

Shigellosis Outbreak Associated with an Elementary School – Crawford County, April 2012



Background

On April 20, 2012 at 3:50 pm Crawford County Health Department (CCHD) notified the Kansas Department of Health and Environment (KDHE) Bureau of Epidemiology and Public Health Informatics (BEPHI) of a possible outbreak of shigellosis among students attending an elementary school in Arma, Kansas. Approximately 427 students attended the elementary school. CCHD had identified the cluster through routine surveillance. In response to this notification, BEPHI worked with CCHD to collect information on ill individuals, determine the cause of the outbreak, and make recommendations to stop transmission of the illness to others.

Methods

A confirmed case was defined as an individual who developed diarrhea on or after March 17, 2012, either attended or worked at the elementary school, and tested positive for *Shigella sonnei*. The school nurse worked as the spokesperson for the school and reported information on individuals who were ill and recorded demographic information and symptomology for ill individuals. Confirmed cases or their guardians were interviewed to collect additional information on symptoms and activities. Requests were made for ill individuals who had not undergone testing to submit stool specimens to the Kansas Health and Environmental Laboratories (KHEL).

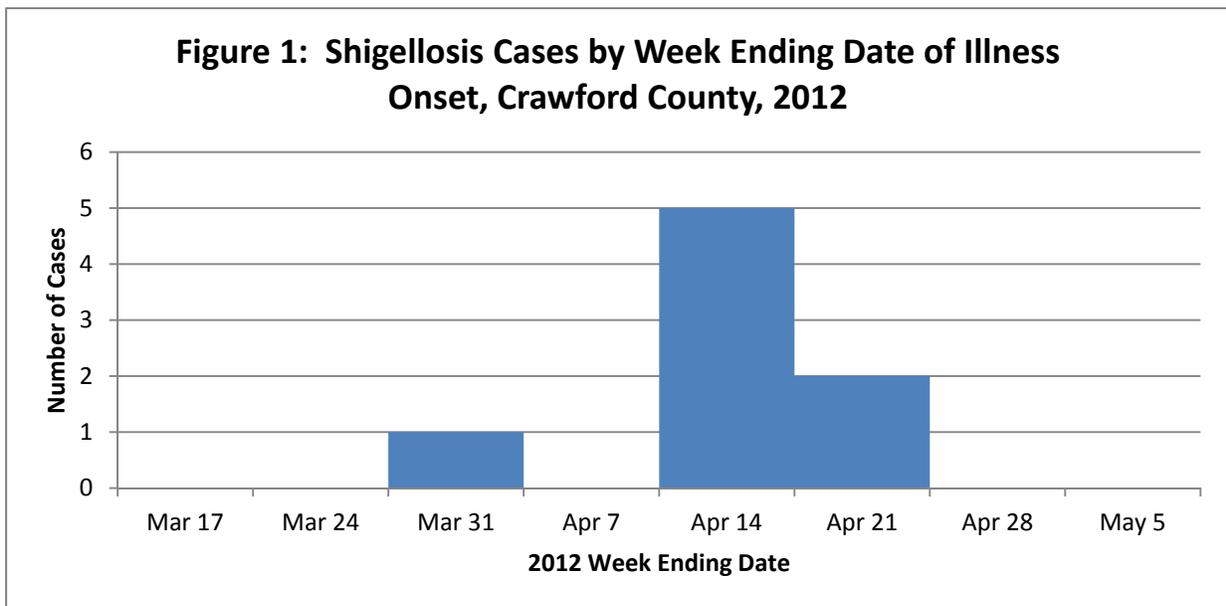
Results

Information was provided for eight individuals who met the confirmed case definition. Five (62.5%) of the cases were male, and ages of cases ranged from 7 to 60 years with a median of 9.5 years. Diarrhea was the most frequently reported symptom followed by abdominal cramps and nausea (Table 1). Two individuals had bloody diarrhea and three students were hospitalized. Onset dates of illness ranged from March 28, 2012 to April 19, 2012 (Figure 1).

The duration of illness was available for all individuals and ranged from 2-16 days with a median of 8.5 days. Incubation periods were not calculated for this outbreak.

Table 1: Clinical Information for Cases (n=8)

<i>Symptoms</i>	<i>Number of cases</i>	<i>Percentage</i>
Diarrhea	8	100
Abdominal Cramps	7	88
Nausea	6	75
Vomiting	3	38
Bloody Diarrhea	2	25



Grades 1, 2, 4, 7, and 8 each had one case, and grade 3 had two cases. The adult case was a para-educator assigned to assist a student who was reported to be symptomatic with diarrhea and required assistance in the bathroom. The local health department was unable to verify if this student was a reported case. Five cases reported attending school while symptomatic; a median of 3 days attendance and range 0.5-5 days attendance.

All eight individuals submitted stool specimens and all were positive for *Shigella sonnei* by culture.

Conclusions

This outbreak was caused by *Shigella sonnei* and was most likely transmitted person to person. *Shigella sonnei* is transmitted primarily through the fecal-oral route, either by consumption of fecally contaminated food or water or by direct person-to-person spread. Environmental and fomite contamination may also act as a source of infection. As few as 10 to 200 organisms can cause infection; shigellosis can spread easily when hygiene is poor.¹

Recommendations were made to the school to exclude symptomatic individuals until they were symptom free for 24 hours, to increase the frequency of cleaning of environmental surfaces, and to encourage good hand hygiene. These prevention measures were initiated on April 23, 2012. The outbreak investigation was deemed over when on May 25, 2012, no additional cases had been reported to CCHD or KDHE.

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¹ Centers for Disease Control and Prevention. "Shigellosis: Technical Information", Accessed on February 19, 2013 at: <http://www.cdc.gov/nczved/divisions/dfbmd/diseases/shigellosis/technical.html>.