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OIE recommendations on the Competencies of graduating veterinarians (“Day 1 graduates”) to assure high-quality of National Veterinary Services



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Director General's foreword

The OIE highlights the key contribution made by veterinarians in society to assure the health and wellbeing of animals, people and ecosystems and advocates for the importance of high quality veterinary education – both initial and continuing. The OIE is aware that the quality of veterinary education varies greatly around the world and notes, with concern, the inadequacy of veterinary education in the majority of OIE Member Countries. The OIE respects national and regional specificities and recognises the need for recommendations that are relevant and applicable to all countries and regions. In this context, I am pleased to present these recommendations, which are based on the work of an OIE ad hoc Group on Veterinary Education, comprising veterinary Deans, academicians and experts in the field of veterinary education from all five OIE regions.

This document sets out the minimum competencies needed by graduating veterinarians to be adequately prepared to participate in National Veterinary Services (both public and private sector) at the entry level. High quality veterinary education is of critical importance to efficient Veterinary Services and improving the quality of veterinary education is therefore a key component of any plan to improve governance of Veterinary Services. Accordingly, this document is an element of the OIE PVS Pathway.

The minimum competencies include the Public Good Component of veterinary activities. The national demand for specific competencies, reflecting the national context, must be taken into account. However, the OIE would like to convince all those responsible for policies on veterinary education to include these minimum competencies in the veterinary curriculum of all OIE Member Countries. All bodies responsible for the accreditation of Veterinary Education Establishments worldwide should integrate these competencies into their minimum curriculum requirements.

The OIE continues to develop tools for capacity building of Veterinary Services, with the objective of improving the quality of veterinary education worldwide. The development of procedures for Twinning of Veterinary Education Establishments between developed and developing countries, based on the successful OIE Laboratory Twinning program, is one important initiative. In 2012, the OIE will start drafting recommendations on the minimum core curriculum for veterinarians based on the following minimum competencies. On the related topic of Veterinary Statutory Body, the OIE is developing Guidelines on the implementation of the relevant standards in the Terrestrial Animal Health Code and on Twinning mechanisms directed to Veterinary Statutory Bodies. In 2013, the OIE is planning to hold a Third Global Conference on Veterinary Education and the role of Veterinary Statutory Bodies, in collaboration with the World Veterinary Association and other key partners.

The OIE encourages National Delegates to familiarize themselves with these recommendations and to highlight them in discussions with relevant partners and stakeholders, including senior representatives of Veterinary Education Establishments, veterinary professional associations and the National Veterinary Statutory Body.

Bernard Vallat



1. Introduction

1.1. Background

All veterinarians in every nation are responsible for the delivery of National Veterinary Services—that is, services provided under the legislative framework and the auspices of the governmental authority of a country to implement animal health to assure the health and wellbeing of animals, people and ecosystems. The term “Veterinary Services” refers to the OIE *Terrestrial Animal Health Code (Terrestrial Code)* definition, which includes both public and private components of the veterinary profession involved in the promotion of animal and public health as well as animal welfare.

National Veterinary Services should be able to meet standards adopted by each country, but should also be able to comply with appropriate international standards and recommendations, particularly those in the OIE’s *Terrestrial Code*. In delivering National Veterinary Services, veterinarians serve as an integral partner in the “One Health” effort – a collaboration of multiple disciplines working locally, nationally, and globally, to address critical challenges and attain optimal health for people, animals (domestic and wild) and the environment (www.onehealthcommission.org).

Although only some veterinarians will focus their careers on the public component of National Veterinary Services, all veterinarians, regardless of their professional area of practice after graduation, are responsible for promoting animal health, animal welfare, veterinary public health, and food safety. Veterinarians in the private sector frequently act as sub-contractors for the public component of National Veterinary Services and in many instances opt for career changes into the public sector. As such, veterinary education is a cornerstone to assure that the graduating veterinarian (“Day 1 veterinary graduate”) not only has received a level of education and training that ensures sound overall competencies, but also has the required knowledge, skills, attitudes and aptitudes to understand and be able to perform entry-level national veterinary service tasks that relate to the promotion of animal and public health. In addition, basic education that provides the minimum competencies is a basis on which veterinarians whether working in the public or private sector can build expertise through on-the-job training and quality postgraduate continuing education.



