FOOD HYGIENE

Unit 1: Food Inspection
Topic: FOOD SAFETY - A SERIOUS PUBLIC HEALTH ISSUE
Lecture 2
Objectives

At the end of the session, students should be able to:

• Discuss the health, social & economic implications of FBD outbreaks
• Outline global contemporary issues in relation to the safety of foods
• Identify at least two (2) differences in relation to FBD outbreaks in developed countries compared to that of developing countries
• Explain the global strategy required to address the issues of FBD outbreaks
• Outline the steps to be followed to enhance the food control capacity of nations/jurisdictions using a flow diagram
How Safe is our food?

• Millions worldwide fall sick annually from consuming contaminated food and water.
• Many of these remain unreported
  – iceberg phenomenon
• Food borne diarrhoea is one of the leading cause of infant and childhood mortality.
• FBD is poses a problem in both developed as well as developing countries.
• Diarrhoea is a major cause of malnutrition among children.

WHO 2007
How safe is our foods?

- Intentional food contamination
- Unintentional food contamination
Major FBIs

- Salmonellosis
- Campylobacteriosis
- Infections due to E. coli 0157:H7
- Listeriosis
- Cholera
How foods become contaminated

Factors which contribute to potential hazards in foods include:

• poor hygiene/safety practices at all stages of the food chain
• improper agricultural practices
• contaminated raw materials, ingredients and water
• lack of preventive controls in food processing and preparation operation
• inadequate or improper storage
How foods become Contaminated

• Cultural Practices – eating raw or undercooked foods causes parasitic spread
• Poor food preparation practices
• Lack of training in food safety
• Chemical contaminants (pesticides)
Health Implications

- Human suffering
- Increased demands on an over-burdened health care system
- Malnutrition
  - Vulnerability to a number of diseases
- Retardation of growth & development
Economic Implications

• Economic loss due to absenteeism
• Expenditure on medical care
• Cost of investigating and controlling outbreaks
• Long term illnesses and disabilities
Economic Implications

Enormous social & economic burden

- Loss of revenue
  - Sales
  - Recall
  - Law suits

- Trade implications/ loss due to condemnation
  - Cholera in Peru 1991
    - Loss US $700m

- Effect on tourism (Traveler's diarrhoea)
Global concerns for food safety

Microbiological hazards

• Primary concern in relation to food safety
• Bacteria, viruses, parasites, protozoan, fungi
• Increase in the incidence of FBI
  • *Salmonella* spp.
  • *Campylobacter* spp.
  • E. coli 0157:H7
  • BSE

Source: WHO global strategy for food safety
Global concerns for food safety

Chemical hazards

• Natural toxicants - mycotoxins and marine toxins
  – Aflatoxin and Ochratoxin A
• Environmental contaminants
  – Heavy Metals
    • Hg, Pb, Ca
    • Pollution of air, soil and water
  – POPs – persistent organic pollutants
    • Dioxins, PBC
• Food additives – quality/quantity of food supply
• Pesticides and veterinary drugs

Source: WHO global strategy for food safety
Global concerns for food safety

Animal husbandry practices

- Intensive farming

YouTube video

- Increased risk for disease transmission
- Increased use of ruminant bone and meat meal as feed supplement for cattle appear to have played a role in the emergence of BSE
- Veterinary Drug
  - Adding low levels of antibiotics to animal feed in order to increase growth rate has raised concern about the transfer of antibiotic resistance to human pathogens

- Use of Agro chemical
- Waste disposal
Global concerns for food safety

Advanced technologies

• Genetic Engineering
  • Crops modified to resist pests
  • Foods with allergens removed/added
  • Food with an increase of essential nutrients

• Consider benefits as well as possible negative implications

Source: WHO global strategy for food safety
Global concerns for food safety

• Advanced technologies (cont’d)
  – Irradiation
  – Modified Atmospheric packaging of foods
  – The potential risks associated with application should be *objectively* and *rigorously* assessed well before these technologies are widely introduced/accepted

Source: WHO global strategy for food safety
Global concerns for food safety

• Trends in global food production
  – Trans-boundary movement of foods
  – Demand for more of and variety
  – Seasonal foods demanded year round
  – Increase life expectancy and immuno-compromised population
Global concerns for food safety

• Bio-terrorism (food terrorism)
  – An act or threat of deliberate contamination of food for human consumption with biological, chemical and physical agents or radio nuclear materials for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability.

WHO 2007
Global concerns for food safety

Industrialization & Urbanization

• Longer, more complex food chain
  – Increased possibility for contamination
  – More people more likely to be affected

• In developing countries the health sector have not evolved to meet urban needs

• Increased affluence
  – More consumption of meat, milk, eggs, poultry, processed foods
Food Borne Diseases

• Developed countries – cholera reduced due to:
  – better education
  – higher standards of hygiene
  – improved water supply and sanitation
  – Application of safe food processing techniques

• Epidemic of emerging food borne pathogens (E. coli and Campylobacter and BSE)

• Chemical hazards in food
Food borne Diseases

• Developing Countries – all food borne pathogens
  – Causes death
  – Malnutrition and decreased resistance to diseases

• Chemical contamination
  – Less access to education
  – Lower standards of hygiene
  – Limited access to water and sanitation
  – Food processing techniques??
Food Safety concerns

• Consumers expect protection throughout the Farm to Fork Continuum

• Protection **will only** occur if all sectors in the chain operate in an integrated way, and food control systems are developed to address all stages of this chain
• The importance of food safety as a global public health concern has been recognized internationally.
• For example, the Rome Declaration on World Food Security (1996) clearly stated that all people have the right to safe food whatever the level of their effective demand.
• At the international level, the promotion of food safety is the joint responsibility of both FAO and WHO.
General Weaknesses in FC systems

- Failure to develop and implement any type of national strategy for establishing a food control system.
- Lack of a system of management to develop and implement effective and efficiently managed food control programmes.
- Need to up-date food laws and regulations.
- Food control officials that are poorly equipped to perform their respective functions.
- Food control personnel that are generally inadequately trained and often lack the technical information needed to perform their functions.
- Lack of co-ordination between government organizations and agencies with food control responsibilities

(FAO, 2001)
Response to global concerns for food safety

• The need for capacity building
  – FBI impacts not only health but overall development
  – Globalization of the food trade and development of international food standards have raised awareness of the interaction between food safety and export potential for developing countries
  – Food safety should be part of the political agenda
    • Technical expertise and monetary resources necessary

Source: WHO global strategy for food safety
How to build capacity

1. Identify stakeholders
2. Determine goal and terms of reference
3. Assess the existing food control system/mechanisms
   - Increased restriction of the use of toxic chemicals and pesticides that persist in the environment
   - Improved control of environmental pollution

Generally, the contamination of chemicals in food is on the decline

This is much lower in developed countries vs developing countries