

Norovirus Gastroenteritis Associated with a School Lunch

February

Hennepin County

On February 8, 2017, the Hennepin County Human Services and Public Health Department (HCPH) received a call from a school nurse at a school in Minneapolis. The school reported that approximately 60 of 340 students in the high school had called in sick with vomiting, diarrhea, cramps, and fever. Most illness onsets were reported as the night of February 7. Seven staff members were also ill. An illness prevention/control checklist was provided to the school, City of Minneapolis Environmental Health was notified, and an investigation was initiated.

City of Minneapolis sanitarians visited the school kitchen on February 8 to perform an environmental assessment and conduct employee interviews.

An illness log of students who reported illness or absence due to gastroenteritis was provided by the school nurse. Ill non-food service staff were interviewed about illness history and foods consumed at school by HCPH. The school's food service contractor provided transaction information for food purchases at the high school on Monday (February 6).

A case was defined as a student or staff member who developed vomiting or diarrhea (by self-report to the school) after February 6. Stool samples from consenting individuals were submitted to the MDH Public Health Laboratory (PHL) for bacterial and viral testing.

The school decided to close at noon on Wednesday, February 8 for the remainder of the week, and hired a cleaning company to clean and sanitize the building during the closure. Games and other after school and weekend activities were also cancelled by the school administration. On February 9, the school also decided to close the school's younger campuses; several illnesses among siblings of high schools students were reported at these campuses.

A total of 36 students and 5 staff met the case definition. Forty (98%) of 41 reported vomiting, 17 (74%) of 23 reported diarrhea, and 7 (50%) of 14 reported fever. Twenty-four (59%) were male. The median age was 17 years (range, 15 to 58 years). An additional 27 students were listed on the illness log provided by the school, which indicated that they had experienced gastrointestinal illness, but information on vomiting or diarrhea was not available to classify them as cases. One student (included in the 27) had onset of a respiratory/throat illness on February 6, which included mild diarrhea that was attributed to an antibiotic. This student was not in school on February 6 and was not classified as a case. Including these 27 students, a total of 63 students (and 5 staff members) were reported to have gastrointestinal illness during the outbreak. The school's enrollment is 340 students (and 90 staff), indicating a school-wide student attack rate of approximately 19%. Illness onsets for cases were February 7–8. Three of the additional 27 students had illness onsets after February 8; these onsets were on February 15 and February 22.

All five non-food service staff members who were interviewed consumed a variety of items for lunch (salad bar, soup, chicken sandwich, deli sandwiches) in the cafeteria on February 6; the median incubation period was 37.5 hours (range, 29.5 to 39 hours). Three staff returned stool specimens to MDH; two were positive for norovirus GII.4 untypeable with identical Region C nucleic acid sequences.

The school uses a contract caterer to provide food service at their cafeteria. Most foods are prepared on site by the kitchen staff. Monday (February 6) lunch consisted of buffalo chicken sandwiches as the hot entrée, made-to-order deli sandwiches, salad bar, and pizza in a grab-and-go hot box. The caterer provided a transaction report from February 6 that included high-level data (e.g., “classic entrée”, “diner station”) on lunch food transactions at the high school.

Among the 36 student cases, transaction records indicated that 35 (97%) had a lunch meal in the cafeteria on Monday, February 6. Among the approximately 278 students not known to be ill, 228 (82%) had a lunch purchase on Monday. Odds of a Monday lunch transaction were 7.7 times higher among cases than those not known to be ill (95% confidence interval [CI], 1.4 to 160.5; $p = 0.016$).

Based on the high-level nature of transaction data, a detailed meal item analysis was not possible. However, among Monday transactions, consumption of a “classic entrée” was significantly associated with known case status (27 of 36 cases vs. 99 of 228 non-cases; odds ratio, 4.4; 95% CI, 1.9 to 10.7; $p < 0.001$). No other transaction items were associated with case status. Results were similar when ill students who did not meet the case definition were included together with cases.

The six kitchen employees were interviewed; two reported recent gastrointestinal illness. One employee who worked February 1–7 as a prep cook reported onset of vomiting, cramps, and diarrhea at 1:00 a.m. on February 8. Another employee who worked as the chef (making salad and pizzas) on February 6 reported vomiting from 7:30 p.m. through 9:00 p.m. on Sunday, February 5.

Prospective illness symptom screening of kitchen employees as they arrived for their shift was implemented during the investigation. No additional illnesses were identified. Handwashing and glove use observed in the kitchen during the environmental assessment were appropriate. Self-service food items (including a “grab-and-go” reach-in hot box with pizza and other items, and the salad bar) were removed during the investigation. The school also sent a letter home with students containing information about norovirus and promoted handwashing before lunch and snacks.

As a result of the investigation, the food service contractor decided to meet with food service employees to share the outbreak summary information and review procedures and practices for employee illness exclusions.

This was a foodborne outbreak of norovirus gastroenteritis associated with Monday lunch, specifically a “classic entrée” purchase, served at a high school cafeteria. A food worker who reported recent illness and was suspected to be infectious while working on Monday was the most likely source of contamination.