



# Safety in the kitchen (Biological dangers)

HFA4U

Unit#1

Lesson#1.1

# Biological dangers in the kitchen = Bacteria

- Bacteria are biological dangers in the kitchen and cause harm to individuals just as slipping or falling can (physical dangers).
- Bacteria are naturally found in living organisms (plants and animals which are our food sources).
- There are several different kinds of foodborne illnesses that result from bacteria growing in our food as well as being transferred to our food.
- Bacteria can be transferred to our food if safe handling of food is not taken. This is known as cross contamination (when bacteria from one object is transferred to another thereby making the new object contaminated as well).



# What is Foodborne Illness?

- Foodborne illness, often called food poisoning, occurs when a person gets sick by eating food that has been contaminated with bacteria, parasites, or viruses, also known as 'microbes' and 'pathogens'.
- Foodborne illness is the largest class of emerging infectious diseases. This is due to changing population demographics, changing patterns of food production and consumption and new, re-emerging or drug resistant disease agents.
- Foodborne illness or food poisoning is often confused as the flu since they share similar symptoms. These include: stomach pain, diarrhea, nausea, chills, fever, and headache. Symptoms of foodborne illness can appear anywhere from thirty minutes to two weeks after an individual has come into contact with the bacteria, although it usually happens in the first 4-48 hours.

# What are the Most Common Pathogens Causing Foodborne Illness?

## 1. **Clostridium botulium:**

- In adults, Clostridium botulinum (C. botulinum) itself does not make people ill, but the poisons produced by the pathogen do.
- Canned (especially home canned) low acid foods may contain C. botulinum, however some cases occur from eating raw or parboiled meats from marine mammals.
- Symptoms can include double vision, nausea, vomiting, fatigue, dizziness, headache and dryness in the throat and nose. In extreme cases, symptoms may progress to respiratory failure.

# Common Foodborne Illnesses Continued

## 2. **Escherichia Coli 0157:H7 (E. Coli):**

- Escherichia Coli bacteria live in the intestines of animals such as cattle, pigs, sheep and poultry. When these animals are butchered, the bacteria can spread to the outer surfaces of the meat.
- E. Coli can be spread by hand to hand contact with an infected person or surfaces he or she may have touched. It may also be found in undercooked meat and poultry, non-chlorinated water and unpasteurized apple juice.
- Symptoms of E. Coli include minor flu-like symptoms to more severe stomach cramps, vomiting and fever, and even kidney failure.

# Common Foodborne Illnesses Continued

## 3. *Clostridium perfringens*:

- *Clostridium perfringens* (*C. perfringens*) is a spore-forming bacteria that produces a toxin in the intestinal tract of people who have eaten food containing many of the bacteria.
- This organism can be found in high protein or starch like foods such as cooked beans and gravies, and are especially likely to be a problem in improperly handled leftovers.
- Symptoms consist of very grassy diarrhea, cramps and headache.

# Common pathogens causing Foodborne Illness

## Continued

### 4. **Salmonella:**

- Salmonella is a bacterium found in the intestines of animals. Foods or environments contaminated with animal waste may contain Salmonella bacteria. It has also been found in a low percentage of unbroken raw eggs.
- Raw poultry is the most common food that may contain Salmonella. Other foods include raw and undercooked meats, unpasteurized milk and eggs. Fruits and vegetables may also contain the bacteria if they have been in soil contaminated with animal waste.
- Symptoms may range from mild diarrhea, abdominal cramps, vomiting and fever to severe dehydration.

# Common pathogens continued

## 5. Listeriosis:

- Listeriosis primarily affects older adults, persons with weakened immune systems, pregnant women, and newborns. Rarely, persons without these risk factors can also be affected.
- A person with listeriosis usually begins having diarrhea or other gastrointestinal symptoms which are then followed by a fever and muscle aches. Almost everyone who is diagnosed with listeriosis has invasive infection (meaning that the bacteria spread from their intestines to their blood stream or other body sites). This foodborne illness can occur as much as two months after eating contaminated food.



