

Institutions: stronger Veterinary Services for better governance

H.L. Batho⁽¹⁾, B. Logar⁽²⁾, J.C. Mariner⁽³⁾,
W.-A. Valder⁽⁴⁾ & J.M. Westergaard⁽⁵⁾

(1) European Commission Directorate-General for Health and Consumers, Unit D1, Honnekinberg 9, 1950 Kraainem, Belgium

(2) European Commission Directorate-General for Health and Consumers, Unit G2, Animal Health, Rue Froissart 101, 1040 Brussels, Belgium

(3) International Livestock Research Institute, P.O. Box 30709, Nairobi 00100, Kenya

(4) Federal Ministry of Food, Agriculture and Consumer Protection, Graue-Burg Str. 79, D – 53332 Bornheim, Germany

(5) European Commission Directorate-General for Health and Consumers, Unit D1, Mikkelpborg Alle 7, 2970 Hørsholm, Denmark

Summary

Veterinary Services (VS) as defined by the World Organisation for Animal Health (OIE) are institutions that can have varied structures, from the centralised to the completely decentralised, with ranges in between these two extremes. The VS include a broad range of public and civil society organisations and actors whose shared purpose is to deliver animal health services, and the interactions of these actors are governed by a range of formal and informal rules. The range of essential services to be carried out by the VS is laid out in the OIE *Terrestrial Animal Health Code*, which also provides certain key definitions. To provide these services, there must be strong institutions, as these are key elements of good governance. This, in turn, enhances the efficient provision of global public goods and services to the citizens. Therefore, the VS must be properly resourced and structured to carry out all their tasks. This paper highlights some important factors that can help achieve this goal and discusses possible VS administrative structures, human and financial resources, and national systems for the early detection and notification of disease events as well as those for disease prevention. These are essential elements of the public good functions of VS and they warrant prioritisation by OIE Member Countries.

Keywords

Biosecurity measure – Compensation – Disease notification – Farmer – Governance – Institution – Veterinary Authority – Veterinary diagnostic laboratory – Veterinary Services – World Organisation for Animal Health.

Introduction

There are three main areas that need to be addressed when considering good governance of Veterinary Services (VS): (i) the structures or institutions, (ii) the processes and (iii) the resources. In addition, there must be linkages with the veterinary statutory body and partnerships with relevant stakeholders. Furthermore, there must be comprehensive and clear legislation that is properly implemented (see Fig. 1).

An Institution is defined (17) as: ‘any structure or mechanism of social order and cooperation governing the behaviour of a set of individuals within a given human

community. Institutions are identified with a social purpose and permanence, transcending individual human lives and intentions, and with the making and enforcing of rules governing cooperative human behaviour’. The VS of the Member Countries of the World Organisation for Animal Health (OIE) can be described as institutions that are made up of a number of interlinked governmental and non-governmental organisations, such as laboratories, agencies, statutory bodies, associations, private-sector service suppliers, and universities. Figure 2 attempts to give an overview of these institutional component organisations, stakeholders and linkages. Veterinary Services, according to the glossary in the OIE *Terrestrial*

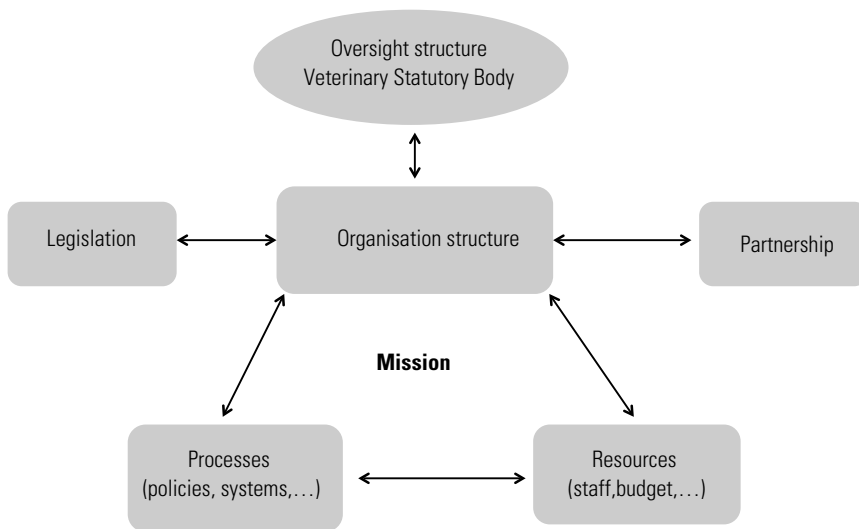
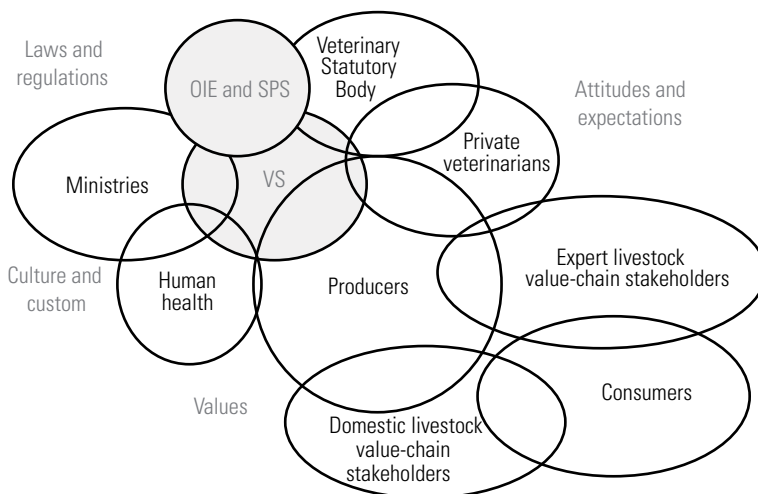


Fig. 1
Institutional framework and linkages



OIE: World Organisation for Animal Health
 SPS: Sanitary and Phytosanitary Agreement of the World Trade Organization
 VS: Veterinary Services

Fig. 2
Veterinary Service institutions: an overview of component organisations, stakeholders and linkages

Animal Health Code (Terrestrial Code) (18), are defined as: ‘the governmental and non-governmental organisations that implement animal health and welfare measures and other standards and recommendations in the *Terrestrial Code* in the territory’. This definition is consistent with the common definition of an institution in social sciences, but appropriately limits itself to the purpose of implementing the guidelines of the *Terrestrial Code*. The *Terrestrial Code* also specifies the role and the importance of the VS in food safety, i.e. in the field of veterinary public health, which usually represents a substantial proportion of their

workload and responsibilities. It should be noted that the purpose of animal health institutions undoubtedly extends beyond the implementation of the standards of the *Terrestrial Code*, but it is these standards, and the ability of VS to meet them, that are the main focus of this paper.

