

Norovirus Outbreak Associated with Atria Hearthstone Long-Term Care Facility — Shawnee County, March 2015



Background

At 1:21pm on April 7, 2015 a concerned citizen notified the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section in the Bureau of Epidemiology and Public Health Informatics (KDHE) of a possible outbreak of gastrointestinal illness at Atria Hearthstone, a long-term care facility (LTCF) located within Shawnee County (3415 SW 6th Ave, Topeka, KS, 66606). Shawnee County Health Agency (SCHA) was notified of the outbreak. An outbreak investigation was initiated on April 7, 2015 at 1:25pm to determine the cause and scope of illness among the residents and staff and to recommend prevention and control measures at the facility.

Methods

Epidemiologic Investigation

The LTCF Director of Nursing created a line list which contained demographic and clinical information for all residents and staff experiencing gastrointestinal illness. The line list included both the wing and the unit in which the individual lived. The facility consists of an east and a west wing with independent living (IL), assisted living (AL), and memory care (LG) units. Shawnee County Health Agency (SCHA) worked to obtain work schedules for all employees, including dates and time worked as well as job duties and locations worked. Once the outbreak was confirmed, the Kansas Department of Aging and Disability Services (KDADS) was contacted on April 17, 2015.

A case was defined as diarrhea (three or more loose stools in a 24-hour period) and/or vomiting between March 25 and May 15, 2015 in a resident or staff member of Atria Hearthstone LTCF.

Laboratory Analysis

Stool specimens were collected from four individuals and submitted to the Kansas Health and Environmental Laboratories (KHEL) for testing. Additional testing of two specimens was conducted at Stormont-Vail HealthCare in Topeka, Kansas.

Environmental Assessment

KDADS conducted an inspection of the Atria Hearthstone facility on May 13, 2015.

Results

Seventy-two residents and 26 staff members reported illness. Of the 98 persons reporting illness, 92 (94%) met the case definition. Of the 92 case-patients, 70 were residents and 22 were staff. The most common symptoms were diarrhea (92%) and vomiting (51%) (Table 1). There were three reported emergency department visits and no deaths.

Table 1: Symptoms reported among case-patients (n=92)

Symptom	# of case-patients with symptom	% of case-patients with symptom
Diarrhea	82	89%
Vomiting	45	49%
Abdominal Cramps	6	7%
Coryza	2	2%
Headache	1	1%
Fever	1	1%
Cough	1	1%

Onset of illness ranged from March 25 to May 15 (Figure 1). The outbreak began in the west wing of the facility, by May 2 had begun affecting the east wing at the facility. A majority of the cases (n=59, 64%) were in the east wing and within that wing those persons in assisted living were affected the most (n=42, 46%). Of the 22 staff members who reported illness, 15 (68%) worked in the east wing of the facility (Table 2).

Figure 1: Case-patients by week of illness onset and long-term care facility wing (n=92)

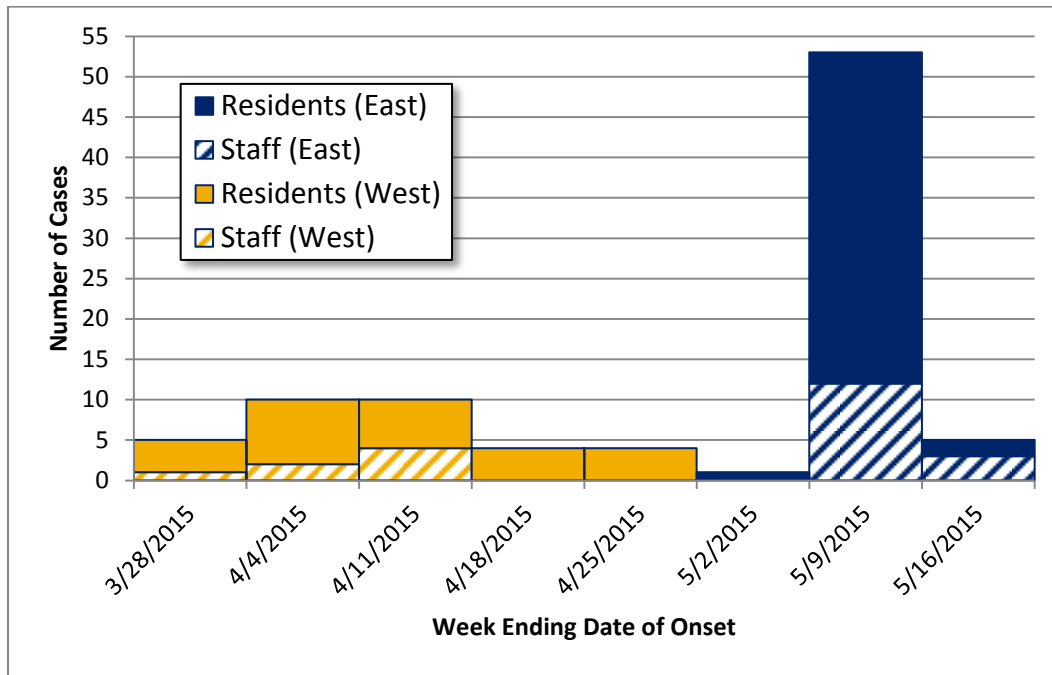


Table 2: Distribution of case-patients by wing and unit (n=92)

