

Gastroenteritis Outbreak Associated with Carniceria Camecuaro — Shawnee County, July 2015



Background

On Tuesday, July 28, 2015, at 12:24 p.m., an ill individual notified the Kansas Department of Health and Environment's Infectious Disease Epidemiology and Response section (KDHE) of a possible foodborne disease outbreak. The individual reported that four persons from three different households became ill after consuming food purchased on July 26 from Carniceria Camecuaro, a restaurant and butcher shop located at 1016 SE 6th St., Topeka, Kansas. No other common exposures among the households were reported.

Within the next thirty minutes, KDHE had notified the Kansas Department of Agriculture (KDA) and the Shawnee County Health Agency (SCHA), and an outbreak investigation was initiated by SCHA at 1:05 p.m., supplemented by a KDA inspection of the facility on Wednesday, July 29, at 11:05 a.m. This joint investigation by KDHE, SCHA, and KDA was conducted to determine the cause and scope of illness and to implement prevention and control measures.

Methods

SCHA interviewed the complainant and other ill individuals by phone to obtain information about symptoms and foods that were consumed. A case was defined as diarrhea (three or more loose stools within a 24-hour period) within eight hours of eating food purchased from Carniceria Camecuaro on July 26, 2015.

One ill individual submitted a stool specimen for laboratory testing. The laboratory was contacted to obtain the laboratory results, and the patient's stool sample was forwarded to the Kansas Health and Environmental Laboratories (KHEL) for further analysis. No additional stool samples were provided for analysis. No food samples were collected.

After multiple violations were identified during the inspection of the facility on July 29, KDA scheduled a Hazard Analysis and Critical Control Points (HACCP) inspection for August 4.

Results

SCHA completed three of four interviews (75%) within 24 hours of being notified of the illnesses. Attempts to interview a fourth individual were unsuccessful.

Three individuals met the case definition for this outbreak. The case-patients were from two different households and ranged in age from 11 to 54 years (median age, 24 years). Two (67%) of the case-patients were female. All experienced diarrhea, nausea, and abdominal pain. Only one sought treatment, visiting a local emergency department.

Table 1: Clinical information for case-patients (n=3)

<i>Symptom</i>	<i># Case-patients reporting</i>	<i># Case-patients with information available</i>	<i>Percentage</i>
Diarrhea	3	3	100%
Nausea	3	3	100%
Abdominal Pain	3	3	100%
Myalgia	2	3	67%
Chills	2	3	67%
<i>Complications</i>			
Emergency Room Visit	1	3	33%

Stool culture results were available from the individual who sought emergency care. Multiplex PCR testing revealed that the stool sample was positive for Enteropathogenic *E. coli* (EPEC) and *Salmonella* spp. Further analysis at the KHEL by culture identified *Salmonella infantis* in the sample. KHEL did not attempt to culture EPEC.

Food items were purchased from the Carniceria Camecuaro on July 26, 2015 at 1:00 p.m. The items were consumed by two individuals at 1:30 p.m. and by a third individual at 7:00 p.m. All ill individuals consumed pork carnitas made into tacos. Illness onset was available for the three individuals. The ill individuals' incubation times ranged from 1 to 2 hours (Median, 1 hour). Recovery time was reported for one individual as 54 hours.

On October 9, 2015, KDHE noted that two additional individuals had been infected with *Salmonella infantis*, and the bacterial isolates were indistinguishable by pulsed-field gel electrophoresis (PFGE) when compared to the case-patient who purchased food from Carniceria Camecuaro on July 26. These case-patients reported illness onset of August 13 and September 1.

SCHA had attempted to interview the two case-patients prior to October 9, but both case-patients refused. Interviews were again attempted after the PFGE information was obtained,

and one case-patient complied on November 3, reporting Carniceria Camecuaro as a likely source of food in the week prior to illness onset on September 1.

During the initial inspection seventeen violations were observed, including:

- Handwashing sink without soap or hand drying towels,
- Improper use of gloves,
- Improper storage of shell eggs next to packaged, ready-to-eat foods,
- Food debris on and improper drying of utensils and equipment,
- Improper cooling and hot holding of cooked foods,
- Improper cold holding of potentially hazardous food,
- Improper date marking and labeling of food containers,
- Cooling units without temperature monitoring devices, and
- Use of non-food grade containers for food storage.

The most significant findings in the inspection were sauces in the walk in cooler (WIC) with an internal temperature near 45°F, above the required cooling temperature of 41°F after over 6 hours of cooling, and cooked ham placed in the WIC the night before that had an internal temperature above the required temperature of 41°F.

