Investigating a Diarrhea Outbreak Associated with Centralized School Lunch Program, New Taipei City, Taiwan, November 2016

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Background: In Taiwan, school lunch program often use caterers with centralized kitchen, which potentially increases the risk of larger foodborne outbreaks because foods are prepared long before serving. On November 4, 2016, Taiwan CDC was notified of gastroenteritis outbreaks in two schools served by the same caterer and 361 of 1,686 students who consumed school lunch were ill. We investigated the outbreak to identify etiology and food vehicles.

Methods: We conducted a case-control study among 9th grade students in one school using a self-administered questionnaire. We defined cases as illnesses in students who developed diarrhea or abdominal pain within 72 hours after consuming school lunch on November 3. We performed bivariate analyses to identify associated food items. Human stools from ill students and food handlers along with food samples were collected to test for common foodborne pathogens and *Bacillus cereus* toxin genes. Food distribution process was reviewed.

Results: 229 of 241 (95%) students targeted completed questionnaires. Of the 54 (28%) cases, median incubation period was 10 hours (range 0–60). The main symptoms were diarrhea (85%) and abdominal pain (80%). Compared with 138 controls, consuming pork slices with mashed garlic (OR 17.74, 95% CI 1.05–300.60) and grapes (OR 2.10, 95% CI 1.04–4.25) were associated with illness, but only the former was served to both schools. Specimens of leftovers and one food handler tested positive for *Bacillus cereus* with enterotoxin gene nhe, but specimens from ill students were culture-negative. Review of food distribution showed that it took at least 2 hours for prepared foods to be served to students.

Conclusion: Long period between food preparation and food service allowed *Bacillus cereus* spores to multiply on pork slices with mashed garlic. We recommend school caterer to review processes for preparing school meals and store cooked meals at proper temperature to ensure food safety.