

***Salmonella* Montevideo Infections Associated with a Restaurant**

June-July

Olmsted County

On July 10, 2012, the Mayo Clinic Infection Prevention Department notified an Olmsted County Public Health Services (OCPHS) epidemiologist that they had an unusually high number of patients test positive for *Salmonella* within a few days. The Minnesota Department of Health (MDH) was then notified. All the cases were reported to MDH by Mayo Clinic staff. All of the *Salmonella* isolates were sent to the MDH Public Health Laboratory (PHL) for confirmation, but none had serotype or pulsed-field gel electrophoresis (PFGE) subtype results yet. Initial interviews of two cases revealed that they had eaten at the same restaurant in Rochester, in the week prior to illness onset. Based on that information, OCPHS and MDH initiated an investigation of the restaurant on July 11.

A case was defined as a Minnesota resident with laboratory-confirmed infection with *S. Montevideo* PFGE subtype SMON93SMB4, or as a person who ate at Restaurant A in Rochester and subsequently developed diarrhea (≥ 3 loose stools in a 24-hour period) and fever or duration of diarrhea > 2 days in the 7 days after the meal.

All *S. Montevideo* cases identified during routine surveillance activities are interviewed using a standard questionnaire about exposures and food consumption at home and at restaurants. A supplemental questionnaire that included multiple restaurants and other eating venues was used early in the investigation. A second supplemental questionnaire listing Restaurant A menu items was used to interview cases after the restaurant was identified as the source of the outbreak, and also was used to interview additional restaurant patrons.

Patrons who ate at Restaurant A from June 28 to July 2 were identified using credit card receipts, and were contacted and interviewed about food consumption and illness history by MDH. Stool samples collected from consenting patrons were submitted to the MDH PHL for *Salmonella* testing.

OCPHS Environmental Health Specialists visited the restaurant on July 11 to evaluate food preparation and handling procedures. Restaurant employees were interviewed about recent history of gastrointestinal illness and work duties at the restaurant. All restaurant employees were asked to submit stool specimens to the MDH PHL until two consecutive specimens collected at least 24 hours apart tested negative for *Salmonella*. Additionally, employees who reported gastrointestinal illness or who tested positive for *Salmonella* were excluded from work until testing was completed.

Restaurant management staff were asked to screen employees for gastrointestinal illness when they presented to work during the investigation. Additional interventions to prevent further transmission were also implemented.

Overall, 24 people were interviewed as part of the investigation. Eleven cases were identified (eight were identified through routine surveillance, two were identified from complaint calls to MDH, and one was a dining companion of a surveillance case). Of those, 10 were laboratory confirmed cases with *S. Montevideo* SMON93SMB4 isolates. Of all the cases, only one confirmed case did not report eating at Restaurant A prior to onset of illness. All 11 cases had diarrhea, 7 (64%) had fever, 3 (27%) had vomiting, 1 (9%) had blood in their stool, and 1 (9%) developed a urinary tract infection. Four (36%) of the patients were hospitalized. The median duration of hospitalization was 3 days (range, 1 to 6 days). None of the cases died. Illness onset dates for the confirmed cases ranged from June 29 to July 7. The median incubation period was 39 hours (range, 15.5 to 143 hours). Most of the cases were still ill at the time of the interview; duration of illness was available for only four cases. The median duration of illness was 144 hours (range, 31.5 to 191 hours). One secondary case was identified in a household member and dining companion of a confirmed case.

The cases' meal dates at Restaurant A ranged from June 23 through July 5. One case ate at the restaurant two times before the onset of illness (June 27 and July 2); however, the second meal was less than 3 hours before onset of illness. The cases ate a variety of foods including biscuits, chicken sandwich, eggs, fruit, gravy, hash browns, mashed potatoes, pancakes, pancake special (with blueberries, strawberries, and whipped cream), pork chops, salads, sausages, and other foods. Twelve patrons identified through credit card receipts and who ate at Restaurant A from June 28 to July 2 were interviewed about food consumption at the restaurant and gastrointestinal illness after their meal. None were ill. A case-control study was conducted. Foods were grouped into categories including any eggs, bacon, sausage, hamburger, steak, chicken, salad, lettuce, tomatoes, sandwich, strawberries, fruit drinks, syrup, and other food categories for analysis. No foods were statistically associated with illness.

OCPHS interviewed 50 employees. Seven employees reported experiencing diarrhea, with onsets ranging from June 30 through July 12. Forty eight employees submitted at least two stools for testing. Two tested positive for *Salmonella*, including one employee with onset of diarrhea on June 30 who worked while ill for 2 days, and one employee who was asymptomatic.

OCPHS worked with restaurant management to implement employee health screening by management during the investigation. Additional interventions included no bare-hand contact with ready-to-eat foods using a 100% glove use policy for food handling, and surface cleaning, especially of heavily soiled areas, to be followed by sanitizing.

Observations made on July 11 during the initial visit to the restaurant identified a potential for cross-contamination on the cook line due to inadequate glove changes and inadequate handwashing after handling raw meat and shell eggs. While task separation of the three cook line positions was attempted, the actual food-handling practices of staff working the "shell-egg" position and the middle "raw-meat" position increased the probability of cross-contamination.

This was an outbreak of *Salmonella* Montevideo infections associated with eating at a restaurant in Rochester. A specific food vehicle or source of contamination were not identified. Ill and infected food workers were identified, and it is possible that they served as a source of contamination for some patron cases; however, some patrons became ill ate at the restaurant before the earliest food worker illness, suggesting that an infected food worker was not the initial source of contamination. Cross-contamination of ready-to-eat foods from raw foods of animal origin could also explain some of the patron cases.