

## An Outbreak of Norovirus Involving Multiple Events and a Common Food Service Establishment, Connecticut, September 2014

In September 2014, the Connecticut Department of Public Health (DPH) was notified of gastrointestinal illness among attendees of two separate events. The first event (Group #1) was held at a residence, and was attended by approximately 60 persons. The second event (Group #2) was a luncheon, held a day later, and was attended by 11 persons. Both events were catered by the same food service establishment. Three days after the initial notification, the DPH was notified of a third complaint of gastrointestinal illness in a patron (Patron #1) who consumed take-out food from the same food service establishment. The DPH Epidemiology Program, Food Protection Program (FPP), and the local health department (LHD) conducted a joint investigation to determine the source of the outbreak and implement control measures.

### Epidemiologic Investigation

Epidemiology Program staff conducted telephone interviews using a standardized questionnaire. A case was defined as vomiting and/or diarrhea ( $\geq 2$  stools in a 24-hour period) among persons in these groups with symptom onset during September 22-25. Overall, 62 (86%) persons were interviewed (52/60 from Group #1, 9/11 from Group #2, and Patron #1). Among these, 39 (63%) met the case definition. The median age for cases was 53 years (range 8-84 years); 28 (72%) were female.

Onsets of illness ranged from September 22-25 (Figure). The median incubation period was 33 hours (range 6-51 hours), and the median duration of illness was 36 hours (range 12-168 hours). Of the 39 case-patients, 34 (87%) reported vomiting, 29 (74%) diarrhea, 24 (62%) headache, 22 (56%) abdominal cramps, and 13 (33%) subjective fever. Five (13%) case-patients sought medical attention; no

### In this issue...

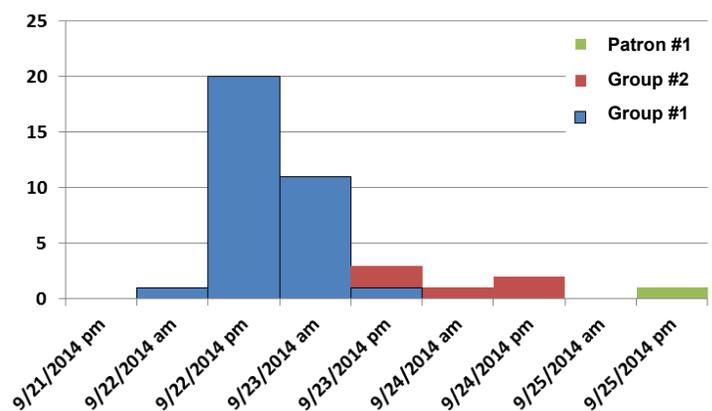
An Outbreak of Norovirus Involving Multiple Events and a Common Food Service Establishment, Connecticut, September 2014	9
Chikungunya Virus Infection—Connecticut, 2014	10

hospitalizations or deaths were reported. Analysis of foods consumed among persons of Group #1 showed that eating any sandwich or wrap was significantly associated with illness (OR=6.89, 95% CI 1.87-25.35,  $p < 0.0001$ ). All case-patients from Group #2 and Patron #1 reported eating a variety of sandwiches and wraps.

### Laboratory Investigation

Stool specimens were collected from 6 case-patients and 15 food workers at the catering facility. Specimens were submitted to the DPH State Laboratory and tested for routine enteric pathogens and norovirus. One case-patient and 4 food workers tested positive for norovirus genotype I. Positive stool specimens were forwarded to the New York State Wadsworth Laboratory for additional testing. Sequence analysis yielded norovirus strain GI.6B in two specimens (a case-patient and a food worker). The remaining 3 specimens had insufficient nucleic acid present for sequence analysis and genotyping.

**Figure. Onsets of illness, outbreak associated with a food service establishment, Connecticut, September 2014.**



## Environmental Investigation

The environmental investigation was conducted by staff of the FPP and LHD. All 15 food workers were interviewed regarding gastrointestinal illness and food handling practices. A total of 6 food workers reported gastrointestinal illness (vomiting and/or diarrhea) with onsets over a 5-day period that coincided with the events. Of these, 2 food workers reported working while ill and 4 food workers returned to work within 72 hours of resolution of symptoms. The onsite observations identified bare-hand contact with ready to eat foods, hand washing sinks that were inaccessible to staff, lack of produce washing before preparation, and improper sanitization of dishes and other items that may come in contact with food. Although testing negative, the food worker who prepared the implicated sandwiches and wraps reported being ill with vomiting and diarrhea while preparing those items.

