

World Organisation for Animal Health: strengthening Veterinary Services for effective One Health collaboration

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Summary

To effectively reduce health risks at the animal–human–ecosystems interface, a One Health strategy is crucially important to create strong national and regional animal health systems that are well coordinated with strong public health systems. Animal diseases, particularly those caused by new and emerging zoonotic pathogens, must be effectively controlled at their source to reduce their potentially devastating impact upon both animal and human health. As the international organisation responsible for developing standards, guidelines and recommendations for animal health, the World Organisation for Animal Health (OIE) plays an important role in minimising animal and public health risks attributable to zoonoses and other animal diseases, which can have severe consequences for global food safety and security. National Veterinary Services, which implement OIE animal health and welfare standards and other measures, are the first line of defence against these diseases, and must have the capacity to meet the core requirements necessary for their diagnosis and control. The OIE works collaboratively with the World Health Organization and Food and Agriculture Organization of the United Nations to improve the ability of national animal and public health systems to respond to current and emerging animal health risks with public health consequences. In addition to improving and aligning national laboratory capacities in high-risk areas, the OIE collaborates on One Health-oriented projects for key diseases, establishing model frameworks which can be applied to manage other existing and emerging priority diseases. This article reviews the role and activities of the OIE in strengthening the national Veterinary Services of its Member Countries for a more effective and sustainable One Health collaboration.

Keywords

Animal health – One Health – Public health – Veterinary governance – Veterinary Services – World Organisation for Animal Health – Zoonosis.

Introduction

Winston Churchill once said, ‘Healthy citizens are the greatest asset that any country can have’. Arguably, this goal is becoming increasingly daunting as human health risks are evolving more rapidly than ever before. Many factors, such as the increased international movement of people, animals and commodities; intensified animal production, and environmental change, have enhanced opportunities for the transmission of pathogens. With changes in their eco-biology, some new pathogens have acquired the ability

to cross the species barrier between animals and humans. Of particular importance are those pathogens that originate from animals, such as influenza virus H5N1, HIV/AIDS, rabies, and severe acute respiratory syndrome (SARS). Since many emerging and re-emerging diseases are vector-borne or zoonotic in origin, the prevention and control of animal disease at its source is crucial, not only to protect animal health and welfare, but also to best achieve global goals for ‘healthy citizens’.

Historically, addressing human and animal health threats has often been in response to particular events, or may

have been driven by global or donor concerns, rather than being based upon national and international priorities. In recent years, the One Health concept has steadily gathered momentum, and has been embraced by a widening spectrum of stakeholders. With the shared goal of improving the health and well-being of all species, members of the human medicine, veterinary medicine and environmental science professions have endorsed the need for greater collaboration amongst these sectors. With the stage now set, the current challenge lies in determining how best to enhance cross-sectoral collaboration, and to continue to implement sustainable joint strategies, which address existing and emerging health risks throughout the world.

Preventing the spread of animal pathogens is therefore an important foundation stone of One Health collaborative efforts. In accordance with the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), the World Organisation for Animal Health (known by the acronym 'OIE', from its original name of the *Office International des Epizooties*) is the intergovernmental organisation responsible for setting standards for animal health worldwide. Infectious animal diseases are at the core of the OIE's mandate and, in its *Terrestrial and Aquatic Animal Health Codes and Manuals* (1, 2, 3, 4), the organisation sets standards and guidelines for their surveillance and reporting, and ensures that Veterinary Services throughout the world are professionally prepared to prevent and control the spread of these diseases. Through this activity, and its dedicated collaboration with international animal and human health partners, the OIE plays an important role in minimising animal and public health risks attributable to zoonoses and animal diseases, which can severely affect food safety and security. In the One Health initiative to stop the spread of these pathogens, it may also, in fact, be argued that 'healthy animals are the greatest asset any country can have'.

Building a collaborative framework to reduce health risks at the animal–human–ecosystems interface

Zoonotic pathogens have sent a clear warning to the protectors of global health: they travel throughout the world and account for about 75% of recently emerging infectious diseases affecting humans (5), causing more than two million deaths and two billion cases of human illness annually (6). Their advance is relentless: within the past decade, more than 40 new zoonotic diseases have emerged and with accelerating changes in human and animal demographics and the environment, new and recurring

zoonotic diseases will continue to emerge. Increasingly rapid changes at the animal–human–ecosystems interface influence the evolution of pathogens, and their possible mutation and recombination may result in an even greater pathogenicity. Zoonotic diseases have also been recognised as the leading agents of bioterrorism, comprising 80% of the Centers for Disease Control and Prevention high-priority 'Class A' bioterrorism diseases or agents most likely to be used (7).

This need to collaborate in preventing public health threats at the animal–human–ecosystems interface, and to coordinate animal and human health surveillance and communications to reduce zoonotic risks, became alarmingly apparent in 2003, when a new strain of highly pathogenic avian influenza (HPAI/H5N1) spread through Asia, Africa and Europe, and was reinforced in 2009 during the pandemic event involving a novel H1N1 influenza virus recombinant. Owing to the public health implications of these viruses, it was necessary to quickly coordinate often complex avenues for cooperation between authorities and agencies at local, national, regional and global levels. The OIE was able to provide timely information on influenza occurrence, and developed international standards and recommendations for managing the disease in animals. In addressing these events, the OIE worked closely with the World Health Organization (WHO) and Food and Agriculture Organization of the United Nations (FAO) in developing strategies and policies, and supported national Veterinary Services as they played a most vital role in managing this disease.