When carrying out the functions of the VS described in the *Terrestrial Code*, the VS are under the control and direction of the Veterinary Authority (VA), which is defined in the *Terrestrial Code* as: ‘the Governmental Authority of an OIE Member, comprising veterinarians, other professionals and

para-professionals, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the *Terrestrial Code* in the whole territory'. Private-sector organisations, veterinarians, veterinary para-professionals or other professionals are normally accredited or approved by the VA and thereby empowered to 'deliver the delegated functions'. The principal tools available to the VA to shape the VS are often seen as policy, legislation and regulation. Powerful, but less formal, forces that also shape VS institutions are values, ethics, expectations and cultural context. Astute VA are aware that they shape national and international VS institutions over the longer term through interventions in educational systems, forums for professional dialogue and communication with the general public.

The range of services to be carried out by the VS is laid out in Chapter 3.1. of the *Terrestrial Code*. According to this Chapter, in order to ensure the quality of their general organisation, the VS should:

- be able to demonstrate, by means of appropriate legislation, sufficient financial resources and effective organisation, that they are in a position to have control of the establishment and application of animal health and animal welfare measures, and of international veterinary certification activities
- have at their disposal effective systems for animal disease surveillance and for notification of disease problems wherever they occur, in accordance with the provisions of the *Terrestrial Code*. Adequate coverage of animal populations should also be demonstrated. They should at all times endeavour to improve their performance in terms of animal health information systems and animal disease control
- define and document the responsibilities and structure of the organisation (in particular the chain of command) in charge of issuing international veterinary certificates
- describe each position within the VS which has an impact on their quality. These job descriptions should include the requirements for education, training, technical knowledge and experience.

The *Terrestrial Code* includes guidelines for the governance of VS. Well-governed VS are those that are sustainably financed, universally available, provided efficiently without waste or duplication, and are transparent and free of fraud or corruption. Thus, good governance leads to VS which operate adequately and efficiently within proper structures, and have comprehensive legislation, the means to implement it, and sufficient resources to carry out their functions, *inter alia*, trade, animal health, veterinary public

health, veterinary laboratories, and management and regulatory services.

Three important areas are further elaborated below:

- i) administrative structures and the chain-of-command concept
- ii) the human and financial resources at VS disposal, including compensation to farmers
- iii) certain key processes:
 - early detection of national or international disease events
 - rapid notification, confirmation and characterisation of the pathogens, including veterinary diagnostic laboratories and possible recourse to reference laboratories
 - implementation of biosecurity measures in and around disease outbreaks, control of animal movements and slaughter.

Administrative structures including the chain-of-command concept

There are usually two main structures found for VS: i) those with a strong central authority with a top-down chain of command and ii) those with a federal system with decentralisation of powers and resources. There are several examples of OIE Member Countries where federal systems do in fact work well, but there are some where they do not (authors' experiences). In the successful examples, federal systems are well coordinated and the division and delegation of powers is carefully structured to maintain appropriate national response capacity and information flow to assure safe participation in international trade. However, in some cases, decentralisation and devolution of authority is so great that local authorities are empowered to select their own policies on matters critical to the surveillance and control of diseases of interest in trade. In these instances it is difficult or impossible for the national authorities to coordinate local actions or have sufficient knowledge of what is going on in the country, which limits their ability to assure safe trade or effectively serve the health needs of the nation. This, of course, is the extreme and is not in conformity with international standards. However, federal systems may concomitantly require more resources, more legislation and much more coordination than centralised systems. It is crucial that any VS structure ensures that it is the VA of the exporting country that is ultimately accountable for veterinary certification used in international trade, as laid down in paragraph 3 of Chapter

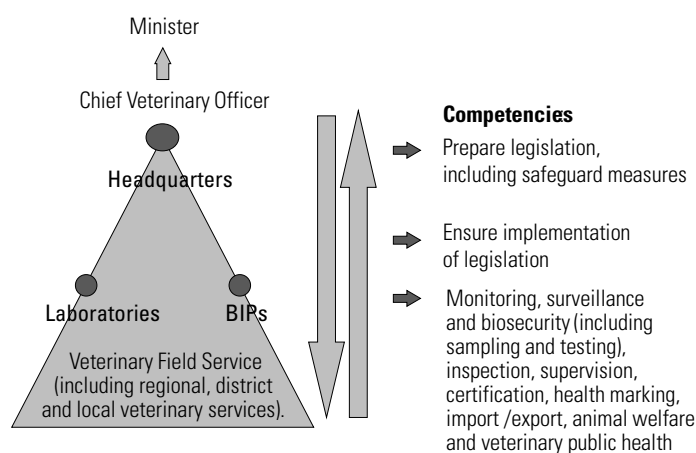
5.1.3. of the *Terrestrial Code*. The structure must also ensure that the VA is able to fulfil the country's responsibility to rapidly notify outbreaks of animal diseases and provide related epidemiological information to the OIE, as laid down in Chapter 1.1. of the *Terrestrial Code*.

There should be a proper, functioning veterinary statutory body to ensure that the code of conduct for veterinarians is respected. This body must have sufficient powers to suspend veterinarians when necessary. This is particularly important for ensuring confidence in any certification carried out by the VS.

All VS, irrespective of how decentralised, devolved or de-concentrated they are, require comprehensive, detailed and transparent legislation covering the whole of the veterinary domain, adequately trained veterinary staff, sufficient resources, and management systems, including information technology systems. In addition, there should be stakeholder involvement to assure broad ownership of animal health programmes, otherwise implementation of legislation will be difficult or even impossible. The most effective way to assure stakeholder ownership is to include key partners in the process of developing the policy objectives within the framework of science-based approaches to animal health.

