

Safer Food for a Safer World

Professor Pe Thet KHIN¹

It is indeed an honor and a pleasure for me to be invited to deliver the Taro Takemi Oration on this auspicious occasion. First of all, I would like to take this opportunity to welcome you all to Myanmar. This may not be the best time to visit our country because of the Monsoon and heavy rains, and of course Yangon traffic, but nevertheless we may find some time and space for you to visit memorable places in and around Yangon.

“There is no sincerer love than the love of food.”—George Bernard Shaw

Forty years ago, as second year medical students of the Institute of Medicine 1, we were asked by our Biochemistry teacher whether we eat to live or rather we live to eat.

I have deep respect for Moliere who proposed that “one must eat to live and not live to eat,” but my hero is Snoopy who maintained “All you need is love. But a little chocolate now and then doesn’t hurt.”

As you can imagine, we were divided and did not get the consensus. Forty years later, we still don’t really have the consensus on what to eat, how much to eat, and how frequent we should eat in health and disease or for different age groups, or as members of medical profession, what advice we should give to the individual or the community as a whole, about healthy and nutritious diet in a plain language easily understandable and unequivocal.

What we know is this...

Access to sufficient amounts of safe and nutritious food is fundamental to human health and development, as it sustains life and promotes good health. Food safety encompasses actions aimed at ensuring that all food is as safe as possible. The policies and actions need to cover the entire food chain, from production to consumption. Food safety is distinct from food and nutrition security, but they are inextricably linked.

Myanmar people traditionally believe that “Food is also Medicine, and Medicine is also

Food.” Safe, nutritious, and healthy diet is very important in a Myanmar family especially for the vulnerable ones such as infants and young children, pregnant women, the elderly, the diseased and the infirmed. One common Myanmar parlance clearly describes the importance of unsafe food—a single wrong step you take or one mouthful of wrong food you eat may cause irreparable damage!

“The food you eat can be either the safest and most powerful form of medicine or the slowest form of poison”—Ann Wigmore

The risks of unsafe food are substantial, but can be difficult to quantify. Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes more than 200 diseases ranging from diarrhea to cancers. According to WHO, food borne and waterborne diseases kill an estimated 2 million people annually.

Here, I would like to elaborate a little bit more on this.

Food borne 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. According to WHO, Food borne pathogens can cause severe diarrhoea or debilitating infections including meningitis.

Chemical contamination can lead to acute poisoning or long-term diseases, such as cancer. Food borne diseases may lead to long-lasting disability and death. Examples of unsafe food include uncooked or undercooked foods of animal origin, fruits and vegetables contaminated with faeces, and raw shellfish containing marine biotoxins.

Bacteria such as *Salmonella*, *Campylobacter*, and Enterohaemorrhagic *Escherichia coli* are among the most common food borne pathogens that affect millions of people annually—sometimes with severe and fatal outcomes. Examples of foods involved in outbreaks of salmonellosis are eggs, poultry and other products of animal

¹ Former Union Minister of Health of Myanmar, Chairman of the National Health Committee, Myanmar.

origin. Food borne cases with *Campylobacter* are mainly caused by raw milk, raw or undercooked poultry and drinking water. Enterohaemorrhagic *Escherichia coli* is associated with unpasteurized milk, undercooked meat and fresh fruits and vegetables.

Listeria infection leads to unplanned abortions in pregnant women or death of newborn babies. *Listeria* is found in unpasteurised dairy products and various ready-to-eat foods and can grow at refrigeration temperatures.

Vibrio cholerae infects people through contaminated water or food. Rice, vegetables, millet gruel and various types of seafood have been implicated in cholera outbreaks.

Viral infections such as Norovirus infections and Hepatitis viruses A and E infections typically spreads through raw or undercooked seafood or contaminated raw produce and water. Infected food handlers are often the source of food contamination.

Some parasites, such as fish-borne *trematodes*, are only transmitted through food. Others, for example *Echinococcus spp*, may infect people through food or direct contact with animals. Other parasites, such as *Ascaris*, *Cryptosporidium*, *Entamoeba histolytica* or *Giardia*, enter the food chain via water or soil and can contaminate fresh produce.

Bovine spongiform encephalopathy (BSE, or “mad cow disease”) is a prion disease in cattle, associated with the variant Creutzfeldt-Jakob Disease (vCJD) in humans. Consuming bovine products containing specified risk material, e.g. brain tissue, is the most likely route of transmission of the prion agent to humans.

