



World Health
Organization



International Food Safety Authorities Network (INFOSAN)

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INFOSAN Information Note No. 5/2006 - "Five Keys to Safer Food"

"Prevention of Foodborne Disease: The Five Keys to Safer Food"

SUMMARY NOTES

- Each day millions of people become ill and thousands die from a preventable foodborne disease
- Children, the elderly, and pregnant and immunocompromised individuals are particularly susceptible to foodborne disease
- Proper food preparation can prevent many foodborne diseases
- The World Health Organization (WHO) has developed the **Five Keys to Safer Food** to teach safe food handling practices
- The **Five Keys to Safer Food poster** has been translated into over 40 languages
- The **Five Keys to Safer Food manual** is available to help trainers present and adapt the WHO food hygiene message to specific and diverse groups
- **Five Keys to Safer Food projects** have been conducted by all six WHO Regional Offices
- WHO continues to seek partners and collaborators to continue this important work

The components of the Five Keys to Safer Food are:

1. Keep clean
2. Separate raw and cooked
3. Cook food thoroughly
4. Keep food at safe temperatures
5. Use safe water and raw materials

The issue

Unsafe food has been a human health problem since history was first recorded, and many food safety problems encountered today are not new. Some records attribute the death of Buddha to foodborne illness and a number of religious dietary rules reflect food hygiene concerns. Some of the earliest laws also relate to food standards and safety.

Although governments throughout the world are doing their best to improve the safety of the food supply, the occurrence of foodborne disease remains a significant health issue in both developed and developing countries. While the foodborne disease burden is often most well-documented in developed countries, the implications for developing countries are extremely serious in terms of both human suffering and increased demand on health care systems. The long-term consequences of repeated bouts of diarrhoea are malnutrition and increased vulnerability to a wide range of diseases. This is particularly true for diarrhoea in infants where mortality is recorded as several millions per year. Foodborne disease hurts the national economy and development, because of both direct and indirect costs, as well as the serious implications for food export and tourism, two important sources of revenue in developing countries.

In recent years a number of extremely serious foodborne disease outbreaks have occurred on virtually every continent, demonstrating both the public health and social significance of foodborne disease. Foodborne disease is particularly harmful for high-risk groups.

Food Safety and High-risk Groups

While everyone is susceptible to foodborne disease, there are a growing number of people, throughout the world, that are at increased risk for contracting foodborne disease - often with severe consequences:

- ***Infants and young children***

Because their immune systems are still developing and the protection afforded by the gut flora is not as effective as in adults, infants and children are more prone to foodborne disease. In addition, children consume more food in proportion to their weight than adults, hence they have greater exposure to foodborne toxins and contaminants.

- ***Pregnant women***

Hormonal changes during pregnancy affect the mother's immune system resulting in decreased immune function and greater susceptibility to foodborne disease. Also the developing fetus is susceptible to foodborne pathogens that may not cause illness in the pregnant women. For example, *Listeria monocytogenes* and *Toxoplasma gondii* can cause premature delivery, miscarriage, stillbirth or foetal malformation without causing symptoms in the mother.

The immunocompromised

Due to their weakened immune systems, individuals suffering from chronic illness such as HIV/AIDS, individuals receiving treatment for cancer and individuals with organ transplants are particularly prone to contracting foodborne disease. Bacterial infections are often associated with complicated sequelae and death in these individuals.

- ***The elderly***

Older people are more susceptible to foodborne disease because the natural defences or ability to fight diseases decrease with old age. Infections with *entero-haemorrhagic E. coli* (such as *E. coli O157*) can be fatal. The elderly are also at increased risk due to decreased sight which interferes with their ability to determine that surfaces are clean and food is well cooked.

- ***Travellers***

International travellers often contract diarrhoea through the consumption of contaminated food. Compromised immunity, changes in diet and climate, stress, limited knowledge of local problems and social traditions are some of the factors compounding the problem.

A high level of foodborne disease is caused by foods improperly prepared, or mishandled at home or in food service establishments. Education of food handlers (which includes all consumers) is essential in the prevention of foodborne disease. Proper food handling is particularly important for people in high-risk groups and their care-givers.

WHO's actions to lower the burden of disease from food

WHO has long been aware of the need to educate food handlers about their responsibilities for food safety. In the early 1990's WHO developed the *Ten Golden Rules for Safe Food Preparation*. However, it became obvious that something simpler and more generally applicable was needed. After nearly a year of consultation with food safety experts and risk communicators, WHO introduced the **Five Keys to Safer Food poster** in 2001.

The Five Keys to Safer Food poster consists of simple headings that are more easily remembered, specific suggestions for improvement and reasons behind the suggested measures. The poster has been translated into more than 40 languages and is currently being used to spread WHO's food hygiene message throughout the world. Copies of the poster in many languages are available on-line at <http://www.who.int/foodsafety/publications/consumer/5keys/en/index.html>.

WHO has recently published the **Five Keys to Safer Food manual**. The manual elaborates the core food safety information provided in the WHO Five Keys to Safer Food poster and suggests ways to communicate the message. The manual also provides tips on how to adapt the training programme for different target groups (e.g., professional food handlers, consumers, children, and women). Included in the manual are two evaluation forms: one for the organizer and one for participants. The evaluation form for participants assesses the impact of the training session on food safety knowledge, attitude and behaviours. Copies of the training manual are available on-line at <http://www.who.int/foodsafety/consumer/5keysmanual/en>.