The person ultimately responsible for the competent authority in a country is the competent Minister, and the Chief Veterinary Officer (CVO) should be their professional veterinary adviser and head of the VS. It is clear that a pyramidal structure with a clear definition of competence and a clear chain of command – from the decision-making VA at the top, to the veterinarians at the central, regional and local services – ensures that the

activities and actions of the VS are efficient (see Fig. 3) (1). This is of particular importance in the event of emergencies, which often occur in the veterinary sector. When the VS system comprises a proper, direct chain of command there is usually a more effective and efficient flow of information in both directions. This two-way flow of information is important, with commands and information not just being sent down to personnel in the field, but rapid responses and information coming back up to headquarters to help in further decision-making or disease control actions. Good information flow is needed for several reasons, e.g. for sending prompt international disease notifications and for allowing export certification to be undertaken in a timely and accurate manner. Generally, a clear chain of command allows for more dynamic action to be taken, which leads to greater confidence and trust in the VA and its services. This is particularly important for international trade, where confidence between trading partners is a key enabling condition. The stability of the chain of command is also important for trade, as frequent changes in personnel can be disruptive to trade relations. Senior technical management in the VA are an important source of experience, stability and institutional memory and it is counter-productive to change professional management during political transitions. International relationships between CVOs and heads of departments are an important component of international communication networks and confidence between trading partners. Lastly, the authority and responsibilities of each level of the service must be clearly defined and the personnel should be empowered to carry out their designated functions and duties. This includes the designation of private veterinarians to undertake specified delegated functions on behalf of the VS. Such delegation of functions to private veterinarians can help reduce government costs and



BIPs: Border Inspection Posts

Fig. 3

The organisation of efficient Veterinary Services: a simple structure is required, with a two-way flow of information and a clear definition of key competencies generally available to the public

stimulate a thriving private veterinary sector, while at the same time ensuring a good level of disease surveillance.

A chain of command does not imply passive waiting for orders from the central headquarters. When well organised, a chain of command engenders rapid responses and rewards initiative.

Human and financial resources at the disposal of Veterinary Services, including compensation to farmers

This all costs money and requires human resources. Over recent years, particularly under the economic circumstances post 2007, there has been great financial pressure on all public services and the VS have not been immune. However, the provision of VS is seen as a common public good. Animal diseases do not recognise international boundaries and consumers want assurances over what they eat.

Veterinary Services may recuperate some expenditure, to a certain extent, by collecting fees for the services they provide, including, *inter alia*, import and border veterinary controls, export certification, meat inspection, approvals of establishments under veterinary supervision, and animal health schemes, including vaccination.

However, in most cases, the money collected by the VS is not retained by the service, but goes to the finance ministries and is therefore lost to the VS. It would seem more appropriate for VS to retain this money to help finance their activities.

The OIE Performance of Veterinary Services (PVS) Pathway (19), which includes the OIE PVS Gap Analysis Tool (20), has been developed to aid countries in determining their level of advancement and compliance with 46 critical competencies. These critical competencies cover five fundamental pillars, namely trade, animal health, veterinary public health, veterinary laboratories, and management and regulatory services. The Gap Analysis Tool provides an excellent framework for costing the different levels of VS and for costing improvements. It is also an extremely good tool for helping VS prepare their annual budget, as it helps to highlight deficiencies and attempts to provide an estimate of the finances required to improve each critical competency. Some VS may lack the expertise required to prepare well-structured budgets, and the PVS Gap Analysis Tool really assists in this process, thus enabling VS to convince both their Minister and the Minister of Finance of their real needs.

Each VS is different and has varying resource needs depending on its ability to export and its need to import; its size, diversity and geographical situation; its animal resources; its consumer needs and expectations; and the level of development of the country in which it is operating. Each country should define its own set of national VS objectives, determine the relative priority and feasibility of each objective and apportion its finite resources appropriately. (By involving industry and the civil society organisations in this process, the VA can often mobilise additional resources, in both monetary and institutional terms, through partnerships and increased political support.) If a country depends on imports then it is to be expected that it will require more resources to control imports of animals and animal products than a country with few imports. In the past, if a country had the luxury of being an island, it was easier and cheaper to control and inspect imports, but this is not necessarily the case today with the widespread and rapid movement of people and the risk of possible introduction of 'contaminated' material, including contaminated food. There are many examples of the introduction of animal diseases causing huge economic losses. Many governments tend to reinforce control and inspection services in the short term after such disease incursions; but they soon forget the lessons learned and then the VS again come under renewed pressure to reduce costs.

Disease notification and early detection of animal diseases are essential elements for the effective and successful functioning of the VS. The system cannot function effectively unless business operators and, especially, animal keepers are aware of its importance and contribute to it. In the past, veterinary policies were often based on authoritative powers and governments simply imposed the measures. Nowadays, this is less and less the case.

National systems, therefore, require mechanisms that incentivise animal keepers to play an active role in disease control systems. Early and rapid detection and notification of abnormalities can only be achieved if the farmers and other business operators are not afraid of losing their livelihood or suffering irreparable losses when a disease appears on their premises or if their premises are affected by VS measures to protect farms from a disease present in their locality. An instrument for providing financial compensation to farmers should be established to compensate for damages due to the imposition of disease control measures. This enables the competent authorities to take immediate action on the farms or in the areas concerned, knowing that it will be possible to compensate farmers and industry for certain losses incurred as a result of their actions.

Animal health and veterinary services are perceived as a global public good and compensation is usually sourced through public funds. It is essential that compensation

rules are pre-defined and transparent in order to be effective, efficient and sustainable. However, public resources and contributions are often limited, therefore the public intervention is usually based on disease categorisation policies. This means that public funds are made available for losses incurred as a result of diseases that are important to wider society (i.e. those that have significant public, animal health and economic impacts), while compensation for losses resulting from less important diseases is not provided or is only provided in part. These less important diseases are left to the private sector to deal with.

Keepers and other operators experience two kinds of losses:

- direct losses, i.e. losses arising from the disease control measures on the farm
- indirect losses, i.e. losses, including business interruption costs, resulting from the change in the legal and economic environment following the outbreak.

Compensation for direct losses usually covers the costs of animals culled, the costs of operational veterinary measures (e.g. surveillance, emergency vaccination) and the costs of control measures (e.g. disinfection, treatments). Farmers are indemnified on the basis of the market value of their animals. However, the indirect losses may affect animal keepers and operators even more substantially than the direct ones and may have longer and more wide-spreading impacts, including economic, social and trade impacts. Indirect losses, and the possibility to be compensated for them, have become more and more important in the competitive global world. As an example, in one of the previous disease crises in the European Union (EU) 30.8% of losses were direct losses and 69.2% were indirect losses (4).

Furthermore, the system of compensating only for direct losses is weighted in favour of animal keepers that are directly affected by the disease outbreaks. Keepers on whose holdings control measures are implemented receive compensation for killed animals, whereas animal keepers who suffer losses as a result of the introduction of movement controls – but whose premises are not directly affected – are not compensated. This discrepancy can also lead to false notifications or even, in a worst-case scenario, encourage farmers to not respect biosecurity principles in order to expose their animals to disease and obtain compensation.

