

Definition

- Food borne diseases are as a result of ingestion of food stuffs infected with microorganism or chemicals
- The contamination of food may occur at any stage in the process from production to consumption



Food Infections

Food infections

Contaminated food acting as carrier of microorganisms (Infections include typhoid, cholera, dysentery, hepatitis)

Food that serve as culture medium for growth of pathogen (Infection include salmonellosis, shigellosis, gastroenteritis)



Food infection can be due to

- Bacteria (Eg., Salmonellosis, Gastroenteritis, Shigellosis)
- Viruses (Eg., Poliomyelitis, Infectious hepatitis)
- Parasites (Eg., Amebiasis, trichionosis, tapeworm infection)



Bacterial Food Infection

SALMONELLOSIS:

Salmonellosis is a food borne caused by the *Salmonella sps.*

- **Optimum condition for growth:** 10-45°C, pH 4-9, water activity(0.93)
- **Incubation:** 12 to 36 hrs
- **Sources:** Unrefrigerated meat and poultry
- **Symptoms:** Nausea, vomiting, greenish foul stools, fever, weakness and drowsiness
- **Prevention:** Holding food at 66°C for 12 min to kill organisms, eliminating contaminated food, cooking food for sufficient time and proper storing by cooling

GASTROENTERITIS:

Disease caused due enterotoxin released in gut by
Clostridium perfringens

- ④ **Optimum conditions:** 20 to 55°C, pH(5-9), heat resistant
- ④ **Incubation:** 10 to 24 hrs
- ④ **Sources:** Raw foods and food that are cooled slowly and held sometime before consumption
- ④ **Symptoms:** Abdominal pain, diarrhoea, gas formation
- ④ **Prevention:** heating above 60°C followed by rapid cooling of cooked meat and other foods, reheating leftovers and personal hygiene

Disease also caused by *Bacillus cereus*

- **Optimum conditions:** 10 to 49° C and pH(4.9 to 9.3)
- **Incubation:** 2 to 8hrs
- **Sources:** Contaminated foods, cereals, mashed potatoes, vege sprouts, meat loaf, puddings
- **Symptoms:** Nausea, abdominal cramps, vomiting, diarrhoea
- **Prevention:** Holding foods above 65° C and reheating leftovers for 72° C and personal hygiene

E.Coli Infection

Most E.coli are harmless unless they are
Enteropathogenic E.coli (EPEC)

- **Incubation:** 8 to 24 hrs
- **Symptoms:** Vomiting, dehydration, fever, headache, abdominal cramps, diarrhoea
- **Prevention:** cooking food properly, rapid chilling of foods, use of protected water, ensuring personal hygiene

SHIGELLOSIS

It is a bacterial dysentery caused due to *Shigella sps.*

- **Sources:** Moist foods like milk, potato, shrimp, tuna, turkey, apple, cider
- **Symptoms:** Fever, abdominal cramps, chills, mucus or pus, bloody stools, headache, nausea and dehydration
- **Prevention:** Personal hygiene, Control of flies, use of purified water, sanitary conditions

Viral Infections

Common viral infections caused by

- Norovirus (most common viral food borne illness, which causes gastroenteritis, a medical condition characterised by diarrhoea, vomiting and abdominal pain),
- Hepatitis A and E (which cause inflammation of the liver),
- Rotavirus (particularly associated with gastroenteritis in children)

Viruses spread through

- Contamination of food by infected food handlers due to poor hygienic practices,
- Contact of food with animal waste, human sewage or sewage-polluted water,
- Consumption of products of animal origin contaminated with viruses (e.g. meat, fish etc.)

- Foods associated with viral infection include
- ❑ Shellfish (e.g. Oysters, mussels), crustaceans and their products which are farmed and/or harvested in waters near human sewage outlets (e.g. waste-water treatment plants),
 - ❑ Fruit/vegetables grown on land fertilised with animal waste or irrigated with contaminated water,
 - ❑ Undercooked meats such as pork.

Prevention can be by

- ❑ Training and awareness in good hygiene practices (e.g. hand washing, washing and proper handling of fruits and vegetables, adequate storage of food in the refrigerator, thorough cooking of pork meat). This is particularly important where food is prepared for sick or vulnerable people in hospitals for example,
- ❑ Employees suffering from illness should be restricted from food service work,
- ❑ Use of clean water to irrigate crops, particularly ready to eat crops,
- ❑ Avoiding the use of animal manures on crops, particularly ready to eat crops,
- ❑ Farming of shellfish in clean seawater protected from sewage contamination

Parasitic infections

Infections include

Amebiasis: caused by *Endamoeba histolytica* due to sewage contaminated in water

Trichinosis: caused by Nematods due to raw, contaminated pork

Tapeworm Infection: caused due to tapeworm infected pork, fish and beef

Prevention: Proper cooking, quick freezing, purified water and personal hygiene