bulletin

No. 2014 – 3

What are we waiting for to act?

Protecting animals, preserving our future • **World Organisation for Animal Health**

© Dr Katie Hampson

contents

© Chanokporn Boonsart, National Institute of Animal Health, Thailand

© Lele Xia

ISSN 1684-3770
FOUR ISSUES PER YEAR • Chief editor: Bernard Vallat • Copy editor: *Bulletin* Editorial Committee • Design: OIE/Cristina Martín

No more deaths from rabies

Every ten minutes someone in the world dies from rabies. This is the sad reality of the situation, even today. Every year, rabies kills nearly 70,000 people, mostly children in developing countries. Over 95% of human cases are caused by the bite of a rabies-infected dog. Yet the disease could be eliminated. Indeed, unlike many other diseases, we already have all the tools needed to eradicate it. Each new victim is, therefore, one too many.

Rabies is still very widespread in the world and two-thirds of all countries continue to be affected. Half of the world's population lives in an endemic zone, and more than 80% of rabies deaths occur in rural areas, where access to health information campaigns and post-exposure prophylaxis is limited or non-existent. Africa and Asia are the continents with the highest risk to human life, accounting for over 95% of fatal cases of rabies in the world[1]. These are also the regions where canine rabies is the least controlled.

In the vast majority of cases, rabies is transmitted to humans through the bite of an infected dog. Controlling and eradicating rabies, therefore, means combating it at its source in animals. This explains why the 'Tripartite Alliance', comprising the World Health Organization (WHO), the OIE and the Food and Agriculture Organization of the United Nations (FAO), now considers the elimination of rabies cases caused by dogs to be a global public good.

The best way to achieve this is by the mass vaccination of dogs, since this is the only way of breaking the transmission cycle of the disease from animals to humans. It is estimated that, by vaccinating 70% of dogs in those countries that are still infected, canine rabies could be eradicated and the number of human cases could be rapidly reduced to zero.

Mass vaccination of dogs is also the most economical way of protecting humans against the disease. Every year, approximately 9 to 12 million people around the world receive prophylactic treatment after having been bitten by an animal potentially infected with rabies, at a total cost of approximately 2.1 billion dollars[2]. Yet, there are excellent canine rabies vaccines, manufactured in accordance with the standards developed by the OIE and at a tenth of the cost of the prophylactic treatment used in humans.

The OIE has been committed to fighting the disease for decades. In addition to developing and regularly revising standards on rabies prevention and control, diagnostic methods and the production of high-quality veterinary vaccines, the OIE has a two-fold objective.

Vaccination of dogs is the only really effective way of breaking the cycle of rabies transmission from animals to humans: it is the best way of achieving global control of the disease

Firstly, the OIE seeks to ensure transparency of knowledge about rabies in animals, through the compulsory notification of the disease by its 180 Member Countries and the collection of scientific data produced by the global network of Reference Laboratories.

Secondly, it encourages governments and international donors to invest in rabies control programmes, including vaccination of dogs.

The financial challenge that these programmes might appear to present must be placed in perspective: about 10% of the financial resources currently used for

1 Shwiff S., Hampson K. & Anderson A. (2013). – Potential economic benefits of eliminating canine rabies. *Antiviral Res.*, **98** (2), 352-356

2 Hampson K. *et al.* (2014). – Estimating the global burden of endemic canine rabies. *PLoS Negl. Trop. Dis.* (submitted)

emergency treatment of people bitten by potentially rabid dogs would probably be enough for national Veterinary Services throughout the world to eradicate rabies at its source in domestic animals, namely in dogs, and so prevent almost all human cases worldwide.

Solidarity with developing countries is essential. The OIE World Fund for Animal Health and Welfare has already enabled considerable action to be taken, such as the creation of a rabies vaccine bank for dogs, intended for the poorest countries of Asia.

To date, the OIE has delivered around 3 million[3] doses of rabies vaccine to some ten different countries in support of their national vaccination campaigns, thanks to financial support from the European Union and Australia. In particular, the Philippines has taken advantage of the vaccine bank to develop its own programme, aimed at eradicating rabies by the year 2016.

This first venture must now serve as a model for the creation of new regional vaccine banks for other regions of the world. This model ensures the availability of high-quality vaccines, produced in accordance with OE standards, and their fast delivery in the field.

In addition to the OIE's own activities, an effective rabies control strategy can only be achieved through the effective coordination of partners applying the same strategies. Our Organisation works closely with FAO, WHO and the Global Alliance for Rabies Control (GARC) to develop international recommendations aimed at greater intersectoral collaboration and global implementation of the most appropriate strategies.

Rabies is also one of the issues identified as a priority by the OIE, WHO and FAO, within the framework of the joint 'One Health' approach developed through our 'Tripartite Alliance'. In this context, the FAO/OIE/WHO Global Conference on Rabies Control, held in Incheon (Seoul, Republic of Korea) in 2011, provided the opportunity to develop a joint strategy to control the disease worldwide. Priority was given to good governance of the distribution of public and private, local, national and international resources targeted at priority prevention actions to be taken in animals.

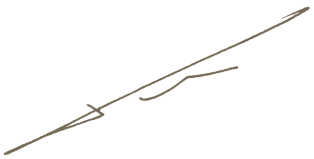
Veterinarians and the national Veterinary Services of OIE Member Countries have a crucial role to play in implementing these strategies at the national and regional level. They must be mobilised so that the operations to be carried out can be coordinated with the public health services, local and municipal authorities, the police force, and the non-governmental organisations working in the poorest countries.

It is also essential for the Veterinary Services and all their partners to be involved in stray dog population control and public awareness campaigns.

It is essential for the Veterinary Services and all their partners to be involved in stray dog population control and public awareness campaigns

To raise the international community's awareness of the devastating impact of rabies and the worldwide resources that must be mobilised to control the disease, the OIE recently produced three videos to convey its key messages on rabies in a visual format. The videos are available at the rabies portal on the OIE website. Championing this cause, HRH Princess Haya Al Hussein, OIE Goodwill Ambassador, has lent her voice to the Organisation and calls on the world to realise the urgency of the situation and the existence of concrete solutions. These videos and numerous other communication tools are available[4] for all those wishing to join the fight against this lethal yet easily controllable disease.

This concerns us all. We must act without further delay.



Bernard Vallat
Director General

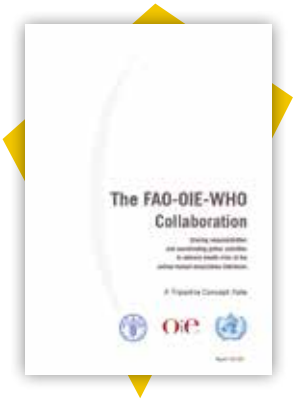
3 Estimate of the number of doses already delivered, as of 1 July 2014
4 www.oie.int/en/animal-health-in-the-world/rabies-portal/

Rabies is a tripartite (WHO-OIE-FAO) priority

Collaboration between Animal and Human Health Sectors

The World Health Organization (WHO), the World Organisation for Animal Health (OIE), and the Food and Agriculture Organization of the United Nations (FAO) are sharing responsibilities and coordinating global activities to address health risks at the animal–human–ecosystem interfaces under the umbrella of the One Health concept.

The three organisations offer **a coordination mechanism** to better consolidate fragmented efforts at global, regional, national and sub-national levels. This approach was clarified and formalised in April 2010 with the publication of a tripartite concept note: *The FAO-OIE-WHO Collaboration. Sharing responsibilities and coordinating global activities to address health risks at the animal–human–ecosystems interfaces.*



The OIE organised the first Global Conference on Rabies Control (Incheon–Seoul, the Republic of Korea, September 2011). The recommendations adopted by more than 100 countries are still the basis of global rabies control policies in animals (see *Bulletin*, no. 2011-4, pp. 70-72).

The three international organisations are involved in collating and disseminating expertise and building technical capacity in countries. They are continually working together and recognise the importance of their collaboration in the fight against rabies. At the High-Level Technical Meeting to Address Health Risks at the Human–Animal–Ecosystems Interfaces, held in Mexico City in November 2011, the three organisations identified the following three topics – zoonotic influenza, rabies, and antimicrobial resistance – as 'entry points' at the country level, as priority matters and as models in which the benefits of intersectoral approaches are evident.

Rabies is an exemplary 'One Health' model disease, yet an intersectoral approach has not been sufficiently used to address it.

On the occasion of the 2013 World Rabies Day (28 September), the three organisations issued a joint press release: *WHO, FAO, and OIE unite in the fight against rabies*, and published a fact sheet on the disease.

As mentioned above, rabies has been identified **as a priority disease** and **as a model in which the benefits of an intersectoral approach in establishing functional and sustainable collaboration between national animal and human health sectors is evident.** The elimination of rabies requires consistent and sustained commitment, underpinned by strong public and veterinary health systems. Today, for the first time, all major human and animal health organisations, relevant NGOs, and animal welfare stakeholders are aligning their objectives, working together in a constructive way, and dedicating their time, expertise and efforts to reduce the global burden of rabies. This is an historic commitment, which is gaining momentum.

This momentum will incentivise government mobilisation and will also offer an exemplary opportunity to reverse existing trends: the public health sector currently spends too much on rabies post-exposure prophylaxis for humans; those vaccinating children have different priorities and delivery systems from the ones required to facilitate systematic dog vaccination in endemic countries or areas; and the animal health sector has not been sufficiently engaged in dog vaccination, focusing its priorities on animals used for human consumption, instead.

WHO and the OIE, in collaboration with the FAO and the Global Alliance for Rabies Control (GARC), have recognised the global impact of rabies and have joined forces to break the cycle of transmission of this devastating disease from dogs to humans.

The most recent analyses estimate that 74,000 human deaths are caused by rabies each year around the world, with more than 95% of these deaths originating from dog bites. Although rabies is preventable and manageable, it causes more deaths annually than dengue fever and many other neglected tropical diseases. The majority of deaths (over 80%) occur in rural areas where access to post-exposure prophylaxis is limited or non-existent. Over 95% of all human rabies deaths occur in Asia and Africa, where canine rabies is least controlled; the majority of these victims (60%) are children bitten by rabid dogs.

Vaccinating at least 70% of dogs would break the cycle of transmission from dogs to humans and save the lives of several tens of thousands of children globally.

Vaccinating dogs against rabies is now recognised as the most effective way to prevent humans dying from rabies. While human deaths from rabies can be averted by relying on early post-exposure prophylaxis for persons bitten, these actions will never result in disease elimination and their associated costs will only continue to escalate.

The highest risk of human deaths from rabies occurs in Africa and Asia where canine rabies is least controlled. In fact, rabies is still endemic in many countries in Africa despite numerous efforts targeting rabies prevention in both human and dog populations.

Research has demonstrated that the systematic culling of stray dogs alone is not effective in controlling stray dog populations nor in reducing cases of rabies in dogs. On the other hand, studies based on OIE, WHO and country data show that controlling the virus in the reservoir (dogs) is more cost effective than concentrating efforts on indefinite post-exposure prophylaxis of humans; the latter does not have any influence on changing the disease ecology nor breaking the cycle of transmission.

In the context of regional strategies, the setting up of **OIE regional vaccine banks for rabies** facilitates the delivery of high-quality vaccines for dog vaccination. Furthermore, they allow for economies of scale, limited physical storage of vaccines, different replenishment and procurement mechanisms, the possible delivery of small quantities adapted to field needs and different speeds of delivery. In less than two years, and with the financial support of the European Union and Australia, the OIE has delivered three million doses of rabies vaccine for dog vaccination to ten countries in Asia.

The OIE tools to mitigate the risk of rabies transmission at the human–animal interface:

Recommendations of the Global Conference on Rabies Control and the new Rabies Technical Disease Card

Rabies is a widespread, under-reported and neglected zoonotic disease with a case fatality rate of almost 100% in humans and animals, if left untreated. Although it is completely preventable in humans through the sustainable vaccination of dogs, limited progress has been made in eliminating the disease at the global level. In countries where people are still dying from rabies, dogs are responsible for an overwhelming majority of the reported animal and human rabies cases. In developing countries, children remain most at risk, due to the all-too-frequent occurrence of stray dog bites. In spite of advances in scientific methods and control tools, rabies remains a threat to both the human and animal populations. Controlling the disease in dogs, especially in stray dogs, must be a priority to prevent lethal cases in humans. The veterinary profession has a leading role in and responsibility for delivering a service that will allow the worldwide elimination of rabies in humans.

Global Conference on Rabies Control: Towards Sustainable Prevention at the Source

Promoting rabies control and eradication in dogs, with special attention to stray dogs, by encouraging governments to consider rabies control as a high priority was identified as a key strategy at the Global Conference on Rabies Control in September 2011, organised by the OIE, in collaboration with FAO and WHO, in Incheon-Seoul, the Republic of Korea (see *Bulletin*, no. 2011-4, pp. 70-72). The Conference placed great importance on good governance of Veterinary Services and on the use of public and private resources at the local, national, regional and international levels, as well as on prevention activities targeted at animals in collaboration with the public health services.

The effective implementation of rabies control programmes depends on political will, community commitment and sustainable financial resources. Rabies control strategies cannot be effective without intersectoral collaboration and the support of a great many partners and stakeholders, such as animal health and public health services, environmental officers, police forces, non-governmental organisations and dog owners. All such strategies should be coordinated by the competent authorities, including local and municipal authorities. National governments must take responsibility for rabies control in the animal reservoir. Ensuring transparency by officially notifying the occurrence of rabies in animals to the OIE through the World Animal Health Information System (WAHIS) is essential.

Communication, education and awareness are recognised as essential components and priorities in any holistic and successful approach to rabies control. The exchange of information, experience and cooperation among medical, veterinary and environmental authorities was recommended by participants at the Conference.

Highlighted among the 25 recommendations of the Conference was the recognition that controlling rabies is one of the primary responsibilities of veterinarians and national Veterinary Services, who can help to control the disease by breaking the transmission cycle at the human–animal interface. Rabies control programmes should always take into account the need to improve the effectiveness of the public and private components of national Veterinary Services.

Recommendations of the OIE Global Conference on Rabies Control:
www.oie.int/fileadmin/Home/eng/Conferences_Events/docs/pdf/recommendations/A_Recommendation_Global Rabies Conference Seoul_final.pdf

Effective Veterinary Services acknowledge that an effective and rapid response depends largely on early detection and diagnosis to minimise the impact and public health consequences of the disease. Clinical signs of rabies in animals are not specific and could vary considerably from one animal to another. The disease may be suspected, based on clinical signs. However, due to the long incubation period, which can be more than six months, it is difficult to establish causality between the risk factors for exposure and the clinical signs. Therefore, laboratory tests are always required to confirm the diagnosis.

A deep understanding of the epidemiology of the disease, including the source of the virus, its domestic and wildlife hosts, the risk factors for transmission, etc., are of paramount importance for the investigation of a rabies outbreak and for the timely implementation of appropriate control measures.

At the international level, the OIE, in collaboration with its partners FAO and WHO, is committed to assist its Member Countries in their efforts to eradicate rabies in humans, using the 'One Health' approach. One of the priorities of the Tripartite (WHO, OIE and FAO) is promoting the One Health concept at all levels to achieve deeper and sustainable political support for the coordinated prevention of rabies at the human–animal interface. Rabies can act as a model and entry point to demonstrate the benefits and value of an intersectoral approach and improved collaboration in the fight against zoonoses.

When the general public becomes more aware of rabies, understands the route of transmission and knows what actions should be taken when an animal or a person is exposed to the virus, the impact of the disease is drastically reduced. Following this principle, the Global Alliance for Rabies Control (GARC), with the support and active participation of the OIE and other international organisations, established World Rabies Day (28 September) back in 2007. This annual event is an opportunity for the international community to unite in rabies prevention. The OIE supports and encourages its Member Countries to actively participate in World Rabies Day. In the years since World Rabies Day began, hundreds of thousands of people have organised and taken part in simultaneous events which encourage increased international solidarity and strengthen donor commitment to support rabies eradication programmes based on international standards.

The OIE standards

Assisted by international experts, the OIE is continually developing and updating intergovernmental science-based standards, guidelines and recommendations to control the disease at its source and to prevent its spread through trade. With the support of its International Reference Laboratories for Rabies, the OIE also establishes the international standards for diagnostic methods and vaccine preparation for use in animals. In May 2014, the World Assembly of Delegates adopted the latest version of the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* which, among other updates, included a revised version of the section dedicated to the requirements for rabies vaccines in animals.

According to the OIE standards, clinical and laboratory-based surveillance, along with the strategic use of potent, high-quality vaccines that comply with the OIE standard, are basic requirements for effective rabies prevention and control. The OIE is also promoting and implementing the concept of regional vaccine banks for dog vaccination. This offers an easy procurement and delivery system, reducing the risks associated with the storage of large quantities of vaccines in sub-optimal conditions and, at the same time, ensuring the

availability of high-quality vaccines that comply with international standards at a low cost, since they benefit from the economies of scale. This is also an incentive for developing countries to carry out dog vaccination campaigns and rabies control programmes.

The OIE Rabies Reference Laboratories and Collaborating Centres are designated as centres of expertise and the standardisation of diagnostic techniques and they provide technical assistance for diagnosis, surveillance and control of the disease. They contribute to the international harmonisation of laboratory methods and to the quality control of vaccines, as well as the development of new techniques and methodologies for rabies control, in collaboration with other laboratories and organisations.

One of the ongoing efforts of the OIE laboratory twinning programme is to further improve diagnostic capability in other laboratories, especially those in developing countries. The aim of the OIE twinning programme on rabies is to provide a more balanced distribution of advanced expertise, allowing countries to access high-quality diagnostic methods. Each twinning project links an existing OIE Reference Laboratory with a selected candidate laboratory for the exchange of knowledge and skills. Twinning projects provide mutual benefits, including joint research opportunities which benefit the entire international community by establishing stronger global rabies surveillance networks.

Rabies Technical Disease Card

In its continuing efforts to increase awareness and promote understanding of the technical aspects of rabies, and of international standards and recommendations, the OIE, in collaboration with its Rabies Reference Laboratories, has recently created and published a Rabies Technical Disease Card on its website.

Rabies Technical Disease Card:
www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Disease_cards/RABIES_FINAL.pdf

Along with the other 33 Technical Disease Cards already published, it serves as a technical reference for both the veterinary sector and the general public. It includes up-to-date information on the most important aspects of the disease, such as the aetiology of the virus, the main epidemiological characteristics of the disease, current OIE-approved diagnostic methods, and recommendations on prevention measures. The information included in the Technical Disease Card is based on peer-reviewed papers and the international science-based standards already adopted by OIE Member Countries.

The Rabies Technical Disease Card, as well as the dedicated rabies portal on the OIE website, are communication tools to educate the public on rabies, and possible reference points for the media. They convert scientific data into audience-targeted information.

Rabies portal:
www.oie.int/en/animal-health-in-the-world/rabies-portal/

As recommended during the 2011 Global Conference on Rabies Control, the OIE continues to build on its communication strategy to contribute to improving our understanding of rabies through advocacy, awareness and education. Furthermore, it works hard to encourage Veterinary Services and public health sectors around the globe to continue their progress towards the sustainable prevention of rabies at the source.

OIE's commitment to fight rabies worldwide

Every ten minutes someone dies of rabies somewhere in the world. Rabies is reported to claim nearly 74,000 lives a year, the vast majority being children, though the true figure is certainly far higher. Ninety-five percent of human cases are due to bites by infected dogs.

In countries where people are still dying from rabies, dogs are the main vector. Controlling the disease in dogs, especially in stray dogs or semi-owned dogs, and breaking the cycle of transmission in dogs and to humans must therefore be the first priority to prevent lethal cases in humans.

Analysts have estimated that just 10% of the financial resources currently used for post-exposure treatment for people bitten by potentially rabid dogs would be enough to enable national Veterinary Services throughout the world to eradicate rabies in domestic animals and so prevent almost all human cases. Vaccinating dogs is the most economical method of controlling and eliminating rabies in humans. Indeed, for epidemiological, ethical, ecological and economic reasons, the culling of animals that are potential vectors cannot be considered as the priority method for control and eradication. All successful rabies eradication programmes have included measures that combine stray dog population control with canine vaccination.

We know that a rabies control strategy cannot be effective without the support of many different partners coordinated by competent authorities, including the animal and public health services, environmental officers and the police force, local and municipal authorities, non-governmental organisations and dog owners.

At the international level, the OIE, FAO and WHO are developing recommendations, in particular to ensure good intersectoral collaboration. Since 2010, the OIE's standards relating to rabies have been revised, with a view to mitigating the risk of rabies to human and animal health and to preventing the international spread of the disease. By introducing a new article, the revised standards now provide an approach that allows the disease to be controlled in stages, with an emphasis on the animal species that play the most critical role in the transmission of the disease to humans, i.e. dogs.

The OIE's aim is not only to encourage transparency in notifying the disease but to persuade governments to invest in priority control programmes, such as rabies prevention in dogs, especially in those countries which, in the short term, are not managing to meet the requirements to make a self-declaration of rabies-free status for all susceptible domestic and wild animal species.

Rabies control programmes are a major financial challenge for many countries as they need to consider both the cost of post-exposure prophylaxis and vaccination costs, which can be considerably beyond their means. The quality standards relating to the production of diagnostic tests and vaccines for rabies contained in the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* were amended in 2011 and 2013 to take the very latest scientific developments into account.

The OIE set up a regional rabies vaccine bank for Asia in 2012 and the possibility of developing more rabies vaccine banks – at both the regional and global level – is being explored. Such vaccine banks help to ensure that high-quality vaccines, produced in accordance with OIE international standards, are available to meet developing countries' needs. They also constitute incentives for countries to engage in rabies control programmes.

It should be emphasised that veterinarians and the national Veterinary Services have a primary responsibility to apply their knowledge and skills to help control zoonoses, including rabies, and to break the link between the source of the disease in animals and human infection. Rabies control programmes should always take into account the need to improve the effectiveness of the public and private components of the national Veterinary Services, especially with regard to compliance with the intergovernmental standards of quality issued by the OIE. To this end, the active participation of all countries in the OIE PVS Pathway to determine the technical and financial needs of national Veterinary Services is highly recommended.

OIE vaccine banks

In 2006, following an international call for tenders, the OIE set up the first vaccine bank to control **avian influenza**, under its World Animal Health and Welfare Fund. The vaccine bank received European Union financial support (PACE[1] programme) and was initially reserved for African countries. During the 2007–2011 period, additional funding from Canada (CIDA[2]), as part of a multi-donor approach, enabled countries from around the world to benefit from the vaccine bank ('eligible' countries), with priority given to African and developing countries in line with the solidarity principle. A total of 62,017,000 doses of avian influenza vaccine were delivered to six African countries (mainly Egypt: 45% of vaccines delivered) and to Vietnam (43%). This total included 4,013,000 doses donated by Canada and the United Kingdom through the OIE vaccine bank in the form of combined financial support and in-kind donations. The vast majority of the vaccines were used immediately, although some were supplied in response to requests from OIE Member Countries to build emergency stocks.

In 2011, through the OIE World Animal Health and Welfare Fund and under the European Union-funded HPED[3] programme, the OIE, in collaboration with the Veterinary Services of eligible countries and with technical support from the SEACFMD[4] platform and OIE Reference Laboratories for foot and mouth disease (FMD), launched an international call for tenders for the establishment of an **FMD** antigen and vaccine bank. Following a selection process involving independent international experts, the OIE negotiated a contract with an internationally renowned vaccine provider to ensure a supply of high-quality vaccines in compliance with OIE international standards. This is a contractual agreement by a selected provider to deliver the specified type and quality of product, service and rates (vaccines, transport cost and transportation service). The contract provides for penalties for missed delivery deadlines.

Under the terms of the tender, the new FMD antigen bank provides five core strains and six optional strains. Member Countries may request additional strains, allowing vaccines containing different antigen combinations to be formulated in line with countries' requirements and the disease's changing epidemiology. The vaccine bank also provides a pre-formulated vaccine (four strains) to respond to urgent requests.

The combination of antigen bank (variable vaccine composition), limited physical inventory of pre-formulated vaccines (emergency response) and mechanisms for producing vaccines and replenishing the bank at any time allows several options to be offered in terms of: production and delivery speed; scheduling and cost-reduction (four options); and volume of vaccine in vials (five options). The initial two-year contract has been extended by one year owing to a one-year extension of the European Union-funded HPED programme. Under a multi-donor approach, Australia and New Zealand have provided additional funding for the purchase of FMD vaccines in South-East Asia, providing further leverage. Under this mechanism, the OIE delivered 2.75 million doses of FMD vaccine to five Asian countries until July 2014.

Based on these experiences, in 2012 the OIE, through its World Animal Health and Welfare Fund and as part of a programme funded by the Bill & Melinda Gates Foundation[5], launched an international call for

1 PACE: Pan-African Programme for the Control of Epizootics
2 CIDA: Canadian International Development Agency (now Foreign Affairs, Trade and Development Canada)
3 HPED: Regional cooperation programme on highly pathogenic and emerging and re-emerging diseases in Asia
4 SEACFMD: South-East Asia and China Foot and Mouth Disease Campaign
5 VSPA Project (Vaccine Standards and Pilot Approach to PPR Control in Africa)

tenders for the establishment of a vaccine bank to control **peste des petits ruminants (PPR)** in Africa (pilot project in West Africa, at the donor's request). Following a selection process involving independent international experts and AU-PANVAC[6], the OIE negotiated a contract with an African-based vaccine provider for an initial period of 20 months (extendable) to supply vaccines (and the respective diluent). This mechanism allows high-quality vaccines meeting OIE international standards to be delivered in lots of 500 000 doses or more (in multi-dose vials), with two delivery speed options and scheduled production of lots of 2 million doses. Under this mechanism, the OIE delivered 8 million doses of PPR vaccine to three African countries until July 2014.

Vaccine banks can also provide an opportunity for locally produced, high-quality vaccines to be selected for wider use through a call for tender, and used at a regional/worldwide level, thereby also increasing local vaccine supply and demand.

In 2011, the OIE published a further international call for tenders, as part of the European Union-funded HPED programme, with a view to establishing a vaccine bank to control **canine rabies** in Asia. In 2012, following a selection process involving independent international experts, the OIE negotiated two contracts – based on a multi-vendor approach and an allotment system – with two internationally renowned vaccine providers to ensure a supply of high-quality vaccines in compliance with OIE international standards. One of the contracts entails the supply of injectable vaccines in multi-dose vials of 10 millilitres (three options in terms of delivery speed), while the other is for the supply of injectable vaccines in single-dose vials of 1 millilitre and allows for orally administered vaccines to be provided to pilot research projects for the oral vaccination of stray dogs. The main vaccine bank (multi-dose vials) was established at a very low initial fixed cost – leverage between the initial fixed cost and total capacity of the new vaccine bank (depending on available funding) – corresponding to the establishment of an initial physical inventory of only 50 000 doses to respond to urgent requests for vaccine to contain an outbreak. This mechanism allows rolling physical inventory and production to be adjusted at any time in response to demand from eligible countries. The initial two-year contracts have been extended by one year owing to a one-year extension of the European Union-funded HPED programme. Under a multi-donor approach, Australia has provided additional financial support for the purchase of rabies vaccines in South-East Asia, providing further leverage.

Eligible countries may, if they wish, pay for the vaccines provided by the OIE. This direct-procurement mechanism serves not only to safeguard the 'solidarity' component of the vaccine bank (vaccines and transportation provided free of charge to the poorest countries with financial support from donors) but also exerts a leverage effect in beneficiary countries: supply of vaccines by the OIE with donor support, followed by additional direct procurement from beneficiary countries. This cuts excessive costs for procurement procedures and saves time, while guaranteeing the use of high-quality vaccines in compliance with OIE international standards. Under this mechanism, the OIE delivered 3 million doses of rabies vaccine to ten Asian countries until July 2014 (see also *Bulletin*, no. 2014-1, pp. 80-81).

