1

Providing Safe Food

Foodborne Illness at a Local Café

Dozens of people became sick at a small café. Guests who ate the café's famous baked potato salad called to complain of nausea and vomiting. These calls began within two days after eating the dish. Guests eventually experienced double vision and difficulty in speaking and swallowing.

The local regulatory authorities investigated. They found that the baked potatoes in the salad were the source of the outbreak. The potatoes had been wrapped in aluminum foil when they were baked. Then they were left on a prep table overnight to cool. Ultimately, the potatoes were left at room temperature for almost 18 hours before they were used in the salad. Bacteria on the potatoes had the correct conditions for growth.

You Can Prevent This

The guests became sick because the staff at the café did not know that baked potatoes might contain bacteria. When the staff did not handle the potatoes with care, bacteria on the potatoes grew to high levels. Preventing foodborne illnesses like this is one of your most important tasks as a manager. This chapter will introduce you to some basic concepts and principles for keeping food safe.

Study Questions

- What is a foodborne illness and what is a foodborne-illness outbreak?
- What are TCS and ready-to-eat food?
- What are the five risk factors for foodborne illness?
- Which populations have a higher risk for foodborne illness?
- How can you help to keep food safe in your operation?
- What are the roles of government agencies in keeping food safe?

Foodborne Illnesses

Being a foodservice manager is not easy. You have responsibilities to your operation, your staff, and your customers. The best way to meet those responsibilities is to keep the food you serve safe. To start, you must learn what foodborne illnesses are and the challenges you will face in preventing them. You simply can't afford not to. The costs of a foodborne-illness outbreak can be devastating.

Challenges to Food Safety

A **foodborne illness** is a disease transmitted to people by food. An illness is considered an outbreak when:

- Two or more people have the same symptoms after eating the same food.
- An investigation is conducted by state and local regulatory authorities.
- The outbreak is confirmed by a laboratory analysis.

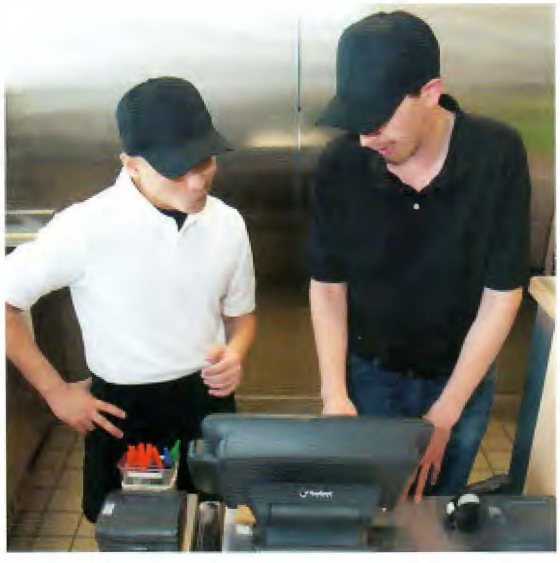
Each year, millions of people get sick from unsafe food.

Foodservice operations work hard to minimize foodborne illnesses. As a result of these efforts, foodborne illnesses have declined in recent years. However, operations still face many challenges to food safety.

Time Pressure to work quickly can make it hard to take the time to follow food safety practices.

Language and culture Your staff may speak a different language than you do. This can make it difficult to communicate. Cultural differences can also influence how food handlers view food safety.

Literacy and education Staff often have different levels of education. This makes it more challenging to teach them food safety.



Pathogens Illness-causing microorganisms are more frequently found on types of food that once were considered safe.

Unapproved suppliers Food that is received from suppliers that are not practicing food safety can cause a foodborne-illness outbreak.

High-risk customers The number of customers at high risk for getting a foodborne illness is increasing. An example of this is the growing elderly population.

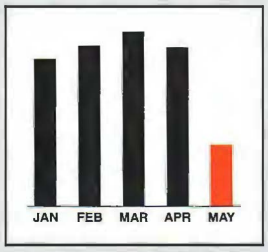
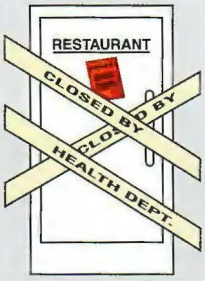
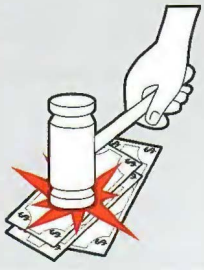
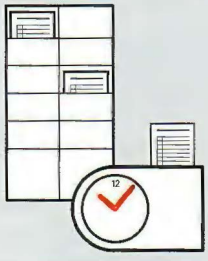
Staff turnover Training new staff, as shown at left, leaves less time for food safety training.

