

Norovirus Outbreak at a Food Service Establishment, Connecticut, 2021

On May 12, 2021, the Connecticut Department of Public Health (DPH) was notified by a local health department (LHD) of a possible foodborne outbreak among patrons of a food service establishment (FSE) in Tolland County. An initial complainant informed the LHD that they were aware of multiple patrons experiencing gastrointestinal illness from this same FSE. The LHD received additional reports of illness over the next several days. DPH staff worked with the LHD and the Yale Emerging Infections Program (EIP) to assess the extent and cause of the outbreak. Actions included: gathering illness information from complainants, conducting an epidemiological analysis of the association between implicated food items and illness, performing an environmental assessment of the FSE and laboratory testing of stool specimens from selected ill patrons and food workers (FWs).

Epidemiologic Investigation

A cohort study was conducted among four defined groups of patrons of the FSE. Preliminary information was collected by LHD and DPH staff who interviewed initial complainants from the groups. Data were collected using either a standardized questionnaire or the Foodborne Alert Complaint Form; both included questions about symptoms, onset of illness, foods consumed from the FSE, and contact information for the rest of the dining party. Symptom and exposure information for each patron in the four groups was then gathered by telephone interview, completed by the Yale EIP, or online using a confidential survey. DPH also developed an online form to assist the local health department with gathering complaints of illness from individuals in the community who ate from the FSE, but were not part of the four identified groups.

A case was defined as an individual experiencing vomiting and/or diarrhea (3 loose stools in 24

INSIDE

Page

Norovirus Outbreak at a Food Service Establishment, Connecticut, 2021 5

An Outbreak of *Clostridium Perfringens* Associated with a Connecticut Healthcare Facility, May 2021 7

hours) who ate from the FSE between May 8, 2021–May 16, 2021. Using information gathered from reports of individual illness complaints and by interviews of dining parties, 110 patrons reported illness after consuming food from the FSE. Illness onsets occurred between May 8th – May 18th (Figure. 1) and 65 (59%) were female. Reported symptoms included nausea (n=105 [95%]), vomiting (n=102 [93%]) and diarrhea (n=102 [93%]). The median incubation period was 34 hours (range 3.5– 186.5 hours). The median duration of illness was 48 hours (range 7–336 hours). Case patients reported being residents of Connecticut, Pennsylvania, Maine, Massachusetts, and Alabama. Three (2.7%) case-patients were hospitalized; no deaths occurred.

Among 52 patrons, from the four different cohorts who responded to either the telephone interview or online survey, 26 (50%) reported illness, meeting the case definition. Seven additional people became sick after exposure to an ill patron and were classified as secondary cases.

Analysis of the limited number of available menu items revealed that consuming any donut was associated with illness [Relative Risk (RR)=2.96; (95% CI: 1.02–32.62)]. More specifically,

CONTACT INFORMATION

**Connecticut Department of Public Health
Infectious Diseases Division
410 Capitol Avenue/MS#11FDS
Hartford, CT 06134
Phone: 860-509-7995**

consumption of either filled raised donuts or cake donuts were also associated with illness [RR=1.99; (95% CI: 1.06–7.41)].

Environmental Investigation

On May 13th, the LHD began an onsite environmental investigation of the FSE. During the visit, the LHD interviewed 8 FWs. Stool specimen collection kits were distributed to the FWs, one FW did not submit a sample. During the initial interview process, 5 FWs indicated experiencing symptoms of vomiting and/or diarrhea with onsets of 5/6, 5/9, and 5/10. The owner of the FSE reported having diarrhea on 5/6 after a family member was ill with similar symptoms.

