

Outbreak of Norovirus in a Long-Term Care Facility — Sedgwick County, March 2014



Background

On March 13, 2014 at 3:32 p.m., the Kansas Department of Health and Environment's Bureau of Epidemiology and Public Health Informatics (KDHE-BEPHI) received a report from a long-term care facility (LTCF) administrator of gastrointestinal illness affecting ten staff and 20 residents. Prevention measures were recommended by KDHE-BEPHI at the time of the initial call. The Sedgwick County Health Department (SCHD) was notified at 4:06 p.m. SCHD and KDHE-BEPHI immediately began an outbreak investigation to determine the cause of illness and to recommend prevention and control measures.

The LTCF consists of four separate houses. Each house has 64 rooms, with one resident per room. Each house has its own staff (except for floating therapists), living area, dining room and kitchen. Two houses (A and B) are for long-term care living, and two houses (C and D) are for short-term rehabilitation stays. All residents can attend group activities which take place in the different houses (most people who attend are residents of house A or B). During the time of the outbreak, there were 104 employees at the facility.

Methods

SCHD requested clinical information for each ill individual. The LTCF conducted a chart review and surveyed its staff members to determine clinical histories. Clinical information was shared with SCHD and KDHE-BEPHI in a case listing format and was analyzed. A case was defined as a LTCF resident or staff member who experienced diarrhea (three or more loose stools in a 24-hour period) or vomiting from March 12, 2014 through March 27, 2014.

On March 14, SCHD investigators traveled to the LTCF and met with the director and several staff members. SCHD provided stool specimen collection kits for individuals who exhibited gastrointestinal symptoms. On March 17, two stool specimens were shipped to the Kansas

Health and Environmental Laboratory (KHEL) for norovirus testing by Polymerase Chain Reaction (PCR).

The LTCF limited visitors after the outbreak was detected. SCHED and KDHE recommended the following additional infection control measures:

- Isolate symptomatic individuals to their rooms
- Deliver meals to rooms rather than serving meals in a common area
- Increase the frequency of cleaning of environmental surfaces, using a diluted bleach solution
- Consider protective personal equipment for cleaning staff
- Encourage good hand hygiene, emphasizing hand washing with soap rather than hand sanitizer
- Consider cohorting staff to limit the number of staff exposed to symptomatic individuals
- Ensure staff preparing or handling food are not symptomatic
- Affected staff may return to work 24 hours after diarrhea stops

SCHED and the LTCF held a follow-up meeting on March 20.

Results

During the course of the outbreak, 59 individuals — 32 staff and 27 residents— met the case definition. Forty-eight cases were female. Age was reported for 24 staff cases and 23 resident cases. The median age of staff cases was 38 (range: 18-59 years); the median age of resident cases was 82 (range: 66-95 years). Diarrhea, nausea, and vomiting were the most commonly reported symptoms (Table 1).

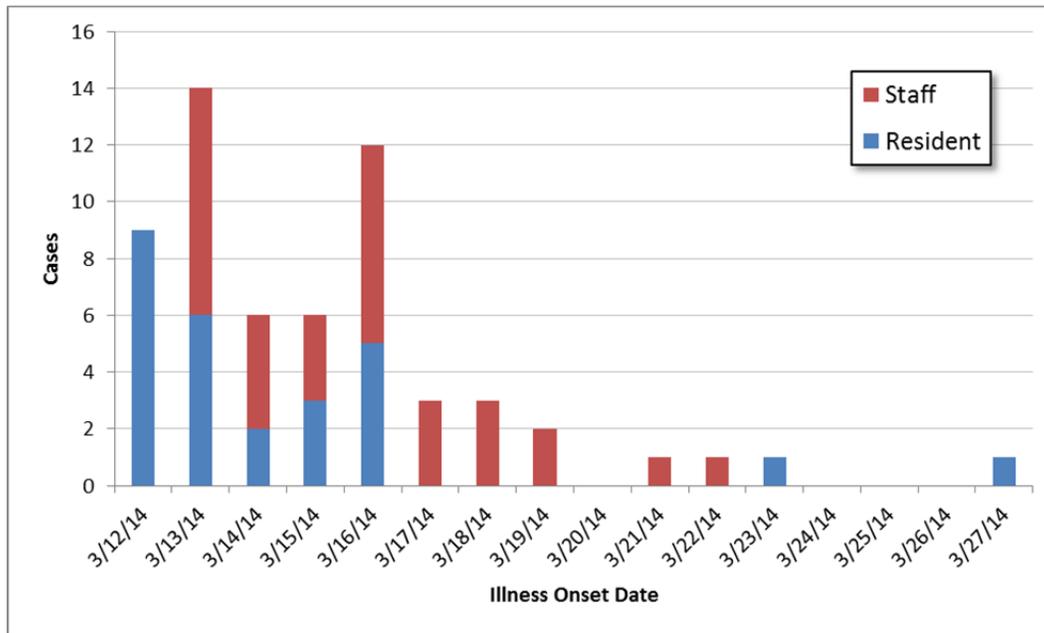
Table 1: Clinical information for norovirus cases (n=59)