The ServSafe program will provide you with the tools you need to overcome the challenges in managing a good food safety program.

The Cost of Foodborne Illnesses

Foodborne illnesses cost the United States billions of dollars each year. National Restaurant Association figures show that one foodborne-illness outbreak can cost an operation thousands of dollars. It can even result in closure. Some of these costs are shown in Table 1.1.

Table 1.1: **Costs of a Foodborne Illness to an Operation**

Loss of customers and sales		Loss of reputation	
Negative media exposure		Lowered staff morale	
Lawsuits and legal fees		Staff missing work	
Increased insurance premiums		Staff retraining	

Most important are the human costs. Victims of foodborne illnesses may experience the following:

- Lost work
- Medical costs
- Long-term disability
- Death

How Foodborne Illnesses Occur

Unsafe food is usually the result of contamination, which is the presence of harmful substances in food. To prevent foodborne illnesses, you must recognize the contaminants that can make food unsafe. These can come from pathogens, chemicals, or physical objects. They might also come from certain unsafe practices in your operation.

Contaminants

Contaminants are divided into three categories.

Biological Pathogens are the greatest threat to food safety. They include certain viruses, parasites, fungi, and bacteria, as shown at left. Some plants, mushrooms, and seafood that carry harmful toxins (poisons) are also included in this group.

Chemical Foodservice chemicals can contaminate food if they are used incorrectly. The photo at left shows one example of how chemicals may contaminate food. Chemical contaminants can include cleaners, sanitizers, and polishes.

Physical Foreign objects such as metal shavings, staples, and bandages can get into food. So can glass, dirt, and even bag ties. The photo at left shows this type of physical contaminant. Naturally occurring objects, such as fish bones in fillets, are another example.

Each of these contaminants is a danger to food safety. But biological contaminants are responsible for most foodborne illness.

How Food Becomes Unsafe

If food handlers do not handle food correctly, it can become unsafe. These are the five most common food-handling mistakes, or risk factors, that can cause a foodborne illness:

1. Purchasing food from unsafe sources
2. Failing to cook food correctly
3. Holding food at incorrect temperatures
4. Using contaminated equipment
5. Practicing poor personal hygiene

Purchasing food from unsafe sources can be a big problem. So, purchasing food from approved, reputable suppliers is critical. This will be discussed in greater detail later. Keep in mind that food prepared in a private home is also considered to be from an unsafe source and must be avoided. The other food handling mistakes listed are related to four main practices. These include time-temperature abuse, cross-contamination, poor personal hygiene, and poor cleaning and sanitizing. These are identified in Table 1.2 on the following page.

Something to Think About

More than 30 children experienced dizziness, nausea, and vomiting after eating spaghetti at an elementary school cafeteria. According to the regulatory authority, the spaghetti was not heated correctly on the day it was served. It also was not cooled correctly when it was prepared the day before. The cafeteria had to be closed so staff could be retrained on safe food-handling practices.

Table 1.2: **Practices Related to Foodborne Illness**

Time-temperature abuse

Food has suffered **time-temperature abuse** when it has stayed too long at temperatures that are good for the growth of pathogens. A foodborne illness can result if food is time-temperature abused. This can happen in many ways:

- Food is not held or stored at the correct temperature, as shown in the photo at left.
- Food is not cooked or reheated enough to kill pathogens.
- Food is not cooled correctly.

Cross-contamination

Pathogens can be transferred from one surface or food to another. This is called **cross-contamination**. It can cause a foodborne illness in many ways:

- Contaminated ingredients are added to food that receives no further cooking.
- Ready-to-eat food touches contaminated surfaces.
- Contaminated food touches or drips fluids onto cooked or ready-to-eat food, as shown in the photo at left.
- A food handler touches contaminated food and then touches ready-to-eat food.
- Contaminated wiping cloths touch food-contact surfaces.

Poor personal hygiene

Food handlers can cause a foodborne illness if they do any of the following actions:

- Fail to wash their hands correctly after using the restroom.
- Cough or sneeze on food.
- Touch or scratch wounds and then touch food, as shown in the photo at left.
- Work while sick.

Poor cleaning and sanitizing

Pathogens can be spread to food if equipment has not been cleaned and sanitized correctly between uses. This can happen in the following ways:

- Equipment and utensils are not washed, rinsed, and sanitized between uses.
- Food-contact surfaces are wiped clean rather than being washed, rinsed, and sanitized, as shown in the photo at left.
- Wiping cloths are not stored in a sanitizer solution between uses.
- Sanitizing solutions are not at the required levels to sanitize objects.