Consequently, many developed compensation systems, such as the system in the EU (5), try to find solutions to incentivise, as far as possible, preventive behaviour. Primary responsibility for the health and welfare of animals rests with their keepers. However, private decisions do not

always reflect wider public considerations. The public intervention and funding in the area of animal diseases is a major source of financing for compensation, but should not be the only one. It is keepers who are best placed to identify any variations in their animals' health; they are responsible and should bear a part of the costs of the measures taken. Such systems stimulate more responsible and preventive behaviour and practices. Tools to stimulate rapid notification of abnormalities, such as incentives to reduce the time lag between the first suspicion and the first notification to VS, can also be used to reduce compensation.

Many countries search for the best options for cost-sharing schemes (4). Such schemes can take several forms. They can be, for example:

- a public fund (administered by the public authority; this may include the collection of a levy, e.g. at slaughter)
- a mutual fund (owned by the participating operators)
- private insurers
- a combination of the above.

In the EU, some individual Member States have developed systems for covering indirect losses (8), but the EU provides compensation only for direct losses (7) (usually around 50%). The EU does not compensate for indirect costs as these are too expensive to fund by the government and other solutions are needed.

Certain key processes

National systems for the early detection of national or international disease events

Effective surveillance systems are those that are fully integrated and owned by national and international VS. Ownership implies that stakeholders have participated in the setting of objectives and the design of the surveillance system. The starting point is the mapping of VS, ensuring that all potential partners, their roles and inter-relationships are taken into account.

It is particularly important that the stakeholders, above all animal keepers and operators, are aware of disease threats and their implications, as only then can they contribute to the system in an effective and timely way. The role of VS in raising disease awareness in this context is essential.

Surveillance objectives often include safeguarding and promoting economic production, enhancing market access, and safeguarding public health. Early detection of disease events is a key output of surveillance systems that supports all these objectives, so it is important that these systems are sensitive enough to quickly detect disease in

the whole range of host populations present in the country. Once events of concern are detected, effective diagnostic services are required to definitively characterise the aetiologic agent.

Sensitive and timely surveillance requires methods that can detect suspicious events whose clinical or epidemiological presentations are compatible with diseases of concern. These diseases may include important transboundary diseases, zoonoses or emerging pathogens.

Effective surveillance systems should include:

- Risk-based strategies: Risk-based surveillance is the targeting of surveillance to populations in which the probability of the occurrence of events is high. Provided the risk criteria are well identified and documented, this is a valuable approach for increasing the sensitivity, timeliness and cost-effectiveness of surveillance systems.

- Active outreach: Active surveillance implies that the surveillance system has built-in mechanisms to encourage reporting or sampling of suspicious events. This can take the form of mass communication programmes or periodic outreach to critical reporting stakeholders, and/or sampling. This approach increases sensitivity and timeliness, but usually adds to cost.

- Clinical case definitions: The sensitivity and timeliness of surveillance can be enhanced by the provision of easily understood case definitions that provide criteria for deciding which events warrant reporting or further investigation.

- Procedures for rapidly implementing effective investigations: The effectiveness of early detection is greatly enhanced by having clear procedures in place for moving to the next stage in the diagnostic and response procedure. The procedure should be one that encourages and rewards initiative on the part of reporting stakeholders.

- Data collation and analytical procedures: The components of the system that are designed to facilitate early detection should include activities to collate data and review the data for patterns. In some instances, individual disease events may not be sensational, but the pattern of events may suggest an emerging problem of significant economic, trade or public health significance.

- Performance monitoring: The early detection component of the programme should include activities based on the measurement of indicators to assess how well the programme is achieving its goals. The key parameters for assessment are related to sensitivity and timeliness.

The *Terrestrial Code* focuses on achieving outcomes rather than prescribing particular methodologies. The principle of equivalence in the World Trade Organization (WTO) Agreement on the Application of Sanitary and

Phytosanitary Measures (SPS Agreement) indicates that Member Countries must recognise the methodologies of other countries as equivalent to their own if they achieve the same outcome (22). The criteria described above can be met through a variety of specific programmes. An important consideration is that the programme is designed in dialogue with the VS and stakeholders in order to ensure that it is compatible with national institutions and well implemented. The performance-monitoring component of the programme should provide sufficient data to assess how well the desired outcomes are achieved and to identify where enhancements can be made.

National systems for rapid notification, confirmation and characterisation of the pathogens, including veterinary diagnostic laboratories and possible recourse to reference laboratories

Recognition and notification of an animal disease without delay remains an extremely important step in effective disease control and eradication. The animal keeper or owner and the field veterinarian are usually the key people in the process but, as has been stated above, laboratory results from a surveillance programme may also provide the first indication of a potential new disease situation. The basic requirements for early detection of disease leading to effective control or eradication are several and include:

- a) adequate and efficient disease surveillance (active and/or passive)
- b) a well-established notification system, including a strong relationship between the animal owner and the field veterinarian and links for rapid and robust communication of reports to the local, regional or national VS
- c) the presence of an efficient VS
- d) access to adequate diagnostic laboratory facilities
- e) the tools necessary for implementation of disease control and eradication measures
- f) legislation supporting (a) to (e).

In most countries, the legislation covering the control of infectious diseases requires the competent authority to immediately activate official investigation arrangements under its supervision in order to confirm or rule out the presence of disease when:

- a holding contains one or more animals suspected of being infected or contaminated
- wildlife is suspected of being infected.

A notification (the act of giving warning or information), within this context, refers to a report to an official veterinarian about the presence of a potential infectious

disease. A notification records a disease suspicion. Quantitative information about disease suspicions unrelated to disease outbreaks is in general limited, as unjustified trade restrictions may be established when a notification of a suspicion is made public. Some VS may, therefore, be reluctant to provide information on disease suspicions and even confirmations; this in spite of the fact that openness and transparency about suspicions should provide trust between trading partners. Early detection is enhanced when the animal keeper and field veterinarian are ensured moral and professional support by the competent authority. Veterinary Services should develop a disease information system that requires a definition for a disease suspicion (i.e. disease suspicions that are later refuted) which is as follows:

i) an official veterinarian has been contacted by a farmer or veterinarian concerning disease suspicion, but the notifiable disease has been ruled out by either:

- a consultation without visit by an official veterinarian to the holding/place where the disease-suspected animal is kept
- a clinical examination of the disease-suspected animal by an official veterinarian
- the results from a laboratory examination of specimens obtained from the disease-suspected animal

ii) a result from the National Surveillance Scheme suggests the presence of disease but further investigations rule out the presence of disease.

A national disease notification database should hold information on, at least, the date of suspicion, the animal(s) and region affected, the place where the suspicion occurred, and more detailed information concerning subsequent confirmed cases. The flow of information and some initial steps to be taken to record disease suspicions and confirmed outbreaks are given in Figure 4. In addition, it is very useful to give serial numbers to confirmed outbreaks (e.g. FMD/2011/1 and FMD/2011/2 for the first and second outbreaks of foot and mouth disease in a country in a given year), so that epidemiological investigations can be carried out more easily, the information better used and transparency enhanced.

