

Outbreak of Norovirus in a Long-Term Care Facility — Shawnee County, April 2014



Background

On April 14, 2014 at 12:37 p.m., the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) received a report from a long-term care facility (LTCF) administrator of gastrointestinal illnesses affecting staff members and residents. The Shawnee County Health Agency (SCHA) and Kansas Department for Aging and Disability Services (KDADS) were notified. An outbreak investigation was immediately initiated by staff at SCHA and KDHE to determine cause of illness and implement prevention and control measures.

Methods

Epidemiologic Investigation

Clinical information was requested for all ill LTCF staff members and residents. A line list was compiled that included symptom information, onset dates of illness, and dates of recovery. A case was defined as diarrhea (3 or more stools in a 24-hour period) and/or vomiting in a LTCF

resident or staff member from April 1, 2014 to April 23, 2014. Once the outbreak was detected by the LTCF, the following infection control measures were implemented:

- Isolated symptomatic persons to their rooms
- Encouraged good hand hygiene, emphasizing hand washing with soap rather than hand sanitizer
- Cohorted staff to limit number of staff exposed to symptomatic persons
- Communicated with housekeeping on effective cleaning materials

On April 14, KDHE made additional recommendations including increasing the frequency of cleaning of environmental surfaces and restricting affected staff members from working until 48 hours after symptoms had resolved. Fact sheets on infection control and prevention of norovirus outbreaks in healthcare settings were also shared with the LTCF.

Laboratory Analysis

On April 16, 2014, SCHA investigators traveled to the LTCF and provided stool specimen kits for persons who exhibited gastrointestinal symptoms. Two stool specimens were collected from residents and shipped to the Kansas Health and Environmental Laboratories (KHEL) for norovirus testing by Polymerase Chain Reaction (PCR).

Environmental Assessment

On April 28, 2014, KDADS was asked to inspect the LTCF to determine if appropriate infection control and prevention measures were being maintained throughout the facility.

Results

Epidemiologic Investigation

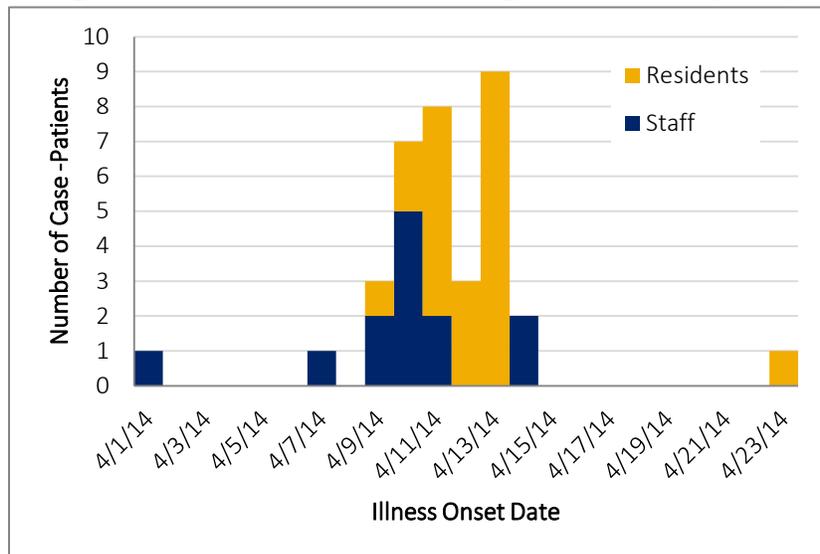
During the course of the outbreak, 38 persons reported illness. Thirty-five (13 staff members and 22 residents) met the case definition. Nausea, vomiting, and diarrhea were the most commonly reported symptoms (Table 1). One person was hospitalized. No deaths were reported.

Table 1: Symptoms Reported Among Case-Patients (n=35)

Symptom	# of Case-Patients/ Total	% of Case-Patients
Nausea	29/34	85%
Vomiting	29/35	83%
Diarrhea	19/35	54%
Fever	4/34	18%
Abdominal Cramps	3/34	9%

Onset dates of illness ranged from April 1, 2014 to April 23, 2014 (Figure 1). Duration of illness was available for 28 persons and ranged from one to four days, with a median of one day.

Figure 1: Illness Onset Date Among Case-Patients (n=35)



Laboratory Analysis

Both stool specimens that were tested by PCR at KHEL were positive for norovirus genogroup II.

Environmental Assessment

Deficiencies were cited at the time of inspection by KDADS. The LTCF failed to provide a sanitary environment to prevent the spread of infection among the residents. This was demonstrated when an isolation room was cleaned with materials that were not adequate in killing infectious agents of concern and through employees' lack of knowledge regarding disease-specific cleaning agents.

Conclusions/Discussion

This was an outbreak of norovirus that affected staff members and residents in a LTCF. The source of this outbreak is unknown, but it began with an ill staff member that may have spread the virus through contamination of environmental surfaces or by person-to-person transmission.

Once the outbreak was detected the LTCF implemented control measures, which included isolating symptomatic residents to their rooms, restricting employee movement from areas of the facility with ill persons to areas not affected, encouraging washing hands with soap and water, and communicating with housekeeping on effective cleaning agents against norovirus. However, inspection of this LTCF revealed that proper cleaning agents were not being used to properly clean environmental surfaces of infectious agents, and this could have prolonged the spread of norovirus in this facility.

Norovirus is a highly contagious pathogen with a very low infectious dose, estimated to be between 10-100 viral particles¹. 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. Surfaces contaminated or potentially contaminated with norovirus should be cleaned with a chlorine bleach solution or an EPA-registered disinfectant labeled to be effective against norovirus. Norovirus typically causes vomiting, diarrhea, nausea, and abdominal cramps. Low-grade fever and body aches may also occur. Once a person is infected, norovirus shedding can begin prior to the onset of symptoms and can persist for weeks after clinical symptoms have ceased². Symptoms typically persist for one to three days, but may last longer in young children and elderly individuals. In the United States, norovirus outbreaks most commonly occur in long-term care facilities³. Early recognition and implementation of appropriate control measures can prevent further spread of disease in these types of facilities.

Report by:

Chelsea Raybern, Kansas Department of Health and Environment
Elaine Deters, Shawnee County Health Agency
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Investigation by:

Kansas Department of Health & Environment
Bureau of Epidemiology and Public Health Informatics
1000 SW Jackson St., Suite 075
Topeka, Kansas 66612
<http://www.kdheks.gov/>

Shawnee County Health Agency
1615 SW 8th Ave
Topeka, Kansas 66606
<http://www.shawneehealth.org/>

Kansas Department for Aging and Disability Services

612 South Kansas Avenue

Topeka, Kansas 66603

<http://www.kdads.ks.gov/>

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. "Norovirus: Technical Fact Sheet," Accessed on November 25, 2014 at: <http://www.cdc.gov/norovirus/index.html>.

³ Centers for Disease Control and Prevention. Updated Norovirus Outbreak Management and Disease Prevention Guidelines. *MMWR* 2011 60 (RR03); 1-15.