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## West Nile Virus – Connecticut, 2015

West Nile virus (WNV) is an arbovirus that is transmitted primarily through the bite of infected mosquitoes. Since 2000, the Connecticut Department of Public Health (DPH) has conducted human WNV surveillance. This surveillance has allowed the DPH to monitor infections in Connecticut residents and, with mosquito surveillance data, guide prevention measures.

During 2015, 10 cases of WNV were reported to the DPH; all infections were acquired in-state. Of the 10 case-patients, 5 (50%) reported encephalitis, 3 (30%) meningitis and 2 (20%) WNV fever. While none of the patients died, 9 (90%) were hospitalized. Case-patients resided in the towns of Bridgeport (6), Fairfield (1), Shelton (1), Milford (1), and New Haven (1). Onset of illnesses occurred from August 9 - October 9. The median age of patients was 64.5 years (range = 35-90 years).

Mosquito surveillance was conducted by the Connecticut Agricultural Experiment Station (CAES) at 91 permanent trapping stations located in 72 municipalities throughout the state. Mosquito trapping and testing for 2015 began on June 1 and concluded on October 15. During 2015, 177,509 mosquitoes were trapped and tested. A total of 157 isolations of WNV were made from 11 mosquito species collected in 19 towns in 6 counties (*2*). Of the 157 WNV mosquito isolates, 113 (72%) were mosquitoes trapped in 6 towns including Stamford (29), West Haven (27), Bridgeport (19), Stratford (14), New Haven (13) and Greenwich (11). No WNV-infected horses were reported in Connecticut.

During 2015, human cases of WNV associated illnesses and WNV positive mosquitoes indicated heightened transmission in southern Connecticut towns and a focal area of increased human risk in Bridgeport (Figure 1). Of the 10 case-patients, 6 (60%) were residents of Bridgeport with onset of illnesses during August 9 – September 24. The first positive mosquitoes in Bridgeport were trapped August 3 with additional infected mosquitoes trapped through August 27 indicating continued risk of viral transmission to people.

*In this issue...*



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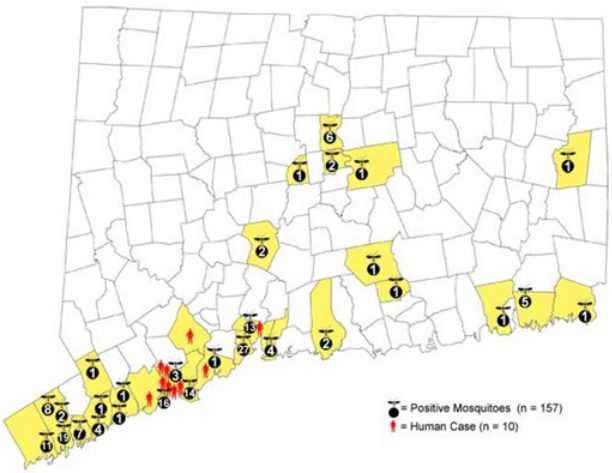
### Editorial Note

West Nile Virus has a complex life cycle that includes wild bird hosts and a variety of mosquito vectors (*3,4*). The spread of WNV can be influenced by factors including the weather, number of infected birds, number of mosquitoes that spread the virus, and human behavior. Because of this, it is difficult to determine how many people will develop illness each year, and the locations where infections will be acquired. While WNV activity varies annually and ongoing surveillance is necessary, some regional and temporal patterns of human illness and virus

**Figure 1. West Nile virus, Connecticut, 2015**



isolations from mosquitoes have emerged that can help focus the public health response. In Connecticut, risk for human WNV infections is generally highest in August and September in southern Fairfield County and southeastern New Haven County, and is preceded by identification of WNV positive mosquitoes (*5*).

During 2006-2015, 17 Bridgeport residents were diagnosed with WNV infections including at least 1 person (range 1 – 6) in 8 of the past 10 years (Figure 2). The 6 Bridgeport residents identified with WNV-associated illnesses during 2015 is the most in a single season for any city in Connecticut since WNV was first identified in 1999.

