

Investigation of a Norovirus Outbreak at a Connecticut University, 2012

On November 28, 2012, a local health department notified the Connecticut Department of Public Health (DPH) of a gastrointestinal (GI) outbreak at a university. The university was closed during Thanksgiving break from November 20 – 25, and food service was suspended. On November 25, university food service resumed for lunch with limited foods at the student center snack bar, and full service in the main cafeteria for dinner. This report summarizes the findings of the investigation.

To collect preliminary information about the outbreak, staff of the DPH Epidemiology and Emerging Infections Program developed a standardized questionnaire that included questions about symptoms, onset of illness, and places of food consumption on campus. On November 29, the first 15 ill students were interviewed by telephone. Answers supplied during these interviews indicated that symptoms and onsets of illness were consistent with a norovirus infection, and that ill students primarily consumed foods from either the campus main cafeteria and/or snack bar. By November 29, over 60 students had reported GI illness to the university health service. To further characterize the outbreak, a second standardized online questionnaire that included questions about illness, specific meals and foods consumed, and campus dining locations was developed. University officials were requested to distribute the survey link to university students and faculty members (approximately 4,400 students and 600 faculty members).

A case was defined as illness consisting of vomiting and/or diarrhea (≥ 2 stools in 24 hour period) in a university student or staff member during November 26 – December 3, 2012. A total of 388

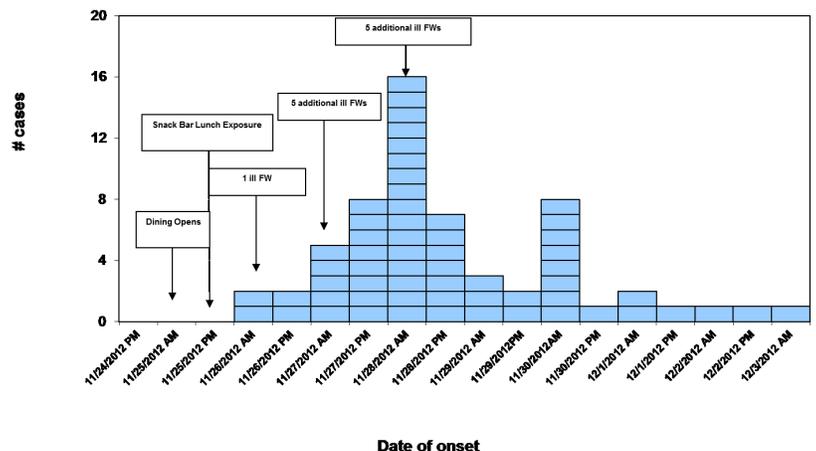
If you require aid/accommodation to fully and fairly enjoy this publication, please contact 860-509-7994.

In this issue...

Investigation of a Norovirus Outbreak at a Connecticut University, 2012	5
Connecticut Antimicrobial Stewardship Prevention Collaborative	7
Table. Summary of Reported Tuberculosis Cases - Connecticut, 2012	8

(~8%) students/staff responded to the online survey. Of those, 60 (15%) reported illness consistent with the case definition, of which 37 (62%) cases lived on campus (in 11 different residential halls), and 16 (27%) cases lived off campus. Of those meeting the case definition, the median age was 19 years (range 18-49 years); 43 (72%) were female, 46 (77%) ate at a university dining hall. Onset of illness ranged from November 26 - December 3, 2012 (Figure 1). The median duration of illness was 36 hours (range 18-100 hours). Of the 60 cases, 54 (90%) reported nausea, 53 (88%) vomiting, 50 (83%) headache, 47 (78%) stomach pain, 46 (77%) diarrhea, 43 (72%) chills, and 28 (47%) fever. No hospitalizations or

Figure 1. Epidemic Curve: University Outbreak in Connecticut, November 2012.



deaths were reported; 15 (25%) sought medical attention.

For the purpose of analyzing food exposures, and to exclude cases likely due to secondary transmission, analysis was limited to 45 cases with onset of illness during November 26-30, 2012. Univariate analysis indicated that illness was statistically associated with eating food on campus and eating food from the snack bar. More specifically, illness was statistically associated with eating food from the snack bar during dinner on November 25, lunch and dinner on November 26, and lunch on November 27. Analysis of specific meals from the snack bar further revealed that eating at the deli, burger station, and salad bar were statistically associated with illness (Table).

Laboratory Investigation

The university health service collected stool samples from 14 ill students for testing at a

commercial clinical laboratory; 13 (93%) were positive for norovirus Genotype II (NoV GII). The local health sanitarians collected 14 stool samples from ill food workers that were tested at the CT DPH Katherine A. Kelley, State Public Health Laboratory; 7 (50%) were positive for NoV GII.

