

# The role of official Veterinary Services in dealing with new social challenges: animal health and protection, food safety, and the environment

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## Summary

The authors describe the role of Veterinary Services in dealing with developments in society and the challenges they present. In an increasingly globalised world, in which there are new methods of production, a new and changing relationship between humans and animals and increasingly complex and global problems, the protection of public health and the safety of the environment in which people and animals live require new skills, new knowledge and new technical-scientific responses.

Official Veterinary Services are responsible for maintaining hygiene and animal health standards in primary and secondary production and ensuring fair trade. To achieve this, Veterinary Services must ensure that their organisational structures meet internationally recognised quality assurance standards.

## Keywords

Environment – Food safety – Globalisation – Public health – Quality assurance – Risk analysis – Veterinary Service.

## Introduction

In the vast field of veterinary medicine it is the official Veterinary Services which are responsible for guaranteeing public health. The position occupied by Veterinary Services in public administrations varies from country to country. In general, such Services answer to the authorities responsible for agricultural affairs, but sometimes they are responsible to the public health authorities.

In any case, Veterinary Services apply the skills, knowledge and resources of the veterinary profession to the protection and improvement of human and animal health. These Services make an indispensable contribution to the physical, mental and social welfare of humans (18), either by protecting human health through the prevention of zoonoses and the hygienic control of foodstuffs, or by helping to improve primary and

secondary zootechnical production and, thus, the socio-economic welfare of the population.

When defining the role and position of an official Veterinary Service in the context of these new global challenges, a brief analysis of some of the scenarios in which veterinarians work is important.

## New horizons and challenges for veterinary medicine

The past century has seen significant changes for veterinary medicine, the traditional role of which has been to cure animal diseases and protect human health. The changeover from individual to mass therapies, the implementation of plans for animal disease eradication, the birth of 'technopathies' (i.e.

diseases caused by the application of technology to animal production), the development of animal nutrition and the shift from pathological control of abattoir animals to the concept of the abattoir as an epidemiological observatory where the results of farming activities may be verified, are just a few examples of the changes that have occurred. A culture of prevention now prevails, which places 'food safety' at the forefront of its priorities, through the tools of hazard analysis and critical control point (HACCP) (15).

Furthermore, extensive developments in veterinary medicine have required ever more technological responses to increasingly complex problems.

In the medium term (ten to fifteen years), the challenges which veterinary medicine will confront can be summarised as follows:

- the globalisation of as the breeding of animals such as
- the relationship between veterinary medicine and the environment
- the changing relationship between animals and humans.

### **Globalisation of trade in animals and animal products: rules and opportunities**

In 1995, the World Trade Organization (WTO) introduced the Sanitary and Phytosanitary Agreement (the 'SPS Agreement') to reduce non-tariff barriers to trade (20).

The SPS Agreement stipulates that restrictions on the introduction of animals and animal products must be motivated by the protection of consumer health and the safeguarding of the zootechnical heritage of the importing country.

Under the SPS Agreement, a country may apply the protective measures which it considers necessary to protect the environment and the health of its human, animal and plant populations from any hazards arising from imports, provided that the importing country does not discriminate between domestic and imported animals. However, no country may adopt protective measures without a valid scientific reason.

Protective measures applied to imports are indeed only justified if it has been scientifically demonstrated that they are necessary to protect the human, animal and plant populations, as well as the environment, from risks greater than those which the country would face if the product were not imported. In this context alone, the 'precautionary principle' may be applied to risks that are not yet fully determined, and provisional preventive measures may be taken until further knowledge is gained of the actual hazard involved.

Risk analysis is used to determine and justify a protective measure. Risk analysis has therefore become an indispensable instrument, both for protecting the public and for ensuring that national agro-food industries have access to international markets, which are more demanding but also more profitable.

The international reference standards used to evaluate a foodstuff or an animal with respect to the desired level of protection are based on those of international technical organisations such as the OIE (World organisation for animal health) or the Codex Alimentarius of the Food and Agriculture Organization (FAO) (8, 10, 12, 14, 17). Thus, the regulatory activities of these organisations should be increased, as should the participation of individual countries and/or the regional organisations to which they belong.

It is because of these rules that all countries have the opportunity to gain access to international trade and/or to increase the proportion of their domestic output destined for export.

However, these regulations also impose constraints, since, without effective official control measures in the field of veterinary public health, no country would have access to international markets for its animals, animal products and foodstuffs of animal origin. These constraints are especially stringent on developing countries, the very countries that are in greatest need of international markets for their animals and animal products.

