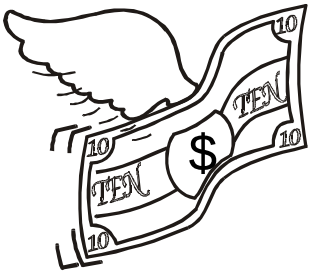
Understanding Foodborne Illness (Food Poisoning)

Costs of Foodborne Illness (Food Poisoning)

- possible law suits from customers who are ill



There have been numerous cases where restaurants have been sued for causing a foodborne illness. The courts can award any amount of money, usually dependant on the type of illness and the severity.

- bad publicity will result in loss of customers

Word of mouth spreads very quickly and a restaurant can get a bad reputation, sometimes undeservedly. In the past, restaurants have had to put out full page advertisements to tell customers that the reports are untrue or to apologize for a foodborne illness.

- employees will not be at work resulting in lost wages and shortage of staff

Since employees eat at the restaurant for many of their meals, they may also get foodborne illness. They will not be able to show up for work because they are ill or if they are showing symptoms, will be ordered to stay at home by the Health Department. This will result in a shortage of staff for some shifts which will cause bad service and therefore, a potential loss of customers.

- foodborne illness investigations are time consuming and expensive

The local Health Department will conduct their investigation when a food poisoning occurs. This will be time consuming as the food item will be thoroughly analyzed and the operator will have to deal with many people until it is resolved.

- fines issued through courts from Public Health Inspector reports

Fines may be levied against the premises and the operator if it is found that they were neglectful in their duties.

Commonly Used Words

Micro-organisms:

- invisible living single cells

Pathogen:

- harmful micro-organisms that can cause disease in humans

Hazardous Food:

- food that is able to support the growth of pathogenic micro-organisms or the production of toxins
- **hazardous food include poultry, ground meats and dairy products**

Clean/Wash:

- to remove oil, grease, dirt and debris using soap and water

Sanitize:

- to destroy unwanted contaminants such as bacteria and viruses using a chemical substance
- to kill 999 out of 1000 pathogenic micro-organisms

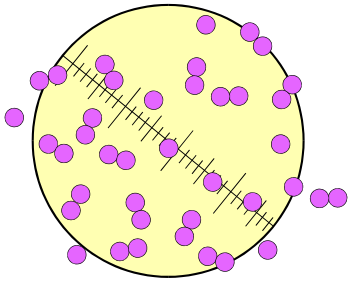
Understanding Micro-organisms

- types of micro-organisms include bacteria, parasites, viruses, moulds and yeasts

  These five organisms are the most common micro-organisms and the most important in terms of food safety.

- pathogenic bacteria are odourless and tasteless bacteria that cause disease

  These micro-organisms are dangerous because it is difficult to know if they are present in food.



- spoilage organisms cause odours and off tastes

  These micro-organisms you can detect. If you eat them, you may or may not become ill. However, most people will not eat spoiled food as they can smell or see the food is not good to eat.

- some micro-organisms are beneficial to humans such as the ones that make yogourt and cheese

- micro-organisms can be introduced to food from man, pests, other food and food contact surfaces

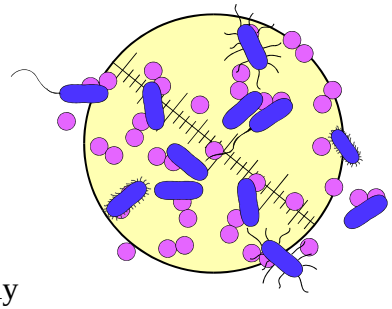
How Bacteria Grow

- bacteria reproduce by dividing itself

Bacteria are single celled organisms that reproduce through multiplication. One cell becomes two, two cells become four, four cells become eight and so on.

- it will divide when the conditions of its surroundings are ideal

Bacteria will begin to grow and multiply if they are comfortable in their surroundings. Our goal is not to allow bacteria to become comfortable.



- bacteria can reproduce every 20 minutes in perfect conditions

Bacteria will double its number every 20 minutes if its surroundings are perfect. The number of bacteria will reach dangerous levels very quickly in a short period of time in this case.

- some bacteria can go into a spore state where the bacteria will not grow but will remain alive

If spore forming bacteria are exposed to very hot or very cold temperatures, they can protect themselves by changing into a spore state. This protects the bacteria from being killed. The bacteria will begin to grow again when the food goes back into the Danger Zone.