The database is considered an excellent tool for good governance, as the registered information can assist in contingency planning (with regard to allocation of funds and the updating of plans when necessary) and also gives confidence to trading partners that there is a good national surveillance system for the early detection of diseases. In drawing up a disease notification database, VS must bear in mind that the database should include the necessary data and be structured in such a way as to be compatible with the international obligations of the country to promptly

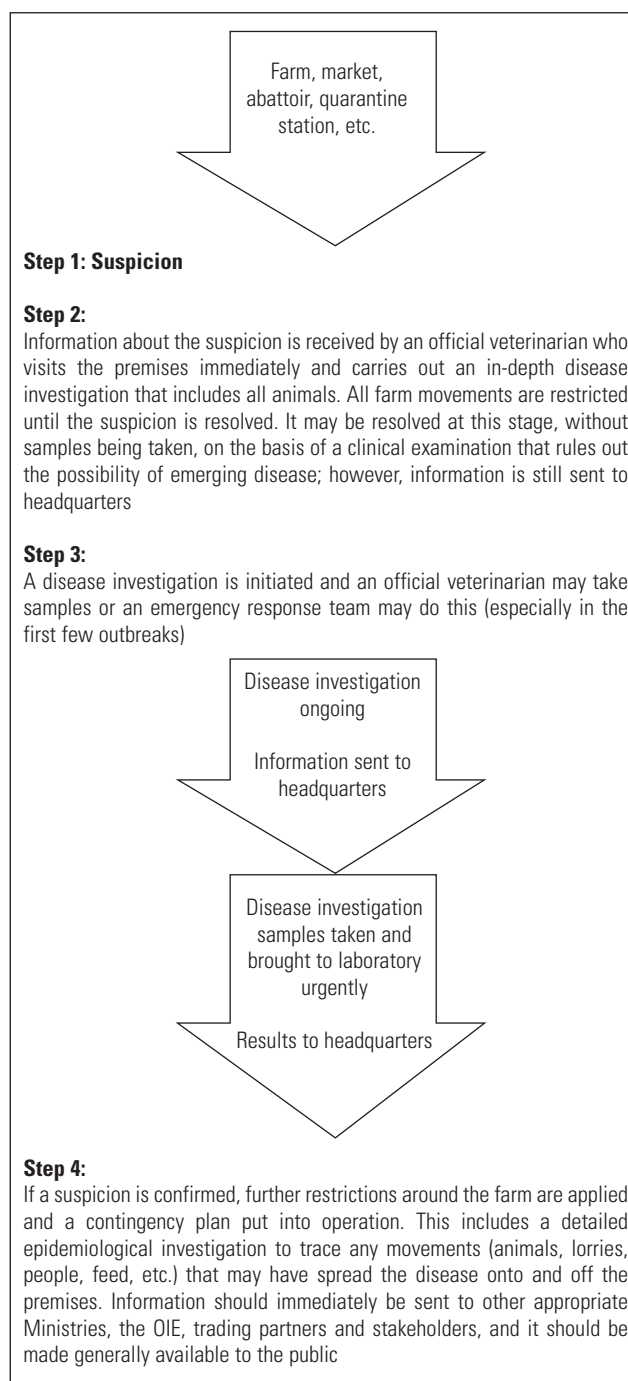


Fig. 4
Flow of information during disease suspicion and confirmation

notify and report diseases to the OIE for inclusion in the World Animal Health Information System/World Animal Health Information Database (WAHIS/WAHID) (available via the OIE website: www.oie.int). For example, since 2009, the EU and the OIE have been working on a project of interoperability between WAHID and the developing EU system – Animal Diseases Information System (ADIS) (5, 6), which will expand the present Animal Disease Notification System (3). This interoperability should guarantee the compatibility of any communication

between the EU and the OIE systems. Such a system should save time and money by preventing the duplication of work, and make the results of surveillance activities more widely available, thus enabling more people to benefit from the information. At the same time, it should help VS of the individual EU Member States to fulfil their obligations towards the OIE as regards WAHIS. It could serve as a model for other countries to develop or use.

At the moment that the official veterinarian receives information about a disease suspicion the pathogen may often be unknown. If a specific animal disease is suspected in a free country or zone, e.g. classical swine fever, it is important to remember that the differential diagnosis may include a number of bacterial and viral diseases and even poisoning. Furthermore, the disease observed may, on some occasions, be caused by a pathogen not yet described in the literature. An example is porcine respiratory and reproductive syndrome: the disease signs and symptoms were described for several years before it was shown, in 1991 (16), that the pathogenic agent was a virus.

Proper identification of disease pathogens calls for proper collection and submission of relevant material for laboratory examination, laboratories with adequate facilities and qualified staff. The role and importance of veterinary laboratories in the prevention and control of infectious animal diseases has been described by Trusczyński (15), who subdivided laboratories into three groups depending on the tasks to be performed:

- Group 1: laboratories whose principal role is to provide diagnostic assistance to VS in relation to disease suspicions, disease outbreaks and post-epidemic screening
- Group 2: laboratories linked to VS and mainly involved in the manufacture of vaccines and diagnostic kits
- Group 3: laboratories primarily engaged in basic research.

The tasks of veterinary laboratories, however, vary greatly from country to country depending on national needs. In recent years there has been a tendency to designate national reference laboratories and internationally recognised reference laboratories to carry out specific diagnostic tasks; furthermore, these laboratories are playing an increasingly important role in the development and adoption of fast, sensitive, specific, reliable and harmonised diagnostic tests.

It is important for good governance that laboratory requirements are well defined and covered by legislation. A country's livestock population, disease situation, ecosystem and involvement in international trade will usually be important factors in determining the specific functions and capacity of a national reference laboratory, including the resources it will need.

The continuous call for ever-improving tools for detecting animal diseases and for the development of more sophisticated molecular diagnostic methods provides the rationale for the provision of support to national reference laboratories from internationally recognised reference laboratories, the latter being centres of excellence for specific diseases. The number of reference laboratories recognised by the OIE has gradually been expanded, and by mid-2012 the network of laboratories included 236 reference laboratories located in 37 countries (see Fig. 5), and the expertise available covered 33 aquatic and 79 terrestrial diseases (21). Since 1983, the EU has paid great attention to the establishment and use of EU reference laboratories for infectious animal diseases. The functions and duties of an EU reference laboratory are detailed in EU legislation. This might be a good model for OIE regional reference laboratories.