1.2. Scope

Taking into account the vast societal, economic, and political differences among OIE Member Countries, including the different existing Veterinary Education Establishments accreditation schemes, this document sets out the competencies necessary for the Day 1 veterinary graduate to be adequately prepared to participate in National Veterinary Services at the entry-level.

While the minimum competencies outlined in this document are those relevant to the delivery of National Veterinary Services, no attempt is made to dictate in which specific course or during which educational year each competency should be taught. Indeed, it may be that many of the following competencies cross course boundaries and can be integrated across the curriculum in multiple courses. The document does not suggest how many credit hours of educational contact are required to teach each competency, as this might vary depending on the needs and resources of each country. Close collaboration between veterinary education establishments, National Veterinary Services and National Veterinary Statutory Bodies is encouraged in order to ensure the provision of veterinary education appropriate to the needs of each country. Education in the following minimum competencies during the course of each veterinary school's curriculum will prepare the Day 1 veterinary graduate to promote global veterinary public health and provide an excellent base for advanced training and education for those veterinarians wishing to pursue a career in both public and private components of National Veterinary Services. Given the expanding scientific knowledge base and increasing demands on the veterinary profession, it is essential that graduates be competent in locating, accessing and using appropriate information sources. It is important to note that veterinary education includes not only undergraduate education but also postgraduate continuing education and on-the-job training. The authorities should bear in mind the importance of life-long learning to ensure the various competencies of veterinary graduates such as protecting animal and public health.

Animal production, in particular the growing sector of aquaculture, is key to satisfy the growing global demand for food. Aquatic animal health programmes need to be strengthened and, to this end, the involvement of veterinarians with competence in aquatic animal health should be assured. Competencies in this document cover both terrestrial and aquatic animals. However, the aquaculture sector is not of equal importance to all countries. Therefore, veterinary education establishments should address competence in aquatic animal health as appropriate to the importance of the aquaculture sector in the country or region.



1.3. Official OIE definition of terms used in this document

Veterinary Services: means the governmental and non-governmental organisations that implement animal health and welfare measures and other standards and recommendations in the *Terrestrial Code* and the *OIE Aquatic Animal Health Code* in the territory. The Veterinary Services are under the overall control and direction of the Veterinary Authority. Private sector organisations, veterinarians, veterinary paraprofessionals or aquatic animal health professionals are normally accredited or approved by the Veterinary Authority to deliver the delegated functions.

Veterinary Statutory Body: means an autonomous authority regulating *veterinarians* and *veterinary para-professionals*.

Veterinarian: means a person registered or licensed by the relevant Veterinary Statutory Body of a country to practice veterinary medicine/science in that country.

Competencies means:

- knowledge: cognitive abilities, meaning mental skills
- skills: ability to perform specific tasks
- attitude: affective abilities, meaning feelings and emotions, and
- aptitude: a student's natural ability, talent, or capacity for learning.

Basic competencies: means the minimum knowledge, skills, attitudes and aptitudes required for a veterinarian to be licenced by a Veterinary Statutory Body. This comprises general competencies, as well as specific competencies that directly relate to the OIE mandate.

Basic general competencies: means basic veterinary sciences, which are normally taught early in the curriculum and are prerequisite to clinical studies; clinical veterinary sciences, which provide the competencies necessary to diagnose, treat and prevent animal diseases; and animal production, which includes health management and economics of animal production.

Advanced competencies: means the minimum knowledge, skills, attitudes and aptitudes required for a veterinarian to work within the Veterinary Authority.

Day 1 veterinary graduate: means a veterinarian who has just graduated from a Veterinary Education Establishment.

[Explanatory note: The Day 1 veterinary graduate should have mastery of basic competencies and a general awareness and appreciation of advanced competencies. Basic competencies can be divided into "general" competencies (which are not addressed in detail in this document) and "specific" competencies. This document identifies eleven specific competencies and eight advanced competencies.]