Environmental Investigation

The local health department sanitarians, in collaboration with the DPH Food Protection Program, conducted the environmental investigation. Interviews of university food workers about recent GI illness, and evaluation of food handling practices were conducted by the local health department sanitarians. Of the 118 food service employees interviewed, 14 (12%) reported experiencing vomiting and/or diarrhea during November 26 – December 3, 2012, and 3 reported GI illness during the 2 weeks before the outbreak. Stool specimens were collected from the 14 food service employees with onset of GI illness after November 25, 2012.

TABLE. Case control study analysis of snack bar meals consumed by students at a Connecticut university, November 2011

Meals	CASES (45=N)		CONTROLS (290=N)		OR	95% CI	p-value
	ATE	DID NOT	ATE	DID NOT			
Ever eating on Campus	38	7	152	138	4.93	(2.13-11.40)	<0.001
Ever eating at the Snack Bar	21	24	31	259	7.31	(3.65-14.63)	<0.001
Sunday Snack Bar Dinner	5	35	4	246	8.79	(2.25-34.29)	0.003
Monday Snack Bar Lunch	21	19	14	223	17.61	(7.73-40.08)	<0.001
Monday Snack Bar Dinner	7	31	5	214	9.66	(2.89-32.34)	<0.001
Tuesday Snack Bar Lunch	8	29	13	181	3.84	(1.47-10.07)	0.009
Tuesday Snack Bar Dinner	1	34	7	168	0.71	(0.08-5.92)	1.00
Ever eating at Deli	17	28	7	283	24.55	(9.38-64.24)	<0.001
Ever eating at Burger	6	39	7	272	6.22	(1.99-19.46)	0.004
Ever eating at Salad	8	37	11	279	5.48	(2.07-14.51)	0.001
Ever eating at Pizza	2	43	4	286	3.33	(0.59-18.71)	0.19

The environmental investigation identified several factors that may have contributed to the outbreak including ill food workers continuing to work while symptomatic, improper glove use and hand washing, and an inadequate ill food worker policy.

Control Measures

Several university-wide control measures were implemented to help limit further spread of infection. On November 28, a thorough cleaning of the main student center and all common bathrooms was conducted every morning and evening. Additional control measures included: 1) establishment of a “Vomit Response Team”, which required custodial staff to quickly clean areas of vomiting incidents using a 10% bleach solution; 2) the university suspended self-service in dining halls; 3) more frequent cleaning of food stations; 4) replacement or cleaning of service utensils.

Reported by

P. Gacek, MPH, CPH, M. Maloney, MPH, Q. Phan, MPH, T. Rabatsky-Ehr, MPH, Epidemiology and Emerging Infections Program; C. Applewhite, RS, T. Weeks, MS, Food Protection Program; D. Barden, State Public Health Laboratory, Connecticut Department of Public Health; Local Health Department staff.

Editorial

The epidemiologic, environmental, and laboratory evidence suggest that a foodborne outbreak occurred among students and staff at a university in Connecticut during November 26 – December 3, 2012. The reported symptoms, incubation period, and duration of illness were consistent with norovirus infection. This is further supported by the finding of NoV GII in the stool specimens of 14 students and 7 food workers.

The epidemiologic analysis revealed that illness was associated with eating food on campus, and more specifically, eating food from the snack bar during November 26-30, 2012. Further analysis showed that eating at the snack bar deli, burger station, and salad bar were all associated with illness. Contamination of food by one or more ill food workers is the most likely cause of this outbreak. The investigation identified multiple ill food workers who continued to work while symptomatic. In addition, improper glove use and inadequate hand washing were noted by local and state health sanitarians. 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.

This outbreak reinforces the importance of having and enforcing a written ill food worker policy, and the need for food managers to train and supervise staff on prevention methods for foodborne disease.

There were several limitations to this investigation. First, it is unknown whether the online survey link was distributed to or reached all intended members of the university (all students and faculty). Second, because the response rate was low (~8%), the findings are not generalizable to the entire university population. Third, due to the low response

rate, the extent of illness (i.e. number of cases) may be underestimated.

