THE ROLE OF VETERINARY SERVICES IN THE FOOD CHAIN
‘FROM THE STABLE TO THE TABLE’

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Summary: Food-borne diseases affect hundreds of millions of people around the world. The globalisation of trade in animals and food has made food safety an international issue. Consumer pressure and the responsibilities of Competent Authorities have forced the control of risks in every stage of the food chain, i.e. from the ‘stable-to-the-table’. New Regulations, particularly the EU Basic Food Law, require objective and transparent scientific analysis and assessment of risks from foods. Veterinary Services and veterinarians should adapt their role and activities, in close collaboration with other sectors and professionals in a risk-based approach to cope with hazards and risks to human health from foods.

Responses to a questionnaire distributed among the Member Countries of the OIE Regional Commission for Europe, aiming to collect information from the National Veterinary Services, could be summarised as follows: All countries (31) consider food safety to be a priority among other public health issues. Biological hazards are reported to be the most prevalent followed by chemical hazards. Different degrees of awareness on risks to humans from food are reported. Public Health and Veterinary Services, together with food safety Agencies and Institutions are most aware. Out of 29 countries, 22 (76%) stress that the risk-based provisions of the WTO/SPS Agreement had a significant impact on governments’ food safety strategies, while 18 out of 29 (62%) report that quantitative microbiological standards and criteria for food of animal origin have been derived and implemented from quantitative risk assessment.

Twenty five countries (80.6%) agree that OIE could complement the Codex Alimentarius Commission work by elaborating standards, guidelines etc. in food safety and for the establishment of formal links with the above-mentioned Commission.

Veterinary activities at the farm level, aiming at protection of public health from food-borne hazards, are implemented mainly by state veterinarians, and to a lesser degree by private veterinarians and those of food safety agencies. At the same level, programmes of good hygienic practices are implemented mainly by state veterinarians with some assistance from veterinarians employed in industry and private veterinarians. Thirty countries report that veterinarians are involved at primary processing level of at least eight kinds of foods of animal origin.

It is concluded that present developments in food safety issues at international level, create new responsibilities to veterinarians and the State Veterinary Services.

1. INTRODUCTION

Food is a potential vehicle for exposing consumers to different agents capable of causing disease or injury. At all stages of production, transport, storage, distribution and preparation for consumption, it can be contaminated with biological, chemical or physical agents.

Hundreds of millions of people are affected by food-borne diseases each year and the problem is more widespread in developing countries. (1, 26)

During the last decade, a number of extremely serious outbreaks of food-borne diseases occurred on all continents. In Europe, hormones, dioxins, bovine spongiform encephalopathy, Listeria, antibiotic resistance and chemical residues in foods, have made consumers increasingly concerned about the health risks from hazards in foods. (21, 24, 25)
The globalisation of trade has made food safety an international issue, as food contaminated in a producing country may cause food-borne outbreaks in an importing country. (13)

In the past, food control was concentrated on the examination of samples from the end products and the inspection of processing and catering establishments to monitor hygienic practices. Unsafe foods found during inspections were detained and removed from the market and those responsible for their production and placing on the market were prosecuted. These traditional systems were not efficient and could not respond to existing and emerging challenges to food safety, because they do not provide a preventive approach. (2, 27)

During the last decade, food scares and consumer pressure contributed to a change of food safety programmes towards a holistic approach for the control of food risks in every stage of food production, from raw material to food consumption, from the ‘farm to the fork’ - from the ‘stable to the table’. Many food safety problems originate from the farms and their environment. At present, there is a greater emphasis on measures to prevent biological and chemical contamination at source, both at the pre-harvest and post-harvest stages of food production. Prevention of hazards requires attention through the chain of production and the responsibility for safe foods should be shared by all involved, i.e. farmers, processors, distributors, retail markets, consumers and Competent Authorities (CA) for the control of food safety. (12, 36, 39)

Food safety risk management must be developed on the basis of risk analysis and risk assessment. Between risk assessment and management there should be a functional separation.