<i>Symptoms</i>	<i># Cases reporting</i>	<i>Percentage</i>
Diarrhea	56	95%
Nausea	50	85%
Vomiting	46	78%
Abdominal Cramps	38	64%
Fever	29	49%
Headache	23	39%
Chills	20	34%

No one reported seeking medical care for their illness, and no emergency room, hospital visits or deaths were reported. The onset of illness ranged from March 12, 2014 to March 27, 2014

(Figure 1). The duration of illness was available for 11 individuals and ranged from 13 hours to 81 hours, with a median of 39 hours.

Figure 1. Norovirus cases among long-term care facility residents and staff by illness onset date (n=59)



Among residents, attack rates for houses A, B and C ranged from 44-56%, and the attack rate for house D was 17%. No food service staff had been ill within two weeks of initial onset. During the outbreak, only one food service worker became ill with an onset late in the outbreak. Of the eight residents attending a morning exercise class on March 11 in house A, five (from houses A and B) became ill during the outbreak (four of them within the first two days). Of the 16 residents who attended a birthday party coffee break on March 11 in house B, seven became ill during the outbreak (five within the first two days). Refreshments at the birthday party included a cake and punch, both brought in by the family of a resident.

A March 11 vomiting incident in house A was noted by staff members. Maintenance staff recalled deep cleaning that area on the morning of March 12. A staff member who cleaned the area became ill on March 13.

Two stool specimens were collected from residents. Both tested positive for norovirus genogroup II by PCR at KHEL.

Conclusions

This gastrointestinal outbreak was caused by norovirus. Transmission likely began from exposure to a vomiting incident in house A on March 11; the initial nine cases reported an illness onset on the following day. Subsequent cases were likely infected from person-to-person transmission of the virus.

Norovirus is a highly contagious pathogen with a very low infectious dose, estimated to be between 10-100 viral particles.¹ 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. Norovirus typically causes vomiting, diarrhea, nausea, and abdominal cramps. Low-grade fever and body aches may also occur. Symptoms typically persist for one to three days, but may last longer in young children or elderly individuals. In the United States, norovirus outbreaks most commonly occur in long-term care facilities.²

Because the LTCF contacted KDHE soon after illness occurred and recommended prevention measures were put into place immediately, the spread of illness may have been limited.

In the future, SCHED plans to partner with this LTCF and others in Sedgwick County to provide the following education:

- Recognizing the signs and symptoms of norovirus infection
- Prevention measures for long term care facilities
- How to report cases of communicable disease and outbreaks to public health
- Laboratory testing during an outbreak to confirm the causative agent

¹ Teunis PFM, Moe CL, Liu P, et al. Norwalk virus: how infectious is it? J Med Virol 2008; 80:1468-76.

² Centers for Disease Control and Prevention. Updated Norovirus Outbreak Management and Disease Prevention Guidelines. MMWR 2011 60(RR03);1-15.

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