Foodborne Illness Review

What is foodborne illness?

1. Foodborne illness is any disease caused or transmitted by eating contaminated food.

2. Contamination can be caused by bacteria, toxins, viruses, parasites, or any chemicals or non-biological materials that contact food.

3. When two or more people contract the same illness from eating the same food, the CDC defines it as a “foodborne-illness outbreak.”

Foodborne Illness Risk Factors

1. There are five major foodborne illness risk factors. These include:
   - Improper holding temperatures,
   - Inadequate cooking, such as undercooking poultry
   - Contaminated equipment
   - Food from unsafe sources, and
   - Poor personal hygiene

2. The Food Code establishes five key public health activities to protect consumer health. These are:
   - demonstration of knowledge,
   - employee health controls,
   - controlling hands as a vehicle of contamination,
   - time and temperature standard for controlling pathogenic growth,
   - consumer advisory activities

Reasonable Care

1. Most foodborne illnesses can be prevented by implementing proper food safety techniques and operations within your establishment.

2. A foodservice establishment that is sued as the cause of a foodborne illness or outbreak can show that it took “reasonable care” in preventing food contamination.

3. The best way to show reasonable care is to maintain documentation of the activities related to food safety management. You should document the following:
   - all activities related to food safety operations
   - your HACCP or other approved management plan
   - any corrective actions taken when critical limits were not met
any relevant employee training procedures

Symptoms of Foodborne Illness

1. Foodborne illness can cause a painful symptoms, including:
   - Vomiting
   - Nausea
   - Diarrhea
   - Headaches and fever
   - Cramps

2. Sometimes symptoms are felt quickly after eating contaminated food.

3. Some illnesses carry symptoms that are red flags when they are found in food service employees. These symptoms or illnesses may cause a food safety manager to immediately exclude or restrict an employee's access to the food operations in the establishment.

Highly Susceptible Populations (HSP)

1. There are people that are at greater risk of contracting a foodborne illness. We call these groups the Highly Susceptible Population, or HSP. These groups include:
   - People with reduced immune systems (HIV, chemotherapy, etc.)
   - The elderly
   - Children
   - Women who are pregnant

2. These groups are more at risk for foodborne illness because their immune systems are weakened and not strong enough to fight off infection or sickness easily.

3. Because of the higher level of risk associated with HSPs, there are additional regulations and activities you must know and use when serving food to these groups.

Food Contamination

1. Food contamination is when harmful chemicals, microorganisms and/or other substances which can cause foodborne illness are present in food.

2. There are three general categories of food contamination. These are:
   - Biological
   - Physical
Biological Contamination

1. Foodborne illness is usually caused by improper food handling, preparation, or storage. These improper actions can lead to the development and growth of pathogens, which are biological food contaminants.

2. Some pathogens are:
   - Bacteria
   - Viruses
   - Parasites
   - Seafood Toxins
   - Molds and Myotoxins
   - Plant Toxins

3. Pathogens are microorganisms that can grow on food or in your body.

How Pathogens Grow

1. Pathogens need six conditions to grow. An easy way to remember these six conditions is the words FAT TOM. It stands for:
   - Food
   - Acidity
   - Temperature
   - Time
   - Oxygen
   - Moisture

High Risk Foods (TCS)

2. Certain types of food are more likely to have pathogen growth than others. These are called TCS, or "time and temperature control for safety" foods.

3. These foods allow pathogen growth when they are kept at temperatures between 41°F and 135°F. (5°C and 57°C)

4. This range of temperatures is called the "Temperature Danger Zone" because pathogens multiply at a very fast rate when food is kept in this range.

5. A TCS food is any food that requires time/temperature control for safety to limit pathogenic microorganism growth or toxin formation.
6. The manager is responsible for making sure that all foods are received, stored and prepared in the correct times and temperatures.

7. TCS foods include the following:
   - Meats, including beef, pork, and lamb
   - Poultry, including chicken and turkey
   - Fish and seafood
   - Dairy products, including milk and cheese
   - Shell eggs and other egg items
   - Cut melons, including cantaloupe, honeydew, and watermelon
   - Cut tomatoes
   - Cut leafy greens
   - Cooked beans
   - Cooked rice
   - Cooked potatoes
   - Cooked vegetables
   - Garlic-and-oil mixtures
   - Tofu and other soy-protein products
   - Ready-to-eat foods including washed fruits and vegetables, whole or cut, sugar, spices, cooked foods, deli meat, etc.