The international cooperation that developed while addressing the HPAI/H5N1 epizootic gave impetus to the creation of sustainable collaborative relationships between international agencies, and in 2008, a strategic framework for reducing risks at the animal–human–ecosystems interface was prepared by the OIE, FAO, WHO, United Nations Children's Fund (UNICEF), United Nations System Influenza Coordinator and the World Bank. The key principles of this strategy included the adoption of a multidisciplinary, multinational and multisectoral approach; the integration of technical, social, political, policy and regulatory issues; and the foundation of partnerships across sectors. This included the involvement of wildlife and ecosystems communities, the human and veterinary medical communities and advanced research institutions. In 2010, following the establishment of this framework, the OIE, FAO and WHO specifically formulated a One Health Tripartite Concept Note (8), in which they described the 'sharing of responsibilities and coordinating of global activities to address health risks at the animal–human–ecosystems interface' and 'preventing animal and public health risks attributable to zoonoses and animal diseases impacting food security'. Although this concept describes a joint effort, it also acknowledges the unique

mandate and areas of competency of each organisation. At an ensuing High-Level Technical Meeting, held in Mexico City in 2011, the OIE, FAO and WHO evolved a proactive plan to collaboratively address risks at the animal–human–ecosystems interface. During this meeting, zoonotic influenza, rabies, and antimicrobial resistance were identified as model issues to demonstrate the benefits of an overarching framework, intersectoral collaboration and communication.

However, in order to effectively reduce health risks at the animal–human–ecosystems interface, it is crucially important to create strong national and regional public health systems that are coordinated and aligned with strong animal health systems. Countries depend upon each other to conduct successful campaigns against current and emerging zoonoses, and the failure of one country may endanger its neighbours, or even result in a serious global health risk. By working together, the OIE, WHO and FAO have therefore begun to shift the focus towards strengthening national health systems, and improving the ability of countries and regions to respond to current and emerging challenges.

The OIE's One Health concept

The OIE has embraced the One Health concept as an all-encompassing way to address global animal and public health, and its continued commitment is reflected in its slogan, 'Protecting animals, preserving our future'. The OIE's role in the One Health collaboration is to provide scientifically based recommendations on measures for the prevention, control and eradication of animal diseases, including zoonoses, particularly at those points and in those contexts where animals, humans and the environment interact.

The OIE provides systematic support and capacity building to its Member Countries, as well as initiating activities for specific diseases or issues. The initiatives directly relevant to achieving the implementation of One Health are explained in the following paragraphs. They are further supported through the OIE's efforts in the areas of good governance, veterinary education and public–private partnerships.

Supporting national Veterinary Services to improve global disease surveillance and control

Low-to-middle-income countries might not have the resources, capacity or governance to meet the core requirements necessary to adequately diagnose and control

zoonotic pathogens, even though they may be the actual source of the disease. Strengthening the capabilities of national Veterinary Services is one of the most important factors in the successful management of outbreaks. Veterinary Services are defined in the *Terrestrial Code* (1) as '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'. They are therefore paramount in the formulation and implementation of animal health policies and programmes to control animal diseases, and are the first-line defence in the battle against animal diseases, including zoonoses. Veterinary Services also play a crucial role in reducing the risks of foodborne infection, protecting food production, and lessening biothreats. As they have a profound impact on reducing risks to food security, human health and economic resources, Veterinary Service activities are considered to be a 'global public good' (9). The constant improvement of veterinary governance is a crucial factor in reducing the health risks of zoonotic and foodborne diseases.

OIE 'PVS Pathway' – a gateway to One Health collaboration

The OIE supports the national Veterinary Services of its Member Countries by strengthening their capacity to align with OIE intergovernmental standards. The OIE's assistance is provided both through regional programmes to enhance animal disease surveillance and the early detection and control of outbreaks, and through its global programme, the 'Performance of Veterinary Services (PVS) Pathway', which was established in 2005/2006. The PVS Pathway is a voluntary, continuous process, whereby Member Countries formally request the professional guidance necessary to objectively evaluate their current situation and address deficiencies. The PVS Pathway shifts the emphasis from short-term, emergency-type approaches to improving Veterinary Services towards a more sustainable, long-term strengthening of capabilities and resources. This approach broadens the skills needed to address national priorities, and ensures that countries have adequate systems in place to effectively detect, prevent and control infectious diseases, including zoonoses.

The PVS Pathway (Fig. 1) begins with a qualitative evaluation. The OIE Tool for the Evaluation of Performance of Veterinary Services ('OIE PVS Tool') is based upon four Fundamental Components and 47 Critical Competencies. It assists countries to determine their current level of performance, establish priorities, and undertake appropriate strategic initiatives to improve their Veterinary Services' compliance with the intergovernmental standards