► **Combating avian influenza with the Five Keys to Safer Food**

In 2006 WHO adapted the Five Keys messages to specifically address the health concerns associated with handling and preparing poultry and poultry products potentially infected with highly pathogenic Avian influenza (HPAI) virus. In addition, the basic food hygiene principles of separate, wash and cook were incorporated into the FAO/UNICEF/WHO Social Mobilization Campaign designed to prevent the spread of avian influenza to humans (http://www.who.int/csr/disease/avian_influenza/adhocsummaryreport.pdf). A video focusing on preventing HPAI infection in humans through the application of the Five Keys message is available at http://www.who.int/foodsafety/publications/micro/ai_farmtofork/en/index.html.

► **Adaptation of the Five Keys to Healthy Food Markets**

While food markets are an important source of affordable food for many millions of people, these markets have also been associated with major disease outbreaks. As part of its Healthy Cities Programme, WHO has developed "The Healthy Food Markets" approach to improve the safety and nutritional quality of foods sold in urban markets. An adaptation of the Five Keys, developed for use by Healthy Food Markets, is included in a new publication, A Guide to Healthy Food Markets available at: http://www.who.int/foodsafety/capacity/healthy_marketplaces/en/index.html.

► **Delivering the Five Keys to Safer Food Message**

WHO actively promotes the adaptation of the Five Keys food hygiene message to the local level. Educational projects for high-risk groups, including children and women and others involved in food preparation and handling, such as street-food vendors, are being implemented at the local level in countries through the active participation of the WHO's network of Regional and Country Offices (<http://www.who.int/foodsafety/contact/en/index.html>), and partner organizations.

The six WHO Regional Offices play a crucial role in the process. For example, in the Regional Office for South-East Asia, the Five Keys were translated into the 13 languages widely spoken in the region and a guidance booklet on how to adapt the Five Keys to local conditions was prepared. Following the tsunami, the posters and training manuals were distributed widely throughout the affected countries. These materials were used in emergency refugee camps, marketplaces, health care facilities and schools; and helped prevent the secondary outbreak of disease which is often associated with poor sanitation and overcrowding.

In the WHO Regional Office for the Americas, the Five Keys to Safer Food training was used to encourage tourism by decreasing foodborne disease in Maldonado, Uruguay. The core course was mandatory for all commercial food handlers in Maldonado who were required to pass a test at the end of the course. Approximately 12 000 persons successfully completed the course. Evaluation of the programme showed that the training not only improved the knowledge and behavior of the food handlers but resulted in a significant decrease in foodborne disease.

In the Eastern Mediterranean Region, the WHO Regional Office partnered with the Association for the Development and Enhancement of Women (ADEW) to provide the Five Keys training to women in impoverished neighbourhoods in Cairo, Egypt. The goal of the training was to enable these women to overcome many of the unsafe food handling practices used in the area and thereby preventing foodborne disease. The training methodology was based upon the peer learning concept with women providing the instruction to other women in the area. The evaluation of the programme found that the women not only adopted the basic food hygiene practices taught during the session but became aware of their need to petition the government to gain access to basic services, such as safe water.

In all regions collaborations with the national health ministries have brought the Five Keys to Safer Food message to businesses, schools, hospitals, retirement homes, places of worship and households in a language and format tailored to each audience.

Awareness-raising strategies and partnership

NSF International, a WHO collaborating Centre, and the United States Department of Agriculture recently convened a Food Safety Education Conference (http://www.nsf.org/media/enews/0601_atriskconference.html). Participants at the Conference were provided with food safety educational material from industry, government and academia. It was clear that more food safety work is needed and that successful food safety education must be a collaborative effort. At the conference, WHO presented the Five Keys concept and strengthened collaboration with partners committed to food safety education to continue this important work, based on the outcome of this conference, the second of its kind.

WHO already collaborates with a wide range of partners in different fields of activities (national and international organizations, NGOs, public health institutions, the tourism sector, consumers associations, local communities, industries, academia etc.) However, lowering the burden of foodborne disease requires a renewed effort on the part of government, scientists, food industry and consumers. To meet the growing demand for food safety information and education, WHO offers materials, expertise, technical support and the credibility of an internationally recognized public health organization.

Individuals and groups interested in working with WHO to disseminate this important food hygiene message should contact Françoise Fontannaz, Department of Food Safety, Zoonoses and Foodborne Diseases (e-mail: fontannazf@who.int)

INFOSAN serves as a vehicle for food safety authorities and other relevant agencies to exchange food safety information and to improve collaboration among food safety authorities at both the national and international level.

INFOSAN Emergency, embedded in INFOSAN, links official national contact points to address outbreaks and emergencies of international importance and allows for the rapid exchange of information. INFOSAN Emergency is intended to complement and support the existing WHO Global Outbreak Alert and Response Network (GOARN).

INFOSAN is operated/managed by WHO, Geneva. It currently includes 150 Member States.

More information is available at: www.who.int/foodsafety