

***E. coli* O157:H7 Infections Associated with a Restaurant**

September

Olmsted County

On October 10, 2017, the Minnesota Department of Health (MDH) contacted Olmsted County Public Health Services (OCPHS) to report that the MDH Public Health Laboratory (PHL) had identified three clinical isolates of *E. coli* O157:H7 that were indistinguishable by pulsed-field gel electrophoresis (PFGE; Minnesota pattern designation MN1570ECB676), and that routine interviews of the three cases revealed that all had eaten food from the same restaurant in Rochester, Minnesota from September 16-25. An investigation was initiated immediately.

OCPHS contacted restaurant ownership to inform them of the illnesses associated with the restaurant. The restaurant had not yet opened for the day and voluntarily remained closed. Sanitarians from OCPHS visited the restaurant on October 10 to evaluate food preparation and handling procedures, review the employee illness log, interview employees, and gather patron credit card receipts.

A confirmed case was defined as a person from whom *E. coli* O157:H7 with the outbreak PFGE pattern was isolated after eating at the restaurant. Probable cases were defined as a person with diarrhea (≥ 3 loose stools in a 24-hour period) that was either bloody or at least 3 days in duration after eating at the restaurant. Cases were identified through routine laboratory surveillance and interviews with restaurant patrons identified through credit card receipts. The Minnesota cases identified through routine laboratory surveillance were initially interviewed with a broad-based exposure questionnaire and then re-interviewed with a restaurant-specific interview form. Restaurant patrons identified through credit card receipts were interviewed about food consumption at the restaurant and illness history. Stool samples from employees and ill patrons were submitted to the MDH Public Health Laboratory (PHL) for bacterial testing.

Thirty-eight restaurant patrons were interviewed and 11 (29%) cases (8 laboratory-confirmed and 3 probable) were identified. Reported meal dates ranged from September 12, 2017 through September 30, 2017. The first symptomatic patron became ill on September 16, and the last reported illness began on October 4. One patron reported illness that did not meet the case definition and was excluded from analyses. The three probable cases were identified after a local news article was published and were included in the demographic and symptom analysis but not the food exposure analysis. Eight (73%) cases were female, and the median age was 38 years (range, 1 to 68 years). The median incubation period for the 10 cases who provided a meal date was 3 days (range, 2 to 16 days). Ten (91%) cases reported cramps and diarrhea, seven (64%) reported bloody stools, two (18%) reported fever, and one (9%) reported vomiting. The median duration of illness was 7 days (range, 2 to 25 days). Four patrons were hospitalized but none developed hemolytic uremic syndrome or died. One ill patron identified through credit card receipts submitted a stool specimen to MDH PHL and tested positive for *E. coli* O157:H7 MN1570ECB676.

Consuming the falafel main dish was significantly associated with illness (4 of 6 cases vs. 6 of 28 controls; odds ratio [OR], 7.3; 95% confidence interval [CI], 1.1 to 50.2; $p = 0.048$). Consuming any falafel was also significantly associated with illness (7 of 7 cases vs. 10 of 27 controls; OR, undefined; $p = 0.007$). No other food items were statistically significant.

During the environmental assessment conducted at the restaurant on October 10, staff observed that meat prep and vegetable prep were done in separate areas; however, restaurant staff reported that they used the same grinder for raw beef, raw lamb, and the garbanzo beans used to make falafel. They reported that the grinder parts were cleaned in the 3-compartment sink and then washed and sanitized again in the dishwashing machine. Upon observation of the grinder cleaning process, all food-contact parts of the grinder were removable. The cleaning process appeared to be effective, as there was no visible evidence of food residue in or on any of the grinder parts. The owners were instructed to purchase a second grinder for use prior to re-opening October 11 and labeled each grinder with its assigned use (raw meat or falafel). On October 11, OCPHS staff observed meat grinding and garbanzo bean grinding. No obvious routes of cross-contamination were noted, since separate grinders for raw meat and beans were in use. OCPHS staff also observed falafel preparation and cooking. The finished cook temperature was measured at 198° F and was still rising due to heat gain.

The facility remained closed on October 10 for public health interventions to be put in place. The owners implemented illness screening of all employees before their work shifts, maintained their policy and practice of no bare-hand contact with ready-to-eat food, and emphasized effective and timely handwashing. All open, ready-to-eat foods were discarded, and the facility, equipment, and utensils were cleaned and sanitized. On October 11, public health interventions were in place, and the establishment re-opened.

The facility closed again on October 18 when it was discovered through stool sample testing that multiple employees were infected with Shiga toxin-producing *E. coli* (STEC). The establishment re-opened on October 21 when enough healthy employees were available to work. All nine restaurant employees were interviewed and none reported recent gastrointestinal illness. All employees were required to submit stool samples and to have two STEC negative samples collected at least 24 hours apart before returning to work. Five employees tested positive for STEC. Isolates were available for further identification in four of the five STEC-positive employees. All four employee isolates were identified as *E. coli* O91:H14.

This was a foodborne outbreak of *E. coli* O157:H7 infections associated with a restaurant in Rochester. Five employees tested positive for *E. coli* O91:H14, while patrons were infected with *E. coli* O157:H7, suggesting that infected employees were not the source of the patron illnesses. Falafel was the only food item significantly associated with illness, and the environmental assessment indicated potential for cross-contamination from raw meat to falafel ingredients during grinding of garbanzo beans. Therefore, environmental and epidemiological evidence pointed to the falafel as the most plausible vehicle for transmission.