Now, please let me turn your attention to chemical substances that cause food unsafe. Chemicals that cause most concern for health are naturally occurring toxins and environmental pollutants.

Naturally occurring toxins include mycotoxins, marine biotoxins, cyanogenic glycosides and toxins occurring in poisonous mushrooms. Staple foods like corn or cereals can contain high levels of mycotoxins, such as aflatoxin and ochratoxin. A long-term exposure can affect the immune system and normal development, or cause cancer.

Persistent organic pollutants (POPs) are compounds that accumulate in the environment and human body. Known examples are dioxins and polychlorinated biphenyls (PCBs), which are

unwanted byproducts of industrial processes and waste incineration. They are found worldwide in the environment and accumulate in animal food chains. Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and cause cancer.

Heavy metals such as lead, cadmium, and mercury can cause neurological and kidney damage. Contamination by heavy metal in food occurs mainly through pollution of air, water and soil.

Many waters contain some arsenic and excessive concentrations are known to naturally occur in some areas. Drinking water rich in arsenic over a long period lead to arsenic poisoning or arsenicosis. The health effects are generally delayed, which include skin problems (such as color changes on the skin, and hard patches on the palms and soles of the feet), skin cancer, cancers of the bladder, kidney and lung, and diseases of the blood vessels of the legs and feet, and possibly also diabetes, high blood pressure and reproductive disorders.

“Every time you eat or drink, you are either feeding disease or fighting it” —Heather Morgan

So, what are the implications?

Safe food supplies support national economies, trade and tourism, contributes to food and nutrition security, and underpins 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 food borne disease outbreaks have occurred on every conti-

ment in the past decade, often amplified by globalized trade and tourism.

Examples include 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. The 2011 *E.coli* outbreak in Germany caused US\$ 1.3 billion in losses for farmers and industries and US\$ 236 million in emergency aid payments to 22 European Union Member States.

Food safety is a significant public health priority. Unsafe food poses global health threats, endangering everyone. Infants, young children, pregnant women, the elderly, and those with underlying illnesses are particularly vulnerable.

Food borne and waterborne diarrhoeal disease kill an estimated 2 million people annually, including many children and particularly in developing countries. Unsafe food creates a vicious cycle of diarrhoea and malnutrition, threatening the nutritional status of the most vulnerable. Where food supplies are insecure, people tend to shift to less healthy diets and consume more “unsafe foods”—in which chemical, microbiological and other hazards pose health risks.

Food can become contaminated at any point of production and distribution, and the primary responsibility lies with food producers. Yet a large proportion of food borne disease incidents are caused by foods improperly prepared or mishandled at home, in food service establishments or markets. Not all food handlers and consumers understand the roles they must play, such as adopting basic hygienic practices when buying, selling and preparing food to protect their health and that of the wider community.

Disease Outbreaks

Occurrence of disease outbreaks due to unsafe food can easily escalate to a food safety emergency situation, which can adversely impact national economies and livelihoods through reduced availability of food for national consumption, closure of export markets, and/or the high cost of addressing the effects of the threat.

Antimicrobial Resistance

Antimicrobial resistance is one of the main

threats to modern medicine. Antimicrobials, such as antibiotics, are essential to treat infections caused by bacteria. However, their overuse and misuse in veterinary and human medicine has been linked to the emergence and spread of resistant bacteria, rendering the treatment of infectious diseases ineffective in animals and humans. Resistant bacteria enter the food chain through the animals (e.g. *Salmonella* through chickens).

Measures already taken by UN Agencies and other International Organizations

The WHO, recognizing the importance of food safety, introduced “Five Keys to Safer Food” as early as 2001, and again promoted the efforts to improve food safety on World Health Day 2015 with a theme “How safe is your food? From farm to plate, make food safe.” The WHO works closely with FAO, the World Organization for Animal Health (OIE), and other international organizations to ensure food safety along the entire food chain from production to consumption.

The FAO has also published guidelines for strengthening national food control systems in a technical paper—“Assuring food safety and quality.” Guidance and manuals for governments, travelers, and food markets have also been published by the FAO and WHO.

To tackle the important issue of Antimicrobial resistance, WHO, FAO and OIE have established a formal tripartite alliance to enhance global coordination and to promote intersectoral collaboration between the public health and animal health sectors, as well as in food safety.