6 AU-PANVAC: African Union Pan-African Veterinary Vaccine Centre

Dog vaccination is the single, most cost-effective intervention to protect humans from contracting rabies. High-quality vaccines are available. Vaccine coverage needs to reach at least 70% of the canine population to break the transmission cycle from dogs to humans.

Over all, global/regional vaccine banks can help to guarantee:

a) ***quality incentives***

– the availability of high-quality vaccines that comply with international standards

– a reduction in the risks associated with storing large quantities of vaccine in sub-optimal conditions

– the shelf life of the delivered vaccines.

b) ***fluid logistics***

– the timely dispatch of emergency stocks in line with field needs

– the possible delivery of relatively small quantities, in line with field needs, when appropriate

– complex replenishment mechanisms for the relevant strains (when appropriate); vaccine bank contracts can also include more sophisticated financial mechanisms with clauses for direct purchase and reimbursement by beneficiary countries (emerging or developed countries)

– easy procurement and delivery systems: bypassing (national) administrative delays, 'red tape' and possible costs associated with the multiplication of local registration and vaccine purchases

– easy customs clearance (international aid)

– virtual stocks, production on demand

– the burden of storage lies with the selected vaccine supplier(s), rather than with the purchasing countries

– in-kind donations (e.g. from laboratories or countries) can also be collected/channelled to support global/regional control programmes.

c) ***cost incentives***

– a cost reduction per vaccine unit (a call for tender and contracts for large quantities enable a reduced fixed cost)

– economies of scale

– the management of multi-donor financial support, allowing for earmarking of funds (eligible countries/activities): low overheads, economies of scale, very low fixed costs

– synergies and leverage effects.

d) ***Better coordination***

– harmonisation and coordination of regional control programmes; the implementation of global control strategies

– support for multi-party vaccination campaigns

– public/private partnerships

– country incentives to become engaged.

When high-quality vaccines, complying with international standards, are provided free of charge to developing countries at the airport of destination (the cost of the vaccines and transportation are covered by the vaccine bank), the beneficiary country can concentrate its efforts and limited resources on implementing the vaccination campaign (in-kind contributions and the mobilisation of scarce human, financial and technical resources, such as staff to carry out the vaccination; cold chain transport and storage, if required; vaccination consumables, etc.) or on contracting public–private partnerships with selected NGOs.

90 years... of expertise

Collecting, analysing and disseminating veterinary scientific information

One of the OIE's main missions is to collect, analyse and disseminate knowledge on animal health and welfare.

This worldwide dissemination of veterinary scientific information helps to improve control methods for animal diseases and promote their eradication.

To this end, the work of the OIE is supported by a worldwide network of expertise that has expanded and consolidated over the years.

180 Member Countries sharing their expertise

The OIE's primary network naturally consists of its Member Countries, represented by their Delegates and Focal Points. Since May 2014, the OIE has had 180 Member Countries, which cooperate in animal disease control at the national, regional and international level.

The government of each Member Country chooses its Delegate to the OIE. Delegates are chosen for their technical competence in the field of Veterinary Services and animal disease control. They represent their country within the World Assembly of OIE Delegates and thus participate in the preparation of science-based standards, with the aim of improving animal health and welfare. They also ensure compliance with OIE reference standards and are responsible for notifying the OIE of the presence of animal diseases in their country.

Since May 2008, at the request of the World Assembly, the Delegates of Member Countries have each nominated national Focal Points to provide them with scientific and technical support, each Focal Point being responsible for one of the following eight topics:

296 Reference Centres to ensure the OIE's scientific excellence

A network of internationally recognised experts

The OIE's network of expertise is the only one of its kind anywhere in the world. By contributing to the work of the Organisation on a permanent basis, the network's Reference Laboratories and Collaborating Centres help to ensure the scientific relevance of the standards, guidelines and recommendations published by the OIE. These are submitted to the World Assembly of OIE Delegates for adoption or delisting.

OIE Reference Laboratories are designated to pursue all the scientific and technical problems relating to a given disease. They provide the OIE and its Member Countries with assistance on topics linked to the surveillance, prophylaxis, and control of the disease in question.

List of OIE Reference Laboratories:
www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/

OIE Collaborating Centres are designated for a specific sphere of competence relating to animal health. These are cross-cutting topics, such as epidemiology in general or veterinary medicinal products.

List of OIE Collaborating Centres:
www.oie.int/en/our-scientific-expertise/collaborating-centres/list-of-centres/

Global coordination of the OIE's network of expertise

Before the 1980s, the OIE sought the scientific advice of experts as and when the need arose to resolve specific animal health problems. Since 1981, the Biological Standards Commission has been responsible for examining and validating the candidacies of scientific institutes to ensure their scientific excellence and the harmonisation of diagnostic techniques for animal diseases. In 1993, the terms of reference for Reference Laboratories and Collaborating Centres were clarified and formally established.

The OIE currently has a worldwide network of 247 Reference Laboratories covering 117 diseases or topics in 38 countries and 49 Collaborating Centres covering 46 topics in 26 countries.

The networking of OIE Reference Centres has gradually intensified, with the aim of ensuring consistency in the expertise and scientific advice given to Member Countries, through better sharing of information. Coordination has notably been achieved by organising global conferences on the subject (2006 and 2010). This has served to improve the Centres' credibility and visibility throughout the world.

The Third Global Conference of OIE Reference Centres is due to be held in Seoul (Rep. of Korea) from 14 to 16 October 2014.

Strengthening the excellence and worldwide distribution of the scientific network

The twinning initiative between existing OIE Reference Centres and candidate centres in developing countries was officially launched in 2006. The aim is to provide a more balanced distribution of Reference Centres across the five continents and facilitate access to scientific expertise for all countries of the world. Strengthening the excellence of the veterinary scientific community in developing countries is in fact essential to promote their participation in the development of OIE standards.

The laboratory twinning programme has been a resounding success. This initiative is now widely recognised as one of the OIE's flagship programmes in the field of laboratory capacity-building and network development.

Disseminating veterinary scientific information

The OIE edits and publishes numerous works and periodicals. These provide an essential source of documentation for the international scientific community concerned with animals and support progress in veterinary medicine throughout the world. They cover all aspects of animal health and welfare and veterinary public health worldwide.

In addition to the OIE's international standards, various serial publications, important monographs and the proceedings of international conferences are published every year.

The OIE also has a documentary database with over 13,000 documents referenced online.

Keywords relating to OIE expertise:
network, reference, excellence, harmonisation

Cartography section of the OIE 90th Anniversary website
www.90.oie.int

Where are the OIE Reference Centres?

The OIE's network of partners and expertise in the field of animal health is among the most extensive in the world. To help Internet users, animal health professionals and the general public to locate the different players in this network and obtain detailed information on them, the OIE has placed an interactive map online on its 90th Anniversary website. The map contains information on the OIE's 13 regional offices across the five continents, its 180 Member Countries and its 296 Reference Laboratories and Collaborating Centres. It complements the existing maps of the WAHIS system, which are more specifically related to animal diseases.

OIE 90th Anniversary Quiz!

1. How many reference Centres does the OIE have?

a. 296
b. 284
c. 252

2. OIE Delegates designate National Focal Points for how many specific key topics?

a. 5
b. 10
c. 8

3. In what year did twinning between Reference Centres begin?

a. 1998
b. 2006
c. 2008

4. The World Assembly of OIE Delegates adopted the accession of two new Member Countries in May 2014. Which ones?

a. Liberia, South Sudan
b. Liberia, Samoa
c. South Sudan, Samoa

Answers: 1-a ; 2-c ; 3-b ; 4-a

new OIE publications

2014

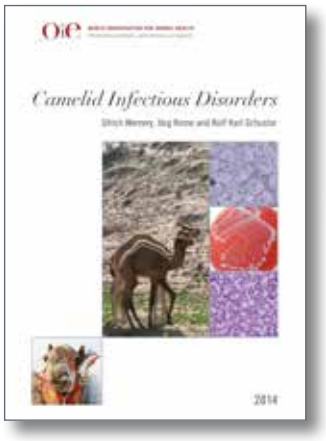
29.7 × 21 cm
132 pages
ISBN 978-92-9044-956-0
Price: EUR **25**

Animal welfare: implementing the OIE standards – addressing regional expectations

Proceedings of the Third OIE
Global Conference on Animal Welfare
(Kuala Lumpur, Malaysia, 6-8 November 2012)

These proceedings of the Third OIE Global Conference on Animal Welfare highlight progress in the worldwide implementation of the OIE animal welfare standards, in conjunction with other initiatives, to improve animal welfare globally.

The conference brought together experts and stakeholders who are actively involved in the implementation of animal welfare policies in their countries to share their perspectives and experiences on the implementation of the OIE animal welfare standards. Regional strategies and capacity building needs that address the difficulties of implementing standards at differing speeds in regions and countries that vary greatly are discussed, and future priorities for research and education in support of OIE standards are also highlighted.



2014

29.7 × 21 cm
512 pages
ISBN 978-92-9044-954-6
Price: EUR **60**

Camelid Infectious Disorders

Ulrich Wernery, Jörg Kinne & Rolf Karl Schuster

This edition of *Camelid Infectious Disorders*, published and distributed by the OIE, provides an up-to-date reference book covering all infectious diseases in camelids.

The book is divided into chapters on bacterial, viral, fungal and parasitic diseases, each section containing information on aetiology, epidemiology, clinical signs, pathology, diagnosis, prevention and control.

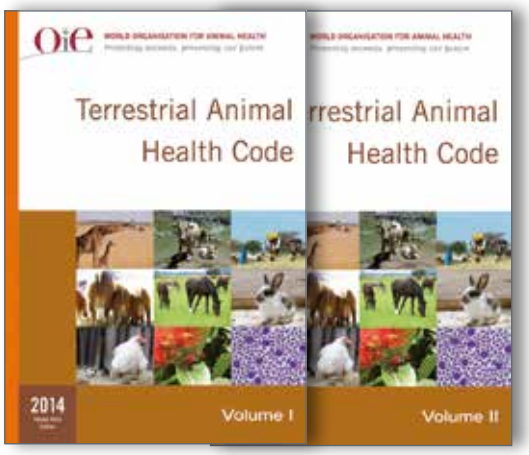
The eminently qualified authors, Drs Ulrich Wernery, Jörg Kinne and Rolf Karl Schuster, have combined their expertise and extensive experience in microbiology, pathology and parasitology to share their knowledge with colleagues around the world.

New edition of the *Terrestrial Animal Health Code* and *Aquatic Animal Health Code*

The aim of the OIE Terrestrial and Aquatic *Codes* is to contribute to improve animal health and welfare worldwide and to assure the safety of international trade in animals (terrestrial: bees, birds and mammals; aquatic: amphibians, crustaceans, fish and molluscs) and their products. This is achieved through the detailing of health measures. The Veterinary Authorities of importing and exporting countries should use the OIE standards to avoid the transfer of agents pathogenic for animals or humans, while avoiding unjustified trade barriers.

The value of the OIE *Codes* is twofold: firstly, the sanitary measures recommended are the result of consensus among the Veterinary Authorities of OIE Members, and secondly, they constitute a reference within the WTO SPS Agreement as an international standard for animal health and zoonoses, as well as a key standard for the prevention and control of animal diseases.

These new editions incorporate modifications to the *Codes* agreed at the 82nd OIE General Session in May 2014.



23rd Edition, 2014

29.7 × 21 cm
674 pages (two volumes sold together)
ISBN 978-92-9044-933-1
Price: EUR **60**

Terrestrial Animal Health Code

Volume I contains general provisions in seven sections in addition to glossary.

– Section 1 contains chapters for diseases diagnosis, surveillance and notification, including chapters on: notification of diseases and epidemiological information; criteria for the inclusion of diseases, infections and infestations on the OIE List; and animal health surveillance.

– Section 2 has a chapter on import risk analysis.

– Section 3 is relating to quality of Veterinary Services including chapters on evaluation of Veterinary Services and veterinary legislation.

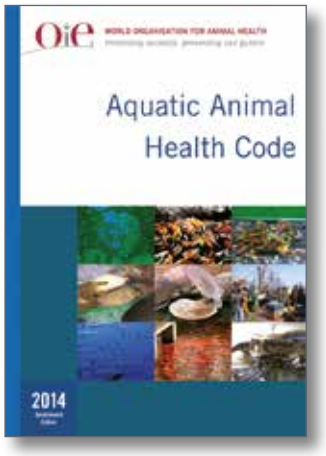
– Section 4 contains chapters relating to general recommendations for disease prevention and control, including: application of compartmentalisation; collection and processing of bovine, small ruminant and porcine semen; collection and processing of *in vivo* derived embryos from livestock and horses; and official health control of bee diseases.

– Section 5 is dedicated to chapters relating to trade measures and includes chapters on certification procedures and model veterinary certificates for live animals and animal products.

– Section 6 is relating to veterinary public health, including chapters on biosecurity procedures in poultry production and the responsible and prudent use of antimicrobial agents in veterinary medicine.

– Section 7 is for animal welfare, including chapters on: transport of animals; slaughter; stray dog population; use of animals in research; and beef cattle and broiler chicken production systems.

Volume II contains disease-specific standards for OIE-listed diseases, including: foot and mouth disease; infection with viruses of notifiable avian influenza; bovine spongiform encephalopathy; infection with African horse sickness virus; peste des petits ruminants; and classical swine fever.



17th Edition, 2014

29.7 × 21 cm
328 pages
ISBN 978-92-9044-942-3
Price: EUR **45**

Aquatic Animal Health Code

The 2014 *Aquatic Code* is arranged in sections as follows:

– Section 1 includes chapters on notification of OIE-listed diseases, criteria for listing aquatic animal diseases, OIE listed diseases and surveillance

– Section 2 includes chapters on import risk analysis

– Section 3 includes chapters on the quality of aquatic animal health services

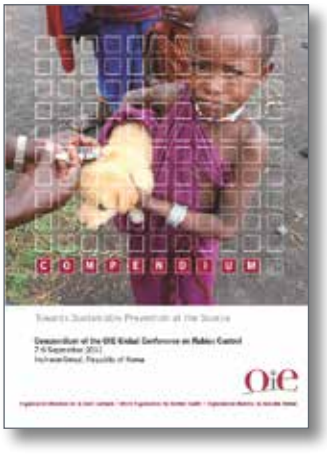
– Section 4 includes chapters on general recommendations for disease prevention and control

– Section 5 includes chapters focused on topics relating to trade measures, import and export procedures and certification

– Section 6 includes chapters on the control of hazards in aquatic animal feed and responsible and prudent use of antimicrobial agents in aquatic animals

– Section 7 includes chapters on welfare of farmed fish during transport and killing

– Sections 8 to 11 include disease-specific chapters for OIE-listed diseases of amphibians, crustaceans, molluscs and fish, and are designed to prevent the diseases in question being introduced into the importing country, taking into account the nature of the commodity and the aquatic animal health status of the exporting country.



2012

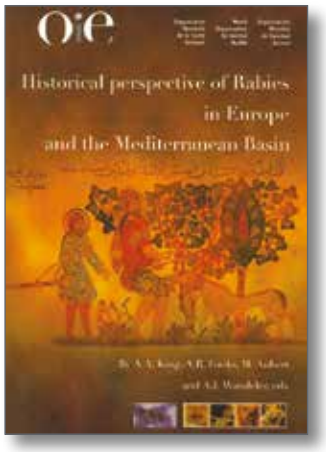
29.7 × 21 cm
228 pages
ISBN 978-92-9044-896-9
Price: EUR **50**

Rabies Control – Towards Sustainable Prevention at the Source

Compendium of the OIE Global Conference on Rabies Control (Incheon-Seoul, Rep. of Korea, 7–11 September 2011)

This Compendium of manuscripts, prepared by speakers of the conference and reviewed by experts from its Scientific Committee, provides an overview of the current rabies situation worldwide and highlights the importance of rabies control at the animal source in achieving worldwide elimination of rabies in humans. The recommendations adopted at the end of the conference are also included. They will guide the future actions of the OIE and its Member Countries in this area.

Around 350 participants from over 90 countries attended this unique international forum. They included high-level officials from veterinary and public health services, veterinary practitioners, representatives of governmental and non-governmental organisations, scientists, and multilateral and bilateral donors.



2004
29.7 × 21 cm
384 pages
ISBN 92-9044-639-0
Price : EUR **65**

Historical Perspective of Rabies in Europe and the Mediterranean Basin

A.A. King, A.R. Fooks, M. Aubert & A.I. Wandeler

Throughout the 20th Century, control strategies for rabies in Europe have significantly reduced the human burden of disease. Rabies has been successfully eradicated from many European countries and in this book leading experts describe the various approaches that have been taken. This comprehensive historical review aims to provide scientists, veterinarians and policy-makers with a historical account and expert analysis of rabies from ancient times to today.

Readers will benefit from several expertly drafted articles brought together in a single volume. Each chapter is clear and concise and focuses on a different region in Europe, North Africa and the Middle East. Additional chapters describe rabies in the ancient world and the history of dog rabies in the Mediterranean Basin, and other chapters cover the different epidemiological models of rabies, such as the epidemiology and ecology of fox rabies in Europe; a description of the computer analysis of fox-rabies epidemics is also included.

Rabies virus variants and the molecular epidemiology of the disease in Europe are discussed in chapters describing lyssavirus infections in European bats and Europe as a source of rabies for the rest of the world. Following the first description of rabies from ancient scriptures the animal/human relationship is explored further through several chapters. Finally, the role of international organisations, such as the OIE, WHO and the European Union, is discussed in a chapter entitled 'International co-operation and the role of international organisations'.

This book is essential reading for anyone involved in disease control policies and especially those involved in the control of rabies.

Staff movements

Arrivals

Scientific and Technical Department

Dr Brian Evans

Head of Department
OIE Deputy Director General

In April 2014, Dr Brian Evans took up his post as OIE Deputy Director General (Animal Health, Veterinary Public Health, International Standards) and Head of the Scientific and Technical Department.

Dr Evans graduated from the University of Guelph (Ontario, Canada) with a doctorate in veterinary medicine and, before long, joined Canada's official Veterinary Services, beginning his career in the provinces before rising steadily up the ranks of Agriculture and Agri-food Canada's Animal Health Division to become Director of the Animal Health and Production Division in July 1997. Following Canada's administrative reforms, in 1998 Dr Evans was appointed Executive Director of the Animal Products Directorate at the Canadian Food Inspection Agency (CFIA), as well as Chief Veterinary Officer of Canada and Delegate of Canada to the OIE. In 2012, he was appointed Special Advisor to the CFIA President for veterinary and food issues.

Dr Evans has received numerous honours and awards and is a member of several learned societies.

As Delegate of Canada to the OIE for 14 years, Dr Evans served as Secretary General of the Regional Commission for the Americas (2000–2003) and then as a member of the OIE Council (formerly the Administrative Commission) for three successive terms (2003–2012). Although he was re-elected as a Council member for a fourth term (2012–2015), Dr Evans stepped down in March 2013 when he retired from the Canadian civil service. Over his years of serving as an OIE Delegate, he played an active and pro-active role in promoting the development of the OIE's ambitious programme of activities. His unflagging personal

news from headquarters

involvement was instrumental in securing Canada's commitment to the World Animal Health and Welfare Fund.

Following a sabbatical year, Dr Evans wished to put his enthusiasm for international activities and his professional expertise and drive at the service of the OIE and its Member Countries. We are both pleased and honoured to welcome him for this new stage in his career.

Departure

Administration, Logistics and Publications Department

Mr Giuseppe Manzi

Mr Giuseppe Manzi joined the OIE in December 2007 as Webmaster and web developer in the Administration, Logistics and Publications Department. He was in charge of redesigning the OIE website, which involved the technical development of the website (and the establishment of a content management system) and support for content contributors and managers. Giuseppe helped to create a number of regional websites and to overhaul our existing sites, including those of OFFLU, the OIE Regional Representation for Asia and the Pacific and the OIE Regional Platform on Animal Welfare for Europe. He assisted in establishing the OIE web portals and set up the OIE global conference websites. In addition, he played a key role in creating the OIE Online Bookshop. His assistance was invaluable in providing user support and preparing the logistical requirements for the various meetings held at the OIE and General Sessions of the World Assembly of OIE Delegates.

Giuseppe is leaving the OIE for personal reasons and we wish him all the best.

Activities of the Communication Unit

AVMA receives the 2014 World Veterinary Day Award

On the occasion of the 82nd General Session of the World Assembly of Delegates of the OIE, the World Veterinary Association (WVA) and the OIE announced the winner of the 2014 World Veterinary Day Award: the American Veterinary Medical Association (AVMA).

© OIE/D.Mordzinski

Left to right: Dr Bernard Vallat, Director General of the OIE, Dr Faouzi Kechrid, President of WVA, Dr Clark K. Fobian, President of AVMA, Dr Karin Schwabenbauer, President of the OIE

Selected theme for 2014: animal welfare

AVMA was chosen in recognition of its creation of an online portal to promote animal welfare, launched on World Veterinary Day 2014 (25 April). This portal provides veterinarians and the general public with a wide range of resources related to animal welfare (literature reviews, bulletins, educational curricula, etc.). It will be an invaluable tool for advocating animal protection and in particular for promoting veterinarians as authorities on and advocates of animal welfare.

Activities of the Communication Unit

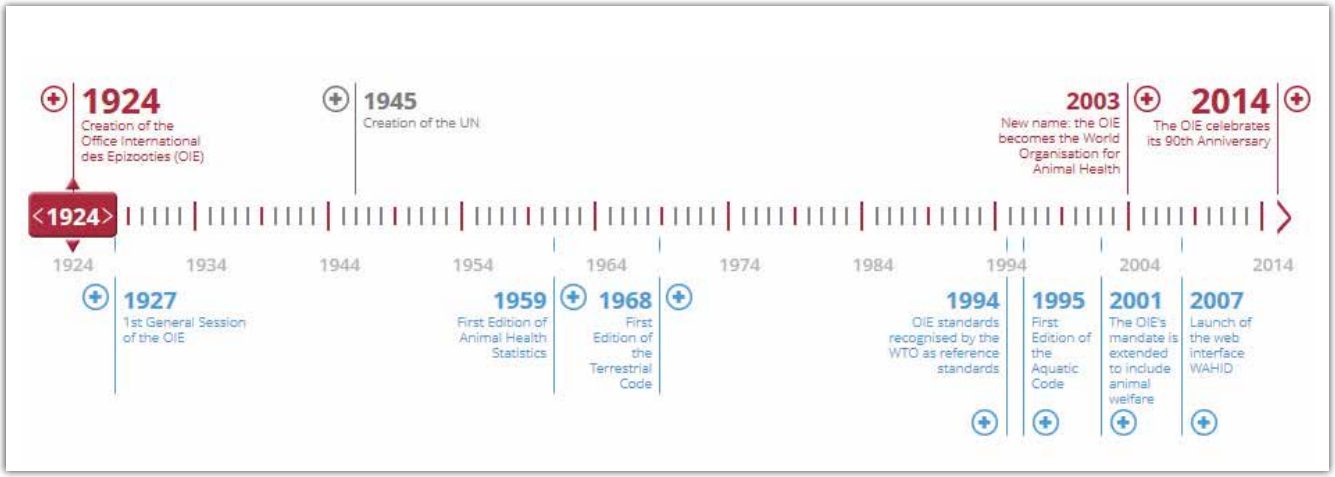
The OIE and the WVA also announced the theme for World Veterinary Day 2015: **parasitic diseases.**

Online portal to promote animal welfare

World Veterinary Day Award 2014

World Veterinary Day Award 2014 (OIE 90th Anniversary website)

Online interactive timeline on the OIE 90th Anniversary website



To help Internet users, animal health professionals and the general public to navigate the various milestones marking the history of the Organisation, the OIE has placed an interactive timeline on its 90th Anniversary website (www.90.oie.int).

This timeline presents the key events of the past 90 years, which can be reviewed month by month or year by year.

It is now 90 years since 28 countries first signed the International Agreement establishing the OIE; 90 years during which the Organisation has grown and developed and has undertaken numerous activities on behalf of animal health and welfare worldwide.

This entertaining and educational timeline complements the interactive map which provides information on the OIE's 13 regional offices across the five continents, its 180 Member Countries and its 296 Reference Laboratories and Collaborating Centres.

For more information:
www.90.oie.int/en/DATES-CLES/ACTUALITES/April/1924-2014-90-years-of-Standards-Transparency-Expertise-and-Solidarity

Activities of the Communication Unit

OIE Annual Report 2013

The OIE Annual Report has been available since the end of May, both in printed format and online on the OIE website. It summarises the main activities of the OIE in 2013.

The Annual Report is sent to the Delegates of OIE Member Countries and to international organisations which have signed a cooperation agreement with the OIE. It will also be distributed at high-level global conferences and meetings.

We invite you to discover the interactive online version on the OIE website. The contents are illustrated by videos and there are web links to supplement the text. The OIE Communication Unit hopes you will enjoy reading the report.

For more information:
www.oie.int/fileadmin/home/eng/Annual_Report_2013/index.html

H.R.H. Princess Haya with the OIE against rabies

No more deaths from rabies

Fighting rabies in Asia

Films about rabies

In 2013, the OIE, with the support of the European Union and the President of the Fédération Equestre Internationale (FEI) and OIE Goodwill Ambassador, H.R.H. Princess Haya Bint Al Hussein, produced three short films designed to raise awareness of the ravages caused by rabies and the resources that must be mobilised to control the disease. They are:

– a short video, featuring this message, delivered by H.R.H. Princess Haya Bint Al Hussein
– a longer film, dealing with the subject in more depth and from an institutional standpoint
– the last film in the series, describing the rabies situation in Asia, where some countries are particularly vulnerable and lack sufficient resources to fight the disease.

This series of three films is available in DVD format, as well as on the OIE website.

HRH Princess Haya with OIE against rabies
www.youtube.com/watch?v=7-FB6aSLnYA

No more deaths from rabies
www.youtube.com/watch?v=ao8bmFEbQkw

Fighting rabies in Asia
www.youtube.com/watch?v=snEi94LGICM

Activities of the Scientific and Technical Department

Summaries of the OIE Specialist Commission, Working Group and *Ad hoc* Group meetings

April to June 2014

Ad hoc Groups

Diseases of Camelids

OIE Headquarters, Paris, 1–3 April 2014

This Group met for the third time. It identified the priority diseases of camelids for consideration by the Biological Standards Commission and agreed on a shortlist, divided into viral diseases, bacterial diseases and parasitic diseases. For each disease on this list, the Group listed the susceptible species and made recommendations on the diagnostic test methods and vaccines that could be used, as well as recommendations on vaccination strategies and control measures.

The Group also provided information on the spread and impact of brucellosis in camelids worldwide.

Finally, with the representative of the World Health Organization and the chair of the OIE Working Group on Wildlife, the *Ad hoc* Group on Diseases of Camelids provided an overview of the current epidemiology and disease situation of Middle East respiratory syndrome in camelids in affected regions, and suggested some recommendations for the surveillance and control of this emerging disease.

International Horse Movement for Equestrian Sport Experts' Sub-group Meeting of the *Ad hoc* Group

OIE Headquarters, Paris, 10–11 April 2014

Six members of the *Ad hoc* Group and four external experts drafted an outline to put the 'high health, high performance' (HHP) concept into operation. This outline describes how to qualify as a member of the HHP horse subpopulation, how to keep HHP health status during travel to and from an event, and how to apply HHP biosecurity measures to a venue for international equestrian events and races. This document will be considered in conjunction with the Model HHP Health Certificate which was developed by an expert sub-group in January 2014.

African Swine Fever

OIE Headquarters, Paris, 23–25 April 2014

The Group proposed amendments to the *Terrestrial Animal Health Code* chapter on African swine fever (ASF), considering harmonisation with the recently adopted chapter on classical swine fever, where relevant. A definition of 'infection with ASF virus' was also proposed. For the purposes of international trade, a distinction was made between different categories of suids (domestic pigs and wild pigs). Articles on the inactivation of ASF virus were added. Finally, taking into account the peculiarities of ASF maintenance and transmission, the Group suggested adding articles on surveillance, including surveillance in wild pigs and of arthropod vectors.