# Who is responsible for ensuring that the food we eat is safe?

- Everyone involved in the food chain, from the primary producer to the consumer has a role to play in ensuring the safety of the food we eat. The food industry and government work together to deliver food that is safe to consumers. The important, and sometimes forgotten, role of the consumer is to maintain the safety of food by using safe food handling practices.
- Approximately 1 million cases of cases of foodborne illness are reported each year in Canada. Since the symptoms are quite similar to those of the flu, the number of cases may actually be higher.

# How can we prevent the growth of bacteria and kill bacteria?

- Bacteria can be killed by thoroughly cleaning cutting boards, knives, and other equipment.
- Store foods properly.
- Thaw foods in the refrigerator.
- Wear clean clothes or aprons
- Avoid cross-contamination
- Clean surfaces with a bleach solution
- Wipe spills with paper towels
- Wash hands before handling food
- Cook foods thoroughly
- Replace dishcloths and wash sponges daily (we do not use sponges since bacteria grow very quickly on them).
- Handle meats, poultry, seafood, and eggs as if contaminated.

# Too much information? Let's break it down into four simple rules...(S3C)

1. **SEPARATE:** combat cross contamination (Get it straight! It's safe to separate!) Keep foods like meats and their juices, separated from others during storage and preparation. Keep separate cutting boards for raw meats and vegetables. Always keep foods covered.
2. **COOK:** (Keep it hot, hot, hot!). Prepare foods quickly, cook them thoroughly, and serve them immediately. Don't let foods linger at temperatures where bacteria can grow. The danger zone is between 4 degrees Celsius and 60 degrees Fahrenheit.
3. **CLEAN:** Remember you can't see, smell, or taste bacteria so keep it, clean! Always wash your hands, utensils and cooking surfaces with soap and hot water before you handle food, repeatedly while you prepare it, and again when you've finished. Sanitize countertops, cutting boards and utensils with a milk bleach and water solution. All produce should be washed under cool running water prior to eating or cooking.
4. **CHILL:** cold foods should be kept at 4 degrees Celsius or 40 degrees Fahrenheit. Refrigerate or freeze perishables, prepared food and leftovers within two hours.

# Personal Cleanliness Matters

- Keep long hair tied back
- Wear a clean apron
- Wear clean clothes
- No hats (unless specifically designed for food use)
- Cover cuts, sores on your hands with a band-aid and gloves before handling food
- Use separate spoons for tasting and stirring. Pour a little food from the stirring spoon onto the tasting spoon
- Do not lick your fingers (even if it is delicious and you usually do at home!)

# Kill Bacteria by Cooking Foods Safely

- Check the internal temperature of meat with a food thermometer
- Poultry or a poultry product, stuffed meat, ground poultry, stuffing containing pork, poultry or other meat should reach an internal temperature of 74 degrees Celsius or 165 degrees Fahrenheit. **ALWAYS** check the thickest part of the meat.
- Other ground meat should reach a temperature of 68 degrees Celsius or 155 degrees Fahrenheit in the center of the thickest part (i.e. burgers). The meat should cook until grey or brown throughout, or until the juices run clear.
- Pork should reach an internal temperature of 66 degrees Celsius or 150 degrees Fahrenheit in the center of the thickest part.
- Other hazardous foods such as fish, shellfish, lamb or beef roasts should reach a temperature of 60 degrees Celsius or 140 degrees Fahrenheit in the center of the thickest part.

# Temperature Safety Guide for Food Safety



→250°F/120°C

→240°F/116°C

→212°F/100°C

→HIGH TEMPS destroy most bacteria

→165°F/74°C

No bacteria growth (some bacteria will continue to live)

→ 140°F/60°C

→MANY bacteria survive

→125°F/52°C

→**DANGER ZONE**

## Rapid bacterial growth

→60°F/15°C some bacterial growth

→40°F/4°C (fridges should be at this temperature = slow bacterial growth)

→32°F/0°C

→Freezing temperatures-no bacterial growth

→0°F/18°C

# How to Store Foods Safely

