis. Thus, surveillance for persons hospitalized with encephalitis, including meningoencephalitis, and adult cases of aseptic meningitis is a sensitive and efficient way to conduct surveillance for WNV infection in humans. Clinicians should be on the alert for cases of viral encephalitis associated with diffuse muscle weakness, which was first described during the 1999 outbreak in New York.

Clinicians should take a thorough travel history from patients with neurologic illness since exposure to mosquitoes varies by geographic region of the U.S. and season. In Connecticut, there is minimal *Culex* mosquito activity until the end of May and little risk of infection with WNV in humans is expected until mid-summer. However, as warm weather arrives and mosquito populations begin to build, health care providers should be alert to the possibility of WNV infection, especially in persons with heavy mosquito exposure around the home setting.

Criteria for reporting cases of suspected WNV encephalitis

Encephalitis is a reportable disease in Connecticut. Because of the current importance

of WNV, we request that you report immediately by telephone any patient with a presumed diagnosis of encephalitis.

To report a case of encephalitis, please call the patient's local department of health and the DPH Epidemiology Program at (860) 509-7994 during business hours or (860) 509-8000 after hours.

Testing for WNV

Free testing for WNV and other arboviruses will be performed at the State Laboratory on acute and paired specimens from persons hospitalized with: encephalitis, meningoencephalitis, Guillain-Barré syndrome with fever, or aseptic meningitis in persons aged > 17 years.

In addition to the DPH Laboratory Virology Form, OL42A, an Encephalitis/Meningoencephalitis Initial Report Form (see page 7) must accompany requests for free arboviral testing. The case report form includes the necessary information needed for interpretation of test results and timely WNV surveillance.

A convalescent specimen should be submitted from all patients with negative specimens collected during the first week of illness for accurate interpretation. In some confirmed cases of WNV infection, acute specimens have tested negative for WNV IgM antibodies.

Specimen types and amounts:

- Acute specimens should be collected within 14 days of onset of symptoms. Convalescent specimens should be collected 2-3 weeks later.
- Please send ≥ 5.0 ml of serum and ≥ 1.0 ml of CSF. Please *do not* send whole blood.
- Frozen brain tissue and acute CSF specimens can be submitted for virus isolation free of charge. Unless specifically requested, virus isolation will not be attempted.
- To obtain free testing, please write "WNV testing" or "encephalitis" on the DPH Laboratory Virology Form. Convalescent specimens should be clearly labeled as such so appropriate testing can be done. Forms can be obtained from the DPH Laboratory at (860) 509-8501.
- The Encephalitis/Meningoencephalitis Initial Report Form must be completed and accompany each specimen or set of specimens submitted for testing. Testing may be delayed

on specimens that are not accompanied by the necessary forms.

Tests to be done and reporting of test results

- Acute serum and CSF specimens will be examined for IgM antibodies to WNV and several other arboviruses including eastern equine encephalitis, western equine encephalitis, California encephalitis group, and St. Louis encephalitis. Negative results will be reported out from 2-4 days after receiving the specimens and completed case report form. Positive results will take longer as confirmatory testing must first be done at the CDC laboratory.
- Paired serum specimens will be examined for IgM and IgG antibodies to WNV, eastern equine encephalitis, western equine encephalitis, California encephalitis group, and St. Louis encephalitis. In addition, tests for IgG antibodies to herpes, varicella, cytomegalovirus, and Jamestown Canyon viruses will be included.

Mild illness

Testing for WNV is not provided at the State Laboratory for persons suspected of having WNV infection on the basis of mild illness, such as fever or headache, and recent mosquito bites. Levels of WNV activity in the community would have to be very high (ie, many confirmed cases of WNV encephalitis) for such symptoms to be likely due to WNV infection. In addition, as persons with mild illness will most likely recover completely, testing is not necessary for prognostication. Rather than testing these persons, they should be advised to seek medical attention if more severe symptoms develop such as confusion, severe muscle weakness, lethargy, severe headache, stiff neck, or photophobia.

For testing of outpatients, specimens should be submitted to commercial or hospital laboratories that perform testing for WNV antibodies or cross-reacting St. Louis encephalitis virus antibodies.

As always, we appreciate our ongoing partnership with the medical community in reporting or investigating unusual diseases. If you have any questions concerning WNV surveillance, please feel free to contact the Epidemiology Program at (860) 509-7994.


State of Connecticut Department of Public Health

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Encephalitis / Meningoencephalitis
Initial Reporting Form

A completed form must accompany requests for West Nile virus testing in addition to the laboratory request form, OL42A. If you have questions concerning the information requested please contact the Epidemiology Program at (860) 509-7994.