It is important therefore to find a solution to allow these countries access to international markets, at least for specific products and in specific conditions.

### **Veterinary medicine and the environment**

The relationship between the rural environment and the livestock activities that occur within it means that veterinary medicine and the environment are closely interrelated.

In industrialised countries, the degree of interdependence varies according to farming systems. Dairy farming and aquaculture are still located principally in rural areas, whereas the breeding of animals such as backyard poultry, rabbits and pigs is becoming increasingly common outside the rural environment. In contrast, in developing countries, the relationship between agriculture and rural regions is as strong as ever. In this context, the role of veterinary medicine is to help rural communities to remain on their land, by protecting the health of their animals and the safety of the animal products that are so essential to the income of the farmers. Keeping rural communities on their land, even in industrialised countries, particularly in underprivileged and marginalised areas, such as in mountain regions, is crucial for maintaining and preserving the characteristics of the rural environment.

Wherever agricultural activity has ceased, the result has been a general degradation of the environment (erosion, fires, etc.) (18).

On the other hand, effective control of farming conditions is also necessary to limit and prevent environmental pollution. If the concept of pollution is extended to include not only organic pollutants in excrements, but also drugs, disinfectants, pathogenic bacteria, etc., the role of veterinary medicine in education and prevention becomes fundamental. Another farm-related issue is the destruction of animal carcasses and remains. Disposal of animal carcasses and remains is crucial, both because these remains are possible vectors of infection and because of their impact on the environment. In this respect, the control function of veterinary medicine is as strategic as it is indispensable. The recent foot and mouth disease (FMD) epidemic in the United Kingdom demonstrated the importance of the environmental implications of this activity.

One potential form of pollution is the release of genetically modified organisms into the environment. This concerns veterinary medicine in that genetically modified bacteria may be administered to animals, either for nutritional purposes (feed additives) or to evaluate their possible pathogenicity on animal models.

Veterinary medicine also has a major role to play in another environment, one in which the majority of the human population dwells, namely, the city. Many problems are raised by co-existence with animals in urban areas (either the companion animals which are raised by humans or animals which are considered physically or biologically harmful to human health). Urban hygiene, the branch of veterinary medicine which addresses these problems, is becoming increasingly important.

Finally, animals play a role as indicators of environmental quality. By caring for and studying both domestic and wild animals, veterinarians have on several occasions been given early and accurate warning of environmental damage. Several cases of poisoning, either chronic (mercury, lead, cadmium) or acute (dioxins or polychlorinated biphenyls, for example), have been discovered as a result of animal pathologies (18).

### **The relationship between veterinary medicine and humans**

The relationship between people, animals and their host environment has always been at the root of the very existence and survival of human beings. As human society has evolved, this relationship has also undergone profound changes. In general, it is possible to distinguish between three types of interconnection, as follows:

– the relationship between the environment, humans and wild animals

– the relationship between the environment, humans and domestic animals

– the relationship between the environment, humans and companion animals (pets) or sports animals (for example, hunting dogs).

Ethical approaches towards the relationship between animals and humans can vary widely from culture to culture and have an economic and political dimension as well. The liberalisation of trade in animals raises the need to guarantee a 'minimum level of animal welfare' in international trade, without creating trade barriers (15). In its Strategic Plan 2001-2005, the OIE makes animal welfare a priority (16).

The WTO also states that issues of animal protection and welfare must be considered when drafting international trade agreements. For this reason, the European Union (EU) has drafted a 'consensus on animal welfare', to be included in upcoming WTO regulations in the chapter of 'non-trade concerns' (6).

For both wild and domestic animals, animal welfare includes respect for their aetiologies and physiologies during farming, transport and slaughter. Examples of this new approach are provided by the two Council of Europe conventions on animal protection and welfare:

a) the European Convention for the Protection of Animals Kept for Farming Purposes (1976) (1)

b) the European Convention for the Protection of Animals for Slaughter (1979) (2).

The EU has ratified these conventions, and issued a long series of protective standards, categorised according to species and farming conditions. This commitment to animal protection and welfare was reiterated in the Treaty of Amsterdam (1997), which modifies the 'Protocol on protection and welfare of animals' (3). This protocol affirms the desire of EU Member Countries to guarantee greater protection and welfare for animals when formulating and implementing community policies.