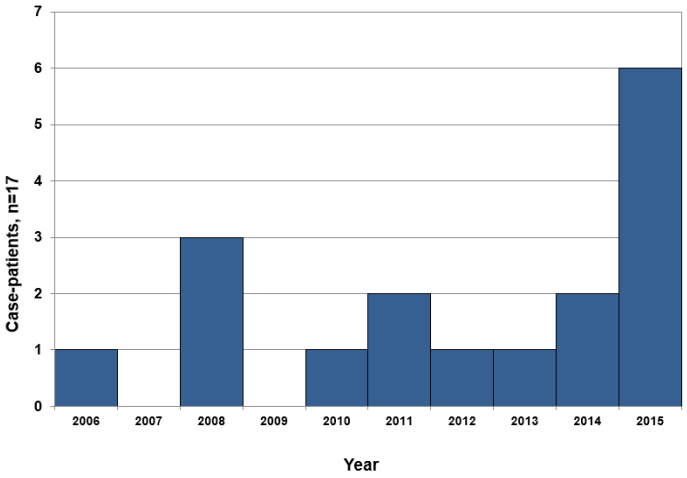
Surveillance data are shared with local health departments, health care providers, and the public through press releases that are meant to raise awareness and encourage the use of prevention measures. It is important to reduce standing water on personal properties, especially during the summer months. Municipalities, especially in regions of the state with frequent yearly WNV transmission, should implement larviciding programs targeting breeding areas of *Culex* mosquito species. When press releases indicate the presence of WNV activity in Connecticut, residents should take precautions to avoid mosquito bites; this is particularly important for older people who are at the highest risk for developing severe WNV-associated illnesses.

Information about WNV associated illnesses and human cases can be found online at: http://www.ct.gov/dph/WNV. Information about mosquitoes and mosquito testing is also available online at: http://www.ct.gov/mosquito/site/default.asp.

## References


1. Centers for Disease Control and Prevention (CDC). West Nile virus Transmission. http://www.cdc.gov/westnile/transmission/index.html. Accessed November 18, 2015.
2. The Connecticut Agricultural Experiment Station. Mosquito Trapping and Testing Cumulative Results 2015. http://www.ct.gov/caes/cwp/view.asp?a=2819&q=567170. Accessed December 4, 2015.
3. CDC. West Nile virus Transmission. Species of dead birds in which West Nile virus has been detected, United States, 1999-2012
4. CDC. West Nile virus Transmission. Mosquito species in which West Nile virus has been detected, United States, 1999-2012.
5. Connecticut Department of Public Health. West Nile Virus-Connecticut, 2000-2013. Connecticut Epidemiologist; Vol. 34, No2. June 2014.


**Figure 2. West Nile virus cases by year, Bridgeport, Connecticut, 2006-2015**




### Influenza Testing Procedures During the 2015-2016 Flu Season

To identify influenza virus types, subtypes and strains circulating in Connecticut during the influenza season, the Department of Public Health (DPH) offers influenza testing for:

1. All hospitalized patients with influenza-like-illness (ILI) (request influenza testing),
2. All patients with ILI and recent close exposure to swine, sick poultry at farms and agricultural settings, or migratory birds (request influenza testing, note exposure to swine, poultry, or other birds);
3. All patients with pneumonia and/or Acute Respiratory Distress Syndrome (ARDS) developing within 10 days of travel to Southeast Asia or within 14 days of travel in or near the Arabian Peninsula, contact the DPH Epidemiology Program at **860-509-7994** regarding possible avian flu or Middle East Respiratory Syndrome Coronavirus [MERS-CoV] testing (provide travel history);
4. Selected non-hospitalized patients with ILI, including patients of ILI network (ILINet) providers, as well as patients associated with outbreaks in long-term care facilities or schools or severe respiratory illness with or without fever in children, contact the DPH Epidemiology Program at **860-509-7994** to discuss possible respiratory viral panel testing for enterovirus and other respiratory viruses.