Wing	Affiliation	Unit	# of case-patients
West	Residents	Independent Living	15
		Assisted Living	10
		Unknown	1
	Staff	None	7
West Total			33
East	Residents	Assisted Living	32
		Life Guidance	12
	Staff	None	15
East Total			59

Laboratory Analysis

Two stool specimens tested at KHEL were positive for norovirus genogroup II. One stool specimen tested at the Stormont-Vail HealthCare laboratory tested positive for norovirus but the genogroup was not available. The remaining three specimens tested at KHEL and at Stormont-Vail HealthCare laboratory tested negative for norovirus.

Environmental Assessment

During the May 13 inspection by KDADS, two infractions were noted, including 1) failing to document all incidents, symptoms, and other indications of illness or injury including the date, time of occurrence, action taken, and results of the action and 2) failing to provide sanitary practices in the on-site laundry facility. The inspection detailed that, in a sample of six residents, the administrator failed to ensure documentation by a licensed nurse of all symptoms and other indications of illness including the date, time of occurrence, action taken, and results of the action. Inspection of the on-site laundry facilities indicated that the facility failed to store laundry in a manner which provided a “one-way flow” of laundry from a soiled area to a clean area.

The KDADS inspection noted that signage was posted above all entry doors advising against visitation, noting that an outbreak of gastroenteritis in the facility was occurring. Interviews with administrative staff noted the presence of a policy in which ill individuals were asked to remain in their rooms until symptoms subsided. When the gastrointestinal illness affected 10% of the resident population, all communal dining and activities were canceled. Administrative staff also stated that the facility stopped the use of the communal salad bar for meals. Considering the possibility of transmission involved with the usage of a salad bar, staff prepared salads for residents until disease transmission subsided.

Discussion

This was an outbreak of norovirus which affected 92 individuals either residing in or working for Atria Hearthstone LTCF. This outbreak may have been propagated by contact with contaminated environmental surfaces and from person-to-person transmission among residents and staff.

The facility implemented procedures for the norovirus outbreak, which included quarantining residents experiencing nausea, vomiting, or diarrhea in their rooms. Individuals not experiencing illness were encouraged to remain in their rooms. To address the spread of the outbreak, visitors were discouraged from visiting residents and the public dining room was closed and community activities were temporarily halted. The outbreak began in the west wing and lasted for five weeks before being reported in east wing residents and staff. A majority of staff members reporting illness were in the east wing. In norovirus outbreaks, communal spaces and shared personal items may contribute to the spread of disease. In this instance, a salad bar, which was available to all residents, could have propagated norovirus transmission. There were no reports of illness in the west and east wings after April 22, 2015 and May 15, 2015 respectively.

Norovirus testing was completed for six specimens at the Kansas Health and Environment Laboratories and the Stormont-Vail HealthCare laboratory. Three of the specimens tested were negative while three were positive. For one of the negative stool specimens, the collection date occurred eleven days after symptom onset, which could have contributed to the negative result.

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 an individual is 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 the 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. More vulnerable populations, such as those living in long-term care facilities, greatly benefit from early recognition of outbreaks. Actions taken early on can limit transmission and prevent the further spread of disease. These actions include thorough and frequent cleaning of community spaces and identifying and isolating symptomatic individuals early.

Report by: Charles Cohlmiya, Kansas Department of Health and Environment; Shawnee County Health Agency

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Investigation by:

Marvena Griffin

Ed Kalas

Kelly Sommers

Shawnee County Health Agency

1615 SW 8th Ave

Topeka, KS 66606

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/>

ⁱ P. Teunis, C. Moe, P. Liu, S. Miller, L. Lindersmith, R. Baric, J. Le Pendu and R. Calderon, "Norwalk virus: how infectious is it?," *J Med Virol*, vol. 80, no. 8, pp. 1468-76, Aug 2008.

ⁱⁱ R. L. Atmar, A. R. Opekun, M. A. Gilger, M. K. Estes, S. E. Crawford, F. H. Neill and D. Y. Graham, "Norwalk Virus Shedding after Experimental Human Infection," *Emerging Infectious Diseases*, vol. 14, no. 10, Oct 2008.

ⁱⁱⁱ C. Moe, "Preventing norovirus transmission: how should we handle food handlers?," *Clinical Infectious Diseases*, vol. 48, no. 1, pp. 38-40, 1 Jan 2009.