On August 4, KDA and KDHE staff visited the restaurant to conduct a HACCP review on the pork carnitas. While lard was melted in a sanitized, large metal pot on the stove set to 350°F, a refrigerated pork butt was removed from the WIC, where it had been stored since delivery, to be cut into smaller chunks and added to the lard along with seasoning. After one hour, raw pork stomach and raw pork skins were added to the metal pot and the mixture of pork was cooked for an additional two and half hours. The pork reached an internal cook temperature of 205°F. After cooking, chunks of pork were placed in a metal pan which was stored in a heated glass case. The ambient temperature of the case was 180°F. No pork carnitas were left at the end of the evening to be able to monitor the cooling and reheating processes, but there were left-over pork carnitas stored in the WIC from the night before that had an internal temperature of 54.8°F, providing evidence of improper cooling of the pork carnitas.

Also, during the HACCP inspection the following was observed:

- Moldy and decomposing vegetables on a shelf in the WIC,
- Raw pork stored in a non-food grade container in the WIC,
- Raw bacon stored next to and above ready-to-eat foods in a reach-in-cooler,
- Dish soap stored on a shelf directly above an opened box of lard,
- Dried food debris on the meat grinder, and
- Ice scoop stored directly on top of the ice machine.

KDA made the following suggestions to improve the establishment's cooling process and other daily procedures:

- Break up or shred the pork carnitas and place the carnitas in shallow pans.
- Do not pile the pork carnitas more than two to four inches deep.
- Place the pans of pork carnitas on containers of ice in the WIC.
- All parts of the carnitas must reach an internal temperature of 70° F within the first two hours of removal from heating. All parts of the carnitas must reach 41° F within a total cooling time of six hours.
- Use a calibrated thermometer to monitor product temperatures to make sure proper two-stage cooling is achieved. Record the cooling temperatures on cooling log sheets.
- Review Focus on Food Safety (FOFS) Material at www.agriculture.ks.gov/fseducation

After the HACCP, a follow-up inspection of the facility was conducted on August 11, 2015. All foods within the WIC were being held at the proper temperatures, but there were still instances of improper cooling of drying pork chorizo, foods on a make table not being held at the proper cold hold temperatures, missing temperature measuring devices on make tables, raw foods stored near or above ready-to-eat foods, improperly labeled containers, and the use of non-food grade containers for storage.

As follow-up to the inspection, a Focus on Food Safety Class was conducted at the establishment on August 18, 2015; all seven employees attended. Education on proper techniques for cooling, cold and hot holding, and storage of food items were among the topics covered.

An additional inspection was conducted by KDA on November 9th, 2015 since additional *Salmonella* case-patients were identified with reported illness onset after the initial KDA inspection, suggesting the possibility of ongoing *Salmonella* transmission. This inspection revealed nine violations, including six directly-associated with foodborne illness risk factors. Violations with improper storage of shell eggs and raw bacon next to ready-to-eat foods, food debris on and improper drying of utensils and equipment, and improper marking and labeling of food containers were again cited by the inspector.

Conclusions

Three cases of gastroenteritis were associated with the consumption of pork carnitas purchased at Carniceria Camecuaro on July 26. Illness onset for the ill individuals was 1 to 2 hour after eating, and one ill individual was later diagnosed with for Enteropathogenic *E. coli* (EPEC) and *Salmonella infantis*. Temperature abuse was observed with the cooling and storage of food items during subsequent inspections at the food establishment.

Salmonella infantis has been associated to an outbreak involving pig ear dog treats¹. An examination of outbreaks reported to CDC *Foodborne Outbreak Online Database* from 2000-2013², revealed 35 outbreaks associated to *Salmonella infantis*. Of these, seven listed a pork product as the suspected food vehicle, including one mention of pork carnitas. The prevalence of EPEC in the United States is unknown as it was not routinely tested for in most laboratories. EPEC is generally associated with infant diarrhea in developing countries and travelers' diarrhea³.

This investigation identified an illness characterized by diarrhea, abdominal pain, and nausea that could be associated with *Salmonella* and EPEC infections, but the incubation period appeared to be too short to be associated with the food establishment. Those infected with *Salmonella* will usually develop diarrhea and abdominal cramps 6-72 hours after infection⁴. The incubation period of EPEC is variable depending on the serotype but has been reported as soon as 4 hours post ingestion⁵. A study of several point-source outbreaks of EPEC in South Korea revealed the potential for the minimum incubation period to be as short as 1 to 3 hours⁶.

A mixed infection with multiple agents is possible. Studies with culture-independent, real-time PCR have identified a high percentage of stool samples positive for ≥ 2 pathogens, including EPEC and *Salmonella*^{7,8}. It should be noted that studies have also found EPEC in healthy controls and in a high enough representation in the mixed agent samples as compared to other agents to suggest the need for increased scrutiny of EPEC identification in determining illness versus colonization^{7,9,10}.

The only way to conclusively link the illness to the pork carnitas would have been through laboratory testing of food samples, which was not possible in this investigation. Even though the etiological agent was not conclusively identified, this investigation did identify hazardous situations that could result in foodborne illness, and KDA was able to implement prevention and control measures to stop illnesses from continuing to occur.

A follow-up inspection of the facility is scheduled for January 6, 2016.

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