The new European Regulation on Food Safety, which was adopted by the European Parliament and the European Council last January (Regulation 178/2002), is based on an integrated approach from the farm to the final consumer. This new Regulation also requires that the scientific analysis and assessment of risks from foods be undertaken in an independent, objective and transparent manner based on the best available science. It establishes the rights of consumers for safe foods, accurate and honest information, so that they can choose their diet. (7)

The spectrum and prevalence of hazards in foods are under continuous change. Recent epidemiological surveys have shown that bacteria in foods of animal origin are the most important causes of food-borne diseases. Most of these are transmitted by animals that do not show any clinical symptoms. (24)

Under these circumstances, Veterinary Services and veterinarians must adapt their activities, their role and work in close collaboration with other professionals and sectors for the effective management, control and prevention of hazards and risks for human health from foods.

The scope of this report is to point out the new role and responsibilities of the State Veterinary Services for food safety. For the collection of information on the involvement of veterinarians in the food of animal origin production chain, a questionnaire was distributed to the 50 Member Countries of the OIE Regional Commission for Europe. A total of 31 responses were received from the following countries:

- Austria, Azerbaijan, Belarus, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom and Yugoslavia.

### 2. CURRENT ASPECTS OF FOOD-BORNE HAZARDS

During the last few decades, countries with surveillance on food-borne diseases have reported significant increases in the incidence of diseases due to biological hazards in food of animal origin. Some of these pathogens were not even recognized as causes of such diseases and some are carried by animals not showing clinical symptoms. (3, 6, 20) The factors that contribute to the increase of biological hazards in foods are related to:

- Changes in farm practices
- Intensive rearing of animals
- Increase in consumption of meat
- Globalization of food trade
- Urbanization
- Changes in lifestyles
- International travel
- Preference for fresh and undercooked foods
- Eating food prepared outside the home
- Demographic changes with increased proportion of old and immunosuppressed people
- Environmental pollution from unsafe disposal of animal manure

Most of the biological hazards have been recognized as emerging\(^1\) or re-emerging\(^2\), the most important of which are:

- Enterohaemorrhagic *E. coli* 0157:H7
- *Salmonella enteritidis*
- *Salmonella typhimurium* DT104, that is resistant to five antibiotics used in human medicine
- *Campylobacter jejuni*
- *Listeria monocytogenes*
- Cryptosporidia
- Cyclospora
- Trematodes
- Bovine spongiform encephalopathy (BSE)

Chemical contaminants in food may be naturally occurring or may be added during the processing of food. They include chemical compounds that, when consumed in sufficient quantities, can inhibit absorption or destroy essential nutrients from the diet of the consumer. They can be carcinogenic, mutagenic or teratogenic, or can be toxic and can cause severe illness and possibly death. (30, 33, 41)

Chemical contamination in food may be classified into the following categories:

- Direct food additives, i.e. preservatives, flavorings, anticaking agents, vitamins, minerals, etc.
- Indirect food additives, i.e. detergents, disinfectants, lubricants
- Heavy metals, i.e. lead, mercury, copper, cadmium, radioactive isotopes
- Pesticides, insecticides, fungicides, herbicides
- Veterinary drugs residues
- Persistent organic pollutants (dioxins)
- Natural toxic substances, cyanogens, solanine
- Natural toxins: paralytic, diarrhoeic, neurotoxic and amnesic shellfish poisonings
- Allergens

Monitoring and surveillance for food-borne diseases and hazards are necessary at all stages of the production-to-consumption continuum, to overview food safety and consumers’ health. Monitoring should also be directed to detect hazards in food supplies, water and the environment at the level of farm production.

### 3. THE RISK-BASED APPROACH

Food safety issues are known to be complex. Therefore, in order to take into account the full picture of the existing situation in the whole food chain, a science-based methodology, with appropriate structure, is of particular importance. This can be achieved through the risk-based approach, which is the result of international concern and increasing consumer interest in public health problems associated with food-borne diseases. (26, 39)

#### 3.1. Risk assessment

The Codex Alimentarius Commission (CAC), the provisions of the Sanitary and Phytosanitary Agreement of the World Trade Organisation (WTO), the EU’s new basic Food Law and the CA of a continuously increasing number of countries require an independent, science-based risk assessment, undertaken in an objective and transparent way, to determine the risks associated with hazard in foods and the factors that influence them. (4, 15, 16)

In the development of appropriate food safety controls, it is important to understand the association between a reduction in hazards in food and the reduction in the risk to consumer health.