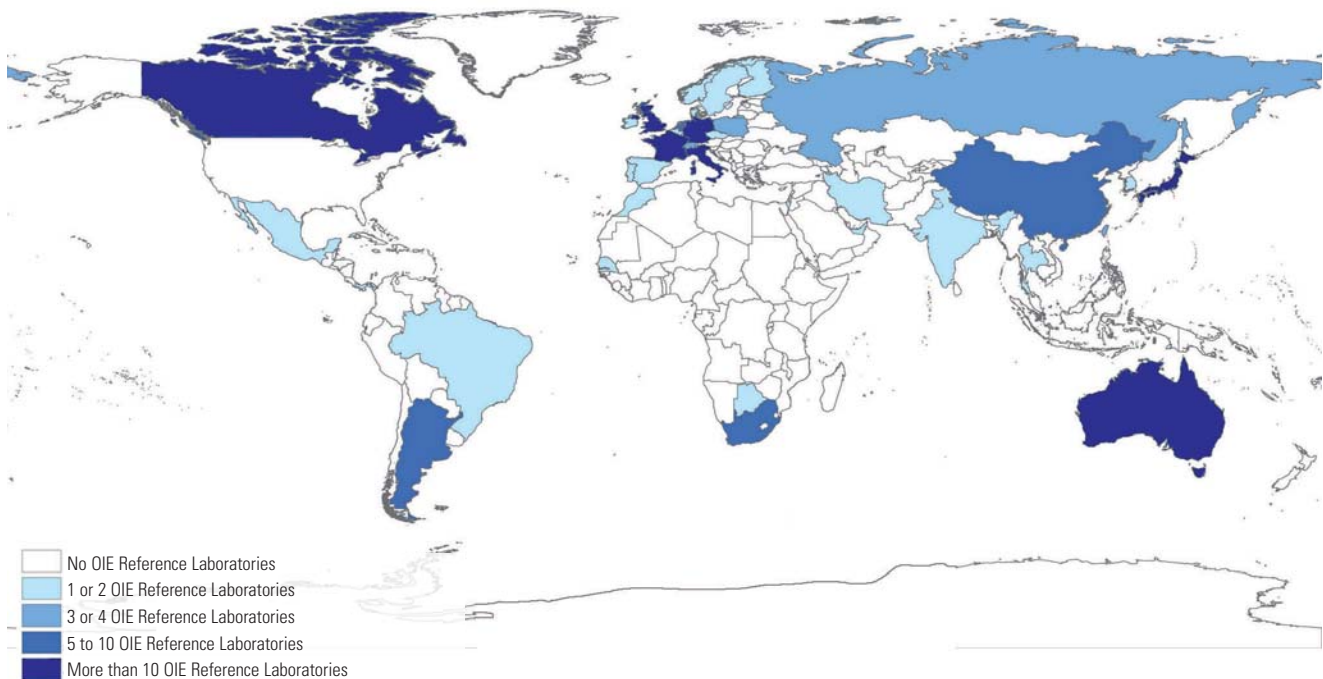
A number of EU reference laboratories are recognised by the OIE and are involved in the OIE laboratory twinning programmes. The goals of twinning include: the transfer of technology, the validation of diagnostic methods and the testing of vaccine efficacy in countries and regions where the diagnostic capacity needs upgrading.

The increased use of national reference laboratories and internationally recognised reference laboratories contributes to good governance, as potential trade disputes due to laboratory findings at different national reference laboratories may be solved by involving a relevant international reference laboratory.

Outbreaks of infectious diseases and, in particular, of emerging diseases (ED) may result in severe economic loss to the farmers involved and may in some situations also have serious health and socio-economic consequences for the region or even the country affected (12, 13). The magnitude of the consequences will, to a great extent, depend on the agent causing the disease and on the country's engagement in international trade. The moment an ED is suspected or confirmed the veterinary authorities will immediately take measures to reduce and stop the potential spread of the pathogenic agent from the infected premises. One of the first issues to be examined during the epidemiological investigation of the suspicion or outbreak will be the biosecurity applied at farm level.

In this paper, biosecurity at farm level refers to measures taken to protect livestock against infectious diseases and pathogenic agents currently not found on the farm, and measures to reduce and limit the spread of disease from the farm and within animals and groups of animals at the farm.

At country level, biosecurity measures should be in place wherever animals are kept: farms, laboratories, quarantine stations, fairs, markets and border posts. Biosecurity therefore represents a preventive tool to minimise the



Copyright © 2011, World Organisation for Animal Health

Fig. 5
Geographical distribution of OIE Reference Laboratories

possibility for diseases to appear. Moreover, in the event of a disease outbreak, the effectiveness and speed of the implementation of control and eradication measures very much depend on the availability and implementation of a well-prepared biosecurity plan, as information in the plan can support and enhance epidemiological investigations. There are several guidelines for the preparation of biosecurity plans at farm level (2, 13, 14). A biosecurity plan should include provisions for:

- the introduction and isolation of new animals brought to the farm
- risks from visitors (preferably with identification of low, moderate and high-risk visitors)
- risks from the use of farming equipment and transport vehicles
- risks from wildlife
- the isolation of sick animals
- the use of detergents and disinfectants
- regular recording of protection measures.

The use of schematic diagrams of infectious disease transmissions may be a useful tool (11) when biosecurity plans are drawn up.

Measures to minimise and hopefully stop the spread of infection from an infected farm may include a stamping-



© Crown copyright – reproduced courtesy of the Department for Environment, Food and Rural Affairs, United Kingdom

Fig. 6
Stamping out includes humane killing of animals on an infected farm

out policy. The OIE (18) has clearly defined a stamping-out policy as a means of carrying out the killing of susceptible animals in the infected herd and in herds exposed to the infection by animal-to-animal contact or by indirect contact of a kind likely to spread the causal agent (see



© Crown copyright – reproduced courtesy of the Department for Environment, Food and Rural Affairs, United Kingdom

Fig. 7
Carcasses for destruction removed from an infected farm in a sealed, leak-proof lorry

Fig. 6). The carcasses of killed animals must be destroyed by a method which will avoid the spread of the agent and the stamping-out policy must be accompanied by cleansing and disinfection (see Fig. 7).

However, total stamping out in many areas may not be acceptable (affordable) if there are other means available to avoid the spread of diseases; for example, vaccination strategies (where an effective and reliable vaccine exists), preferably strategies that enable the differentiation of infected from vaccinated animals (DIVA strategy). This strategy may in some circumstances offer better solutions in terms of reducing the costs of control measures, ensuring food security, avoiding ethical considerations (the culling of healthy animals) and increasing public acceptance of measures that are unpopular because of animal welfare issues.