International Horse Movement for Equestrian Sport

OIE Headquarters, Paris, 2–4 June 2014

This Group met for the fourth time to review Member Countries' comments on the draft *Terrestrial Animal Health Code* chapter on the HHP horse subpopulation. Furthermore, the Group commented on the output of the two expert sub-groups that met in January and April 2014, and discussed the revised version of the *Biosecurity Guidelines* and the *Guidelines for Equine Disease-Free Zones*.

The Group was also updated on the progress made with this project since its last meeting in October 2013 and it amended the work plan for 2014–2015 to reflect the conclusions and proposed activities of this meeting.

Activities of the Scientific and Technical Department

Porcine Epidemic Diarrhoea

OIE Headquarters, Paris, 19–20 June 2014

This Group was convened in response to Member Country concerns about recent porcine epidemic diarrhoea (PED) events in several regions. The main purpose of the Group is to scientifically evaluate the PED global situation, to evaluate the disease against the criteria described in Chapter 1.2. of the *Terrestrial Animal Health Code* for potential inclusion in the OIE List of Diseases and to draft a Technical Disease Fact Sheet, to contribute to a better understanding of the disease by Member Countries.

The meeting's format was based on previous experience with emerging diseases. The Group is composed of six recognised international experts, selected for their expertise and also to ensure geographical balance. A representative from the Scientific Commission for Animal Diseases (Scientific Commission) and one from the Terrestrial Animal Health Standards Commission also attended the meeting.

The conclusions of the Group and the Technical Disease Fact Sheet developed during the meeting will be included in the agenda of the September meeting of the Scientific Commission. The Technical Fact Sheet will become publicly available soon after validation by the Scientific Commission.

Activities of the International Trade Department

Summaries of the OIE Specialist Commission, Working Group and *Ad hoc* Group meetings

April to June 2014

Ad hoc Groups

Disaster Management and Risk Reduction in Relation to Animal Health and Welfare and Veterinary Public Health

OIE Headquarters, Paris, 15–17 April 2014

The *Ad hoc* Group, chaired by Dr Gary Vroegindewey, extensively discussed the problems of dealing with disasters, within the framework of the paper prepared by Dr Sarah Kahn, and agreed with the approach of developing a set of guidelines for OIE Member Countries, to be published on the OIE website. This approach aims to provide information and guidance to Member Countries, rather than introducing obligations to implement new systems or upgrade existing ones.

The Group agreed that the guidelines should focus on strategic, organisational and operational issues rather than technical issues, and cover animal health, welfare and veterinary public health, while taking into account all the work already done in this area.

The *Ad hoc* Group also decided to include both natural and manmade disasters within the scope of the guidelines.

A second meeting of the *Ad hoc* Group is proposed for the fourth quarter of 2014.

Working Equids

OIE Headquarters, Paris, 17–19 June 2014

At its first meeting, the OIE *Ad hoc* Group on Working Equids decided to develop its standards by using criteria based on the animals' health, which focus on results for the individual animal, rather than criteria that prescribe the measures to be applied.

The Group agreed to structure its standards according to the pattern established by existing production animal standards. That is:

1. Preamble
2. Scope and definition
3. Responsibilities and competencies
4. Criteria or measurables for the welfare of working equids
5. Recommendations.

The draft text developed by the Group is expected to be sent for consideration by the Terrestrial Animal Health Standards Commission at its September 2014 meeting.

Activities of the International Trade Department

Working Groups

Animal Welfare

OIE Headquarters, Paris, 24–26 June 2014

The OIE Animal Welfare Working Group (AWWG) held its 13th meeting from 24 to 26 June 2014 at OIE Headquarters in Paris.

This year, following the rotational system of representation for industry members, the representative of the International Meat Secretariat took part as the full industry member of the AWWG.

The Working Group discussed Member Country comments that had been referred by the Terrestrial Animal Health Standards Commission from its February 2014 meeting. To respond to some specific comments, the Group recommended convening a virtual (electronic) *ad hoc* Group. Convening experts in this way, i.e. electronically, is being tested as a pilot scheme, in which the OIE maintains virtual expert committees to address crucial issues raised by Member Countries.

Representatives from the OIE Animal Welfare Collaborating Centres joined the AWWG via video conference to give brief summaries of their activities during the period 2013/2014[1].

The Working Group also advanced the proposed OIE Global Animal Welfare Strategy, which aligns with the OIE Strategic Plan of 2016–2020 and the continuing initiatives of Regional Animal Welfare Strategies.

Other important topics discussed included future priorities for the development of standards, the need to support the effective implementation of the OIE animal welfare standards and the fourth OIE Global Conference on Animal Welfare, to be held in Chile in 2016.

1 The Collaborating Centres' annual reports are available at the OIE website: www.oie.int/en/our-scientific-expertise/collaborating-centres/annual-reports/

regional

Africa

Departure

OIE Sub-Regional Representation for North Africa

Dr Antonio Petrini

At the end of December 2013, Dr Antonio Petrini returned to his home institution, *Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale'*, in Teramo, Italy.

Dr Petrini joined the OIE Sub-Regional Representation for North Africa when it opened in November 2009. During his four years in Tunis, he played an active role in launching the Sub-Regional Representation; coordinating the Representation's technical and scientific activities; supervising OIE activities in connection with laboratory twinning projects in the Mediterranean region; and helping to manage the OIE's laboratory and epidemiology network under the Mediterranean Animal Health Network (REMESA). He successfully coordinated the drafting committee charged with preparing applications from Algeria, Morocco and Tunisia for OIE endorsement of their official foot and mouth disease control programmes, which the OIE endorsed in May 2011. He also participated in many of the FAO/OIE technical missions sent to North Africa by the Crisis Management Centre (CMC) in times of crisis.

We wish Dr Petrini every success in his new duties.

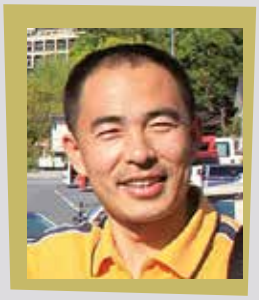
activities

Staff movements

Asia – Pacific

Arrivals

Regional Representation for Asia and the Pacific



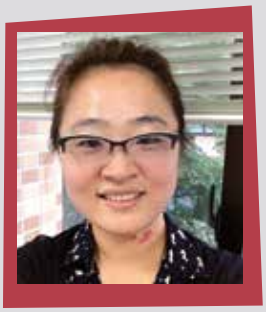
Dr Lushi Liu

Dr Lushi Liu joined the OIE Regional Representation for Asia and the Pacific as a secondment officer from the People's Republic of China, on 14 April 2014.

Dr Liu graduated from Inner Mongolia Agricultural University in P.R. China, with a Master's degree in preventive veterinary medicine, in 2006. That same year, he joined the Veterinary Bureau of the Ministry of Agriculture, P.R. China, where he was principally responsible for projects related to the OIE, such as animal disease information management and notification; the management of OIE Reference Centres; recognition of official disease status; the South-East Asia and China Foot and Mouth Disease Campaign (SEACFMD); and organising international meetings related to OIE affairs.

After five years working in Beijing, he moved to Qingdao and joined the China Animal Health and Epidemiology Centre (CAHEC), which, at the 82nd OIE General Session, also became the OIE Collaborating Centre for Veterinary Epidemiology and Public Health. At CAHEC, he focused on the interpretation and distribution of OIE standards; in particular, the OIE Aquatic and Terrestrial *Codes* and *Manuals*. He was also in charge of collating and summarising comments provided by the relevant officials. As a member of the China National Technical Committee of Animal Health Standardization, he made great efforts to develop China's national animal health standards in line with OIE standards.

Dr Liu will be contributing to regional activities, including regional GF-TADs and OIE/Japan Trust Fund projects, and encouraging OIE Reference Centres in P.R. China to take part in the activities of the region. It is great to have him on board.



Dr Yooni Oh

Dr Yooni Oh has been appointed as a Regional Veterinary Officer for Asia and the Pacific, and began her work with us on 15 May 2014.

Dr Oh obtained her doctorate in veterinary medicine in 1998 in the Republic of Korea. She gained a Bachelor's degree in veterinary medicine from Chungnam National University in 1998, followed by a Master's degree in veterinary preventive medicine in 2000. She continued her work on developing vaccines for viral diseases, as well as her interest in anti-cancer research, in the private sector until 2003, when she joined the Pirbright Institute in the United Kingdom, and embarked on a new direction, the immunology of foot and mouth disease (FMD).

Dr Oh received her PhD in veterinary science from the University of Bristol in 2008.

In the meantime, she had returned to Korea to join the Animal and Plant Quarantine Agency (QIA) in 2007. The QIA is an agency of the Ministry of Agriculture, Food and Rural Affairs, responsible for quarantine, controlling and researching animal diseases, veterinary products and animal welfare. She was in charge of managing research projects into infectious animal diseases, especially viral diseases, such as FMD, rabies, porcine reproductive and respiratory syndrome, and other diseases of public and animal health concern. During her time at the QIA, she was appointed as a member of the OIE *Ad hoc* Group on Rabies, 2010–2011.

As a Regional Veterinary Officer, Dr Oh's responsibilities include organising regional meetings and workshops, such as Focal Point Seminars and those organised under the umbrella of the OIE/Japan Trust Fund projects, as well as short-term, hands-on training at the OIE Reference Centres. She also assists other OIE staff with public relations and information-gathering along the way. We are very pleased to be able to welcome Yooni to the team.

Sub-Regional Representation for South-East Asia

Ms Onsiri Benjavejbhaisan

Ms Onsiri Benjavejbhaisan joined the OIE Sub-Regional Representation for South-East Asia in May 2014 as an Administration Officer. Onsiri brings with her ten years of experience in non-profit, community-based organisations, as well as her time with a consumer goods company. She received her Master's degree in business administration from King's Mongkut University of Technology in Thonburi, Thailand, in 2009. In 2002, Onsiri graduated from Chulalongkorn University, with a Bachelor of Arts degree, majoring in communication arts. It's a pleasure to have her on the OIE team.

Departures

Sub-Regional Representation for South-East Asia

Dr Dirk Van Aken

Dr Dirk Van Aken joined the OIE Sub-Regional Representation for South-East Asia (SRR-SEA) in October 2011, as Programme Coordinator under the Stop Transboundary Animal Diseases and Zoonoses (STANDZ) Initiative. Dirk was responsible for the establishment and management of the Small Grants Facility and the STANDZ Initiative's veterinary education programme.

In August 2012, Dirk was appointed Deputy Sub-Regional Representative, in charge of administration and finance, and guided the implementation of a new, customised financial reporting system for the SRR-SEA.

In April 2014, Dirk left the SRR-SEA to take up the position of Livestock Sector Expert in the EU-funded Agricultural Sector support programme in Cambodia. Dirk will continue to liaise with the OIE-SRR, as the technical aspects of his new job involve working with OIE guidelines and recommendations on strengthening Veterinary Services and improving animal health.

We wish Dirk the very best in his new position and look forward to continuing to work with him on strengthening Veterinary Services in Cambodia.

Regional Representation for Asia and the Pacific

Ms Phungpit Kuruchittham

Ms Phungpit Kuruchittham joined the OIE Sub-Regional Representation for South-East Asia (SRR-SEA) as Operations Manager on 23 September 2013. During her time with us, she oversaw the day-to-day administrative operations of the SRR-SEA, including managing the administrative staff. Khun Pui, as she is known to her colleagues, also put her management skills to good use by supporting the Sub Regional Representative and Deputy Representative in programme management and in fostering good relations with stakeholders.

We have greatly appreciated Khun Pui's contribution to the improvement of our operational procedures, despite her short stint, and we wish her all the best in her future endeavours.

Meetings

Asia – Pacific

4th FAO-APHCA/OIE/DLD regional workshop on brucellosis diagnosis and control in Asia and the Pacific

Proficiency test and ways forward for the region

Chiang Mai, Thailand, 18–21 March 2014

The OIE Regional Representation for Asia and the Pacific has been organising livestock health management activities with FAO-APHCA[1] since the 1990s.

Both organisations have identified brucellosis as a priority issue that needs attention to improve animal health and production as well as to reduce human health risks. A series of joint workshops began in 2006, with the support of Dr Bruno Garin-Bastuji of the French National Agency for Food, Environmental and Occupational Health and Safety (ANSES), the OIE Reference Laboratory for Brucellosis in France, and Dr Monaya Ekgatat of the Thai National Institute of Animal Health (NIAH) as a partner laboratory in the region. The OIE laboratory twinning project between NIAH and ANSES, which was completed in 2013, was the result of one of these collaborations.

Proficiency testing, which has been carried out by each participating Member Country in the region since 2013, led to the focus of this workshop, the Fourth FAO-APHCA/OIE/DLD[2] Regional Workshop on Brucellosis Diagnosis and Control. It was attended by many of those involved in brucellosis diagnosis from 14 countries; namely, Bangladesh, Bhutan, India, Indonesia, Iran, Laos, Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam. In addition, there were three overseas observers, from Australia (Commonwealth Scientific and Industrial Research Organisation – CSIRO), the People's Republic of China (Harbin Veterinary Research Institute – HVRI) and Fiji, as well as 12 observers from the Thai NIAH. Dr Preecha Wongwicharn, Director of NIAH, and Dr Wimolporn Thitisak, Deputy Director General of the DLD, both attended the opening ceremony.

The technical programme started with a review and update of the brucellosis situation by Dr Garin-Bastuji. Noting that only the People's Republic of China, Iran and Iraq have reported substantial numbers of human cases to the OIE, and referring to a study conducted by IRLI[3] in 2011, Dr Garin-Bastuji expressed his concern that brucellosis was being significantly underreported. Referring again to the ILRI study, he highlighted the importance of brucellosis, which is ranked even more highly than avian influenza as a zoonosis. Since the control strategy to be adopted should reflect the situation of each individual country, he reminded participants that the epidemiological situation and available diagnostic techniques are key considerations in any brucellosis control programme.

Following a presentation on 'quality management in veterinary testing

© Chanokporn Boonsart, National Institute of Animal Health, Thailand

1 FAO-APHCA: Animal Production and Health Commission for Asia and the Pacific of the Food and Agriculture Organization of the United Nations
2 DLD: Department of Livestock Development, Thailand
3 ILRI: International Livestock Research Institute

laboratories', which used brucellosis diagnosis as example, and a session on the 'international shipment of biological and potentially infectious materials', Dr Monaya Ekgatat presented the results of proficiency testing carried out by each participating Member Country in the region since the summer of 2013, using serum panels prepared by NIAH with the support of ANSES. The overall result was considered positive. Each Member received detailed feedback comments separately.

All participating Members prepared country reports to share their brucellosis situation, including their national surveillance and control programme, if any, and laboratory diagnosis. They agreed to conduct a second proficiency test to increase confidence in their country's diagnostic capability. It was agreed that Members should share information on the disease situation and laboratory diagnostic data to strengthen regional networking and collaboration. A series of periodical updates by each participating laboratory will also be considered.

© Chanokporn Boonsart, National Institute of Animal Health, Thailand

The OIE Regional Representation for Asia and the Pacific greatly appreciates the hard work that NIAH has invested into this regional collaboration. The Representation would also like to thank Dr Garin-Bastuji's team for their continued support over the years.

Developments of the Regional Animal Welfare Strategy

The developments of the Regional Animal Welfare Strategy (RAWS) for Asia, the Far East and Oceania were discussed during the meeting of the Regional Commission for this region on 26 May 2014 in Paris. The discussions highlighted the progress made on the recommendations of the last RAWS Coordination Group Meetings, held in August 2013 (Seoul, Republic of Korea) and March 2014 (Bangkok, Thailand), as well as those of the Conference of the Regional Commission, held in Cebu, the Philippines, in October 2013.

It has been concluded that a number of key developments have been made, including, in particular, the construction of the RAWS website and the publication of a second edition of RAWS, with translations into Thai, Bahasa, Tagalog, Malay and Chinese. The evidence indicates, at least from advice provided by some countries in the region, that animal welfare improvements are being made in areas such as legislation, strategic planning and training.

During the RAWS Coordination Group Meeting 7, held on 24 March 2014 in Bangkok, members discussed holding an education and training 'stock take', creating a database, and developing joint training with World Animal Protection[1] on the management of animals in disasters. Members were also asked to investigate the idea of holding a regional Animal Welfare Day together with the OIE, following the example of Malaysia, who was requested to distribute a summary of its Animal Welfare Day after May 2014.

The RAWS Coordination Group Meeting 7 also discussed the role and function of its secretariat, provided by the Australian Department of Agriculture until 30 June 2015. The Regional Commission for Asia, the Far East and Oceania agreed that the OIE Regional Representation for Asia and the Pacific will take over the management of the RAWS secretariat, and that future arrangements and recommendations for RAWS will be discussed at the RAWS Coordination Group Meeting 8 in Canberra, Australia, in November 2014.

It can be concluded that the Regional Animal Welfare Strategy for Asia, the Far East and Oceania is now an established and mature activity and, as the first such OIE regional strategy, is now being used as a template by other regions, to develop similar approaches.

1 Known before as WSPA (World Society for the Protection of Animals)

Information seminar for recently appointed OIE Delegates

Beijing, People's Republic of China, 28–30 April 2014

Recently appointed OIE Delegates – or their representatives – from six countries of the Asia–Pacific region (Bangladesh, Bhutan, India, the Federated States of Micronesia, Mongolia and Vietnam) attended the Regional Information Seminar for Recently Appointed OIE Delegates in Beijing, the People's Republic of China (P.R. China), from 28 to 30 April 2014. Some 32 participants attended the workshop, including three senior OIE Delegates, three members of OIE Specialist Commissions, four OIE staff members and 17 observers representing the Ministry of Agriculture of P.R. China. Six OIE National Focal Points from P.R. China were among the observers.

The objective of the two-and-a-half-day seminar was to provide important information on OIE mandates and the functions and obligations of OIE Member Countries and Delegates, as well as OIE functions and activities in the Asia–Pacific region.

The six information sessions were organised under the themes of:

a) OIE missions, organisation and functions

b) the rights and responsibilities of OIE Delegates

c) OIE international standards

d) animal disease notification

e) the quality of Veterinary Services and the OIE PVS Pathway

f) regional initiatives.

Dr Hirofumi Kugita, OIE Regional Representative for Asia and the Pacific, opened the seminar and welcomed participants. Dr Zhang Zhongqiu, Director General of the Veterinary Bureau of P.R. China and the President of the OIE Regional Commission for Asia, the Far East and Oceania, also welcomed delegates. Dr Mara Gonzalez, Deputy Head of the OIE Regional Activities Department, then presented the objectives and context of the seminar.

Dr Zhang briefed recently appointed OIE Delegates on his experiences at the OIE General Sessions as a senior OIE Delegate, explaining his pre-session arrangements and general proceedings. Dr Toshiro Kawashima, Delegate of Japan to the OIE and member of the OIE Council, explained the development of the Sixth Strategic Plan, highlighting

© Tikiri Wijayathilaka, OIE RR AP

Group photo; including new Delegates, senior Delegates, speakers, OIE staff and observers

© Tikiri Wijayathilaka, OIE RR AP

From left to right, Dr Hirofumi Kugita, OIE Regional Representative for Asia and the Pacific; Dr Mara Gonzalez, Deputy Head of the OIE Regional Activities Department; and Dr Zhang Zhongqiu, Delegate of the People's Republic of China to the OIE and President of the OIE Regional Commission for Asia, the Far East and Oceania

its inputs, objectives, and cross-cutting issues. Dr Davinio Catbagan, Delegate of the Philippines to the OIE and Vice President of the OIE Regional Commission for Asia, the Far East and Oceania, delivered the report and recommendations of the 28th Conference of the Regional Commission, held in Cebu, the Philippines, in November 2013, in order to provide a practical understanding of the Regional Conference proceedings.

Dr Etienne Bonbon, Vice-President of the OIE Terrestrial Animal Health Standards Commission and Advisor to the OIE Director General, and Prof. Stuart McDiarmid, Vice-President of the same Commission and Senior Advisor in the Ministry of Primary Industries (New Zealand), explained the dispute settlement process in detail as a convenient and economic way of resolving disputes. Information on recent developments in vaccine production technologies using influenza A H5N1 virus was provided by Dr Hualan Chen, Vice President of the OIE Biological Standards Commission and Director of the OIE Reference Laboratory for Avian Influenza at the Harbin Veterinary Research Institute, P.R. China.

The Delegate of Mongolia to the OIE and a representative of Vietnam both shared their experiences with the OIE PVS Pathway, and the OIE Delegate to Bhutan shared his experience of participating in the development of the Regional Animal Welfare Strategy. OIE Focal Points explained the mechanism adopted by the Ministry of Agriculture of P.R. China to coordinate their work, as well as their experience of the standard-setting process.

Lively discussions took place among the participants, the OIE speakers and senior Delegates throughout the programme, to gain clarification on many of the topics discussed as well as to add their opinions on issues such as the Terms of Reference of OIE National Focal Points, veterinary education, the OIE-mediated dispute settlement process, and the delisting of various diseases.

In the final session, the new Delegates, senior Delegates and observers shared their views on how to work effectively with the OIE, how to work cooperatively as a region, and how the Members in the region mutually support one another. All the Delegates expressed satisfaction with the seminar and thought that it clearly communicated the importance of their role as OIE Delegates and of their participation in OIE activities, including helping to develop the OIE international standards.

Final programme of the seminar and PowerPoint presentations:
www.rr-asia.oie.int/activities/regional-programme/good-governance-of-veterinary-services/activities/2014-new-delegate/

Workshop on relevant international standards for dog rabies

Chiang Mai, Thailand, 11–13 June 2014

The OIE Sub-Regional Representation for South-East Asia held a 'Workshop on Relevant International Standards for Dog Rabies' from 11 to 13 June 2014 in Chiang Mai, Thailand. The workshop aimed to provide knowledge on the OIE international standards and approaches applied to rabies, and a good understanding of the national and regional rabies situation.

All ten Member States of the Association of Southeast Asian Nations (ASEAN), Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam, took part in the workshop. They were joined by international partner organisations actively working on rabies in the region (the FAO Regional Office for Asia and the Pacific,

the Global Alliance for Rabies Control, and World Animal Protection).

The workshop provided a platform for ASEAN Member States to present and discuss their current rabies situation, activities, and future plans for rabies control and prevention. During the meeting, the OIE introduced selected chapters from the OIE international standards which were relevant to rabies and its control and prevention, explaining how these could be put into practice by ASEAN Member States to achieve canine rabies elimination by 2020.

The workshop was divided into six sessions.

– Session 1 (**International standards on rabies**) covered considerations to be taken into account by countries when self-assessing rabies freedom, including recommendations for the importation of various animals from countries with and without rabies (Chapter 8.11. of the OIE *Terrestrial Animal Health Code* [*Terrestrial Code*]).

– Session 2 (**Veterinary Services, communication and veterinary legislation**), included discussions on how good governance of Veterinary Services is closely linked to rabies control and prevention efforts (Chapter 3.1. of the *Terrestrial Code*), and how it can be reinforced by effective communication within and outside Veterinary Services (Chapter 3.3. of the *Terrestrial Code*), and by sound veterinary legislation (Chapter 3.4. of the *Terrestrial Code*).

– Session 3 (**Laboratory diagnosis of rabies**) covered the international standards for collecting, transporting and processing samples for rabies diagnosis (Chapter 2.1.13. of the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* [*Terrestrial Manual*]) and the role of regional Reference Laboratories.

– Session 4 (**Rabies vaccines and vaccination**) dealt with the international standards for the minimum requirements of rabies vaccines (Chapter 2.1.13. of the *Terrestrial Manual*), rabies vaccine banks, and guidelines on vaccination.

– Session 5 (**Stray dog population control**) covered international recommendations for measures to control dog populations and methods for estimating the size of these populations (Chapter 7.7. of the *Terrestrial Code*).

– Session 6 (**International standards on surveillance**) dealt with rabies notification and epidemiological information (Chapter 1.1. of the *Terrestrial Code*), as well as the reporting requirements of the World Animal Health Information System (WAHIS).

Questionnaires, designed to find to what degree each of the ASEAN Member States had adopted the abovementioned OIE standards, were used during each session of the workshop.

Based on the workshop's results, the OIE Sub-Regional Representation for South-East Asia will draft a document summarising the current status of ASEAN nations, existing gaps, and regional and national priorities for achieving freedom from rabies by 2020. This document will provide a comprehensive overview of the rabies situation and initiatives in ASEAN Member States. It is also designed to support the implementation of the ASEAN Rabies Elimination Strategy (ARES), by serving as a resource material for its component on monitoring and evaluation.

It was satisfying to note that progress on rabies prevention and elimination has been and is being made in a number of countries and that ASEAN countries recognise the importance of the OIE standards in underpinning these advances. The OIE Sub-Regional Representation for South-East Asia will consider conducting a retrospective study of rabies management to improve our knowledge and understanding of rabies in South-East Asia. Such a study will complement the OIE Sub-Regional Representation for South-East Asia's future work in this area, and a similar workshop will be held in 2016 to evaluate progress up to that date.

Rabies control in Asia

Around 56% of human deaths caused by rabies throughout the world occur in Asia, affecting mainly those in poor, rural populations.

Regional comparisons of vaccination rates

Dog vaccination rates vary greatly among regions. Latin America has vaccinated over 2.8 million dogs per human life lost; the figure is 1,000 dogs in Asia and 200 in Africa.

Cattle losses show the same trend. Latin America has vaccinated over 1.7 million dogs for each cow lost, whereas it is 1,900 dogs in Asia and 600 in Africa.

The most dramatic difference between Asia, Africa and Latin America is seen in access to post-exposure prophylaxis (PEP). For each fatal case of human rabies, Latin America administers PEP to over 41,000 cases, Asia 200 and Africa 8.

The OIE/Japan Trust Fund Project on Controlling Zoonoses in Asia under the One Health Concept

In December 2013, the OIE Regional Representation for Asia and the Pacific launched the OIE/Japan Trust Fund (JTF) Project on Controlling Zoonoses in Asia under the One Health Concept (See OIE *Bulletin* no. 2014-2, pp. 29–31). **Strengthening rabies control is one of the three basic components of the Project**. The objective of this component is to strengthen OIE Members' capacity for mass dog vaccination and dog population management, as well as to enhance laboratory networking and information-sharing.

As an initial step in this five year programme, **regional training on rabies** for laboratory experts from the Veterinary Services of ten East and South Asian countries was conducted in Japan from 5 to 8 August 2014. The main objectives of the course were to provide a clear understanding of the OIE standards on rabies and the technical skills required for rabies diagnostic tests. Other goals of this meeting were to provide an understanding of the rabies situation and the control programmes of the participating countries, as well as to provide an opportunity for enhancing laboratory networking and information exchange. The course was made up of a two-day session of lectures and discussions at the University of Tokyo and another two-day, hands-on workshop on diagnostic techniques, organised in Yokohama in collaboration with the Animal Quarantine Service of the Ministry of Agriculture, Forestry and Fisheries of Japan.

Strengthening dog vaccination

Approximately 96% of documented human rabies cases are attributed to contact with infected dogs. Dog vaccination is therefore the single most cost-effective intervention to protect humans from contracting canine rabies. However, the Asia–Pacific region carries out just under half of the dog vaccinations implemented worldwide. On the other hand, it is estimated that just 10% of the value of the resources used to treat people after rabid or suspected rabid dog bites would be enough to eliminate rabies, if those countries' Veterinary Services were able to target rabies control programmes at the animal source.