However, a distinction between the terms ‘hazard’ and ‘risk’ should be made. Hazard is a biological, chemical or physical agent in food with the potential to cause harm. In contrast, risk is an estimate of the probability and severity of the adverse health effects in exposed populations, consequential to hazards in food. (39)

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\(^1\) Infections that have newly appeared in a population  
\(^2\) Infections that have previously existed but due to various factors (ecological, environmental, food production, or demographic) are rapidly increasing in incidence or geographical range
When taking decisions, risk managers must consider the results of the risk assessment, the feasibility of controlling the risk, the most cost-effective risk reduction actions, the practical arrangements needed, the socio-economic effect and their environmental impact.

Risk assessment can be a qualitative or quantitative estimation of a risk to a group of people. It is based on a four-step procedure: hazard identification, hazard characterization (dose/response), exposure assessment, risk characterization and estimation of an overall probability of consumption and the severity of health effects in a given population of consumers. (16, 39, 41)

Quantitative risk assessment is the basis of the new food safety control systems and is becoming very important for the international trade of foods.

3.2. Risk management

Risk management is strongly linked into the food safety policy and the definition of the appropriate level of consumer protection. It involves the development of strategies, and the selection and implementation of appropriate control actions necessary to prevent, reduce or eliminate the risk to ensure the decided level of health protection. (10, 15)

When there is evidence that the accepted level of consumer protection is not achieved, all safety programmes and actions should be reviewed and redesigned. The CA for the management of risks is obliged, by the provisions of the new European basic Food Law, to take into account the results of risk assessment and in particular the opinion of the European Food Authority. In circumstances where, following an assessment of available information, the possibility of harmful effects on health has been identified, but scientific uncertainty persists, all the necessary provisional risk management measures may be taken pending further scientific information for a more comprehensive risk assessment. Measures implemented on the basis of the precautionary principle shall be proportionate and no more restrictive of trade than is required to achieve the level of health protection chosen in the EU (7)

The implementation of risk management decisions requires regulatory measures and food safety programmes.

4. THE ‘STABLE TO TABLE’ APPROACH TO FOOD SAFETY

To guarantee a high level protection of consumers from food-borne diseases, there is an urgent need to integrate the feed production, farming, transport of animals and slaughtering, primary and secondary processing, storage, distribution, sale, cooking and serving of foods in a Quality Assurance System, which will link the entire chain of food production from animal breeding and feeding until the time the food is placed on the table of the consumer. (14, 28, 38)

This concept can be easily adapted to all kinds of food: meat, milk, fish and even food of vegetable origin.

The food production chain is becoming increasingly complex and every link in this chain must be as strong as the other. Wholesome and safe food can be produced only from healthy animals kept in hygienic conditions and under husbandry systems that cause them minimal stress. The ‘stable to table’ approach can become a success only if animal health and welfare are fully integrated into it. (2, 28, 29)

The WHO, OIE, FAO, CAC and the EU have endorsed the ‘farm to table’ approach and promote the development of structures and systems for the surveillance of food-borne diseases, the risk assessment and implementation of risk management programmes, such as the Hazard Analysis Critical Control Points (HACCP) systems, to be implemented at all stages of food production, preparation and use. (18, 31)

The HACCP system is a science-based analytical tool that enables management to introduce and maintain a cost-effective, on-going food safety programme. It involves the systematic assessment of all steps involved in each stage of food production: (farm, food establishment, storage, etc.) and the identification of those steps that are critical to the safety of the product. (31, 32, 40)

Food producers, by endorsing the HACCP concept, are enabled to move away from the old philosophy, which was based primarily on end product testing for the detection of failures, to a preventative approach whereby all potential hazards at all stages of production are identified and controlled for the prevention of product failures. This preventative approach has been promoted world-wide as a cost-effective measure, which can, in principle, be used throughout the food chain. (2, 28, 38)
5. THE ROLE OF VETERINARY SERVICES IN FOOD SAFETY

Food safety is recognized as a widely shared responsibility, which requires strong co-ordination between the CA for risk assessment and management and effective collaboration with all other interested parties, such as consumers, industry, traders and farmers. To achieve the required objectives and regain the confidence of the consumers, high levels of transparency and communication are needed.