Experiences gained from the eradication of a number of rapid-spreading infectious diseases (9, 10) have shown that herds near to infected herds are exposed to the threat of infection through different transmission routes. This situation needs the rapid establishment of zones around infected premises, with specific control measures. In the EU legislation (1) outbreaks of ED require Member States to establish a 'protection zone' (infected area) and a 'surveillance zone' (endangered area) around the infected premises, depending on the nature of the disease in question (Fig. 8). The general approach is to establish a protection zone with a minimum radius of 3 km and a surveillance zone with a minimum radius of 10 km. The epidemiological and ongoing trade situation may be facilitated by a surrounding 'buffer' zone for implementation of certain specific surveillance and protective measures. In the geographical delineation of

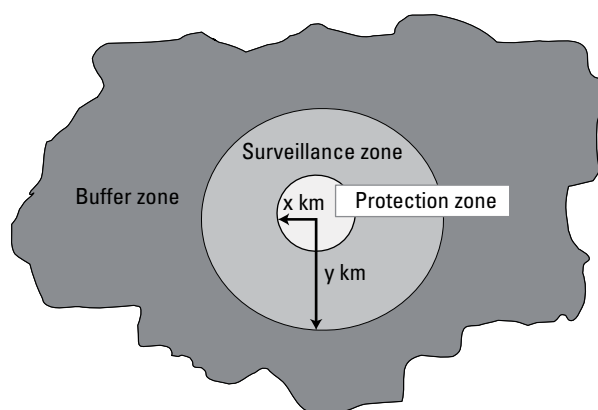


Fig. 8
Illustration of a European Union protection zone, a surveillance zone and a buffer zone centred on a disease outbreak

Specific surveillance and movement restrictions on animals and products of animal origin will apply to the different zones. (NB. The size of the areas depends on a number of factors, e.g. disease and method of spread of agent, including by vectors)

these zones, due consideration must be given to trade patterns, natural borders, administrative borders and supervision, and the results of epidemiological investigations.

The protective measures to be applied in such zones should include:

- registration of holdings with susceptible animals and a census of animals present on the holdings
- periodic veterinary inspections of holdings
- a prohibition on the movement of animals of susceptible species from the holding where they are kept
- a ban on markets, fairs, shows and other gatherings of susceptible animals.

The timetable for removal of restrictions will depend on a number of factors, such as the completion of the disease eradication policy, and results from clinical and serological surveys.

Conclusions

Whatever the organisational structure of the VS, it should ensure the quality of the services provided. The VS should be able to demonstrate – by means of appropriate legislation, sufficient resources and effective organisation – that they are in a position to have control of the establishment and application of animal health and animal welfare measures, and of international veterinary

certification activities. The VS should have at their disposal effective systems for animal disease surveillance and for notification of disease problems, wherever they occur. All such measures should be in accordance with the provisions of international standards as laid down in the *Terrestrial Code*. The chain of command is particularly important and this must be efficient and effective whatever organisational system is used, whether it is highly devolved or highly centralised. Decentralisation, together with privatisation, has expanded in many VS over the last few years, but the question which needs to be asked is how far this should go. Other bodies, for example, the army or customs services, are not decentralised, and there seems no reason why VS should be organised differently. Policies on the devolution of authority and responsibility should seek to

strengthen the functionality of VS in their fight against disease. The VS needs to be adequately funded in order to cope with the wide variety of tasks it is called upon to perform, meet the demand for quality performance that enables safe international trade, safeguard health and ensure the prosperity of national economies. The OIE considers VS a global public good and bringing the VS into line with international standards (structure, organisation, resources, capacities, role of para-professionals) as a public investment priority. ■

Institutions : des Services vétérinaires plus forts pour une meilleure gouvernance

H.L. Batho, B. Logar, J.C. Mariner, W.-A. Valder & J.M. Westergaard

Résumé

Les Services vétérinaires, tels que définis par l'Organisation mondiale de la santé animale (OIE), sont des institutions qui peuvent être organisées de diverses manières : leur système de fonctionnement peut être centralisé, complètement décentralisé, ou encore se situer en divers points entre ces deux extrêmes. Les Services vétérinaires comprennent aussi bien des organisations relevant du secteur public et de la société civile qu'une diversité d'autres acteurs qui partagent le même objectif de prestation de services de santé animale et dont les interactions sont régies par un ensemble de règles formelles et informelles. La gamme des principales prestations relevant des compétences des Services vétérinaires est décrite dans le *Code sanitaire pour les animaux terrestres* de l'OIE, qui fournit également quelques définitions importantes. Pour assurer la prestation de ces services, il faut des institutions fortes, car celles-ci sont un élément déterminant pour une bonne gouvernance. Inversement, la bonne gouvernance améliore l'efficacité des biens et des services publics mondiaux qui sont prodigués aux citoyens. Par conséquent, il convient de doter les Services vétérinaires des ressources et des structures nécessaires pour qu'ils puissent mener à bien leurs tâches. Les auteurs soulignent les facteurs importants qui peuvent contribuer à atteindre cet objectif et examinent diverses possibilités d'organisation des Services vétérinaires, les ressources humaines et financières requises dans chaque cas et les systèmes nationaux de détection précoce et de notification des événements sanitaires ainsi que les systèmes de prévention des maladies. Tous ces aspects sont essentiels au bon fonctionnement des Services vétérinaires en tant que prestataires de bien publics, et doivent être considérés comme une priorité par les Pays Membres de l'OIE.

Mots-clés

Autorité vétérinaire – Éleveur – Gouvernance – Indemnité – Institution – Laboratoire de diagnostic vétérinaire – Mesure de biosécurité – Notification des maladies – Organisation mondiale de la santé animale – Services vétérinaires. ■

Instituciones: Servicios Veterinarios más robustos para un mejor gobierno

H.L. Batho, B. Logar, J.C. Mariner, W.-A. Valder & J.M. Westergaard

Resumen

Los Servicios Veterinarios, según la definición de la Organización Mundial de Sanidad Animal (OIE), son instituciones que se pueden organizar de muy diversas maneras: su sistema de funcionamiento puede ir desde dispositivos muy centralizados hasta una completa descentralización, pasando por todo tipo de formas intermedias. Por Servicios Veterinarios se entiende un amplio conjunto de organismos e interlocutores públicos y de la sociedad civil que tienen por objetivo común prestar servicios de sanidad animal, cuyas interacciones recíprocas se rigen por una serie de reglas oficiales y oficiosas. En el *Código Sanitario para los Animales Terrestres* de la OIE se especifican los servicios esenciales que deben prestar los Servicios Veterinarios y se ofrecen una serie de definiciones básicas. Para prestar esos servicios hacen falta instituciones sólidas, pues estas son la piedra angular del buen gobierno, lo que a su vez mejora la prestación eficaz al ciudadano de servicios y bienes públicos mundiales. Por ello hay que dotar a los Servicios Veterinarios de recursos suficientes y de una organización apropiada para cumplir todas sus funciones. Los autores subrayan una serie de factores importantes para ayudar a cumplir este objetivo y examinan diversos aspectos de los Servicios Veterinarios: posibles estructuras administrativas, recursos humanos y económicos y sistemas nacionales para una rápida detección y notificación de incidentes sanitarios y para la prevención de enfermedades. Todos ellos son elementos cardinales de las funciones de interés público que cumplen los Servicios Veterinarios, y en este sentido merecen que los Países Miembros de la OIE les otorguen la debida prioridad.

