

Shiga Toxin-Producing *Escherichia coli*
Outbreak Associated with Daycare Facility –
Trego County, Kansas, 2015



Background

On August 26, 2015 at 4:30 pm, routine infectious disease surveillance conducted by the Kansas Department of Health and Environment's infectious Disease Epidemiology and Response section (KDHE) identified that, during the course of routine case investigations, two individuals who attended a daycare in Trego County, KS during August 2015 had tested positive with Shiga toxin-producing *Escherichia coli* (STEC). Additional ill persons who also attended the daycare reported illness with similar symptoms. The Trego County Health Department (TCHD) was notified at approximately 4:45 pm, and an investigation was initiated.

Methods

Epidemiologic Investigation

The parents of children attending the daycare, in the same room as STEC positive cases, were interviewed via telephone by Trego County Health Department. A standardized questionnaire was utilized in order to obtain demographic information, symptoms, and exposure history.

For this investigation, a confirmed case was defined as laboratory evidence of STEC serotype O103 with a pulsed-field gel electrophoresis (PFGE) pattern indistinguishable from the other confirmed cases and who attended the daycare or was a contact of a person who attended the daycare. A probable case was defined as diarrhea in an individual who was epidemiologically linked to a person with a confirmed case. A primary case attended the daycare facility from August 1st through August 28th, 2015.

Laboratory Analysis

Stool specimens were cultured, serotyped, and pulsed-field gel electrophoresis (PFGE) was performed on the bacterial isolates to determine the PFGE pattern ("DNA fingerprint") of the outbreak strain of STEC.

Results

Epidemiologic Investigation

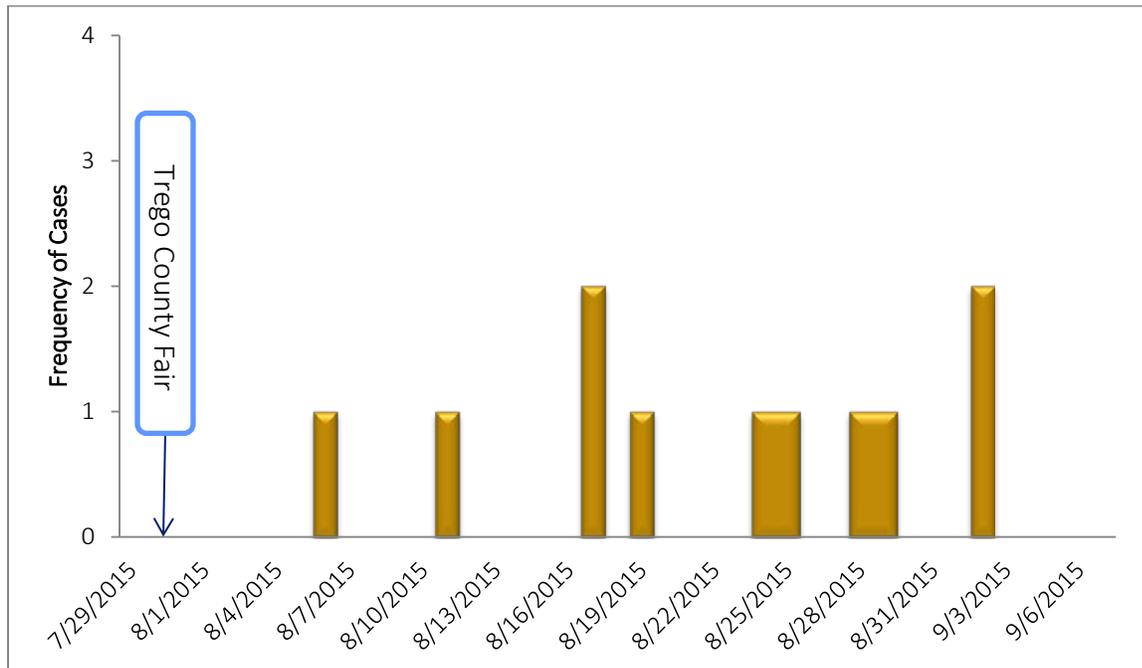
There were 24 children identified as attending daycare in the same room as two children with confirmed cases; parents of all 24 children were interviewed during the course of the investigation. Of the 24 exposed children, 10 (42%) developed clinical symptoms; two were confirmed cases and eight were probable. Case-patients' ages ranged from 8 to 24 months (median 13 months), and seven (70%) of the ill individuals were male. Common symptoms included diarrhea and fever (Table 1). Bloody diarrhea and vomiting were also reported. No hospitalizations or ER visits were reported. None of the case-patients developed hemolytic uremic syndrome (HUS).

Onset of illness between August 6 and September 2 (Figure 1). Illness duration averaged 7.75 days with a median of 2.5 days. All ill individuals resided in Kansas.

Table 1: Symptoms Reported Among Confirmed Primary and Secondary Cases (n=10)

Clinical Information	# Cases with Symptom	% of Cases with Symptom
Diarrhea	10	100%
Bloody Diarrhea	2	20%
Vomiting	3	30%
Fever	5	50%

Figure 1: Number of cases by illness onset date (n=11)



Laboratory Analysis

Stool specimens were submitted by ten individuals. Two tested positive for Shiga toxin-producing *Escherichia coli* serotype O103; one additional child tested positive for STEC toxin however an isolate for serotyping was unable to be obtained.

Conclusions/Discussion

Three individuals with confirmed or probable STEC infections were associated with this daycare in Trego County during the month of August. One instance of secondary transmission was noted, resulting in the sibling of ill individual developing STEC symptoms. Prior to the onset of illness of an initial case, a visit to the Trego County Fair occurred, where exposure to cattle or other STEC reservoir animals was likely. Additionally, given the onset dates of symptomatic children, it is likely that secondary transmission was person-to-person.

Shiga toxin-producing *E. coli* is spread through fecal-oral transmission.¹ STEC lives in the intestines of cattle and other animals including deer, goats, and horses, and they can carry the bacteria and shed it in their feces without being ill. People become exposed to STEC by having contact with infected animals or their feces, ingesting contaminated food or beverages, or coming into contact with fecal matter from other people who are infected.^{1,2}

Report by:

Kelly Gillespie, MPH

Kansas Department of Health and Environment

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Investigation by:

Trego County Health Department

201 North Main Street

WaKeeney, Kansas 67672

Kansas Department of Health and Environment

Bureau of Epidemiology and Public Health Informatics

1000 SW Jackson Street, Suite 075

Topeka, Kansas 66612

<http://www.kdheks.gov/epi>

¹ <http://www.cdc.gov/ecoli/general/index.html>

² <http://www.foodsafety.gov/poisoning/causes/bacteriaviruses/ecoli/>