“Out of Sight, Out of Mind” Case Studies

Failure to cool foods properly results in Confirmed Foodborne Illness Outbreaks in Minnesota (2002)

Small Group Activity Directions: Choose one person to read the case study to the group. Choose one person to be the recorder. Read the case study. Discuss the questions that follow the case study.

Case Study 1: Foodborne Bacterial Intoxications Associated with a Restaurant

January 2002 Hennepin County

On January 23, 2002 the Minnesota Department of Health (MDH) foodborne illness hotline received a complaint. Ten construction workers became ill after eating lunch at a Mexican restaurant. Food eaten included taco salad, chicken dishes, chips, rice, beans, pop and water with ice. Six of the 10 construction employees were interviewed by MDH. All report diarrhea and became ill within 7 to 16.5 hours after eating lasting 7 to 16.5 hours.

The local health inspector visited the establishment. The owner stated that all food is served on the day it is cooked. The health inspector found rice and beans stored in the walk-in cooler. The items in the cooler were kept in pans of various sizes, with depths ranging from 3 inches to 6 inches. A tub of rice, which had been cooked the day before, was found at an internal temperature of 50°F. The hot rice had been put in the cooler the previous night at closing time. The on-site food thermometer was not calibrated and was not being used.

MDH investigators concluded this was an outbreak of foodborne bacterial intoxications associated with a restaurant. The epidemiologic and clinical characteristics of the illnesses were consistent with intoxications caused by *Clostridium perfringens* or *Bacillus cereus*. Because of the small number of cases and lack of controls, no food vehicle could be determined. It is likely that time-temperature abuse of chicken, rice, beans, sauces, and/or other food items contributed to the outbreak.


Discussion Questions:

Summarize the case study: **6 confirmed** (#) people got sick after eating lunch at a Mexican restaurant taco salad, chicken dishes, chips, rice, and beans (list types of foods). The intoxications were caused by **Clostridium perfringens** or **Bacillus cereus** (name the bacteria).

Contributing factors that led to this outbreak included **time-temperature abuse of chicken, rice, beans, sauces, etc.**

1. What are the concerns when cooling thick dense items like rice or beans?
   - **Very thick and dense items are very hard to cool.**

2. What are the temperature requirements for cooling food?
   - **From hot to 70°F within 2 hours and then to 41°F within 4 hours.**

3. Discuss how you cool the items implicated in this outbreak quickly.
   - **Review best practices.**
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**Case Study 2: Foodborne Bacterial Intoxications Associated with a Chicken**

**March 2002  Olmsted County**

Forty-three people became ill after eating at a Mexican restaurant. Symptoms appeared within 2 to 25 hours (average was 12 hours) after eating and lasted an average of 16 hours (range from 1 to 93 hours). Of the 43 cases, 42 (98%) had diarrhea, 30 (70%) had cramps, 22 (51%) had chills, nine (21%) had headache, and eight (19%) had vomiting. 68% of the cases ate chicken-containing dishes.

Findings: *Clostridium perfringens* enterotoxin type A was identified in two stool samples; *Staphylococcus aureus* and *S. aureus* enteotoxin A also were found in one of these samples. *Bacillus cereus* and *B. Cereus* diarrheal-type enterotoxin were identified in a third stool sample.

Two samples of beans from the restaurant were tested. One sample of the beans was positive for *B. cereus* diarrheal-type enterotoxin.

County health inspectors found critical food handling violations including significant bare-hand contact with ready-to-eat foods and improper cooling procedures. Beans in the walk-in cooler were 52°F. The storage time could not be verified. Food containers blocked one hand sink, and fingernail brushes and single-use paper towels were not present at the other hand sinks. There was an accumulation of dirt and debris in many areas of the restaurant and on some equipment and food storage containers.

Conclusion: This was an outbreak of foodborne bacterial intoxications associated with a Mexican restaurant. Consumption of chicken was associated with illness. Improper cooling and reheating of foods likely contributed to the outbreak.

Adapted from Minnesota Department of Health, 2002 Gastorenteritis Outbreak Summary, [http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html](http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html)

**Discussion Questions:**

Summarize the case study: **43 (#) people got sick after eating at a Mexican Restaurant**; chicken dishes and beans (list types of foods). The intoxications were caused by *B. Cereus* or *Clostridium perfringens* (name the bacteria).

Contributing factors that led to this outbreak included bare hand contact (Staph), improper cooling and reheating of beans and chicken.

1. How could this outbreak have been prevented?
   - Add to standard operating procedures (SOP) and recipe
   - Prep food same day
   - Train employees on the importance and how to cool food.

2. Discuss how you handle ready-to-eat foods in your work place.
   - For the past 20 plus years over 60% of the outbreaks in Minnesota have been linked to viruses. Viruses come from us—a human disease transferred to other humans through food from unclean hands. Don't use bare hands to touch ready-to-eat foods.

