CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
Keeping Connecticut Healthy

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West Nile Virus Surveillance, Connecticut, 2006

The Connecticut Department of Public Health (DPH) monitors human West Nile virus (WNV) and other arbovirus infections. Testing of serum and cerebrospinal fluid (CSF) specimens from people hospitalized with neurologic syndromes consistent with WNV infection is offered by the DPH Laboratory. During 2006, WNV activity in humans or mosquitoes was detected in 5 counties and encompassed 25 towns.

During 2006, WNV testing was performed at the DPH Laboratory on 235 serum and CSF specimens collected from a total of 159 Connecticut residents. While testing of patients hospitalized for neuroinvasive illnesses was emphasized, the DPH Laboratory tested specimens for WNV antibodies in patients who had a variety of clinical syndromes at the request of physicians.

Of the 159 residents tested, 9 (6%) had laboratory evidence of acute WNV infection. Seven (78%) of these 9 individuals were hospitalized. Serum samples from 8 of the infected patients initially tested positive at outside laboratories and were later confirmed by the DPH Laboratory. Of the 9 residents infected, 3 had elevated IgM antibody levels specific to WNV in serum, 5 in CSF, and 1 in both CSF and serum.

The median age of the 7 hospitalized patients was 63 years (range 40-81 years). Symptoms most often reported included fever, headache, muscle weakness, and nausea. Onset of symptoms preceded hospitalization by a median of 2 days (range 1-3 days). One patient aged over 80 years died.

One person was likely infected with WNV while traveling outside Connecticut. The 8 individuals infected in Connecticut were residents of 6 towns in 2 counties: Bridgeport, Fairfield, and Stamford in Fairfield County, and Hamden, New Haven (3 cases), and East Haven in New Haven County. Onset dates ranged from August 8 - September 2 (Figure 1).

Mosquito trapping conducted by the Connecticut Agricultural Experiment Station (CAES) found 217 WNV-positive mosquito pools collected in 22 towns in 5 counties from June 29 - October 2 (1). No WNV-infected horses were reported in Connecticut.

Reported by: R Nelson, DVM, MPH, B Esponda, Epidemiology and Emerging Infections Program; T Brennan, BA, State Public Health Laboratory, Connecticut Department of Public Health.

Editorial Note:

From 2000-2006, 57 persons with WNV infection were identified in Connecticut. Of these, 52 were infected in state. These locally acquired infections involved residents of 28 towns in 6 of Connecticut's

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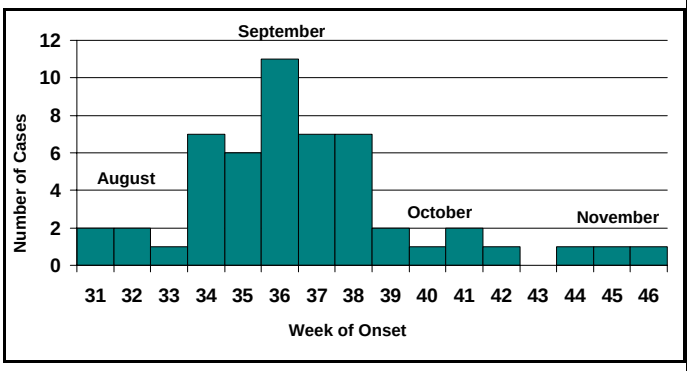
Figure 1: Cumulative Human Cases of Connecticut-Acquired West Nile Virus Infection (n=52) by Week of Onset, 2000-2006*



* No cases were reported in 2004.

8 counties. Onset of symptoms occurred during July 30-November 14, with the peak in early September (Figure 1).

