

Gastroenteritis Outbreak Associated with a Banquet Dinner – Montgomery County, November 2012



Background

On November 14, 2012, at 11:00 a.m., the Montgomery County Health Department notified the Kansas Department of Health and Environment (KDHE) of multiple foodborne illness complaints. The complainants stated they become ill with diarrhea, abdominal cramps and nausea, following a catered banquet dinner the previous evening with approximately 215 attendees. The Montgomery County Health Department, KDHE, and Kansas Department of Agriculture (KDA) immediately began an investigation.

Methods

An internet-based questionnaire was created to ask attendees about what food items they consumed and the symptoms they experienced. A web link to the questionnaire was distributed to the attendees by email on November 16, with assistance from the organizer of the event. Surveys were collected from November 16 through November 28. A case was defined as any individual experiencing diarrhea (three or more loose stools in a 24 hour period) and/or vomiting within 24 hours of eating at the banquet on November 13, 2012.

Food items served at the banquet included pulled pork, baked beans, potato salad, cole slaw, and cake; tea, water, and coffee were available for beverages. Three food items left over from the banquet were collected from the caterer. Two different samples of pulled pork from separate serving trays, along with samples of potato salad and baked beans, were collected from the caterer's home and sent to a private laboratory for testing.

Stool specimen collection kits were offered to ill individuals for testing at the Kansas Health and Environmental Laboratories (KHEL). All declined testing.

Results

The results from the internet-based questionnaire represented responses from 89 of an approximate 215 attendees of the banquet (Response rate = 41%). Of the attendees, 87 consumed food or drink at

the event. Among attendees that consumed food or drink, 49 reported being ill, with 37 (43%) meeting the case definition.

The age of cases ranged from 8 to 93 years (median age, 35 years). Seventeen were male, and 19 were female. All cases reported diarrhea, only 2 reported vomiting (Table 1). One case visited a physician. Another case was hospitalized for less than one day.

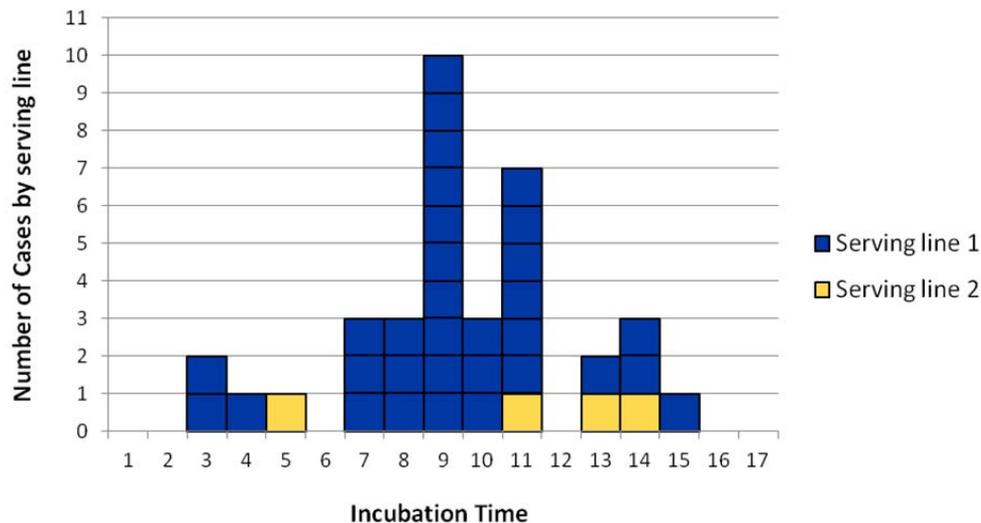
Table 1. Clinical Information for Cases

Symptoms	# with Symptoms/Total Number Reporting (%)
Diarrhea	37/37 100%
Abdominal cramps	34/36 94%
Nausea	17/32 53%
Myalgia	11/32 34%
Headache	9/31 29%
Vomiting	2/31 6%

The incubation period ranged from 3 to 15 hours (median, 10 hours), Figure 1. The duration of illness ranged from 4 to 103 hours (median, 24 hours). All cases reported recovering from their illness.