Apply Your Knowledge

What's the Cause? Write an X next to the 5 most common causes of foodborne illness.

1. _____ **Purchasing food from unsafe sources**
2. _____ **Allowing pests to enter the operation**
3. _____ **Failing to cook food correctly**
4. _____ **Failing to rotate food during storage**
5. _____ **Using contaminated equipment**
6. _____ **Holding food at incorrect temperatures**
7. _____ **Practicing poor personal hygiene**
8. _____ **Failing to store dry food correctly**

For answers, please turn to page 1.18.

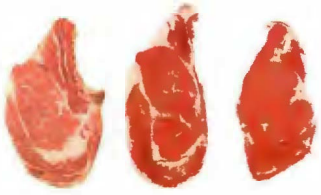
Food Most Likely to Become Unsafe

TCS and ready-to-eat food are the most likely types of food to become unsafe.

TCS Food

Pathogens grow well in TCS food. These items need time and temperature control to limit pathogen growth. For this reason, this food is called TCS food—food requiring time and temperature control for safety. TCS food is shown in Table 1.3 on the following page.

Table 1.3: **TCS Food**

	• Milk and dairy products		• Shell eggs (except those treated to eliminate nontyphoidal *Salmonella*)
	• Meat: beef, pork, and lamb		• Poultry
	• Fish		• Shellfish and crustaceans
	• Baked potatoes		• Heat-treated plant food, such as cooked rice, beans, and vegetables
	• Tofu or other soy protein • Synthetic ingredients, such as textured soy protein in meat alternatives		• Sprouts and sprout seeds
	• Sliced melons • Cut tomatoes • Cut leafy greens		• Untreated garlic-and-oil mixtures

Ready-to-Eat Food

Like TCS food, ready-to-eat food also needs careful handling to prevent contamination. **Ready-to-eat food** is exactly what it sounds like: food that can be eaten without further preparation, washing, or cooking. Ready-to-eat food includes cooked food, washed fruit and vegetables (whole and cut), and deli meat. Bakery items and sugar, spices, and seasonings are also included.

Populations at High Risk for Foodborne Illnesses

Certain groups of people have a higher risk of getting a foodborne illness. These are listed in Table 1.4.

Table 1.4: **High-Risk Populations**

Elderly people

People's immune systems weaken with age. The immune system is the body's defense against illness.

Preschool-age children

Very young children have not built up strong immune systems.

People with compromised immune systems

Certain medical conditions and medications can weaken a person's immune system. These include:

- Cancer or chemotherapy
- HIV/AIDS
- Transplants

Apply Your Knowledge

Which Is It? Write an X next to the food that needs time and temperature control to keep it safe.

1. _____ **Chopped lettuce**
2. _____ **Sliced watermelon**
3. _____ **Dry rice**
4. _____ **Flour**
5. _____ **Cooked carrots**
6. _____ **Cheese**

Who Has a Greater Risk? Write an X next to each group that has a higher risk of getting a foodborne illness because of their immune systems.

1. _____ **School teachers**
2. _____ **College students**
3. _____ **Preschool students**
4. _____ **Health-care providers**
5. _____ **Transplant recipients**
6. _____ **Nursing home residents**

For answers, please turn to page 1.18.

Keeping Food Safe

Now that you know how food can become unsafe, you can use this knowledge to keep food safe. Focus on these measures:

- Purchasing from approved, reputable suppliers
- Controlling time and temperature
- Preventing cross-contamination
- Practicing personal hygiene
- Cleaning and sanitizing

Set up standard operating procedures that focus on these areas. The ServSafe program will show you how to design these procedures in later chapters.

Training and Monitoring

As a manager, your job is more than just understanding food safety practices and creating the necessary procedures. You also must train your staff to follow these procedures, as shown in the photo at right. Staff should be trained when they are first hired and on an ongoing basis. Your entire staff needs general food safety knowledge. Other knowledge will be specific to the tasks performed on the job. For example, everyone needs to know the correct way to wash their hands. However, only receiving staff need to know how to inspect produce during receiving.

Staff need to be retrained in food safety regularly. When a food handler completes this training, document it.

Once staff are trained, monitor them to make sure they are following procedures. At times, you may notice employees doing tasks incorrectly. Each incorrect task could lead to an increase in risk. When this happens, it is important to correct the situation immediately. This is called corrective action. If an employee often completes a task incorrectly or if multiple employees complete a task incorrectly, they should be retrained.