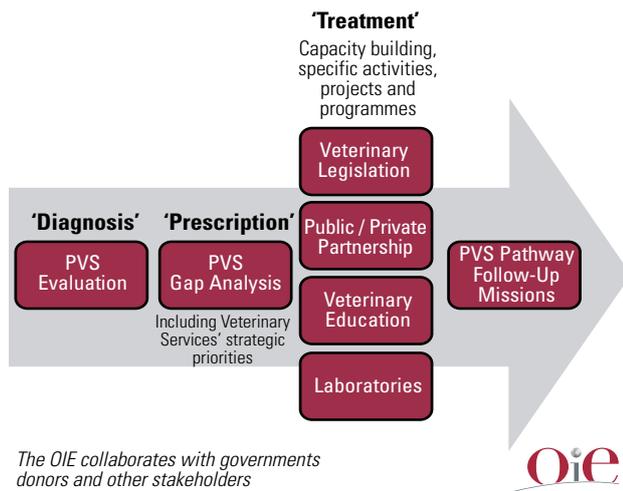


Fig. 1
The OIE Performance of Veterinary Services Pathway

that they have democratically adopted. This initial PVS Evaluation can be followed by a PVS Gap Analysis Mission (PVS Costing Tool). By brainstorming together, combining skills, and understanding and bridging gaps, the PVS Gap Analysis allows Veterinary Services to undertake a strategic planning process to identify the investments required to reach their national goals and improve their compliance with intergovernmental standards, over a five-year timeframe. It is essentially a capacity building exercise which fosters a change in mind-set from a project-oriented approach to the strategic and horizontal management of Veterinary Services, one that considers all interested parties, their interrelationships, and the existing coordination mechanisms. After this process, assistance and guidance can be provided through a number of activities and programmes in areas (i.e. laboratories, veterinary legislation, veterinary education) that have been identified as being in need of capacity building. The final report also includes a description of the financial and human resources needed to comply with the selected priorities.

Pilot PVS One Health missions have been undertaken as part of these programmes. In this context, the importance of One Health is to achieve an optimal intersectoral approach to the prevention, detection and control of human and animal diseases which are specifically relevant to public health outcomes. These missions review the activities of a country's Veterinary Services that specifically focus on collaboration with public health and other relevant authorities whose major objective is the achievement of public health outcomes. In particular, One Health reviews assess the critical competencies of the Veterinary Services in areas that require or would benefit from intersectoral collaboration to achieve optimal public health outcomes.

OIE Laboratory Twinning Projects

To enable its Member Countries to become self-sufficient in the early detection and diagnosis of zoonotic and other important diseases, the OIE provides support so that they can gain the necessary scientific and technological expertise and comply with the OIE international standards and guidelines. The OIE has a worldwide expert network of Reference Laboratories and Collaborating Centres which share their knowledge and expertise to improve global disease surveillance and control. This network also specifically participates in building the scientific capacity of developing and in-transition countries that have been identified as lacking specific capabilities to detect and diagnose disease. Over 70% of OIE Members are developing countries, which have variable scientific capacities or access to scientific expertise within their national laboratories. The OIE Twinning Project has been designed so that a selected candidate laboratory from a priority country enters into a one-to-three-year dedicated partnership with an OIE Reference Laboratory or Collaborating Centre, enhancing knowledge and skills, as well as creating joint research opportunities. This will ultimately result in more accurate and rapid detection of pathogens, a more balanced geographical distribution of laboratory expertise, and the creation of more Reference Laboratories or Collaborating Centres worldwide, particularly in emerging and developing countries.

The ability to detect and diagnose high-impact transboundary animal diseases is of particular concern, as these highly contagious epidemic diseases can spread quickly across national borders. They include zoonotic diseases, such as influenza and brucellosis, which are important One Health issues, as they can directly endanger public health, or otherwise affect animal production and food security. Since the inception of the Twinning Project in 2006, more than 50 partnerships have been undertaken to improve laboratory capability to prevent, detect and respond to these and other disease events (10). As a result of this initiative, both animals and humans benefit from a much-strengthened global disease surveillance network.

Establishing frameworks for the Tripartite's three high-priority issues: zoonotic influenza, rabies and antimicrobial resistance

Influenza – working together to reduce risks

Since the first cases of human infection with avian influenza A (H5N1) were identified in 1997 in Hong Kong, both

animal and human influenza experts have made concerted efforts in their respective sectors to address the risks posed by this highly pathogenic influenza virus.

The importance of cross-sectoral collaboration is widely recognised, and in 2008, a large group of influenza experts met specifically to discuss technical topics of joint interest at the human–animal interface. The FAO–OIE–WHO Joint Technical Consultation on Avian Influenza focused upon H5N1, and aimed their efforts at identifying the virological characteristics important to zoonotic and pandemic disease. Of particular importance was identifying gaps in our knowledge that had not yet been addressed by either the human or animal sector. During this consultation, it was noted that a significant threat was posed by influenza virus subtypes other than H5N1, and that epidemiological and virological surveillance for these other viruses was lacking, and should be improved (11).

While avian influenza H5N1 remains a pandemic threat to both human and animal health, other avian influenza strains, such as the H7N9 strain which has a higher predilection for transmission to humans, may eventually pose an even greater risk (12). In September 2013, a joint meeting, which included representatives from the United States Agency for International Development (USAID), FAO, WHO and the OIE, reviewed their efforts to reduce H7N9 risks. It was noted that these efforts must be strengthened not only in affected countries, but also in neighbouring states and areas with strong trade links (13). As a result of partner support and collaborative projects, at-risk countries have begun to dramatically improve their ability to accurately detect influenza viruses, particularly those of zoonotic origin.

The animal health sector has taken the lead in controlling influenza at its animal source, and shares this information with the international community, not only to safeguard animal health and livelihoods in affected regions, but also to prevent virus transmission to humans. The OIE and other animal health organisations continue to make significant contributions by participating in a number of One Health influenza meetings and collaborative projects, such as the OIE/FAO Network of Expertise on Animal Influenza (OFFLU), and the ‘Four-Way Linking Project’. The surveillance of influenza has also been enhanced by the establishment of the Global Early Warning System (GLEWS), a platform created by the OIE, WHO and FAO to improve the sharing of disease information and intelligence, particularly early warning on animal diseases and zoonoses throughout the world.

