



**Foodborne Final Report**

User: Shamika Smith

**Prelim Report #:** ORS-1071116    **Outbreak #:** IL2016-0248

**Core Report Section**

Person Submitting: Shamika Smith    Report Submission Date: 07/01/2016

LHD (Primary Jurisdiction):

Partner Jurisdictions:

**Mode of Transmission**

Mode of Transmission :

Other Mode of Transmission:

**Description of Outbreak**

Initial Description: Twelve cases of E. coli O157 have been reported to the Chicago Department of Public Health since mid-June 2016. Dates of specimen collection have ranged from 6/23-6/28 and median age of cases is 24 years old (range, 2-72 years). 50% are male and 50% are African American. Cases are being interviewed for possible exposures to contaminated food or water, animals or others who are ill. Four have been hospitalized. See attached supplement for full description of outbreak.

**Location of Exposure**

Site of Outbreak	Type of Setting	Address	County	Country
CARBON LIVE FIRE MEXICAN GRILL	Restaurant - Sit-down Dining	300 W 26TH ST, CHICAGO, IL 60616-2251	Cook	United States

**Location of Source (if different than exposure location)**

Not Available

**Suspect or Confirmed Etiology Information**

Etiology	Serotype/Genotype	Etiology Status
Shiga toxin-producing E. coli (STEC)- O157:H7		Confirmed

**Outbreak Etiology Final Lab Results**

# Tested: 55    # Laboratory Confirmed: 55

**Laboratory Testing Details (each pathogen for which testing was conducted)**

Not Available

Estimated number of persons reported to be ill from this outbreak (excludes food handlers suspected to be the source of the outbreak)? (Required): 96

**Exposure Information**

Date of First Exposure: 06/17/2016 Date of Last Exposure: 06/30/2016

# Non-staff Exposed: # Staff Exposed:  
(e.g. residents or patrons)

# Visitors Exposed:

Total # Persons Exposed:

**Case Illness Information**

Date of First Onset: 06/19/2016 Date of Last Onset: 07/13/2016

# Non-staff meeting Illness Case Definition: 55  
(e.g. residents or patrons)

# Staff meeting Illness Case Definition:

# Visitors meeting Illness Case Definition:

Total # meeting Illness Case Definition: 55

Attack rate (percentage): %

# Seen by Health Care Provider that meet Case Definition: 52

# Hospitalized that meet Case Definition: 19

# Fatalities that meet Case Definition:

Location of ills within the facility: (Ex: classroom, floor, wing, cell block)

**Describe Illness (percent of ills with each symptom):**

Major Signs and Symptoms	# Cases Reporting Symptoms	# Cases Asked about Symptoms	% with Symptom
diarrhea (3 or more loose stools in a 24 hr period)	55	55	100%
bloody stools	50	55	90%

Describe any factors which contributed to the outbreak:

Preventive/Control measures taken:	<input type="checkbox"/> Closure of facility (foodborne or waterborne outbreaks)
	<input type="checkbox"/> Collection of clinical specimens
	<input type="checkbox"/> Collection of food/water samples if indicated by IDPH
	<input type="checkbox"/> Environmental disinfection
	<input type="checkbox"/> Exclusion of ill staff
	<input type="checkbox"/> Increased monitoring for illnesses
	<input type="checkbox"/> Interview ill and well (foodborne or waterborne outbreaks)

Interview of food handlers about illness  
 Strict hand hygiene enforcement

Other Control measures taken:

Date first control measure initiated : 07/01/2016

**General Information**

**Investigation Methods**

Investigation Methods:  Case control study  Environment/food/water sample testing  
 Food preparation review/(Environmental assessment)

Other Investigation Method:

Comments:

**Geographic Location**

Did exposure occur in multiple states?  Yes  No

States:

Did exposure occur in a single state, but cases resided in multiple states?  Yes  No

States:

Did exposure occur in multiple counties?  Yes  No

Counties:

Did exposure occur in a single county, but cases resided in multiple counties in reporting state?  Yes  No

Counties:

**Primary Case Demographics**

**Note:** Percentages are calculated using # Non-staff meeting Illness Case Definition ( 55 ) as the denominator. Do not include food handler data below.