Palabras clave

Autoridad veterinaria – Buen gobierno – Indemnización – Institución – Laboratorio de diagnóstico veterinario – Medida de seguridad biológica – Notificación de enfermedades – Organización Mundial de Sanidad Animal – Productor agrícola – Servicios Veterinarios.



References

1. Batho H., Bendixen H., Meyer-Gerbaulet H. & Westergaard J. (2008). – The EU Veterinarian: animal health, welfare and veterinary public health developments in Europe since 1957. European Commission – Directorate-General for Health and Consumer Protection. European Union, Brussels.
2. Canadian Food Inspection Agency (2011). – Animal biosecurity. Available at: www.inspection.gc.ca/english/anima/biosece/biosece.shtml (accessed on 5 June 2011).
3. European Union (1984). – ADNS: Animal Disease Notification System. Available at: ec.europa.eu/food/animal/diseases/adns/previous_table_11_en.htm (accessed on 13 July 2011).
4. European Union (2006). – Evaluation of the Community Animal Health Policy (CAHP) 1995–2004 and alternatives for the future. Part II: Pre-feasibility study on options for harmonised cost-sharing schemes for epidemic livestock diseases. Available at: ec.europa.eu/food/animal/diseases/strategy/archives/main_report_part2_en.pdf (accessed on 11 June 2011).
5. European Union (2007). – A new animal health strategy for the European Union (2007–2013) where 'prevention is better than cure'. Available at: ec.europa.eu/food/animal/diseases/strategy/docs/animal_health_strategy_en.pdf (accessed on 11 June 2011).

6. European Union (2008). – Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: action plan for the implementation of the EU animal health strategy. COM(2008) 545 final. Available at: http://ec.europa.eu/food/animal/diseases/strategy/docs/COMM_PDF_COM_2008_0545_F_EN_AUTRE_PROC_LEG_NOUVELLE.pdf (accessed on 13 July 2011).
7. European Union (2009). – Council Decision 2009/470/EC on expenditure in the veterinary field. *Off. J. Eur. Union*, **L155**, 30.
8. European Union (2009). – Feasibility study on the revision of Council Decision 2009/470/EC (ex 90/424/EEC) on expenditure in the veterinary field with a view to develop a harmonized EU framework for cost and responsibility sharing schemes for animal diseases. Available at: http://ec.europa.eu/food/animal/diseases/strategy/pillars/docs/6530_06_final_report_08062011.pdf (accessed on 11 June 2011).
9. Fritzemeier J., Teuffert J., Greise-Wilke I., Staubach C., Schlüter H. & Moennig V. (2000). – Epidemiology of classical swine fever in Germany in the 1900s. *Vet. Microbiol.*, **77**, 29–41.
10. Gibbens J.C., Sharpe C.E., Wilesmith J.W., Mansley L.M., Michalopoulou E., Ryan J.B.M. & Hudson M. (2001). – Descriptive epidemiology of the 2001 foot-and-mouth disease epidemic in Great Britain: the first five months. *Vet. Rec.*, **149**, 729–743.
11. McNab W.B. & Dubé C. (2007). – Simple models to assist in communicating key principles of animal disease control. *Vet. ital.*, **43** (2), 317–326.
12. Meuwissen M.P.M., Horst S.H., Huirne R.B.M. & Dijkhuizen A.A. (1999). – A model to estimate the financial consequences of classical swine fever outbreaks: principles and outcomes. *Prev. vet. Med.*, **42**, 249–270.
13. Royal Society (2002). – Infectious diseases in livestock. Policy document 15/02. Royal Society, London.
14. Snively D.W.W. (2011). – Biosecurity on the farm. West Virginia University, Morgantown, West Virginia. Available at: www.wvu.edu/~agexten/Biosecure/Farm.pdf (accessed on 5 June 2011).
15. Truszczyński M.J. (1998). – The role and importance of veterinary laboratories in the prevention and control of infectious diseases of animals. In *Veterinary laboratories for infectious diseases* (J.E. Pearson, ed.). *Rev. sci. tech. Off. int. Epiz.*, **17** (2), 405–410.
16. Wensvoort G., Terpstra C., Pol J.M.A., ter Laak E.A., Bloemraad M., de Kluyver E.P., Kragten C., van Buiten L., den Besten A., Wagenaar F., Broekhuisjen J.M., Moonen P.L.J.M., Zetstra T., de Boer E.A., Tibbedn H.J., de Jong M.F., van't Veld P., Groenland G.J.R., van Gennep J.A., Voets M.Th., Verheijden J.H.M. & Braamskamp J. (1991). – Mystery swine disease in the Netherlands: the isolation of Lelystad virus. *Vet. Q.*, **13**, 121–130.
17. Wikipedia (2011). – Institution. Available at: en.wikipedia.org/wiki/Institutions (accessed on 6 May 2011).
18. World Organisation for Animal Health (OIE) (2010). – Terrestrial Animal Health Code, 19th Ed. OIE, Paris.
19. World Organisation for Animal Health (OIE) (2010). – The OIE Tool for the Evaluation of Performance of Veterinary Services (PVS Tool). OIE, Paris. Available at: www.oie.int/en/support-to-oie-members/pvs-evaluations/oie-pvs-tool/ (accessed on 12 July 2011).
20. World Organisation for Animal Health (OIE) (2011). – PVS Gap Analysis. OIE, Paris. Available at: www.oie.int/en/support-to-oie-members/pvs-gap-analysis/ (accessed on 12 July 2011).
21. World Organisation for Animal Health (2012). – List of OIE Reference Laboratories. Available at www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/ (accessed on 29 June 2012).
22. World Trade Organization (WTO) (1995). – Agreement on the application of sanitary and phytosanitary measures (SPS Agreement). In *The results of the Uruguay Round of multilateral trade negotiations: the legal texts*. WTO, Geneva. Available at: www.wto.org/english/tratop_e/sps_e/spsagr_e.htm (accessed on 12 July 2011).