It is evident, therefore, that animal welfare has become an important social concern in Europe. A specific example of this is provided by the criteria for farm animal welfare, drafted by the Farm Animal Welfare Council of Great Britain (1992), known as the 'five freedoms' which animals should enjoy, as follows (7):

1. freedom from hunger and thirst – by ready access to fresh water and a diet to maintain full health and vigour

2. freedom from discomfort – by providing an appropriate environment including shelter and a comfortable resting area
3. freedom from pain, injury or disease – by prevention or rapid diagnosis and treatment
4. freedom to express normal behaviour – by providing sufficient space, proper facilities and company of the animal's own kind
5. freedom from fear and distress – by ensuring conditions and treatment which avoid mental suffering.

These conditions ensure the optimum development of farm animals.

A specific animal-welfare problem is that of the use of animals in scientific experimentation. The issues concern both the way in which these animals are raised and the way they are used. Breeding conditions, which must be controlled and appropriate to the specific type of research concerned, may cause stress and real suffering to the animals. With regard to the use of animals in experimentation, although useless suffering must be avoided, the nature of some experiments implies that pathological and para-physiological conditions will be induced. It is essential therefore to try to develop forms of experimentation that will limit the suffering of animals, e.g. the use of alternatives to live animals, and ensuring that the conditions in which animals are experimented on are carefully controlled.

With urban development and the emergence of the nuclear family, the relationship between humans and animals has undergone transformations and taken on new meanings. The development of animal-assisted therapy is just one example of the changes that have taken place as a result of this new relationship. Various people suffering physical and/or mental discomfort can now take advantage of companion animal therapy. The role of veterinary medicine in this multi-disciplinary activity is irreplaceable.

### **The role of veterinary public health: a global approach**

Veterinary public health is a branch of preventive medicine based on population groups as well as on individual cases. Veterinary epidemiology and epidemicsurveillance networks are therefore very important tools in the implementation of veterinary public health.

Veterinary public health includes several disciplines of veterinary medicine, in particular, the following:

- microbiology
- virology

- parasitology
- pathology
- food hygiene
- environmental hygiene
- toxicology.

All these disciplines involve either on-the-spot checks or controls performed by diagnostic laboratories.

The main responsibilities of veterinary public health, as defined above, are as follows:

- the promotion of animal health, to improve production and productivity so as to ensure the provision of sufficient quantities of animal proteins for human nutrition and the socio-economic development of countries with export potential
- the protection of foodstuffs of animal origin for human consumption, to guarantee their safety and nutritional quality, and to prevent disease being transmitted in this way
- the surveillance, prevention and control of zoonoses and reportable infective diseases common to humans and animals which cause morbidity, disability and mortality in vulnerable human populations
- the promotion of environmental protection with regard to potential risks to public health stemming from industrialised zootechnical production, the keeping of farm animals and companion animals, or the presence of hazardous fauna and synanthropic animals in cities.

As a result, the following steps should be taken to ensure veterinary public health:

- diagnosis, communication, surveillance and eradication of animal diseases and zoonoses
- control of safety of foodstuffs of animal origin throughout the production chain
- control of products and waste products of animal origin
- control of zootechnical hygiene (i.e. hygiene in farming practices, e.g. control of animal feed)
- control of veterinary drugs (residues and antimicrobial resistance)
- control of wild fauna and their environment
- control of international trade in animals, animal products, animal wastes and foodstuffs of animal origin.

It is also essential to monitor the veterinary public health activities of both official and private veterinarians.

In order to ensure optimum efficacy in the results of veterinary public health, there must be an integrated approach, from 'farm to fork'. This approach, based on guarantees and controls at each link in the food production chain, is the one that best ensures success in meeting the objectives of veterinary public health.

Although there is no conceptual difference in veterinary public health between the developing and developed countries, there are differences in scope regarding the specific processes involved and the participation of those involved in the farming and food processing industries.

In the field of veterinary public health, one of the most urgent problems is that of antimicrobial resistance, which involves:

- a loss of therapeutic efficacy of the molecules concerned
- a dramatic drop in the life span of commercial drugs.

Combating antimicrobial resistance entails:

- promoting, disseminating and enforcing good veterinary practices, such as zootechnical hygiene
- the use of 'soft' (less intensive) farming technologies
- the proper and responsible use of drugs
- alternatives to drug-based prophylactic techniques (vaccination, farming techniques, pro-biotic feed, etc.).

Feed hygiene, throughout the productive chain, is another important tool in preventing the spread of zoonotic agents and bacteria between animals and humans. All these practices constitute an important method of preventing the development and spread of antimicrobial resistance. In this context, veterinary public health has a role to play in promoting awareness of the problem, as well as in managing the use of veterinary drugs, as indicated in Resolution No. XXV 'Antimicrobial Resistance', adopted at the OIE General Session on 31 May 2001 (11).