**Sex**

**Age**

# of Cases	% of Cases	# of Cases	% of Cases	# of Cases	% of Cases
------------	------------	------------	------------	------------	------------

# Male:	<input type="text" value="26"/>	<input type="text" value="47.27"/>	%	< 1 yr:	<input type="text"/>	<input type="text"/>	%	1 - 4 yrs:	<input type="text" value="2"/>	<input type="text" value="3.63"/>	%
# Female:	<input type="text" value="29"/>	<input type="text" value="52.72"/>	%	5 - 9 yrs:	<input type="text" value="2"/>	<input type="text" value="3.63"/>	%	10 - 19 yrs:	<input type="text" value="3"/>	<input type="text" value="5.45"/>	%
# Unknown:	<input type="text"/>	<input type="text"/>	%	20 - 49 yrs:	<input type="text" value="42"/>	<input type="text" value="76.36"/>	%	50 - 74 yrs:	<input type="text" value="6"/>	<input type="text" value="10.9"/>	%
				≥ 75 yrs:	<input type="text"/>	<input type="text"/>	%	Unknown:	<input type="text"/>	<input type="text"/>	%

**Incubation and Duration****Incubation Period** Unknown incubation period

Shortest:

Median:

Longest:

Total # of cases for whom info is available:

**Duration of Illness** Unknown duration of illness

Shortest:

Median:

Longest:

Total # of cases for whom info is available:

**Secondary Cases** No Secondary casesMode of Secondary Transmission: Other Mode of Transmission: 

# Lab-confirmed secondary cases:  # Probable secondary cases:

# Estimated total secondary cases:  # Estimated total cases (Primary + Secondary):

**Comments:**

Sixty-nine confirmed and 37 probable cases were identified as part of this outbreak. Among the confirmed, 55 met the primary case definition, four were secondary cases, and ten of the confirmed cases matched the outbreak PFGE pattern but their association with the restaurant was not identified (five denied eating at the restaurant and five were unable to locate).

**Food Specific Data**

If an Outbreak is associated with restaurant,

Please specify restaurant type: Was a food vehicle identified:  Yes  NoTotal # of cases exposed to implicated food: **Food Vehicle**

<b>Category</b>	Vegetables, green leafy, fresh
<b>Name</b>	Cilantro
<b>Ingredients</b>	
<b>Contaminated Ingredients</b>	
<b>Reasons Suspected</b>	<ul style="list-style-type: none"> <li>Statistical evidence from epidemiological investigation</li> </ul>
<b>Method of Processing</b>	<ul style="list-style-type: none"> <li>Shredded or diced produce</li> </ul>
<b>Method of Preparation</b>	Ready to eat food - No manual preparation, No cook step.

**Level of Preparation** Foods eaten raw with some processing.  
**Site of food preparation** Restaurant - Sit-down Dining  
**Site of food consumption** Restaurant - Sit-down Dining  
**Contaminated Food Imported** Unknown  
**Produced under regulatory oversight and sold**

**Contributing Factors**

Contributing Factors Unknown

Contamination Factors: *Cross-contamination of ingredients (pre- and/or during)*

Proliferation/Amplification Factors: *Food preparation practices that support proliferation of pathogen  
Improper food holding due to an improper procedure or practice*

Survival Factors: *Defect/Contaminations*

**Point of contamination**

When did confirmed/suspected contamination occurred?

If before preparation, specify detail:

Reasons suspected: *Select from dropdown*

**Food Handler Section**

**Testing**

Were food handlers tested?