3. What are the temperature requirements for cooling foods?
   - From hot to 70°F within 2 hours and then to 41°F within 4 hours
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**Case Study 3: Clostridium perfringens Intoxications Associated with a Restaurant**

**March 2002       Anoka County**

A restaurant patron called the Minnesota Department of Health (MDH) Foodborne illness hotline to report a suspected Foodborne illness that began after he and three other people ate lunch at a restaurant. It was the only meal the four patrons had in common. All four patrons (100%) had diarrhea and abdominal cramps, two (50%) reported fever, one (25%) had vomiting. Symptoms started within 5 to 18 hours after eating lunch. The illness lasted an average of 19 hours (range from 8 to 20 hours). Two of the four cases reported eating refried beans. One stool sample tested positive for *Clostridium perfringens* toxin.

Conclusion: The local sanitarian noted several critical food handling violations at the restaurant including improper cooling and storing of refried beans, no thermometers, and the lack of a certified food manager.

Adapted from Minnesota Department of Health, 2002 Gastorenteritis Outbreak Summary, [http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html](http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html)

**Discussion Questions:**

Summarize the case study: **4** (#) people got sick after eating ___________________________
refried beans ___________________________ (list types of foods). The intoxications were caused by *Clostridium perfringens* ___________________________ (name the bacteria).

Contributing factors that led to this outbreak included ___________improperly cooled refried beans—no ___________monitoring of temperatures.

1. What are the concerns when cooling thick dense foods like refried beans?
   - **Very thick and dense—hard to cool.**

2. How can refried beans be cooled properly?
   - **Put in shallow metal pans and put in an ice water bath—stir every 15 minutes, monitor temperatures.**

3. What are the temperature requirements for cooling food?
   - **From hot to 70°F within 2 hours and then 41°F within 4 hours.**

4. What if you don’t meet the requirements?
   - **Reheat to 165°F and start over or throw food.**

5. How do you ensure that foods are cooled correctly in your workplace?
   - **Train employees**
   - **Add cooling food to SOPs and recipe**
   - **Monitor that it’s been done—Check cooling logs.**
   - **Add cooling to “Closing Checklist”**.
**Case Study 4: Clostridium perfringens Intoxications Associated with Chicken**

**November 2002 Olmsted County**

Two separate food related illness complaints prompted a foodborne outbreak investigation at a restaurant in Rochester, Minnesota. Forty-one patrons were interviewed. Nine patrons met the case definition. Symptoms included diarrhea (100%), abdominal cramps (78%), sweats/chills (44%), nausea (33%) and headache (33%). Incubation periods ranged from 1 to 14 hours with an average of 12 hours. The average illness lasted 10 hours, ranging from 2 to 25 hours. Chicken was implicated as the source. Clostridium perfringens enterotoxin type A was detected in three stool samples and one stool also contained Staphylococcus aureus and S. aureus enterotoxin A.

- Employees reported that the chicken was boiled and then cooled completely before being shredded. Further questioning revealed that the standard procedure was to partially cool the boiled chicken by direct contact with ice. After the chicken was cool enough to handle, it was to be shredded and portioned into pans that were then placed in the walk-in cooler to finish cooling. Cooled, shredded chicken was then combined with other ingredients, heated on the stove, and transferred to the steam table. After interviewing other employees, the quantity of chicken prepared was larger than usual and may have been left at room temperature for an extended period of time because staff was not available to finish preparation.

At a later date the sanitarian visited the restaurant to observe the cooling procedures and found chicken stored in 6-inch pans (chicken was 5 inches deep) in the walk-in cooler. The temperature of that chicken was 37°F at the time of the assessment. Food workers were unable to provide documentation that the chicken was adequately cooled within 6 hours.

Conclusion: This was an outbreak of Clostridium perfringens intoxications associated with eating at a restaurant. Foods containing chicken were associated with illness. Improper cooling of chicken was a contributing factor.

Adapted from Minnesota Department of Health, 2002 Gastorenteritis Outbreak Summary, [http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html](http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/outbreaksummary.html)

**Discussion Questions:**

Summarize the case study: _______9____ (#) people got sick after eating **chicken products** (list types of foods). The intoxications were caused by **Clostridium perfringens** (name the bacteria). Contributing factors that led to this outbreak included **improper cooling of food**

1. How could this outbreak have been prevented?
   - Using a quick-chill method
   - Monitor cooling temperatures
   - Train employees
   - Add cooling to SOPs and in recipes
   - Add cooling to top of the closing check list.

2. What are the temperature requirements for cooling foods?
   - From hot to 70°F within 2 hour and then 41°F within 4 hours

3. Discuss your standard operating procedures for cooling food.
   - Do you have one? You should for each food you cool.