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Keeping Food Safe

Chapter Overview

This chapter introduces students to the fundamentals of preventing foodborne illnesses.

Learning Objectives

- 1-1** Explain what a foodborne illness is and how to determine when one has occurred
- 1-2** Summarize the challenges to food safety, and the five common risk factors that can cause foodborne illness
- 1-3** Identify types of contaminants and state the methods of prevention
- 1-4** Define TCS food and ready-to-eat food
- 1-5** Identify high-risk populations
- 1-6** Summarize the food safety responsibilities of the person in charge of a foodservice operation

Opening Case Study

1. What could have been done to prevent the outbreak?

Answer: In this case, the disease-causing microorganism nontyphoidal *Salmonella* was transferred from raw chicken to cooked chicken. Even if the finished product had been properly cooked to safe temperatures, it was made unsafe when contaminated by the raw product. This could have been prevented with correct cleaning and sanitizing, use of separate tools and equipment, and proper handwashing and glove use. Separate utensils, such as cutting boards, tongs, and knives, should have been used for the raw and ready-to-eat products. Employees should have washed their hands and changed gloves when switching from raw to ready-to-eat products.

Chapter Breakdown

Pages 4 to 5

1.1 Foodborne Illnesses

Resources

PowerPoint Slides 3 to 5

Reinforce and Review:

- A foodborne illness is a disease transmitted to people by food. A foodborne illness is considered an outbreak when two or more people have the same symptoms after eating the same food.
- Operations face many challenges to food safety. These include time pressure and potentially unsafe supplies, including food formerly considered safe from pathogens, such as produce. Operations also face an increase in high-risk populations and challenges related to staff.
- A foodborne illness costs both guests and operations. An operation may experience negative publicity, decreased business, lawsuits and legal fees, increased insurance premiums, and personnel issues.

Key Terms

- **Foodborne illness:** Illness carried or transmitted to people by food.
- **Foodborne-illness outbreak:** An incident in which two or more people experience the same illness symptoms after eating the same food. An investigation is conducted by the state and local regulatory authorities, and the outbreak is confirmed by a laboratory analysis.

Knowledge Check Answers

1. Common challenges to food safety include:
 - Time available for food safety
 - Differing languages and cultures in the operation
 - Varying levels of literacy and education
 - A variety of pathogens
 - Unapproved suppliers
 - An increasing number of guests who are in high-risk populations
 - Staff turnover can leave less time for ongoing food safety training
2. A foodborne illness is a disease transmitted to people by food.

Chapter Breakdown

Pages 6 to 12

1.2 How Foodborne Illnesses Occur

Resources

PowerPoint Slides 6 to 13

Reinforce and Review:

- Food handlers who do not follow correct procedures can also threaten the safety of food. They can do this when they fail to cook food enough and when they hold it at incorrect temperatures. Food handlers can also cause an illness when they use contaminated equipment and when they practice poor personal hygiene.
- Food has been time-temperature abused when it has stayed too long at temperatures that are good for the growth of pathogens.
- Pathogens can be transferred from one surface or food to another. This is called cross-contamination. Pathogens can be spread to food if equipment has not been cleaned and sanitized correctly between uses.
- Pathogens grow well in TCS food. To prevent this growth, this food needs time and temperature control.
- Some groups are at a higher risk of getting sick from unsafe food. They include pre-school-age children, the elderly, people with cancer who are undergoing chemotherapy, people with HIV/AIDS, transplant recipients, and people on certain medications.
- Important prevention measures for keeping food safe include controlling time and temperature; preventing cross-contamination; practicing good personal hygiene; purchasing from approved, reputable suppliers; and cleaning and sanitizing items correctly.

