**FOOD SAFETY, FOOD HYGIENE and FOODBORNE** **DISEASES**

Everyone needs food, and needs it every day. Food is a fundamental human right. And yet one in nine people around the world (805 million) go hungry every day. Food is vital to our lives, like air and water, providing pleasure and much more. That food must be nutritious and safe. Yet food safety is a hidden, and often overlooked, problem. Most people suffering from diarrhea do not consult a physician. Diseases and deaths might be attributed to other causes, even when the food that people have eaten is the culprit. How often do we hear the phrase “It must be something I ate”? Foodborne diseases, caused either by an acute infection with a pathogen or by chronic exposure to chemicals, are largely under-reported.

Safe food supplies support national economies, trade and tourism, contribute to food and nutrition security, and underpin sustainable development. Urbanization and changes in consumer habits, including travel, have increased the number of people buying and eating food prepared in public places. Globalization has triggered growing consumer demand for a wider variety of foods, resulting in an increasingly complex and longer global food chain.

As the world’s population grows, the intensification and industrialization of agriculture and animal production to meet increasing demand for food creates both opportunities and challenges for food safety. Climate change is also predicted to impact food safety, where temperature changes modify food safety risks associated with food production, storage and distribution.

These challenges put greater responsibility on food producers and handlers to ensure food safety. Local incidents can quickly evolve into international emergencies due to the speed and range of product distribution. Serious foodborne disease outbreaks have occurred on every continent in the past decade, often amplified by globalized trade.

Today, the food chain extends over thousands of kilometers, crossing many national borders, and containing many steps from production to consumption. An error by a food producer in one country can affect the health of consumers on the other side of the planet. In our globalized world, not only people but foods, as well, travel far and fast. Food safety needs concerted global effort. A global scandal is often needed to stir the collective consciousness on food safety, examples include the bovine spongiform encephalopathy crisis in the 1990s, the contamination of infant formula with melamine in 2008 (affecting 300 000 infants and young children, 6 of whom died, in China alone), and the 2011 Enterohaemorrhagic *Escherichia coli* outbreak in Germany linked to contaminated fenugreek sprouts, where cases were reported in 8 countries in Europe and North America, leading to 53 deaths and significant economic losses. Foodborne illness is much more than the “stomach flu”, and it is a serious health issue and economic burden for consumers. According to the Economic Research Service (ERS) of the USDA, each year $6.9 billion in costs are associated with five bacterial pathogens, *Campylobacter, Salmonella, Listeria monocytogenes*, *E. coli* O157:H7, and *E. coli* non-O157:H7 STEC.These costs are associated with medical expenses, lost productivity, and even death.

**Key Facts**

Access to sufficient amounts of safe and nutritious food is key to sustaining life and promoting good health. Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes more than 200 diseases – ranging from diarrhea to cancers. An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420 000 die every year, resulting in the loss of 33 million healthy life years. Children under 5 years of age carry 40% of the foodborne disease burden, with 125 000 deaths every year. Diarrhoeal diseases are the most common illnesses resulting from the consumption of contaminated food, causing 550 million people to fall ill and 230 000 deaths every year.

Food safety, nutrition and food security are inextricably linked. Unsafe food creates a vicious cycle of disease and malnutrition, particularly affecting infants, young children, elderly and the sick. Foodborne diseases impede socioeconomic development by straining health care systems, and harming national economies, tourism and trade. Food supply chains now cross multiple national borders. Good collaboration between governments, producers and consumers helps ensure food safety.

Food safety entails other public health concerns, and antimicrobial resistance is one such concern. Resistant microorganisms entering the food chain are a significant health security threat today. In combating antimicrobial resistance, prudent use of antimicrobials in human medicine is crucial. Equally crucial is their use in agriculture, particularly animal husbandry and aquaculture. Food safety should serve as a platform to bring stakeholders together to raise awareness and take steps towards solving the problem

**Definitions**

**Food:** Edible or potable substance consisting of nourishing and nutritive components which sustains life, generates energy, and provides growth, maintenance, and health of the body.

**Nutrients:** Are molecules in food that all organisms need to make energy, grow, develop, and reproduce. Nutrients are digested and then broken down into basic parts to be used by the organism. There are two main types of nutrients, macronutrients and micronutrients. The three main categories of macronutrients include carbohydrate, protein, and fat. The two types of micronutrients are vitamins and minerals, and these are extra molecules that cells need to make energy.

**Food Additives:** Are substances added to food to preserve flavor or enhance its taste, appearance, or other qualities.

**Food Fortification:** Refers to the addition of one or more nutrients (vitamins, minerals, and amino acids) to a food product

**Food Safety:** Refers to handling, preparing and storing food in a way to best reduce the risk of individuals becoming sick from foodborne illnesses. It is a global concern that covers a variety of different areas of everyday life.

**Food Hygiene:** Are the conditions and measures necessary to ensure the safety of food from production to consumption. Food can become contaminated at any point during slaughtering or harvesting, processing, storage, distribution, transportation and preparation. Lack of adequate food hygiene can lead to foodborne diseases and death of the consumer.