Government Agencies Responsible for the Prevention of Foodborne Illness

Several government agencies take leading roles in the prevention of foodborne illness in the United States. The Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) inspect food and perform other critical duties.

State and local regulatory authorities create regulations and inspect operations, as shown in the photo at left.

Agencies such as the Centers for Disease Control and Prevention (CDC) and the U.S. Public Health Service (PHS) help with food safety as well.

The FDA

The FDA inspects all food except meat, poultry, and eggs. The agency also regulates food transported across state lines. In addition, the FDA issues a *Food Code*. This science-based code provides recommendations for food safety regulations. The *Food Code* was created for city, county, state, and tribal agencies. These agencies regulate foodservice for the following groups:

- Restaurants and retail food stores
- Vending operations
- Schools and day care centers
- Hospitals and nursing homes

Although the FDA recommends that states adopt the *Food Code*, it cannot require it. The FDA also provides technical support and training. This is available for industry and regulatory agencies.

Other Agencies

Several other agencies have an important role in food safety and the prevention of foodborne illness.

USDA The U.S. Department of Agriculture regulates and inspects meat, poultry, and eggs. The USDA also regulates food that crosses state boundaries or involves more than one state.

CDC and PHS These agencies assist the FDA, USDA, and state and local health departments. They conduct research into the causes of foodborne-illness outbreaks. They also assist in investigating outbreaks.

State and local regulatory authorities Regulatory authorities write or adopt codes that regulate retail and foodservice operations. Codes may differ from the FDA *Food Code*, because these agencies are not required to adopt it.

Regulatory authorities have many responsibilities. Here are some of the responsibilities related to food safety:

- Inspecting operations
- Enforcing regulations
- Investigating complaints and illnesses
- Issuing licenses and permits
- Approving construction
- Reviewing and approving HACCP plans

Apply Your Knowledge

Who Does What? Write the letter of the government agency in the space next to the action that agency takes. Some letters may be used more than once.

A. FDA

B. USDA

C. CDC and PHS

D. State and local health departments

1. _____ Writes the codes that regulate retail and foodservice operations

2. _____ Conducts research into the causes of foodborne-illness outbreaks

3. _____ Inspects meat, poultry, and eggs

4. _____ Writes the *Food Code*

5. _____ Inspects retail and foodservice operations

For answers, please turn to page 1.18.

Chapter Summary

- A foodborne illness is a disease transmitted to people by food. An illness is considered an outbreak when two or more people have the same symptoms after eating the same food.
- TCS and ready-to-eat food are especially at risk for contamination. TCS food is food that needs time and temperature control for safety. Ready-to-eat food is food that can be eaten without further preparation, washing, or cooking.
- There are five common risk factors that can cause a foodborne illness. These include (1) purchasing food from unsafe sources, (2) failing to cook food correctly, (3) holding food at incorrect temperatures, (4) using contaminated equipment, and (5) practicing poor personal hygiene. The risk factors are related to these unsafe practices: time-temperature abuse, cross-contamination, poor personal hygiene, and poor cleaning and sanitizing.
- Some groups are at a higher risk of getting sick from unsafe food. They include preschool-age children, elderly people, and people with compromised immune systems. Certain medical conditions and medications can compromise a person's immune system. These include cancer, chemotherapy, HIV/AIDS, and transplants.
- Important prevention measures for keeping food safe are controlling time and temperature; preventing cross-contamination; practicing good personal hygiene; purchasing from approved, reputable suppliers; and cleaning and sanitizing items correctly.
- Train your staff to follow safe food handling procedures. Train staff when they are hired and retrain them on an ongoing basis. Watch to make sure they follow procedures. If you see unsafe food handling practices, take corrective action to keep food safe. Retrain employees as needed.
- Federal, state, and local governments have a role in keeping food safe. The FDA issues the *Food Code*. The FDA, USDA, and state and local regulatory authorities regulate operations. These authorities issue operating permits and licenses for operations and have other responsibilities. The CDC and PHS conduct research and investigations related to food safety.

Chapter Review Case Study

Food safety is important to every foodservice operation, and the costs of a foodborne-illness outbreak can be high. However, you can avoid outbreaks by recognizing the importance of food safety, recognizing how food can become unsafe, identifying the risks associated with high-risk populations, training and monitoring staff, and following the keys to food safety.

Now, take what you have learned in this chapter and apply it to the following case study.