2. Specific competencies

2.1. Epidemiology

Epidemiology is the study of factors affecting the health and illness of populations, and serves as the foundation and logic of interventions made in the interest of veterinary public health and preventive medicine.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- know and understand the general principles of descriptive epidemiology, its application to disease control and the ability to access and use appropriate information sources;
- understand and participate appropriately in an epidemiological inquiry in case of occurrence of a reportable disease, including collection, handling, and transport of appropriate specimens or samples.

2.2. Transboundary animal diseases

Transboundary animal diseases (TADs) are epizootic diseases that are highly contagious or transmissible and have the potential to spread very rapidly irrespective of national borders. TADs agents may or may not be zoonotic, but regardless of zoonotic potential, the highly contagious nature of these diseases invariably impacts global economy, global trade and global public health. Examples of TADs include highly pathogenic avian influenza, rinderpest, classical swine fever and foot and mouth disease.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- identify the clinical signs, clinical course, transmission potential (including vectors), and pathogen associated with TAD;
- describe the current global distribution of TADs or know where to find up-to-date distribution information;
- use or explain the collection and handling of samples and the rationale for the use of appropriate diagnostic and therapeutic tools to prevent and combat TADs and pathogens;
- understand regulatory implications of TADs and pathogens (e.g. the Official Veterinarian who should be contacted if an epizootic pathogen is identified or suspected) and know where to find relevant up-to-date information.

2.3. Zoonoses (including food borne diseases)

Zoonoses are diseases or infections that are naturally transmissible from animals or their products to humans. Many food borne pathogens are zoonotic and most emerging human pathogens have an animal (livestock or wildlife) origin. As such, zoonoses have major implications for human health and trade in animals and animal products.



Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- identify the clinical signs, clinical course, transmission potential, and pathogen associated with common zoonotic and food borne diseases;
- use or explain the use of current diagnostic and therapeutic tools for common zoonotic and food borne diseases;
- understand the implications of common zoonotic and food borne diseases for human health (e.g. how does the disease spread from animals to humans) and know where to find up-to-date information;
- understand regulatory implications (e.g. the Official Veterinarian who should be contacted if a zoonotic pathogen is identified or suspected) of common zoonotic and food borne diseases and pathogens and know where to find up-to-date and reliable information.

2.4. Emerging and re-emerging diseases

An emerging disease is a new infection resulting from the evolution or change of an existing pathogenic agent, a known infection spreading to a new geographic area or population, or a previously unrecognised pathogenic agent or disease diagnosed for the first time. A 're-emerging disease' is a resurgence in a defined time period and location, of a disease considered to have been eradicated or controlled in the past. Both emerging and re-emerging diseases have significant impacts on animal (naïve populations) and/or public health.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- define “emerging disease” and “re-emerging disease” and provide contemporary examples;
- detect suspicious signs and report them to the relevant veterinary authority;
- understand the reasons/hypotheses to explain the emergence and /re-emergence of diseases;
- know where to find up-to-date and reliable information regarding emerging and re-emerging diseases.

2.5. Disease prevention and control programmes

Disease prevention and control programmes, whether or not approved, managed or supervised by the veterinary authority, include movement controls, vaccination and treatment. Disease prevention and control programmes will be specific to each country or region and should comply with applicable OIE standards, as appropriate.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- describe established programs for the prevention and control of common zoonotic or contagious diseases or emerging/re-emerging diseases, to include animal identification and traceability and oversight by the relevant veterinary authority;
- understand and participate in the implementation of contingency plans to control transboundary diseases, including humanely killing animals;



- understand and participate in regular or emergency vaccination campaigns, as well as in regular test-and-cull/treat programmes;
- explain the concept of “early detection system”, which is defined as a system, under the control of the veterinary services, for the timely detection and identification of an incursion or emergence of diseases/infections in a country, zone or compartment;
- know which diseases of animals (including companion animals) require compulsory notification by the veterinarian to the prescribed national authority in order to mitigate disease transmission;
- know where to find up-to-date and reliable information regarding specific disease, prevention and control measures, including rapid response mechanisms.