Food borne 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 among governments, food industry, consumers and consumer protection societies, academia and professional associations, will ensure food safety.

What should we do now?

“If you wish to make an apple pie truly from scratch, you must first invent the Universe.”— Carl Sagan

According to the WHO, Everyone can contribute to making food safe. Here are some examples of effective actions:

Governments

Governments should make food safety a public health priority, as they play a pivotal role. By developing policies and regulatory frameworks, and by establishing and implementing effective food safety systems, Governments must ensure food producers and suppliers along the whole food chain operate responsibly and supply safe food to consumers.

Policy-makers can:

- build and maintain adequate food systems and infrastructures (e.g. laboratories) to respond to and manage food safety risks along the entire food chain, including during emergencies;
- foster multi-sectoral collaboration among public health, animal health, agriculture and other sectors for better communication and joint action;
- integrate food safety into broader food policies and programmes (e.g. nutrition and food security);
- think globally and act locally to ensure the food produce domestically be safe internationally

Food handlers and consumers can:

- know the food they use (read labels on food package, make an informed choice, become familiar with common food hazards);
- handle and prepare food safely, practicing the WHO Five Keys to Safer Food at home, or when selling at restaurants or at local markets;
- grow fruits and vegetables using the WHO Five Keys to Growing Safer Fruits and Vegetables to decrease microbial contamination

Professional associations

- Professional Associations like Medical Associations and Veterinary Medical Associations should take an active and leading role in educating the public and advocating the governments for a well-balanced regulatory and educational action, including a coordinated, integrated, unified food safety regulatory program that is effectively enforced and that cooperates closely with state and municipal food control programs.

Response of UN Agencies

Pay the farmer now (FAO) or pay the doctor later (WHO)!

WHO

WHO aims to facilitate global prevention, detection and response to public health threats associated with unsafe food. Ensuring consumer trust in their authorities, and confidence in the safe food supply, is an outcome that WHO works to achieve.

To do this, the WHO helps Member States build capacity to prevent, detect and manage food borne risks by:

- providing independent scientific assessments on microbiological and chemical hazards that form the basis for international food standards, guidelines and recommendations, known as the Codex Alimentarius, to ensure food is safe wherever it originates;
- assessing the safety of new technologies used in food production, such as genetic modification and nanotechnology;
- helping improve national food systems and legal frameworks, and implement adequate infrastructure to manage food safety risks. The International Food Safety Authorities Network (INFOSAN) was developed by WHO and the UN Food and Agriculture Organization (FAO) to rapidly share information during food safety emergencies;
- promoting safe food handling through systematic disease prevention and awareness programmes, through the WHO Five Keys to Safer Food message and training materials; and
- advocating for food safety as an important component of health security and for integrating food safety into national policies and programmes in line with the International Health Regulations (IHR-2005).

FAO

Through the Food Chain Crisis Management Framework (FCC), FAO addresses the risks to the human food chain through a comprehensive, multidisciplinary and institution-wide collaborative approach.

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To contribute to the efforts to reduce this adverse impact of food safety emergencies on global food security and public health, and at the

request of its members, The Food and Agriculture Organization of the United Nations (FAO) has established an Emergency Prevention System for Food Safety (EMPRES Food Safety). EMPRES Food Safety will complement and enhance FAO's ongoing work in food safety, as well as in animal health and plant health emergencies.

The main aim of EMPRES Food Safety is to prevent and control food safety risks. As a key international system to assist in the prevention and management of global food safety emergencies EMPRES Food Safety serves FAO members with the three pillars of early warning, emergency prevention and rapid response.

In this regard, and as the first step toward the development and implementation of EMPRES Food Safety, the Nutrition and Consumer Protection Division (AGN) of FAO, in collaboration with other concerned technical divisions and units, has prepared the Strategic Plan, which aims at making full use of relevant available expertise along the food chain within FAO.

The plan reflects FAO's comparative advantages of having a mandate covering the entire food chain, its status as a neutral international forum and its linkages with national governments, regional bodies, other international agencies, universities, research centres and the donor community. The Plan will be regularly updated to reflect the ever-changing nature of food safety emergencies.