1. TCS foods can cause illness if temperatures are not proper and safe. Keep these foods strictly hot or cold. Avoid warm temperatures to prevent food safety problems.

**Viruses**

2. Viruses and viral infections are the number one cause of foodborne illness in the US.

3. Foodborne infections from viruses (viral infections) are usually felt within 1 to 3 days of eating contaminated food.

4. Viruses do not grow in contaminated food, but will grow in the person’s body if the food is eaten.

5. Viruses can be transmitted in a variety of ways including person to person, person to contact surface and person to food.

6. Viruses are generally found in saliva, mucous, blood and feces of an infected person.

7. Proper hygiene and handwashing practices are the best way to prevent the transmission of viruses. Eliminating bare-hand contact with ready-to-eat food is another good way to prevent viral contamination.

8. Most virus contamination occurs when an infected person comes into contact with the food item. You can minimize the risk of viral contamination by:
   - Requiring proper employee handwashing
   - Requiring good employee personal hygiene habits
   - Eliminating bare-hand contact with ready-to-eat-foods
   - Restricting or excluding infected employees from work, especially those whose symptoms include vomiting, diarrhea or jaundice
Common Viruses

**Enterovirus** is generally caused by the consumption of food contaminated with fecal matter.

**Hepatitis A** is generally caused by the consumption of fresh cut produce contaminated with fecal matter.

**Hepatitis E** is generally caused by the consumption of food contaminated with fecal matter.

**Norovirus** is generally caused by the consumption of food or water contaminated with fecal matter, through food contaminated by an infected person by touch, or by food contacting contaminated surfaces.

**Rotavirus** is generally caused by the consumption of food contaminated with fecal matter.

Bacteria

1. Bacteria are the 2nd most common cause of foodborne illness.

2. Illness symptoms caused by bacteria are usually delayed, since bacteria need time to multiply in your body. Most bacterial illness symptoms occur 12-72 hours after eating contaminated food.

Common Bacteria

**Campylobacter** is generally caused by fecal to oral ingestion of contaminated food or water, and the consumption of raw meat. It is most commonly found in raw chicken and raw milk.

**Salmonella** is generally caused by the consumption of eggs, poultry, or meat that are not sufficiently cooked, however can be caused by the consumption of contaminated fruits, nuts and vegetables.

**E. coli** is generally caused by eating unwashed vegetables or undercooked meat.  
**Listeria** is generally caused by consumption of contaminated milk, cheeses, raw meats and raw fish.

**Clostridium** is generally caused by the consumption of undercooked meats and poultry.  
Clostridium is commonly classified as "food poisoning".

**Shigella, spp** is closely related to E.Coli and is generally caused by the consumption of food contaminated with fecal matter.

**Staphylococcus** is generally caused by the consumption of food that was contaminated by an infected person through touch, nose/mouth discharges, or through pus from an infected wound.

**Bacillus Cereus** is generally caused by the consumption of undercooked food products.

**Botulism** is generally caused by the consumption of improperly preserved or canned foods.

**Vibrio** is generally caused by the consumption of contaminated water or fluids, often from oysters that come from contaminated water.
Parasites

1. Parasites may be present in food or water and can lead to foodborne or waterborne illness. They range in size, from tiny single-celled organisms to worms that are visible to the naked eye.

2. The illnesses they can cause range from mild discomfort to severe illness and sometimes death.

3. Parasites are organisms that get food and protection from other living organisms called hosts.

4. They may be transmitted from animals to humans, from humans to humans, or from humans to animals.

5. These organisms live and reproduce within the tissues and organs of infected human and animal hosts, and are often excreted in feces.

6. Parasites can be transmitted from host to host through eating and drinking contaminated food and water, or by putting anything into your mouth that has touched the stool (feces) of an infected person or animal.

7. Two common parasites are:
   - Giardia duodenalis
   - Cryptosporidium Parvum

Other Toxins

1. Foodborne illness can also be caused by natural toxins or poisons found in food. Sometimes, these toxins occur naturally in a food item.

2. There are three main categories of natural toxins:
   - **Seafood Toxins** - found in fish and shellfish are troublesome because they cannot be tasted or smelled, and cannot be destroyed by freezing or cooking.
   - **Plant Toxins** - Most foodborne illness related to plant toxins can be prevented by purchasing the items from a reputable and approved source. However, improper cooking and holding of some plant items can also lead to foodborne illness.
   - **Mushroom Toxins** - Mushroom poisoning is caused by the consumption of raw or cooked mushrooms or toadstools. The toxins involved in mushroom poisoning are produced naturally by the fungi themselves.