Key Terms

- **Contamination:** Presence of harmful substances in food. Some food safety hazards occur naturally, while others are introduced by humans or the environment.
- **Time-temperature abuse:** When food has stayed too long at temperatures that are good for the growth of pathogens; for example, when food is not held or stored correctly, not cooked or reheated correctly, or not cooled correctly.
- **Cross-contamination:** The transfer of pathogens from one surface of food to another.
- **TCS food:** Food that requires time and temperature control to limit the growth of pathogens. TCS stands for time and temperature control for safety.
- **Ready-to-eat food:** Any food that can be eaten without further preparation, washing, or cooking; for example, cooked food, washed fruits and vegetables (whole and cut), and deli meats. Bakery items, sugars, spices, and seasonings are also considered ready to eat.
- **High-risk populations:** People susceptible to foodborne illness due to the effects of age or health on their immune systems, including preschool-age children, older adults, and people with compromised immune systems.
- **Immune system:** The body's defense system against illness. People with compromised immune systems are more susceptible to foodborne illness.

Knowledge Check Answers

1. The common risk factors are:

- Purchasing food from unsafe sources
- Failing to cook food correctly
- Holding food at incorrect temperatures
- Using contaminated equipment
- Practicing poor personal hygiene

2. Answers may vary but could include:

- Milk and dairy products
- Meat
- Fish
- Baked potatoes
- Shell eggs (except those treated to eliminate nontyphoidal *Salmonella*)
- Poultry
- Shellfish and crustaceans
- Heat treated plant food such as cooked rice, beans, and vegetables

CLASSROOM ACTIVITY: Imagining Risks

LO 1-2: Summarize the challenges to food safety and the five common risk factors that can cause foodborne illness

Materials: Blank paper

1. Divide students into five groups.
2. Assign each group one of the five most common food-handling risks that can lead to a food-borne illness.
3. Give groups 5–10 minutes to come up with three scenarios that could cause the risk factor they were assigned (ex: a chef purchases mushrooms from a friend who foraged them).
4. Ask groups to present their scenarios to the class.

Chapter Breakdown

Pages 12 to 16

1.3 Managing Food Safety

Resources

PowerPoint Slides 14 to 16

Reinforce and Review:

- A Certified Food Protection Manager must show that he or she has the required knowledge by passing a test from an accredited program. The presence of a Certified Food Protection Manager is believed to reduce the risk of foodborne-illness outbreak in an establishment.

Key Terms

No key terms for this section

Knowledge Check Answers

1. In most cases, the FDA *Food Code* requires that the person in charge of a foodservice operation be onsite at all times during operating hours. There may be exceptions to this when regulatory authority has determined that the operation poses a minimal risk for causing foodborne illness, such as in cashierless markets and convenience stores. In such cases, the person in charge may not be required to be onsite at all times.
2. Answers will vary but could include:
 - Food handlers are regularly monitoring food temperatures during hot and cold holding.
 - Food is not prepared in a private home or in a room where people are living or sleeping.
 - People other than food handlers are restricted from prep, storage, and dishwashing areas. If other people are allowed in these areas, steps are taken to protect food, utensils, and equipment from contamination.
 - Maintenance and delivery workers follow food safety practices while in the operation.
 - Staff handwashing is monitored in the operation.
 - The inspection of deliveries is monitored to ensure that food is received from an approved source, is received at the correct temperature, and has not been contaminated.
 - Food delivered after-hours is monitored to make sure it is received from an approved source, stored in the correct location, protected from contamination, and accurately presented.
 - Food handlers are monitored to make sure TCS food is cooked to required temperatures. Temperatures are checked using calibrated thermometers.
 - Food handlers are monitored to make sure TCS food is cooled rapidly.
 - Consumer advisories are posted notifying guests of the risk of ordering raw or partially cooked food.
 - Cleaning and sanitizing procedures are monitored to make sure sanitizer solutions are the correct temperature and concentration and remain in contact with items for the correct amount of time.

- Guests are notified that they must use clean tableware when returning to a self-service area.
- Staff members are handling ready-to-eat food with utensils or single-use gloves.
- Staff members are trained in food safety, including allergy awareness.
- Staff members, including conditional staff members, reporting illnesses and symptoms of illnesses that can be transmitted through food.
- Food safety procedures are written down, implemented, and maintained where required by the regulatory authority.