If yes, please specify

# tested for Salmonella:

# tested for STEC:

# tested for Norovirus:

# tested for Other:

Specify Organism and Source:

**Reporting**

Did food handlers report diarrhea and/or vomiting?  Yes  No

If yes, were any ill prior to, during or within one day after the date of exposure:

If yes, please specify

# reporting diarrhea and/or vomiting:

# food handlers became ill during the same period as the outbreak cases:

Was food-worker implicated as the source of contamination?  Yes  No

if yes, please select one from the list:

**Comments**

16 Food handlers were STEC positive

**Outbreak Type Section**

**School**

Total # of students (approximate enrollment):   Unknown or undetermined

Grade Level(s):

Primary funding:

Implicated item preparation:

Other Implicated item preparation:

How many times has the state, county or local health department inspected this school cafeteria or kitchen in the 12 months before the outbreak? \*

Does the school have a HACCP plan in place for the school feeding program? \*

\*If multiple schools are involved, please answer according to the most affected school

Was implicated food item provided to the school through the National School Lunch/Breakfast program?

Was the implicated food item donated/purchased by:

Donated/purchased by other:

**Ground Beef**

What percentage of ill persons (for whom information is available) ate ground beef raw or undercooked?  %

Was ground beef case-ready?   
(Case-ready ground beef is meat that comes from a manufacturer packaged for sale that is not altered or repackaged by the retailer.)

Where was beef processed (e.g. Name of retailer or meat locker)?

Was the beef ground or reground by the retailer?

Was anything added to the beef during grinding (such as shop trim or any product to alter the fat content)?

**Eggs / Salmonella**

Were eggs (Select all that apply):

Was Salmonella enteritidis found on the farm?

**Food Comments**

Comments:

## IL 2016-0248 Supplement

Notification. On June 28, 2016, the Chicago Department of Public Health (CDPH) received five reports of Shiga Toxin-producing *Escherichia Coli* (STEC)<sup>1</sup> through routine surveillance. By June 29, routine interviews conducted by the CDPH Communicable Disease (CD) Program revealed that three of the five cases reported consuming food items from Restaurant A within 2-3 days before illness onset. That evening, three separate hospitals reported an increase in the number of patients that presented to the ED with complaints of diarrhea and had preliminary positive STEC diagnostic laboratory tests. By July 1, seven cases reported eating at Restaurant A prior to their illness onset.

Restaurant. Restaurant A has two Chicago locations, one on the south side and another on the west side of the city. The restaurant is open 7 days a week and serves Mexican-style foods. Both locations serve the same menu and use the same food suppliers. The majority of food preparation is performed out of the south side location; most food for the west side location is transported after preparation at the south side kitchen. Catering is also available. Overall, approximately 40% of food orders are placed by phone or through online ordering websites (i.e. GrubHub, Eat24, etc.) for delivery or pickup. Catering and other delivery orders are prepared in the same kitchen and by the same staff as dine-in orders at both locations. Staff members at each location reported regularly consuming restaurant food.

Epidemiological investigation. Case finding was conducted through public messaging and disease surveillance. On June 30, 2016, CDPH issued a health alert to all Chicago hospitals to notify them of the outbreak, to request prompt reporting of STEC cases, and to discourage use of antibiotics and encourage aggressive hydration if suspecting a diagnosis of STEC. Concurrently, the Illinois Department of Public Health (IDPH) issued an alert via the Foodborne Outbreak Network to state health departments to notify them of any STEC cases with travel to Chicago and mention of Restaurant A.



A standard questionnaire was created to collect information about signs and symptoms of illness, food consumption and other potential exposures occurring in the seven days prior to the case's onset of illness, and meal companions. A case-control study was conducted to determine risk factors for infection with STEC. Case definitions were in accordance with the Centers for Disease Control and Prevention (CDC) and Council of State and Territorial Epidemiologists standards<sup>2</sup>. A confirmed case was defined as isolation of *E. coli* O157:H7 (STEC) from a clinical specimen in a person with illness onset between June 3–July 23, 2016, with either reported exposure to Restaurant A or a pulsed-field gel electrophoresis (PFGE) pattern indistinguishable from one of 14 patterns associated with the outbreak. Confirmed cases with reported Restaurant A exposure and onset dates that preceded others within their household were considered confirmed primary cases. A probable case was defined as a person with clinically compatible illness (bloody diarrhea or  $\geq 3$  days of diarrhea with  $\geq 3$  stools in a 24 hour period) in the absence of laboratory confirmation, and exposure to Restaurant A or shared household with a primary case. Secondary cases were defined as household contacts of primary confirmed or probable cases, with onset of diarrhea one to eight days after the primary case's symptom onset date. Case-control analysis was limited to primary confirmed cases and well controls. To identify controls, CD Program staff asked confirmed cases about their meal companions and obtained a list of individuals who placed orders through the online delivery service GrubHub. Controls were frequency matched 4:1 to cases by meal date (June 17<sup>th</sup>–June 30<sup>th</sup>) and restaurant location.