Lucas was not happy because he was working by himself. His coworker had called in sick, and they were expecting their regular Wednesday night group of softball players. Lucas was not feeling too well himself. On top of this, the large group canceled at the last minute. Unfortunately, Lucas had already started cooking a dozen burgers on the grill.

Lucas finished cooking the hamburger patties until they were well-done, and then he put them in a pan on the counter. "Maybe someone will order a burger later," he thought. Because there were no customers yet, he made a quick run to the restroom. When he finished, he wiped his hands on his apron, combed his hair, and headed back to the kitchen.

Twenty minutes later, Lucas got his first customers of the evening. They were an elderly man and his four-year-old granddaughter. Lucas was happy when they ordered a burger to share. "Cook it medium," the man said. It looked like the premade burgers would stay on the counter for a while.

Lucas went back to the kitchen and put a fresh patty on the grill. Then he wiped off the cutting board he had used earlier for prepping raw chicken. He sliced the tomatoes and onion. When the burger just passed medium-rare, he plated it up.

1 What did Lucas do wrong?

2 What should Lucas have done?

For answers, please turn to page 1.18.

Study Questions

Circle the best answer to each question.

1 **What is a foodborne-illness outbreak?**

A When two or more food handlers contaminate multiple food items

B When an operation serves contaminated food to two or more people

C When two or more people report the same illness from eating the same food

D When the CDC receives information on two or more people with the same illness

2 **Which is a ready-to-eat food?**

A Uncooked rice

B Raw deboned chicken

C Sea salt

D Unwashed green beans

3 **Why are preschool-age children at a higher risk for foodborne illnesses?**

A They have not built up strong immune systems.

B They are more likely to spend time in a hospital.

C They are more likely to suffer allergic reactions.

D Their appetites have increased since birth.

4 **Which is a TCS food?**

A Bread

B Flour

C Sprouts

D Strawberries

5 **The 5 common risk factors that can lead to foodborne illness are failing to cook food adequately, holding food at incorrect temperatures, using contaminated equipment, practicing poor personal hygiene, and**

A reheating leftover food.

B serving ready-to-eat food.

C using single-use, disposable gloves.

D purchasing food from unsafe sources.

Study Questions

6 Raw chicken breasts are left out at room temperature on a prep table. What is the risk that could cause a foodborne illness?

A Cross-contamination
B Poor personal hygiene
C Time-temperature abuse
D Poor cleaning and sanitizing

7 What is TCS food?

A Food requiring thermometer checks for security
B Food requiring trustworthy conditions for service
C Food requiring training commitments for standards
D Food requiring time and temperature control for safety

8 A food handler left a pan of roasted turkey breasts to cool at room temperature overnight. In addition to throwing away the turkey, what is an appropriate corrective action?

A Complete an incident report.
B Order additional turkey breasts.
C Deduct the cost from the food handler's pay.
D Make sure the food handler understands safe cooling practices.

9 What is an important measure for preventing foodborne illness?

A Using new equipment
B Measuring pathogens
C Preventing cross-contamination
D Serving locally grown, organic food

10 What is one possible function of a government agency that is responsible for food safety?

A Ensuring a product's appeal
B Approving a construction project
C Monitoring an operation's revenue
D Protecting a product's brand name

For answers, please turn to page 1.19.

Answers

1.7 What's the Cause?

1, 3, 5, 6, and 7 should be marked.

1.10 Which Is It?

1, 2, 5, and 6 should be marked.

1.10 Who Has a Greater Risk?

3, 5, and 6 should be marked.

1.13 Who Does What?

1 D

2 C

3 B

4 A

5 D

1.15 Chapter Review Case Study

Here is what Lucas did wrong:

- He came into work sick.
- He left cooked burgers sitting out at room temperature. This is time-temperature abuse.
- He wore his apron into the restroom. He also did not wash his hands after using the restroom and wiped his hands on his apron. This is poor personal hygiene.
- He sliced tomatoes on a cutting board that had been used for chicken. This is cross-contamination.

Answers

Here is what Lucas should have done:

- He should have called in sick. If Lucas was feeling sick, there is a chance he could have made his customers sick.
- When he realized he had made too many hamburger patties, he should have either stored the burgers in hot holding or thrown them out.
- He should have washed his hands after using the bathroom and after touching his hair. He should have removed his apron before using the restroom.
- When slicing the tomatoes, Lucas should have first washed, rinsed, and sanitized the cutting board. Also, he could have used a separate cutting board.

1.16 Study Questions

1 C
2 C
3 A
4 C
5 D
6 C
7 D
8 D
9 C
10 B