Table I

Annual direct impacts of canine rabies in terms of human and cattle deaths and post-exposure prophylaxis

	Latin America (in thousands)	Africa (in thousands)	Asia (in thousands)	Total (in thousands)
Human deaths	0.002	31	38	69
Post-exposure prophylaxis	620	260	8,700	9,000
Cattle deaths	0.002	11	21	32

Source : Shwiff S., Hampson K. & Anderson A. (2013). – Potential economic benefits of eliminating canine rabies. *Antiviral Res.*, **98** (2), 352–356

The European Union regional cooperation programme on Highly Pathogenic and Emerging and Re-emerging Diseases in Asia (EU HPED) supports the OIE Regional Vaccine Bank for Rabies. The Regional Vaccine Bank was established in 2011 to facilitate the rapid dispatch of high-quality vaccines that comply with international standards, at a lower cost per vaccine unit and reducing administrative delays. It has already distributed 2,690,400 doses of rabies vaccine in Asia for dog vaccination (See OIE *Bulletin* no. 2014-1, pp. 80–81).

Table II

Deliveries made by the OIE Rabies Regional Vaccine Bank (Asia)

Country	No. of doses	Date
Afghanistan	200,000	January 2014
Bangladesh	200,000	July 2013
Bhutan	20,000	September 2013
Indonesia	200,000	July 2013
Laos	50,000	2012 World Rabies Day
Laos	120,000	June 2013
Myanmar	200,000	2013 World Rabies Day
Nepal	200,000	October 2013
The Philippines	500,000	February 2013
Sri Lanka	300,400	June 2013
Vietnam	200,000	December 2012
Vietnam	500,000	December 2013
Total	**2,690,400**	

Europe

5th Annual West Eurasia FMD Roadmap Meeting

Astana, Kazakhstan, 23–24 April 2014

The Fifth Annual West Eurasia Foot and Mouth Disease (FMD) Roadmap Meeting was held from 23 to 24 April 2014, in Astana, Kazakhstan, under the auspices of the OIE/FAO Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs).

The main purposes of this event were to:

- share information on the circulation of the FMD virus (FMDV) within the West Eurasia ecosystem. In addition to this, the forum addressed the distribution of species and serotypes of FMDV;
- review the progress of each country along the Progressive Control Pathway for FMD (PCP–FMD);
- assist countries preparing national control programmes for FMD in order to steadily reduce the impact of the disease;
- provide countries with information on making submissions to the OIE for endorsement of their control programmes and recognition of their FMD status for countries and zones;
- emphasise the role of the newly established OIE Sub-Regional FMD Coordination Office in Astana.

During the 5th Annual West Eurasia FMD Roadmap Meeting, the new building of the OIE Sub-Regional FMD Coordination Office in Astana was inaugurated. From left to right: Mr Asylzhan S. Mamytbekov, Minister of Agriculture of the Republic of Kazakhstan (holding the ribbon); Dr Monique Eloit, Deputy Director General of the OIE; Prof. Kazimieras Lukauskas, OIE Regional Representative in Moscow; and Dr Askar Kozhayev, Technical Assistant, OIE Sub-Regional FMD Coordination Office in Astana

Thirteen (Afghanistan, Armenia, Azerbaijan, Georgia, Iran, Iraq, Kazakhstan, Kyrgyzstan, Pakistan, Syria, Tajikistan, Turkey and Uzbekistan) out of the 14 countries of the Roadmap were represented. Russia took part as an Observer, as did donors and some private firms.

For the first time, the meeting was organised by the GF-TADs Working Group on FMD, as previous meetings (see OIE *Bulletin* no. 2013-3, pp. 27–28) had been organised by the European Commission for the Control of FMD (EuFMD). The general feedback from the organisers, from EuFMD and from the participants was very positive. Discussions between countries, among the FMD experts and within the epidemiology and laboratory networks seemed very productive. Eighteen recommendations were adopted by the participants, including six directly related to the epidemiology and laboratory networks.

In particular, it was noted that the characteristics of the virus should be regularly investigated, particularly to maintain the matching of the vaccines with the circulating strains.

Countries that had provided their national control programme for FMD and/or the questionnaire on their position on the Progressive Control Pathway for the control of FMD (PCP-FMD) were asked to attend an interview. The conclusions of the assessors were then presented to and discussed with the Regional Advisory Group (RAG), who decided to propose these conclusions for endorsement from the participants.

As a result of the meeting, four countries remain in PCP-FMD Stage 1, two in Stage 2 and eight countries have been provisionally moved from PCP-FMD Stage 1 to Stage 2, pending the submission of additional information within six months. The meeting demonstrated that most countries were on the right track to achieve the vision of 'a region free from FMD clinical disease by 2025'.

The role of the OIE Sub-Regional FMD Coordination Office in Astana was clarified. Emphasis was placed on supporting countries by:

a) improving control of the spread of foot and mouth disease

b) coordinating a common approach and strategy at the regional level

c) strengthening cooperation between the Veterinary Services in the region, with the OIE Regional Commission for Europe and with the relevant Specialised Commissions.

From left to right: Dr Bulut Abdulnaci, Turkey, leader of the laboratory network; Dr Mikheil Sokhadze, Delegate of Georgia to the OIE; Dr Irfan Erol, Delegate of Turkey to the OIE; Dr Mereke Taitubaev, Delegate of Kazakhstan to the OIE; and Dr Rasouli Beirami Naser, Iran, leader of the epidemiology network

From left to right: Dr Julio Pinto, Animal Health Officer (FAO); Dr Laure Weber-Vintzel, Recognition of countries' animal disease status (OIE); Dr Giancarlo Ferrari (FAO consultant from Italy); Dr Nadège Leboucq, OIE Sub-Regional Representative in Brussels; Dr Samia Metwally, Animal Health Officer Virologist (FAO); and Dr Joseph Domenech, Advisor (OIE)

1st OIE workshop on stray dog management for Balkan countries (SDB1)

Bucharest, Romania, 17–19 June 2014

Ten Balkans countries[1] have agreed on a sub-regional 'vision': 'to become fully compliant with OIE standards on stray dog population control by 2025'. This means that they have committed themselves to reducing their stray dog populations to an acceptable level, thus greatly mitigating the risk of transmitting rabies and other zoonoses to humans through stray dogs.

OIE Platform on Animal Welfare for Europe

From left to right: Dr P. Dalla Villa, European Commission; Dr C. Duicu, Delegate of Romania to the OIE; Prof. N. Belev, OIE Regional Representative for Eastern Europe; Dr S. Ralchev, OIE Sub-Regional Representation in Brussels

To achieve this vision, these countries agreed to develop national roadmaps and monitor their situation on a regular basis, using the OIE monitoring and evaluation tool specifically developed for this purpose, based on the provisions of Chapter 7.7. of the OIE *Terrestrial Animal Health Code*.

These were the key results of the First OIE Regional Workshop on Stray Dog Population Management for Balkan Countries (SDB1), held in Bucharest, Romania, from 17 to 19 June 2014, within the framework of the OIE Platform for Animal Welfare in Europe.

The workshop also enabled these countries to establish their baseline situation with regard to their stray dog population (to be further consolidated, by means of the evaluation tool) and to understand the bottlenecks and obstacles involved in properly and sustainably addressing this issue in line with OIE standards.

Experts from the public sector and civil society gave useful lectures on topics that should be at the top of the priority list; namely, how to:

a) design legislation on stray dogs

b) identify the sources of stray dogs

c) ensure effective coordination between the competent authorities

d) raise public awareness; and

e) enable Veterinary Services to keep the public and stakeholders well informed of their stray dog control activities.

The countries of the region also shared their best working practices, demonstrating that operational solutions do exist and are applicable in this part of the world.

The objectives of the workshop were to:

- remind Members of the provisions of Chapter 7.7. of the OIE *Terrestrial Code* on stray dog population control
- review national control strategies for stray dog populations
- identify key weaknesses in their programmes
- share best practices in the region
- share a common vision at the sub-regional level to address the problem of stray dog population control, including its rabies component.

In light of the success of this workshop and the commitment of that these countries made towards achieving the vision, the OIE Platform will organise follow-up workshops (SDB2, SDB3, etc.) every two to three years, to continue supporting OIE Member Countries in the implementation of their national Roadmaps, and to monitor this implementation, as well as their increasing compliance with OIE standards. In between SDB

1 Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, the Former Yug. Rep. of Macedonia (FYROM), Romania, Serbia and Turkey – these countries were represented by their OIE National Focal Point for Animal Welfare and a veterinarian working on stray dogs at the municipal level

meetings, the OIE Platform will also organise and coordinate capacity-building activities, using the available expertise and resources of OIE partners in the region. For example, a regional awareness campaign on stray dogs has been scheduled for the end of 2014 or beginning of 2015. Finally, through its dedicated website, the OIE Platform will collate and post information on best practices and continue to stimulate regional dialogue on stray dogs in Europe.

The OIE would like to thank the European Commission, Germany and Romania — in particular, the OIE Delegate of Romania, Dr Cristian Duicu — for their significant financial and technical support, which were so crucial to the success of this event.

The workshop report, workshop video and all presentations are available on the website of the OIE Platform on Animal Welfare for Europe: http://rpawe.oie.int/

Regional policies to control rabies in the Southern Mediterranean

A workshop was held in Paris from 15 to 16 October 2013, aimed at improving coordination among the Mediterranean Neighbourhood countries[1] of the European Union (EU) in defining and implementing control policies for rabies in the Southern Mediterranean.

The workshop was organised and financed by the TAIEX[2] instrument of the European Commission, in cooperation with the Health and Consumers Department of the European Commission (DG-Sanco), the European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC). It was labelled a **GF-TADs multi-regional workshop**[3]. Participants came from Algeria, Egypt, Greece, Israel, Italy, Jordan, Lebanon, Morocco, Palestine, Portugal and Tunisia. Speakers represented the OIE, FAO, WHO, EFSA, ECDC, DG-Sanco, the Royal Society for the Prevention of Cruelty to Animals (RSPCA), the EU Reference Laboratory for rabies, the Pasteur Institute and the French National Veterinary School of Lyon.

In the Mediterranean region, the rabies virus is sustained almost exclusively by dog populations. The disease is usually introduced and/or spread over long distances in the region by dogs, travelling in cars with their owners. Given the biological characteristics of the disease, and the geographical situation of the Southern Mediterranean, where the desert provides a natural barrier to the South and the Mediterranean to the North, rabies appears to be a disease that could effectively be controlled at a reasonable cost.

Public awareness, mass vaccination of dogs and dog population management are the key elements in the control of rabies.

The culling of stray dogs alone is not effective to control either stray dog populations or rabies cases. Experts agree that vaccination strategies should aim at 70% vaccination coverage.

According to OIE and WHO data, controlling the virus reservoir (dogs) is much more cost-effective than concentrating efforts on the indefinite post-exposure prophylaxis of humans, which has no influence on the disease's ecology. In the long term, using just 10% of the money which is currently spent on rabies treatment, it would be possible to vaccinate all dogs in all infected countries and eventually to eliminate rabies cases in humans altogether. The control of stray dog populations should follow OIE recommendations.

Control strategies should be coordinated at the regional level to provide sustained results.

Public awareness, mass vaccination of dogs and dog population management are areas in which beneficiary countries need assistance, e.g. vaccine procurement via a regional/sub-regional vaccine bank, dog vaccination programmes combined with effective dog population management and responsible dog ownership, in cooperation with all relevant stakeholders, in accordance with the relevant OIE standards, notably *Terrestrial Animal Health Code*,

1Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Tunisia
2TAIEX: Technical Assistance and Information Exchange Instrument (http://ec.europa.eu/enlargement/taiex)
3GF-TADs: FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases

Chapter 7.7. (Stray dog population control[4]) and Chapter 8.12. (Infection with rabies virus[5]), and *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*, Chapter 2.1.13. (Rabies[6]).

The RSPCA and International Companion Animal Management (ICAM) Coalition[7] have developed a guidance document and methodology for dog population management programme. Moreover, the RSPCA is in a position to assist Mediterranean countries with conducting initial dog surveys and developing targeted intervention. In addition, the TAIEX instrument could be used specifically for stray dog control. The Blueprint for Rabies Prevention and Control website[8] of the Global Alliance for Rabies Control[9] provides further detailed information, which is crucial in setting up a rabies control strategy.

As a next step, FAO, OIE and WHO can assist Mediterranean countries to establish a regional/sub-regional rabies vaccine bank and in formulating rabies control strategies, taking into account the regional analysis of the OIE PVS reports available in the Mediterranean. This approach should allow the Mediterranean Neighbourhood to identify regional priorities and possible gaps on the basis of individual country assessments and make recommendations based on international standards. The Mediterranean Animal Health Network (REMESA) can also play an essential role in this endeavour. Linking with the Network for the Control of Public Health Threats in the Mediterranean Region and South-East Europe (EpiSouth)[10] would be beneficial to coordinate action.

To initiate the development of national and regional strategies, follow-up activities may also be eligible for funding through the TAIEX facility (e.g. study visits from experts). Implementing control measures should come under the umbrella of GF-TADs. Funding could be sought under different programmes and from different donors.

Agenda, list of participants and presentations of the workshop: http://ec.europa.eu/enlargement/taiex/dyn/taiex-events/library/detail_en.jsp?EventID=53855

4 www.oie.int/index.php?id=169&L=0&htmfile=chapitre_aw_stray_dog.htm
5 www. oie.int/index.php?id=169&L=0&htmfile=chapitre_rabies.htm
6 www.oie.int/fileadmin/Home/fr/Health_standards/tahm/2.01.13_RABIES.pdf
7 ICAM Coalition: http://icam-coalition.org
8 The Blueprint for Rabies Prevention and Control: www.rabiesblueprint.com
9 Global Alliance for Rabies Control: http://rabiesalliance.org
10 EpiSouth: www.episouthnetwork.org

The OIE has two new Members

The OIE welcomes its 179th and 180th Members: the Republic of Liberia and the Republic of South Sudan.

Their application for accession was accepted unanimously by the World Assembly of OIE Delegates during its General Session on 30 May 2014 (Resolutions nos. 12 and 13 of the 82nd General Session).

New composition of the OIE Regional Commission for Africa

On becoming OIE Members, Liberia and South Soudan joined the OIE Regional Commission for Africa, which now has 54 members:

1. Algeria
2. Angola
3. Benin
4. Botswana
5. Burkina Faso
6. Burundi
7. Cameroon
8. Cape Verde
9. Central African Rep.
10. Chad
11. Comoros
12. Congo (Rep. of the ~)
13. Congo (Dem. Rep. of the ~)
14. Côte d'Ivoire
15. Djibouti (+ME)
16. Egypt (+ME)
17. Equatorial Guinea
18. Eritrea
19. Ethiopia
20. Gabon
21. Gambia
22. Ghana
23. Guinea
24. Guinea Bissau
25. Kenya
26. Lesotho
27. Liberia
28. Libya (+ME)
29. Madagascar
30. Malawi
31. Mali
32. Mauritania
33. Mauritius
34. Morocco
35. Mozambique
36. Namibia
37. Niger
38. Nigeria
39. Rwanda
40. Sao Tome and Principe
41. Senegal
42. Seychelles
43. Sierra Leone
44. Somalia (+ME)
45. South Africa
46. South Sudan
47. Sudan (+ME)
48. Swaziland
49. Tanzania
50. Togo
51. Tunisia
52. Uganda
53. Zambia
54. Zimbabwe

(+ME): Also member of the OIE Regional Commission for the Middle East

Appointment of permanent Delegates

8 May 2014

Pakistan

Dr Qurban Ali

Animal Husbandry Commissioner, Ministry of National Food Security and Research

15 May 2014
Portugal
Prof. Dr Álvaro Mendonça
Director General, Direção Geral de Alimentação e Veterinária, Ministério da Agricultura e do Mar

26 May 2014
Serbia
Dr Budimir Plavšić
Head, Animal Health Department, Veterinary Directorate, Ministry of Agriculture and Environmental Protection

30 May 2014
Liberia
Dr Seklau Elizabeth Wiles
Director, National Livestock Bureau, Ministry of Agriculture

30 May 2014
Malaysia
Dr Mohamad Azmie Zakaria
Director General, Department of Veterinary Services, Ministry of Agriculture and Agro-Based Industry

30 May 2014
South Sudan
Dr Jacob Maiju Korok
Acting Director General, Veterinary Services, Ministry of Agriculture, Forestry, Tourism, Animal Resources, Fisheries, Cooperatives & Rural Development

10 June 2014
Costa Rica
Dr Bernardo Jaén Hernández
Director General, Servicio Nacional de Salud Animal (SENASA), Ministerio de Agricultura y Ganadería

25 June 2014
Hungary
Dr Lajos Bognár
Deputy State Secretary, Chief Veterinary Officer, Food Chain Safety Department, Ministry of Agriculture

30 June 2014
Sri Lanka
Dr Dugganna Ralalage Tissa Gamini Ratnayake
Director General, Department of Animal Production and Health, Ministry of Livestock and Rural Community Development

New cooperation agreements

Agreement between the World Organisation for Animal Health (OIE) and the Eurasian Economic Commission (EEC)

THE EURASIAN ECONOMIC COMMISSION (EEC) AND THE WORLD ORGANISATION FOR ANIMAL HEALTH (OIE), hereinafter referred to as 'the Parties',

BASED ON the provisions of the Treaty on the Eurasian Economic Commission of 18 November 2011, Moscow, and the International agreement for the creation of the Office International des Epizooties of 25 January 1924, Paris,

NOTING the important role of the protection of animal health for livestock development and the safe trade of animals and animal products, and also for the protection of the population from diseases transmitted from animals to humans,

TAKING INTO CONSIDERATION the mutual interest in cooperation between the Parties in the sphere of veterinary science,

BASED ON the principles of mutual respect, openness and honesty,

CAME TO A MUTUAL UNDERSTANDING ON THE FOLLOWING:

1. The Parties intend to cooperate in the framework of their competence in the sphere of veterinary science in the following directions:

– Cooperation on issues, relating to the protection of animal health, prevention and control of animal diseases, including diseases that are common to humans and animals (zoonoses);

– Cooperation by contributing to the procedures used by the World Organisation for Animal Health to set and update international standards on animal health and animal welfare.

2. Cooperation under the Memorandum shall be conducted by:
– The exchange of normative and technical documentation and information of mutual interest;
– The participation of representatives of one Party in the events held by the other Party;
– Consulting on issues of mutual interest.
3. Responsible for the coordination of interaction of the Parties for the implementation of the Memorandum are:
– From the side of the Eurasian Economic Commission – the Department for Sanitary, Phytosanitary and Veterinary Measures of the Eurasian Economic Commission;
– From the side of the World Organisation for Animal Health – the Regional Representation of the OIE in Moscow.
4. The Memorandum is not an international Treaty and does not create rights and obligations governed by international law. The Memorandum also does not impose any financial obligations on the Parties.
5. The Memorandum applies from the date of its signing by the Parties.
6. Any Party may withdraw from this Memorandum through sending written notice to the other Party. The application of the Memorandum shall be terminated 3 months from the date of receipt of such notification by the other Party.
7. On mutual agreement the Memorandum may be amended by signing the relevant Protocol, which will be an integral part of this Memorandum.

Done, in duplicate, each in the Russian and English languages, both texts being equally authentic.

Paris, 10 January 2014

Victor Khristenko	*Bernard Vallat*
Chairman	Director General
of the EEC Board	of the OIE

PVS

strengthening of Veterinary Services

OIE PVS Pathway for efficient Veterinary Services

PVS Evaluation missions

State of Play – as at 5 September 2014

OIE Region	OIE Members	Requests received	Missions completed	Reports available for distribution to donors and partners
Africa	54	53	51	40
Americas	29	25	23	18
Asia and the Pacific	32	23	19	11
Europe	53	16	16	12
Middle East	12	13	11	5
Total	180	130	120	86

PVS Evaluation mission requests

- **Africa (53)**

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep., Chad, Comoros, Rep. of the Congo, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

- **Americas (25)**

Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Rep., Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

- **Asia-Pacific (23)**

Bangladesh, Bhutan, Brunei, Cambodia, Fiji, Indonesia, Iran, Dem. People's Rep. of Korea, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Caledonia, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Timor Leste, Vanuatu, Vietnam.

- **Europe (16)**

Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Israel, Kazakhstan, Kyrgyzstan, Romania, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

- **Middle East (13)**

Afghanistan, Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian N.A. (not an OIE Member), Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen.

In red: completed missions

PVS

Legislation missions

State of Play – as at 5 September 2014

OIE Region	OIE Members	Requests received	Missions completed
Africa	54	37	21
Americas	29	7	6
Asia and the Pacific	32	5	5
Europe	53	5	2
Middle East	12	4	4
Total	180	58	38

Legislation mission requests

- **Africa (37)**

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African (Rep.), Comoros, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sudan, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

- **Americas (7)**

Barbados, Bolivia, Dominican Rep., Guatemala, Haiti, Honduras, Paraguay.

- **Asia/Pacific (5)**

Bhutan, Cambodia, Laos, Mongolia, Vietnam.

- **Europe (5)**

Armenia, Georgia, Israel, Kazakhstan, Kyrgyzstan.

- **Middle East (4)**

Afghanistan, Kuwait, Lebanon, United Arab Emirates.

In red: completed missions

PVS Gap Analysis missions

State of Play – as at 5 September 2014

OIE Region	OIE Members	Requests received	Missions completed	Reports available for distribution to donors and partners
Africa	54	46	41	23
Americas	29	15	11	10
Asia and the Pacific	32	18	13	7
Europe	53	8	7	2
Middle East	12	8	4	0
Total	180	95	76	42

PVS Gap Analysis mission requests

- **Africa (46)**

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African (Rep.), Chad, Comoros, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Libya, Madagascar, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

- **Americas (15)**

Barbados, Belize, Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname.

- **Asia-Pacific (18)**

Bangladesh, Bhutan, Brunei, Cambodia, Fiji, Indonesia, Iran, Dem. People's Rep. of Korea, Laos, Mongolia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Timor Leste, Vanuatu, Vietnam.

- **Europe (8)**

Armenia, Azerbaijan, Bosnia and Herzegovina, Israel,Kazakhstan, Kyrgyzstan, Tajikistan, Turkey.

- **Middle East (8)**

Afghanistan, Kuwait, Lebanon, Oman, Palestinian N.A. (not an OIE Member), Syria, United Arab Emirates, Yemen.

In red: completed missions

A practical approach to the implementation of recommendations from an OIE PVS Evaluation in Afghanistan

T.L. Dennison

26 Mackay Place, Cooloongup, WA 6168 (Australia)

The findings and conclusions in this report are those of the authors only, and do not necessarily reflect the views of their institutions or those of the OIE.

Background

The national Veterinary Services in Afghanistan were established in 1933. However, between 1979 and 2001, the various conflicts which occurred in the country destroyed its physical infrastructure, such as regional veterinary laboratories, as well as its institutional systems, processes, knowledge and memory. With the arrival of aid money in 2001 came a keen interest in supporting the development of the livestock sector, which in 2003 was estimated to include 3.7 million cattle, 8.8 million sheep, 7.3 million goats, 1.6 million donkeys, 180,000 camels, 140,000 horses and 12.2 million poultry [1]. Up to 80% of the population of approximately 30 million Afghans live in rural areas and depend, either directly or indirectly, on livestock for their livelihoods.

From 2001 onwards, a range of donors and organisations have designed and implemented projects to develop both the public and private aspects of the Afghan Veterinary Services. Several major projects have been instrumental in this approach, such as the Animal Health Development Programme (AHDP) (2006–2014), funded by the European Union (EU), which is focused on strengthening the country's public sector Veterinary Services. This programme provides technical assistance to the Directorate of Animal Health (DAH), formerly the Veterinary Service in the Ministry of Agriculture, Irrigation and Livestock (MAIL). Two other projects, aimed at veterinary services delivery in the private sector, were funded by the United States Agency for International Development (USAID): the Rebuilding Agricultural Markets Program (RAMP, 2004–2006) and the Accelerating Sustainable Agriculture Program (ASAP, 2007–2011). These consecutive projects focused on the development of the delivery of prophylactic and therapeutic animal health services to farmers and herders through the creation of private, district-based Veterinary Field Units (VFUs). It has recently been confirmed that there are 799 active VFUs, approximately 10% of which are staffed by graduate veterinarians (with a university degree); 9% by veterinary assistants (two years of training at a government training institution); and 81% by paraveterinarians (six months' training by an NGO) [2].

While there has been considerable donor funding of animal health projects since 2001, there has been comparatively little overall coordination of these projects and Afghanistan finds itself with a public–private framework for veterinary services provision that uses an implementation model largely devised by donors. However, through continuing engagement with the OIE (via regional workshops, capacity-building of Focal Points, and participation in the OIE PVS Pathway, including a Laboratory Twinning Programme), along with the ongoing in-country support of AHDP, the skills and knowledge within the public sector are slowly improving, as is the performance of the Veterinary Services. There is also measurable progress in the rational integration of the public and private sectors, largely through the initiation of sanitary mandates that use private-sector VFU staff to carry out disease surveillance and control activities.

Overview of the Veterinary Services

By 2001, as a result of prolonged conflict, the Veterinary Authority was severely degraded in terms of both personnel and infrastructure. However, starting in 2006, the service slowly began to rebuild, with technical support provided by the EU-funded AHDP. One key part of the first phase of this project (2006–2010) concentrated on the development and refinement of the institutional structure at the DAH, within the Ministry, ensuring that the Directorate was able to carry out its core functions to protect the health and welfare of animals in Afghanistan. This development included technical sections in the DAH responsible for:

– the provision of laboratory-testing services
– the prevention and control of diseases (incorporating epidemiology, sanitary mandate contracting of private-service providers to carry out specific public functions, veterinary public health and the monitoring of private veterinary services delivery)
– the production of a limited range of animal vaccines.

Engagement with the OIE and PVS Evaluation

After the OIE initiated the PVS Pathway in 2006, a number of technical advisors working in Afghanistan encouraged the OIE Delegate of Afghanistan to take advantage of the support being offered to OIE Member Countries by requesting a PVS Evaluation. In 2010, a PVS Evaluation was carried out, followed immediately by a Veterinary Legislation Support Programme (VLSP) mission. The results of the VLSP mission were used almost immediately by specialists at the AHDP and their government counterparts in the DAH to direct the development of new veterinary legislation in three key areas:

– animal health and veterinary public health
– veterinary professionals and para-professionals
– veterinary medicinal products.

While the report of the Veterinary Legislation Identification Mission was immediately put to use, the 154-page PVS Evaluation report, containing 107 key recommendations, remained 'on the shelf' and no coordinated plan was made to advance the findings of the PVS Evaluation Mission. This was due to a number of factors, including changes in leadership at the DAH, a change of OIE Delegate and a belief by staff that a PVS Gap Analysis was needed to implement any recommendations made in the PVS Evaluation report.

By mid-2013, the AHDP team of technical advisors had been working with staff at the DAH for over six years. Over this period, capacity at the Directorate had been built and genuine trust and participation cultivated between the international advisors (AHDP) and national staff (government). Significant progress had been made in all areas of the Directorate, particularly with regard to the development of new legislation and institutional reform. However, it was recognised that this did not cover all the critical competencies identified by the OIE for the effective performance of Veterinary Services. This was made more obvious by the relatively recent focus on the Veterinary Services' obligations under the SPS Agreement, as a number of donors and projects have directed their efforts to aiding Afghanistan to prepare for possible accession to the WTO.

Use of the PVS Evaluation

In November 2013, the PVS Evaluation report was 'taken down from the shelf' and revisited by the Project Manager of AHDP and the OIE Delegate. They agreed that the recommendations made in the report could act as a useful framework for future work at the DAH and to promote the sustainability of actions funded by the EU through the AHDP. To increase the DAH staff's understanding of the PVS Pathway methodology and findings, the following steps were taken:

1. Translation of key parts of the report

As the 154-page PVS Evaluation report was in English, and English is not a first language in Afghanistan, it was decided that translating the report into Dari was a crucial step towards making the report accessible to DAH staff. To use its resources effectively, the DAH first translated the levels of advancement for each critical competency used during the PVS evaluation, plus the 107 key recommendations. As part of the process to link these recommendations with the functions of the Afghan Veterinary Services, each recommendation was assigned to a category which aligned with a certain technical field (e.g. laboratory, epidemiology, veterinary public health) or administrative area (e.g. policies and strategies, financial management, human resources, communication and coordination) which would be familiar to DAH staff. For ease of reference, each recommendation was also given a number. An example of the translation can be seen below.