## The role and position of official Veterinary Services

In the context of national health structures, the official Veterinary Services must play the role of 'guarantor', i.e. these Services must ensure that all problems related to the activities and fields of competence of veterinary medicine are managed effectively, in such a way as to uphold the rights and health care standards of all citizens.

The term 'guarantor' implies that Veterinary Services act as a third party with respect to the other parties concerned, and that the independence and transparency with which the Veterinary Services fulfil their functions must be recognised.

The 'guarantor' role of Veterinary Services must be considered an institutional objective. In other words, Veterinary Services must have a mandate, issued by the national authorities, to help achieve the animal health objectives of that particular country, with the resources assigned to them.

To fulfil this role, Veterinary Services must demonstrate, by a system of evaluation, their transparency and competence, as well as the appropriateness of their interventions and their ability to act. The evaluation should include the organisation and management of services, and should be based on quality accreditation criteria, drawing on international quality assurance standards for services to third parties. The fundamental instruments of quality accreditation are as follows:

- the planning and definition of veterinary activities
- the use of written procedures
- documentary evidence of all activities conducted and the results obtained
- internal auditing of such results (9).

In each country, the official Veterinary Service is organised on the basis of its specific tasks and the 'history' of national veterinary medicine. There are no 'recipes' or 'magic formulas' to describe how such a service should be organised; only an evaluation of its effectiveness and, if possible, its efficiency, can help to determine its worth.

That being said, the role of guarantor that should be played by an official Veterinary Service, should consist of the following areas of responsibility:

- veterinary public health
- ethical responsibilities towards animals
- professional activities
- the exchange of communication and information
- the prevention of bioterrorism
- the evaluation and management of food safety risks.

### Veterinary public health

This is the most important part of the work of an official Veterinary Service. A Veterinary Service must guarantee the achievement of the health objectives set by its country, as well as fairness in trade. Animal health, food safety, certification in international trade in animals and animal products and environmental protection are all issues which must be addressed when pursuing the specific animal health objectives established for veterinary public health. Official Veterinary Services contribute to this aim in various ways, from the direct performance of necessary veterinary tasks to the evaluation of

veterinary activities conducted by operators in the agro-industrial chain.

### **Ethics of the relationship between humans and animals**

The ethical responsibilities of humans towards animals can be a concept which is intimately linked with the cultural values of a given population. Official Veterinary Services must thus ensure that all those concerned with agriculture and the care of animals provide proper conditions for their welfare. This should be done for the sake of the animals themselves, not simply because they are a valuable product. The issues inherent in the use of transgenic animals as organ donors for humans is one aspect of this problem.

### **Professional activities**

All activities performed by veterinarians for public health and the ethics of all relationships between humans and animals must be subject to evaluation by the official Veterinary Service.

### **Exchange of information and communication**

The exchange of epidemiological, technical and scientific information is fundamental to an efficient veterinary public health system, and to the development and maintenance of international trade. In this respect, reliable and transparent information, as well as rapid communication, especially in periods of crisis, is of strategic importance. Resolution No. XXI, 'The Role of Communication Management in Assisting Veterinary Services', adopted by the OIE General Session on 31 May 2001, is the basis for the implementation of the communications activities of official Veterinary Services (13).

### **Bioterrorism**

Many biological weapons, either in the hands of the military or of terrorists, are zoonotic, often particularly pathogenic for animals. In addition to their direct impact on humans, such weapons aim to inflict the greatest possible damage on the economies of the countries attacked. In order to minimise the damage caused by such an attack, the World Health Organization Assembly, in a resolution adopted on 14 May, urges Member States, in the event of public health problems arising from the deliberate or accidental use of biological or chemical agents or nuclear material, to share 'expertise, supplies and resources in order to contain the event rapidly and mitigate its effects' (19). Official Veterinary Services must establish specific operational procedures for rapid intervention, decontamination and the re-establishment of safe conditions. Specific training must be provided to veterinary practitioners at all levels, and a specific plan must be drawn up to secure

supplies of the drugs and vaccines needed to guarantee minimal safety conditions.

There is no single way for official Veterinary Services to fulfil this mandate. The history of the country concerned and its membership in or reference to international organisations will strongly influence the solution adopted in each country. The authors can, however, recommend that the official Veterinary Service should have a central agency, which is responsible for general strategy, verification and international relations, and peripheral agencies in direct contact with local regions, which are responsible for the implementation of the activities of the official Veterinary Service.