2.6. Food hygiene

Food hygiene means all conditions and measures necessary to ensure the safety and suitability of food of animal origin.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- understand and explain on-farm food safety practices;
- participate in slaughter inspection: this includes *ante mortem*, *post mortem* and humane slaughter;
- understand and explain the integration between animal health controls and veterinary public health: the role of veterinarians in conjunction with physicians, public health practitioners, and risk analysts to ensure safe.

2.7. Veterinary products

‘Veterinary products’ means drugs, insecticides/acaricides, vaccines, and biological products used or presented as suitable for use to prevent, treat, control, or eradicate animal pests or diseases; or to be given to animals to establish a veterinary diagnosis; or to restore, correct or modify organic functions in an animal or group of animals.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- use common veterinary products in the appropriate manner, including appropriate record keeping;
- explain and utilise the concept of drug withdrawal time as a means to prevent drug residues in products of animal origin meant for human consumption, and know how to find up-to-date and reliable information regarding specific withdrawal times;
- understand common mechanisms leading to development of antimicrobial resistance in common pathogens;
- know where to find and how to interpret up-to-date and reliable information regarding the link between use of antimicrobials in food animals and development of antimicrobial resistance in pathogens of human importance;
- know the appropriate use of drugs and biologicals to ensure the safety of the food chain and the environment (e.g. proper disposal of biological waste).



2.8. Animal welfare

Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter (when relevant), management, nutrition, humane handling, and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment. Veterinarians should be the leading advocates for the welfare of all animals, recognizing the key contribution that animals make to human society through food production, companionship, biomedical research and education.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- explain animal welfare and the related responsibilities of owners, handlers, veterinarians and others responsible for the care of animals;
- identify animal welfare problems and participate in corrective actions;
- know where to find up-to-date and reliable information regarding local, national and international animal welfare regulations/standards in order to describe humane methods for:
 - animal production;
 - transport;
 - slaughter for human consumption and killing for disease control purposes.

2.9. Veterinary legislation and ethics

Veterinary legislation is an essential element of the national infrastructure that enables veterinary authorities to carry out their key functions, including surveillance, early detection and control of animal diseases and zoonoses, animal production food safety and certification of animals and animal products for export. Furthermore, Veterinary Education Establishments' should teach ethics and value issues to promote high standards of conduct and maintain the integrity of the profession.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- have a general knowledge of the fundamentals of national veterinary legislation and of specific rules and regulations governing the veterinary profession at the local, provincial, national, and regional level (in some countries this information may be delivered to the graduates by the Veterinary Statutory Body after graduation);
- know where to find up-to-date and reliable information regarding veterinary legislation and the rules and regulations governing the veterinary profession in his/her own state, province, region and/or country;
- understand and apply high standards of veterinary medical ethics in carrying out day-to-day duties;
- provide leadership to society on ethical considerations involved in the use and care of animals by humans.



2.10. General certification procedures

Certification means an official document, completed by an authorised veterinarian, for purposes of verifying the health or sanitary status of animals and animal products, respectively, most often prior to transport.

Veterinarians are responsible to certify the health status of an animal or herd in private practice or as an element of official certification.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- examine and monitor an animal or a group of animals with a view to certifying freedom from specified diseases or conditions according to established procedures;
- fill out, sign and provide health certificates according to the national rules.

2.11. Communication skills

Effective communication skills are as important to success in veterinary medicine as are technical skills. In general, communication entails the exchange of information between various individual, institutional and public audiences for purposes of informing, guiding and motivating action. The application of the science and technique of communication involves modulating messages according to situations, objectives and target audiences.

Specific learning objectives for this competency include the Day 1 veterinary graduate being able to:

- communicate technical information in a way that the general public can understand;
- communicate effectively with fellow health professionals to exchange scientific and technical information and practical experience.