**Foodborne Diseases (Illneses):** Diseases that people get from eating contaminated food. They are an important cause of illness, disability and deaths around the world. Foodborne illnesses are usually infectious or toxic in nature and caused by bacteria, viruses, parasites or chemical substances entering the body through contaminated food or water. Foodborne pathogens can cause severe diarrhoea or debilitating infections including meningitis. Chemical contamination can lead to acute poisoning or long-term diseases, such as cancer. Foodborne diseases may lead to long-lasting disability and death. Examples of unsafe food include uncooked foods of animal origin, fruits and vegetables contaminated with faeces, and raw shellfish containing marine biotoxins.

**Food security**: Is defined by the Food and Agriculture Organization (FAO) when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food security has four interrelated elements: availability, access, utilisation and stability. Availability is about food supply and trade, not just quantity but also the quality and diversity of food. Improving availability requires sustainable productive farming systems, well managed natural resources, and policies to enhance productivity. Access covers economic and physical access to food. Improving access requires better market access for smallholders allowing them to generate more income from cash crops, livestock products and other enterprises. Utilisationis about how the body uses the various nutrients in food. A person’s health, feeding practices, food preparation, diversity of their diet and intra-household distribution of food all affect a person’s nutrition status. Improving utilisation requires improving nutrition and food safety, increasing diversity in diets, reducing post-harvest loss and adding value to food. Stability is about being food secure at all times. Food insecurity can be transitory with short term shocks the result of a bad season, a change in employment status, conflict or a rise in food prices. When prices rise, it is the poor who are most at risk because they spend a much higher portion of their income on food. Poor people in Malawi spend nearly 78% of their income on food, while poor in the US, spend just 21%. Social nets can play an important role is supporting people through transitory food insecurity.

**Food Control:** A mandatory regulatory activity of enforcement by national or local authorities to provide consumer protection and ensure that all foods during production, handling, storage, processing, and distribution are safe, wholesome and fit for human consumption; conform to safety and quality requirements; and are honestly and accurately labelled as prescribed by law.

**Food Quality:** Quality includes all other attributes that influence a product’s value to the consumer. This includes negative attributes such as spoilage, contamination with filth, discoloration, off-odours and positive attributes such as the origin, colour, flavour, texture and processing method of the food.

**Food Loss and Food Waste:** Food loss and food waste refer to the decrease of food in subsequent stages of the food supply chain intended for human consumption. Food is lost or wasted throughout the supply chain, from initial production down to final household consumption. Food that gets spilled or spoilt before it reaches its final product or retail stage is called food loss. This may be due to problems in harvesting, storage, packing, transport, infrastructure or market / price mechanisms, as well as institutional and legal frameworks. Harvested bananas that fall off a truck, for instance, are considered food loss. Food that is fit for human consumption, but is not consumed because it is or left to spoil or discarded by retailers or consumers is called food waste. This may be because of rigid or misunderstood date marking rules, improper storage, buying or cooking practices. A carton of brown-spotted bananas thrown away by a shop, for instance, is considered food waste. One-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year. Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. Food losses represent a waste of resources used in production such as land, water, energy and inputs, increasing the green gas emissions in vain.

**Codex Alimentarius:** The other name is Food Codex and it is a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission. The Commission, also known as CAC, is the central part of the Joint FAO/WHO Food Standards Programme and was established by FAO and WHO to protect consumer health and promote fair practices in food trade. The Codex Alimentarius international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Codex has worked since 1963 to create harmonized international food standards to protect the health of consumers and ensure fair trade practices.

**Food Contaminant:** Any biological or chemical agent, foreign matter, or other substance not intentionally added to food which may compromise food safety or suitability.

**Cross-contamination:** The transfer of harmful substances or disease-causing microorganisms to food by hands, food-contact surfaces, sponges, cloth towels, and utensils that touch raw food, are not cleaned, and then touch ready-to-eat foods. Cross-contamination can also occur when raw food touches or drips onto cooked or ready-to-eat foods.

**Incidence:** Is the rate of new (or newly diagnosed) cases of the disease. It is generally reported as the number of new cases occurring within a period of time (e.g., per month, per year). It is more meaningful when the incidence rate is reported as a fraction of the population at risk of developing the disease (e.g., per 100,000 or per million population).

**Prevalence**: Is the actual number of cases alive, with the disease either during a period of time (period prevalence) or at a particular date in time (point prevalence). Period prevalence provides the better measure of the disease load since it includes all new cases and all deaths between two dates, whereas point prevalence only counts those alive on a particular date.

**Outbreak:** An incident in which two or more people experience the same illness after eating the same food.

**Hazard:** Is any source of potential damage, harm or adverse health effects on something or someone. In food safety, “hazard” means a chemical, physical or biological agent with potential to contaminate food.

**Risk:** Is the likelihood of occurring “hazard”.

**Farm-to-Table:**  Includes all steps involved in the production, storage, handling, distribution and preparation of a food product.

**Food Surveillance:** The continuous monitoring of the food supply to ensure consumers are not exposed to components in foods, such as chemical contaminants or biological hazards, which pose a risk to health.

**Good Agricultural Practices (GAP):** Practices of primary food producers (such as farmers and fishermen) that are necessary to produce safe and wholesome agricultural food products conforming to food laws and regulations.

**Good Manufacturing Practices (GMP):** Conformance with codes of practice, industry standards, regulations and laws concerning production, processing, handling, labelling and sale of foods decreed by industry, local, state, national and international bodies with the intention of protecting the public from illness, product adulteration and fraud.