

***Staphylococcus aureus* Intoxications Associated with a Graduation Party**

June

Olmsted County

On June 6, 2011, the Minnesota Department of Health (MDH) foodborne illness hotline received a complaint of gastrointestinal illness among 20 of 150 attendees of a June 4 graduation party in Byron, Minnesota; several guests had sought medical attention at an emergency department during the party due to gastrointestinal illness. Food items served at the event included: pulled pork and pulled beef provided by a restaurant in Rochester; pickles, watermelon, cake, and condiments purchased at a grocery store; and, homemade potato salad. Olmsted County Public Health Services (OCPHS) was notified and an outbreak investigation was immediately initiated.

Environmental Health (EH) specialists from OCPHS visited the restaurant on June 6 to observe food preparation, handling, and temperature holding procedures. Contact information for party attendees was

obtained from the party host. MDH staff conducted interviews with party attendees to obtain information on food consumption, food preparation, and illness history.

A case was defined as a graduation party attendee who subsequently developed vomiting and/or diarrhea (≥ 3 loose stools in a 24-hour period). Stool samples from consenting attendees were submitted to the MDH Public Health Laboratory (PHL). Leftover food from the graduation party was obtained by OCPHS staff and tested at the MDH PHL for enterotoxins and toxin-producing bacteria.

Of the 64 party attendees interviewed, 14 (22%) met the case definition. One case was the daughter of the party host who had onset of vomiting, cramps, headache, and chills 7 hours after consuming leftover peeled hardboiled eggs on June 5 (she had not consumed potato salad at the party on June 4); this case was excluded from further analyses. Another six (9%) attendees reported mild gastrointestinal illness that did not meet the case definition and were also excluded from further analyses. The median incubation period for cases was 4 hours (range, 1 to 10 hours). For the 11 cases who had recovered at the time of interview, the median duration of illness was 14 hours (range, 1 to 25 hours). Twelve (92%) cases reported vomiting, 10 (77%) diarrhea, 6 (46%) cramps, 5 (39%) fever, and 1 (8%) reported bloody stools. Two cases visited an emergency department and none were hospitalized.

In a univariate analysis, consuming potato salad (13 of 13 cases vs. 23 of 43 controls; odds ratio, undefined; 95% confidence interval lower limit, 2.9; $p = 0.002$) was the only food item significantly associated with illness.

The potato salad was prepared by four people at the house of the party host. Potatoes for the salad were prepared on June 2, 2 nights prior to the party. Forty pounds of potatoes were cut up, boiled, drained, and immediately placed in the refrigerator overnight. The fridge contents, including the milk and potatoes used in the salad, were reportedly warm the next morning. The milk may have been mixed into the salad on this day (June 3). Shell eggs were purchased on the day of the party (June 4), boiled, cooled, peeled, sliced, and added to the potato salad that morning around 8:00 a.m. One potato salad preparer reported that the potatoes were still warm when the lid was removed to add the eggs. The finished potato salad was kept on ice during the graduation party. Extra peeled hard-boiled eggs not used in the potato salad were stored in a plastic bag in the fridge.

One stool sample from an ill attendee was received at the MDH PHL. The attendee's illness onset was on June 4, and the stool sample was collected June 7; the stool was negative for norovirus, *Salmonella*, *Shigella*, *Campylobacter*, Shiga toxin-producing *E. coli*, *Staphylococcus aureus*, and *Bacillus cereus*.

Samples of leftover potato salad and leftover peeled hard-boiled eggs were collected from the fridge of the party host on June 7. Both foods initially tested negative for *S. aureus* and *B. cereus* enterotoxins; however, both food samples were cultured, and 3×10^8 colony-forming units of *S. aureus* per gram of food was isolated from the potato salad, and 6×10^8 CFU/g were isolated from the hard-boiled eggs. Three *S. aureus* colonies from each food sample were tested for toxin production and subtyped; all six produced staphylococcal enterotoxin A and were indistinguishable by pulsed-field gel electrophoresis (subtype MR765). The hard-boiled eggs also grew *B. cereus* on culture (the concentration could not be quantified); the isolates produced the diarrheal type of *B. cereus* enterotoxin. *B. cereus* was not found in the potato salad sample, and case incubation, duration, and symptom profiles were more consistent with those caused by preformed *S. aureus* toxin than the diarrheal form of *B. cereus*.

Centers for Disease Control and Prevention guidelines for confirmation of *S. aureus* as the etiology of an outbreak include the isolation of $\geq 10^5$ CFU/g from an epidemiologically implicated food, provided the specimen is properly handled.

EH specialists identified no food preparation, handling, or temperature abuse issues at the restaurant that provided the pulled meats, with the exception that a cook underestimated the safe cook temperature for ground beef and chicken by 5° F when asked.

This was a foodborne outbreak of *S. aureus* intoxications associated with a graduation party. Potato salad prepared with hard-boiled eggs was identified as the vehicle of transmission. Temperature abuse of the potato salad during preparation likely led to conditions conducive to *S. aureus* replication and formation of enterotoxin A. The source of the *S. aureus* contamination was not identified, but most plausibly occurred during handling/peeling of the hard-boiled eggs and other potato salad ingredients by a food preparer colonized with *S. aureus*.