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Foodborne illness outbreak due to *Staphylococcus aureus* among hospital staff following Hurricane Harvey

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To the Editor—After Hurricane Harvey, an outbreak of foodborne illness occurred at a hospital in Houston. An investigation implicated a donated catered meal contaminated with *Staphylococcus aureus*. Prompt investigation and interventions prevented the disruption of patient care.

The Centers for Disease Control and Prevention (CDC) estimates that 48 million people in the United States develop foodborne disease each year.[1,2] More than 9 million cases are due to food contaminated with 1 of 31 known foodborne illness pathogens.[1] Gastrointestinal illness after natural disasters result from the disruption of public works or pathogen transmission in crowded temporary housing.[3,4] We report a foodborne outbreak that occurred at a hospital in Houston, Texas, in 2017 following Hurricane Harvey.

On September 1, 2017, a donated catered meal was served to staff in the hospital cafeteria. The following day, infection control (IC) staff were notified of several cases of gastrointestinal illness among staff who had consumed the meal.

Investigation

The meal was delivered to the hospital and was received by the manager of food services. He was interviewed on September 2, 2017, to collect information about the menu and food condition when it was delivered and served. All food was served within 2 hours of arrival.

Staffing logs were used to identify individuals who were working on September 1, 2017. A case was defined as any staff present when the meal was served that developed acute onset of gastrointestinal symptoms (eg, emesis, diarrhea, abdominal pain, cramping, or bloody stool).

A questionnaire that assessed food consumed, environmental exposures, and symptoms was administered to all potentially exposed staff. Leaders notified staff of the possible foodborne outbreak and administered the questionnaire. Data from completed questionnaires were collated for our retrospective cohort study. Attack rates and risk ratios for specific food items were calculated. The Harris County Health Department was notified.

Control Measures

Staff were instructed not to eat any leftover food. The food was secured, and samples of pork sausage, pulled pork, brisket, and

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Table 1. Food Items Served at Catered Buffet and Relative Risk of Acute Gastrointestinal Illness Among Hospital Staff

Exposure	Illness in Those Who Ate Specified Food, No./Total No. (%)	Illness in Those Who Did Not Eat Specified Food, No./Total No. (%)	Relative Risk (95% CI)
Brisket	36/55 (65)	14/25 (56)	1.17 (0.79–1.74)
Pulled pork	32/45 (71)	17/35 (49)	1.46 (0.99–2.16)
Pork sausage	21/27 (78)	28/53 (53)	1.47 (1.06–2.04)
Chicken	14/25 (56)	35/55 (64)	0.88 (0.59–1.31)
Hot dogs	5/7 (71)	44/73 (60)	1.19 (0.72–1.96)
Chips	13/18 (72)	36/62 (58)	1.24 (0.87–1.76)
Cookies	1/2 (50)	48/78 (62)	0.81 (0.20–3.28)
Yogurt parfait	10/12 (83)	39/68 (57)	1.45 (1.05–2.01)

chicken were submitted to a certified food safety reference laboratory for testing.

Ill hospital staff were excluded from work until resolution of symptoms for 24 hours. Hand hygiene practice was emphasized, and nursing staff were instructed to report any patients with new onset vomiting or diarrhea to infection control staff. Medical records of inpatients were reviewed daily for these symptoms and/or orders for stool studies.

Results

All 191 staff who were working at the hospital when the meal was served were contacted, and 92 (48%) reported eating some of the catered meal. Of these 92 consumers, 50 (54 %) reported acute onset of gastrointestinal symptoms within 14 hours of the meal being served and were defined as cases. All ill hospital staff recovered within 24 hours. Those who were well when they were initially contacted remained symptom free. No hospitalized patients developed new gastrointestinal symptoms.