Veterinary Services and their veterinarians, in many countries of the world, have a leading role in the safety of foods of animal origin. The adoption of the integrated approach from the 'stable to table', and the introduction of quality assurance systems, through the entire production process, provide a new challenge for the Veterinary Services and the veterinary profession in general. Veterinarians should seek and accept responsibilities for developing a new quality-oriented procedure. This process must cover the entire food chain from ‘farm to table’ and must be designed to deliver the highest levels of food safety guarantee for animal production, the food industry and the consumer. (14, 18, 29)

The principles of the risk-based approach, HACCP, the ISO Quality Control Standards should be adopted to ensure the delivery, at the final point of consumption, of high quality safe food.

The identification of the origin of animal feed, food ingredients and food sources is important for the protection of consumers. Traceability is also a new requirement of the new European basic Food Regulation being useful for the facilitation of withdrawal or recall of foods unsuitable for human consumption.

All adopted systems should be implemented in a transparent, easily audited, cost-effective and quality driven approach. The aim shall be to deliver affordable and fully accountable inspection systems that will help to regain the confidence of the consumers. Since the primary responsibility for the production of safe foods and feeds has been given to the producers, the veterinary inspection should undertake the assessment of the control systems and apply the monitoring of their correct implementation by the producers. The monitoring and auditing should be used for the development of cooperation with producers to identify non-compliances, reduce inconsistencies and improve standards. (10, 11, 38)

6. THE ROLE OF VETERINARIANS IN THE PREVENTION AND MANAGEMENT OF FOOD-BORNE HAZARDS AT THE FARM LEVEL

The basic training of veterinarians covers nearly all aspects of food hygiene, food processing, pharmaceuticals and pathogenic agents that may be present in foods of animal origin. These, together with their speciality in animal health and welfare, place veterinarians in a unique position to provide expert advice and establish specific programmes on the farm, to prevent and control the presence of biological and chemical hazards that may be carried by animals, milk or other animal products to primary processing.

The presence of a veterinarian on the farm is the key to an integrated approach and will ensure that animals and animal products sent to slaughterhouses or dairies are free from disease.

The role of Veterinarians at the farm level will focus on good hygienic practices, on safe use of veterinary drugs, disinfectants, insecticides, and herbicides and on safe waste disposal. They should also be involved in the epidemiological surveillance programmes for zoonotic diseases and food-borne pathogens, the protection of animal health and welfare, the residue control programmes, the registration, identification of animals and in the issue of certificates for animals that will be moved from the farm. (2, 25)

Monitoring and reporting of the animal health situation in the farm by the national Veterinary Services is an essential tool in the context of an epidemiological surveillance programme. Early detection of zoonotic diseases can prevent transmission to humans at slaughter or introduction of pathogens into the food chain. It is evident that the effectiveness of monitoring and reporting is directly dependent on the cooperation of veterinarians and farmers with the State Veterinary Services. (2, 9, 18, 35)

The veterinarian at the farm will also supervise the record keeping of all the activities at the farm, including the feed quality control and the recording of the batches of feeds received and the name and address of their suppliers. All this information must be made available to the Official Veterinarian of the abattoir where the animals are sent for slaughter or to the manager of the food establishment where the animal products are sent for processing.
7. THE ROLE OF THE VETERINARIAN AT PRIMARY PROCESSING SLAUGHTERHOUSES

The movement of animals causes stress to them, which consequently affects the safety and the quality of the meat. For this reason, only healthy animals must be transported and their health and welfare must be monitored during their journey from the farm to the slaughterhouse.

The Official Veterinarian upon arrival of the animals at the slaughterhouse will carry out the following checks and assessments:

- The effects of the transport on the animals
- The health data from the farm of origin
- The identification of the animals
- Any previous treatments they have received or that were given to other animals on the farm of origin
- The level of cleanliness at time of arrival
- The clinical examination for any symptoms that the animals may show.

During post-mortem inspection, the Official Veterinarian will carry out examinations for the detection of macroscopically visible pathological changes or other abnormalities. Wherever it is absolutely necessary, palpation and incisions for removal of any lesions, which may be present, may be carried out.