The Joint OIE/FAO Network of Expertise on Animal Influenza: OFFLU

In a cross-sectoral consultation to improve influenza vaccine virus selection, WHO advised that ‘effective

collaboration and coordination between human and animal influenza networks is increasingly recognised as an essential requirement for the improved integration of data on animal and human viruses, the identification of unusual influenza A viruses infecting humans, the evaluation of pandemic risk and the selection of candidate viruses for pandemic vaccines’ (14).

Thus, OFFLU is a joint OIE/FAO network of expertise on animal influenza that actively shares its knowledge and information with human health laboratories and expert influenza bodies, such as WHO. Established in 2005, it supports and coordinates global efforts to prevent, detect and control important influenza viruses in animals. Experts from the OIE and FAO Reference Laboratories, along with experts in virology, epidemiology, diagnostics and other disciplines, form an international network and contribute to the OFFLU platform for the exchange of influenza information. OFFLU enhances links between human and animal health experts not only by facilitating the exchange of relevant data, but also by providing influenza viruses that may potentially be of use in the early preparation of human vaccines, working in close collaboration with WHO for pandemic preparedness.

In addition, OFFLU develops scientific tools and recommendations, as well as important virological and surveillance data, to share with the broader scientific community. It provides a wide range of technical support activities and reference materials; for example, proficiency testing to enhance diagnosis, a reference standard for H5 antisera, OIE biosafety guidance for handling HPAI viruses, and immediate notifications from the OIE and FAO on HPAI outbreaks in animals. OFFLU also scientifically evaluates the diagnostic sensitivity and specificity of some new commercially available diagnostic kits for the quick and easy detection of influenza A. It is envisaged that the appropriate introduction of rapid and inexpensive diagnostic testing mechanisms will enable developing countries with limited capacity and resources to make swift and accurate influenza diagnoses, thus better protecting animal and human health throughout the world.

Four-Way Linking Project

To apply the One Health concept on a national level, and to identify and initiate effective national disease control measures, an FAO–OIE–WHO Four-Way Linking Project was conceived in 2010 as a way of collecting and linking national disease-related information and of jointly building a framework to assess health risks. This project has so far been implemented in three of the H5N1-endemic countries that have reported human cases: Indonesia, Vietnam and Egypt.

By collecting and linking information from four ‘streams’ (Fig. 2) – animal and human health epidemiology and

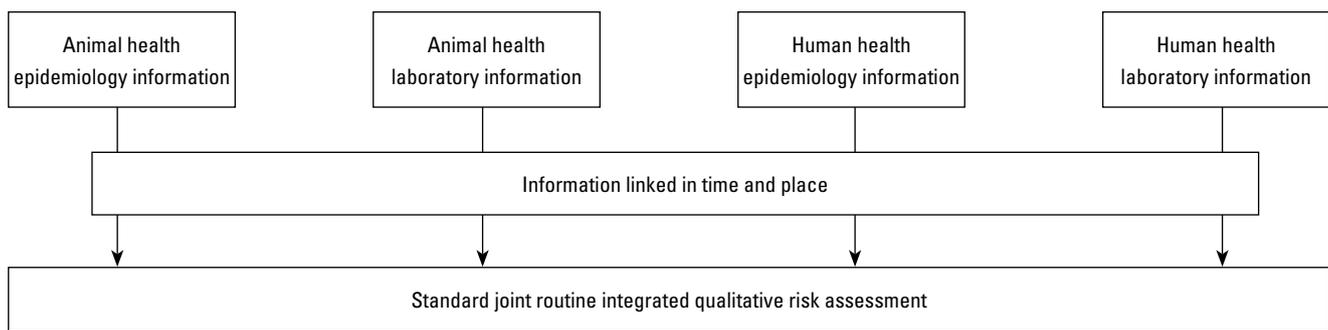


Fig. 2
Linking and assessing information from the four information streams

Source: FAO/OIE/WHO 2013 (15)

virology – national experts can perform an integrated qualitative assessment, identify both existing and emerging risks, and quickly communicate with decision-makers. This national four-way linking framework may also be used to align internally mandated influenza capacity building and related activities, and could be adapted to other zoonotic diseases.

The Four-Way Linking Project begins with a review mission to identify and map the national human and animal health epidemiological and virological systems and mechanisms for investigating H5N1 cases, addressing both national strengths and gaps. This is followed by Four-Way Linking Workshops, which are attended by national public and animal health laboratories, academic institutions, and epidemiological units under the Ministries of Health and Agriculture, including the Office of the Chief Veterinary Officer. These key stakeholders are engaged as national project partners, and undertake scenario-based training to enable them to implement a sustainable data-sharing and risk-assessment framework within their country. By strengthening their capacities to quickly detect and properly communicate their collective information about H5N1 health risks and disease status, national partners become more closely linked and better equipped to protect the global health community.

Rabies – a model One Health collaboration

Rabies, in particular, has been seen as a model for One Health implementation as its potential elimination in dogs and people can be directly attributed to the coordinated efforts of the human and animal health sectors. According to WHO, rabies is still found in 150 countries, causing the deaths of up to 60,000 people annually, particularly in Africa and South-East Asia (16). As infected dogs are a major source of rabies for humans and livestock, their mass vaccination is considered to be the most effective and sustainable way of achieving rabies elimination. This goal can only be reached through a robust One Health effort

to educate the public and carry out a successful canine vaccination campaign.