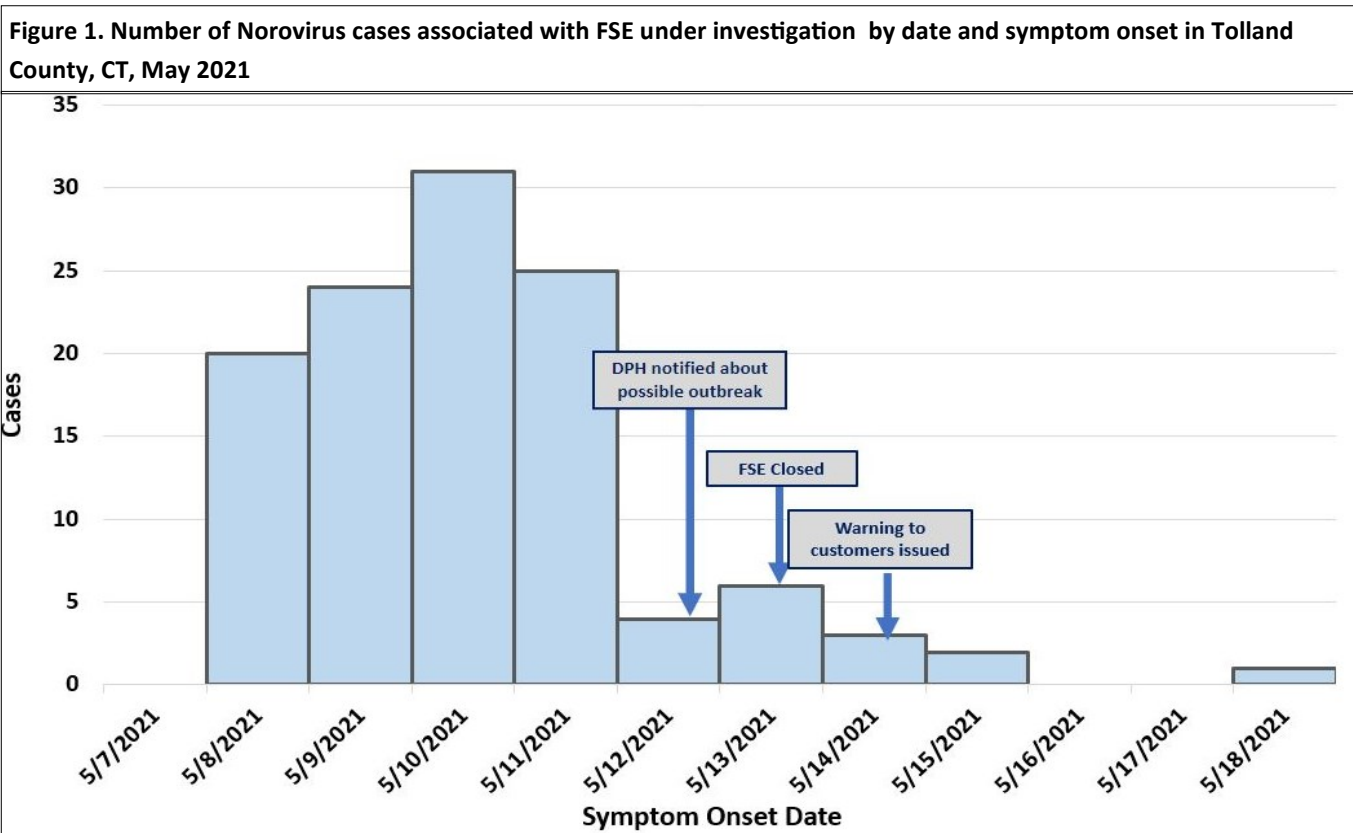
Based on the number of reports about potential ill patrons received by the LHD and the likelihood of additional product present in customer’s homes, the LHD issued an order of closure to the establishment and released a public notification through media channels instructing people to not eat any product purchased from the FSE. The establishment closed on May 13th.

While completing an assessment of the FSE and interview with the owner, the LHD and FPP

determined that the establishment did not have any written protocols and procedures to address ill FWs, incidences of vomiting or diarrhea in the establishment, or basic sanitization. There were improper sanitizing methods at the FSE, and no functioning hand soap dispensers at a sink in the food prep area and in the women’s restroom. Bare hands were used to prepare food items at the FSE and disposable gloves were not available for use.

Laboratory Investigation

Stool specimens collected from 7 FWs, 5 ill patrons, and 1 ill family member of a FW were tested at the DPH State Public Health Laboratory (SPHL). Four FWs, all 5 patrons, and the family member tested positive for Norovirus Genotype II by RT-PCR. The patrons and family member tested negative for routine enteric bacterial pathogens (*Campylobacter*, *Escherichia coli* O157, *Salmonella*, and *Shigella*). Six (2 FWs, 3 patrons, and 1 family member) of the norovirus-positive samples were forwarded to the New York State Wadsworth Laboratory for further testing. Three specimens (2 FWs, 1 patron) were successfully sequenced and were identified as GII.4 untypeable [P4 New Orleans] strain. Sequence data was not available for the remaining three specimens.