Molds

1. Molds are microscopic fungi that live on plant or animal matter. Most are threadlike organisms that produce spores to grow. These spores can be transported by air, water, or insects.

2. Some molds cause allergic reactions and respiratory problems. And a few molds, can produce "mycotoxins," poisonous substances that can make people sick.

3. Unlike bacteria that are one-celled, molds are made of many cells and can sometimes be seen with the naked eye.
4. Some molds cause allergic reactions and respiratory problems. Aflatoxins are a type of mycotoxin and are a primary cause of mycotoxin poisoning.
5. Aflatoxin is a cancer-causing poison produced by certain fungi in or on foods and feeds, especially in field corn and peanuts.

**Physical Contamination**

1. Physical contamination is when any physical object is within food that could result in choking or in physical harm to a person who eats it.
2. Physical contaminants such as pieces of glass, metal shavings from opening cans, pebbles, staples from food packaging, bandages, and insects, can make food unsafe to eat.
3. Other physical hazards can be left in the food during processing and packaging. Sometimes bone chips are left in ground beef and minced fish, or seeds are mistakenly left in fruit.
4. You must inspect food when you receive it from vendors and during food prep in your establishment to make sure there are no physical contaminants.

**Chemical Contamination**

1. Chemical contamination is usually caused by chemicals that are used in the kitchen preparation areas of your establishment.
2. There are several factors that can lead to chemical contamination, some of them are:
   - the improper handling of chemicals by employees
   - the improper storage of chemicals in your establishment
   - the improper use of equipment and utensils in the preparation and service of food
3. Improper handling of chemicals by foodservice employees can cause chemical contamination in foods. Employees must be careful when using any chemicals near a food preparation area.
4. Chemicals removed from their original container to spray bottles, buckets or other containers, MUST be labeled with the chemical’s common name.
5. Make sure to store all chemicals in an area that is separate from any food items, preparation areas, utensils or other equipment used in the preparation or service of food.
6. Food service utensils and equipment can also cause chemical contamination if not used properly. Some of these items contain metals which can react chemically with acidic foods, causing toxic chemicals to reach unsafe levels.

**Food Allergies**

1. Some food allergies can cause severe reactions, and may even be life-threatening.
2. There is no cure for food allergies. Total avoidance of food allergens is required for preventing serious health consequences.
3. Allergic reactions can take many forms and can happen very quickly, although some allergies may take hours to develop symptoms. Typical food allergy symptoms include:
   - sneezing
• itching
• vomiting
• nausea
• cramps
• diarrhea
• hives/rashes

4. Food allergies can kill, with 150 to 200 deaths each year recorded. Sometimes death can occur within a few minutes of the allergic reaction.

5. Allergenic ingredients are substances that are capable of causing an allergic reaction.

6. All of your staff should be trained on the basics of food allergies.

7. There should be a designated "food allergy expert" available at all times to answer any food allergy or ingredients questions your customers or staff may have.

8. If asked, you MUST tell customers any and all ingredients found in that item, even if the recipe is a "secret."

9. The only way for people with food allergies to prevent having a reaction is to avoid certain foods and ingredients entirely.

10. Cross-contamination occurs when two or more foods come in contact with each other. This normally happens as a result of the cooking and production process or while workers are putting food on display.

11. Be cautious when handling allergen foods. Hands, gloves, and tongs can be a source of cross-contact.

The Big "8"

1. The most common foods that people are allergic to are called the “Big Eight.” These foods are:
   • Milk
   • Peanuts
   • Tree nuts
   • Fish
   • Shell fish
   • Eggs
   • Wheat
   • Soy

Preventing Allergic Reactions to Food

1. There are a few steps that you can take to help prevent cross-contamination. These are:
   • Always wash your hands and replace your single-use gloves before preparing foods or when moving from one food to another
   • Designate certain equipment and utensils as allergen free zones that will be used when preparing non-allergenic food items.
- Make sure to thoroughly clean and sanitize all equipment, utensils, and food contact surfaces after before and after preparing a food item.
- If possible, store allergenic foods away from other foods
- Store fresh foods in clean and sanitized containers only

2. Treat allergic reactions as emergency situations - A severe food allergy reaction can be life threatening.

3. Next, get medical help - Call 911 immediately or have someone call for you. Stay on the line until medical help arrives.