The OIE has embraced this effort by undertaking a number of initiatives to support a collaborative rabies campaign. The OIE provides science-based standards and guidelines to diagnose the disease in animals and to prevent its spread through trade, as well as providing standards for the preparation of animal rabies vaccines. In 2013, the OIE amended its *Terrestrial Code* to include a new article, 'Control of rabies in dogs', in Chapter 8.11., 'Infection with rabies virus' (1). This article, adopted unanimously by the OIE World Assembly of Delegates at its 81st General Session, supports countries whose dog population is currently infected with rabies by implementing a structured control strategy to eventually eradicate the disease.

While hosting a global conference on rabies control in 2011 in the Republic of Korea ('Towards sustainable prevention at the source') the OIE, along with WHO and FAO, agreed to consider, initiate and sustain rabies control programmes for countries in need of funding. Uniting with WHO and FAO, the OIE became one of the supporters of a global rabies campaign partnership, led by the Global Alliance for Rabies Control (GARC). Annual 'World Rabies Day' raises awareness about the impact of rabies on humans and animals and provides information on rabies prevention.

As mentioned above, canine vaccination is a key defence against human rabies, and vaccinating 70% of a dog population can eliminate or prevent rabies outbreaks. With funding from the European Union's Regional Cooperation Programme on Highly Pathogenic and Emerging and re-emerging Diseases (HPED) in Asia, the OIE established the OIE Regional Vaccine Bank for Rabies in Asia in 2012. This vaccine bank is a rolling stock of vaccines provided by a supplier who was selected through an OIE international call for tender. Through an official request from their national Veterinary Services, priority countries which may not have sufficient access to high-quality canine vaccines are provided with rabies vaccines to immunise their dog

populations under agreed national vaccination strategies. Vietnam and the People's Democratic Republic of Laos were the first recipient countries, respectively receiving 50,000 and 200,000 rabies vaccine doses in 2012. In March 2013, the Philippines received 500,000 doses of dog vaccine in support of its National Rabies Awareness Month vaccination campaign. To date, subsequent rabies vaccine deliveries through the OIE Regional Vaccine Bank for Rabies in Asia have included the following: 120,000 doses to Laos and 300,400 doses to Sri Lanka in June 2013; 200,000 doses to Bangladesh and 200,000 doses to Indonesia in July 2013; 20,000 doses to Bhutan and 200,000 doses to Myanmar in September 2013; 200,000 doses delivered to Nepal in October 2013, and an additional delivery of 500,000 doses of rabies vaccine to Vietnam in December 2013. Thus, since World Rabies Day in 2012, during a period of less than 15 months, the OIE will have delivered nearly 2.5 million doses of canine rabies vaccine to beneficiary countries.

The OIE's technical support projects and Laboratory Twinning programmes have also improved the capability of Member Countries to diagnose rabies. In Africa, there has historically been only one OIE Reference Laboratory for Rabies, the Agricultural Research Council–Onderstepoort Veterinary Institute (OVI) in South Africa. After a recommendation from the South East African Rabies Group (SEARG) that regional laboratory capacity for rabies at the animal source should be enhanced, the OIE initiated a rabies proficiency testing project. This project evaluates the competence of participating OIE Member Countries to diagnose blind samples, using an OIE standardised operating procedure, with subsequent expert support and follow-up evaluations. Participation in such exercises not only gives animal health laboratories the opportunity to align their rabies diagnostic capacity with international standards, but it also acts as a valuable tool in the campaign to reduce the rabies risk to both animals and humans.

Antimicrobial resistance – shared stewardship

Antimicrobial resistance (AMR) is recognised as a growing issue of concern by both the human and animal health sectors. With increasingly resistant microbes and even multidrug-resistant bacteria, our ability to treat or prevent diseases could be in great peril. As there are few new antimicrobial agents in the development pipeline (17), it is imperative that existing drugs are used responsibly, in order to minimise or delay resistance. Although this health risk exists independently for both humans and animals, it is also evident that resistant zoonotic pathogens can be exchanged between people and animals. Minimising antimicrobial resistance requires effective stewardship by promoting the responsible and prudent use of antimicrobial agents in animals and people at the national, regional and international level. Their application in the human,

animal and plant health sectors should be harmonised in a concerted One Health approach.

Workshops around this issue, with experts from the OIE, WHO and FAO, began in 2003, and this collaboration has continued, with the development of a common action plan. These three organisations have nominated Technical Focal Points and participate in one another's relevant activities, such as the OIE *ad hoc* Group on Antimicrobial Resistance. This Group has undertaken the task of updating all OIE standards related to AMR, including the OIE guidelines and the List of Antimicrobial Agents of Veterinary Importance (18). This list, adopted in May 2007, and complementing the WHO List of Critically Important Antimicrobials (CIA) for Human Health, classified antimicrobial agents authorised for veterinary use into three categories: Veterinary Critically Important Antimicrobial Agents (VCIA), Veterinary Highly Important Antimicrobial Agents (VHIA), and Veterinary Important Antimicrobial Agents (VIA). The list was updated in 2013 to take into account the fact that some antimicrobial agents in the VCIA category are considered to be critically important for human health as well as for animal health. These agents – such as fluoroquinolones and cephalosporins – are not to be used as a first-line treatment in animals unless specifically justified.