Editorial

Norovirus is the most common cause of foodborne outbreaks in the United States, accounting for about 50% of outbreaks (1). Infected FWs cause 70% of Norovirus outbreaks and 1 in 5 have reported working while experiencing vomiting and diarrhea (2). These outbreaks mostly occur in food service settings when infected FWs touch ready-to-eat foods with bare hands before serving (1). Norovirus is very contagious, easily contaminating food because it only takes a very small amount of virus to make a person sick (3). The virus remains infectious on foods until heated above 140°F, can stay on utensils and counter-tops up to 2 weeks, and may withstand common disinfectants (2).

The epidemiologic, environmental, and laboratory investigation indicate that an outbreak of Norovirus occurred among patrons of FSE in Tolland County. Donuts were implicated as the vehicle for this out-break, most likely contaminated by a FW working while ill. Contributing factors include the FSE's lack of adequate facilities to conduct proper handwashing and using bare hands to prepare a ready-to-eat food item. Additionally, the popularity of the FSE and ease of food product distribution to multiple groups of patrons helped contribute to over 100 illnesses spanning five states. To help prevent Norovirus outbreaks, it is important to avoid preparing foods while ill, wash hands carefully for at least 20 seconds with warm water and soap, and report suspected illness from consuming food to the state or local health department (2).

Reported by

C Turner, MPH, E E Washington, MS, A Edmundson, MPH, Q Phan, MPH, Epidemiology and Emerging Infections Program; C Applewhite, BA, RS, T Weeks, MS, RS, Food Protection Program; Christina Nishimura, MPH, Diane Noel, BS, MT, State Public Health Laboratory, Connecticut Department of Public Health; Local Health Department staff

References

1. Common Settings of Norovirus. 2021. <https://www.cdc.gov/norovirus/trends-outbreaks/outbreaks.html>
2. Preventing Norovirus Outbreaks. Food Services has a Key Role. CDC Vital Signs. June 2014. <https://www.cdc.gov/vitalsigns/norovirus/index.html>
3. How Norovirus Spreads. 2021. <https://www.cdc.gov/norovirus/about/transmission.html>

An Outbreak of *Clostridium Perfringens* Associated with a Connecticut Healthcare Facility, May 2021

On May 13, 2021, a Connecticut healthcare facility reported multiple incidents of gastrointestinal illness (GI) among employees to the Connecticut Department of Public Health (DPH) Epidemiology and Emerging Infections Program (EEIP). The initial report indicated that an estimated 30 staff members called out ill or came to work with GI symptoms following a facility-wide event on May 12th. During this event, employees were served a chicken taco lunch from a food truck. Staff from EEIP, the Food Protection Program (FPP), and the local health department (LHD) conducted a joint investigation to better understand the extent and source of the outbreak and to implement control measures.

Epidemiologic Investigation

To gather symptom and exposure information, a standardized investigation questionnaire was developed by DPH staff using SurveyMonkey®. A link to the survey was shared with the facility and distributed to employees. A case was defined as vomiting and/or diarrhea (3 or more stools in a 24-hour period) in an employee who responded to the survey and with symptom onset May 12–13. A total of 149 employees responded to the survey and of those, 101 reported eating from the food truck on May 12th.

Fifty-seven (57%) employees, who ate from the food truck, reported illness meeting the case definition; 49 (86%) were female. Eating food from the food truck was associated with illness [Odds Ratio (OR)= 21.4, 95% Confidence Interval (CI)= 4.9– 93.9; p-value <0.0001].

Additional analysis was conducted for a subset of respondents who ate from the food truck to determine if illness was associated with exposure to a specific ingredient in the chicken taco lunch. Illness was not significantly associated with any specific ingredient, most likely due to the limited food choices at the event.

The median incubation period was 10 hours (range 4–19 hours) with a median duration of illness of 2 days (range 1–10 days). Commonly reported symptoms among cases included diarrhea (100%), cramps (98%), nausea (73%), headache (27%), and chills (26%). One person sought medical care, and no one was hospitalized.