Based on the above findings and observations, the owner agreed to close voluntarily and discard all prepared food items. A Closure Order was subsequently issued by the LHD with specific conditions for reopening. Upon meeting the sanitization and food safety training requirements outlined by the FPP and LHD, the establishment reopened a week later.

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### Editorial

Noroviruses are the most common cause of foodborne illnesses in the United States, accounting for 58% of reported foodborne illnesses in 2011 (1). A person generally develops symptoms of gastroenteritis 12 to 48 hours after being exposed to norovirus. Typical symptoms include an acute onset of vomiting; watery, non-bloody diarrhea with abdominal cramps; and nausea (2). Noroviruses are highly contagious. A person with norovirus infection can shed billions of norovirus particles, and it only takes as few as 18 viral particles for infection to occur (2). Noroviruses are generally spread through close personal contact with an infected person or

through the fecal-oral route when a person consumes contaminated food or water. From 2009 – 2012, 64% of reported norovirus outbreaks were associated with a restaurant setting, with 70% implicating food worker contamination (3).

The epidemiologic, environmental, and laboratory evidence suggest that a foodborne outbreak involving a food service establishment occurred during September 2014, and affected at least two groups of patrons on multiple days. The symptoms, incubation period, and duration of illnesses were consistent with norovirus. This hypothesis was further supported by the laboratory results which confirmed norovirus genotype I. Furthermore, consumption of sandwiches and wraps was significantly associated with illnesses.

Contamination of food by one or more ill food workers is likely the cause of this outbreak. Possible contributing factors included food handlers preparing foods while symptomatic, inaccessible hand washing sinks, and bare-hand contact with ready to eat foods. The findings of this outbreak reinforce the need for food managers to train and closely supervise staff on proper food handling practices, reporting of illness, and refraining from handling food when ill. Food workers with symptoms of vomiting and/or diarrhea should be excluded from food handling until at least 72 hours (3 days) after resolution of symptoms.

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## Chikungunya Virus Infection – Connecticut, 2014

Chikungunya virus is transmitted through the bite of infected mosquitoes. Mosquitoes become infected when they feed on an infected person within the first week of their illness. Mosquitoes most likely to spread the virus include *Aedes aegypti* and *Aedes albopictus*. These mosquito species are not native to Connecticut. Symptoms of chikungunya infection generally occur 3-7 days after the bite. Symptoms include sudden onset of fever and severe pain in

multiple joints. Other symptoms may include headache, muscle aches, joint swelling, and rash.

Chikungunya virus was first identified in Tanzania in 1952-1953 (1). Since then, locally-acquired cases have been reported from Africa, Asia, the Caribbean, Europe, islands in the Indian Ocean and Western Pacific, and South America. The first locally-acquired infection identified in the Americas occurred in the Caribbean in late 2013 (2). In the Caribbean alone, more than 800,000 people have been affected since the virus was first detected in the region. On July 17, 2014, the first continental United States acquired chikungunya virus infections were reported by the Florida Department of Health.

Chikungunya positive test results are entered into ArboNET, a national arboviral surveillance database. As of February 10, 2015, a total of 2,481 travel-associated cases, and 11 locally-transmitted cases have been reported in the United States to ArboNET for the 2014 surveillance year (2). All locally-transmitted cases were reported from Florida. This emphasized the importance of effective surveillance and adoption of measures to prevent mosquito bites.

In 2014, the Connecticut Department of Public Health entered a total of 35 positive chikungunya virus test results into ArboNET. All cases were travel-related. Of these, 22 (63%) traveled to the Dominican Republic, 6 (17%) to Haiti, 3 (9%) to Puerto Rico, and 1 (3%) each from Antigua, Guyana, Jamaica, and St. Martin. Case-patients resided in each of Connecticut's 8 counties and included 17 (49%) from Fairfield, 6 (17%) from New Haven, 4 (11%) from Hartford, 3 (9%) from New London, 2 (6%) from Windham, and 1 (3%) each from Litchfield, Middlesex, and Tolland (Table, see page 12). Of the 35 cases, 23 (66%) had onset of illness during the summer months of June-August (Figure, see page 12).

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### Editorial

In 2014, the first complete year of chikungunya surveillance in Connecticut, 35 cases were identified

in Connecticut residents. All Connecticut cases were travel related. With the identification of locally-acquired cases reported from Florida, it is likely that locally-acquired chikungunya virus infection will spread throughout areas of the United States where *Ae. aegypti* can survive year round. *Ae. aegypti* are currently found east of Arizona in southern and southeastern states (3). Due to climate changes, it is possible that mosquito vectors for chikungunya virus infections will gradually become more established in northern states.