Area	Recommendation from OIE PVS evaluation	سفارشات سازمان صحت حیوانی به اساس ارزیابی خدمات وترنری	#
EPIDEMIOLOGY – training آموزش اپیدمولوژی	Training in epidemiology principles for central and provincial staff (national and international level)	آموزش پرسونل مرکزی و ولایتی (به سطح ملی و بین المللی) در بخش قواعد / پرنسیپ های اپیدمولوژی	75
	Staff training on risk analysis which is consistent with OIE standards	آموزش پرسونل مربوطه در مورد تحلیل خطرات مطابق به استندردهای سازمان جهانی صحت حیوانی OIE	76

	Levels of advancement	سطوح پیشرفت
II-1. Veterinary laboratory diagnosis II.1 تشخیص لابراتوار وترنری *The authority and capability of the VS to identify and record pathogenic agents, including those relevant for public health that can adversely affect animals and animal products.* صلاحیت و ظرفیت خدمات وترنری بخاطر شناسایی و ثبت اجنت های پاتاجنیک منجمله موارد مرتبط به صحت عامه که تاثیر بالای صحت حیوانات و محصولات حیوانی دارد.	1. Disease diagnosis is almost always conducted by clinical means only, with laboratory diagnostic capability being generally unavailable.	1. تقریباً تمام تشخیص امراض توسط کلینیک های وترنری اجرا میگردد و ظرفیت تشخیص توسط لابراتوار وجود ندارد.
	2. For major zoonoses and diseases of national economic importance, the VS have access to and use a laboratory to obtain a correct diagnosis.	2. بسیاری از امراض زونوز و امراض تاثیر گذار بر اقتصاد کشور ، مسئولین خدمات وترنری دسترسی به لابراتوار دارند تا تشخیص صحیح صورت گیرد.
	3. For other zoonoses and diseases present in the country, the VS have access to and use a laboratory to obtain a correct diagnosis.	3. مسئولین خدمات وترنری لابراتوار تشخیص وترنری بخاطر تشخیص دیگر امراض زونوز و امراض فعلی در کشور در اختیار دارند.
	4. For diseases of zoonotic or economic importance not present in the country, but known to exist in the region and/ or that could enter the country, the VS have access to and use a laboratory to obtain a correct diagnosis.	4. مسئولین خدمات وترنری ، دسترسی به لابراتوار تشخیص وترنری بخاطر تشخیص امراض حیوانی موجود در منطقه یا امراض انتقالی از خارج به داخل کشور دارند و تشخیص درست صورت میگیرد.
	5. In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.	5. در صورت بروز امراض جدید یا مشترک در منطقه یا جهان ، مسئولین خدمات وترنری از طریق لابراتوارهای ملی و بین المللی (لابراتوار سازمان جهانی صحت حیوانی) تشخیص درست امراض را انجام میدهند.

Each critical competency and the levels of advancement for each critical competency were also translated, in addition to highlighting the level of advancement assigned during the PVS Evaluation in 2010. A sample is shown above.

2. Dissemination of translated documents

These translations were disseminated to staff in both hard and soft copies and staff were allowed time (approximately one month) to read and digest them.

3. Reflections on the progress of the recommendations

Once staff were more familiar with the methodology of and results from the PVS Evaluation, a workshop was planned to:

– provide an overview of the findings from the OIE PVS Evaluation (2010)

– identify progress to date

– develop an action plan of progress expected during 2014 (including any budget/external support which would be required).

The Heads of each technical section at the DAH were provided with a PowerPoint™ template which contained all the recommendations relevant to their 'sector'. Each Section Head was then requested to complete information on any progress made to date on the implementation of that recommendation. As the PVS Evaluation had never been formally disseminated in this manner, there were a number of recommendations which had not been implemented or planned for. However, this was not seen as a limitation, but more of a reflection of what was seen as being important and practicable in each sector.

4. Progress and planning workshop

A workshop was held over 1.5 days and attended by nine DAH staff (including the OIE Delegate and a number of

Focal Points), four national advisors and six international advisors. The first part of the workshop included information about the OIE, the PVS Pathway and the PVS Evaluation mission, with time allowed for discussion, mostly in Dari and Pashtu (the national languages of Afghanistan), relating to the participants' interactions and opinions on Afghanistan's engagement with the OIE. Each Head of Section then presented progress to date on the report's recommendations in their area. Recommendations which had not progressed were recorded. Following this, the remaining recommendations (the majority of which related to administrative and management issues) were discussed, and divided into those which specific staff members in DAH would be able to take forward and those which would require support at a higher level within MAIL.

The workshop took the form of a platform for information-sharing and dissemination and was extremely participatory. Once staff had had a chance to become familiar with all the PVS Evaluation recommendations and the progress made to date, they were then asked to collaboratively plan actions to implement those recommendations which they would focus on during the remainder of 2014, ensuring that they would have sufficient time and resources (staff, budget, management support, etc.) to carry them out. To maintain a certain level of flexibility in planning and to generate discussion, each recommendation had been printed out before the workshop on a colour-coded piece of paper (e.g. light green for epidemiology, blue for laboratory, white for non-technical, etc.) and placed on the wall (see photo). Recommendations could then be sorted out into those which would be addressed in 2014, those which would be delayed for the future and those which would be shared with other stakeholders, e.g. change management project teams working at MAIL, to solicit their support. One added benefit of this approach was that, following the workshop, many Section Heads decided to take 'their recommendations back to their offices' and place them on their own walls, as a constant reminder of the areas on which they should be focusing.

5. Implementation of action plans

After the workshop, staff started working on their action plans.

6. Institutionalisation of recommendations for sustainability

As far as possible, the PVS recommendations were 'mapped' against activities already included in the AHDP project log framework. It was found that there was a large degree of crossover/duplication. One such overlapping PVS recommendation/AHDP activity, for example, was the establishment of an effective epidemiosurveillance scheme to identify, control and prevent diseases from which Afghanistan is at risk. Another was the development of comprehensive veterinary legislation for effective regulation of the veterinary domain. This mapping exercise meant that, instead of the DAH staff working on action points for PVS and action points for AHDP, plus their own government-mandated work (and seeing each set of action points as separate activities for different projects/stakeholders), they now work in conjunction with AHDP/PVS activities, which map closely to DAH core functions. It is expected that this integrated document will be used as the basis of an overall DAH strategy for the Afghan Veterinary Services. Other PVS Evaluation recommendations which did not have a comparable AHDP activity – for example, ensuring that MAIL has a 'conflict of interest' policy, and the development of systems for pharmacovigilance – were noted for inclusion in future DAH strategic planning for the Veterinary Services.

Added benefits of PVS recommendations and related collaboration

Although some of the recommendations identified in the PVS Evaluation were already being implemented, with support from the AHDP and other projects (e.g. an OIE Laboratory Twinning Project and the development

of legislation to include provisions for animal welfare), these activities were often being implemented by a single section of the DAH, e.g. Laboratory, Epidemiology, Veterinary Public Health. However, many of the recommendations made in the PVS Evaluation require collaboration among a number of technical areas, such as those relating to disease prevention and control, which in Afghanistan require input from the Laboratory, Epidemiology, Sanitary Mandate, Veterinary Public Health, and Monitoring and Evaluation of Veterinary Services sections of the DAH. The workshop highlighted a number of important issues which have yet to be addressed and encouraged staff to identify how they could work together to implement these findings. Examples of PVS Evaluation recommendations (in italics, below), for which collaborative work began after the workshop, include the following:

– *Risk analysis is carried out on a routine basis* – training on risk analysis is planned for staff from Veterinary Public Health and Epidemiology;

– *Systematically integrate slaughterhouse data into the animal disease-reporting system* – discussions on the development of an appropriate database and/or integration into an existing system, as well as methods for data collection, analysis and reporting, have begun between Veterinary Public Health and Epidemiology;

– *Veterinary Field Unit daily case-activity logs have columns for 'samples collected' and 'laboratory results*' – discussions on the best way to do this have begun between staff from the Laboratory and Sanitary Mandate departments and there are also plans to involve the NGOs that support VFUs, as many of these units are linked to an NGO.

© Wim Tondeur

Future activities, recommendations and lessons learned

The implementation of the PVS Evaluation recommendations is ongoing and is expected to continue for many years to come. It is hoped, through continued communication with the OIE, that a review can be carried out of the progress made for each critical competency and additional recommendations can be made, either through a PVS Gap Analysis or a future PVS Evaluation Follow-Up Mission. The key lessons learned in Afghanistan, which may be useful to the OIE and others involved in the OIE PVS Pathway, especially those working in some of the less-developed countries, are as follows:

Lesson learned	Recommendation
Long reports get buried, especially if English is a second or third language	Translating the PVS tables of the level of advancement into the local language can act as a permanent record for future reference, e.g. for PVS Gap Analysis, follow-up missions, etc.
The translation, dissemination and explanation of results take up a significant amount of time and resources (approximately four months)	Ensure this is budgeted for in terms of both time and costs
It took the AHDP six years to develop really good relations, understanding and trust with the DAH, which helped in the dissemination and 'in country' ownership of the PVS Evaluation recommendations	Identify advocates and/or champions with a permanent in-country presence who may be able to help disseminate the results and support the Veterinary Services to use action points and permanently integrate these recommendations into future plans

Conclusion

The participatory approach taken during the prioritisation and planning for the implementation of the PVS Evaluation recommendations with the DAH staff, including the Director of the DAH (the OIE Delegate), has ensured that proposed actions are realistic and achievable. This has also ensured coordination with the overall MAIL work plan and any activities which DAH staff are required to carry out for other projects or donors. Owing to the 'project-based' nature of work in Afghanistan, past experience has shown that, unless activities are firmly integrated into staff work plans and priorities, assertions can often be made that work will be carried out, when in fact it is not carried out due to competing priorities, lack of staff, or other reasons. The time taken (approximately four months) to effectively disseminate the methodology and findings of the PVS Evaluation has resulted in an informed DAH staff that can truly absorb and understand what is required of them. They can appreciate the collaborative efforts required to implement effective Veterinary Services and can identify what they can realistically achieve before the end of 2014. It is planned to have future workshops to continue to review progress and identify additional support, thus promoting accountability of actions.

References

1. Food and Agriculture Organization of the United Nations (FAO) (2006). – Afghanistan National Livestock Census, 2002–2003. FAO, Rome. Available at: ftp://ftp.fao.org/docrep/fao/010/i0034e/i0034e01.pdf (accessed on 10 June 2014).
2. Department of Monitoring Evaluation and Coordination of Veterinary Services, Directorate of Animal Health, Ministry of Agriculture, Irrigation and Livestock of Afghanistan (2014). – National survey of Veterinary Field Units.

Good governance of human and animal health services:

Ongoing collaboration between the OIE and WHO/One Health activities

We know that more than 60% of animal diseases are transmissible to humans and that 75% of recent emerging diseases are zoonotic. Thus, both human and animal health systems need to be strong, but they also need to work in close partnership to jointly address such diseases, in terms of early detection and an accurate assessment of and effective response to events of potential international health concern. Strengthening their surveillance, reporting and response capacities are common requirements for both human and animal health services, and form part of the international standards developed by WHO in its International Health Regulations (IHR, 2005), the OIE in its *Terrestrial and Aquatic Animal Health Codes* and *Manuals*, and the international food standards developed by the Codex Alimentarius Commission.

During the last decade, driven by the emergence of major zoonotic infectious diseases, the WHO, OIE, FAO and World Bank have begun collaborative discussions and undertaken joint initiatives, which continue to develop. In 2010, the Tripartite (WHO, OIE, FAO) signed a joint concept note, describing areas of common interest, so that they could more effectively 'share responsibilities and coordinate global activities to address health risks at the animal–human–ecosystems interfaces'. This increased collaboration has contributed to the development of references for good governance across both the animal and human health sectors.

Appropriate materials and guidance are needed for individual countries so that they can objectively evaluate their situation, address deficiencies and build capacity, in order to improve their operational capability and to better comply with international requirements.

Specific tools have been developed in the human and animal health sectors. WHO has established a list of minimum core public health capacities to guide the effective implementation of the IHR. In addition, it has provided countries with a Monitoring Framework, including a checklist and indicators, so that they can assess their degree of compliance with the expected levels of capability described in the IHR.

The OIE has developed the Performance of Veterinary Services (PVS) Pathway, which encompasses the OIE PVS Evaluation (qualitative assessment, using the PVS Tool) and the PVS Gap Analysis (using the PVS Costing Tool for qualitative and quantitative assessment). These tools are used by countries to objectively assess and address the main weaknesses of their Veterinary Services and to determine the scope for improving their compliance with OIE international standards and the costs of doing so. In order to establish the country's current level of performance, 47 PVS Critical Competencies have been developed, which come under the four Fundamental Components of the PVS tool. For each Critical Competency, qualitative levels of advancement are described. A higher level of advancement implies that the country's national Veterinary Services have already complied with the preceding levels (i.e. level 3 assumes compliance with level-2 criteria; level 5 assumes compliance with level-4 and all preceding criteria, etc.). The Critical Competencies are reviewed on a regular basis and new Competencies can be added to reflect changes in the OIE *Terrestrial and Aquatic Animal Health Codes*.

The joint use of the outputs of the WHO IHR Monitoring Framework and of the OIE PVS Pathway enables Member Countries to obtain a detailed overview of their existing national human and animal health services, and thus to identify gaps in the coordination of human and animal health which require bridging. Making use of the Monitoring Framework and the Pathway also generates wide-ranging benefits for the development of national strategies that target capacity-building in both the human and animal health sectors.

This vision promotes the joint and facilitated use of existing frameworks, rather than the development of new processes and procedures.

Thus, WHO and the OIE have developed an operational approach which promotes the simultaneous and facilitated use of the OIE and WHO frameworks. This approach, which takes place under the framework of the **National Human and Animal Health Systems Assessment Tools and Bridges Project**, was established in collaboration with the World Bank and with funds provided by the European Community, represented by the Commission of the European Communities under the European Commission Avian and Human Influenza Trust Fund. (The World Bank administers these grants through the Avian and Human Influenza Facility.)

A Guide (see pp. 101–102) has been developed to help Member Countries better understand the importance of good governance at the human–animal interface and to explain the tools available to help them examine their capacities, including those related to cross-sectoral collaboration. The Guide is structured in two parts. Part One introduces the principles of good governance and the use of international standards as references; the second part introduces the WHO IHR Monitoring Framework and the OIE PVS Pathway. Part Two also highlights synergies and complementarities between the two frameworks and includes the results of pilot national workshops conducted in various countries. These pilot national workshops provided an opportunity for national human and animal health services to review the outputs of the PVS Pathway and IHR Monitoring Framework and to use the results of this analysis to improve the performances of both sectors, as well as to identify future steps in the development of a joint national plan of action to strengthen collaboration and coordination between the two services. Specific sections in the Guide include an in-depth analysis of the tools used to assess and monitor national capacities and the costing tools available to identify the financial resources required to strengthen national capacities, as well as the complementary tools developed by the OIE and WHO to help Member Countries to analyse their national laboratory situation and identify targeted and strategic improvements.

During the final meeting of this process, held at WHO Headquarters in Geneva on 17 April 2014, all interested parties reviewed the progress of the work undertaken so far. At this meeting, it was agreed that WHO and the OIE should implement more national and regional workshops to enhance dialogue and engagement between the human and animal health sectors. Such workshops will provide both sectors with a forum to share their assessment results and are a necessary prerequisite for motivating future intersectoral cooperation and forging permanent national collaborative 'One Health' roadmaps.

Assessment tools and bridges completed, paving the way to reduction of global health risks

World Bank, 17 June 2014

Thanks to contributions from the European Commission and nine other donors, the Avian and Human Influenza Facility (AHIF) financed a transformational project that is key to development and health security. The World Health Organization (WHO) and the World Organisation for Animal Health (OIE) worked closely together, with support from AHIF, to develop and refine their tools for assessing human and veterinary public health systems and to develop an accompanying joint OIE-WHO manual. This project, the last financed by AHIF, was successfully completed on schedule this year. The international community now has critically-needed assessment tools that work across the human and animal health sectors.

Only robust public health systems in all developing countries can reduce the global risks of antimicrobial resistance, pandemic influenza, Middle East respiratory syndrome (MERS), and other conditions. The achievements of this project are very relevant and timely because these risks are high and rising, and the impacts could be catastrophic. AHIF thus not only effectively responded to H5N1 avian flu and H1N1 pandemic flu, but it deserves credit for financing the basis to strengthen public health systems in the medium term, which will reduce risks in the future. In our interconnected world, where a dangerous novel pathogen can travel from a remote village in a poor country to cities on all continents in 36 hours, robust public health systems in all countries are a priority for the global community.

The project took advantage of the good experience with OIE's Performance of Veterinary Services (PVS) assessment program and the lessons that WHO has learned in overseeing implementation of the International Health Regulations (IHR). Close collaboration between the two sectors is necessary because many infectious diseases of humans originate in animals, and their spread does not stop at borders. Indeed, 75% of infectious diseases in humans are now of animal origin (zoonotic). Every year, poor people in developing countries suffer the impact of 2.3 billion zoonotic infections. Moreover, weak public health systems in some countries increase the risks of globalized contagion and antimicrobial resistance; when a country does not check the spread of pathogens in time, all countries are at risk. The tools produced by this project will help countries determine where the gaps are in the performance of their systems relative to international standards, and assess the costs of investments and other measures that are required for compliance. All countries should be able to detect diseases early, assess and report them correctly, and respond to them effectively. Thanks to this project, every developing country will be able to set out its investment program to close the worst – most dangerous – gaps. The World Bank and other partners can support this investment program, confident that the assessments are comprehensive, thorough, and technically robust.

On behalf of the World Bank, Juergen Voegele (Director, Agriculture) and Timothy Grant Evans (Director, Health) welcomed the completion of the joint OIE-WHO project. They emphasized use of One Health approaches, promptly sharing information and jointly analyzing risks and response effectiveness. The tools for assessments of the veterinary and human public health systems and the bridges between them are clearly needed to guide improvement in capacities of public health systems to prevent and control diseases, including those that can become pandemics. The tools will enable smooth implementation of One Health approaches, consistent standards across countries, and badly-needed investments in essential public health capacity.

WHO and OIE presented the tools at a joint meeting in Geneva on 17 April 2014. In this short video, Juergen Voegele and Tim Evans highlight the importance of this project and its results for public health in the 21st Century: http://streaming2.worldbank.org:8080/vvflash/hdn1

Source:
www.worldbank.org/en/topic/pandemics/brief/assessment-tools-bridges-completed-paving-way-to-reduction-of-global-health-risks

OIE Regional Workshops
for focal points and Information Seminars for new Delegates

Americas

Regional Workshop for OIE National Focal Points for Wildlife
Guelph, Canada, 25–27 March 2014

The third edition of the Workshop for National Focal Points for Wildlife in the Americas was held from 25 to 27 March 2014, at Ontario Veterinary College in the city of Guelph, Canada.

The meeting was attended by the National Focal Points for Wildlife from 21 OIE Member Countries in the region, with the participation of the Delegate of Canada to the OIE, Dr Martine Dubuc, and the Dean of Ontario Veterinary College, Dr Elizabeth Stone, who welcomed the participants.

OIE Headquarters was represented by Dr Elisabeth Erlacher-Vindel, Deputy Head of the Scientific and Technical Department, and by Drs Marija Popovic and Daria Di Sabatino, from the Animal Health Information Department. Dr Montserrat Arroyo Kuribreña and Dr Martín Minassian attended on behalf of the OIE Sub-Regional Representation for Central America and the OIE Regional Representation for the Americas, respectively.

Participants also included Dr William B. Karesh, Chair of the OIE Working Group on Wildlife Diseases (WGWD), and Drs John Fischer and Frederick A. Leighton, both members of the WGWD. Dr María Fernanda Mejía, from the University of Saskatchewan, and Dr Rodolfo Gutiérrez Nallar, from the Wildlife Conservation Society of Bolivia, acted as facilitators.

Topics presented at the workshop included the OIE's activities in the field of wildlife diseases, the content of the OIE Terrestrial and Aquatic *Animal Health Codes* and the OIE *Manuals of Diagnostic Tests and Vaccines* for Terrestrial Animals and Aquatic Animals, and the procedure for adopting and amending their chapters.

The technical content focused on health risk assessment of wildlife, including qualitative and quantitative risk analysis and multi-criteria analysis, and took a practical approach, based on exercises in small groups using case simulations.

Group photo in front of Ontario Veterinary College

From left to right: Dr Andrea Ellis, Canadian Food Inspection Agency (CFIA); Dr Elisabeth Erlacher-Vindel, OIE; Dr Shane Renwick, CFIA; Dr Martin Santiago Minassian, OIE; Dr Martine Dubuc, CFIA; Dr Montserrat Arroyo Kuribreña, OIE; Dr Elizabeth Stone, Ontario Veterinary College; Dr Marija Popovic, OIE; and Dr Daria Di Sabatino, OIE

Another important activity of this workshop was the use of practical exercises, designed to help National Focal Points become familiar with the process of reporting wildlife diseases to the OIE, one of their specific tasks outlined in their Terms of Reference. Participants also took part in exercises on the

notification of diseases, using the *WAHIS-Wild* online system, whose new interface was launched in December 2013.

Further topics of discussion included validating diagnostic tests for use in wildlife and the current international wildlife trade situation in the Americas.

Participants also took part in discussions on the adoption and modification of the OIE standards, on their role as Focal Points, and on the practical activities they carry out.

This workshop, along with other activities in the wildlife arena, will strengthen the networks for exchanging information between Member Countries and the OIE, at both the national and regional level. In this regard, the OIE is a forerunner in acknowledging the importance of linking our knowledge of the health status of animals in the wild to the health of domestic animals and public health.

Practical exercises for breakout groups

Europe

Regional Workshop for OIE National Focal Points for Wildlife

St. Petersburg, Russia, 28–30 April 2014

A Regional Workshop for OIE National Focal Points on Wildlife was held in St. Petersburg from 28 to 30 April 2014. The meeting was organised by the OIE Regional Representation in Moscow in collaboration with OIE Headquarters in Paris.

The OIE Focal Points on Wildlife from all 53 Member Countries of the OIE Regional Commission for Europe were invited to attend this event. In all, 58 participants came, including Focal Points – or their representatives – from 42 countries; four speakers from Canada, France, Sweden and the United Kingdom; and OIE staff, as well as representatives from the Ministry of Agriculture of the Russian Federation, the Federal Service for Veterinary and Phytosanitary Surveillance of Russia, the Eurasian Economic Commission, the Russian Veterinary Association and the Russian Federal Centre for Animal Health.

© Ali Aliev, VS Russia

The workshop was conducted in English with simultaneous translation into Russian, aimed at enhancing the contribution of Russian-speaking countries.

The opening ceremony was chaired by Prof. Kazimieras Lukauskas, OIE Regional Representative in Moscow. The Director of the Veterinary Department of the Ministry of Agriculture of the Russian Federation, Dr Svetlana Dresviannikova, gave a warm welcome on behalf of the host country, underlining the importance of wildlife, especially taking into account the spread of African swine fever (ASF) through Europe.

The workshop included a three-day programme, made up of both presentations and practical exercises.

During the first part of the meeting, staff from the OIE Regional Representation in Moscow and from the OIE Scientific and Technical Department provided general information about the activities of the OIE, the Terrestrial and Aquatic *Codes* and *Manuals*, and the

role of the OIE Specialist Commissions, Working Groups and Focal Points.

A training programme on wildlife health risk assessment was presented by the Canadian Cooperative Wildlife Health Centre. Participants were divided into small groups to work through various exercises, using the *Wildlife Health Risk Assessment in Support of Decisions and Policies* workbook as a guide.

Staff from the OIE Animal Health Information Department also presented information on the World Animal Health Information System (WAHIS) and the OIE monitoring system for diseases in wild animals (*WAHIS-Wild*). Computer-based practical exercises offered a chance to gain familiarity with the *WAHIS-Wild* online notification system.

During the second day of the workshop, two reports were presented by representatives of the Federal Centre for Animal Health (ARRIAH) in Vladimir, Russia. Dr Mikhail Shulpin, Head of the ARRIAH Laboratory for Rabies, and Dr Alexey Igolkin, Head of the ARRIAH Laboratory for African Swine Fever, updated participants on the current situation of these disease in Russia. Both subjects prompted active discussion and debate among the contributors.

© Ali Aliev, VS Russia

At the end of the formalities, many participants expressed their appreciation to OIE Headquarters and the OIE Regional Representation in Moscow for a successful and stimulating workshop.

Regional Seminar for OIE National Focal Points on Communication

Raising the profile of communication in the daily work of Veterinary Services

Tallinn, Estonia, 1–3 July 2014

An 'advanced training' seminar was organised by the OIE in Tallinn, Estonia, for OIE National Focal Points on Communication, from 1 to 3 July 2014. This was a follow-up of the first OIE Seminar for National Focal Points (NFPs) on Communication, held in Prague, the Czech Republic, in September 2011 (see *Bulletin* no. 2011-4, p. 49), which was an important milestone in OIE history. (National Focal Points on Communication were among the most recent Focal Points to be appointed, in 2010.) All 53 NFPs of Europe were invited to the seminar and 40 attended.

The agenda was designed to train NFPs on how to manage national communication systems and operational communication campaigns, in particular:

– modern forms and channels of communication, and their implications for Veterinary Services
– definitions and specific requirements of target audiences, such as staff, partners, stakeholders, media and the general public
– organising and providing tools for internal and inter-sectoral Veterinary Services communication, and
– planning operational communication campaigns, using the examples of an awareness campaign and a crisis campaign, examined through country presentations and working group sessions.

This seminar was a chance to present the new OIE communication team to the European Focal Points, while two speakers from the World Health Organization (WHO) were also invited, to present the new media landscape and to take part in a session on why 'a good communication is an organised and knowledgeable communication'. This kind of OIE/WHO partnership on risk communication issues has been a rewarding experience and will probably be continued in the future.

Terms of Reference of OIE Focal Points on Communication

(summary)

– Acts as a Focal Point for the OIE on matters relevant to communication
– Prepares comments for the Delegate, including on new or revised standards, guidelines or recommendations relating to communication
– Establishes a network of relevant communication experts within the country/region or liaises with existing networks.

The topic of managing stray dog populations (and rabies-related aspects) was deliberately chosen to prepare these NFPs to take an active role – together with the NPFs for Animal Welfare – in the preparation and implementation of a regional awareness campaign on stray dogs, to be organised in 2014–2015 under the framework of the OIE Regional Platform for Animal Welfare in Europe.

The seminar was rated satisfactory and useful by all participants, and the OIE strongly supports using similar training sessions in other parts of the world (so far, they have taken place only in Europe and Asia). They are part of the OIE global capacity-building programme, aimed at reinforcing Veterinary Services' capacities in a number of areas covered by the OIE *Terrestrial and Aquatic Animal Health Codes* (Strategic Objective V of the OIE Fifth Strategic Plan 2011–2015). As a matter of fact, the OIE strongly advocates that communication should be recognised as an intrinsic activity of Veterinary Services. Accordingly, the OIE recommends that communication be one of the eleven specific competences needed by graduating veterinarians if they are to be adequately prepared to participate in National Veterinary Services (in both the public and private sector) at entry level. (See the OIE recommendations on the competencies of graduating veterinarians –'Day 1 graduates' – to ensure quality in National Veterinary Services.)

