

Outbreak of Norovirus Associated with a Catered Luncheon, Sedgwick County, January 2012



Background

On January 23, 2012 at 10:05 AM, the Bureau of Epidemiology and Public Health Informatics at the Kansas Department of Health and Environment (BEPHI-KDHE) was notified of a possible foodborne illness outbreak associated with a catered luncheon on January 17, 2012. Attendees reported gastrointestinal symptoms within 24-72 hours following this luncheon, catered by McAlister's Deli located at 306 N Rock Rd, Wichita, Kansas. In response to this report, an outbreak investigation was initiated immediately by staff at Sedgwick County Health Department; City of Wichita Office of Environmental Health, Food Safety and Protection Division; BEPHI-KDHE; and the Kansas Department of Agriculture (KDA) to determine the cause of illness and to implement prevention and control measures.

Methods

Epidemiologic Investigation

A retrospective cohort study was conducted among all coworkers that attended the catered lunch. A spokesperson for the organization interviewed each individual and provided clinical information and food consumption history.

A case was defined as an individual who developed diarrhea (three or more loose stools in a 24-hour period) and/or vomiting and/or abdominal cramps with a fever within 24-72 hours after consuming food from this catered meal on January 17, 2012.

Descriptive analysis was conducted using SAS® 9.2. Relative risk (RR), chi-square (P-value), and 95% confidence intervals (95% CI) were calculated to assess the association between food items and subsequent illness.

Laboratory Analysis

Two stool specimens were collected and submitted to the Kansas Health and Environmental Laboratories (KHEL) for testing.

Environmental Assessment

KDA conducted an inspection at McAlister's Deli on January 24, 2012. Employee surveys were distributed to all McAlister's employees to assess for illnesses, hours worked, duties performed, and foods consumed.

Results

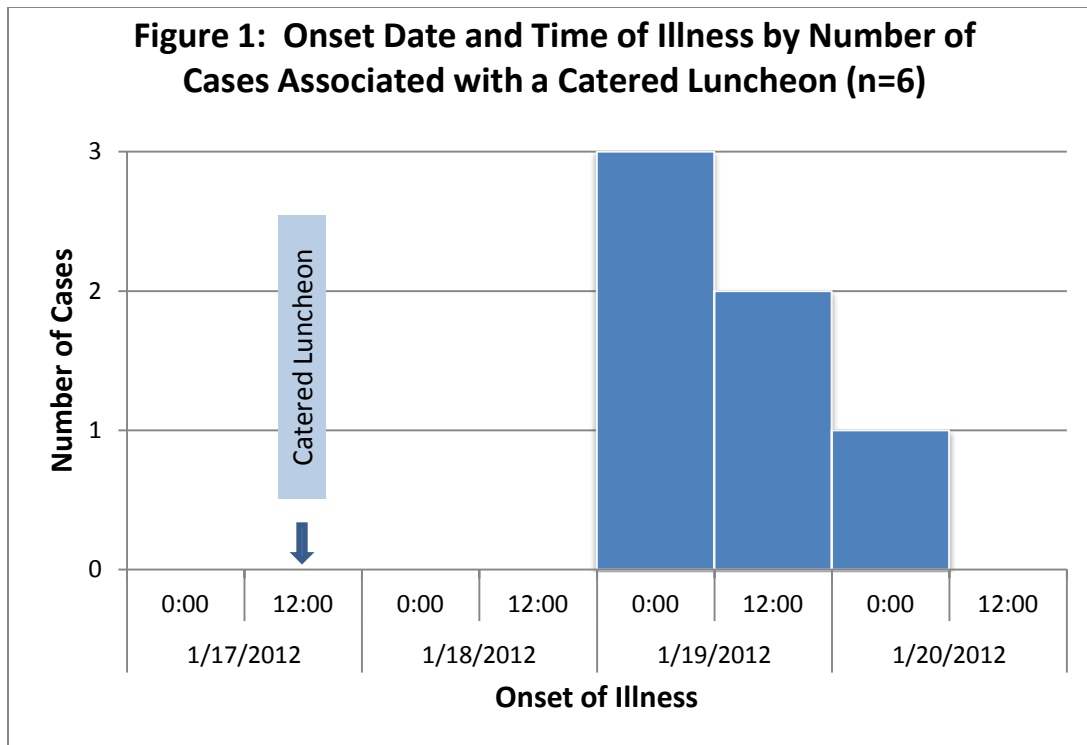
Epidemiologic Investigation

Seven (27%) of twenty-six individuals reported gastrointestinal symptoms and six (23%) met the case definition. The predominant symptoms included diarrhea, abdominal cramps, vomiting, and fever (Table 1). The ages of cases ranged from 22 to 25 years (median = 23 years).