Connecticut Antimicrobial Stewardship Prevention Collaborative

Emerging resistance to antibiotics and other antimicrobials is a serious medical care and public health problem. The widespread occurrence of methicillin-resistant *Staphylococcus aureus* (MRSA) and some of the emerging carbapenem-resistant Enterobacteriaceae (CREs) that are resistant to most or all available antibiotics is worrisome, as is the high incidence of *Clostridium difficile* (potentiated by antibiotic use), rapid transcontinental spread of resistant strains through international jet travel, and the spread of antimicrobial-resistant pathogens outside healthcare settings into the community.

Infection with antimicrobial-resistant pathogens harm patients, conferring additional morbidity and mortality that could be reduced by improving appropriate and optimal use of antimicrobial agents in both inpatient and outpatient settings. Drug development is a long and arduous process, and antibiotic resistance cannot be solved by relying on accelerating development of new antimicrobials. Bacteria, viruses, and other pathogens can develop resistance more quickly than effective new antimicrobials can be developed. Therefore, it is vital that we focus on the judicious use of antimicrobials fostered by antimicrobial stewardship (AMS) activities in healthcare settings, and through public information and education.

The Connecticut Department of Public Health (DPH), supported by funding from the Centers for Disease Control and Prevention (CDC), has partnered with Qualidigm, the state Medicaid and Medicare Quality Improvement Organization, to facilitate a statewide AMS prevention collaborative in Communities of Care. A prevention collaborative is a group of healthcare facilities formally working together to address a healthcare quality problem through assessing the problem, learning about best practices and how to effectively apply them, engaging in peer-to-peer education and shared problem solving, and tracking their data to evaluate

progress and foster success. Communities of Care are groups of healthcare facilities of different types (e.g., acute care hospitals, long term care facilities, dialysis centers, and home health care) in a defined geographic area that share a large percentage of their patients.

Connecticut AMS prevention collaborative activities include a preliminary survey of current baseline AMS practices in the Communities of Care, a full-day kickoff session for the six Communities that registered to participate in a six month pilot collaborative, monthly technical assistance conference calls, individualized technical assistance from Qualidigm staff, and tracking of data to evaluate process and effectiveness of the collaborative.

Qualidigm is providing opportunities for participants to share information, track progress, problem-solve together, and make best use of resources, including the CDC *Get Smart for Healthcare* educational and technical assistance materials and products from other states. Qualidigm has established a National Healthcare Safety Network (NHSN) “group” for the collaborative to track Laboratory-identified (LabID) MRSA and *Clostridium difficile* data in NHSN, to reinforce data quality monitoring, and to offer NHSN technical assistance to members of the collaborative.

We anticipate that the experience developed in the collaborative will help Connecticut compete for funding to continue and expand the collaborative to more Communities of Care, despite the challenges posed by limited resources. More information on the AMS prevention collaborative is available from the Qualidigm web site at www.qualidigm.org or the DPH Healthcare Associated Infections Program at (860) 509-7995.

Table. Summary of Reported Tuberculosis Cases - Connecticut*, 2012

Classification	n= 74 No. (%)
Age (years)	
<5	1 (1)
5-14	0 (0)
15-24	7 (9)
25-44	40 (54)
45-64	9 (12)
≥65	17 (23)
Race/Ethnicity	
Asian	28 (38)
Black	16 (22)
Hispanic	18 (24)
White	12 (16)
Gender	
Male	42 (57)
Female	32 (43)
Birth Origin	
U.S. and Territories	13 (18)
Other Nations (26 different Nations)	61 (82)
Pulmonary cases	52 (70)
HIV positive	4 (5)
Multi-drug resistant (resistance to at least isoniazid and rifampin)	1 (1)
Birth Nations with more than 5 Cases	
India	9
Philippines	6
Haiti	5
Towns with ≥5 cases	Rate**
Stamford	9 (7.3)
Norwalk	8 (6.9)
Hartford	6 (6.4)
Bridgeport	9 (6.2)
New Haven	6 (4.6)

* Cases were reported from 33 towns.

** Rate per 100,000 population.

<p>Jewel Mullen, MD, MPH, MPA Commissioner of Public Health</p> <p>Matthew L. Cartter, MD, MPH State Epidemiologist</p> <p>Lynn Sosa, MD Deputy State Epidemiologist</p>	<p>Healthcare Associated Infections 860-509-7995 HIV & Viral Hepatitis 860-509-7900 Epidemiology and Emerging Infections 860-509-7994 Immunizations 860-509-7929 Tuberculosis Control 860-509-7722 Sexually Transmitted Diseases (STD) 860-509-7920</p>	<p>Connecticut Epidemiologist</p> <p>Editor: Matthew L. Cartter, MD, MPH</p> <p>Assistant Editor & Producer: Starr-Hope Ertel</p>
--	---	--