

Norovirus Gastroenteritis Associated with a Restaurant

December

Olmsted County

On January 2, 2012, Olmsted County Public Health Services (OCPHS) received a complaint of gastrointestinal illness from a husband and wife who had dined at a restaurant in Rochester, Minnesota on December 27, 2011. On January 3, OCPHS and the Minnesota Department of Health (MDH) foodborne illness hotline both received independent complaints from restaurant patrons. An outbreak investigation was immediately initiated.

OCPHS Environmental Health (EH) specialists visited the restaurant on January 3 to assess food preparation and handling procedures, interview employees, and obtain credit card receipts for additional patron contact information.

Patrons identified from credit card receipts and foodborne illness complaints were interviewed by OCPHS staff to obtain information on food/beverage consumption and illness history.

A case was defined as a restaurant patron who developed vomiting and/or diarrhea (≥ 3 stools in a 24-hour period) after eating at the restaurant. A secondary case was defined as an individual who developed these symptoms at least 24 hours after a household member's illness onset. Stool samples from consenting patrons and food workers were submitted to the MDH Public Health Laboratory (PHL) for bacterial and viral testing.

Fifty-four patrons were interviewed; 17 (31%) met the case definition. One secondary case was identified with illness onset on January 3 and was excluded from further analyses. Case meal dates were December 27 (n=7), 28 (n=2), 29 (n=7), and 31 (n=1), and illness onset dates ranged from December 28 through January 2. The median incubation period was 35.5 hours (range, 29 to 48.5 hours), and the median duration of illness was 58 hours (range, 6 to 116 hours). All 17 cases reported vomiting, 16 (94%) diarrhea, 15 (88%) abdominal cramps, seven (41%) fever, and one (6%) bloody stool. None of the cases saw a healthcare provider. Two patron stool samples were received at the MDH PHL from independent complainants who ate at the restaurant on December 28 and 29; both tested positive for norovirus GII.4 New Orleans with identical region D nucleic acid sequences.

In a univariate analysis, consuming a pita entrée side salad (6 of 16 cases vs. 1 of 36 controls; odds ratio [OR], 21.0; 95% confidence interval [CI], 2.3 to 195.4; $p = 0.002$), a gyros/pita/fries lunch special (8 of 16 cases vs. 5 of 35 controls; OR, 6.0; 95% CI, 1.5 to 23.4; $p = 0.01$), or a pita entrée rice side (5 of 16 cases vs. 2 of 36 controls; OR, 7.7; 95% CI, 1.3 to 45.6; $p = 0.02$) were significantly associated with illness. Most, but not all, salads contained romaine lettuce; when interviewed about side salads, cases and controls were not asked to specify the salad type. A composite variable including any salad and any romaine lettuce-containing item, which included most pitas and the gyros/pita/fries lunch special, explained a greater proportion of cases than controls (16 of 17 cases vs. 24 of 36 controls; OR, 8.0; 95% CI, 0.9 to 67.7; $p = 0.04$). Consuming tzatziki (0 of 16 cases vs. 13 of 36 controls; OR, 0; 95% CI, undefined; $p = 0.01$) was inversely associated with illness. A multivariate analysis was not attempted due to overlap in menu items and ingredients, and the lack of specificity during patron interviews.

Three (23%) of 13 restaurant employees interviewed reported recent vomiting or diarrhea. Two submitted stool specimens that tested positive for norovirus GII.4 New Orleans; one had onset of illness late in the evening on December 28, and the other had onset on December 31. The region D nucleic acid sequence for the first positive employee stool specimen was identical to the two patron sequences. Region D could not be sequenced for the second positive employee stool specimen. The third ill employee also had onset on December 28; a stool sample from this employee tested positive for norovirus GII.3. One employee had reported his/her illness to the restaurant management, but was told to report to work anyway because the restaurant was short-staffed; the employee returned home 30 minutes after arriving at the restaurant.

OCPHS EH specialists instructed restaurant management to implement norovirus interventions during their visit to the restaurant on January 3. Interventions included mandatory glove use for handling ready-

to-eat (RTE) foods, review of employee illness and handwashing policies with all staff, daily screening of staff for vomiting and diarrhea, exclusion of ill employees, cleaning and sanitizing of the facility, and discarding all prepared or opened RTE foods. The restaurant voluntarily closed in the afternoon on January 3 to accomplish these interventions and reopened after additional EH assessment on January 4.

EH specialists noted that employee training about appropriate handwashing after entering the kitchen from the restaurant's only uni-sex toilet room may have been inadequate, or that handwashing was not properly stressed to employees by management.

On January 5, EH specialists reviewed the food flow for romaine lettuce served at the restaurant. Gloves were used by food workers when chopping a case of whole heads of romaine; however, bare hands were then used to agitate the chopped lettuce in a water rinse bath, which was not changed between cases of lettuce. Recommendations were made to discontinue use of bare hands to wash lettuce, change out rinse water after each case of romaine, and clean and sanitize all food contact surfaces after each case is processed.

This was a foodborne outbreak of norovirus gastroenteritis associated with a restaurant. Environmental and statistical evidence indicated that romaine lettuce was the most likely vehicle of transmission. The source of contamination was not identified. However, bare-hand contact issues were identified during the lettuce washing process, and it is likely that an ill or recently ill food worker, or a food worker with an ill household member, contaminated the romaine lettuce during preparation or serving.