PDP 406 CLINICAL TOXICOLOGY

Pharm. D

Fourth Year
What is Food Poisoning

• Food poisoning is an acute illness, usually of sudden onset, brought about by eating contaminated or poisonous food. The symptoms normally include abdominal pain, diarrhoea, nausea, vomiting and fever.

• It may be caused by:-
  – bacteria or their toxins
  – chemicals including metals
  – plants or fish
  – viruses
  – mycotoxins
FOOD POISIONING

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Lecturer
Type of Bacteria:

- There are two types of bacteria that cause major problems in the food industry:
  - Spoilage bacteria - responsible for the decomposition of food.
  - Pathogenic bacteria - responsible for causing illness such as dysentery, typhoid, and food poisoning.
# The Main Food Poisoning Bacteria

<table>
<thead>
<tr>
<th>Type of food poisoning</th>
<th>Where the bacteria come from</th>
<th>Onset time</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonella</td>
<td>Raw meat, eggs, poultry, animals</td>
<td>6 - 72 hours</td>
<td>Abdominal pains, diarrhoea, fever, vomiting, dehydration</td>
</tr>
<tr>
<td>Clostridium perfringens</td>
<td>Raw meat, soil, excreta, insects</td>
<td>8 - 72 hours</td>
<td>Abdominal pain, diarrhoea</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>Skin, nose, boils, cuts, raw milk</td>
<td>1 - 6 hours</td>
<td>Vomiting, abdominal pains, lower than normal temperature</td>
</tr>
</tbody>
</table>
Bacteria need all four to multiply

- Food
- Warmth (63°C and 5°C)
- Moisture
- Time

Multiplication of bacteria
<table>
<thead>
<tr>
<th>Temperature</th>
<th>Conditions</th>
<th>Bacterial action</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>−18°C</td>
<td>Freezers</td>
<td>Dormant – not able to multiply</td>
<td>Safe</td>
</tr>
<tr>
<td>1 – 4°C</td>
<td>Fridges and cold stores</td>
<td>Most bacteria unable to multiply</td>
<td>Safe</td>
</tr>
<tr>
<td>5 – 63°C</td>
<td>Room temperature (10 – 36°C) Body temperature (37°C) Warm food (38 – 63°C)</td>
<td>Bacteria able to multiply</td>
<td>DANGER</td>
</tr>
<tr>
<td>64 – 72°C</td>
<td>Keeping food hot</td>
<td>Most bacteria can’t multiply</td>
<td>Safe</td>
</tr>
<tr>
<td>73 – 100°C</td>
<td>Cooking temperature</td>
<td>Most bacteria die</td>
<td>Safe</td>
</tr>
<tr>
<td>Above 100°C</td>
<td>Boiling food Pressure cookers</td>
<td>Most bacteria and bacterial spores killed</td>
<td>Safe</td>
</tr>
</tbody>
</table>
### Incidents of Food Poisoning in PDO

<table>
<thead>
<tr>
<th>Date</th>
<th>Place</th>
<th>People Affected</th>
<th>Type of Food Poisoning</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>June '98</td>
<td>Marmul</td>
<td>23</td>
<td>Salmonellosis</td>
<td>Unknown</td>
</tr>
<tr>
<td>April '99</td>
<td>Fahud</td>
<td>12</td>
<td>Shigellosis</td>
<td>Unknown</td>
</tr>
<tr>
<td>April '99</td>
<td>RAH Club</td>
<td>32</td>
<td>Shigellosis</td>
<td>Unknown</td>
</tr>
<tr>
<td>May '01</td>
<td>Toco Camp Saih Rawl</td>
<td>75</td>
<td>Salmonellosis</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
High-Risk Foods

– Cooked poultry
– Cooked meats
– Dairy produce (milk, cream, etc.)
– Soups, sauces and stocks
– Shellfish, sea food
– Cooked rice
– Dishes containing eggs.
Low-Risk Foods

- Dried or pickled Foods
- Chemically-preserved foods
- Foods with high sugar content
- Food with high salt content
Environmental Sources

-Water - Food-borne diseases are also carried by contaminated water.

-Soil - Dust and dirty is made up from soil. It is easily blown on to food after being carried into the kitchen on clothes and shoes, soil contains the food poisoning bacterium clostridium perfringens as well as many others.

-Insects - Insects carry bacteria on their bodies. Crawling insects such as cockroaches, beetles and flies.

-Kitchen surfaces & Utensils
Ten Main Reasons for Outbreak of Food Poisoning

1. Food prepared too far in advance, and stored at warm temperature.
2. Cooling food too slowly prior to refrigeration.
3. Not reheating food to high enough temperatures to destroy food poisoning bacteria.
4. The use of cooked food contaminated with food poisoning bacteria.
5. Under cooking.
6. Not thawing frozen poultry and meat for sufficient length of time.
Ten Main Reasons for Outbreak of Food Poisoning (Cont.)

7. Cross-contamination from raw food to cooked food.
8. Storing hot food below 63°C.
9. Infected food handlers.
10. Use of leftovers.
Control Measures:-

• Cook food thoroughly
• Handle food as little as possible
• Try not to prepare food in advance
• Keep food covered at all times
• Store food at safe temperatures below 5ºC or above 63ºC.
• Do not keep food in the temperature (5ºC to 63ºC danger zone)
• Keep raw and cooked foods separate.
• Avoid re-heating food.
Control Measures (cont.)

• Prevent dry foods from becoming moist.
• Dispose waste food and other rubbish carefully.
• Keep bins covered.
• Keep all animals and insects away from food places.
• Keep everything as clean as possible.
• Seek advice if you feel ill, especially if you are suffering from diarrhoea or vomiting.
Finally, Never Forget:

• Good Food Handling Practices are the Most Important Aspect of Food Hygiene.

• Get the Practices Right, Keep them Right, and you should Achieve Food Safety.