Table 1: Symptoms Reported Among Cases (n=6)

Symptom	# of Cases/ Total Reporting	% of Cases
Diarrhea	4/6	67%
Abdominal Cramps	4/6	67%
Vomiting	3/6	50%
Fever	2/6	33%

Onset dates and times of illness ranged from 12:00 AM on January 19 to 12:00 AM on January 20 (Figure 1). The incubation period ranged from 36 to 52 hours with a median of 41 hours. Recovery dates were reported by five of the six ill individuals and duration of illness lasted 24 hours.



Food items served at the luncheon were analyzed for association with illness. Eating cantaloupe and eating any fruit from the fruit tray were significantly associated with illness (Table 2).

Table 2: Exposure Information

Food Item	Relative Risk	95% Confidence Interval	P-value
<i>Cantaloupe</i>	<i>7.00</i>	<i>1.94 – 25.25</i>	<i>0.004</i>
<i>Fruit Tray</i>	<i>12.22</i>	<i>0.78 – 191.46</i>	<i>0.006</i>
Grapes	0.77	0.06 – 9.38	0.519
Ham Wrap	2.17	0.54 – 8.74	0.316
Honeydew	1.88	0.37 – 9.48	0.509
Mango	0.77	0.06 – 9.38	0.519
Pineapple	0.77	0.06 – 9.38	0.519
Strawberries	2.75	0.62 – 12.17	0.182
Turkey Wrap	4.50	0.63 – 32.38	0.088

Laboratory Analysis

Of the two stool specimens that were collected and tested at KHEL, one tested positive for norovirus genogroup II and one tested negative.

Environmental Assessment

McAlister's Deli was inspected on January 24, 2012. Two critical violations were observed during the inspection: 1) the make table was not holding appropriate cold hold temperatures, and 2) food was not being held at proper cold holding temperatures. There was one noncritical violation observed: inappropriate use of a hand sink in a food prep area. All violations were corrected on site. Employees at the restaurant were surveyed for gastrointestinal illness, hours worked, and food consumed. No employees reported illness.

Conclusions

This was an outbreak of a gastrointestinal illness associated with a catered luncheon held in Sedgwick County. Six individuals among a group of coworkers became ill after eating food served at this luncheon. One individual tested positive for norovirus.

Eating cantaloupe and eating any fruit from the fruit tray were significantly associated with illness. The fruit served at the luncheon could have been contaminated by an employee that was infected with norovirus; however, no food handlers reported any illness either before or after preparation of the food for this event. The employees who prepared the fruit tray may not have been surveyed or they could have been infected with norovirus but were asymptomatic. The inspection of the restaurant revealed malfunctioning cold storage equipment, inadequate cold holding temperatures, and improper use of a hand washing sink. None of these violations are likely to have caused this outbreak of norovirus.

Norovirus is a highly contagious pathogen with a very low infectious dose, estimated to be between 10-100 viral particlesⁱ. Transmitted primarily through fecal-oral route, norovirus particles may be spread through direct contact or through consuming fecally-contaminated food or water. Spread via aerosolized vomitus is also possible. Once infected, norovirus shedding can begin prior to the onset of symptoms and can persist for weeks after clinical symptoms have ceased. Norovirus has been detected in fecal specimens 3 to 14 hours before onset of clinical symptoms and can be detected for 13 to 56 days after exposure to the virusⁱⁱ. Approximately 20% of norovirus infected individuals do not have clinical symptomsⁱⁱⁱ. However, these individuals can still shed norovirus and can be potential sources of contamination.

Simple measures, including correct handling of cold foods, strict hand washing after using the bathroom and before handling food items, and excluding employees with gastrointestinal illness from food handling may substantially reduce foodborne transmission of noroviruses^{iv}.

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ⁱ Teunis PFM, Moe CL, Liu P, et al. Norwalk virus: how infectious is it? *J Med Virol* **2008**; 80:1468-76.

ⁱⁱ Atmar RL, Opekum AR, Gilger MA, et al. Norwalk virus shedding after experimental human infection. *Emerg Infect Dis* **2008**; 14:1553-1557.

ⁱⁱⁱ Moe CL. Preventing norovirus transmission: How should we handle food handlers? *Clin Infect Dis* **2009**; 48:38-40.

^{iv} Centers for Disease Control and Prevention. "Norovirus: Technical Fact Sheet", Accessed on January 20, 2012 at: <http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus-factsheet.htm>.