Focal points are established under the authority of the OIE Delegate and assist him or her with the OIE standard-setting process in their particular area of competency, by organising in-country consultations, preparing comments on the draft chapters of the OIE *Codes* and *Manuals*, and ensuring their proper implementation, once adopted. NFPs for Communication should specifically ensure that the provisions of Chapter 3.3. of the *Terrestrial Code* and Chapter 3.2. of the *Aquatic Code* are applied. At the same time, they should also support the discussion and implementation of all other chapters of the *Codes*, as communication is a cross-cutting issue.

Group photo

The OIE would like to thank the Estonian Government – and, in particular, Dr Ago Pärtel and his team – for their logistical and financial support of this event as the hosting country, as well as the European Commission, who contributed to this seminar through the Contribution Agreement EU–OIE 2014–2015.

All documentation related to the Tallinn seminar is available at: http://web.oie.int/RR-Europe/eng/events/en_events.htm.

A **'Who is Who' book**, with the names, photos and contact information of the NFPs for Communication, has also been developed to facilitate networking activities at the regional level and encourage the sharing of experiences and best practices.

The OIE would like to encourage all Member Countries which have not yet nominated their National Focal Points on Communication (or in other fields) to do so as soon as possible, or to notify the OIE of any change in nomination. The OIE keeps an updated database of all NPFs (in all eight fields) to ensure that Focal Points receive reports by OIE specialist commissions and ad hoc groups, as well as other relevant documentation.

Panel of speakers. From left to right: Dr M. Eloit, OIE; Ms M. Kuznicki, LEEM; Dr C. Bertrand Ferrandis, OIE; Dr Olivier Stucke, WHO

meetings and visits

Names and positions of OIE permanent staff who participated in meetings or visits from April to June 2014

OIE Headquarters

General Directorate

Bernard Vallat	Director General
Alex Thiermann	Adviser of the Director General and President of the OIE Terrestrial Animal Health Standards Commission
Catherine Bertrand-Ferrandis	Head of the Communication Unit
Marina Domingo Monsonis	Chargée de mission
Yael Farhi	Chargée de mission
Monique Eloit	Deputy Director General (Administration, Management, Human Resources and Regional Activities)
Alain Dehove	Coordinator of the World Animal Health and Welfare Fund
Jean-Paul Pradère	Chargé de mission – Animal Health Economics
Julie Macé	Project Officer (World Fund)
Emily Tagliaro	Project Officer (World Fund)
Victoria Wong	Project Officer (World Fund)
Alix Weng	Head of the Budget and Financial Unit
Jean-Pierre Croiziers	Head of the Human Resources Unit
Gilles Seigneurin	Head of the Accounts Unit
Romain Lemesnager	Accountant
Brian Evans	Deputy Director General (Animal Health, Veterinary Public Health and International Standards)

Administration, Logistics and Publications Department

Daniel Chaisemartin	Head of Department
Bertrand Flahault	1st Deputy Head of Department and Head of the Systems Management and Events Unit
Annie Souyri	2nd Deputy Head of Department and Head of the Publications Unit
Tamara Benicasa	Marketing and Sales Manager

Animal Health Information Department

Paula Cáceres Soto	Acting Head of Department **(until 31 May 2014)** and Head of Department **(from 1 June 2014)**
Marija Popovic	Chargée de mission
Natalja Lambergeon	Animal Health Information Technician
Hu Suk Lee	Veterinary Epidemiologist
Lina Awada	Veterinary Epidemiologist
Daria Di Sabatino	Chargée de mission
Aziza Yassin Mustafa	Chargée de mission

International Trade Department

Derek Belton	Head of Department
Gillian Mylrea	Deputy Head of Department
Rastislav Kolesar	Animal Welfare Coordinator
Tomasz Grudnik	Chargé de mission
Maria Elaine Joy Villareal	Chargée de mission
Masatsugu Okita	Chargé de mission
Leopoldo Humberto Stuardo Escobar	Chargé de mission

Scientific and Technical Department

Brian Evans	Head of Department
Elisabeth Erlacher-Vindel	Deputy Head of Department
Joseph Domenech	Adviser
Susanne Münstermann	Project Officer
Kiok Hong	Chargé de mission
François Diaz	Chargé de mission
Keith Hamilton	Officer in charge of the Reduction of Biological Threats
Laure Weber-Vintzel	Officer in charge of the Recognition of Countries' Animal Disease Status
Jennifer Lasley	Project Coordinator
Gounalan Pavade	OFFLU Technical Assistant
Dietrich Rassow	Veterinarian Adviser
Min Kyung Park	Chargée de mission
Dawid Visser	Biosecurity Officer
Barbara Freischem	Chargée de mission
Simona Forcella	Chargée de mission
Gregorio José Torres Peñalver	Chargé de mission

Regional Activities Department

François Caya	Head of Department
Mara Elma González Ortiz	Deputy Head of Department
Maud Carron	Chargée de mission
Marie Edan	Chargée de mission
Valentyna Sharandak	Chargée de mission
David Sherman	Chargé de mission
Martial Petitclerc	Chargé de mission
Ewelina Marzec	Secretary
Margherita Recchia	Secretary

OIE Regional and Sub-Regional Representations

Africa

Yacouba Samaké	Regional Representative for Africa (Bamako, Mali)
Daniel Bourzat	Adviser to the Regional Representative for Africa (Bamako, Mali)
Abdramane Sanogo	Accountant (Bamako, Mali)
Aïssata Bagayoko	Secretary (Bamako, Mali)
Alou Sangaré	Administrative Assistant (Bamako, Mali)
Neo Mapitse	Sub-Regional Representative for Southern Africa (Gaborone, Botswana)
Mpho Mantsho	Administrative and Financial Assistant (Gaborone, Botswana)
Nomsa Thekiso	Secretary (Gaborone, Botswana)
Rachid Bouguedour	Sub-Regional Representative for North Africa (Tunis, Tunisia)
Vincent Brioudes	Programme Officer (Tunis, Tunisia)
Alessandro Ripani	Programme Officer (Tunis, Tunisia)
Ines Guitouni	Administrative and Financial Assistant (Tunis, Tunisia)
Walter Masiga	Sub-Regional Representative for Eastern Africa and the Horn of Africa (Nairobi, Kenya)
Patrick Bastiaensen	Programme Officer (Nairobi, Kenya)
Grace Omwega	Administrative and Financial Assistant (Nairobi, Kenya)
Loise Ndungu	Secretary (Nairobi, Kenya)

Americas

Luis Osvaldo Barcos	Regional Representative for the Americas (Buenos Aires, Argentina)
Martín Minassian	Technical Assistant (Buenos Aires, Argentina)
Alina Gutiérrez Camacho	Secretary (Buenos Aires, Argentina)
Leandro Barcos	Administrative Assistant (Buenos Aires, Argentina)
Montserrat Arroyo Kuribreña	Sub-Regional Representative for Central America (Panama City, Panama)
Lexy Castro de Ceballos	Secretary (Panama City, Panama)

Asia and the Pacific

Hirofumi Kugita	Regional Representative for Asia and the Pacific (Tokyo, Japan)
Tomoko Ishibashi	Deputy Regional Representative for Asia and the Pacific (Tokyo, Japan)
Chantanee Buranathai	Regional Project Coordinator (Tokyo, Japan)
Tikiri Wijayathilaka	Regional Project Coordinator (Tokyo, Japan)
Hnin Thidar Myint	Regional Project Coordinator (Tokyo, Japan)
Yooni Oh	Regional Veterinary Officer (Tokyo, Japan)
Lushi Liu	Secondment Officer (Tokyo, Japan)
Takako Hasegawa	Administrative Officer (Tokyo, Japan)
Chiharu Izumi	Administrative Officer (Tokyo, Japan)
Kanako Koike	Accounting Officer (Tokyo, Japan)
Ronello Abila	Sub-Regional Representative for South-East Asia (Bangkok, Thailand)
Agnès Poirier	Programme Coordinator (HPED) (Bangkok, Thailand)
Jaruwan Kampa	Programme Coordinator (IDENTIFY) (Bangkok, Thailand)
Mary Joy Gordoncillo	Science and One Health Coordinator (Bangkok, Thailand)
Cecilia Dy	'M&E' Coordinator and Communication Officer (Bangkok, Thailand)
Karan Kukreja	Project Officer (Bangkok, Thailand)
Barbara Tornimbene	Project Officer-Epidemiologist (Bangkok, Thailand)
Melada Ruengjumroonnath	Financial Officer (Bangkok, Thailand)
Preechaya Srithep	Administrative Officer (Bangkok, Thailand)
Onsiri Benjavejbhaisan	Administrative Officer (Bangkok, Thailand)

Europe

Nikola T. Belev	Regional Representative for Eastern Europe (Sofia, Bulgaria)
Rina Kostova	Secretary (Sofia, Bulgaria)
Aleksandra Miteva	Technical Assistant (Sofia, Bulgaria)
Kazimieras Lukauskas	Regional Representative in Moscow (Russia)
Ekaterina Panina	Technical and Administrative Assistant (Moscow, Russia)
Askar Kozhayev	Technical Assistant (Astana, Kazakhstan)
Nadège Leboucq	Sub-Regional Representative in Brussels (Belgium)
Stéphane de La Rocque	Animal Health Specialist (Brussels, Belgium)
Stanislav Ralchev	Technical Assistant (Brussels, Belgium)

Middle East

Ghazi Yehia	Regional Representative for the Middle East (Beirut, Lebanon)
Mustapha Mestom	Consultant (Beirut, Lebanon)
Ali El Romeh	Consultant (Beirut, Lebanon)
Rita Rizk	Trilingual Secretary (Beirut, Lebanon)
Mahmoud Ghaddaf	Assistant (Beirut, Lebanon)
Khodr Rejeili	Assistant (Beirut, Lebanon)
Tony Atallah	Assistant (Beirut, Lebanon)

Names and positions of experts who represented the OIE in meetings or visits from April to June 2014

Etienne Bonbon	Vice-President of the OIE Terrestrial Animal Health Standards Commission
Vincenzo Caporale	President of the OIE Biological Standards Commission
Susan Corning	OIE Consultant
Gardner Murray	OIE Special Adviser
Paul-Pierre Pastoret	Scientific Adviser

List of abbreviations

ACCAHZ
ASEAN Coordination Centre for Animal Health and Zoonoses

AFSTAL
French Association for Laboratory Animal Science and Technology

AGISAR
Advisory Group on Integrated Surveillance of Antimicrobial Resistance

ANMV
French Agency for Veterinary Medicinal Products

ARC-OVI
Agricultural Research Council-Onderstepoort Veterinary Institute

ASEAN
Association of South-East Asian Nations

ASF
African swine fever

ASWGL
ASEAN Sectoral Working Group on Livestock

AU-IBAR
African Union-Interafrican Bureau for Animal Resources

AU-PANVAC
African Union-Pan-African Veterinary Vaccine Centre

BTSF
Better Training for Safer Food (programme)

CaribVET
Caribbean Animal Health Network

CARICOM
Caribbean Community

CCARDESA
Centre for Coordination of Agricultural Research and Development for Southern Africa

CCFH
Codex Committee on Food Hygiene

CIC
International Council for Game and Wildlife Conservation

CIRAD
French Agricultural Research Centre for International Development

CISA
Inter-American Committee on Avian Health

ComAcross
Companion Approach for Cross-sectoral collaboration in health risks management in South-East Asia

COPEG
Panama-United States Commission for the Eradication and Prevention of Screwworm

CORDS
Connecting Organizations for Regional Disease Surveillance

COSALFA
South-American Commission for the Fight against Foot and Mouth Disease

CPME
Standing Committee of European Doctors

CVO
Chief Veterinary Officer

CVP
Standing Veterinary Committee of the Southern Cone

DG SANCO
Directorate General for Health and Consumers of the European Commission

EC
European Commission

ECDC
European Centre for Disease Prevention and Control

ECOWAS
Economic Community of West African States

EDFZ
Equine Disease Free Zone

EFSA
European Food Safety Authority

EU
European Union

EuFMD
European Commission for the Control of Foot and Mouth Disease

FAO
Food and Agriculture Organization of the United Nations

FEAM
Federation of European Academies of Medicine

List of abbreviations (contd)

FLURISK
Development of a risk assessment methodological framework for potentially pandemic influenza strains

FMD
Foot and mouth disease

FVE
Federation of Veterinarians of Europe

GFSP
Global Food Safety Partnership

GF-TADs
FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases

HPED
European Union-funded cooperation programme on highly pathogenic and emerging and re-emerging diseases in Asia

IATA
International Air Transport Association

ICAHS
International Conference on Animal Health Surveillance

ICIPE
International Centre for Insect Pathology and Ecology

IDENTIFY
Laboratory Capacity Building and Networking Project

IDF
International Dairy Federation

IGAD
Intergovernmental Authority on Development

IIR
International Institute of Refrigeration

IMS
International Meat Secretariat

INNOVATE
Initiative for New One Health Ventures in Asia considering Ecosystems

ISID
International Society for Infectious Diseases

ISO
International Organization for Standardization

M&E
Monitoring & Evaluation

MERS-CoV
Middle East Respiratory Syndrome Coronavirus

OFFLU
Joint OIE/FAO worldwide scientific network for the control of animal influenzas

OIE
World Organisation for Animal Health

OIRSA
Regional International Organization for Plant Protection and Animal Health

PAGNet
Ports, Airports and Ground Crossings Network

PPR
Peste des petits ruminants

PREDEMICS
Preparedness, Prediction and Prevention of Emerging Zoonotic Viruses with Pandemic Potential using Multidisciplinary Approaches (five-year EC-funded programme)

PVS
Evaluation of Performance of Veterinary Services

RSPCA
Royal Society for the Prevention of Cruelty to Animals

SAARC
South Asian Association for Regional Cooperation

SADC
Southern African Development Community

SGF
Small Grants Facility

SMP-AH
Standard Methods and Procedures in Animal Health (AU-IBAR/USAID Project)

STANDZ
Stop Transboundary Animal Diseases and Zoonoses

STAR-IDAZ
Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses

STDF
Standards and Trade Development Facility

TIKA
Turkish Cooperation and Coordination Agency

US
United States

USAID
United States Agency for International Development

USDA
United States Department of Agriculture

VETGOV
'Reinforcing Veterinary Governance in Africa' (EU-funded project implemented by AU-IBAR in partnership with OIE and FAO)

VICH
International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products

VSBs
Veterinary Statutory Bodies

VSPA
'Vaccine Standards and Pilot Approach to PPR Control in Africa' (OIE programme supported by the Bill & Melinda Gates Foundation)

WHO
World Health Organization

WSAVA
World Small Animal Veterinary Association

WVA
World Veterinary Association

meetings and visits

April 2014

Title of the event	Place	Date	Participants
Official visit – Meeting with the Minister of Agriculture of Venezuela	Caracas, Venezuela	30 March – 1 April	Dr B. Vallat & Dr L.O. Barcos
GF-TADs Management Committee Meeting	FAO Headquarters, Rome, Italy	1 April	Dr M. Eloit, Dr D. Chaisemartin & Dr F. Caya
Official visit – Meeting with the Minister of Agriculture and Rural Development of Colombia	Bogota, Colombia	1–2 April	Dr B. Vallat & Dr L.O. Barcos
High-Level Conference: 'A New Spring for Bees', organised by the Sustainable Development Intergroup of the European Parliament	Brussels, Belgium	2 April	Dr M. Eloit
32nd Meeting of the IATA Live Animals and Perishables Board	Miami (United States)	2–3 April	Dr D. Belton
87th EuFMD Executive Committee Meeting	Brussels, Belgium	2–3 April	Dr J. Domenech
Stakeholders' Workshop of the OIE Improved Animal Welfare Programme in Philippines	Puerto Princesa, Philippines	2–3 April	Dr T. Grudnik & Dr M.E.J. Villareal
4th SAARC Chief Veterinary Officers Meeting	Kathmandu, Nepal	2–3 April	Dr T. Ishibashi
Official visit – Meeting with the Vice-President of Ecuador	Quito, Ecuador	2–4 April	Dr B. Vallat & Dr L.O. Barcos
Workshop on STANDZ SGF Projects in Vietnam and meeting with the Department of Animal Health of Vietnam	Hanoi, Vietnam	2–4 April	Dr K. Kukreja & Dr B. Tornimbene
16th International Conference on Infectious Diseases, organised by ISID	Cape Town, South Africa	2–5 April	Dr N. Mapitse & Dr P. Bastiaensen
Preparatory meeting for the organisation of the Ministerial Conference on Antibiotic Resistance: 'Joining Forces for Future Health', to be held in The Hague, Netherlands, from 25 to 26 June 2014	The Hague, Netherlands	3 April	Dr E. Erlacher-Vindel
FLURISK Workshop	EFSA Headquarters, Parma, Italy	4 April	Dr G. Pavade
CCFH Physical Working Group Meeting on Code/OIE Cooperation	OIE Headquarters, Paris, France	5 April	Dr D. Belton & Dr G. Mylrea
FVE/CPME Conference: 'Ensuring Health and Sustainability in Europe'	Brussels, Belgium	7 April	Dr N. Leboucq & Dr E. Bonbon
1st European Conference of High-Level Experts to discuss solutions to protect Bee Health in Europe, organised by EC	Brussels, Belgium	7 April	Dr C. Bertrand-Ferrandis & Dr F. Diaz
Codex Committee on General Principles	Paris, France	7–11 April	Dr B. Vallat, Dr D. Belton & Dr G. Mylrea
International Seminar: 'Risk-based surveillance: a tool to consolidate the status of FMD free' and 41st COSALFA Ordinary Meeting	Lima, Peru	7–11 April	Dr J. Domenech & Dr L.O. Barcos

meetings and visits

April 2014 (contd)

Title of the event	Place	Date	Participants
Feasibility study mission for epidemiology research on FMD outbreak in Mongolia	Ulan Bator and Sukhbaatar, Mongolia	7–11 April	Dr C. Buranathai
FMD Diagnostic Hands-on Workshop	Tokyo, Japan	7–19 April	Dr H. Kugita & Dr C. Buranathai
PREDEMICS Workshop: 'Zoonotic features of viral infections: from the animal reservoir to pandemic emergence', hosted by the National Institute for Infectious Diseases	Rome, Italy	8 April	Dr S. Corning
OFFLU/STAR-IDAZ Consultation	OIE Headquarters, Paris, France	8–9 April	Dr K. Hamilton & Dr G. Pavade
Networking Event of the INNOVATE 'One Health' Programme in Asia	Phnom Penh, Cambodia	8–9 April	Dr R. Abila & Dr A. Poirier
Training course on animal welfare in killing for disease control, in the framework of the BTSF initiative	Lloret de Mar, Spain	8–11 April	Dr M.E.J. Villareal
Training Course on Equine Diseases for Middle Eastern Countries, organised by the Istituto Zooprofilattico Sperimentale della Sicilia	Palermo, Sicily, Italy	8–18 April	Dr S. Münstermann, Dr G. Yehia & Prof. V. Caporale
7th Strategic and Technical Advisory Group Meeting on Neglected Tropical Diseases	WHO Headquarters, Geneva, Switzerland	9 April	Dr S. Forcella
'States General of Health' (health community forum on future health care, right to health, prevention, research and agri-food safety)	Rome, Italy	9–10 April	Dr M. Eloit
Planning meeting on a proposed Capacity Building Project for aquatic animal health courses for SADC countries and for Sub-Regional Strategy Development Workshop	Pretoria, South Africa	9–10 April	Dr N. Mapitse
VICH Round Table	Kazan, Russia	9–11 April	Dr B. Freischem
4th International Veterinary Congress	Kazan, Russia	9–11 April	Dr B. Freischem, Prof. K. Lukauskas & Dr E. Panina
Symposium on 'Animal Welfare: Ethics, Policies and Trade', during the Agricultural Economics Society's 88th Annual Conference 2014	Paris, France	10 April	Dr L.H. Stuardo Escobar
5th Asia-Pacific Conference on Public Health	Seoul, Rep. of Korea	10–11 April	Dr M.J. Gordoncillo
1st FMD meeting in the Middle East organised by the Egyptian laboratory under the patronage of the Minister of Agriculture	Cairo, Egypt	12–13 April	Dr G. Yehia
WHO Informal Consultation Meeting on Draft Technical Guidance	Lyons, France	14–15 April	Dr B. Evans
2nd WHO Strategic and Technical Advisory Group Meeting on Antimicrobial Resistance and additional meeting of Tripartite Technical Focal Points for Antimicrobial Resistance	WHO Headquarters, Geneva, Switzerland	14–15 April	Dr E. Erlacher-Vindel & Dr J. Domenech

meetings and visits

April 2014 (contd)

Title of the event	Place	Date	Participants
PVS Gap Analysis and Evaluation Refresher Course	OIE Headquarters, Paris, France	14–16 April	Dr L. Weber-Vintzel, Dr J. Lasley & Dr S. Corning
Livestock Global Alliance Meeting	Brussels, Belgium	15 April	Dr B. Vallat, Dr C. Bertrand-Ferrandis, Dr A. Dehove & Dr S. Corning
South African Horse Export Strategy Workshop	Pretoria, South Africa	15–16 April	Dr N. Mapitse
4th PAGNet Meeting	Lyons, France	16–17 April	Dr B. Evans & Dr D. Belton
Final meeting of the project 'National Human and Animal Health Systems Assessment Tools and Bridges' (World Bank, OIE, WHO)	WHO Headquarters, Geneva, Switzerland	17 April	Dr B. Vallat, Dr A. Dehove & Dr S. Corning
Stakeholder briefing of the review mission of the FAO/OIE/WHO Four-way linking project for assessing health risks at the human–animal interface	Dhaka, Bangladesh	17 April	Dr T. Ishibashi
ISO Regional Workshop: 'Role of International Food Standards in International Trade'	Bangkok, Thailand	22–23 April	Dr A. Poirier
Steering Committee Meeting of the Feedlatina STDF/345 project: 'Feed and Food Regulatory Harmonization and Safety for Latin America and the Caribbean'	Montevideo, Uruguay	22–24 April	Dr M. Minassian
Meeting with Mr Asylzhan Mamytbekov, Minister of Agriculture of Kazakhstan and Ms Gulmira Issayeva, Vice-Minister of Agriculture of Kazakhstan	Astana, Kazakhstan	23 April	Dr M. Eloit & Prof. K. Lukauskas
3rd Collaborative Partnership on Sustainable Wildlife Management Meeting	Milan, Italy	23 April	Dr D. Rassow
5th Annual West Eurasia FMD Roadmap Meeting, under the GF-TADs (inter-regional meeting on the progressive control of FMD in West Eurasia)	Astana, Kazakhstan	23–24 April	Dr M. Eloit, Dr J. Domenech, Dr L. Weber-Vintzel, Prof. K. Lukauskas, Dr A. Kozhayev, Dr N. Leboucq & Dr G. Yehia
Meeting with Mr Christiaan De Graaff, Minister of Agriculture of Botswana, on the mandate and activities of the OIE	Gaborone, Botswana	24 April	Dr N. Mapitse
CIC Global Summit	Milan, Italy	24 April	Ms R. Kostova
GFSP Meetings: Food Safety Technical Working Group – Expert Working Groups – Knowledge and Learning Systems Working Group – GFSP Coordination Committee Meeting	Aarhus, Denmark	24–25 April	Dr G. Mylrea
ISO/TC 34: Food products plenary meeting	Bangkok, Thailand	24–25 April	Dr A. Poirier
61st CIC General Assembly	Milan, Italy	24–26 April	Dr B. Vallat & Ms R. Kostova
Meeting between Kazakhstan Veterinary Authorities, USDA, FAO and OIE	Astana, Kazakhstan	25 April	Dr M. Eloit & Dr L. Weber-Vintzel
Supervision of the 'Bill and Melinda Gates Foundation' Project: 'Vaccine Standards and Pilot Approach to PPR Control in Africa (VSPA)'	Accra, Ghana	27 April – 4 May	Dr J. Domenech

meetings and visits

April 2014 (contd)

Title of the event	Place	Date	Participants
OIE Regional Training Workshop (Europe) for OIE National Focal Points for Wildlife	Saint Petersburg, Russia	28–30 April	Dr M. Popovic, Ms N. Lambergeon, Dr E. Erlacher-Vindel, Prof. K. Lukauskas & Dr E. Panina
OIE Regional (Asia-Pacific) Information Seminar for Recently Appointed OIE Delegates	Beijing, P.R. China	28–30 April	Dr M.E. González Ortiz, Dr H. Kugita, Dr T. Wijayathilaka, Dr K. Kukreja & Dr E. Bonbon
Joint FAO/WHO Sub-Regional Technical Consultation on surveillance for H7N9 in high-risk countries	Yangon, Myanmar	28–30 April	Dr H. Thidar Myint
2nd Conference of African Ministers of Fisheries and Aquaculture (CAMFA)	Addis Ababa, Ethiopia	28 April – 2 May	Dr N. Mapitse & Dr W. Masiga
Global Webinar on Animal Welfare: 'Veterinary leadership: Empowering tools for vets in the field of Animal Welfare', organised by WVA and EC	Brussels, Belgium	29 April	Dr L.H. Stuardo Escobar
Workshop on 'Animal protection at transport in third countries: reality and possibilities'	Bad Staffelstein, Germany	29–30 April	Dr D. Belton
2nd Regional Task Force Meeting on Pastoralism (World Bank Project)	Nouakchott, Mauritania	29 April – 2 May	Dr Y. Samaké & Dr D. Bourzat
1st Training-of-Trainers Session of the OIE Improved Animal Welfare Programme in Thailand	Nakhon Pathom Province, Thailand	29 April – 2 May	Dr M.E.J. Villareal, Dr R. Abila & Ms M. Ruengjumroonnath
ComAcross project's kick-off meeting, managed by CIRAD	Bangkok, Thailand	30 April – 2 May	Dr A. Poirier

May 2014

Title of the event	Place	Date	Participants
8th ACCAHZ Preparatory Committee Meeting	Singapore	4–6 May	Dr H. Kugita, Dr R. Abila & Dr A. Poirier
Supervision of the 'Bill and Melinda Gates Foundation' Project: 'Vaccine Standards and Pilot Approach to PPR Control in Africa (VSPA)'	Ouagadougou, Burkina Faso	4–9 May	Dr J. Domenech
1st Global Health Security Agenda (GHSA) Commitment Development Meeting	Helsinki, Finland	5–6 May	Dr B. Vallat, Dr A. Dehove, Dr K. Hamilton & Dr S. Corning
35th Asian Racing Conference, organised by the Asian Racing Federation (ARF)	Hong Kong, Special Administrative Region of P.R. China	5–6 May	Dr S. Münstermann
9th CaribVET Steering Committee Meeting and CARICOM Meeting	Havana, Cuba	5–6 May	Dr M. Arroyo Kuribreña
6th AU-IBAR CVO's Annual Meeting	Nairobi, Kenya	5–7 May	Dr Y. Samaké, Dr W. Masiga & Dr E. Bonbon

meetings and visits

May 2014 (contd)

