Outbreak of Norovirus Associated with a Family Luncheon – North Central Kansas, August 2016

Background

On the evening of August 29, 2016, the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) was notified by a citizen that approximately 16 people were ill with gastrointestinal symptoms after attending a family luncheon on August 27 in North Central, Kansas. Food items were prepared by the attendees and attendees resided in numerous counties within the state. The local health department was notified on August 30, 2016, and KDHE began an outbreak investigation that morning. The aim of the investigation was to determine the cause of illness and scope of illness to prevent future occurrences. An online questionnaire was developed and a link to the survey was provided to the attendees through email.

Key Investigation Findings

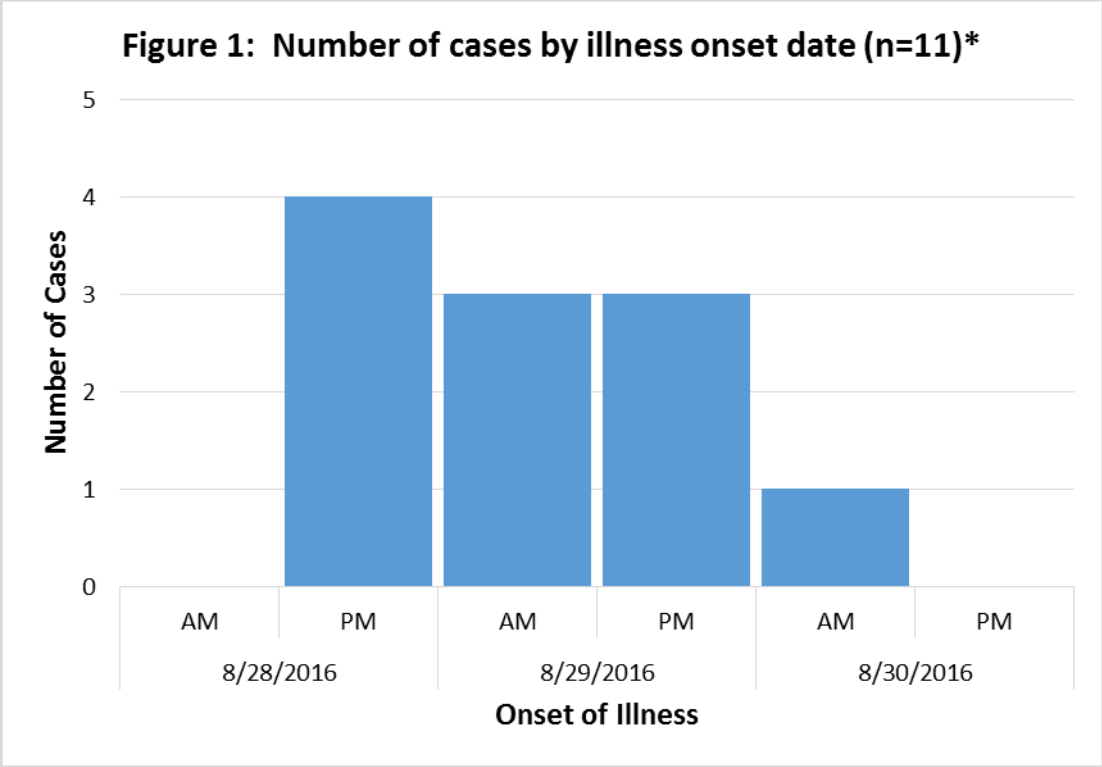
- A case was defined as diarrhea (more than 3 loose stools in a 24-hour period) or vomiting in a person within 12 – 72 hours after attending the luncheon.
- Descriptive analysis was conducted using SAS®9.4. Relative risk (RR) and 95% confidence intervals (95% CI) were calculated, and associations between food items and illness were assessed. Due to a small sample size, fisher's exact test was used and exposures were considered statistically associated with illness if p-value was less than 0.1.
- The survey was distributed to 38 individuals, and 20 completed the survey. Twelve persons were ill and met the case definition.
- Cases were identified in attendees from five counties including Cloud, Geary, Johnson, Saline and Shawnee, Kansas.
- The median age of those ill was 58 years with a range from 2 to 88 years. Predominant symptoms included nausea, vomiting, and muscle aches (Table 1). Seven (64%) ill persons were female. No one reported visiting a healthcare provider for their illness.

Table 1: Symptoms reported among ill persons (n=11)*

Symptom	# of Ill Persons	% of Ill Persons
Nausea	11	100%
Vomiting	9	82%
Muscle aches	9	82%
Stomach cramps	8	73%
Diarrhea	6	55%
Chills	6	55%

*Symptoms were unknown for one ill person

- Onset dates ranged from August 28 to August 30, 2016 (Figure 1). The incubation period ranged from 28 to 58.5 hours (median, 38.5 hours). Eleven persons had recovered by time of survey completion and duration of illness ranged from 7 to 65.5 hours (median, 39 hours).



*Onset date was unknown for one ill person

- Food items and drinks served at the luncheon were analyzed for association with illness. Consumption of grapes (RR = 4.5, 95% CI = 0.7-28.9, P-value = 0.06) and strawberries (RR = 4.8, 95% CI = 0.7-32.2, P-value 0.06) were significantly associated with illness.
- One person reported onset of diarrhea and vomiting on August 26, 2016.
- Two stool specimens were collected and submitted to the Kansas Health and Environmental Laboratories (KHEL) for testing. Both were positive for norovirus genogroup II.

Conclusion and Recommendations

This was an outbreak of norovirus associated with a family luncheon in North Central, Kansas. Twelve persons became ill with norovirus.

Consuming grapes and strawberries were significantly associated with illness. All food items were prepared by attendees of the luncheon. One person reported gastrointestinal illness a day prior to the family luncheon. This person may have been ill with norovirus and may have prepared food items for the luncheon or the food items or environmental surfaces could have been contaminated during the luncheon. Norovirus is a highly contagious pathogen with a very low infectious dose (10 – 100 viral particles), estimated to be between 10-100 viral particles and is the most common cause of gastroenteritis in the United States with an estimated 19-21 million illnesses each year [i]. Transmission is commonly via fecal-oral route or aerosolized vomitus, through direct contact with an ill person or contaminated food, water or surfaces. The leading cause of illness and outbreaks is food contaminated by infected food handlers [i]. Norovirus

incubation is typically 12-48 hours and with symptoms lasting one to three days. Infected persons can transmit the virus prior to the onset of symptoms and up to two weeks after recovery. Simple prevention measures, including thorough hand washing after using the bathroom and before handling food items can substantially reduce transmission of noroviruses

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[i] Norovirus. (2013, July 26). Retrieved January 21, 2016, from http://www.cdc.gov/norovirus/about/overview.htm