The two prevailing models for the organisation of official Veterinary Services are:

- a centralised model
- a federal model.

In the first model, regional services are only marginally involved in the planning of their activities. Even their location and organisational structures are determined by the central agency and defined by the national authorities.

In a federal structure, regional services are asked to plan their own activities, within a national framework. Such regional services have a degree of autonomy in determining their location and structure, and work with the local authorities.

One disadvantage of the federal system, demonstrated in the reports issued by the Food and Veterinary Office of the European Union, is that, if there is no centralised agency empowered and organised to perform 'spot checks', the efficiency of these regional services can differ in different parts of the country. Moreover, changes can be only partial or not fully effective and may not be implemented quickly enough (4, 5). Finally, official Veterinary Services occupy an important position in national health structures with regard to the evaluation and management of food safety risks. The European Union provides an example of this, as it has created a specific agency, the European Food Safety Agency (EFSA), to coordinate the activities of similar food safety agencies in its Member Countries. This division of labour requires close co-operation between the different parties to guarantee the desired level of food safety. Such co-operation takes the form of developing and implementing specific food safety control plans based on the scientific advice given by the agency, as well as gathering and publishing the results of such programmes. For their part, the various food safety agencies within Member Countries, when selecting analysis projects, must consider everything that EFSA and the private sector submit to them.

## Conclusion

Official Veterinary Services face many challenges. These challenges are linked to the huge transformations which veterinary medicine has undergone in attempting to meet the demands and opportunities created by the development of society.

The central task of the Veterinary Services is still the pursuit of veterinary public health. However, Veterinary Services are no longer the sole managers of animal health protection and disease control, but rather 'guarantors' that all parties involved in food production fulfil their respective obligations to

guarantee safe food for the consumer. To accomplish this, Veterinary Services must use tools, such as quality accreditation and functional specialisation, which result in effective and efficient modern economic management systems.

In addition, there are diverse areas – such as the relationship between humans and animals, environmental protection and natural, accidental or terrorist emergencies – in which official Veterinary Services are called upon to play an increasingly broad and complex role.

## Le rôle des Services vétérinaires officiels face aux nouveaux enjeux de la société : santé et protection des animaux, sécurité sanitaire des aliments et environnement

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### Résumé

Les auteurs décrivent le rôle des Services vétérinaires confrontés à la transformation de la société et aux défis que pose cette transformation. Dans un contexte de mondialisation accrue qui voit naître de nouvelles méthodes de production, bouleverse les relations entre l'homme et l'animal et soulève des problèmes de plus en plus complexes à l'échelle planétaire, la sauvegarde de la santé publique et de l'environnement humain et animal requiert la mise en œuvre de compétences, de connaissances et de solutions scientifiques et techniques nouvelles.

Les Services vétérinaires officiels ont pour mission de garantir le respect des normes sanitaires et zosanitaires lors des phases de production primaire et secondaire, ainsi que l'équité des échanges internationaux. Pour remplir cette mission, les Services vétérinaires doivent s'assurer que leurs structures organisationnelles sont conformes aux normes d'assurance qualité reconnues sur le plan international.

### Mots-clés

Analyse des risques – Assurance qualité – Environnement – Mondialisation – Santé publique – Sécurité sanitaire des aliments – Service vétérinaire.

# El papel de los Servicios Veterinarios frente a los nuevos retos sociales: sanidad y protección de los animales, inocuidad de los alimentos y salubridad del medio ambiente

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## Resumen

Los autores describen el papel de los Servicios Veterinarios frente a los retos que implican los cambios sociales. En un mundo cada día más globalizado, en el que se han introducido nuevos métodos de producción, se ha establecido una relación nueva entre las personas y los animales y se plantean problemas cada vez más complejos y globales, la protección de la salud pública y la salubridad del ambiente en el que viven las personas y los animales requieren competencias nuevas, conocimientos nuevos y respuestas técnicas y científicas nuevas.

Los Servicios Veterinarios oficiales tienen la responsabilidad de hacer respetar normas de higiene y de sanidad animal en los procesos de producción primaria y secundaria y de velar por la seguridad del comercio. Para ello, deben cerciorarse de que sus estructuras organizativas cumplen con las normas de aseguramiento de calidad internacionalmente reconocidas.

## Palabras clave

Análisis de riesgos – Aseguramiento de calidad – Globalización – Medio ambiente – Salud pública – Seguridad sanitaria de los alimentos – Servicio Veterinario.



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