Further to this list, the OIE *Terrestrial* and *Aquatic Animal Health Codes* both contain further continuously reviewed standards and guidelines, aimed at reducing the risk of the emergence or spread of resistant bacteria due to the use of antimicrobial agents in food-producing animals, notably through:

- harmonising national antimicrobial resistance surveillance and monitoring programmes (OIE *Terrestrial Code*, Chapter 6.7.)
- monitoring the quantities and usage patterns of antimicrobial agents used in food-producing animals (OIE *Terrestrial Code*, Chapter 6.8.)
- the responsible and prudent use of antimicrobial agents in veterinary medicine (OIE *Terrestrial Code*, Chapter 6.9.)
- risk assessment for antimicrobial resistance caused by the use of antimicrobial agents in animals (OIE *Terrestrial Code*, Chapter 6.10.) (1).

In 2013, in its role as a leader in this One Health issue of continuing importance, the OIE hosted a 'Global Conference on the Responsible and Prudent Use of Antimicrobial Agents for Animals' (19). Organised in close collaboration with WHO and FAO, the conference brought together national, regional and global experts and stakeholders in the fields of pharmacology, epidemiology, animal health and human health to review worldwide antimicrobial use and resistance. Reflecting the inherent

One Health essence of this challenge, the final recommendations of the conference promoted international solidarity and strengthened cross-sectoral cooperation to assist countries in need of the necessary legislation, structures, and resources to apply the OIE's antimicrobial responsible use standards.

International partnerships to strengthen and synergise laboratory standards

The Emerging Pandemic Threats Project: strengthening laboratory capacity and reducing disease risks

The FAO/OIE/WHO Tripartite plays a unique role as part of the USAID Emerging Pandemic Threats (EPT) Programme, which strengthens capacities in developing countries to prevent, detect, and control infectious diseases in animals and people, with an emphasis on the early identification of and response to dangerous pathogens from animals before they can become significant threats to humans.

The Tripartite 'IDENTIFY' component of the EPT programme seeks to strengthen national laboratory capacity for the rapid and accurate detection of targeted diseases in regions where the risk of emerging human and/or animal diseases is highest. IDENTIFY interacts with various endeavours of the other components of the EPT programme: PREDICT (detecting novel pathogens in wildlife); RESPOND (strengthening outbreak response capacity); and PREVENT (developing behaviour modification strategies to reduce the risk of disease transmission between animals and people). Since its inception in 2009, IDENTIFY has enhanced the diagnostic capacity of and improved geographic and cross-sectoral networking between laboratories in the Congo Basin in Central Africa, and in South and South-East Asia. The OIE has contributed to the IDENTIFY partnership by establishing National Level Frameworks to guide the development of sustainable laboratories by providing expertise and technical support to develop National Animal Health Laboratory strategic plans, improve laboratory detection and reporting of IDENTIFY-targeted diseases, establish quality assurance practices, and enhance participation in relevant regional and international laboratory networks. The activities undertaken by the OIE and its IDENTIFY partners have been specifically coordinated to strengthen capacity and share expertise between animal and public health laboratories in order to optimise sustainable One Health benefits.

Building cross-sectoral bridges: the OIE PVS Pathway and WHO International Health Regulations (2005)

Adapting and collaborating upon the existing tools of health governance, such as international regulations and standards, can be a useful part of harmonised initiatives to support countries as they work to improve their animal and human health systems.

Building synergies between animal and human health systems enhances a country's capacity to address priority diseases, and reduces the risks of potential global zoonoses and emerging pandemic diseases. Two main global institutions are responsible for setting animal and human health intergovernmental standards and strengthening the capacity for disease surveillance, early detection, timely reporting and rapid response. The OIE's role in developing standards for animal health has already been described, while WHO is the international organisation safeguarding public health, notably through the International Health Regulations (IHR 2005).

With the support of the World Bank, and using European Union funding, the OIE and WHO have sought to harmonise their respective PVS Pathway and IHR Monitoring Framework initiatives, together developing, piloting and implementing specific complementary operational assessment and costing tools, and providing an operational manual, with the current title: *Good governance at the human–animal interface: bridging WHO and OIE tools for the assessment of national capacities*. By using these synergised tools and indicators, and the joint WHO/OIE operational manual, all countries, donors and partners should be better able to benchmark the performance of their human and animal health systems, measure their progress, and develop appropriate cooperative relationships, sustainable strategies and investments, based upon robust analyses and upon the international standards and regulations democratically adopted by WHO and OIE Member Countries.

Conclusions

National animal and public health systems must have the capability to robustly diagnose and prevent serious health threats at the animal–human–environmental interface. Zoonotic pathogens, in particular, must be controlled effectively at their animal source if we are to reduce their potentially devastating impact upon both animal

and human health. With increasing risks of zoonotic disease emergence or re-emergence, there must also be a coordinated pathway for efficient cooperation between different authorities and agencies at the local, national, regional and global levels. The OIE, which sets international standards and recommendations for managing animal diseases, collaborates with international partners such as WHO and FAO in a cooperative One Health strategy, and undertakes numerous initiatives in its own area of expertise to strengthen and integrate the efforts of national Veterinary and Public Health Services so that they can accurately diagnose and control zoonotic pathogens. In addition to undertaking projects to improve and align national laboratory capacities in areas where the risks of emerging disease are at their highest, the OIE has collaborated on One Health-oriented projects to address key priority issues, such as zoonotic influenza, rabies and antimicrobial resistance.

