

Norovirus Gastroenteritis Associated with a Church

February

Olmsted County

On February 19, 2013, Olmsted County Public Health Services (OCPHS) received reports from staff at a church in Rochester that approximately 73 persons were ill after attending one of two events that were held at the church the weekend of February 15-16. The first group took part in a youth retreat that involved weekend-long activities at the church and in the homes of host families, and a group dinner held at the church Saturday evening (February 16). The second group was comprised of adults who attended a Saturday evening service at the church followed by a fellowship dinner. Both groups were served the same meal Saturday evening; this meal was prepared in the church kitchen. The groups did not eat together and were served in separate locations within the facility. This information was reviewed by OCPHS staff, the Minnesota Department of Health (MDH) was consulted, and an investigation was initiated.

OCPHS Environmental Health staff went to the church on the afternoon of February 19 to conduct an assessment of food preparation, staff hygiene practices, and to obtain a menu for the Saturday evening meal. Employees and volunteers were interviewed using a standard food service employee questionnaire.

OCPHS investigators obtained from the church lists of youth who participated in the weekend retreat as well as contact information for adults who participated in the fellowship dinner. Individuals from the youth retreat were interviewed by OCPHS staff, and individuals from the adult dinner were interviewed by staff from MDH to obtain information on food/beverage consumption and illness history. A case was defined as an individual who participated in activities held at the church the weekend of February 15-16 and developed vomiting and/or diarrhea (≥ 3 loose stools in a 24-hour period) after the event. Stool samples collected from consenting ill attendees and food workers were submitted to the MDH Public Health Laboratory (PHL) for bacterial and viral testing.

A total of 48 individuals were interviewed; 34 (71%) attended the youth group dinner and 14 (29%) attended the adult meal. Overall, 23 (48%) of the 48 individuals interviewed reported illness that met the case definition. Of the attendees of the youth group dinner, 16 (47%) individuals met the case definition. Of the attendees of the adult meal, seven (50%) individuals met the case definition. Three individuals experienced mild illness that did not meet the case definition and were excluded from analyses.

Twenty (87%) attendees reported vomiting, 19 (83%) reported diarrhea, 15 (65%) reported abdominal cramps, and 12 (57%) reported fever. The median incubation period for cases was 37 hours (range, 7.5 to 63 hours) and the median duration of illness was 30 hours (range, 13 to 48 hours). Three (14%) ill attendees contacted their healthcare provider; one sought medical attention at a clinic but was not hospitalized. Stool samples were submitted by seven ill attendees to the MDH PHL (five from attendees of the youth retreat and two from attendees of the adult dinner); all seven stool samples tested positive for norovirus GII and negative for bacterial enteric pathogens.

Early in the interview process it became clear that the host family meals were not a likely source of illness because similar attack rates of illness were observed in groups that stayed at different host homes. Additionally, the reported illness onsets of cases who attended the adult dinner were within the same time-frame as the youth retreat attendees; the only reported shared exposure between the groups was the food at the church on February 16. Food served at the church included chicken pot pie, potatoes, green beans, garlic bread, lettuce salad with dressing, and cheesecake. In the univariate analysis, consuming potatoes (22 of 23 cases vs. 15 of 22 controls; odds ratio [OR], 10.3; 95% confidence interval [CI], 1.1 to 92.3; $p = 0.02$) and cheesecake (23 of 23 cases

vs. 14 of 22 controls; OR, undefined; 95% CI, undefined; $p = 0.002$) were significantly associated with illness. By multivariate logistic regression, no food item was independently associated with illness.

The church is a religious organization that has chosen to obtain a food and beverage license through OCPHS. Food service staff consists of one church employee—the food service director, and a group of regularly scheduled volunteers. All 16 food workers/volunteers were interviewed; seven (44%) reported recent gastrointestinal illness. Two ill food workers reported symptom onset on February 12 and recovery on February 13; one reported symptom onset on February 13 and recovery on February 15. The two food workers reporting illness onset on February 12 also reported preparing the cheesecake on February 16. One of these ill food workers scored the cheesecake; three other non-ill food workers served the cheesecake to the two groups. An additional four food workers reported onset of gastrointestinal symptoms after the event with the date of symptom onset ranging from the evening of February 16 to February 19. All food workers consumed the same meal as the event attendees. Five stool samples were collected from food workers; all tested positive for norovirus GII. The two food workers who prepared the cheesecake were among the food workers tested. The nucleic acid sequences of all 12 norovirus-positive samples collected from attendees and food workers were identical.

Food preparation for both events took place on February 16; both meals were served between 6:30 and 7:00 p.m. Glove-use throughout preparation and service was reported; however, since food service occurred concurrently in two locations, this could not be verified by the food service director for volunteer food workers. Potatoes were washed, wrapped in foil, baked, and served uncut with the foil still intact. The cheesecake was prepared by pressing graham cracker crust mix into a pan and pouring no-bake cheesecake mix over the top. The food service director reported that gloves were worn during the crust-making process. All food was served by volunteer food workers from a buffet-style set-up with use of serving utensils.

As a result of the investigation, the church voluntarily suspended all food service activities on February 19 until all recommended interventions could be put in place. Recommendations that were made included: clean and sanitize all food contact surfaces in the kitchen; implement a no bare-hand contact policy for ready-to-eat foods, provide handwashing and glove-use training for all volunteer food workers; review illness policy with all staff and volunteer food workers; limit food service duties to trained staff; and discard all open, ready-to-eat foods.

This was an outbreak of norovirus gastroenteritis associated with a meal at a church. Cheesecake was implicated as the vehicle by the epidemiologic and environmental health investigations. Three infected food workers with illness onset before the events on February 16 were identified. The likely source of contamination was one or more recently ill food workers who prepared the cheesecake.