Environmental Investigation

The LHD began the environmental investigation of the food truck on May 14th. The event was sponsored by a local church which had partnered with the food truck to provide the onsite food distribution at the healthcare facility. Volunteers from the church helped prepare the food in the church kitchen.

The LHD interviewed five food workers (FWs) who worked the event, two from the food truck and three church volunteers. Stool specimen collection kits were distributed to all who worked the event. No FW admitted to experiencing illness before or after the event.

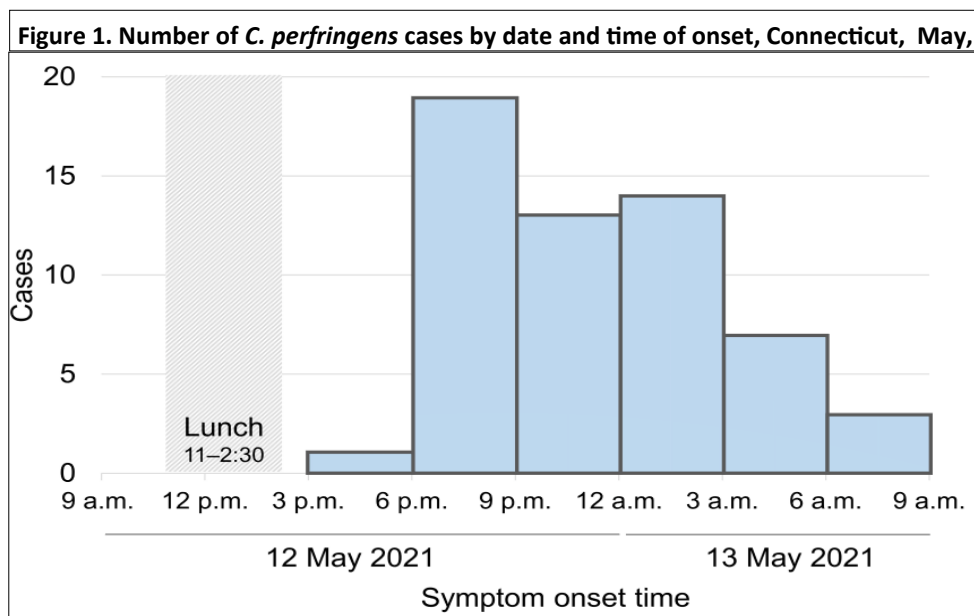
Interviews with the FWs revealed that seven cases (roughly 140 lbs.) of boneless skinless chicken thigh meat were purchased for the event and stored in a cooler at the church kitchen. The chicken was cooked on the stove in the kitchen, but no food thermometer was used to determine the internal temperature of the cooked chicken. The produce and salsa were also reportedly prepared in the kitchen. Approximately 750 soft tacos were assembled in the

kitchen and included chicken, mozzarella style cheese, tomato, and lettuce on a tortilla. Sour cream and salsa were served on the side. The tacos were then delivered to the food truck and left at room temperature until arriving at the healthcare facility where they were placed briefly on a griddle. The tacos were served to employees in take-out containers. Food preparation began at 5:00 a.m. and lunch service ended at 2:30 p.m.

Laboratory Investigation

A total of 9 specimens from 4 ill patrons and 5 FWs were tested at the DPH State Public Health Laboratory (SPHL). All specimens tested negative for Norovirus by reverse transcription polymerase chain reaction (RT-PCR) using the GeneXpert. Specimens were also tested using the BioFire® GI panel (which has 22 pathogen targets on its multiplex PCR assay). Five specimens tested positive for a variety of pathogens including Enteropathogenic *Escherichia coli* (EPEC), *giardia*, and *Clostridioides difficile*. Because incidental findings can occur due to the highly sensitive nature of the multiplex GI panel, an etiology could not be determined based on these re-sults. Specimens were forwarded to the Centers for Disease Control and Prevention (CDC) for further testing.

All 9 specimens were tested at CDC and 4 (1 patron, 3 FWs) were positive for *Clostridium perfringens* enterotoxin by a reverse passive latex agglutination (RPLA) test.