The Official Veterinarian will also supervise the implementation of Good Hygienic Practice (GHP), Good Manufacturing Practice (GMP), the HACCP and the samplings for the residues control, the microbiological testing of carcasses and the general hygiene of the slaughterhouse.

He will be responsible for record keeping and the communication of his findings to the farm veterinarian, to the Veterinary Services for any necessary actions and to meat processing establishments, cold stores and traders, as well as any information required for the traceability of the products they will produce or distribute. (17, 23)

Veterinarians and Veterinary Services are also involved in the primary processing of milk, fish, eggs and farmed and wild game.

8. ROLE OF VETERINARIANS AND THE VETERINARY SERVICES IN SECONDARY PROCESSING ESTABLISHMENTS

Veterinarians employed in food safety are involved in the design and implementation of GHP, HACCP Plans and quality assurance systems in Secondary Processing Establishments for meat, milk and fish products in many countries.

The role of the Veterinary Services with the change of the legislation will be confined to assessment of the HACCP food safety programmes and their auditing to verify that they are correctly implemented by the industry. It should be noted that the management of food establishments now has the primary responsibility for the production of safe food. (18, 32, 40)

9. FOOD SAFETY RESEARCH

Research in food safety has two major roles: (a) contribution to continuous improvement at the level of animal production and at all further steps of the food chain and (b) development of both simple and inexpensive analytical methods for all hazardous substances and micro-organisms as well as development of more complex and sophisticated food technology.

National Veterinary Services, in order to be effective in their role and responsibilities as principal agents for increasing both the quantity and quality of food of animal origin, monitoring food industry activities at primary production and processing levels, need information and knowledge from integrated research programmes. Through research, new devices can be developed, which could further support the role of State Services.

The food industry has many reasons to be involved in food safety research. However, this is also a responsibility and an obligation of governments, which, through their Veterinary Services, should increase and focus research activities at primary production and processing levels.
10. DISCUSSION

The implementation of the risk-based approaches for food safety will require veterinarians to include in their epidemiological surveillance programmes, pathogens that do not cause clinical disease to animals, but that contribute to the contamination of animal products (meat, milk, etc.) with biological hazards that may affect the health of consumers, i.e. *E.coli* 0157:H7, *Listeria*, *Campylobacter*, *Salmonella* and antibiotic drug resistance. (3, 5, 6, 12)

Veterinary activities are reported at all stages of milk and fish production and other sectors of food production. Veterinarians are present in every stage of food production and have the scientific background and experience to develop standards on animal health, animal welfare, food safety and to undertake a leading role in the implementation of the ‘stable to table’ approach for all foods of animal origin.

Although food producers will have the primary responsibility for the production and planning on the market of safe foods of animal origin, the protection of public health and consumers will continue to be a public task. The Veterinary Services will have to take the leadership and all the necessary responsibilities to fulfill the requirements of the new European basic Law, the guidelines and Codes of the International Organisations, such as the OIE, WHO, FAO and Codex Alimentarius and the provisions of the Sanitary and Phytosanitary and Technical Barriers to Trade Agreements of the WTO. To achieve this, the Veterinary Services urgently need to change to a risk-based approach to food safety and to focus their veterinary public health activities primarily on the protection of the health of the consumer. (4, 7, 38)

The Veterinary Services must harmonize their legislation with the new EU requirements and seek adequate legal power to get the chains of command and control of food production from the ‘stable-to-table’.

The change from traditional programmes of food safety control to risk-based approaches will create new responsibilities for veterinarians, which will require their involvement in the development and implementation of HACCP-based control systems at farm level and in food processing establishments.

The Veterinary Authorities will have to develop services for the assessment, verification and auditing of HACCP implemented by food producing establishments.

There is a need to regulate and audit the services of veterinarians to which Veterinary Services may delegate responsibilities for official inspections. The Veterinarians must be professionally competent, fully accountable and regularly audited by the Competent Authority. The Veterinarians must attend programmes of continuous training and further professional development that must be closely followed and encouraged, so that there is a continuous progress and adaptation in the increasing demands for high levels of food safety.

11. CONCLUSIONS

The responses to the main issues of the questionnaire received are summarized below, while they are reported in detail in Annex I.