Title of the event	Place	Date	Participants
1st CCARDESA General Assembly	Gaborone, Botswana	6–7 May	Dr N. Mapitse
RSPCA/FAO/TIKA Regional workshop on animal welfare in meat producing animals	Ankara, Turkey	6–8 May	Dr R. Kolesar & Dr S. Ralchev
Nordic/Baltic Seminar on 'Biosecurity, experiences, training, motivation and economic aspects'	Stockholm, Sweden	6–8 May	Dr N. Leboucq
FAO Regional Conference for Latin America and the Caribbean	Santiago, Chile	6–9 May	Dr M. Minassian
Equine Expert Meeting, organised by the World Horse Welfare and Eurogroup for Animals for the European Commission	Brussels, Belgium	7 May	Dr D. Belton
2nd International Conference on Animal Health Surveillance (ICAHS)	Havana (Cuba)	7–9 May	Dr M. Arroyo Kuribreña
22nd ASWGL Meeting and 1st Meeting for ASEAN National Focal Points for Veterinary Products	Singapore	7–9 May	Dr H. Kugita, Dr H. Thidar Myint, Dr R. Abila & Dr A. Poirier
FEAM Spring Conference 2014, hosted by the Romanian Academy of Medical Sciences	Bucharest, Romania	12–13 May	Prof. P.-P. Pastoret
Meeting of the 'Drafting Committee' on official disease status related to FMD and official control programmes related to FMD and PPR	Tunis, Tunisia	12–13 May	Dr J. Domenech, Dr L. Weber-Vintzel, Dr R. Bouguedour, Dr V. Brioudes & Dr A. Ripani
OIE Consultation on compartmentalisation project destined at creating a high health lamb sub-population for meat export	Montevideo, Uruguay	12–15 May	Dr A. Thiermann
Training course on animal welfare in pig production, in the framework of the BTSF initiative	Herning, Denmark	12–15 May	Dr M.E.J. Villareal
1st Training-of-Trainers Session of the OIE Improved Animal Welfare Programme in Sultanate of Oman	Muscat, Oman	12–15 May	Dr T. Grudnik
Scientific day on 'Animal welfare', organised by the National Veterinary School of Sidi Thabet, Tunisia, in collaboration with the Tunisian Society for the Protection of Animals and Nature (SPANA)	Tunis, Tunisia	13 May	Dr V. Brioudes
2nd Steering Group Meeting of the OIE Regional Platform on Animal Welfare for Europe	Moscow, Russia	13–14 May	Dr M. Eloit, Dr L.H. Stuardo Escobar, Prof. Dr N.T. Belev, Prof. K. Lukauskas, Dr E. Panina, Dr N. Leboucq & Dr S. Ralchev
Review of research proposals for Zoonoses anticipation and preparedness initiative (ZAPI) submitted to the Innovative Medicines Initiative (IMI), a public-private partnership	Brussels, Belgium	13–14 May	Dr B. Freischem
Mexican Veterinary Academy Session	Mexico City, Mexico	13–15 May	Dr M. Arroyo Kuribreña

meetings and visits

May 2014 (contd)

Title of the event	Place	Date	Participants
Workshop on the regional strategy for PPR	Tunis, Tunisia	14 May	Dr J. Domenech, Dr L. Weber-Vintzel, Dr R. Bouguedour, Dr V. Brioudes & Dr A. Ripani
3rd Annual Conference of the Animal Welfare Indicators (AWIN)	Prague, Czech Republic	14–15 May	Dr L.H. Stuardo Escobar
Disease Prioritisation Workshop, organised by ARC-OVI	Pretoria, South Africa	14–15 May	Dr N. Mapitse
Final meeting of the FAO Project on FMD for the Andean Region	Lima, Peru	15 May	Dr M. Minassian
1st EDUCAVET Forum Meeting	Lima, Peru	15–16 May	Dr M. Minassian
14th international exhibition on agricultural and agrifood production (Sipsa-Agrofood 2014) and 1st Maghreb veterinary meetings on strategies to protect product quality and consumers	Algiers, Algeria	15–18 May	Dr R. Bouguedour & Dr A. Ripani
Mission about MERS-CoV	Doha, Qatar	15–20 May	Dr K. Hamilton
British Veterinary Public Health Association Spring Conference	Sheffield, United Kingdom	17 May	Dr G. Mylrea
67th WHO World Health Assembly	Geneva, Switzerland	19–24 May	Dr S. de La Rocque
International Workshop of the European 'Rapidia-Field' Project: 'Rapid field diagnostics and screening in veterinary medicine'	Madrid, Spain	20 May	Dr B. Freischem
FAO Regional Technical Consultation Meeting on MERS-CoV	Muscat, Oman	20–21 May	Dr K. Hamilton & Dr G. Yehia
20th Joint Annual Meeting of the EU Reference Laboratories for Avian Influenza and Newcastle disease	Lelystad, Netherlands	20–22 May	Dr G. Pavade
8th Management Committee Meeting of the OIE World Animal Health and Welfare Fund	OIE Headquarters, Paris, France	21 May	Dr B. Vallat, Dr A. Dehove, Ms J. Macé, Ms E. Tagliaro, Ms V. Wong, Ms A. Weng, Mr G. Seigneurin & Mr R. Lemesnager
4th Meeting of the ISO/TC 34 Working Group on Animal Welfare	OIE Headquarters, Paris, France	21 May	Dr D. Belton & Dr L.H. Stuardo Escobar
Retail Forum: 2nd Workshop on Animal Welfare	Brussels, Belgium	22 May	Dr S. Ralchev
OIE Regional (Americas and Middle East) Information Seminar for Recently Appointed OIE Delegates	OIE Headquarters, Paris, France	24 May	Dr A. Thiermann, Dr P. Cáceres Soto, Dr H.S. Lee, Dr D. Di Sabatino, Dr M.E.J. Villareal, Dr L.H. Stuardo Escobar, Dr D. Visser, Dr B. Freischem, Dr G.J. Torres Peñalver, Dr F. Caya, Dr M.E. González Ortiz, Dr M. Carron, Ms E. Marzec, Dr L.O. Barcos, Dr M. Minassian, Dr M. Arroyo Kuribreña, Dr A. Miteva, Prof. K. Lukauskas, Dr E. Panina, Dr A. Kozhayev, Dr G. Yehia & Dr A. El Romeh

meetings and visits

May 2014 (contd)

Title of the event	Place	Date	Participants
France-Russia VSBs Twinning project – Contract signing ceremony	Paris, France	25 May	Dr A. Dehove
Annual meeting of the non-tsetse transmitted animal trypanosomoses (NTTAT) Expert Group	Paris, France	25 May	Dr S. Münstermann
82nd General Session of the World Assembly of Delegates of the OIE	Paris, France	25–30 May	OIE Headquarters' staff and OIE Regional and Sub-Regional Representatives
CORDS Executive Board Meeting	Annecy, France	26–27 May	Dr A. Dehove

June 2014

Title of the event	Place	Date	Participants
1st Coordination Meeting of the RLA/5/067 Ministry of Agricultural Development Project: 'Supporting Capacity Building for Evaluation of Feasibility of a Progressive Control Programme for New World Screwworm', hosted by COPEG	Panama City, Panama	2 June	Dr M. Arroyo Kuribreña
3rd Steering Committee Meeting of the SMP-AH Project, organised by IGAD	Kampala, Uganda	3 June	Dr N. Mapitse
Mediterranean Exhibition for Animal Production and Agricultural Products at Export (PAMED 2014) – 9th DICK/CEVA Avian Scientific Day: 'EcoAntibio plan for the poultry sector: Why? How?'	Hammamet, Tunisia	4 June	Dr R. Bouguedour, Dr V. Brioudes & Dr A. Ripani
1st Steering Committee Coordination Meeting: 'Improving Animal Disease Surveillance in Support of Trade in IGAD Member States' Project, organised by IGAD	Kampala, Uganda	4 June	Dr N. Mapitse
Conference on 'Disease notification to the OIE and Member Countries responsibilities', organised by OIRSA as part of the regional simulation programme for early mortality syndrome (EMS)	Guatemala City, Guatemala	4–6 June	Dr M. Arroyo Kuribreña
Workshop: 'Future of Public Health in Digital Era'	Annecy, France	4–7 June	Dr A. Dehove
40th AFSTAL Annual Colloquium: 'Pain management in laboratory animals'	Toulouse, France	5–6 June	Dr D. Belton
Post-planning and follow-up workshop for the Philippine Animal Health Center (PAHC) and Regional Animal Disease Diagnostic Laboratories (RADDLs)	Tagaytay City, Philippines	5–6 June	Dr C. Buranathai, Dr R. Abila & Dr J. Kampa
Feasibility study mission for influenza surveillance in Cambodia	Phnom Penh, Cambodia	9–10 June	Dr H. Kugita & Dr H. Thidar Myint

meetings and visits

June 2014 (contd)

Title of the event	Place	Date	Participants
Consultation with the Ministry of Information, Culture and Tourism and other stakeholders on public awareness campaign for FMD control in Laos	Vientiane, Laos	9–10 June	Ms C. Dy
2nd Training-of-Trainers Session of the OIE Improved Animal Welfare Programme in Sultanate of Oman	Muscat, Oman	9–12 June	Dr T. Grudnik
Real-Time FMD Training Course, organised by FAO	Erzurum, Turkey	9–12 June	Dr A. Kozhayev
Training Seminar: 'The OIE PVS Tool' for CVP Countries	Buenos Aires, Argentina	9–13 June	Dr F. Caya, Dr M. Carron, Dr L.O. Barcos, Dr M. Minassian & Dr M. Arroyo Kuribreña
Informal discussion about MERS-CoV with Dr Peter Ben Embarek, WHO Focal Point for MERS-CoV, and participation in the process to develop guidelines for naming emerging diseases	Geneva, Switzerland	10 June	Dr K. Hamilton
Workshop on Food Safety Challenges for Mediterranean Products	Zaragoza (Spain)	10–11 June	Dr R. Bouguedour
SADC Livestock Technical Committee Meeting	Gaborone, Botswana	10–12 June	Dr N. Mapitse
Meeting with EU and Azerbaijan on EDFZ in Absheron Peninsula	Brussels, Belgium	11 June	Dr S. Münstermann
The Merial FMD Day	Tunis, Tunisia	11 June	Dr V. Brioudes & Dr A. Ripani
Workshop on relevant international standards for dog rabies	Chiang Mai, Thailand	11–13 June	Dr P. Cáceres Soto, Dr R. Kolesar, Dr G.J. Torres Peñalver, Dr T. Wijayathilaka, Dr R. Abila, Dr A. Poirier, Dr M.J. Gordoncillo, Ms M. Ruengjumroonnath & Dr G. Murray
IIR Conference on 'Challenges for the cold chain of health products'	Paris, France	12 June	Dr F. Diaz
2nd Training-of-Trainers Session of the OIE Improved Animal Welfare Programme in Thailand	Pattaya, Thailand	12–16 June	Dr M.E.J. Villareal & Ms P. Srithep
20th IMS World Meat Congress	Beijing, P.R. China	14–16 June	Dr T. Ishibashi & Dr L. Liu
6th International Mycobacterium bovis Conference, hosted by the British Cattle Veterinary Association and STAR-IDAZ Bovine Tuberculosis Research Gap Analysis and Prioritisation Workshop	Cardiff, United Kingdom	16–19 June	Dr S. Forcella
Training on Outbreak Investigation, Management and Communication	Luang Prabang, Laos	16–20 June	Ms C. Dy & Dr B. Tornimbene
16th CISA Meeting and 23rd Congress of Poultry Farming of Central America and the Caribbean	Havana (Cuba)	16–20 June	Dr M. Minassian & Dr M. Arroyo Kuribreña

meetings and visits

June 2014 (contd)

Title of the event	Place	Date	Participants
Workshop for WHO-AGISAR Pilot Projection Surveillance of Antimicrobial Resistance in Aquaculture Sector in Vietnam	Hanoi, Vietnam	17 June	Dr M.J. Gordoncillo
OIE Meeting on Rabies for North Africa Countries	Tunis, Tunisia	17–18 June	Dr G.J. Torres Peñalver, Dr R. Bouguedour, Dr V. Brioudes & Dr A. Ripani
ECDC Expert Workshop: 'Needs Assessment for Joint Training on Response to Biological Threats'	The Hague, Netherlands	17–19 June	Dr D. Visser
1st OIE Regional Workshop on national strategy for stray dog population management for Balkan countries	Bucharest, Romania	17–19 June	Dr T. Grudnik, Prof. Dr N.T. Belev, Ms R. Kostova & Dr S. Ralchev
Visit by Mr Thomas Vilsack, US Secretary of Agriculture	OIE Headquarters, Paris, France	18 June	Dr B. Vallat, Dr M. Eloit, Dr B. Evans, Dr A. Thiermann & Dr A. Dehove
WSAVA Foundation Meeting and Inception of the African Small Companion Animal Network (AFSCAN)	Nairobi, Kenya	18–20 June	Dr W. Masiga & Dr P. Bastiaensen
Round table: 'Imagining the future of veterinary medicinal products', organised to commemorate the 20th ANMV anniversary	Fougères, France	19 June	Dr B. Vallat
IDF Standing Committee for Animal Health and Welfare	Brussels, Belgium	19–20 June	Dr E. Erlacher-Vindel
Stakeholders' Workshop of the OIE Improved Animal Welfare Programme in Thailand	Bangkok, Thailand	19–20 June	Dr M.E.J. Villareal & Dr K. Kukreja
26th Veterinary Association Malaysia Congress 2014	Putrajaya, Malaysia	20–22 June	Dr H. Kugita
30th VICH Steering Committee Meeting and 5th VICH Outreach Forum Meeting	Brussels, Belgium	23–26 June	Dr B. Freischem
2nd Continental Training-of-Trainers on early detection, timely notification, prevention and control of bee diseases and pests for the French-speaking Member States of the African Union, organised by AU-IBAR and ICIPE under the Bee Health Project	Ouagadougou, Burkina Faso	23–27 June	Dr F. Diaz & Dr P. Bastiaensen
Botswana National Policy Hub Inauguration Meeting, under the VETGOV Programme	Gaborone, Botswana	24 June	Dr N. Mapitse
Regional Seminar for OIE National Focal Points for Animal Production Food Safety	Hanoi, Vietnam	24–26 June	Dr G. Mylrea, Dr D. Sherman, Dr H. Thidar Myint, Dr A. Poirier & Dr J. Kampa
OIE Regional Seminar on Rabies for OIE Delegates and Doctors in charge of zoonosis from countries of the ECOWAS region	Niamey, Niger	24–26 June	Dr G.J. Torres Peñalver, Dr Y. Samaké, Dr D. Bourzat, Ms A. Bagayoko & Dr R. Bouguedour

meetings and visits

June 2014 (contd)

Title of the event	Place	Date	Participants
Training course on animal welfare during transport, in the framework of the BTSF initiative	Nova Gorica, Slovenia and Trieste, Italy	24–27 June	Dr M.E.J. Villareal
Workshop on bovine traceability	Santa Cruz de la Sierra, Bolivia	24–27 June	Dr L.O. Barcos
Ministerial Conference on Antibiotic Resistance: 'Joining Forces for Future Health'	The Hague, Netherlands	25–26 June	Dr B. Vallat, Dr C. Bertrand-Ferrandis & Dr E. Erlacher-Vindel
8th Pan African Meeting of Directors of Veterinary Vaccine Laboratories, hosted by AU-IBAR	Nairobi, Kenya	25–27 June	Dr J. Domenech, Dr A. Ripani & Dr W. Masiga
WCO Council Session	Brussels, Belgium	26–28 June	Dr N. Leboucq
Meeting of the DG SANCO Animal Health Advisory Committee	Brussels, Belgium	27 June	Dr S. Ralchev & Dr E. Bonbon
AU-PANVAC Visit	Debre Zeit, Ethiopia	29–30 June	Dr J. Domenech
Discussion on Chemical, Biological, Radiological, and Nuclear (CBRN) Security Assistance to Ukraine	London, United Kingdom	30 June	Dr A. Dehove & Dr S. Corning
Joint OIE/CIC International Meeting on early detection and prevention of ASF and other animal health issues at the wildlife–livestock–human interface	OIE Headquarters, Paris, France	30 June – 1 July	Dr B. Vallat, Dr M. Eloit, Ms M. Domingo Monsonis, Dr D. Chaisemartin, Ms T. Benicasa, Dr P. Cáceres Soto, Ms N. Lambergeon, Dr H.S. Lee, Dr D. Di Sabatino, Dr M. Okita, Dr B. Evans, Dr K. Hong, Dr F. Diaz, Dr L. Weber-Vintzel, Dr D. Rassow, Dr M.K. Park, Dr S. Forcella, Dr G.J. Torres Peñalver, Dr M.E. González Ortiz, Ms M. Recchia, Prof. Dr N.T. Belev, Prof. K. Lukauskas, Dr A. Kozhayev & Dr E. Bonbon

epidemiology & animal disease control programmes

The worldwide rabies situation in domestic and wild animals

Rabies is a major zoonotic disease, assumed to be present on all continents apart from Antarctica and Oceania. It is caused by one member of the Lyssavirus genus of the family Rhabdoviridae. According to the World Health Organization[1], more than 55,000 people die in Africa and Asia every year.

Rabies infection is maintained in two epidemiological cycles, one urban and one sylvatic. In the urban rabies cycle, dogs are the main reservoir host. This cycle predominates in areas of Africa, Asia, and Central and South America. The sylvatic (or wildlife) cycle is the predominant cycle in the northern hemisphere. It can also present simultaneously with the urban cycle in some parts of the world[2].

To better harmonise surveillance data at the international level, successive developments have taken place in the OIE World Animal Health Information System (WAHIS). Since the year 2012, countries have been able to specify the particular wildlife species affected by disease.

The first objective of this article was to evaluate the distribution of countries affected by rabies, based on their disease situation between 2012 and May 2014. The second objective was to evaluate the regional distribution of wildlife species affected. Member Countries of the OIE, as well as several non-Members, continually report information through WAHIS. In 2012, the number of countries which submitted and validated their six-monthly reports was 180, and in 2013, it was 142 (the decrease was due to the frequently observed delay in reporting by some countries). In addition, 13 exceptional epidemiological events were reported during this period, through immediate notifications and follow-up reports.

Rabies in domestic animals

Figure 1 shows the number of countries affected by rabies, by disease situation in domestic animals, for 2012, 2013 and during the cumulative period of 2012 to May 2014. The highest number of countries had reported the presence or suspected presence of rabies, with a percentage of 62.8% (95% confidence interval [CI], 55.7–69.9) during the overall period. Some 36.1% of countries (95% CI, 29.1–43.1) notified that rabies was absent or had never been reported, while only two countries did not report their information.

Rabies has been mainly reported in dogs and cats (around 15,000 cases reported by 91 countries during this period), but also in livestock (about 10,500 cases reported by 76 countries during this time).

1 www.who.int/mediacentre/factsheets/fs099/en/
2 OIE Technical Disease Card on rabies: www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Disease_cards/RABIES_FINAL.pdf

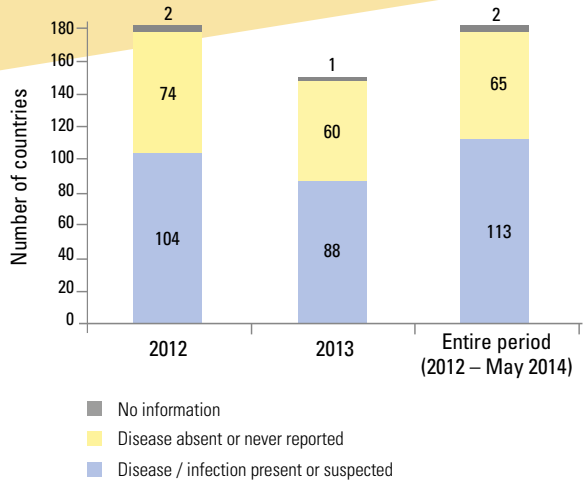


Fig. 1

Number of countries affected by rabies, by disease situation in domestic animals, from 2012 to May 2014

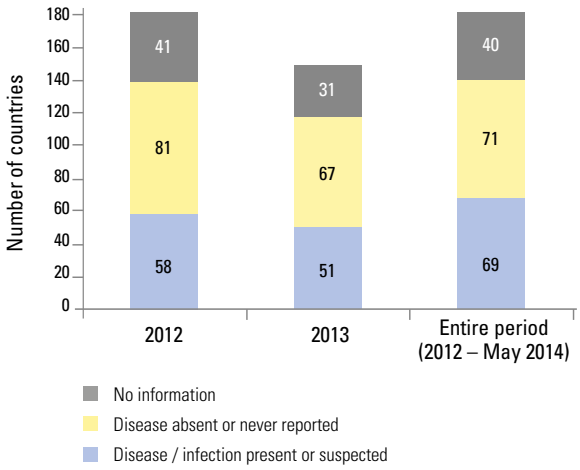


Fig. 2

Number of countries affected by rabies, by disease situation in wildlife, from 2012 to May 2014

Rabies in wildlife

Figure 2 shows the results of the same analysis applied to wildlife. The highest number of countries notified that rabies was absent from their territory or had not been reported, with a percentage of 39.4% (95% CI, 32.3–46.5) over the entire period. A percentage of 38.3% countries (95% CI, 31.2–45.4) reported that rabies was present or suspected.

It should be emphasised that 40 countries (22.2% [95% CI, 16.1–28.3]) did not provide information for wildlife over that period, while only two countries did not report information for their domestic animals.

Figure 3 presents the number of rabies-reporting countries by wildlife group and region. During this period, the Carnivora group (mainly *Vulpes vulpes*) was the most reported group in each region; except for the Americas, where Chiroptera (mainly vampire bats and Brazilian free-tailed bats) was the most reported order. Some countries also reported cases in other orders, including: Artiodactyla, Hyracoidea, Lagomorpha, Primates, Rodentia and Soricomorpha. During this period, 2,965 rabies cases were reported in Carnivora, 519 cases in Chiroptera, and 252 cases were reported in other orders.

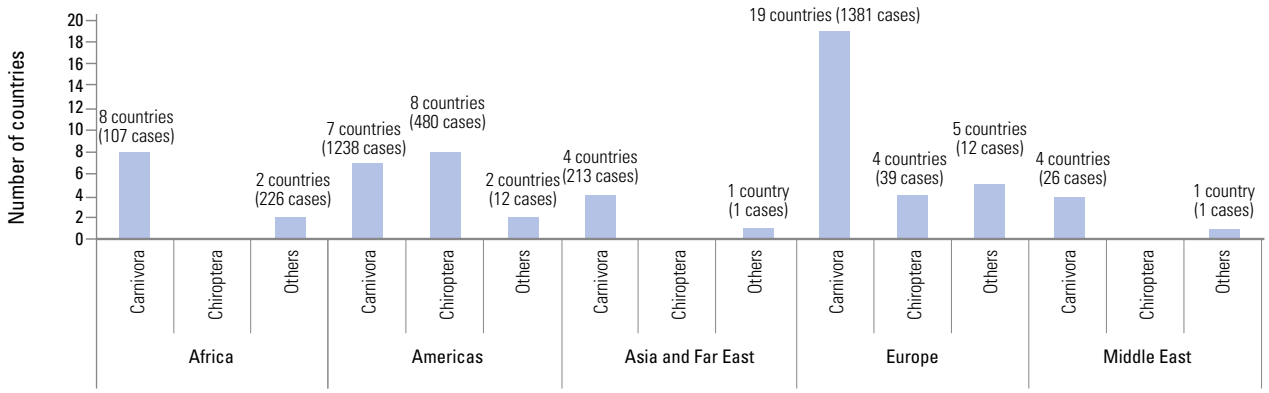


Fig. 3

Number of rabies-reporting countries, by wildlife group and region, from 2012 to May 2014

Conclusions

Rabies is one of the most important zoonotic diseases still widespread in all regions. Indeed, two-thirds of the 180 countries that reported information to the OIE for 2012, 2013 and early 2014 notified that the disease was present or suspected within their territory.

Almost all countries reported information for domestic species and most of these reported on affected livestock, as well as on cats and dogs. However, 22% of countries did not provide information on wildlife. This gap in reporting on wildlife is detrimental to global disease knowledge. In international terms, the most common source of exposure and transmission of the rabies virus to humans is the dog but, in some ecological contexts, wildlife can also play a key role in the epidemiology of the disease. This is why surveillance in wildlife is essential if we are to control rabies, despite the difficulties.

There are specific challenges associated with detecting infected and/or diseased wild animals, due to the diversity and intractable nature of wildlife, as well as the difficulty of assigning responsibility for managing pathogens and diseases in wild animals. The recent improvement in WAHIS, which gives countries the opportunity to specify the particular wildlife species affected, is a useful tool for disease surveillance and control. The highest number of wild species reported as being affected by rabies came from the Carnivora order (41 species reported), and then from the Chiroptera (with 19 species reported), especially in the Americas. The OIE encourages intersectoral collaboration between the animal, human and environmental health sectors.

Recommendations from the OIE Global Conference on Rabies Control held in Incheon-Seoul, the Republic of Korea, 7–9 September 2011: www.oie.int/fileadmin/Home/eng/Conferences_Events/docs/pdf/recommendations/A_Recommendation_Global Rabies Conference Seoul_final.pdf

Global rabies elimination – 'Making the case'

7th Partner for Rabies Prevention meeting

Wolfsberg, Switzerland, 1–3 April 2014

Partner for Rabies Prevention (PRP) is a multi-disciplinary group that comprises different stakeholders involved in rabies prevention and control. The group meets once a year to discuss global challenges related to rabies and to contribute their expertise towards improving rabies control strategies at the global level.

The OIE, with its relevant Reference Laboratories and Collaborating Centres, actively participates in this group, along with the Tripartite partners (WHO and FAO), research scientists, representatives from several rabies-endemic countries, non-governmental organisations, vaccine manufacturers and donors, including private foundations.

The PRP was created as an initiative of the Global Alliance for Rabies Control (GARC)[1], which is a non-governmental organisation established to contribute to the prevention of human deaths from rabies and to reduce the burden of rabies in animal populations, especially in dogs. GARC and the OIE have an official agreement, adopted in May 2014.

The seventh PRP meeting was held from 1 to 3 April 2014 in Wolfsberg, Switzerland, with the participation of 42 experts and stakeholders from 15 different countries. The main purpose of this meeting was to develop strategies to engage stakeholders, donors and governments in the plan to eliminate canine rabies at the local and global level.

The meeting further reviewed social, economic and epidemiological evidence to justify and motivate international efforts towards worldwide canine rabies elimination and ways in which the international community could support countries in their fight against rabies. One of the main objectives of the meeting was to confirm the willingness of the Tripartite initiative to develop a 'case for investment', in collaboration with GARC.

This document will provide scientific evidence, specify intergovernmental standards and mechanisms, and promote high-quality vaccines and international recommendations to draw the attention of governments, donors and decision-makers to investing in the elimination of canine-mediated human rabies.

The group evaluated the results of several scientific pilot studies, and discussed the health economics aspects of rabies. Comparisons across various regions of the world clearly demonstrate that investment in mass dog vaccination in developing countries breaks the transmission of the disease between dogs and humans, and reduces human deaths. In the long term, investment in canine rabies prevention can bring economic benefits by reducing the social burden, post-exposure prophylaxis expenditure and the loss of income associated with rabies exposure.

During the meeting, the essential role of the regional vaccine banks in supporting and stimulating countries' efforts towards rabies elimination in dogs was acknowledged. As demonstrated in Asia (by the OIE regional rabies vaccine bank supported by the European Union), this facilitates the implementation of mass dog vaccination with quality vaccines that are manufactured according to the provisions of the specific chapter of the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*. Thus, the proposal of extending the concept to other regions in which countries experience similar burdens was supported by the group of experts.

Challenges in implementing rabies control programmes were identified and actions to be taken at the global level to help promote progress were thoroughly discussed. Effective rabies control programmes that meet international guidelines and standards require strong and sustained political support at the country level. There is also a need for effective and well-coordinated national rabies surveillance systems. These programmes should be coordinated across the animal and human health sectors by promoting official notification of human and animal cases of rabies (which would lead to enhanced disease transparency within the international community) and by transferring more responsibilities to official Veterinary Services and private veterinarians in dog vaccination campaigns worldwide.

Intersectoral collaboration, following the 'One Health' approach, should be a core component of rabies control programmes. The international community should be involved in promoting best practices for rabies control that have proven to be successful in certain regions/countries and could be replicated elsewhere. Continuous efforts should be made to promote

1 http://rabiesalliance.org/rabies/

education and awareness. Young professionals in the medical and veterinary fields should be actively involved in this process as they will inherit the role in future disease management and establish health policies which will have a direct impact on the control of rabies worldwide.

The Blueprint for Rabies Prevention and Control:
www.rabiesblueprint.com

The Blueprint project, already available in six different languages, was recognised as an example of an excellent advocacy and communication tool, guiding countries in understanding how to better prevent and control rabies.