Recent news on Medical Associations and Food Safety

In June 2014, The American Medical Association (AMA) called for federal action to ban antibiotic use in food animals for growth promotion purposes so as to slow the development of antibiotic-resistant bacteria. The American Medical Association, along with a coalition of 18 mayors, came out against the eligibility for sugary drinks to be purchased under the Supplemental

Nutrition Assistance Program (SNAP) in 2013. AMA maintained that food stamps should not buy soft drinks. It also promotes tax on sugar-sweetened drinks.

Following nationwide ban on Nestle's Maggi Noodles over concerns of lead contamination, the Indian Medical Association has announced plans recently to form a safe food consortium to create awareness in the country about what constitutes safe food. The organization plans to prepare a set of guidelines to widely disseminate to the Indian public.

A report by the British Medical Association concluded that with regard to the long-term effects of genetically modified (GM) foods on human health and the environment, "many unanswered questions remain" and that "safety concerns cannot, as yet, be dismissed completely on the basis of information currently available."

Before I conclude, I would like to present some "quotable quotes" on food safety.

"An ounce of prevention is worth a pound of cure"—Benjamin Franklin

"Food safety involves everybody in the food chain"—Mike Johann

"The goal should be food safety culture, not food safety programme"—Frank Yiannas

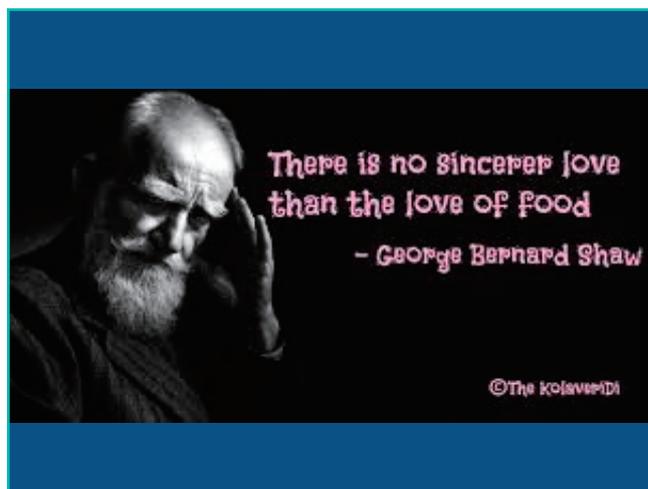
"We may find in the long run that tinned food is a deadlier weapon than the machine gun."—George Orwell

"He was a bold man that first ate an oyster."—Jonathan Swift

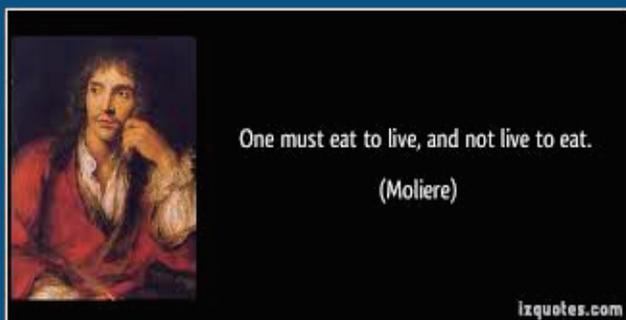
"Man seeks to change the foods available in nature to suit his tastes, thereby putting an end to the very essence of life contained in them."—Sai Baba

I would now conclude my presentation with Luciano Pavarotti's comment:

"One of the very nicest things about life is the way we must regularly stop whatever it is we are doing and devote our attention to eating."



We eat to live or we live to eat?



40 years later

We still don't really have the consensus on

- what to eat*
- how much to eat*
- how frequent we should eat in health and disease or for different age groups*
- what advice we should give to the public, about healthy and nutritious diet in a language easily understandable and unequivocal*

What we know now

- Access to sufficient amounts of safe and nutritious food is fundamental to human health and development, as it sustains life and promotes good health*

Food Safety

- Food safety encompasses actions aimed at ensuring that all food is as safe as possible*
- The policies and actions need to cover the entire food chain, from production to consumption.*
- Food safety is distinct from food and nutrition security, but they are inextricably linked.*

Food Safety

- Myanmar people traditionally believe that “Food is also Medicine, and Medicine is also Food”
- Myanmar common parlance clearly describes the importance of unsafe food – a single wrong step you take or one mouthful of wrong food you eat may cause irreparable damage!