These model issues have clearly demonstrated the benefits of intersectoral collaboration and communication, and established frameworks which can be applied to sustainably manage other existing and emerging priority diseases.

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Organisation mondiale de la santé animale : renforcer les Services vétérinaires pour une collaboration « Une seule santé » efficace

S. Corning

Résumé

Afin de réduire réellement les risques sanitaires à l'interface animal-homme-écosystèmes, il est indispensable de mettre en œuvre une stratégie « Une seule santé » qui permette de créer aux niveaux national et régional des systèmes de santé animale puissants et reliés à des systèmes de santé publique tout aussi puissants par des dispositifs de coordination efficaces. Les maladies animales, en particulier celles qui sont causées par des agents pathogènes nouveaux ou émergents de nature zoonotique doivent faire l'objet d'un contrôle efficace à leur source afin de réduire leur impact potentiellement dévastateur sur la santé animale et humaine. En tant qu'organisation internationale chargée de l'élaboration de normes, de lignes directrices et de recommandations dans le domaine de la santé animale, l'Organisation mondiale de la santé animale (OIE) joue un rôle important dans l'atténuation des risques pour la santé animale et publique imputables aux zoonoses ainsi qu'aux maladies animales ayant de graves conséquences sur la sécurité sanitaire des aliments et sur la sécurité de l'approvisionnement alimentaire dans le monde. Les Services vétérinaires nationaux, qui mettent en œuvre les normes et les mesures préconisées par l'OIE en matière de santé et de bien-être animal sont aux premières lignes du dispositif de lutte contre ces maladies et doivent se doter des capacités de base nécessaires pour réaliser les tâches de diagnostic et de lutte appropriées. L'OIE travaille en collaboration

avec l'Organisation mondiale de la santé et l'Organisation des Nations unies pour l'alimentation et l'agriculture pour améliorer les capacités des systèmes nationaux de santé animale et publique à faire face aux risques de santé animale avérés et émergents qui peuvent avoir des conséquences sur la santé publique. En plus d'améliorer et de veiller à la conformité des capacités des laboratoires nationaux dans les domaines à haut risque, l'OIE collabore à des projets axés sur « Une seule santé » pour des maladies prioritaires et élabore dans ce cadre des modèles opérationnels qui peuvent ensuite s'appliquer à la gestion d'autres maladies prioritaires avérées ou émergentes. L'auteur passe en revue le rôle et les activités entreprises par l'OIE en vue de renforcer les Services vétérinaires de ses Pays Membres pour une collaboration « Une seule santé » plus efficace et durable.

Mots-clés

Gouvernance vétérinaire – Organisation mondiale de la santé animale – Santé animale – Santé publique – Services vétérinaires – Une seule santé – Zoonose.



La Organización Mundial de Sanidad Animal y el fortalecimiento de los Servicios Veterinarios para una eficaz colaboración en el marco de «Una sola salud»

S. Corning

Resumen

A fin de reducir eficazmente los riesgos sanitarios que existen en la interfaz entre animales, personas y ecosistemas, es de la mayor importancia disponer de una estrategia de «Una sola salud» que sirva para generar sistemas zoonosarios nacionales y regionales robustos y bien coordinados con sistemas de salud pública igualmente robustos. Las enfermedades animales, en especial las causadas por patógenos zoonóticos nuevos y emergentes, deben ser combatidas eficazmente en su origen para reducir sus efectos, potencialmente devastadores, sobre la salud humana y animal. En su calidad de organismo internacional responsable de elaborar normas, directrices y recomendaciones en la materia, la Organización Mundial de Sanidad Animal (OIE) cumple una importante función para reducir al mínimo los riesgos zoonosarios y de salud pública atribuibles a zoonosis u otras enfermedades animales que pueden tener graves consecuencias para la inocuidad de los alimentos y la seguridad alimentaria a escala mundial. Los Servicios Veterinarios de los países, que aplican las normas de la OIE sobre salud y bienestar de los animales, junto con otras medidas, constituyen la primera línea de defensa contra esas patologías, y deben ser capaces de cumplir los requisitos básicos necesarios para diagnosticarlas y combatirlas. La OIE trabaja en colaboración con la Organización Mundial de la Salud y la Organización de las Naciones Unidas para la Alimentación y la Agricultura para lograr que los sistemas zoonosarios y de salud pública de los países estén mejor preparados para responder a los riesgos zoonosarios existentes o emergentes que puedan afectar a la salud pública. Además de potenciar y armonizar la capacidad de los laboratorios nacionales en ámbitos de especial riesgo, la OIE colabora en proyectos concebidos en clave de «Una sola salud» para combatir una serie

de enfermedades fundamentales, estableciendo así modelos de referencia que después pueden aplicarse a la lucha contra otras enfermedades prioritarias ya existentes o emergentes. El autor examina el papel y las actividades de la OIE para reforzar los Servicios Veterinarios de sus Países Miembros con vistas a lograr una colaboración más eficaz y duradera desde los planteamientos de «Una sola salud».

Palabras clave

Gobernanza veterinaria – Organización Mundial de Sanidad Animal – Salud pública – Sanidad animal – Servicios Veterinarios – «Una sola salud» – Zoonosis.