End of Chapter

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Discussion Questions

1. What are the potential costs associated with foodborne-illness outbreaks?

Costs include:

- Loss of guests and sales
- Loss of reputation
- Negative media exposure
- Lawsuits and legal fees
- Increased insurance premiums
- Lowered staff morale
- Staff absenteeism
- Staff retraining
- Closure of the operation
- Human costs, such as lost work, medical costs, long-term disability, and death

2. Why are the elderly at a higher risk for getting foodborne illnesses?

As people age, there are changes in their organs. For example, stomach-acid production decreases as people get older. This allows more pathogens to enter the intestines. A change in the stomach and intestinal tract also allows the body to store food for longer periods. This gives toxins more time to form.

3. What are the three major types of contaminants?

The three major types of contaminants are biological, chemical, and physical. Biological contaminants include bacteria, viruses, parasites, and fungi. Chemical contaminants include foodservice chemicals such as cleaners, sanitizers, and polishes. Physical hazards include foreign objects such as metal shavings, staples, bandages, glass, and dirt. Naturally occurring objects, such as fish bones in fillets, are another example.

4. What are some common ways that time-temperature abuse can happen?

Common ways include:

- Food is not held or stored at correct temperatures.
- Food is not cooked or reheated enough to kill pathogens. Food is not cooled correctly.

Page 18

Apply Your Knowledge

Undercooked Chicken Sends Children to the Hospital

1. What caused the outbreak?

The chicken that the children ate was time-temperature abused. It was not cooked enough to kill pathogens, which resulted in the outbreak. The manager of the operation should have been monitoring food handlers to ensure that all food was being cooked to required internal temperatures. The manager and food handlers must also make sure that food is being checked with calibrated thermometers.

2. Why did so many children get sick?

So many children got sick because preschool-age children have a higher risk of getting a foodborne illness. That is because they have not had enough time to build up a strong immune system.

With Power Comes Responsibility

1. What will the regulatory authority hold Russell accountable for in regard to food safety?

Answers may vary but could include:

- Food is not prepared in a private home or in a room where people are living or sleeping.
- People other than food handlers are restricted from prep, storage, and dishwashing areas. If other people are allowed in these areas, steps are taken to protect food, utensils, and equipment from contamination.
- Maintenance and delivery workers follow food safety practices while in the operation.
- Staff handwashing is monitored in the operation.
- The inspection of deliveries is monitored to ensure that food is received from an approved source, is received at the correct temperature, and has not been contaminated.
- Food delivered after-hours is monitored to make sure it is received from an approved source, stored in the correct location, protected from contamination, and accurately presented.
- Food handlers are monitored to make sure TCS food is cooked to required temperatures. Temperatures are checked using calibrated thermometers.
- Food handlers are regularly monitoring food temperatures during hot and cold holding.
- Food handlers are monitored to make sure TCS food is cooled rapidly.
- Consumer advisories are posted notifying guests of the risk of ordering raw or partially cooked food.

- Cleaning and sanitizing procedures are monitored to make sure that sanitizer solutions are at the correct temperature and concentration and remain in contact with items for the correct amount of time.
- Guests are notified that they must use clean tableware when returning to a self-service area.
- Staff members are handling ready-to-eat food with utensils or single-use gloves.
- Staff members are trained in food safety, including allergy awareness.
- Staff members, including conditional staff members, are reporting illnesses and symptoms of illnesses that can be transmitted through food.
- Food safety procedures are written down, implemented, and maintained where required by the regulatory authority.

Page 19**Study Questions**

1. C. When two or more people report the same symptoms from eating the same food
2. A. Food requiring time and temperature control for safety
3. B. New staff training leaves less time for ongoing food safety training
4. D. Tofu
5. C. practicing poor personal hygiene.
6. A. Cross-contamination
7. C. Time-temperature abuse
8. D. Poor cleaning and sanitizing