What Pathogenic Bacteria Need to Grow

· bacteria need a combination of things to grow

1. Temperature

Pathogenic bacteria grow best in the temperature range between 4°C and 60°C. Temperatures below 4°C will not kill pathogenic bacteria but will not allow them to multiply enough times to cause an illness. Temperatures between 60°C and 74°C may not kill pathogenic bacteria but will not allow them to grow. Temperatures above 74°C will kill most pathogenic bacteria. This is the easiest factor in controlling pathogenic bacterial growth.

2. Protein

Pathogenic bacteria grow best when there is a rich food supply. Pathogenic bacteria and spoilage bacteria grow most quickly in high protein food such as poultry and seafood. It is difficult to control pathogenic bacterial growth in high protein food.

3. Available Water

Pathogenic bacteria need a water supply to survive. The amount of water in food can be reduced by smoking, drying or adding salt, pectin or sugar. Lower water will not kill pathogenic bacteria but it will not allow them to grow.

4. pH

pH is the measure of the level of acid and can range from 0 to 14. Pathogenic bacteria need a neutral environment to survive. High or low pH will not kill pathogenic bacteria but will not allow them to grow.

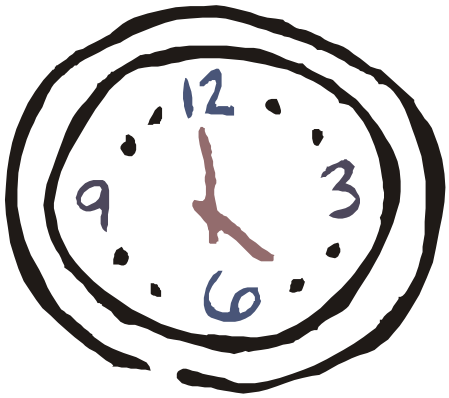
Tap water has a pH of 7 (neutral), javex has a pH of 13 (alkaline) and vinegar has a pH of 3 (acidic).

5. Oxygen

Some pathogenic bacteria can only grow where there is oxygen while other pathogenic bacteria can only grow where there is no oxygen. You should be aware of those bacteria that grow without oxygen in canned and jarred products and those that need oxygen the rest of the time.

6. Time

Leaving food out at room temperature for more than 2 hours might be long enough for the pathogens to multiple enough to cause a foodborne illness.



- these six things together will allow pathogenic bacteria to multiply enough times to cause a food poisoning

By sufficiently changing or eliminating one of the criteria, bacterial growth can be prevented or delayed.

What is Foodborne Illness (Food Poisoning)

- disease acquired from eating or drinking contaminated food or water

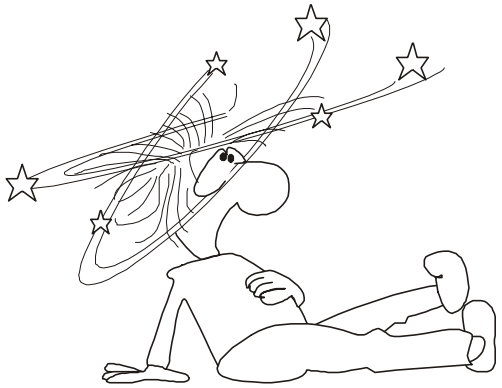
  This term can include any type of illness that you can get from eating food that is contaminated. It can include illness from bacteria, viruses, parasites, chemicals, allergies or naturally occurring poisons such as some mushrooms.

- symptoms can include stomach cramps, fever, headache, nausea, vomiting or diarrhea

  Symptoms can be almost anything, however, vomiting and diarrhea are most common.

- onset of symptoms usually occurs between 1 hour and 5 days after eating the contaminated food

  In severe cases, vomiting can occur almost immediately. The length of time it takes for the symptoms to begin will depend on the type of organism which causes the illness, the immune system of the person and the amount of organism the person ate.



Types of Foodborne Illness

1. Microbiological

· the most commonly reported micro-organisms that cause food poisonings are bacteria

Most bacterial food poisonings last for a few days and clear up on their own. Antibiotics can be prescribed and are effective against bacteria. They will help your immune system fight and eventually destroy the bacteria.

There are two types of bacterial foodborne illness:

A. Bacterial Infection

· food poisoning infection can occur when the food eaten is contaminated with living pathogenic bacteria

You must eat the living bacteria to become ill. Food can contain a large or small amount of bacteria to cause illness, depending on the type of bacteria. The amount and type of bacteria will determine the time for symptoms to appear.

· bacteria will multiply in the digestive tract and most often cause diarrhea, stomach cramps and fever

The bacteria will pass through your stomach and down into your lower intestine. The bacteria will embed themselves in the wall of the intestine and begin to multiply. When there are enough bacteria, diarrhea will result, sometimes bloody.

· examples of infectious bacteria are *Salmonella*, *Campylobacter*, *E. coli* and *Shigella*

These are the most common however there are many other types as well. There are over 2,000 types of *Salmonella* alone.

