

Norovirus Gastroenteritis Associated with a Bowling Alley

March

Olmsted County

On March 9, 2012, the Minnesota Department of Health (MDH) was notified by Olmsted County Public Health Services (OCPHS) that they were investigating two independent complaints of illness from group events held at a bowling alley in Rochester, Minnesota on March 3. OCPHS received the first complaint of vomiting and diarrhea among eight of nine birthday party guests on March 7. They received a second complaint the next day of illness among 34 of 56 co-workers from a work bowling event. A joint investigation was initiated.

OCPHS sanitarians visited the bowling alley on March 8 to evaluate food preparation and handling procedures, and gather contact information for other bowling alley patrons (including large group reservations and credit card receipts) from March 3 and March 4. Employees were interviewed by OCPHS to determine their food handling duties and to elicit an illness history.

OCPHS obtained contact information for party attendees from each party host. MDH and OCPHS staff interviewed party attendees to obtain information on food/beverage consumption and illness history. The organizer for the March 3 work-related event forwarded an email and interview form from OCPHS to her co-workers, who were asked to return the completed form to OCPHS. Credit card receipts did not have printed names and were not used to contact patrons.

A case was defined as a bowling alley patron who subsequently developed vomiting and/or diarrhea (≥ 3 stools in a 24-hour period). A secondary case was defined as either a bowling alley patron who lived or worked with a primary case and developed vomiting and/or diarrhea >48 hours after visiting the bowling alley, or an ill individual who did not go to the bowling alley but lived in the same household as a primary case.

Stool samples from consenting patrons and employees were submitted to the MDH Public Health Laboratory (PHL) for bacterial and viral testing.

A total of 99 patrons were interviewed about food/beverage consumption and bowling activities. Of these, 24 were excluded from further analyses due to incomplete symptom or exposure histories, illness that did not meet the case definition, illness with an indeterminate incubation period (could not differentiate between primary and secondary cases) or the questionnaire was received after completion of data analyses. Among the remaining 75 interviewed patrons, 31 primary cases were identified. In addition, 15 secondary cases were identified and were excluded from further analyses. The median incubation period for cases was 36 hours (range, 13 to 47.5 hours). Among the 31 cases, 30 (97%) reported vomiting, 28 (90%) reported diarrhea, 25 (42%) reported cramps, 19 (68%) reported fever, and none reported bloody stools. The median duration of illness was 47.5 hours (range, 10.5 to 104 hours). Four patron stool samples were submitted to the MDH PHL; two tested positive for norovirus GI.6A with identical region D nucleic acid sequences. The positive stools were from individuals who attended two different March 3 birthday parties. The two negative stools were collected 10 days after illness onset.

In a univariate analysis, consuming a "first frame starter" appetizer (10 of 31 cases vs. 1 of 24 controls; odds ratio, 11.0; 95% confidence interval, 1.3 to 93.0; $p = 0.02$) was significantly associated with illness. Individual appetizers, eating any food item (17 of 31 cases vs. 9 of 15 controls), and bowling activities were not significantly associated with illness.

All 11 bowling alley employees were interviewed. One employee reported gastrointestinal illness onset on March 6. This employee worked at the alley primarily as a bartender on March 2 through March 4. A stool sample from the employee tested positive for norovirus GI.6A with an identical region D nucleic acid sequence to the patron specimens.

The facility is a 20-lane bowling alley with lobby seating and an additional bar area. On March 8, OCPHS sanitarians asked the alley to institute interventions to prevent further transmission, including mandatory glove use when handling ready-to-eat foods, management review of employee illness and handwashing policies with all staff, daily screening of employees for illness, a 72-hour exclusion for ill employees, discarding prepared ready-to-eat foods, and a cleaning/sanitizing of the entire facility including bowling balls. The alley voluntarily closed their kitchen at 6:00 p.m. for the remainder of the day to accomplish the cleaning. As a result of the outbreak, the alley switched to norovirus-effective sanitizer for non-food contact surfaces and reinforced staff illness and hygiene practices. OCPHS sanitarians recommended more frequent cleaning of restrooms and surfaces throughout the facility.

This was a foodborne outbreak of norovirus gastroenteritis associated with a bowling alley. Appetizers were identified as the outbreak vehicle; however, 45% of cases did not consume any food items at the alley, suggesting that contamination of the alley environment (e.g., bowling balls, surfaces, utensils) likely also played a role in transmission.