



K A N S A S

RODERICK L. BREMBY, SECRETARY

KATHLEEN SEBELIUS, GOVERNOR

DEPARTMENT OF HEALTH AND ENVIRONMENT

Foodborne Outbreak among Staff Members at a Junior High School Finney County, Kansas, February 2005

Report Date:

May 2005

Investigators:

Megan Speers
Finney County Health Department
Melissa Hathaway
Finney County Health Department
Mary Ella Vajnar, Medical Investigator
Epidemiologic Services Section
Kansas Department of Health and Environment
School Nurse
Junior High School X
Finney County, Kansas

Author:

Jennifer M. Hill, MPH, Epidemiologist
Epidemiologic Services Section
Bureau of Epidemiology and Disease Prevention
Kansas Department of Health and Environment

BACKGROUND

On February 18, 2005, the staff members at Junior High School X held a potluck luncheon. Several staff members brought in food that was either store-bought or prepared at home. Individuals began eating shortly after 10am with most people eating between 11am and 1pm. Staff members reported illness within several hours after eating at the luncheon.

During a routine inspection of the cafeteria at Junior High X on February 22, school officials made the Bureau of Consumer Health aware of the possible foodborne outbreak associated with the potluck of February 18, 2005. The Bureau of Consumer Health notified Epidemiology Services Section (ESS) on February 22, 2005 of the potential outbreak. ESS then notified the Finney County Health Department (FILHD) and the Kansas Department of Education.

DIVISION OF HEALTH

Bureau of Epidemiology and Disease Prevention
Epidemiologic Services Section

CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 210, TOPEKA, KS 66612-1274

Voice 785-296-8156 Fax 785-291-3775 <http://www.kdhe.state.ks.us>

Disease Reporting & Public Health Emergencies: Toll Free Phone 1-800-427-7317 Toll Free FAX 1-877-427-7318

During the initial investigation, FILHD, ESS, and the school nurse determined that 20 staff members had become ill with diarrhea approximately 8 hours after eating at the potluck meal. One person was hospitalized. Junior High X has a total of 80 staff members, however, the total number of individuals who ate at the luncheon was unknown.

METHODS

Epidemiologic

Our investigation started with the school nurse collecting a line listing of ill individuals to determine the extent of the outbreak. In order to determine the possible source of the outbreak we asked staff members to record food items that they brought to the potluck. We created a questionnaire based on that food list, which was distributed by the school nurse to staff members who ate at the potluck. FILHD collected the completed questionnaires and forwarded them to ESS for data entry and analysis. The data were analyzed using SAS 9.1.

For purposes of our investigation we defined a case as: any staff member who ate food served at the luncheon on February 18, 2005, and became ill with diarrhea on February 18, after the potluck.

Environmental

Since this was a private function and none of the school's licensed kitchen facilities were used to prepare or store the potluck food items, no inspection was performed at the school.

Lab and Clinical

Stool samples were collected from the hospitalized case. No other samples were collected from the cases in this outbreak.

RESULTS

Epidemiologic

Of the thirty-two questionnaires returned, 31 individuals ate at the potluck. Seventeen (17) of the 31 individuals who ate at the luncheon met the case definition for this outbreak. The individuals in the cohort were predominately female (84%) and were 20-49 years of age (55%). The ill and non-ill groups do not differ among gender, age, and occupation (Appendix).

The three most common symptoms reported by the cases were diarrhea, stomachache and nausea (Table 1). One individual was hospitalized with bloody diarrhea and complications from an underlying gastrointestinal disorder. The median incubation time for illness was 8.1 hours and the median duration of illness was 73 hours (3 days) (Figure 1).

Table 1: Distribution of symptoms in individuals who met the case definition among staff members who ate the potluck lunch in Finney County, February 2005.

Symptoms	Number (%)
Diarrhea	17 (100)
Stomach Ache	16 (94.1)
Nausea	11 (64.7)
Muscle Ache	8 (47)
Chills	6 (35.3)
Fever	3 (17.6)
Bloody Diarrhea	2 (11.8)
Vomiting	1 (5.9)

All food items were initially examined but only those items that were eaten at the potluck by more than 6 individuals were included in the analysis (Table 2). Less than 11 (35%) people reported eating several of the analyzed foods (*). Individuals who ate the green chili were 15.2 times more likely to become ill when compared to those who did not eat the green chili.

LABORATORY

The single stool specimen collected from the hospitalized case tested negative for enteric pathogens. However, the case had been on antibiotics for 48 hours prior to testing for pathogens.

Figure 1: Number of persons meeting the case definition based on onset of symptoms, in hours, Finney County, February 2005.