The food you eat can be either the safest and most powerful form of medicine or the slowest form of poison.

–Ann Wigmore



restorativenutrition.com

Risks of Unsafe food

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Risks of unsafe food

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- Examples of unsafe food include uncooked or undercooked foods of animal origin, fruits and vegetables contaminated with faeces, and raw shellfish containing marine biotoxins

He was a **bold** man that first ate an oyster.

– Jonathan Swift



Bacteria

- *Salmonella*, *Campylobacter*, and *Enterohaemorrhagic Escherichia coli* are among the most common food borne pathogens that affect millions of people annually – sometimes with severe and fatal outcomes
- Foods involved in outbreaks of salmonellosis are eggs, poultry and other products of animal origin

Bacteria

- Food borne cases with **Campylobacter** are mainly caused by raw milk, raw or undercooked poultry and drinking water.
- **Enterohaemorrhagic Escherichia coli** is associated with unpasteurized milk, undercooked meat and fresh fruits and vegetables

Bacteria

- **Listeria** infection leads to unplanned abortions in pregnant women or death of newborn babies.
- **Listeria** is found in unpasteurized dairy products and various ready-to-eat foods and can grow at refrigeration temperatures.

Bacteria

- **Vibrio cholerae** infects people through contaminated water or food.
- Rice, vegetables, millet gruel and various types of seafood have been implicated in cholera outbreaks.

Viruses

- Viral infections such as **Norovirus** infections and **Hepatitis viruses A and E** infections typically spreads through raw or undercooked food or contaminated raw produce and water.
- Infected food handlers are often the source of food contamination.

Parasites

- Some **parasites**, such as fish-borne **trematodes**, are only transmitted through food.
- **Echinococcus spp**, may infect people through food or direct contact with animals.
- Other parasites, such as **Ascaris**, **Cryptosporidium**, **Entamoeba histolytica** or **Giardia**, enter the food chain via water or soil and can contaminate fresh produce.

Prions

- **Bovine spongiform encephalopathy (BSE, or "mad cow disease")** is a prion disease in cattle, associated with the variant **Creutzfeldt-Jakob Disease (vCJD)** in humans.
- Consuming bovine products containing specified risk material, e.g. brain tissue, is the most likely route of transmission of the prion agent to humans.

Chemicals

- **Naturally occurring toxins** include mycotoxins, marine biotoxins, cyanogenic glycosides and toxins occurring in poisonous mushrooms.
- Staple foods like corn or cereals can contain high levels of mycotoxins, such as aflatoxin and ochratoxin.
- A long-term exposure can affect the immune system and normal development, or cause cancer.

Chemicals

- **Persistent organic pollutants (POPs)** are compounds that accumulate in the environment and human body.
- Known examples include **Dioxins** and **polychlorinated biphenyls (PCBs)**, which are unwanted byproducts of industrial processes and waste incineration.

Chemicals

- They are found worldwide in the environment and accumulate in animal food chains.
- Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and cause cancer.

Heavy Metals

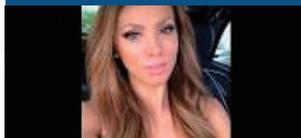
- **lead, cadmium, and mercury** can cause neurological and kidney damage.
- Contamination by heavy metal in food occurs mainly through pollution of air, water and soil.
- Natural waters contain some **arsenic** and excessive concentrations are known to occur in some areas.
- Drinking water rich in **arsenic** over a long period lead to arsenic poisoning or arsenicosis.

So, what are the implications?

"Every time you eat or drink, you are either feeding disease or fighting it."

—Heather Morgan, MS, NLC

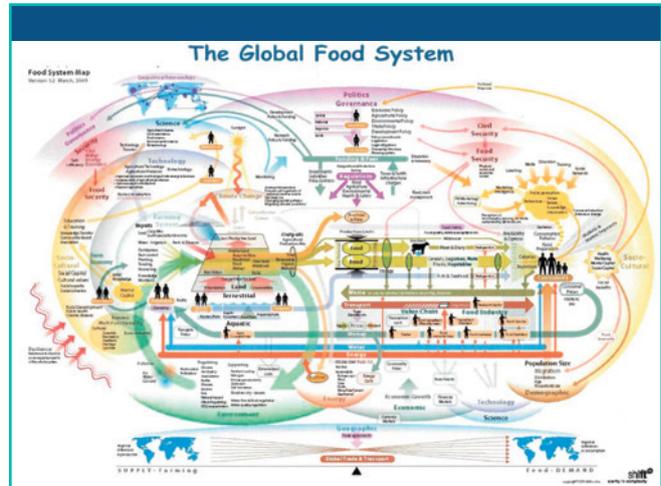
www.WholesomeFoods.com



Heather Morgan

- Safe food supplies support national economies, trade and tourism, contributes to food and nutrition security, and underpins sustainable development.
- Urbanization and changes in consumer habits, including travel, have increased the number of people buying and eating food prepared in public places.