Trapping of mosquitoes is used to help guide the public health response by identifying areas with WNV activity and determining the intensity of activity. During 2006, 142 (65%) of the 217 WNV-infected mosquito pools collected in Connecticut were from a single trap site in West Haven or from neighboring New Haven. The West Haven mosquito trap site was located near the West River. Three persons with WNV infection, including 1 West Haven and 2 New Haven residents, lived in proximity to the West River. To minimize the risk of additional human cases among residents of the area, the Department of Environmental Protection applied pesticides to grassy areas bordering the river where there was an abundance of mosquito breeding habitat. The pesticide was applied at the request of the municipalities during the first week of September when risk of WNV transmission to people has historically remained high. No further cases of human infections were reported in the area.

For the 2007 season, surveillance includes monitoring the occurrence of human cases of illness associated with WNV infection and mosquito trapping and testing by the CAES. Mosquito trapping will be conducted at 91 sites statewide from June through October.

Since 1999, WNV has become enzootic across the United States. In 2006, 4269 human cases were reported from 43 states and the District of Columbia and included 177 fatalities (2). Exposure to mosquitoes and the risk of acquiring WNV infection varies by season and geographic region. In Connecticut, the risk is highest during August and September. Clinicians should consider the possibility of arboviral infection throughout the year in persons with neurologic illness and a history of travel.

References:

1. Connecticut Agricultural Experiment Station. Mosquito Trapping and Testing Cumulative Results. Available at http://www.ct.gov/caes/cwp/view.asp?a=2819&q=377440. Accessed June 2007.
2. CDC. 2006 West Nile Virus Activity in the United States. Available at http://www.cdc.gov/ncidod/dvbid/westnile/surv&controlCaseCount06_detailed.htm. Accessed June 2007.

Laboratory Testing for West Nile Virus

Free arbovirus testing will be performed at the DPH Laboratory for specimens collected from hospitalized patients with neurologic illness. Specimens from outpatients with mild illness should be submitted to commercial or hospital laboratories. Acute CSF and serum samples should be collected within 14 days of symptom onset and convalescent specimens 2-3 weeks later. Please send $\geq$ 5.0 mL of serum and $\geq$ 1.0 mL of CSF. *Do not send whole blood.* Note that negative results may occur during the first week of illness in WNV-infected patients.

Virology Form OL9B:

Instructions for Arboviral Testing

For *free* testing, **Virology Form OL9B** *must* accompany specimens.

- For WNV testing ONLY, please write "WNV TESTING" on the bottom of the form in "Other tests not listed."
- Check the "ARBOVIRUS PANEL" box if testing for eastern equine encephalitis, western equine encephalitis, California encephalitis group, and St. Louis encephalitis.
- Check the "ENCEPHALITIS PANEL" box if testing for WNV, organisms in the ARBOVIRUS PANEL, Jamestown canyon virus, herpes, varicella, and cytomegalovirus.

To request forms call (860) 509-8501.

For questions concerning arbovirus testing or surveillance, please contact the Epidemiology and Emerging Infections Program at (860) 509-7994.

For Public Health Emergencies After 4:30 P.M. and on Weekends call the Department of Public Health Emergency Number (860) 509-8000

Vancomycin-Intermediate *Staphylococcus aureus* (VISA) Infection in a Connecticut Resident

Staphylococcus aureus is an organism that can cause a multitude of infections ranging in severity from mild to life threatening. *Staphylococcus aureus* developed resistance to penicillin in the 1950's. Resistance to semi-synthetic penicillins (e.g., methicillin) was recognized in the 1970's. Since that time, methicillin-resistant *S. aureus* (MRSA) has become a widespread problem both in healthcare settings and in the community.

With the spread of MRSA, vancomycin has been increasingly used to control these infections. Vancomycin-intermediate *S. aureus* (VISA) was first recognized in Japan in 1996. Since that time, VISA infections have been recognized in several countries, including the United States, with 16 cases reported as of September 2006. Additionally, 6 vancomycin-resistant *S. aureus* (VRSA) infections have been reported (1).

In February 2007, the Connecticut Department of Public Health (DPH) was notified of a case of VISA infection in a Connecticut resident hospitalized in another state. This is the first confirmed VISA infection in a Connecticut resident.