All 31 countries consider food safety to be a priority among other public health issues. Biological hazards originating from animals are reported to be the most important, followed by chemical hazards.

Different degrees of awareness to the risks to humans from food are reported. Public Health and Veterinary Services together with food safety agencies and institutions are most aware.

Out of 29 countries, 22 (76%) stress that the risk-based provisions of the WTO/SPS Agreement had a significant impact on governments’ food safety strategies, while 18 out of 29 (62%) report that quantitative microbiological standards and microbiological criteria for food of animal origin have been derived and implemented from quantitative risk assessment.

Red meat veterinary inspection reportedly contributes greatly to the reduction of food-borne risks to consumers, while veterinary epidemiological studies led to food safety measures at the farm level.

Almost all countries stress that Veterinary Services provide both animal health and food safety services at the farm level. Veterinary activities at the farm level, aiming at protection of public health from food-borne hazards, are implemented mainly by state veterinarians in 25 (86%) countries, followed by private practitioners in 16 (59%) countries and those of Food Safety Agencies in 11 (39%) countries. At the same level, programmes of good hygienic practices are implemented mainly by state veterinarians, followed by those in industry and private veterinarians in 22 (76%), 20 (69%) and 15 (52%) countries respectively. At the same level, veterinarians are involved in the design and/or implementation of industry-led quality assurance systems in 21 countries (72%) by veterinarians employed by the
industry, in 16 (55%) by state veterinarians and in 15 (52%) by privates. In HACCP programmes veterinarians employed by industry are involved in 19 (66%) countries, state veterinarians in 15 (52%) and privates in 16 (53%) countries.

Thirty countries report that veterinarians are involved in primary processing level of at least eight kinds of foods of animal origin, such as red meat, poultry, eggs, farmed game, wild game, milk and dairy products, fish, etc.

In 19 (61%) countries, testing and reporting programmes for antibiotic resistance of food-borne pathogens from animals are implemented, but not in 12 (39%) of them.

Thirty countries (97%) report that Veterinary Services carry out on-farm investigations when food-borne hazards of public health importance are detected during veterinary inspections. In 22 (73%) countries, such investigations are performed in collaboration with Public Health Authorities.

Twenty-five countries (80.6%) agree that the OIE could complement the CAC work by elaborating standards, guidelines, etc. in food safety, and for the establishment of formal links with the above-mentioned Commission.

Food safety has become an international issue of major concern. The reality of millions of people around the world suffering from food-borne diseases of different origins has made food security a sector under continuous development. In this changing environment, Veterinary Services and veterinarians should be integrated, so that, in close collaboration with other disciplines and professionals, they can fulfill their tasks and responsibilities in the context of modern requirements and prerequisites for food safety.

It is important that Veterinary and other Control Services make continuous efforts for the establishment of hygienic norms at the farm level, the verification of food producers' compliance with official standards and regulations and for the application of sound processes at all stages of the food chain.

During the 70th General Session, held in Paris from 26 to 31 May 2002, the International Committee of the OIE gave a mandate to the Director General to establish a permanent working group on Food Safety. This group will act as Steering Committee, to coordinate and manage animal production and food safety activities with the WHO, FAO and WTO. In close cooperation with the Codex Alimentarius Commission, they should develop food safety standards, taking into account a risk-based approach in all stages of food production, from the ‘stable to the table’. (22)

The standards and guidelines that will be developed by this Group and the provisions of the OIE International Animal Health Code, will provide a very useful guide to the Veterinary Services of all OIE Member Countries to face the challenge and the changes required for the improvement of food safety.

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ANALYSIS OF QUESTIONNAIRE – BASED DATA

1. Current Aspects of Food-borne Hazards

All the 31 responses consider food safety to be a priority public health problem. Twenty-eight countries (90%) reported biological hazards from foods of animal origin as the most important food-borne pathogens. They are followed by chemical hazards, reported by 19 countries (61%) and those from other sources by 8 countries (25%). For consumers, 23 countries (74%) believe that the most important hazards are of animal origin in general, while 22 (71%) focus their attention on biological hazards, followed by chemical ones as reported by 17 countries (54%). *Salmonella, Campylobacter E.coli* 0157:H7 and *Listeria* are considered major causes of risk to human health. The BSE agent, *Brucella* and *Yersinia* are mentioned by 6, 3 and 2 countries, respectively, while 10 of them report chemical risks and 6 antimicrobial resistance.