Contingency tables were arranged to evaluate the bivariate relationships between case status and individual food items, and odds ratios (OR) with 95% confidence intervals (95% CI) were estimated for each. Chi-Square tests were performed to identify statistically significant associations, except when expected cell counts were less than or equal to 5, in which case Fisher's Exact test was used. P-values < 0.05 were considered statistically significant. The independent effects of variables found to be

significantly associated with disease in the bivariate analyses were further evaluated using multivariable logistic regression, adjusted for age and gender. All statistical analyses were carried out with SAS version 9.3 (SAS Institute, Cary, NC).

Environmental investigation. On July 1, 2016, the Food Protection Division (FPD) conducted an environmental inspection of Restaurant A and collected the following: food samples, initial information about restaurant employees and food preparation, and copies of invoices for food items. Food items collected included steak, chicken, cilantro, elote (corn), elote mix, cheese, sour cream, grilled corn & pineapple salsa, salsa fresca, tequila lime sauce, red and green salsas. CD Program staff performed in-depth interviews of the owners of the restaurant and employees. Because employees at both locations often functioned in multiple roles, all on-site restaurant employees were considered food handlers for the purposes of this outbreak investigation. Food handlers were asked to submit stool specimens to screen for STEC.

Laboratory investigation. Clinical culture or polymerase chain reaction tests were performed by hospital and commercial laboratories and results were reported to the CD program. Specimens from cases, food handlers, and food were sent to the Illinois Department of Public Health Division of Laboratories for culture, and for serotyping and PFGE analysis of STEC isolates. PFGE patterns were uploaded to the national PulseNet database and compared by the Centers of Disease Control (CDC). Sixteen isolates selected to represent all outbreak-associated PFGE patterns and a variety of source patients (primary and secondary cases as well as food handlers), restaurant locations, and meal dates were sent to CDC for characterization by multiple locus variable number of tandem repeats analysis (MLVA).

Epidemiologic findings. Sixty-nine confirmed and 37 probable cases were identified as part of this outbreak. Among the confirmed, 55 met the primary case definition, four were secondary cases, and

ten of the confirmed cases matched the outbreak PFGE pattern but their association with the restaurant was not identified (five denied eating at the restaurant and five were unable to locate). One additional case, identified after the restaurant closure and reopening, was unable to be classified due to multiple Restaurant A meal dates and a PFGE pattern that was similar but not identical to other outbreak patterns. Illness onset dates of the 55 confirmed primary cases ranged from June 19–July 3 (Figure 1). Median age was 29 years (range, 3 to 69 years); 29 (53%) of the cases were female. Median incubation period was 3 days (range 12 hours–5 days). Twenty-one primary and one secondary case were hospitalized. No cases developed hemolytic uremic syndrome, and none died. Among the 55 confirmed primary cases, 50 (91%) ate at the south side location (meal date range 6/17 to 6/30) and 5 (9%) ate at the west side location (meal date range 6/19 to 6/26).

Multiple food items were associated with illness on bivariate analysis (Table 1) including consumption of cilantro (odds ratio [OR] 3.5, 95% CI: 1.5-8.1), salsa fresca (OR 3.1, 95% CI: 1.6-6.1), chicken taco (OR 3.1, 95% CI: 1.6-6.0), and lettuce (OR 2.01, 95% CI: 1.1-3.8). Multivariable analysis using logistic regression (Table 2) revealed that consumption of cilantro (adjusted OR [aOR] 4.64, 95% CI: 1.87-12.011.6), salsa fresca (aOR 2.85, 95% CI: 1.31-6.05.4), and lettuce (aOR 2.57, 95% CI: 1.23-5.26) remained independently associated with illness after adjusting for age and gender. The observed epidemiologic association with chicken tacos may reflect collinearity between chicken tacos and cilantro, meaning that an association was identified because the chicken tacos are prepared and served with raw cilantro. All cases who reported eating a chicken taco also reported eating cilantro. Other chicken-containing items (e.g., chicken burritos, chicken salad bowls) were not associated with illness. Because salsa fresca was known to contain raw cilantro, an additional multivariable logistic regression analysis was performed including a combined variable indicating consumption of either cilantro or salsa fresca. In this model, consumption of cilantro or salsa fresca was associated with an adjusted odds ratio of 6.9 [CI: 2.0-24.0]