Health care providers may call the DPH Laboratory at **860-920-6662** for questions on preparing specimens for testing. Testing is provided at no cost for patients in one of the above categories. Influenza PCR testing kits (formerly "VR-C" kits) can be ordered by calling the DPH Laboratory at **860-920-6674** or **860-920-6675**. All other questions regarding influenza and respiratory virus testing may be directed to the DPH Epidemiology and Emerging Infection Program at **860-509-7994**.

# An Outbreak of *Salmonella* Braenderup Involving a Common Food Service Establishment, Connecticut, April 2015

In April 2015, the Connecticut Department of Public Health (DPH) received two separate foodborne illness complaints from persons who had dined at the same food service establishment (FSE). Additionally, the local health department (LHD) received a call from the implicated FSE reporting that one of their food workers (FWs) had been diagnosed with *Salmonella.* The DPH Epidemiology Program and Food Protection Program (FPP), conducted a joint investigation with the LHD to determine the source of the outbreak and implement control measures.

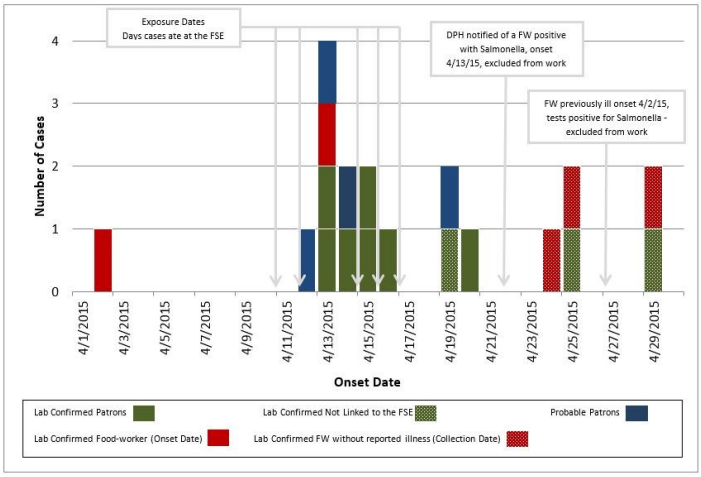
## Epidemiologic Investigation

Epidemiology Program staff conducted telephone interviews using a standardized questionnaire. A confirmed case was defined as a resident with culture -confirmed *S*. Braenderup infection with the designated outbreak pulsed-field gel electrophoresis (PFGE) pattern and symptom onset during April 12-29. A probable case was defined as diarrhea (> 3 stools in a 24-hour period) in a dining companion of a confirmed case linked to the FSE. A total of 14 cases were identified; 10 confirmed and 4 probable. The median age of case-patients was 21 years (range 3-70); 9 (64%) were female. Among case-patients reporting exposure to the FSE, the median incubation period was 49 hours (range 16-77 hours) (Figure). Of the 7 case-patients who had recovered at the time of interview, the median duration of illness was 6 days (range 4-12 days).

Among the 10 confirmed cases, 7 (70%) reported eating at the FSE. Among all case-patients, 14 (100%) reported diarrhea, 9 (64%) fever, 6 (43%) bloody diarrhea, 6 (43%) abdominal cramps or pain, 6 (43%) vomiting, 5 (36%) nausea, 4 (29%) chills, and 2 (14%) headache. Twelve (86%) case-patients sought medical care, of whom 4 (33%) were hospitalized; no deaths were reported. Among the 11 case-patients who reported eating at the FSE, dates of exposure ranged from April 11-17, 2015. All case -patients reported eating salads and/or sandwiches that contained lettuce and tomatoes.

In addition to case-patient interviews, staff from the FPP and LHD conducted an environmental investigation that included interviews and collection of stool samples from FWS, collection of food and environmental samples, and evaluation of food handling practices at the FSE.