Infection:
Salmonella

Source:
· intestinal tract and feces of humans and animals, in particular poultry and beef

Food:
· meat and meat products such as roast beef, meat pies, sausage, ham, poultry, poultry products, milk and eggs (especially cracked eggs)

The Disease:
· symptoms occur 6 to 72 hours after eating, usually 12 to 36 hours (diarrhea, stomach cramps and vomiting are the usual symptoms)

Prevention:
· proper handling, processing, storage and preparation of food

Infection:

- *E.coli 0157:H7* bacteria are the most harmful strain of *E.coli* bacteria known.

The very young and very old are the most likely to be affected by major complications such as kidney failure and even death.

Source:

- intestinal tract and feces of humans and animals, in particular, cattle.

Foods:

- raw meats such as ground beef, poultry, pork, unpasteurized milk, contaminated water

The Disease:

- symptoms occur 3 to 10 days after eating or drinking, usually 3 to 4 days (bloody or watery diarrhea, abdominal cramps)
- *0157:H7* infections may develop hemolytic uremic syndrome, with possible permanent kidney damage, even death

Prevention:

- cooking food thoroughly
- proper handwashing using soap and water
- drinking only pasteurized milk
- drinking water from a safe water supply

B. Bacterial Intoxication

- food poisoning intoxication can occur when the food eaten is contaminated with toxins (poison) or toxin producing bacteria

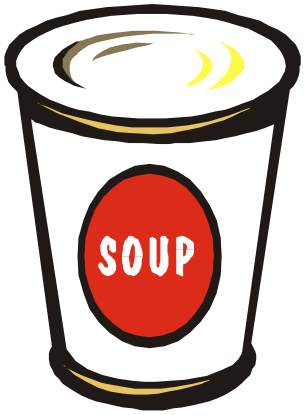
The bacteria multiply in the food and a by-product of this multiplication is toxin. The toxin is the poison that causes the illness. The toxin producing bacteria can multiply in the food or in the body and not all toxins are destroyed by cooking.

- vomiting is the most common symptom in intoxications

As you eat the toxin and it enters into your system, your body realizes that this is not good for it and vomits this poison out.

- examples of bacteria which produce toxins are *Staphylococcus aureus*, *Bacillus cereus* and *Clostridium botulinum*

Again, there are many types of bacteria that produce toxin and will cause an intoxication. *Staphylococcus aureus* is usually found on the skin, in the nose and throat area. *Bacillus cereus* is usually found in cooked rice.



Intoxication:

Staphylococcus aureus

Source:

· nose, throat, hair, skin, hands and feces of humans and animals

Food:

· ham, beef, pork, poultry, potato salad, custard, cream sauces, puddings and fermented dairy products

The Disease:

· symptoms occur 30 minutes to 8 hours after eating, usually 2 to 4 hours (vomiting, stomach cramps and diarrhea are the usual symptoms)

Prevention:

· cook food thoroughly and do not allow toxins to form

· practice good personal hygiene including properly washing hands often

Intoxication:

· *Bacillus cereus* bacteria presents two types of illness; **diarrhea and vomiting.**

Source:

· found everywhere in the environment, especially in soil

Foods:

Diarrhea: soups, custards, meat, poultry

Vomiting: Chinese-style foods, rice

The Disease:

· symptoms are usually mild; nausea, cramps, vomiting (usually within 30 to 60 minutes) and diarrhea (usually 3 to 5 hours)

Prevention:

· cook food thoroughly and do not allow toxins to form
· keep hot food hot at 60°C or more (140°F or more)
· keep cold food cold at 4°C or less (40°F or less)

C. Parasites

· an organism that causes illness by living and feeding off a host organism

A parasite needs a host that it can feed off. Some parasites are very painful such as *Trichinella spiralis* (Trichinosis) as it goes directly into your muscle and forms a spiral.

· examples of parasites are *Giardia lamblia*, *Trichinella spiralis* and *Entamoeba histolytica*

. Most parasites are transferred to humans through water contaminated with feces or through animals that are fed an unsafe food supply.

Food handlers with these parasites, with or without symptoms, can contaminate food by not washing their hands after using the washroom and handling food. Also, washing raw vegetables and fruits with contaminated water can spread parasites.

D. Viruses

· micro-organisms that multiply inside living cells and cause illness

A virus behaves like a parasite as it needs a host to survive and feed off. However, a virus will go directly into another cell and use its reproductive system as its own. Antibiotics do not work against viruses but some vaccines will help prevent the spread of the viruses.