- 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
- Globalization has triggered growing consumer demand for a wider variety of foods, resulting in an increasingly complex and longer global food chain.



- 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 food borne disease outbreaks have occurred on every continent in the past decade, often amplified by globalized trade and tourism.



We may find in the long run that tinned food is a deadlier weapon than the machine-gun.
 (George Orwell)

izquotes.com

- Contamination of infant formula with melamine - 300,000 affected, 6 deaths in China alone (2008)
- Esch. coli outbreak in Germany (2011) - cases were reported in 8 countries in Europe and North America, leading to 53 deaths.
- US\$ 1.3 billion in losses for farmers and industries and US\$ 236 million in emergency aid payments to 22 European Union Member States.

Public Health Priority

- *Food safety is a significant public health priority.*
- *Unsafe food poses global health threats, endangering everyone.*
- *Infants, young children, pregnant women, the elderly, and those with underlying illnesses are particularly vulnerable.*

- *Food can become contaminated at any point of production and distribution, and the primary responsibility lies with food producers.*
- *Yet, a large proportion of food borne disease incidents are caused by foods improperly prepared or mishandled at home, in food service establishments or markets*

Disease Outbreaks

- *Occurrence of disease outbreaks due to unsafe food can easily escalate to a food safety emergency situation*
- *Disease Outbreaks have adverse impact on national economies and livelihoods through reduced availability of food for national consumption, closure of export markets, and/or the high cost of addressing the effects of the threat.*

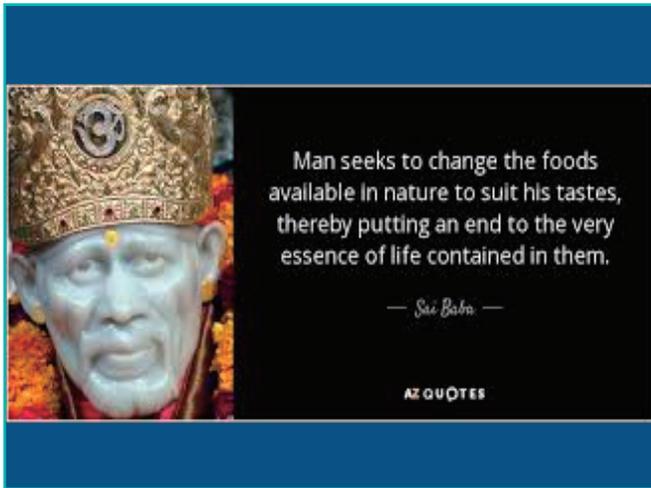
- *Where food supplies are insecure, for various reasons, people tend to shift to less healthy diets and consume more “unsafe foods” – in which chemical, microbiological and other hazards pose health risks.*

Antimicrobial Resistance (AMR)

- *AMR is one of the main threats to modern medicine*
- *Antimicrobials are essential to treat infections*
- *Their overuse and misuse in veterinary and human medicine has been linked to the emergence and spread of resistant bacteria, rendering the treatment of infectious diseases ineffective*
- *Resistant bacteria enter the food chain through the animals (e.g. Salmonella through chickens)*

Genetically Modified (GM) Food

- *A report by the British Medical Association concluded that with regard to the long-term effects of genetically modified (GM) foods on human health and the environment, “many unanswered questions remain” and that “safety concerns cannot, as yet, be dismissed completely on the basis of information currently available”.*



Measures taken

- The WHO, recognizing the importance of food safety, introduced “Five Keys to Safer Food” as early as 2001

HOW SAFE IS YOUR FOOD?

From farm to plate, make food safe

WORLD HEALTH DAY 2015
www.who.int/hand/5-Food-safety

- WHO promoted the efforts to improve food safety on World Health Day 2015 with a theme “How safe is your food? From farm to plate, make food safe”.