**Figure. Epidemic curve of onset of GI illness involving a common food service establishment, Connecticut, April, 2104**




## Laboratory Investigation

Stool samples from 30 of 31 FWS were collected by the LHD. Testing performed at the DPH State Public Health Laboratory identified 5 positive FWS with *S*. Braenderup isolates exhibiting PFGE patterns indistinguishable from the case-patient isolates. Eleven environmental swabs (including a two-bay prep sink, a slicer, prep tables, and shelves in the walk-in cooler) and 10 food samples (including tomatoes and various lettuce types) were collected from the FSE between April 23-24. All the swabs and the food samples tested negative for *Salmonella* at the DPH State Public Health Laboratory.

## Environmental Investigation

The environmental investigation identified several factors that may have contributed to the outbreak. The food expediter, and food servers were observed using bare hands while cutting and portioning bread into serving baskets that were distributed to all tables. Other observation of concern included: dirty handles on a refrigeration unit indicating potential poor hand washing practices, improper concentration of prepared sanitizer, and the absence of produce washing.

Of the 30 FWs interviewed, 5 (17%) reported gastrointestinal illness (GI), of whom 2 tested positive for *S*. Braenderup, 2 tested negative, and 1

terminated employment without submitting a specimen. An additional 3 FWs, who did not report GI illness during the initial interview, tested positive for *S*. Braenderup.

The first symptomatic, *Salmonella*-positive FW reported onset of illness on April 2, 2015. This person worked while symptomatic, despite acknowledging the requirement to report GI symptoms to the qualified food operator (QFO)/ manager, and failing to do so. On April 11, this FW worked at the FSE from 1:00 pm – 11:00 pm and prepared all of the produce for the salads and sandwiches served that day; additionally, leftover product may have been served on April 12, 2015.

The second symptomatic, *Salmonella*-positive FW had onset of illness on April 13, with resolution of symptoms on April 18. This FW worked in the kitchen on April 12, 14, and 19. This FW failed to report symptoms to the QFO until April 19, 2015, when they learned that a stool sample submitted to their private physician had tested positive for *Salmonella*. The owner of the FSE notified the LHD the following day. The remaining 3 FWs who reported GI symptoms reported onsets that occurred between early March and April 3, 2015.

Control measures implemented to prevent further illnesses included exclusion of symptomatic and *Salmonella*-positive FWs until they tested negative in two consecutive stool samples, hiring a professional cleaning service to clean and sanitize the FSE, providing additional hand washing signs, encouraging open communication and cooperation from food service managers, reviewing safe food handling procedures with staff, and reviewing the need for instituting ill FW policies and complying with the reporting requirements to the LHD.

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## Editorial

According to the Centers for Disease Control and Prevention (CDC), approximately 1.2 million illnesses, and approximately 450 deaths occur annually in the United States due to non-typhoidal *Salmonella*. Among some cases, diarrhea may be so severe that the patient requires hospitalization, and the infection may spread to the blood stream. With prompt antibiotic treatment, deaths due to blood stream infections may be prevented. Those more likely to have severe illness include the elderly, infants, and those with impaired immune systems.

The epidemiologic, environmental, and laboratory evidence suggest that a foodborne outbreak involving a FSE occurred during April 2015. This *Salmonella* outbreak affected patrons on multiple days, and also included cases from the community that could not be directly linked to the FSE. Cases that did not report exposure to the FSE may have represented background sporadic infections, or recall bias. Among cases linked to the FSE, contamination of food by ill FWs was the likely cause of this outbreak. Possible contributing factors included food handlers preparing foods while symptomatic and bare-hand contact with ready to eat foods.

The findings of this outbreak investigation reinforce the need for food service managers to: receive regular training on the management of ill FWs, closely supervise staff for adherence to proper food handling practices, and regularly remind FWs of the requirement to promptly report illness and suspend food handling duties while ill.

**For Public Health Emergencies After 4:30 P.M. or on Weekends Call the Department of Public Health at 860-509-8000.**