(Table 2). Lettuce was associated with illness in both multivariable models but was consumed by only 44% of cases. In comparison, cilantro was consumed by 87% of cases, and either cilantro or salsa fresca were consumed by 95% of cases.

Environmental findings and food handler interviews. Meats, salsas, and marinades were fully or partially prepared at the south side location and transported daily to the west side location. Most fresh produce items, including cilantro and lettuce, were received by each location in separate deliveries and chopped and prepared on-site. Several critical violations were identified during the sanitarians' inspection of Restaurant A on July 1, including improper temperatures for several food items (i.e. red & green salsas, tequila lime sauce, raw fish, guacamole, and cheese), and improper hand hygiene practices among food handlers. Because of concern for a potential ongoing public health threat associated with food served by Restaurant A, CDPH recommended that the restaurant voluntarily cease operations and withdraw from a large outdoor food festival until more information about the source of the contamination was known. The owner agreed, and Restaurant A voluntarily closed both locations. CD staff subsequently interviewed and tested forty food handlers from both locations. According to the restaurant owner, there was no cross-over of food handlers at the two locations. Among the forty food handlers interviewed none reported any history of gastrointestinal illness in the two weeks preceding or during the outbreak period, though absenteeism was reported for one. Nearly all food handlers had stool tests performed within one week after the restaurant closure.

Laboratory findings. Specimens from 69 cases and 16/40 (40%) food handlers yielded STEC isolates. From primary case isolates, 10 PFGE patterns were identified (Figure 2). An additional four similar patterns were identified among food handler isolates. The 16 isolates analyzed by MLVA displayed four unique MLVA patterns. One predominant MLVA pattern was shared by 10 isolates. Food handler and case isolates displayed a variety of MLVA patterns, with some food handlers sharing MVLA patterns

indistinguishable from restaurant patrons despite differing PFGE patterns. There were no distinct pattern groupings according to restaurant location. None of the 12 food items cultured were positive for STEC.