2. Risk Assessment and Risk Management

All 31 countries reported varying degrees of awareness of risks to human health from food. Among the 8 groups indicated, state public health and animal health services, food safety agencies and scientific institutions are reported as possessing the most awareness. Processors, farmers and consumers are less aware.

It is gratifying to note that 28 countries, i.e. 90% of those that responded, report that governments have published documents advocating an integrated ‘farm to table’ approach to the application of risk-based food hygiene measures. Twenty-six countries (84%) report that such policy documents provide guidance for managing risks in the food chain, while 23 (74%) refer to activities of consultative mechanisms in place to include consumer opinion.

Among countries, 18 (62%) report that quantitative microbiological standards and microbiological criteria for food of animal origin are implemented and derived from quantitative risk assessment. Out of 29 countries, 22 (76%) stress that the risk-based provisions of the WTO/SPS Agreement had a significant impact on the government’s food strategies, while 7 countries (24%) do not recognize such an effect. Regarding the degree of success in applying WTO/SPS issues to food safety, 9 countries (29%) report the highest score, (i.e. 1) in maintaining compliance with export certification requirements, 8 (26%) the same level on risk assessment capability development, while 7 (22.5%) only achieved consistency between domestic and import food controls. In general, the score stated from 1 to 5 is scattered to various degrees demonstrating the difficulties to effectively achieve the goals. Twenty-four (80%) out of 30 countries stress active participation in the establishment of international food standards by Codex, while 6 (20%) do not.

Veterinary professional involvement in the national Codex delegations is reported to prevail in developed countries with scores 1 to 3 in 10 countries, while scores 1 to 3 in 5 developing countries and scores 4 to 5 in 4 countries of the first group and 4 countries in the second group. Three additional countries had 0 participation. These scores demonstrate the differences existing between the two groups of countries, which are also present, in a few cases, among the developed ones.

In the question regarding how the OIE could complement the work done by CAC in elaborating standards, guidelines, etc. in food safety, all countries agree that this organisation can contribute a great deal in all matters relevant to veterinary public health. Moreover, 22 (71%) of the countries confirm that there is a potential for the establishment of formal links between CAC and OIE. Nine countries (22%) did not reply to this question.

3. Prevention and Management of Food-borne Hazards at the Farm Level

Out of 31 countries, 30 report that Veterinary Services provide at the farm level, both animal health and food safety services.

The question regarding veterinary activities at the farm level, provided by four categories of employed veterinarians, i.e. private practice, Veterinary Services, food safety standards agencies (FSSA) and industry aiming solely for human food-borne disease purposes, was answered by 29 countries as follows: in 25 of these (86%) this task is fulfilled by the State Veterinary Services, in 16 countries (59%) private veterinarians are also involved, 11 countries (39%) report veterinary involvement in FSSA, while in 21 countries (81%) veterinarians employed by the industry are also involved for specific activities, such as milk pasteurisation, HACCP and risk assessment implementation, for salmonellosis monitoring programmes in poultry and swine farms, etc.

Among the veterinary activities implemented at this level, 27 countries (96%) consider as most important those against biological causes, 22 (71%) also consider those against parasites and 18 of them (69%) those against chemical agents.
Regarding activities against asymptomatic carriage of food-borne hazards by animals, 28 countries (90%) consider them important.

Concerning veterinary involvement in the design and/or implementation of control programmes for food-borne hazards at the farm level, 29 out of the 31 countries responded positively. Programmes on good hygienic practices are implemented by State Services, industry and private veterinarians in 22 (76%), 20 (69%) and 15 (52%) countries respectively. Among the few examples given, are Salmonella monitoring programmes, milk hygiene and quality and veterinary drug residues. Industry-led quality assurance systems are implemented with veterinary involvement by industry, the state and private veterinarians in 21 countries (72%), 16 countries (55%) and 15 countries (52%), respectively. In HACCP programmes veterinarians employed by industry are involved in 19 countries (66%), State Veterinarians in 15 countries (52%) and private veterinarians in 12 countries (41%).

