

Primary Health Care Initiatives (PHCI) Project
Contract No. 278-C-00-99-00059-00
Abt. Associates Inc.

FOOD SAFETY

LEARNING OBJECTIVES

- Gain a general overview of food safety
- Identify causes and sources of food poisoning
- Mode of transmitting food borne diseases
- Types of food poisoning and diseases transmitted by food and drinks
- Identify prevention and control of food borne diseases

TEACHING STRATEGIES

- Use lecture-discussion to present main points
- Use discussion (large or small group) of case studies to illustrate learning points
- Ask for two or three case examples from participants experience and discuss in large or small group

MATERIALS AND EQUIPMENT NEEDED

- White board and markers
- Flipchart and markers for each small group
- Overhead projector and transparencies

LEARNING POINTS

- General Overview of food safety
 - An important responsibility of the Ministry of Health
 - Must ensure safety of food and water from source to consumption
 - Most common problem encountered in Health Center is food poisoning
- Common diseases transmitted by food and drinks
 - Bacterial infection, such as:
 - Salmonellosis
 - Staphylococcal intoxication
 - Bacillus cereus
 - Shigellosis
 - Brucellosis
 - Parasitic infection, such as Amebiasis, tapeworm, roundworm, flukes
 - Viral infection, such as Hepatitis A or gastroenteritis
- Definition of food poisoning: - An acute gastroenteritis caused by ingestion of food or drink containing either living bacteria or their toxins, or inorganic chemical substances and poison derived from plants or animals.

- Causes and sources of food poisoning
 - Contaminated raw food (residues of insecticides or fungicides, bacterial contamination (Salmonella on eggs, Brucella abortus in raw milk)
 - Inadequately cooked food (parasitic infection from pork, beef, or fish; Salmonella infection from egg dishes)
 - Improper storage of food (long interval between cooking and consumption, no refrigeration or refrigerator not cold enough)
 - Poor hygiene in food preparation (lack of hand washing before preparing food, unclean pots or dishes)
 - Unclean water source (failure of chlorination system, broken pipes, contaminated spring or well)
- Predisposing personal factors for food poisoning
 - Lack of stomach acidity
 - Older age
 - Sick cell anemia
 - Lack of hygiene and hand washing
- Common types of food poisoning
 - Bacterial
 1. Salmonella infection
 - o Acute onset of vomiting and diarrhea after ingestion of made-up food; usually a number of cases occur together.
 - o Incubation period: -12-36 hours
 - o Disease lasts 1-8 days
 - o Symptoms: - moderate fever, headache, abdominal pain, vomiting & diarrhea
 - o Reservoir: domestic and wild animals
 - o Foodstuffs commonly implicated in outbreaks of Salmonella infection include: undercooked poultry, pre-cooked meats, eggs (particularly dishes prepared with raw eggs), milk and milk products
 2. Staphylococcus aureus toxin
 - o Very commonly occurring gram-positive coccus which causes a range of infections (for example boils) and wound infections following surgical operation.
 - o It is a cause of illness because of the production of a toxin, not simply presence of the Staph bacteria
 - o Once toxin is produced by Staph, cannot be destroyed by refrigeration, heating, or cooking
 - o Incubation period: 2 - 6 hours
 - o The disease lasts 6 - 24 hours
 - o Symptoms: abdominal pain, vomiting & diarrhea
 - o Reservoir: Man only
 - o Outbreaks are frequent in the summer when salad, cakes and cold buffets are served out of doors over several hours
 3. Bacillus cereus

- o Is an aerobic bacillus, which produces spores and is widely, found in nature
 - o There are two main types of illness, both of which are self-limiting: -
 1. Diarrhoeal type with severe diarrhea and abdominal pain
 - Incubation period is 8-16 hours
 - It produces enterotoxin in the bowel.
 - Associated with foods such as corn-flour, sauces, soups and meat dishes that have been insufficiently heated.
 2. Emetic type presents with sudden onset of vomiting
 - Incubation period 1-6 hours
 - It is caused by a toxin produced by the organism and accumulated in the contaminated foodstuff prior to ingestion
 - It is associated with rice, which has been cooked, stored and reheated later.
4. Clostridium Perfringens
5. Botulism
- Non-Bacterial: - plants and seafood contaminated with chemicals such as arsenic, insecticides, etc.
- Clinical management of most common types of food poisoning:
 - Symptomatic treatment of nausea, if present
 - Correct any dehydration with ORT, or IV rehydration in severe cases
 - Antibiotics are not indicated in most cases, but if symptoms lasts for more than 2-3 days:
 - o Collect small sample of diarrheal feces, and examine for presence of leukocytes (WBC). Presence of more than 10 leukocytes/microscopic field suggest an invasive bacterial infection
 - o If many leukocytes present, can consider giving:
 - Trimethoprim/Sulfa (Cotrimoxazole)
 - Quinolone antibiotic (Ciprofloxacin, ofloxacin, etc.).
 - Note: Amoxicillin generally is ineffective because of frequent resistance

PREVENTION AND HEALTH EDUCATION MESSAGES

- Serve meals immediately after preparing to avoid growth of staphylococci accidentally introduced.
- Exclude people with pyogenic (staphylococcal) skin infections from food handling. Search for them in case of an outbreak.
- Cook foodstuffs derived from animals (salmonellae) thoroughly. Avoid the use of raw eggs.
- Health education of food handlers (and housewives) about the necessity of refrigerating foods, washing hands, and maintaining a clean kitchen.
- The toxin produced by staphylococci is heat-stable, so cooking of already prepared food will kill the staphylococci but will not break down the toxin unless the food is

heated over 140 c. Thorough cooking of food will prevent all cases of salmonella food poisoning.

CRITICAL ELEMENTS FOR REFERRAL

- Severe dehydration
- Food poisoning with general toxicity (fever, change in mental status)
- Evidence of common source outbreak of food poisoning involving several people or more (refer to Health Director for epidemiologic investigation)
- Prolonged diarrhea or vomiting not responsive to initial rehydration

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- List the most common causes of food poisoning and their characteristics
- Describe the primary care management of food poisoning
- Understand the basic steps for preventing food poisoning