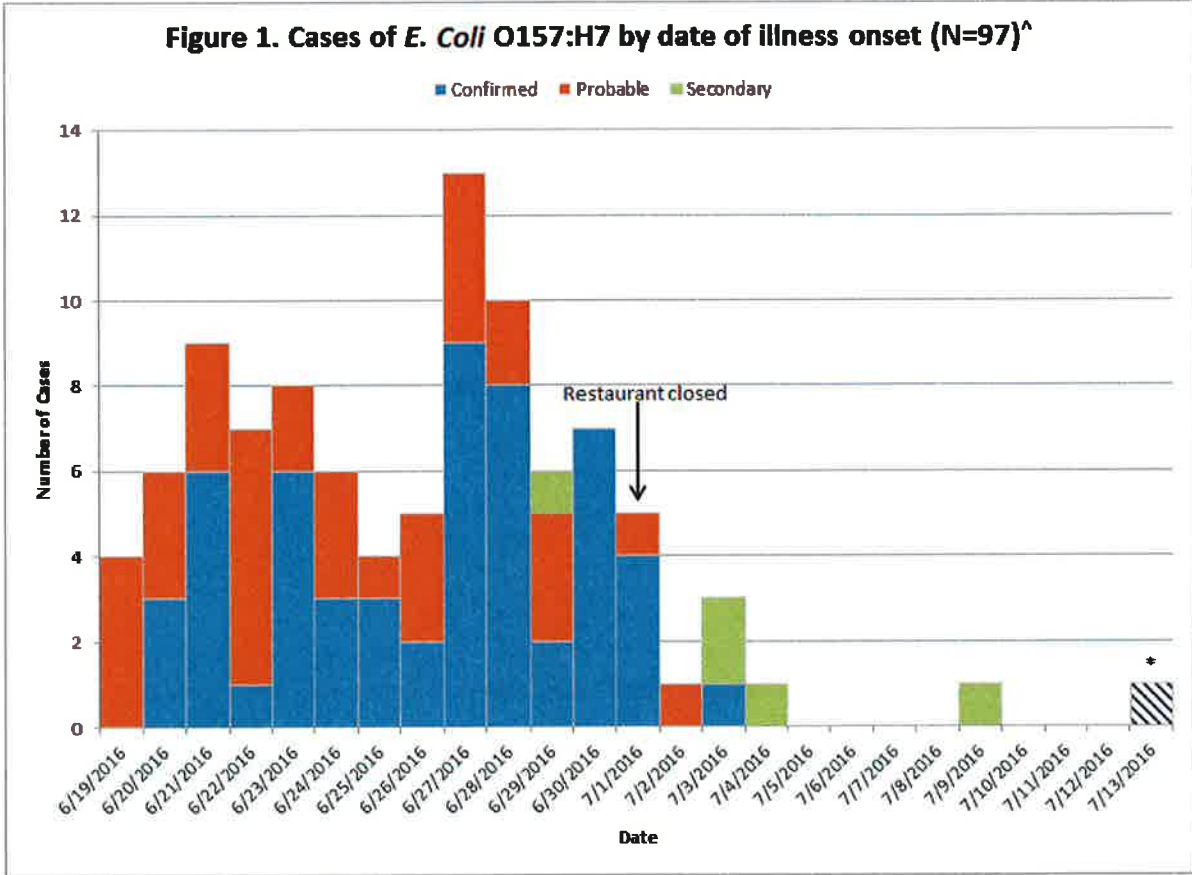
Food product traceback. In collaboration with CDPH, FPD and IDPH department of Food, Drugs and Dairy, invoices collected from the restaurant for the outbreak period meal dates were reviewed. Cilantro was purchased from a distributor serving multiple other restaurants throughout Illinois. The distributor repackaged cilantro from multiple sources, including suppliers in Mexico and Illinois. Of the five laboratory-confirmed cases who denied Restaurant A exposure, none reported cilantro consumption, although cooperation with re-interview was limited. In the absence of confirmed cases reporting consumption of implicated food items from another restaurant, it was not possible to perform further traceback to assess for a common source of contamination. No other restaurants serviced by the distributor were linked to the outbreak.

Re-inspection and reopening. FPD performed re-inspections at both locations, during which instruction and guidance were provided on hand hygiene and it was ensured that food preparation and storage areas were adequately sanitized. Only food workers who had two consecutive negative tests for STEC were permitted to work at the reopened locations, which delayed reopening of the south side location. After passing FPD re-inspections, the south and west side restaurants re-opened on July 9 and 29, respectively.

An additional case of STEC was subsequently identified with a meal date of July 11, 2016 at the reopened west side location, prompting reimposed restriction of all food handlers who had been involved with preparation of the case's meal. All of these food handlers and the case's meal companions were tested for STEC, with negative results. The case had also eaten food from the restaurant on June

21 with a household member, prior to the restaurant's closing; neither reported symptoms of illness at that time. PFGE analysis revealed an additional pattern not previously identified in this outbreak, but which appeared related to other outbreak patterns. Because of the multiple meal dates, negative test results of all meal companions and involved food handlers, and absence of additional reported restaurant-associated cases after the re-opening, we could not definitively determine if the case was primary, secondary or unrelated. Food handlers were permitted to return to work after repeated negative test results. No additional complaints were received in association with the restaurant in the two months following this case's illness onset.