Food was served from two separate lines. Serving line #1 was statistically associated with illness [RR = 5.7, CI (2.7-11.9)] with 32 of 36 cases (89%) reporting consuming food from serving line #1, compared to 4 of 36 (11%) cases reporting consuming food from serving line #2. However, no single food or beverage was statistically associated with illness.

Figure 1. Illness incubation time of gastrointestinal illness cases associated with November 13, 2012 banquet dinner in Montgomery Co., by serving line (n=36).



Food testing of samples was conducted by a private laboratory on December 7, 2012. The presence of *Clostridium perfringens* was found in both samples of pulled pork — 930 colony-forming units (CFU) per gram and 220 CFU per gram were detected per sample. However, the quantity detected was not enough to confirm that this was the cause of outbreak. *Staphylococcus aureus* was not detected in any tested food item.

The caterer of this event was not licensed by the KDA; however, because they did not cater food at events on seven days or more within one calendar year, they were not required to be licensed. The caterer and volunteers prepared food out of the caterer’s home and at the event. Because they did not operate out of a business location, no inspection was performed. Individuals serving food were volunteers and participants in the event. They were not available to be interviewed.

Conclusions

Thirty-seven cases of gastroenteritis were associated with the dinner, but the etiological agent and vehicle of transmission could not be determined definitively. Nearly all attendees at the banquet ate pulled pork, as it was the main dish, making it difficult to statistically determine association between illness and pulled pork consumption. All ill attendees did consume pulled pork, as did many attendees who reported no illness.

One serving line was associated with illness, but it is not known from which serving line the tested pulled pork samples originated. While *Clostridium perfringens* was detected in both samples of pulled pork, at 930 cfu/g and 220 cfu/g, this level is below the 100,000 organisms per gram infective dose usually associated with human illness.¹

Despite the laboratory results, analysis of the clinical and epidemiological data of ill attendees in this outbreak was consistent with illness caused by *C. perfringens* enterotoxin. *C. perfringens* type A enterotoxin is a common cause of foodborne illness in the United States; an estimated 248,520 people are infected with *C. perfringens* every year—100% of these infections are foodborne.² The sudden onset of diarrhea is common 10-12 hours after consuming contaminated foods, and usually subsides within 24 hours. Nausea and abdominal cramps may occur; vomiting and fever are usually absent.³ *C. perfringens* may proliferate in meats, stews, or gravies when “spores survive normal cooking temperatures, germinate and multiply during slow cooling, storage at ambient temperature, and/or inadequate re-heating.”⁴

The agencies and personnel involved in investigating this outbreak responded rapidly. An outbreak investigation began quickly after complaints were made to the Montgomery County Health Department. Upon notice to KDHE, an official complaint was filed quickly with KDA. KDA worked diligently with the caterer of the event to collect food samples, coordinate shipment to KHEL, and provide food safety education in a timely manner. A questionnaire for attendees was developed and distributed to all attendees within two days of the original complaints, and were given 11 days to respond, with a reminder email sent on the 6th day.

¹ Lampel KA, editor. Bad Bug Book – Foodborne Pathogenic Microorganisms and Natural Toxins. 2nd ed. Washington, D.C.: U.S. Food and Drug Administration, 2012. Available online at <http://www.fda.gov/Food/FoodSafety/FoodborneIllness/FoodborneIllnessFoodbornePathogensNaturalToxins/BadBugBook/default.htm>.

² Mead PS. Food related illness and death in the United States. Emerging Infectious Diseases, 199. 5(6):607-625.

³ Heymann DL, ed. Control of Communicable Diseases Manual. 18th ed. Washington, D.C.: American Public Health Association; 2004.

⁴ Ibid.

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