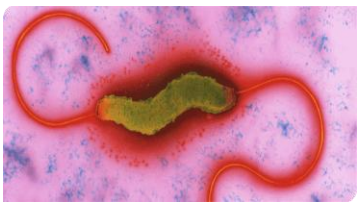
Unit I – Problem 10 – Epidemiology: Prevention and Control of Food-Borne Diseases

- **Outbreaks of food-borne diseases occur when a group of people consume the same contaminated food, and two or more of those people become ill.**
- **Common food-borne illnesses can be caused by:**
  - **Bacteria**: some examples include the following
    - ✓ Campylobacter jejuni:
      - ❖ This organism grows at a temperature between 37C-42C
      - ❖ *It causes*: diarrhea, cramping, abdominal pain and fever (2-5 days after exposure to the organism).
      - ❖ *Source*: under-cooked poultry meat (لحم الدجاج الغير مطبوخ جيداً).



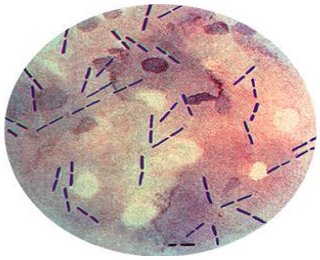
    - ✓ Salmonella:
      - ❖ *It causes*: diarrhea, abdominal cramps and fever (12-72 hours after exposure to the organism).
      - ❖ *Source*: under-cooked contaminated eggs/poultry or cross-contamination in the kitchen.

    - ✓ E.coli (O157:H7):
      - ❖ *Source*: under-cooked meat/beef
      - ❖ *Refrigerating meats:*
        - ➢ Store ground beef in refrigerator set at 40F or below, and cook or freeze it within one or two days of purchase.
        - ➢ Refrigerate cooked meat and poultry within two hour after cooking, and use or freeze it within three or four days.

    - ✓ Bacillus Cereus:
      - ❖ It produces heat-resistant endospores with optimal growth at 28C-35C. These spores can survive recommended cooking temperatures.
      - ❖ *Sources*: rice, sauces and soups.

    - ✓ Staphylococcus aureus:
      - ❖ It grows when contaminated food is left at a room temperature for too long.
      - ❖ *It causes the following (30 minutes – 8 hours after exposure):* diarrhea, nausea & vomiting, abdominal pain and cramps.
      - ❖ *Sources*: Meats, poultry and eggs.

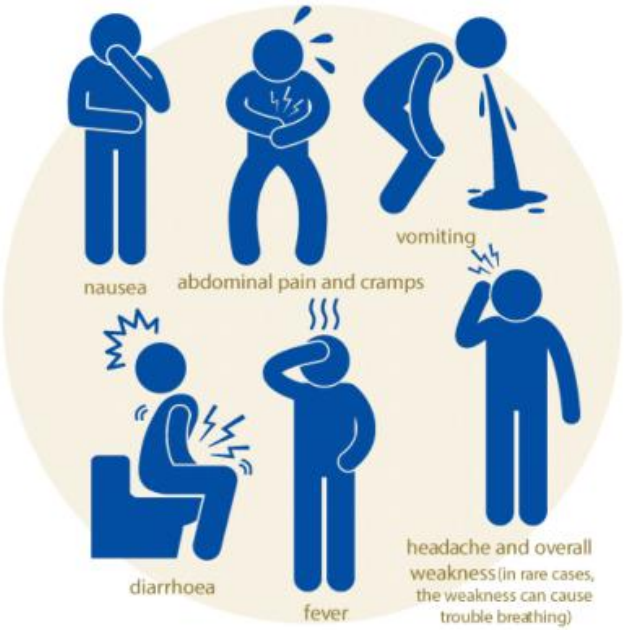
    - ✓ Clostridium perfringens:
      - ❖ *Outbreaks occur in*: hospitals, school cafeterias, prisons, nursing homes or events with catered food.
      - ❖ The spores can survive high temperatures.
      - ❖ Poisoning occurs when food is prepared in large quantities and kept warm for a long time before serving.



      - ❖ *Sources*: beef, poultry, gravies (المَرَق) and pre-cooked foods.

- **Viruses.**
- **Parasites.**
- **Toxins or chemicals.**

- **What are the common symptoms of food-borne illnesses?**
  - Diarrhea.
  - Vomiting.
  - Abdominal pain.
  - Headache.



- **What are the risks for meat contamination?**
  - This might occur during slaughter (ذبح) of the animal.
  - The animal might be irrigated (مَروي) with contaminated water.
  - Unwashed hands.
  - Cross-contamination: the passing of microorganisms indirectly from one patient to another through improper or unsterile equipments, procedures or products.
  - Insufficient cooking of the meat.
  - The meat might be stored at the incorrect temperature.

- **What are the complications of food-borne diseases?**
  - Dehydration and shock (due to loss of fluids from the body through vomiting and diarrhea).
  - Absence from work and school.
  - Economic burden.

- **Principles of prevention of food-borne illnesses:**
  - **Cook:**
    - ✓ Cook meat and poultry at a temperature of (165F).
    - ✓ Cook eggs at a temperature of (145F).
      Use a thermometer to measure internal temperature of meat. Cook food immediately after defrosting.

- **Separate:**
  - ✓ Wash hands, utensils (أواني-أوعية) and cutting boards after they have been in contact with raw meat or poultry and before touching another food.
  - ✓ Put cooked meat on a clean platter.
  - ✓ Use different dishes and utensils for raw and cooked foods.
- **Chill:**
  - ✓ Refrigerate leftovers promptly.
  - ✓ Set refrigerator temperature at (40F).
  - ✓ Set freezer temperature at (0F).
  - ✓ Cold foods should be kept at a temperature of (41F) or below.
  - ✓ Keep purchased food chilled until you get home from the store.
- **Clean:**
  - ✓ The single most important method of preventing infectious diseases is to wash hands.
  - ✓ Remove outer leaves from lettuce or cabbage.
  - ✓ Regularly clean and disinfect the refrigerator and freezer.
  - ✓ Clean and disinfect countertops of kitchen regularly.
- **Report:**
  - ✓ Report suspected food-borne illnesses to the local health department.

- **Ensuring food safety in mass food production:**
  - **Hazard Analysis and Critical Control Point (HACCP):**

1	Conduct a hazard analysis
2	Determine the critical control points
3	Establish critical limits
4	Establish monitoring procedures
5	Establish corrective actions
6	Establish verification procedures
7	Establish record and documentation procedures

- **Investigation of food establishments:**
  - Interviewing managers.
  - Interviewing any employees.
  - A review of the overall operations and hygiene.
  - Food and environmental sample.
  - A review of food worker health and hygiene (including specimens for analysis).
  - An assessment of the water system and supply.