3. Advanced competencies

3.1. Organisation of Veterinary Services

Veterinary Services means the governmental and non-governmental organisations that implement animal health and welfare measures and other standards and recommendations in the OIE *Terrestrial* and *Aquatic Animal Health Codes* in the territory. The Veterinary Services are under the overall control and direction of the Veterinary Authority. An objective in the delivery of National Veterinary Services is to bring a country, territory, or region in line with international standards in terms of legislation, structure, organisation, resources, capacities, and the role of the private sector and paraprofessionals.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- the delivery of National Veterinary Services as a global public good;
- how veterinary services are organised within his/her own country/region (e.g., central and local levels, epidemiological networks);
- the function and authority of the National Veterinary Services within his/her own country/region;
- how his/her country's National Veterinary Service agencies interact with veterinary services in other countries and international partners;
- the relationship between private and public sector veterinarians in delivery of National Veterinary Services within his/her own country;
- the essential need to evaluate the quality of veterinary services as provided for in the OIE PVS Pathway;
- where to find up-to-date and reliable information should deeper knowledge be needed or desired.

Other learning objectives include understanding the following definitions:

- **Veterinary Authority:** means the governmental authority of a country, territory, or region that comprises veterinarians, other professionals, and paraprofessionals and with the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification, international standards and recommendations such as those in the OIE *Terrestrial Code*, and other relevant legislation related to animal and public health and animal welfare. The Veterinary Authority typically accredits or approves private-sector organisations, veterinarians, and veterinary paraprofessionals to deliver veterinary service functions.
- **Veterinary Statutory Body:** means an autonomous authority (typically at the national level) that regulates veterinarians and veterinary para-professionals.

3.2. Inspection and certification procedures

Inspection means examination and evaluation of animals and animal products by an authorised veterinarian prior to completing a certificate to document the health or sanitary status, respectively. Certification means an official document, completed by an authorised veterinarian, for purposes of verifying the health status of animals and safety of animal products.



Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- the processes used to assess the health status of animals and safety of animal products for the purpose of transport / export;
- the process of *ante* and *post mortem* risk-based inspection of animals, and of the inspection of animal products;
- the drafting of health certificates.

3.3. Management of contagious disease

Prevention and control of contagious diseases, whether or not approved, managed or supervised by the veterinary authority, include movement controls, vaccination and treatment. Disease prevention and control programmes will be specific to each country or region and should comply with applicable OIE standards, as appropriate.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- the management of samples and the use of appropriate diagnostic and therapeutic tools;
- tracing the source and spread of a disease;
- monitoring and conducting initial surveillance of diseases, to include communication of epidemiological information to other public health practitioners;
- the methods to:
 - identify and trace animals;
 - control movement of animals, animal products, equipment, and people;
 - quarantine infected and at-risk premises/areas;
 - humanely kill infected or exposed animals;
 - dispose of infected carcasses in an appropriate manner;
 - disinfect or destroy contaminated materials
 - zoning and compartmentalisation.

3.4. Food hygiene

Food hygiene means all conditions and measures necessary to ensure the safety and suitability of food of animal origin.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- the risk-based performance of slaughter inspection including *ante mortem*, *post mortem*, humane slaughter and hygienic dressing;
- residue testing programmes;
- the traceability of animal products;
- sanitation at food processing plants, proper storage of processed animal products, in-home food storage and preparation safety, and health and cleanliness of all humans involved in the food chain from farm to fork.