Conclusion. This was a large restaurant-associated outbreak of Shiga toxin-producing *E. coli* O157:H7 infections. Closure of the restaurant during the early stage of the investigation prevented additional cases of illness from occurring. Cilantro was the most likely food-vehicle causing this outbreak, based on the strong statistical association of raw cilantro consumption with illness, and the high percentage of cases explained by cilantro consumption. The large number of PFGE patterns associated with the outbreak was suggestive of a heavily contaminated food item rather than introduction from a point source such as an ill food worker at the restaurant. However, STEC was not isolated from cilantro or cilantro-containing food items collected from the restaurant or the restaurant's distributor. Inability to isolate STEC from food samples may have been hindered by imperfect sensitivity of testing, imperfect representativeness of food samples, or turnover of produce items through the distribution chain leading to items no longer being contaminated at the time of collection. Additionally, cross-contamination during food preparation and transmission by food handlers who were found to have STEC infection likely contributed to the outbreak.



<sup>^</sup>10 onset dates missing from confirmed cases because unable to locate or denied restaurant exposure

\*Unable to definitively classify case status because of multiple meal dates and PFGE pattern similar but non-identical to outbreak strains

Note: The five secondary cases represented here include four meeting the confirmed case definition, and one that was classified as a probable case.

Figure 2.

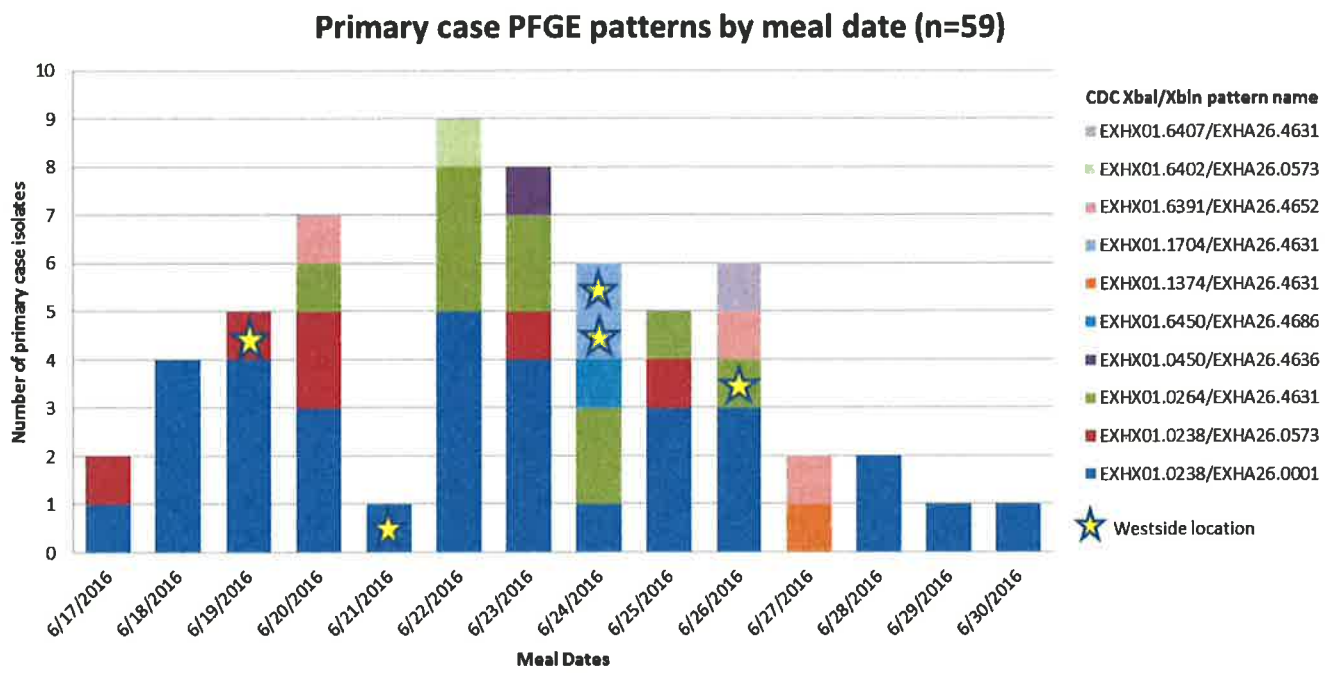




Table 1. Epidemiologic analysis of selected food items consumed at Restaurant A (N=252)