Assuring food safety and quality
 Guidelines for strengthening national food control systems

- The FAO has also published guidelines for strengthening national food control systems in a technical paper-“Assuring food safety and quality” jointly with WHO in 2003

Publications on food safety

HACCP: A Practical Approach

HACCP for SMEs

FOOD SAFETY PRACTICES IN THE PREPARATION AND SALE OF STREET FOOD IN AFRICA

AMERICAN SAFE FOOD FOR THE WORLD

Publications by OIE- World Organization for Animal Health

Work of the OIE on Animal Production Food Safety

Shreshth A. Sharma
 Chief, Animal Production Food Safety Working Group

The OIE role in standard setting

The '3 sisters'

- food safety CODEX
- animal health and zoonoses OIE
- plant health IPPC

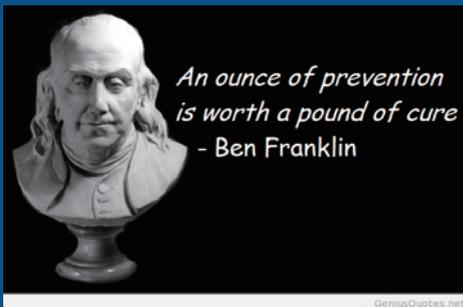
WTO SPS Agreement recognizes OIE as a reference organization for international standards on animal health including zoonoses

PAY THE FARMER
NOW
OR
PAY THE DOCTOR
LATER

What should we do now?



- “If you wish to make an apple pie truly from scratch, you must first invent the universe.” - Carl Sagan



- “Food safety involves everybody in the food chain” – Mike Johann

Governments

- Governments should make food safety a public health priority, as they play a pivotal role.
- By developing policies and regulatory frameworks, and by establishing and implementing effective food safety systems and structures, Governments must ensure food producers and suppliers along the whole food chain operate responsibly and supply safe food to consumers.

Policy-makers

- build and maintain adequate food systems and infrastructures
- foster multi-sectoral collaboration among public health, animal health, agriculture and other sectors
- integrate food safety into broader food policies and programmes (e.g., food and nutrition security)
- think globally and act locally to ensure the food produce domestically be safe internationally



“The goal should be food safety culture, not food safety programme” – Frank Yiannas

Food handlers and consumers

- *know the food they use (read labels, make an informed choice, be familiar with common food hazards)*
- *handle and prepare food safely, practicing the WHO Five Keys to Safer Food at home, or when selling at restaurants or at local markets*
- *grow fruits and vegetables using the WHO Five Keys to Growing Safer Fruits and Vegetables*

Professional associations

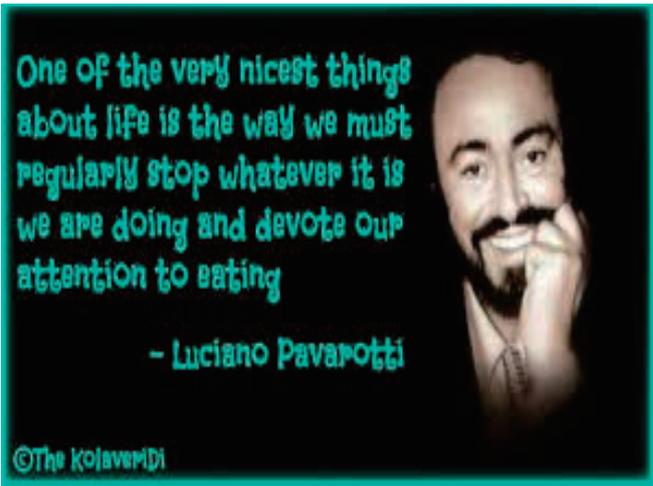
- *Professional Associations like Medical Associations and Veterinary Medical Associations should take an active and leading role in **educating the public and advocating the governments** for a well-balanced regulatory and educational action, including a coordinated, integrated, unified food safety regulatory program that is effectively enforced and that cooperates closely with food control programs at all levels. (WHO)*

Conclusion

- *Food borne diseases impede socioeconomic development by straining health care systems, and harming national economies, tourism and trade.*
- *Food supply chains now cross multiple national borders.*

Conclusion

- *Good collaboration among governments, food industry, consumers and consumer protection societies, academia and professional associations, will ensure food safety.*



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