Patient Information

Last Name _____ First Name _____ Date of Birth ____/____/____ Age ____
 Address _____ City _____ County _____
 State _____ Zip Code _____
 Telephone Home (_____) _____ Work (_____) _____ Sex Male Female
 Race White Black Am Indian/Alaskan Asian Other Unknown Hispanic Yes No Unknown

Clinical Information

Hospitalized Yes No Hospital Name _____ City _____ State _____
 Date of Admission ____/____/____ Date of Symptom Onset ____/____/____
 Date of First Neurologic Symptom ____/____/____
 Current Diagnosis Encephalitis Meningoencephalitis Meningitis Other _____
 Did patient die of this illness? Yes No Unknown

Vaccination / Disease History

		Year Vaccinated / Diagnosed
Was patient ever vaccinated for Yellow fever?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	_____
Was patient ever vaccinated for Japanese encephalitis?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	_____
Did patient ever have previous history of viral encephalitis?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	_____
Did patient ever have Dengue fever?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	_____

Specimens Being Submitted for Testing

CSF Yes No If yes, date collected ____/____/____
 Serum Yes No If yes, date collected ____/____/____
 Other (specify) _____ Date collected ____/____/____

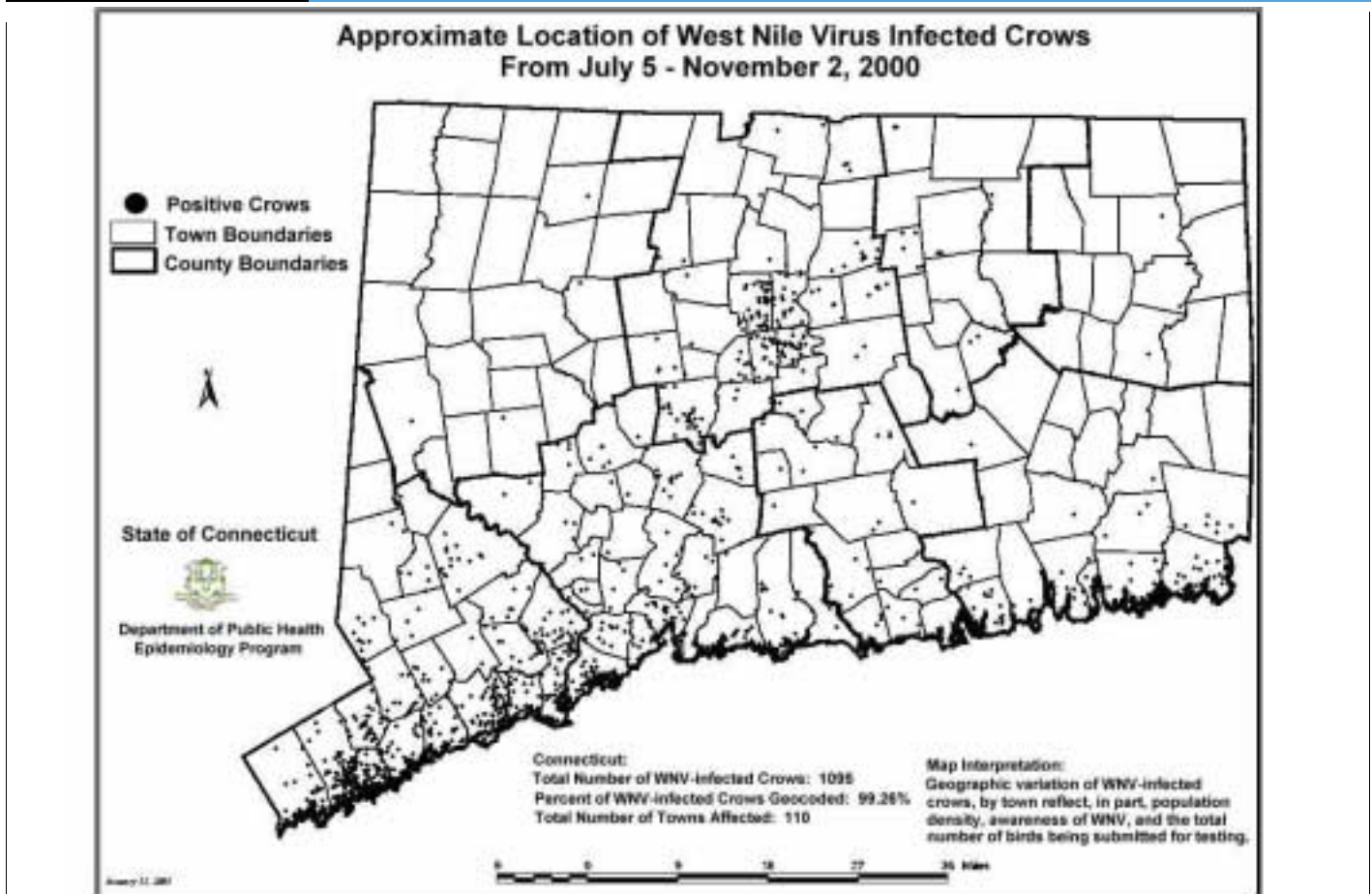
Requesting Physician

Date of Report ____/____/____
mm dd yyyy

Last Name _____ First Name _____
 Work Address _____ State _____ Zip Code _____
 Telephone Numbers Work (_____) _____ Pager (_____) _____ Work (_____) _____

In This Issue...

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