Prevention of chikungunya virus infection requires people to prevent mosquito bites, especially travelers to countries known to have locally-acquired chikungunya virus infections. Travelers who become infected return home and become a vector to infect others through mosquito bites. Treatment of chikungunya infection includes rest and fluids. For fever and other aches and pains, over the counter medications such as ibuprofen, acetaminophen, or naproxen may be helpful.

It is important for healthcare providers to consider chikungunya virus infection in patients who exhibit symptoms that include fever, joint pains, headache, and muscle aches. Although these symptoms are common to other diseases such as influenza, a patient with recent travel to areas known to have locally-acquired chikungunya cases should be considered for testing. Diagnostic testing for chikungunya virus infection is available commercially: <http://www.questdiagnostics.com/testcenter/TestDetail.action?ntc=70188>.

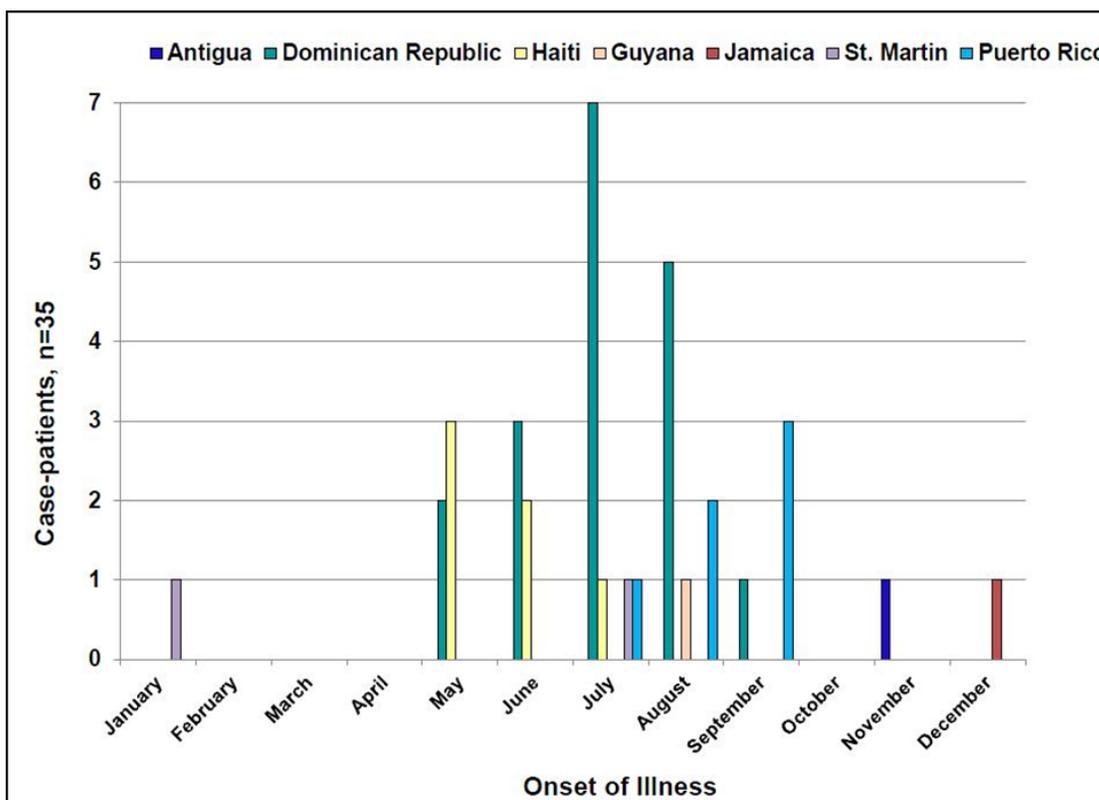
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Table. Reported cases of travel related Chikungunya virus infections among Connecticut residents, by destination and county of residence, January 1-December 31, 2014.

Country Visited	County of Residence								
	Fairfield	Hartford	Litchfield	Middlesex	New Haven	New London	Tolland	Windham	Total
Antigua	0	0	0	0	1	0	0	0	1
Dominican Republic	12	2	1	0	5	1	1	0	22
Guyana	0	1	0	0	0	0	0	0	1
Haiti	1	1	0	1	0	2	0	1	6
Jamaica	1	0	0	0	0	0	0	0	1
Puerto Rico	3	0	0	0	0	0	0	0	3
St. Martin	0	0	0	0	0	0	0	1	1
<b>Total</b>	<b>17</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>35</b>

Figure. Reported cases of travel related Chikungunya virus infections among Connecticut residents, by destination and month of illness onset, January 1—December 31, 2014.



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