

Gastrointestinal Outbreak Associated with
Elementary School –Sedgwick County, 2016



Background

On November 28, 2016 an elementary school nurse notified the Sedgwick County Health Department of a suspect gastrointestinal outbreak. The initial report indicated the illnesses were among third graders at the school. Sedgwick County Health Department along with the Kansas Department Health and Environment (KDHE) initiated an outbreak investigation on November 28, 2016 to determine the cause and scope of illness and to recommend prevention and control measures at the school.

Methods

Epidemiologic Investigation

The Sedgwick County Health Department submitted a line list for the school nurse to fill out daily while the outbreak was ongoing. The line list contained demographic and clinical information for all symptomatic students and staff. A case was defined as diarrhea or vomiting between November 28 and December 15, 2016 in a student, or staff member.

Laboratory Analysis

One stool specimen was collected from one individual and submitted to the Kansas Health and Environmental Laboratories (KHEL) for testing.

Results

There were 85 persons that reported illness and all met the case definition. There were 40 females and 45 males ill. The people whose ages were recorded ranged from 5 to 11 years with a median age of 8 years.

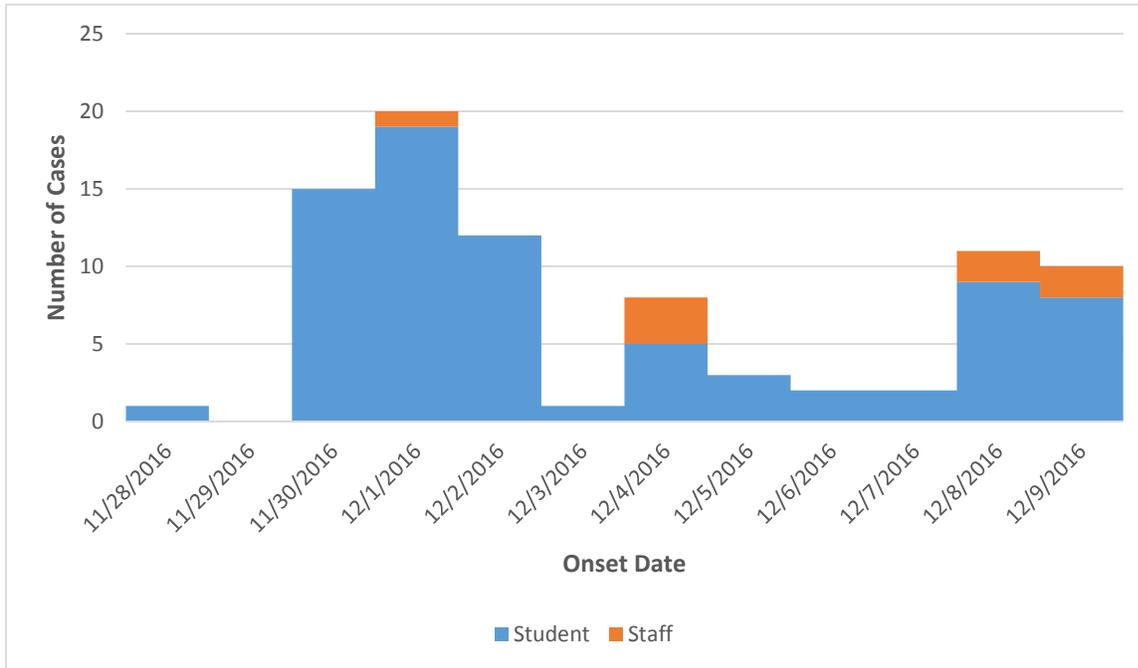
The most common symptoms were vomiting (88%) and abdominal cramps (35%), Table 1. There were no reported hospitalizations and no one sought medical care.

Table 1: Symptoms reported among case-patients (n=85)

<i>Symptom</i>	<i># of case-patients with symptoms</i>	<i>% of case-patients with symptom</i>
Vomiting	75	88%
Abdominal Cramps	30	35%
Nausea	29	34%
Diarrhea	27	32%
Fever	7	8%
Headache	3	4%

Onset dates ranged from November 28 to December 9, 2016, Figure 1. The duration of illness was available for 29 individuals and ranged from one to three days, with a median of one day of illness.

Figure 1: Norovirus cases among staff and campers by illness onset date. (n=85)



The stool specimen submitted to KHEL tested positive for norovirus by polymerase chain reaction (PCR).

Conclusions/Discussion

This gastrointestinal outbreak affected 85 individuals and was likely caused by norovirus. Sedgwick County Health Department shared preventative and control measures with the elementary school. Students and staff were encouraged to stay home if they had vomiting, diarrhea, or abdominal pains.

Norovirus is a highly contagious pathogen with a very low infectious dose, estimated to be between 10-100 viral particles¹. Transmitted primarily through the fecal-oral route, norovirus may be spread through direct contact or through consuming contaminated food or water. Spread via aerosolized vomitus is also possible. The incubation period is normally 24 to 48 hours but can range from 10 to 50 hours². Once 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 detected for 13 to 56 days after exposure to the virus³. Approximately 20% of norovirus infected individuals do not have clinical symptoms⁴. However, these individuals can still shed norovirus and can be potential sources of investigation.

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

² Heymann D, editor. Epidemic Viral Gastroenteropathy. Control of Communicable Diseases Manual. 19th Ed. Washington, DC: American Public Health Association, 2008. 256-258.

³ Atmar RL, Opekum AR, Gilger MA, et al. Norwalk virus shedding after experimental human infection. Emerg Infect Dis 2008; 14:1553-1557.

⁴ Moe CL. Preventing norovirus transmission: How should we handle food handlers? Clin Infect Dis 2009; 48:38-40.