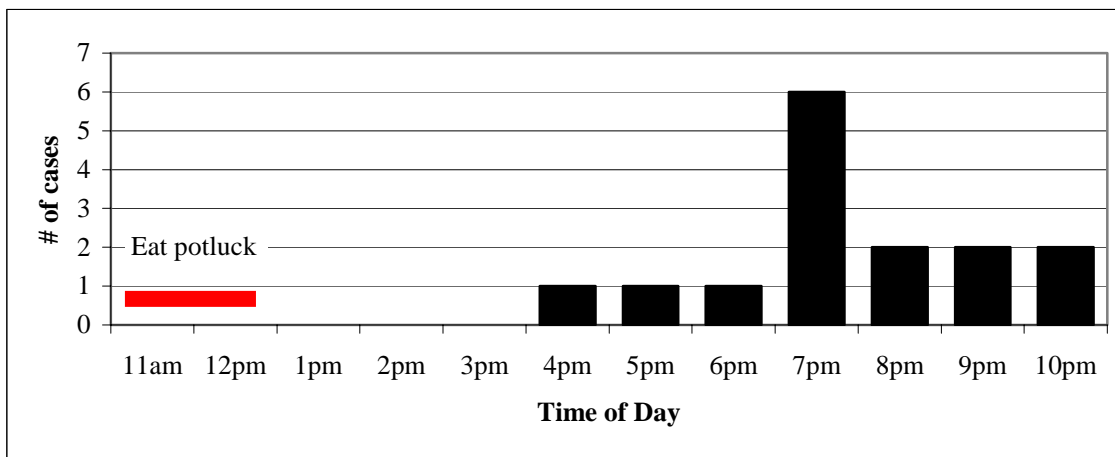


Table 2: Attack Rates and Relative Risks for Food Items Eaten at Potluck at a Junior High School, Finney County, KS on February 18,2005.

Food	# Ill / # Exposed (attack rate)	# Ill / # Not Exposed (attack rate)	Relative Risk (95% CI)
Angel food Cake*	2/7 (30%)	15/24 (62%)	0.45 (0.1, 1.5)
Apple Pie*	7/10 (70%)	10/21 (48%)	1.5 (0.8, 2.7)
Brownie*	5/7 (71%)	12/24 (50%)	1.4 (0.8, 2.6)
Cheese	10/17 (59%)	7/14 (50%)	1.2 (0.6, 2.3)
Flour Tortillas	8/11 (73%)	9/20 (45%)	1.6 (0.9, 3.0)
Green Chili**	17/22 (77%)	0/9 (0%)	15.2 (1.0, 229)
Nacho Cheese Soup*	2/9 (22%)	15/22 (68%)	0.3 (0.1, 1.1)
Pinto Beans	6/11 (54%)	11/20 (55%)	1.0 (0.5, 1.9)

** Note: 0.5 was added to each cell in the analysis of Green Chili to compensate for the 0 ill in the not exposed group.

DISCUSSION

Prior to investigation of the outbreak, some of the staff members decided that the food item causing the illness was the “green chili” due to their observation later in the afternoon that it had begun to foam and had a foul odor. This predetermined perception may have lead to bias in reporting. The item called “green chili” is a South American dish called Caldo de Manguera: A soup made of pig intestines stuffed with blood and rice.

Less than 11 (35% of cohort) people mentioned eat several of the food items. More than 70% of all individuals reported eating the green chili. Seventy-seven percent of the persons eating green chili became ill. Based on this information, the green chili is the most likely cause of the illness.

Only one stool specimen was collected from the ill individuals and no organism was isolated. But based on the symptoms, incubation periods, and foods served, *Clostridium perfringens* toxin is the likely cause of the illness. The incubation period for *Clostridium perfringens* toxin is 6 to 24 hours and the symptoms include diarrhea, nausea, and abdominal cramps. *Clostridium perfringens* is found the gastrointestinal tract of healthy individuals and animals (cattle, fish, pigs, and poultry). In almost all outbreaks, *Clostridium perfringens* toxin is associated with inadequately heated or reheated meats, often stews, meat pies and gravies made from beef, chicken or turkey (Heymann 2004).

LIMITATIONS

One limitation of this outbreak is the amount of time between the outbreak and when it was reported (4 days) resulting in potential recall bias. Also, more stool specimens were needed for testing. Another limitation is that most persons seemed to have decided on the cause of the illness prior to the outbreak investigation.

RECOMMENDATIONS

Persons preparing food at home should remember the following steps to keep food safe:

- Clean – Wash hands and surfaces often.
- Separate – Don't cross contaminate food items.
- Cook – Cook to proper temperatures.
- Chill – Refrigerate promptly.

Also, prepared foods that need to be reheated must reach a temperature of 165°F and be kept at or above 145°F. Cold foods should be placed on ice and kept at 40°F. Perishable food items, such as meat, poultry, eggs, and casseroles should not be left out in the “danger zone” (40-140°F) for more than two hours. These recommendations were taken from “Cooking for Groups: A Volunteer's Guide to Food Safety” USDA, Food Safety and Inspection Service. (<http://www.fsis.usda.gov/OA/pubs/cfg/CookGroups.pdf>)

ACKNOWLEDGEMENTS

Megan Speers – Finney County Health Department
Melissa Hathaway – Finney County Health Department
Mary Ella Vajnar – KDHE, ESS
School Nurse – Junior High School in Finney County

SUPPORTING DOCUMENTS

Questionnaire
Spoon and Fork Form - Final

APPENDIX Age, Gender, and Occupation of Cohort and of Ill and Non-Ill Persons

	All number (%)	Ill number (%)	Non-ill number (%)
Age (years)			
Mean	45.8	44.3	47
Median	48.2	48	48.5
Range	24.6-79.1	24.6-60.1	24.6-79.1
Gender			
Female	26 (84)	14 (82.3)	12 (85.7)
Male	5 (16)	3 (17.6)	2 (14.3)
Occupation			
Teacher / Para Teacher	23 (74.2)	14 (82.3)	9 (64.3)
Other	6 (19.3)	2 (11.8)	4 (28.6)
Adminstration	1 (3.2)	—	1 (7.1)
Unknown	1 (3.2)	1 (5.9)	—

There is no statistical difference by the descriptive characteristics, between those who were ill and those who were not ill.