

Norovirus Gastroenteritis Associated with a Camp

April

Beltrami County

On April 19, 2011, the Minnesota Department of Health (MDH) foodborne illness hotline received an illness complaint associated with attending a basket making workshop at a camp in Bemidji, Minnesota from April 15 through 17. The complainant reported that at least 10 of 44 people in attendance had become ill with vomiting and diarrhea during or after the workshop. MDH Environmental Health Services was contacted and an investigation was initiated.

On April 21, an MDH sanitarian visited the camp to evaluate food preparation and handling procedures, interview food workers, and determine if there were reports of illness among other camp attendees. A list of workshop attendees was provided by the workshop organizer. Attendees were interviewed by MDH staff about food consumption and illness history. A case was defined as a workshop attendee who subsequently developed vomiting or diarrhea (≥ 3 loose stools in a 24-hour period). Stool samples collected from consenting workshop attendees and food workers were submitted to the MDH Public Health Laboratory for bacterial and viral testing.

Illness histories and exposure information were obtained from 34 of 44 workshop attendees. Of these, 21 (62%) individuals met the case definition. Two cases had illness onset on April 16, four had illness onset on April 17 and 15 had illness onset on April 18. The median duration of illness for the 11 cases who had recovered at the time of the interview was 44 hours (range, 7 to 82 hours). Seventeen (81%) cases reported vomiting, 15 (71%) reported diarrhea, 10 (50%) reported cramps, 5 (24%) reported fever and none reported bloody stools. Three stool samples submitted by ill workshop attendees tested positive for norovirus GI.

MDH sanitarians interviewed the three food workers dedicated to the basket making workshop and inspected the kitchen used to prepare the meals. One food worker reported vomiting and diarrhea on April 15. A second food worker became ill with diarrhea on April 18. The food worker with illness onset

on April 15 did not work that day but did work on Saturday, April 16. That food worker's job duties included salad and vinaigrette preparation, peeling and cutting potatoes, slicing bread, serving food and washing the dishes.

Stool samples submitted by both ill food workers also tested positive for norovirus GI. Nucleic acid sequencing was conducted on all five norovirus-positive attendee and food worker samples, and the resulting sequences were all identical.

The MDH sanitarian inquired about illness among other camp attendees and food workers. During that weekend four other camps were in operation. There were no other complaints of illness among attendees. However, there was one report of an ill food worker in a different camp from where the basket weaving workshop took place.

Two workshop attendees became ill on Saturday, April 16. Three classes, in separate classrooms, were offered each day of the workshop. One attendee who became sick on April 16 vomited during a class and had several other classmates attending to her and cleaning up the room. Four attendees who later became ill had been in the classroom when the case vomited. Two of these cases had stool samples positive for norovirus GI. The median incubation period from onset of the first case was 30.5 hours (range, 16.5 to 37.5 hours).

Incubation periods were calculated from several different meal dates and times. The ill food worker prepared meals on Saturday, April 16. The median incubation period from Saturday's breakfast was 41.5 hours (range, 5.5 to 49 hours). The median incubation period from Saturday's lunch was 38 hours (range, 1 to 45 hours). The median incubation period from Saturday's dinner was 32 hours (range, -5 to 39 hours). Two attendees were already ill at the time of Saturday's dinner; one of them ate dinner and one did not.

By univariate analysis, eating breakfast on Saturday (19 of 21 cases vs. 3 of 10 controls; odds ratio [OR], 22.2; 95% confidence interval [CI], 2.3 to 276; Fisher's exact $p = 0.001$), eating lunch on Saturday (21 of 21 cases vs. 5 of 10 controls; OR, undefined; Fisher's exact $p = 0.001$), and eating dinner on Saturday (19 of 21 cases vs. 4 of 10 controls; OR, 14.3; 95% CI, 1.6 to 174; Fisher's exact $p = 0.01$) were significantly associated with illness.

This was a foodborne outbreak of norovirus gastroenteritis associated with a camp. A specific food vehicle was not identified but the primary source of transmission was an infected food worker who contaminated one or more ready-to-eat foods. A food worker who prepared the meals on April 16 became ill on April 15 and subsequently tested positive for norovirus GI with a sequence that was identical to positive samples from ill attendees and also a second food worker who became ill on April 18. The distribution of incubations suggests that most cases were exposed on April 16. There were two attendees whose incubation periods do not fit with exposure on Saturday because they became ill on Saturday. These attendees could have been exposed to norovirus prior to attending the workshop or on Friday night. Four cases were in the room at the time that one of the Saturday onset cases vomited in class. Therefore some person-to-person transmission could have occurred in addition to the documented foodborne transmission.