Editorial

Clostridium perfringens is one of the most common causes of foodborne illness, causing an estimated 1 million illnesses a year in the United States (1). It is a Gram-positive, spore-forming bacillus naturally occurring in the environment and intestinal tracts of humans and other warm-blooded mammals (2). Illnesses can occur when foods such as meat or poultry are held without maintaining adequate heating or refrigeration after being cooked (3). *Clostridium perfringens* bacteria form spores, which act like protective coatings that help the bacteria survive. When food is kept at an unsafe temperature the bacteria can grow and multiply. After the bacteria is ingested, it can produce a toxin that causes diarrhea. Because a common sources of *C. perfringens* infection includes foods cooked in large batches and held at unsafe temperatures, outbreaks tend to happen in places that serve large groups of people (1).

The incubation time for *C. perfringens* ranges between 6–25 hours, usually 10–12 hours, and the most common clinical symptoms include diarrhea and abdominal cramps. These symptoms generally last 12–24 hours (4). The infection cannot be passed from one person to another (1).

The epidemiologic, laboratory, and environmental findings indicate that an outbreak of *C. perfringens* occurred among employees of a healthcare facility in Connecticut. Information obtained during the environmental investigation suggests that chicken is the most likely vehicle for this outbreak. Contributing factors included failing to verify the final cooking temperature of the chicken and temperature abuse of the shredded chicken after cooking, during assembly of the tacos, and during storage prior to service.

To help prevent illness due to *C. perfringens*, it is important for foods to be cooked to a safe temperature and then kept at $\geq 135^{\circ}\text{F}$ or $\leq 41^{\circ}\text{F}$ if not being consumed (5). Leftover foods should be refrigerated within two hours of cooking or within one hour if the temperature outside is above 90°F and the food is outside. Large portions of food should be divided into smaller quantities before being placed in the refrigerator to help the food cool quickly enough to prevent bacterial growth. Leftovers should be reheated to at least 165°F before consumption (1).

Reported by

C Turner, MPH, S Bart, PhD, E Flaherty, BS, Q Phan, MPH, Epidemiology and Emerging Infections Program; C Applewhite, BA, RS, T Weeks, MS, RS, Food Protection Program; Christina Nishimura, MPH, Diane Noel, BS, MT, State Public Health Laboratory, Connecticut Department of Public Health; Local Health Department staff

References

- Centers for Disease Control and Prevention. Prevent Illness from *C. perfringens*. 2021. <https://www.cdc.gov/foodsafety/diseases/clostridium-perfringens.html>.
- Grass JE, Gould LH, Mahon BE. Epidemiology of foodborne disease outbreaks caused by *Clostridium perfringens*, United States, 1998-2010. *Foodborne Pathog Dis*. 2013;10(2):131-136. doi:10.1089/fpd.2012.1316
- FDA Bacteriological Analytical Manual Chapter16: *Clostridium perfringens*. 2001. Available at <https://www.fda.gov/food/laboratory-methods-food/bam-chapter-16-clostridium-perfringens>.
- Fafangel M, Učakar V, Vudrag M, Berce I, Kraigher A. A Five Site *Clostridium Perfringens* Food-Borne Outbreak: A Retrospective Cohort Study. *Zdr Varst*. 2014;54(1):51-57. Published 2014 Dec 30. doi:10.1515/sjph-2015-0007
- CT General Statutes Section 19a-36g (7)(18)

Connecticut Department of Public Health

Manisha Juthani, MD
Commissioner of Public Health

Matthew L. Cartter, MD, MPH
State Epidemiologist

Lynn Sosa, MD
Deputy State Epidemiologist

Infectious Diseases Programs

Epidemiology and Emerging Infections
860-509-7994

Healthcare Associated Infections & Antimicrobial Resistance
860-509-7995

HIV & Viral Hepatitis
860-509-7900

Immunizations
860-509-7929

Sexually Transmitted Diseases
860-509-7920

Tuberculosis Control
860-509-7722

The Connecticut Epidemiologist Newsletter - (Telecommunications Relay Service 7-1-1)

Editor: Meghan Maloney, MPH

Assistant Editor: Amanda Durante, PhD, MSc

Assistant Editor/ Producer: Chris Heneghan, MPH