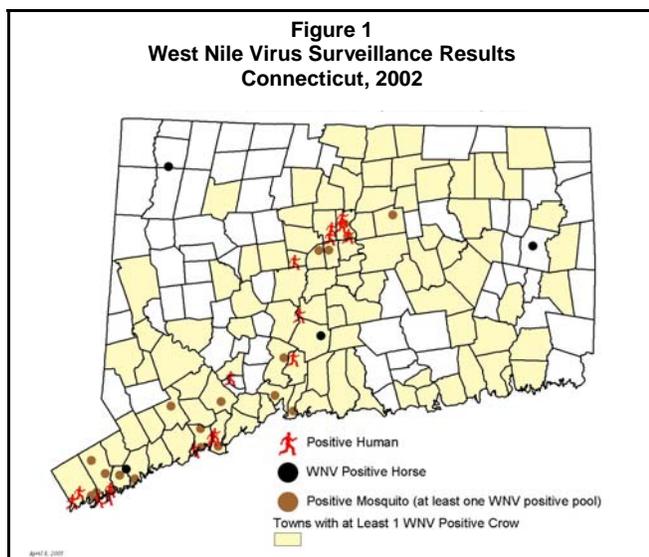


## Surveillance for Arbovirus Infections

To monitor for human West Nile virus (WNV) infection and other arbovirus infections in Connecticut, the Department of Public Health's (DPH), Laboratory Division tests serum and cerebrospinal fluid specimens from persons hospitalized with specified neurologic syndromes. In 2002, the DPH tested 138 serum and cerebrospinal fluid specimens from 93 persons with suspect WNV infection, 41 (44%) were reported with encephalitis or meningoencephalitis, 50 (54%) with aseptic meningitis (age > 17 years), and 2 (2%) with Guillian-Barre syndrome. At physician's requests, an additional 308 persons with a variety of other clinical syndromes were also tested.

Of the persons tested for WNV infection, 17 (18%) were confirmed. Of these, 10 (59%) were hospitalized with neurologic disease and 7 (41%) were outpatients initially tested at a commercial laboratory. Of the confirmed cases, diagnosis of 8 was based on elevated IgM levels specific to WNV in serum, 2 in CSF, and 7 on elevated IgM in both serum and CSF. The median age of cases was 45 years (range: 24-81 years). Cases included residents of 4 towns in Fairfield County, 3 towns in Hartford County, and 3 towns in New Haven County (Figure 1).

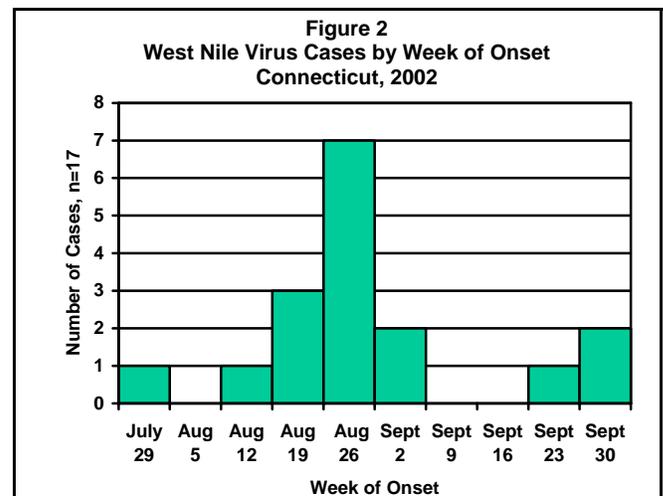


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Of the 10 hospitalized cases, the median age was 62 years. Illness was most frequently characterized by fever, difficulty walking, confusion, and vomiting. Onset of illness preceded hospital admission by 0-7 days (median: 2.5 days). The length of hospital stay ranged from 2-11 days (median: 6 days). The outpatients were younger (median: 44 years) and most frequently had fever, headache, rash, and muscle aches. None of the patients died.

Onset of symptoms occurred between July 29, and September 30, 2003 with the majority (71%) occurring during August 19-September 2, 2003 (Figure 2). Human cases coincided with statewide increases in dead bird sightings, and confirmation of WNV infection in birds and mosquitoes. Among the 14 persons with confirmed WNV infection who were interviewed, 11 (79%) reported outdoor activities without taking precautions against mosquito bites when mosquitoes were present in the 2 weeks prior to symptom onset.

**Reported by:** R Nelson, DVM, MPH, L Wilcox, MPH, Epidemiology and Emerging Infections Program; T Brennan,



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### Editorial Note:

In 2002, WNV was reported from 44 states and the District of Columbia (DC). As of November 30, 2002 3389 human cases of WNV-associated illness were reported nationally. Of these, 2354 (69%) had West Nile meningoencephalitis (WNME), 704 (21%) had West Nile fever (WNF), and 331 (10%) had an unspecified illness. A total of 201 deaths occurred including 199 (8.5%) of patients with WNME and 2 (0.3%) with WNF. Human cases were reported from 37 states and DC (1).

In 2002, person-to-person transmission of WNV via ingestion of breast milk, transplacental infection, transfusion of blood products, and organ transplantation (2-4) were reported to the CDC. In May 2003, the Food and Drug Administration issued guidelines for screening potential blood donors. On July 1, 2003 the Red Cross began testing blood and reporting positive findings to donors advising them to seek medical attention. Results will also be reported to the DPH. The DPH will interview all WNV positive patients about mosquito exposure and the possibility of other modes of transmission.