References

- World Organisation for Animal Health (OIE) (2012). – Terrestrial Animal Health Code, 21st Ed. OIE, Paris. Available at: www.oie.int/en/international-standard-setting/terrestrial-code/access-online/ (accessed on 26 September 2013).
- World Organisation for Animal Health (OIE) (2012). – Aquatic Animal Health Code, 15th Ed. OIE, Paris. Available at: www.oie.int/en/international-standard-setting/aquatic-code (accessed on 26 September 2013).
- World Organisation for Animal Health (OIE) (2012). – Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. OIE, Paris. Available at: www.oie.int/en/international-standard-setting/terrestrial-manual (accessed on 26 September 2013).
- World Organisation for Animal Health (OIE) (2009). – Manual of Diagnostic Tests for Aquatic Animals. OIE, Paris. Available at: www.oie.int/en/international-standard-setting/aquatic-manual (accessed on 26 September 2013).
- Centers for Disease Control and Prevention (CDC) (2013). – National Center for Emerging and Zoonotic Infectious Diseases. CDC, Atlanta, Georgia. Available at: www.cdc.gov/ncezid/ (accessed on 25 September 2013).
- Grace D., Mutua F., Ochungo P., Kruska R., Jones K., Brierley L., Lapar L., Said M., Herrero M., Duc Phuc P., Bich Thao N., Akuku I. & Ogotu F. (2012). – Mapping of poverty and likely zoonoses hotspots. Zoonoses Project 4, Report to the Department for International Development, UK. Available at: <http://r4d.dfid.gov.uk/pdf/outputs/livestock/ZooMapDFIDreport18June2012FINALsm.pdf> (accessed on 25 September 2013).
- Centers for Disease Control and Prevention (CDC) (2013). – Bioterrorism agents/diseases. CDC, Atlanta, Georgia. Available at: www.bt.cdc.gov/agent/agentlist-category.asp#b (accessed on 25 September 2013).
- Food & Agriculture Organization of the United Nations (FAO), World Organisation for Animal Health (OIE) & World Health Organization (WHO) (2010). – The FAO-OIE-WHO Collaboration. Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces. A Tripartite Concept Note. Available at: www.who.int/influenza/resources/documents/tripartite_concept_note_hanoi/en/ (accessed on 26 September 2013).
- Éloit M. (2012). – The global public good concept: a means of promoting good veterinary governance. In Good governance and financing of efficient Veterinary Services (L. Msellati, ed.). *Rev. sci. tech. Off. int. Epiz.*, 31 (2), 577–590. Available at: http://web.oie.int/boutique/index.php?page=ficprod&rid_produit=1073&fichrech=1&lang=en (accessed on 8 June 2014).
- World Organisation for Animal Health (OIE) (2013). – Laboratory twinning. OIE, Paris. Available at: www.oie.int/en/support-to-oie-members/laboratory-twinning/ (accessed on 26 September 2013).
- Anderson T., Capua I., Dauphin G., Donis R., Fouchier R., Mumford E., Peiris M., Swayne D. & Thiermann A. (2010). – FAO/OIE/WHO Joint Technical Consultation on Avian Influenza at the Human–Animal Interface. *Influenza Other respir. Viruses*, 4 (Suppl. 1), 1–29.
- Glatter R. (2013). – Heightened concern after first reported case of human to human H7N9 bird flu transmission. *Forbes Pharma and Healthcare*, 8 July. Available at: www.forbes.com/sites/robertglatter/2013/08/07/heightened-concern-after-first-reported-case-of-human-to-human-h7n9-bird-flu-transmission/ (accessed on 2 October 2013).
- Food and Agriculture Organization of the United Nations (FAO) (2013). – Bird flu viruses could re-emerge in upcoming flu season. FAO, Rome. Available at: www.fao.org/news/story/en/item/196736/icode/ (accessed on 2 October 2013).

14. World Health Organization (WHO) (2012). – Improving influenza vaccine virus selection: report of a WHO informal consultation held at WHO headquarters, Geneva, Switzerland, 14–16 June 2010. *Influenza Other respir. Viruses*, **6** (2), 142–152.
 15. Food and Agriculture Organization of the United Nations, World Organisation for Animal Health & World Health Organization (2013). – Four-way linking project for assessing health risks at the human–animal interface. Project description. Available at: www.oie.int/fileadmin/Home/eng/Media_Center/docs/pdf/13_08_web_summary_4-way_linking_v7_fin_for_clearance__3_.pdf (accessed on 30 July 2014).
 16. World Health Organization (WHO) (2012). – WHO Expert Consultation on Rabies (Second Report), WHO Technical Report Series, 982, 2013. WHO, Geneva. Available at: http://apps.who.int/iris/bitstream/10665/85346/1/9789240690943_eng.pdf (accessed on 8 October 2013).
 17. United Kingdom Government Department of Health & Department for Environment, Food and Rural Affairs (2013). – UK Five Year Antimicrobial Resistance Strategy 2013 to 2018. Available at: www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018 (accessed on 8 October 2013).
 18. World Organisation for Animal Health (OIE) (2013). – OIE list of antimicrobial agents of veterinary importance. OIE, Paris. Available at: www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/OIE_list_antimicrobials.pdf (accessed on 8 October 2013).
 19. World Organisation for Animal Health (OIE) (2013). – Global Conference on the Responsible and Prudent Use of Antimicrobial Agents for Animals: international solidarity to fight against antimicrobial resistance, 13–15 March. OIE, Paris. Available at: www.oie.int/eng/A_AMR2013/Recommendations.htm (accessed on 8 October 2013).
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