The patient's medical history includes chronic renal failure requiring dialysis, coronary artery disease, and multiple MRSA bloodstream infections. The patient has received multiple extended courses of vancomycin treatment in the past year to control and eradicate these MRSA infections.

While on vacation in another state, the patient became ill and was hospitalized. A blood culture collected on admission to the hospital grew MRSA with a vancomycin minimum inhibitory concentration (MIC) of 2. Eleven days later, another blood culture was collected and grew MRSA with a vancomycin MIC of 4; a vancomycin MIC of 4–8 is the criteria used to define VISA (2). The isolate was sent to the DPH Laboratory and the Centers for Disease Control and Prevention (CDC) for confirmatory testing. The patient remains hospitalized and in isolation at the time of this report.

Reported by: L Sosa, MD and J Hadler, MD, MPH, Infectious Diseases Section, Connecticut Department of Public Health.

Editorial Note:

This patient's VISA infection is most likely due to evolution of the infecting MRSA strain to VISA under intense vancomycin selective pressure. VISA usually has a non-transferable resistance mechanism related to vancomycin exposure. By contrast, VRSA strains have been shown to carry the *VanA* gene, which is acquired from *Enterococcus* spp and transferable to other *S. aureus* strains (3, 4). While minimizing the potential for spread of strains of *S. aureus* with any level of vancomycin resistance is crucial, efforts to contain VRSA, in particular, should include active assessment of contacts for colonization.

Clinicians and laboratories need to be aware of these organisms to enable quick recognition, and limit or prevent subsequent spread. The CDC recommends that laboratories develop algorithms for testing *S. aureus* for vancomycin susceptibility, and hospital infection control departments develop plans for follow-up, treatment, and prevention of VISA/VRSA infected patients. When an isolate is identified, laboratories should repeat the test. If confirmed, the DPH, as well as infection control of the hospital, should be notified. All isolates should be saved and sent for confirmatory testing at the DPH Laboratory and the CDC.

Guidelines for laboratories and infection control practitioners are available from the CDC at: http://www.cdc.gov/ncidod/dhqp/ar_visavrsa_prevention.html.

References

1. Hageman, JC, Patel JB, Carey RC, Tenover FC, Mcdonald LC. Investigation and control of vancomycin-intermediate and -resistant *Staphylococcus aureus*: A Guide for Health Departments and Infection Control Personnel. Atlanta, GA 2006. Available at: www.cdc.gov/ncidod/dhqp/ar_visavrsa_prevention.html
2. Clinical and Laboratory Standards Institute/NNCLS. *Performance Standards for Antimicrobial Testing*. Sixteenth informational supplement. M100-S16. Wayne, PA: CLSI, 2006.
3. Centers for Disease Control and Prevention. *Staphylococcus aureus* resistant to vancomycin—United States, 2002. MMWR 2002. 51: 565–7.
4. Whitener CJ, Park SY, Browne FA, et. al. Vancomycin-resistant *Staphylococcus aureus* in the absence of vancomycin exposure. Clin Infect Dis 2004; 38: 1049–55.

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Erratum

In Volume 27, Number 2 of the *Connecticut Epidemiologist* newsletter, Table 1 had inaccurate estimates of incidence rates and rate ratios. The revised rates and rate ratios are shown here in a new table.

Table 1. Cervical Cancer Incidence Rates by Age Group and Race-ethnicity, Connecticut, 1999-2003

	Age <40 years		Age ≥40 years	
	Incidence*	RR**	Incidence	RR
Overall	3.1		12.5	
White Race	2.8	reference	10.1	reference
Black Race	3.6	1.3	23.7	2.3
Hispanic Ethnicity	5.4	1.9	28.1	2.8
Urban Residence	4.2	1.5	21.1	2.1

* Per 100,000 women in specified age and race or ethnic group
** Rate Ratio

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