ITEM	Cases <sup>a</sup> (n=55)				Controls <sup>a</sup> (n=197)				Odds ratio (95% CI)	P-value <sup>b</sup>
	Ate	Did not eat	Total	% Ate	Ate	Did not eat	Total	% Ate		
CILANTRO	48	7	55	87%	131	66	197	66%	3.5 (1.5-8.1)	.003
SALSA FRESCA	20	34	54	37%	31	164	195	16%	3.1 (1.6-6.1)	.001
CHICKEN TACO	20	35	55	36%	31	166	197	16%	3.1 (1.6-6.0)	.001
LETTUCE	22	28	50	44%	53	143	196	27%	2.1 (1.1-3.8)	.020
STEAK TACO	17	38	55	31%	38	159	197	19%	1.9 (1.0-3.7)	.065
TEQUILA LIME SAUCE	5	47	52	10%	11	184	195	6%	1.8 (0.6-5.4)	.340
ONIONS	42	13	55	76%	129	67	196	66%	1.7 (0.8-3.3)	.138
TILAPIA TACO	5	48	53	9%	14	183	197	7%	1.4 (0.5-4.0)	.564
STEAK BURRITO	9	44	53	17%	26	171	197	13%	1.3 (0.6-3.1)	.481
CORN PINEAPPLE SALSA	7	46	53	13%	28	168	196	14%	0.9 (0.4-2.2)	.841
CORN (ELOTE)	18	35	53	34%	71	123	194	37%	0.9 (0.5-1.7)	.723
RED PEPPER SALSA	12	38	50	24%	54	142	196	28%	0.8 (0.4-1.7)	.613
SALSA PICOSO	10	39	49	20%	48	148	196	24%	0.8 (0.4-1.7)	.548
SALSA VERDE	17	34	51	33%	81	114	195	42%	0.7 (0.4-1.3)	.287
CHICKEN BURRITO	4	49	53	8%	28	169	197	14%	0.5 (0.2-1.5)	.197

ITEM	Cases <sup>a</sup> (n=55)				Controls <sup>a</sup> (n=197)				Odds ratio (95% CI)	P-value <sup>b</sup>
	Ate	Did not eat	Total	% Ate	Ate	Did not eat	Total	% Ate		
GUACAMOLE	10	27	37	27%	78	84	162	48%	0.4 (0.2-0.9)	.020
CHICKEN QUESADILLA	1	47	48	2%	14	178	192	7%	0.3 (0.1-2.1)	.316 *
CHICKEN BOWL	1	53	54	2%	18	179	197	9%	0.2 (0.1-1.4)	.085 *

<sup>a</sup> Counts exclude respondents who did not indicate whether or not they ate an individual food item (i.e., did not recall or left blank).

<sup>b</sup> Chi-Square tests were used to calculate p-values for all food items except those with expected cell counts  $\leq 5$  (denoted by an asterisk), which were calculated using Fisher's Exact test.

**Table 2. Multivariable model of illness odds of food items consumed**

<b>Food items</b>	<b>Model 1 Estimate (95% CI)<sup>a</sup></b>	<b>Model 2 Estimate (95% CI)<sup>b</sup></b>
CILANTRO	4.4 (1.7-11.6)	6.9 (2.0-24.0)
SALSA FRESCA	2.5 (1.1-5.4)	
LETTUCE	2.7 (1.3-5.6)	2.7 (1.3-5.5)

a. Model 1 includes all three food items, age, and gender.

b. Model 2 includes combined raw cilantro variable (cilantro and salsa fresca), lettuce, age and gender.

## Footnotes

1. The STEC serogroup most commonly identified and associated with severe illness in the United States is *E. coli* O157

2. Centers for Disease Control and Prevention and Council of State and Territorial Epidemiologists  
National Notifiable Diseases Surveillance System case definitions:

<https://wwwn.cdc.gov/nndss/conditions/shiga-toxin-producing-escherichia-coli/case-definition/2014/>