In Connecticut, WNV in mosquitoes, birds, horses, or people was identified in 102 towns and in all eight counties (Figure 1). Of dead birds tested, 528 (57%) tested positive for WNV. Of these, 501 (95%) were crows and 27 (5%) were other bird species. Positive birds were found between May 20 through October 23, 2003. WNV was also identified in 4 horses (5) and, according to the Connecticut Agricultural Experiment Station (Theodore Andreadis, PhD, personal communication June 2003), 73 pools of mosquitoes.

In 9 of the 10 towns with a human case of WNV, an infected crow was found before onset of illness (median: 38 days). Positive mosquitoes were identified in 5 of the 8 towns with mosquito trapping sites.

In 2003, surveillance will again be conducted for WNV in wild birds, domestic animals, mosquitoes, and people. The surveillance goals are to determine if WNV is present and/or amplifying, and to guide prevention activities. Individuals should use prevention measures when outdoors in areas with potential exposure to mosquitoes. Individuals should also reduce standing water and fix holes in

window and door screens at home. Older persons should take warnings of WNV seriously.

Since exposure to mosquitoes varies by season and geographic region, clinicians should take a thorough travel history from patients with neurologic illness and be alert to the possibility of arboviral infection, especially in persons with heavy mosquito exposure around the home. In Connecticut, the risk of humans acquiring WNV infection is highest during August – September.

In Connecticut, encephalitis became physician reportable in January 2000. To report a case of encephalitis, please notify the local health department in the patient's town of residence and the DPH Epidemiology Program (860-509-7994 or 860- 509-8000 after hours) by mail or phone within 12 hours of diagnosis.

### References:

1. CDC. Provisional Surveillance Summary of the West Nile Virus Epidemic – United States, January-November 2002. MMWR 2002;51:1129-1132.
2. CDC. Possible West Nile Virus Transmission to an Infant Through Breast-Feeding-Michigan, 2002. MMWR 2002, 51:877.
3. CDC Intrauterine West Nile Virus Infection-New York, 2002. MMWR 2002, 15:1135.
4. CDC. Update: Investigations of West Nile Virus Infections in Recipients of Organ Transplantation and Blood Transfusion-Michigan, 2002. MMWR 2002, 51:877.
5. Connecticut Department of Agriculture. West Nile Virus in Domestic Animals & Birds. Available at: <http://www.state.ct.us/doag/wnvfact2.htm>. Accessed July 1, 2003.

### Laboratory Testing for WNV

Free arbovirus testing will be performed at the State Laboratory on acute and paired specimens from persons hospitalized for suspected: encephalitis, meningoencephalitis, Guillain-Barre syndrome with fever, or aseptic meningitis in persons aged > 17 years. For free testing, an Encephalitis/Meningoencephalitis Initial Report Form (see page 15) must accompany Virology Form, OL42A. The case report form requests the minimum information needed for the purposes of surveillance.

Convalescent serum specimens should be submitted for all patients with negative WNV antibody test results from specimens collected during the first week of illness. In some confirmed WNV infection cases, acute specimens tested negative IgM antibodies.

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**State of Connecticut Department of Public Health**

Epidemiology Program  
 410 Capitol Avenue, MS#11EPI  
 P.O. Box 340308  
 Hartford, CT 06134-0308

**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.*

Rev. 5/2003

**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

**Travel History**

	City	State	Country
Travel during the 14 days before onset of illness:	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

**Specimens Being Submitted for Testing**

CSF Date collected \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 Serum Date collected \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 Other (specify) \_\_\_\_\_ Date collected \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**NOTE: Convalescent serum specimens should be submitted for all patients with negative specimens collected during the first week of illness.**

**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...**

**West Nile Virus Update: Arbovirus Surveillance, Laboratory Testing, Reporting Form**

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**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 or recent mosquito bites. Specimens from outpatients can be submitted to commercial or hospital laboratories.

**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  $\geq 5.0$  ml of serum and  $\geq 1.0$  ml of CSF. *Do not send whole blood.*
- Frozen brain tissue and acute CSF specimens can also be submitted for virus isolation. Virus isolation will not be attempted unless specifically requested.

For free testing, please write "WNV TESTING" or "ENCEPHALITIS" on the Virology Form OL42A. Convalescent specimens should be clearly labeled for appropriate testing. Forms can be obtained by calling (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 two necessary forms.

Acute serum and CSF specimens will be tested for IgM antibodies to several arboviruses including: WNV, eastern equine encephalitis (EEE), western equine encephalitis (WEE), California encephalitis group (CEG), St. Louis encephalitis (SLE) and Powassan virus. Negative results will be reported 2-4 days after receiving the specimen and completed case report form. Positive results may take longer if confirmatory testing is done by the CDC.

Paired serum specimens will be tested for IgM and IgG antibodies to WNV, EEE, WEE, CEG, and SLE. In addition, tests for IgG antibodies to herpes, varicella, cytomegalovirus, and Jamestown Canyon virus will be included.

If you have additional questions concerning WNV surveillance, please contact the Epidemiology Program at (860) 509-7994.

<p>John G. Rowland, Governor Joxel Garcia, MD, MBA., Commissioner of Health</p>	<p>AIDS Epidemiology (860) 509-7900 Epidemiology (860) 509-7994 Immunizations (860) 509-7929 Pulmonary Diseases (860) 509-7722 Sexually Transmitted Diseases (STD) (860) 509-7920</p>	<p><b>Connecticut Epidemiologist</b> Editor: Matthew L. Cartter, MD, MPH Assistant Editor: Starr-Hope Ertel</p>
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