· examples of viruses are *Hepatitis A*, *Norwalk virus*, *Rotavirus* and *Influenza*

Viruses are spread in the same way as bacteria. However, some viruses can survive on counter tops and food contact surfaces for a long period of time. HIV (the virus that can cause AIDS) is the one most people fear but is very fragile outside the body and is difficult to transmit person to person.

2. Chemical

- chemical food poisoning can occur when poisons are accidentally added to food

- vomiting usually occurs within 1 hour after eating the contaminated food

Vomiting usually occurs very quickly after eating the poison. The body will immediately reject the poison.

- examples of chemicals that can contaminate food are pest control sprays, cleaners, degreasers or food additives

It is important to label and store pest control sprays and cleaners in compartments separate from food. If space is limited, make sure these items are stored below food to prevent spillage into the food.

- chemicals must be stored in their original containers or in properly labeled containers

Containers with food labels must not be used as people will mistakenly think the chemical is a food product

3. Allergies

- an over reaction of the immune system to unwanted substances

  Not all people are allergic to the same things. Allergens, once ingested, cause the body to produce an excess amount of histamines which can result in many types of symptoms.

- Anaphylaxis, a severe, life threatening reaction may result

- medical attention is required when an allergic reaction occurs

- main symptoms are vomiting, diarrhea, nausea and throat itchiness and swelling

  Milder symptoms could include sneezing, runny nose, watery eyes, fatigue, hives, coughing, tightness in the chest, difficulty breathing and headaches. In severe cases, death may occur.

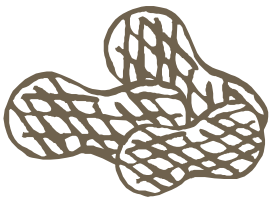
- examples of substances that can cause an allergic reaction are peanuts, eggs and seafood

  Products of these substances, for example, peanut oil and salad dressing, can be just as harmful

- MSG and sulphites are food additives that can cause a food intolerance with similar symptoms

  People with a heightened sensitivity to these substances can experience allergy like symptoms. MSG is a flavour enhancer and cooking aid. Sulphites are used to keep fruit and vegetables looking fresh. Examples of these additives are *Accent* and *Sta-Fresh.*

- food intolerance does not affect the immune system; medical attention is necessary



Allergies and the Role of the Foodservice Industry

- keep an accurate list of all ingredients that are put into food
- keep ingredient lists from packages of all prepackaged food

  Ingredient lists should be provided to the customers upon request.

- if you are not sure of the food's ingredients, tell the customer that you are not sure
- do not cross-contaminate food

  Cross-contamination could result in an allergen being served to the customer without realizing it. Refer to Cross-Contamination Section for details. A very small amount of allergen could be dangerous.

- do not use those food items that can cause allergic reactions

  Where possible, substitute with food that is less likely to cause an allergic reaction. An example is substituting vegetable oil for peanut oil.

- call 911 if a customer is having a severe allergic reaction

What to do if Someone Reports a Possible Foodborne Illness

- call the Health Department and advise the customer to call the Health Department

Call your local Health Department and speak to your district health inspector. Provide the health inspector with as much information as possible to assist in the investigation. The Public Health Inspector's job is to ensure the incident does not happen again and not to find blame.

- ask the customer what they ate, what their symptoms were and the time of both

The time of meal and the time of onset of symptoms are very important in determining the type of illness. Not all food poisonings are caused by the last meal eaten. Very often the food causing illness was eaten days before symptoms began.

- review with the staff how the meal was prepared (using the HACCP system)

Refer to the HACCP Section for details.

- ask staff if they were ill with similar symptoms

Food handlers with foodborne illness-like symptoms must not be handling food until they are symptom free for at least 24 hours. Food handlers with *Shigella*, Typhoid Fever, *Hepatitis A* and *Norwalk*-like virus must not handle food until they are cleared by the Health Department.

· save food samples from original meal if possible

These samples should be labelled and stored in the refrigerator. Food samples from the original meal will be sent to the Ministry of Health laboratory for testing to determine if there are any pathogens present. The Health Department will also ask the customer to submit a stool or vomitus sample for testing to determine if there are any pathogens present. A confirmed foodborne illness only occurs when the pathogens from the original meal and the customer are the same.

· write down all this information

Keep accurate notes and records in case of further action by the customer.

Review Questions

1. Pathogenic micro-organisms cause illness:

    a) true
    b) false

2. Food poisoning:

    a) is caused by the last meal you ate
    b) can have numerous symptoms such as diarrhea and vomiting
    c) is only caused by one type of micro-organism
    d) can be stopped by not eating in restaurants

3. The following are types of micro-biological food poisonings:

    a) infections
    b) intoxications
    c) parasitic
    d) all of the above