Norovirus-Associated Gastroenteritis Outbreak among Hotel Guests — McPherson County, April 2008

Investigation by:

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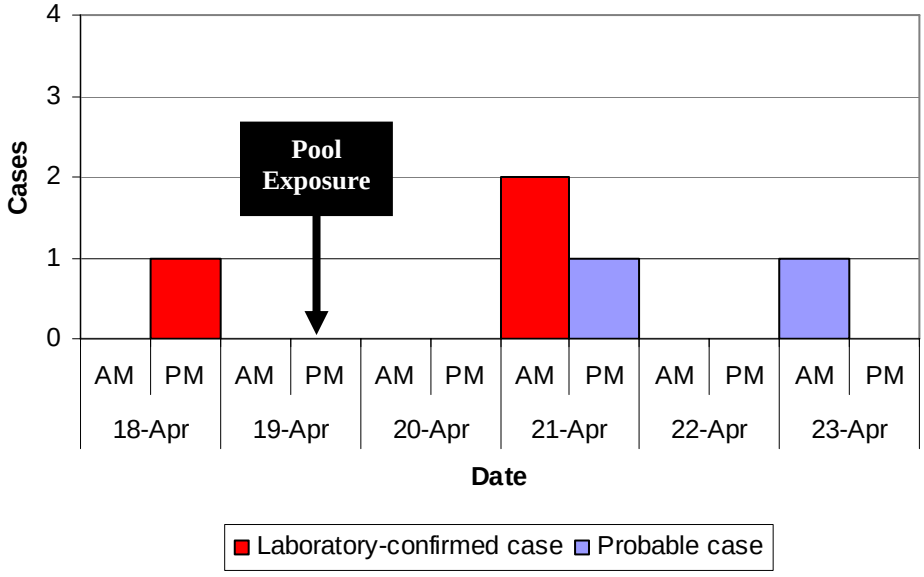
Background

On April 21, 2008, the Kansas Department of Health and Environment's Bureau of Consumer Health (KDHE-BCH) notified KDHE's Office of Surveillance and Epidemiology (KDHE-OSE) of a possible waterborne illness outbreak. The complainants, four Riley County families, stated that eight children experienced gastrointestinal illness after swimming in a Days Inn hotel pool (2300 East Kansas Avenue, McPherson, KS) on April 19. KDHE and the Riley County Health Department (RCHD) initiated an outbreak investigation to determine the source of the illness and to ensure appropriate control and prevention measures were implemented.

Key Investigation Findings

Five households with exposure to the hotel were identified. Four households responded to RCHD's interview requests. Among those four households, twelve individuals stayed at the Days Inn from April 19 to April 20, and eight (67%) reported swimming in the pool. Of these eight swimmers, five (42%) children, ranging from 6 to 10 years of age, reported gastrointestinal illness. Reported symptoms included abdominal cramps (n=5, 100%), vomiting (n=5, 100%), and diarrhea (n=1, 20%). Illness onset dates ranged from April 18 to April 23 (Figure 1). Illness duration was available for three individuals, ranging from 12 to 86 hours (median=15 hours, mean=38 hours). Three ill individuals provided stool specimens for testing at the KDHE laboratory; all tested positive for genotype 1 norovirus.

Figure 1: Illness onset among cases by date (n=5)



Each family member reported eating the hotel's breakfast on April 20. No association between breakfast items and illness was found.

An inspection of the hotel was conducted on April 22, 2008. Inspection of the hotel's food service revealed two violations: (1) a lack of hand towels at the handsink in food preparation area and in the public restroom, and (2) the backflow preventer for the ice machine was leaking and

needed service. Inspection of the pool and hot tub revealed the following violations: (1) no daily records on disinfectant levels, pH, or temperature, (2) chlorine levels low and out-of-compliance—the pool was found to contain 0.15 parts per million while the hot tub had 0.82 parts per million (ppm), well under the mandated 1.0 ppm, (3) pH levels high and out-of-compliance, (4) accumulation of sand and gravel in the pool, and (5) the pool's floatation device was not connected to a rope. A follow-up inspection was scheduled to ensure all violations were corrected.

Conclusion and Recommendations

This outbreak was caused by norovirus. Noroviruses are highly contagious, and as few as 10 viral particles may be sufficient to cause infection. Noroviruses may be transmitted via the fecal-oral route from one person to another, or through food that has been contaminated by the hands of an infected foodhandler. Transmission via recreational water has not been widely observed.

One individual showed symptoms of norovirus-associated gastroenteritis on April 18, one day prior to the hotel stay. Had that individual experienced a fecal accident while swimming, the pool's low level of chlorine could have contributed to norovirus transmission. (According to the Center for Disease Control and Prevention's Fecal Accident Response Recommendations, it would take 300 minutes to inactivate norovirus given the chlorine concentration of 0.15 ppm.) However, since no fecal accident occurred, it is more likely that the illness was transmitted via person-to-person contact among the children.

Simple hygienic measures, including good hand washing after using the bathroom, are recommended to prevent person-to-person transmission of noroviruses.

Reported by: Daniel Neises (Kansas Department of Health and Environment), Patti Grub (Riley County Health Department)

Our Vision and Mission

As the state's environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans.

Through education, direct services, and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent injuries, illness, and foster a safe and sustainable environment for the people of Kansas.