Of the 50 cases, 49 (98%) fully completed the questionnaire, compared to 31 of 42 (74%) asymptomatic hospital staff. The relative risk of illness from eating pork sausage and yogurt was 1.47 (95% confidence interval [CI], 1.06–2.04) and 1.45 (95% CI, 1.05–2.01), respectively (Table 1). Exposure to flood water or flooded homes was not associated with acute gastrointestinal symptoms, and no staff were staying in shelters.

Food items were tested for foodborne pathogens with a short incubation period: *S. aureus*, shigatoxin-producing *E. coli*, and *Bacillus cereus*. *Staphylococcus aureus* were isolated from portions of pulled pork and pork sausage. Testing for *S. aureus* enterotoxins was not available. Brisket and chicken were negative for these pathogens. No yogurt was available for testing. Stool samples from ill staff were not available for testing.

Discussion

Staphylococcus aureus is 1 of 31 known causes of foodborne illness and outbreaks. Foods implicated in *S. aureus* foodborne illness include meats, salads, pastries, and dairy products.[1,2,5–8] In the United States from 1998 to 2008, 458 foodborne disease outbreaks that occurred due to *S. aureus* were reported to the CDC.[2] The source of *S. aureus* contamination is usually colonized or infected food handlers, and if the strain of *S. aureus* produces 1 of several heat-stable enterotoxins, illness may occur even if food is kept at the recommended temperature.[5–7] This outbreak was associated with a catered meal served to hospital staff following a natural disaster. Foodborne outbreaks reported in hospitals have been linked to ill food handlers and/or contaminated foods prepared in the hospital food service department and have impacted both hospital staff and patients.[9] Fortunately, no patients were affected by this outbreak.

In the setting of natural disasters, most foodborne illness is associated with water contamination or transmission of highly contagious agents in crowded living conditions.[4,10] Emergency preparedness for institutions such as hospitals involves securing stockpiles of water and nonperishable food. However, after such disasters, volunteers often donate supplies, water, and catered meals, especially for first responders and hospitals. Institutions should be cautious when accepting donations of catered meals and should consider whether safe food handling practices have been followed because foodborne outbreaks can impact the delivery of needed services after natural disasters. Although the outbreak was reported to the health department, the catering business was not immediately investigated given the tremendous disruption of many public health services for weeks following the hurricane.

Limitations include bias introduced by the higher response rate in symptomatic staff. Additionally, we were unable to test yogurt, which had a significantly elevated risk for illness. Testing for *Staphylococcus* enterotoxins and of stool from case patients was not available.

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Laterality of a short-term peripheral intravenous catheter does not affect complications or patient satisfaction: a subanalysis of the One Million Global Peripheral Intravenous Catheter Study

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To the Editor—The One Million Global Peripheral Intravenous Catheter Study (OMG PIVC) was the largest prevalence study to date on the use and management of short-term peripheral intravenous catheters (PIVC) in adult and pediatric inpatients from 49 countries.[1] The authors found that many PIVCs were placed in areas of flexion, were symptomatic or idle, had suboptimal dressings, or lacked adequate documentation, which suggested an inconsistency between recommendations in PIVC management and current practice.[1]

Although few data are available on the effect of laterality on (peripherally inserted) central venous catheters,[2–4] information is completely lacking for PIVCs. Thus, we supplemented the data from the 302 PIVCs our center contributed to the OMG PIVC study with additional variables on PIVC laterality and patient handedness. All other variables were collected as described in detail in the OMG PIVC study.[1]

Our aim was to correlate the laterality of PIVCs placed in the upper extremity with the outcome rates of complications and patient satisfaction. We included 291 of 302 PIVCs (96.4%) that were inserted at the upper extremity and where information on laterality was available. Characteristics such as handedness, bed days at the time of data collection (April 15, 2015) and PIVC insertion position at the upper extremity (wrist and/or hand versus forearm and/or elbow) did not differ significantly depending on the laterality of the PIVC (Table 1). Also, PIVC outcomes and patient satisfaction did not depend on PIVC laterality (Table 1). Based on this, we conclude that laterality should not influence the decision regarding where to insert a PIVC at the upper extremity.

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