3.5. Application of risk analysis

Risk means the likelihood of the occurrence and likely magnitude of the biological and economic consequences of an adverse event or effect to animal or human health. The process of risk analysis involves hazard identification, risk assessment, risk management, and risk communication. The importation of animals and animal products involves a degree of risk to the importing country. Risk analysis as applied to importation provides the importing country with an objective and defensible method of assessing the disease risks associated with the importation of animals, animal products, animal genetic material, feedstuffs, biological products and pathological material using, particularly as a basis, relevant existing OIE standards.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- how risk analysis can be applied to assessment of risk of animal disease and residues of veterinary drugs, including importation of animals and animal products and other related veterinary services activities;
- how risk analysis can be used to ensure veterinary services adequately protect animal and human health;
- where to find up-to-date and reliable information should deeper knowledge be needed or desired (e.g. the OIE *Handbook on Import Risk Analysis*);
- the following risk analysis concepts:
 - **hazard identification:** the process of identifying pathogenic agents which could potentially be introduced in the commodity (e.g., food of animal origin);
 - **risk assessment:** evaluation of the likelihood and the biological and economic consequences of entry, establishment, and spread of a hazard within a territory;
 - **risk management:** the process of identifying, selecting, and implementing measures that can be applied to reduce the level of risk;
 - **risk communication:** the interactive transmission and exchange of information and opinions throughout the risk analysis process concerning risk; risk-related factors; and risk perceptions among risk assessors, risk managers, risk communicators, the general public, and other interested parties (e.g. stakeholders).

3.6. Research

Research means testing a hypothesis by appropriately designing and implementing a protocol, analysing the data, drawing conclusions and publishing the results.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for how translational and interdisciplinary research is essential to advance veterinary knowledge in the areas relevant to delivery of National Veterinary Services (e.g., zoonoses, transboundary diseases, (re-)emerging diseases, epidemiology, animal welfare, veterinary drugs and biologicals) so that future generations are better equipped to assure the health of animals, the public, and the ecosystem.



3.7. International trade framework

The framework on which regulations governing safe international trade in animals and animal products relies on the interaction and cooperation among several organisations as well as on the latest scientific advances so as to improve animal health world-wide and to promote and preserve the safety of the international trade in animals and animal products.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- the World Trade Organisation (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (i.e., SPS Agreement);
- the role and responsibilities of the WTO standard setting organisations such as the OIE and the Codex Alimentarius Commission (CAC) in developing science-based current regulations governing international trade in animals and animal products;
- current international regulations, that govern the safe trade of animals and animal products;
- the potential implications of transboundary diseases, including zoonoses, on international trade, (risk of loss of international trade of the affected animals and their products), knowing where to find up-to-date and reliable information regarding these implications, the process of health certification of the quality and wholesomeness of commodities for export;
- the import control mechanisms and certification processes related to protection of the health of animals, the public, and the ecosystem in the importing country.

3.8. Administration and management

Administration can be defined as the universal process of organising people and resources efficiently so as to direct activities toward common goals and objectives, with management comprising planning, organising, staffing, leading or directing, and controlling an organisation or effort for the purpose of accomplishing a goal. In the broadest sense, administration consists of the performance or management of business or organisational operations and, thus, the making or implementing of major decisions, whereas management is the act of getting people together to accomplish desired goals and objectives.

Learning objectives include the Day 1 veterinary graduate having a general awareness of and appreciation for:

- good practices in administration and management;
- the importance of excellent interpersonal communication skills, to include self-knowledge and knowledge of others;
- the importance of effective communication (public awareness and advocacy);
- where to find up-to-date and reliable information should detailed knowledge be needed or desired;
- the need to have proficiency in at least one of the official languages of the OIE.



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Chair: Dr Ron DeHaven (American Veterinary Medical Association)

Dr Saeb Nazmi El-Sukhon (Veterinary academician, Jordan)

Prof. Pierre Lekeux (Veterinary academician, Belgium)

Dr Louis Joseph Pangui (Veterinary Dean, Senegal)

Prof. Aaron S. Mweene (Veterinary Dean, Zambia)

Dr Froilán Enrique Peralta (Veterinary Dean, Paraguay)

Prof. Timothy Ogilvie (Veterinary Dean, Canada)

Dr Dao Bui Tran Anh (Veterinary academician, Vietnam)

Dr Brian G. Bedard (The World Bank)

Dr Etienne Bonbon (European Commission)

Dr Tjeerd Jorna (Past President, World Veterinary Association).



12, rue de Prony • 75017 Paris France • tel. 33 (0)1 44 15 18 88 •
fax 33 (0)1 42 67 09 87 • www.oie.int • oie@oie.int