

Outbreak of Norovirus Associated with an Elementary School— Johnson County, October 2017



Background

On October 6, 2016 at 10:32 am, the Johnson County Health Department notified the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) of gastrointestinal illness among students at an elementary school in Johnson County, Kansas. An outbreak investigation was initiated immediately to determine the cause of illness, scope of illness, and to implement prevention and control measures. An online survey was distributed through an emailed link to each staff member or parent of a student at the school.

Key Investigation Findings

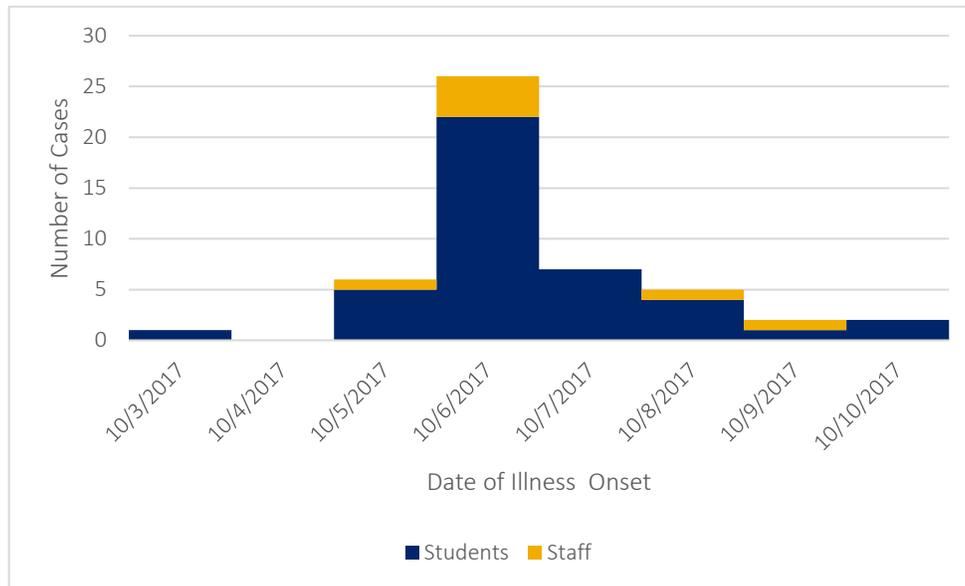
- There were 49 employee surveys (83%) completed, and parents completed 150 student surveys (32%).
- Fifty-six individuals in the elementary school reported illness, including 48 students and nine staff members.
- Thirty-five students and eight staff members met the case definition, which was defined as vomiting, diarrhea, or the detection of norovirus in an individual affiliated with the elementary school in Johnson County, Kansas from October 3 to October 10, 2017.
- Ages of case-patients ranged from 4-54 years (median = 7 years).
- Two persons were laboratory-confirmed as norovirus genogroup II.
- Of the 42 individuals for whom complete illness histories were available, the symptoms most commonly reported were vomiting (88%), nausea (76%), and stomach cramps (60%) (Table 1). No case-patients were hospitalized.

TABLE 1: SYMPTOMS REPORTED AMONG PERSONS WITH OUTBREAK CASES OF ILLNESS

	Predominant Symptom Reported			Overall (n=42)
	Diarrhea Only (n=5)	Diarrhea and Vomiting (n=14)	Vomiting Only (n=15)	
Vomiting	0	14	15	37
Nausea	3	14	15	32
Abdominal Cramps	3	11	11	25
Diarrhea	5	14	0	18
Headache	0	10	8	18
Muscle Aches	0	7	5	12
Fever	0	3	7	10
Chills	0	4	4	8

- Onset dates for cases were available for 42 (98%) case-patients. Onset of illness ranged from October 3 to October 10 (Figure 1).
- There was no predominance of illness in any one classroom. Kindergarten, third, and fourth grades each represented 26% of the student case-patients, and 23% and 17% of the student case-patients were found in second and first grades, respectively.

FIGURE 1: NUMBER OF CASES BY SCHOOL ASSOCIATION AND ONSET DATE (N=42)



- Vomiting was reported at the school on Thursday, October 5, and Friday, October 6. Incidents occurred in hallways, bathrooms, office, and classrooms. Two of the third-grade case-students did not attend school or left school before lunch on October 5th due to gastrointestinal illness.

- Recovery time was available for 31 students and six staff members. The students' recovery seems to be shorter with a range from 1-3 days (median 1 day); staff members reported a recovery time of 2-3 days (median 2.5 days).
- Based on a survey questions that inquired about illness in household members in the preceding two weeks, some respondents reported gastrointestinal illness among household members who did not attend the school with the earliest reports occurring during the last week of September.
- Eleven persons (26%) reported being around a family member or someone at school who was vomiting before they became ill.
- No foods consumed at the school were significantly associated to illness.

Conclusions and Recommendations

Fifty-six individuals (48 students and 9 staff) became ill with gastrointestinal illness and 43 met the case definition for this investigation. Norovirus genogroup II was confirmed as the causative agent of this outbreak.

The epidemic curve seems to indicate a point-source outbreak, by no food items were found to be significantly associated with illness. This outbreak may have been propagated by exposure to viral particles through aerosolized vomitus, contact with contaminated environmental surfaces, and from person-to-person transmission both at the school and in the community.

Deep cleaning measures at the school and education that was provided on staying home while ill appeared to be effective in limiting the scope of this outbreak.

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