According to the responses, ante-mortem inspection in poultry is performed in 26 countries (87%), in small domestic animals in 16 countries (53%), large domestic animals in 14 countries (47%), while there is no ante-mortem veterinary inspection of poultry in 4 countries (13%), of small domestic animals in 14 countries (47%) and of large domestic animals in 16 countries (53%).

4. Reporting of Food-borne Hazards at the Farm Level

Out of the 31 responses received, 29 (94%) report that statutory veterinary reporting of food-borne microbiological or biological hazards exists and that in 18 of these (60%) reporting is based on clinical manifestations of a disease. In 22 countries (78%), reporting chemical food-borne hazards of public health importance is also included, while in 6 (21%) this is not valid. When veterinary laboratory and public health laboratory identify food-borne hazards, State Veterinary Services undertake on-farm investigations in 30 countries (97%) and Public Health Services in 27 (93%), while in 22 among them (73%) such investigations are performed in collaboration with the Public Health Authorities, but not in 8 countries (27%).

Testing and reporting programmes for antibiotic resistance of food-borne pathogens isolated from animals, are implemented in 19 countries only (61%), 12 countries (39%) replied negatively.

5. Prevention and Management of Food-borne Diseases at the Primary Processing Level

Veterinary involvement at the primary processing level of 8 different kinds of foods of animal origin is necessary, as proven by the responses from 30 countries. Veterinary supervision is mandatory for red meat species in 30 countries (97%), while for poultry and wild game it is mandatory in 29 (94%) and 24 (83%) respectively. All countries report a physical veterinary presence for inspection and/or supervision.

At the primary food processing level, veterinarians are involved in the design and/or implementation of control programmes for food-borne hazards, as follows: programmes of good hygienic practices are implemented in 16 countries (52%), in 22 state and 27 industry programmes. Industry-led Quality Assurance Systems are reported by 15 countries (49%) and HACCP programmes by 13 countries (43%).

In 12 countries (39%), poultry post-mortem inspection is performed by non-veterinarians, while in 14 countries (45%) red meat inspection is performed by such personnel.

In 23 countries (77%), veterinarians at the abattoirs are involved in analysis and report data to the producers. In 27 countries (90%), veterinary reporting of food-borne microbiological or biological hazards is statutory, while not in 3 (10%).

Among 29 respondents, 28 (96%) report that Veterinary Services provide on-farm investigations in case of detection of food-borne hazards of public health importance during ante or post-mortem inspection. Among these countries, 22 (73%) perform such investigations in collaboration with Public Health Authorities, while 8 countries (27%) without such collaboration.

Red meat hygiene inspection, at different levels, has been reported to highly contribute in reducing food-borne risks to consumers: 14 (50% of the respondents) for on-farm husbandry, 16 (57%) for ante-mortem inspection, 18 (64%) for post-mortem inspection and 20 (71%) for process control. The same activities are considered by other respondents of medium contribution, i.e. 10 (36%), 10 (36%), 3 (11%) and 7 (28%) respectively.

3 Red meat, poultry, eggs, farmed game (including poultry), wild game, milk and milk products, fish, other.
Regarding veterinary involvement in design and implementation of national chemical residues programmes for food of animal origin, 22 countries, i.e. 71%, reported participation in residues programmes and 14 (45%) reported significant contribution.

6. Food Safety Research

Research in food safety was reported by 10 (32%) countries only, noting ‘some increase’ during the last five years, while 7 (23%) reported ‘marked increase’. Food safety and animal health research were reported by 18 (60%) countries to be of a similar level, while only 6 (19%) reported that animal health research is dominant. Regarding the involvement of veterinary research institutions in food safety research, 17 countries (57%) report that it happens to ‘some degree’, while 12 of them (40%) that they contribute to a high degree.

From 17 countries (57%), it is reported that the above-mentioned institutions are involved in quantitative microbiological risk assessment modeling for food-borne hazards, while 13 of them (43%) did not report any involvement.

Fifteen countries (55.5%) of the 27 responding, report that veterinary epidemiological intervention studies, held during the last ten years, led to food safety measures implemented at the farm level. However, 12 countries (44,4%) deny any such role.