The impact of the project is well recognised among stakeholders and policy-makers. The participants of the PRP meeting agreed to undertake a complete review of its contents, incorporating additional information and guidance on the implementation of rabies programmes, while also taking into consideration new scientific developments and users' experiences, as discussed during the meeting. The OIE has already helped in reviewing and updating the Blueprint chapter on legislation.

In spite of the well-identified tools and approaches to control and eliminate canine rabies, it was recognised that this could require the engagement of new partners, such as health economists and communications experts, to build a case for investment, so that global rabies control and national rabies policies could become reality.

There was a consensus on the current momentum to enhance and promote canine rabies elimination worldwide. However, advances in rabies control will not be possible without sustained financial support from donors in the international community. A combination of strategies that involve advocacy, technical expertise and support from international organisations and donors, as well as the promotion of successful local initiatives, will foster political determination and empower countries to combine their efforts to eliminate rabies at its main animal source (more than 95% of human cases are due to dog bites).

The discussions and conclusions undertaken during this meeting are being used by the Tripartite and GARC to help strengthen the message of the 'case for investment'. It is important for all members of the global rabies community to unite in these efforts and to continue working in a coordinated manner towards the elimination of rabies. This will attract the attention and awareness of the public and donors to ensure that the elimination of canine rabies is recognised as an achievable objective that is absolutely necessary for international public health.

Rabies in wildlife – concerns of the Asia-Pacific region

Chinese Taipei has been recognised as a rabies-free country since 1961. In 1999, it implemented a rabies surveillance programme for dogs; in 2008 it established one for bats and in 2012 it began a programme for wild carnivores. After a long absence of 54 years, a reoccurrence of rabies was notified in Chinese Taipei on 16 July 2013.

Such wildlife disease surveillance has been conducted on the recommendation of the OIE, since so many emerging diseases have their origins in wildlife. The Bureau of Animal and Plant Health Inspection and Quarantine, of the Council of Agriculture, Chinese Taipei, began a

disease surveillance programme in wildlife other than bats in 2012. In January 2013, a ferret badger (*Melogale moschata*) from Nantou County was diagnosed as having meningo-encephalomyelitis, but tested negative for canine distemper (CD) and Aujeszky's disease (pseudorabies). Tracing back to two earlier cases, found in May and November of 2012, researchers found that the test results from these cases were also negative for CD and pseudorabies. However, all three cases were found to be positive for rabies by reverse-transcription polymerase chain reaction (RT-PCR) (June 2013). The brain samples were sent to the Animal Health Research Institute for final confirmation by fluorescent antibody test (FAT) and immunohistochemistry, as well as RT-PCR, and both rabies-specific antigen and viral RNA were detected.

According to the surveillance results up until 8 May 2014, a total of 365 wild ferret badgers were confirmed as testing positive for rabies (Table I). A 1.5-month-old puppy was bitten by a rabid ferret badger and developed rabies symptoms after 24 days in quarantine. The dog was euthanized and rabies was diagnosed by FAT. A house shrew (*Suncus murinus*) was also confirmed to be positive for rabies and was considered to have been infected through the bite of a rabid ferret badger. All samples were tested by FAT in accordance with OIE standards.

Between 2013 and 2014, a total of 1,179 wild carnivores were tested for rabies (Table II). Among five wild carnivores, the ferret badger was the only species found to be infected with the rabies virus. Ferret badgers are distributed all around the country (see Fig. 1) and rabies was found mainly in the mountain areas to the south of Miaoli County. In Chinese Taipei, rabies cases were mainly attributed to the ferret badgers found in the mountains.

Genetic analysis showed that the rabies virus circulating in Chinese Taipei ferret badgers was a distinct lineage within the Asia group of viruses. Divergence time was estimated using a Bayesian coalescent approach and it was concluded that the rabies virus in Chinese Taipei ferret badgers was separated from the China I and Philippines isolates 158 years ago, with 95% highest posterior density ranging from 110 to 225 years [1]. Its divergence dating showed that this rabies virus has been circulating in Chinese Taipei ferret badgers for over 100 years.

Immediately after the confirmation of rabies in Chinese Taipei ferret badgers, the Chinese Taipei government set up the rabies

Table I

Cumulative test results (as of 8 May 2014)

Animals	No. tested 1999–2012	No. testing positive for rabies	No. tested, 2013	No. testing positive for rabies	No. tested, 2014	No. testing positive for rabies
Dogs	6,841	0	1,553	1[a]	287	0
Cats	5	0	112	0	7	0
Bats	322	0	64	0	12	0
Carnivores	–	–	1,019[b]	276[c]	163	89[c]
Other wildlife	–	–	341	1[d]	13	0
Total	**7,168**	**0**	**3,086**	**278**	**482**	**89**

a) 1.5-month-old puppy; b) includes three ferrets which were raised as pets; c) the ferret badger is the only wild carnivore infected by the rabies virus; d) house shrew

Table II

Test results of wild carnivores, 2013–2014

Species	No. tested	No. testing positive for rabies
Ferret badger (*Melogale moschata subaurantiaca*)	964	365
Formosan gem-faced civet (*Paguma larvata*)	189	0
Crab-eating mongoose (*Herpestes urva*)	19	0
Golden weasel (*Mustela sibirica taivana*)	4	0
Small Chinese civet (*Viverricula indica pallida*)	3	0
Total	**1,179**	**365**

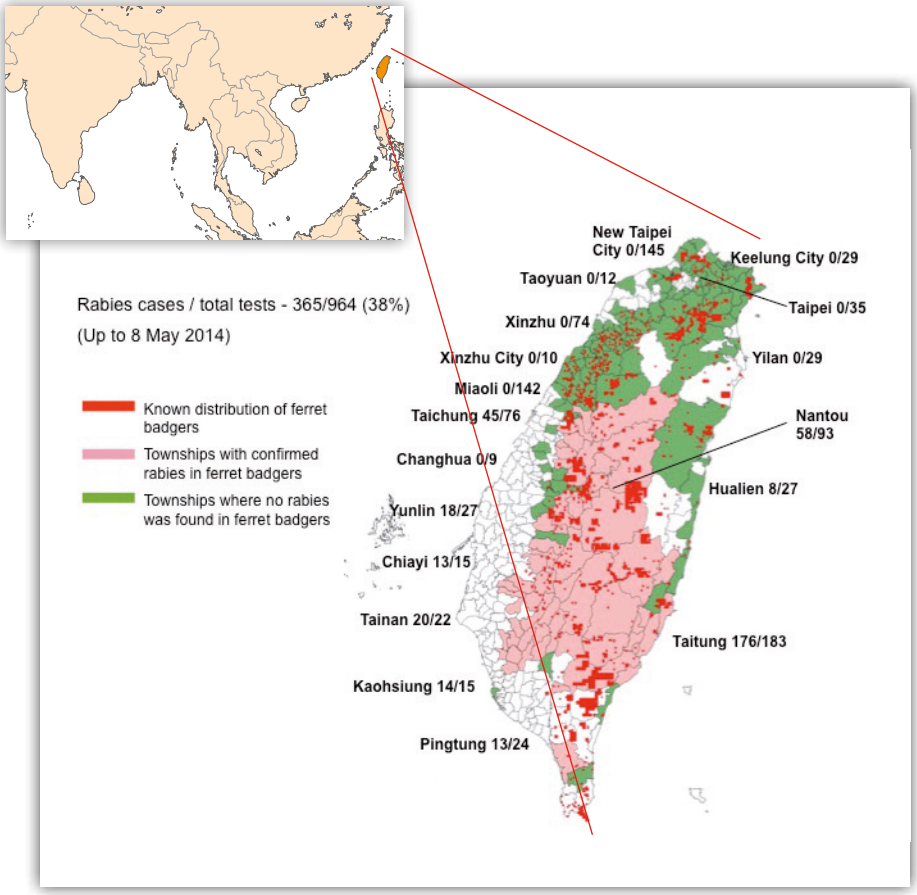


Fig. 1
Geographical distribution of ferret badgers in Chinese Taipei

prevention network to protect both humans and animals. First, the government established a command system; the Central Epidemic Command Center (CECC) was instituted on 1 August 2013. The CECC regularly reviews preventive measures against rabies to enhance the level of prevention and to control the disease as quickly as possible. A notification hotline was set up to strengthen rabies monitoring. A comprehensive health education programme was launched to raise public awareness: '**2 DON'Ts & 1 DO**' (DON'T abandon pets; DON'T catch or touch wild animals; and DO rabies vaccination), along with '**Remember, Rinse, Send and Observe**' campaigns ('Stay calm and remember the behaviour of animals; Rinse with plenty of water and soap for 15 minutes; Send to the hospital as soon as possible to evaluate the necessity of vaccination; Keep animals in quarantine for at least 10 days'). Furthermore, the government provides rabies vaccines to high-risk areas and animal shelters free of charge to improve rabies vaccination coverage of cats and dogs. At present, the vaccination coverage of cats and dogs is estimated at over 90% in high-risk areas and approximately 68% nationwide.

So far, by virtue of the effective control measures implemented by the CECC, rabies cases are limited to ferret badgers only in Chinese Taipei. However, further clarification is needed on such issues as the threat of rabies to ferret badgers, the prevalence of rabies in the ferret badger population and the risk of transmission between different species. Further studies on the ferret badger population, their distribution and habitats, and the feasibility of using oral bait vaccination are essential to better understand the disease situation. Therefore, it is necessary to continue promoting rabies vaccinations for cats and dogs, in order to reduce the risk of spreading disease among humans and other animals.

To eradicate rabies, it is a prerequisite to deal with rabies in wildlife reservoirs. The OIE strongly recommends that all Member Countries take an active role in eliminating urban rabies, as well as in monitoring rabies in wildlife.

Reference

1. Chiou H.-Y., Hsieh C.-H., Jeng C.-R., Chan F.-T., Wang H.-Y. & Chiou V.F.P. (2014). – Molecular characterization of cryptically circulating rabies virus from ferret badgers, Taiwan. *Emerg. infect. Dis.*, **20** (5), 790–798. doi:10.3201/eid2005.131389.

The Middle East Respiratory Syndrome Coronavirus (MERS-CoV) situation

Middle East Respiratory Syndrome (MERS) is a disease first identified in humans in April 2012. It is caused by infection with a coronavirus (MERS-CoV).

Since 2012, hundreds of human cases have been reported, predominantly in the Middle East, with a much smaller number of exported cases detected in travellers outside the region. MERS can be serious, particularly for people suffering from other diseases or for people who are immunocompromised. The case fatality rate among reported human cases is high (approximately 50% to 60%); however, it is not clear how many human infections may show no symptoms and may therefore have gone unreported. At present, MERS-CoV does not seem to be easily spread between humans and most large outbreaks have occurred in hospital settings. Some human MERS cases are thought to be related to zoonotic transmission (transmission from animals to humans), while in other cases human infections are associated with hospital settings or are unexplained.

MERS, like severe acute respiratory syndrome (SARS), is thought to have an animal origin and, since its emergence in humans, medical epidemiologists have been searching for an animal source. Initially, investigations focused on bats but the results were inconclusive. Attention then turned to camels where investigations were more fruitful. Evidence now suggests that MERS-CoV has adapted to dromedary camels and that these camels are a host for the virus. Infections in dromedary camels have been detected in a wide geographic distribution across the Arabian Peninsula and North Africa and appear to be widespread in some countries. Positive PCR results for MERS-CoV or isolation of the virus from animals is notifiable to the OIE because MERS is an emerging disease with a significant public health impact.

Antibodies against MERS-CoV (or another very similar virus) have also been detected in samples taken from camels in a number of countries in the Middle East, North Africa, East and West Africa and the Canary Islands; some of these seropositive samples date back to 1992. However, from antibodies alone, it is difficult to determine how

closely related the viruses that caused these infections (and antibody response) are to each other and to the virus which has been causing MERS in humans since 2012.

There is increasing evidence from genetic studies, outbreak investigations and case control studies that camels play a role in the epidemiology of MERS and that camels are a source of human infection. However, their exact role is not clear and many questions remain unanswered. Investigations have linked some human and camel infections, but the exact link and route of transmission is not well understood. Although MERS-CoV has been detected in the nasal secretions of infected camels and, to a lesser degree, in faeces, it is not known whether MERS-CoV infections cause signs of disease in camels, for how long the virus is shed from infected camels or in which secretions and excretions the virus is shed. Assumptions have also been based on the results of serology studies, and there is a need to explain why

human cases appear to be restricted to the Middle East from 2012 onwards, when serology studies seem to suggest that camels have been exposed to MERS-CoV (or a very similar virus) across a much greater geographical range since 1992. At this stage, very little is known about the epidemiology of MERS-CoV infections within the camel population or the pathogenesis and immunology of MERS-CoV infections in individual camels.

The OIE is advocating that the scientific community should provide a stronger evidence base to inform communications and health strategies. Research should include infection studies in camels, and epidemiological studies in the camel population and at the human–animal interface. The results should provide information about a potential link between human and camel infections, and risk factors for human infection. The studies should also help us to better understand the behaviour of MERS-CoV infections in camels and the actual distribution of MERS-CoV within the camel population, as well as to identify environments and populations which are at greater risk for virus transmission and maintenance. It is important to keep an open mind and continue to investigate the potential role of other animals and the environment in MERS. The net output of these studies should help to inform longer-term health management strategies.

MERS-CoV highlights the importance of the One Health approach. Veterinary and public health sectors must work closely together to investigate the potential role of animals in MERS. The OIE is working closely with WHO to share the latest technical information and to align communications messages at the international level. National Veterinary Services must also work closely with their Public Health Services to investigate links between MERS-CoV infections in humans and animals.

© OIE/K.Hamilton

During a visit to Qatar by an OIE team, May 2014

To provide evidence-based communications and advice for OIE Member Countries, the OIE has mobilised its *Ad hoc* Group on Diseases of Camelids and has also launched a MERS *Ad hoc* Group. Both involve the leading experts from the animal health and human health sectors. The OIE has also been collaborating directly with Member Countries and is particularly grateful to Qatar for welcoming an OIE team in May 2014 to discuss the latest results of the research studies carried out by Qatar.

Latest advice and technical information on MERS:
www.oie.int/en/for-the-media/press-releases/2014/

OIE twinning programme for rabies: capacity-building in China

Anthony R. Fooks [1, 2]*, Trevor W. Drew [1, 3] & Changchun Tu [3]

(1) Wildlife Zoonoses and Vector-borne Diseases Research Group, Animal Health and Veterinary Laboratories Agency (AHVLA) – Weybridge, Woodham Lane, Surrey, KT15 3NB, United Kingdom

(2) Department of Clinical Infection, Microbiology and Immunology, University of Liverpool, Liverpool, L3 5TQ, United Kingdom

(3) Changchun Veterinary Research Institute (CVRI), Chinese Academy of Agricultural Sciences, 666 Liuying West Road, Jingyue Economic Development Zone, Changchun 130062, People's Republic of China

*Corresponding author: Tony.Fooks@ahvla.gsi.gov.uk

The findings and conclusions in this report are those of the authors only, and do not necessarily reflect the views of their institutions or those of the OIE.

Rabies is considered a major communicable disease threat to animal and human health. The disease has one of the highest case-fatality rates of any infectious disease once clinical signs have appeared. The majority of rabies cases in animals and humans occur in sub-Saharan Africa, on the Indian sub-continent and in South-East Asia, but the disease is under-reported in many rabies-endemic countries. This fact alone demonstrates the need to build laboratory capability in rabies-endemic countries and ensure that systematic surveillance is undertaken and cases are reported accurately. Asia accounts for an estimated 31,000 human cases of rabies each year, most probably as a result of canine rabies. Of this estimated figure, China accounts for approximately 1,000 human rabies cases each year.

As rabies is one of the most important zoonotic infections of the 21st Century, the global elimination of rabies requires an interdisciplinary control strategy with the involvement of international organisations, working in collaboration with national governments. The principal goal, in order to reduce the human burden of rabies, is the elimination of rabies in dogs. If this goal were to be realised, it would result in a concomitant reduction of human mortality. In particular, it would have a demonstrable impact on childhood deaths, thus meeting one of the Millennium Development Goals of reducing child mortality.

At the 80th OIE General Session in May 2012, the Changchun Veterinary Research Institute (CVRI) from the People's Republic of China was designated an OIE Reference Laboratory for rabies, with Dr Changchun Tu, Head of the Diagnostic Laboratory for Rabies, named as an OIE expert. This important accomplishment has led to an improved balance of OIE Reference Laboratories for rabies worldwide, especially in countries where the disease remains endemic, allowing the CVRI to act as an OIE focal point for rabies in Asia.

The CVRI was established in 1949 and merged with the Academy of Military Medical Sciences in Beijing in 1953. In 1964, the entire institute was separated from the Academy of Military Medical Sciences and moved to Changchun, the capital city of Jilin Province, to merge with the Veterinary College of the People's Liberation Army as its only affiliated institute. In 2004, the college was merged with Jilin University. To extend its veterinary services to disease prevention and control in livestock, poultry and wildlife, the CVRI joined the Chinese Academy of Agricultural Sciences (CAAS) in 2005 and is now affiliated to CAAS.

At the beginning of the OIE Twinning Project, the institute was located on the campus of Jilin University. In order to improve its infrastructural facilities and functions, and meet the growing demands for veterinary research and animal disease control at the national and international level, the national government has invested in constructing a brand new institute to replace the existing building. The new institute occupies a site on the outskirts of Changchun, close to other research facilities.

In 2004, the Diagnostic Laboratory for Rabies (DLR) and Wildlife Associated Zoonoses at the CVRI was established by the Ministry of Agriculture (MoA), China. This year marks the ten-year anniversary of the DLR. The laboratory plays a pivotal role in dealing with rabies outbreaks, laboratory diagnoses, surveillance and rabies control strategies.

In 2006 and 2010, following a request by the MoA, the DLR organised two National Training Programmes for Rabies Diagnostic Techniques. These workshops enabled laboratory technicians from all provincial Centres for Animal Disease Control and Prevention to receive training. Since 2009, the DLR has also provided annual rabies technical training for the Macao Special Administrative Region.
As a demonstration of the successful outputs from the laboratory, it is estimated that more than 20,000 brain and saliva specimens of animals, including dogs, bats, cats, cattle, sheep, raccoon dogs, foxes and camels, have been tested. Over 60% of the research staff of the CVRI possess a PhD and DVM qualification. The institute therefore forms a very important part of the national veterinary network and has been granted qualification status by the Ministry of Education for postgraduate education in veterinary science. It also has postgraduate training programmes offering PhD and MSc degrees, and in addition is an authorised institute for the enrolment of post-doctoral fellowships.

The OIE Twinning Project began in 2009, with the United Kingdom Animal Health and Veterinary Laboratories Agency (AHVLA Virology Department) acting as the parent and hosting organisation. AHVLA has been recognised as an OIE Reference Laboratory for rabies since 2006.

The objectives of the OIE Twinning Project were:

a) to increase knowledge and preparedness for rabies in China and Europe by sharing information, transferring technology and providing knowledge management skills

b) to harmonise methods for rabies diagnosis in Chinese provinces, to comply with OIE standards.

Dr Changchun Tu commented that: 'The OIE Twinning Programme has contributed to the persistent decline of human rabies mortality in China since 2009, and has significantly benefited the capability-building of our rabies laboratory and the successful application of diagnoses and mass dog vaccination in the endemic areas'.
In 2011, AHVLA organised an ethics workshop, which included the subject of ethical use of animals in research. The issue of welfare standards for animals under experimentation has improved significantly throughout China over the last five years, with legislation now in place

© Lele Xia

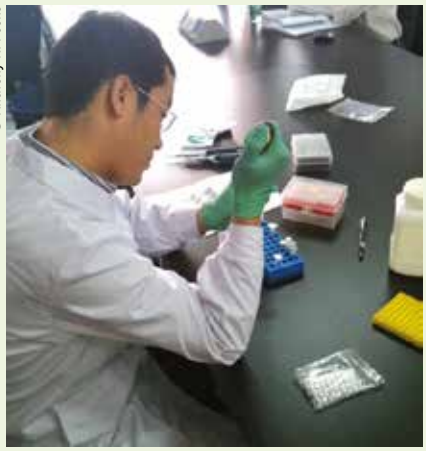
Dr Tu and his laboratory colleagues, who organised the National Workshop on Laboratory Diagnoses for Animal Rabies in 2010

to govern such issues. The '3Rs' principles – to **replace** animals used in research with non-animal alternatives wherever possible; to **reduce** the number of animals used to the minimum needed to achieve the results sought; and, for those animals which must be used, to **refine** the procedures as much as possible to minimise their suffering – have now been established in Chinese law, with which institutes are legally required to comply.
During the past three years, through training workshops, laboratory visits and mentoring, the scientists at the CVRI laboratory have been trained in the following diagnostic techniques for rabies virus:

– the removal of brain samples using the straw technique
– the preparation and storage of RNA from tissue samples
– reverse-transcription polymerase chain reaction (RT-PCR), including an introduction to reverse-transcription loop-mediated isothermal amplification
– technology transfer of OIE-prescribed tests, particularly the cell culture test and the fluorescent antibody test (FAT)
– detecting antigen in fixed tissue using *in-situ* hybridisation
– an introduction to antibody detection using pseudotype viruses
– participation in international rabies ring trials and proficiency tests
– the establishment of OIE standard methods
– improvements to ethics, safety and quality standards.

Since 2012, the DLR has been providing technical assistance, support and international consultancy, and it effectively and actively carries out the tasks assigned by the OIE and its regional representatives in Asia.

In 2012, the DLR hosted a workshop on rabies diagnostic techniques for scientists from the Rabies Vaccine Production Laboratory in Nepal. In addition, serological testing for measuring rabies-specific antibodies in animals has been instigated at the DLR. As a result, the DLR is now testing increasing numbers of canine sera samples,



© Anthony R. Fooks

Dr Huancheng Guo, setting up a PCR reaction

and was recently requested to test antibody titres against rabies for vaccinated giant pandas. Vaccination certificates for two giant pandas (Xinghui and Haohao), now living in Belgium, were issued. At present, the DLR receives approximately ten dog serum samples per week for serological testing.

With the initiation of the OIE Twinning Project, and the move to the new campus, the institute has now begun the process of national quality accreditation, overseen by the China National Accreditation Service. Administrators and staff in the institute, in particular those working in the area of rabies diagnostic veterinary services, have taken on various responsibilities aimed at achieving quality accreditation. Many areas of the work undertaken at the DLR are progressing towards compliance with the ISO9001:2008 and ISO17025 quality standards. The institute is progressing towards national quality accreditation, which should be achieved by 2015. In 2012, the DLR passed an international laboratory comparison test organised by the European Union Reference Laboratory for rabies Serology (Nancy, France) and demonstrating proficiency in rabies serological testing.

In 2013, Dr Changchun Tu participated in an FAO/OIE mission as the laboratory specialist to assist Vietnam with the prevailing rabies situation. He also gave assistance and presentations on rabies at meetings organised by the OIE Sub-Regional Representative for South-East Asia and the Regional Representative for Asia and the Pacific, at their request. At the request of the OIE Sub-Regional Representative for South-East Asia, a regional rabies diagnosis workshop for participants from all ten Member Countries of the Association of Southeast Asian Nations (ASEAN) was held in Changchun from 18 to 22 August 2014.

Since 2012, when the CVRI was accredited as an OIE Reference Laboratory for rabies, the surveillance and rabies investigation studies undertaken there have been more in line with international standards, while still asking pertinent scientific research questions that address important national and regional issues.

Prof. Anthony Fooks, Head of the AHVLA National Rabies Laboratory and an OIE expert for rabies, concludes: 'The OIE twinning experience has benefited both laboratories and has enabled a strong collaborative relationship of mutual trust, friendship and co-operation to flourish'.

© Lele Xia

Changchun Veterinary Research Institute, OIE Reference Laboratory for rabies

The second batch of the OIE reference canine serum for rabies is now available

M. Wasniewski, J. Barrat & F. Cliquet

French Agency for Food, Environmental and Occupational Health & Safety (ANSES), Nancy Laboratory for Rabies and Wildlife, European Union Reference Laboratory for Rabies, European Union Reference Laboratory for Rabies Serology, OIE Reference Laboratory for Rabies, WHO Collaborating Centre for Research and Management in Zoonoses Control, Technopôle agricole et vétérinaire de Pixérécourt, 54220 Malzéville, France

The vaccination of domestic carnivores and wildlife against rabies is a powerful tool to prevent, control and eliminate this disease. The presence of rabies-neutralising antibodies in blood is considered a reliable indicator for assessing the efficacy of rabies vaccination and as proof of protection against the disease.

The OIE reference methods, i.e. the fluorescent antibody virus neutralisation (FAVN) test and the rapid fluorescent focus inhibition test (RFFIT), require an international positive reference control to validate the test, and to obtain harmonised titres between laboratories worldwide for mutual recognition of test results. This is why the OIE recommends the use of the OIE reference serum of dog origin to express the titre of sample in IU/mL.

For many years, the production and determination of the titre of the OIE antirabies-positive reference serum of dog origin has been carried out by ANSES-Nancy, the OIE Reference Laboratory for Rabies (Malzéville, France).

Experiments and husbandry were conducted according to European Directive 2010/63/EU and French regulations on ethics in animal experimentation. The protocol of dog immunisation was proposed to the OIE Reference Laboratories for Rabies as well as to the OIE Biological Standards Commission for approval. To more closely approach the real use of the reference serum (mainly to test the level of antibodies in vaccinated animals), three inactivated monovalent antirabies veterinary vaccines, based on the most used vaccinal strains (PV and Flury LEP strains) in the world, were used to immunise dogs. The immunisation protocol was the same for each veterinary vaccine. Five naïve dogs were vaccinated with each of the three vaccines (a total of 15 dogs in all). Serological monitoring was carried out on each dog to observe the level of rabies-neutralising antibodies produced over a period of several weeks. When the level of antibodies produced was considered satisfactory, the blood was sampled from each dog and centrifuged to obtain the serum. The distribution in vials and freeze drying were performed by a specialised company. Before and after the freeze-drying step, several sterility controls and serological titrations were performed at ANSES-Nancy.

The titre of this reference serum was determined by the OIE Reference Laboratories for Rabies during a ring trial. This inter-laboratory test was organised by ANSES-Nancy and five OIE Reference Laboratories for Rabies (from France, Germany, South Africa, the United Kingdom and the United States of America) were involved. Each received a panel of 12 coded samples: one sample containing a naïve serum; three samples containing the positive reference serum whose titre was to be determined, and eight samples corresponding to the different dilutions of the second WHO International Standard for Anti-Rabies Immunoglobulin, of human origin, titrating 30 IU/mL. Each laboratory was invited to titrate the panel of samples in three independent runs by using one of the two sero-neutralisation tests prescribed by the OIE, either the FAVN test or the original RFFIT. Different statistical tests were carried out by ANSES-Nancy on the results given by participating laboratories to determine the consensus value. The consensus titre of the second batch of the OIE reference canine serum for rabies is equal to 5.59 IU/mL.

The OIE Biological Standards Commission (February 2014) agreed to adopt the serum as an OIE-approved standard. This OIE-approved reference reagent is now available and may be requested from our laboratory – ANSES-Nancy.

A brief history of the OIE Reference Laboratories

Steven Edwards

Consultant editor of the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*
(formerly President of the OIE Biological Standards Commission)

The findings and conclusions in this report are those of the authors only, and do not necessarily reflect the views of their institutions or those of the OIE.

Preliminary discussions

The documentation of the OIE Reference Laboratories (RLs) begins in **1981**, when the then Norms Commission (later the Standards Commission, now the Biological Standards Commission) started discussing what the requirements for RLs should be for the diagnosis of animal disease at national, regional or global levels. It was proposed that they should be government institutions that were recognised in their own countries as having the highest standards and with reference functions for tests and reagents. Advice was to be sought from experts in laboratories around the world. The following year, consultations took place with FAO, WHO and some Chief Veterinary Officers (CVOs) as to where suitable laboratories might already exist. Views would also be sought at the Conference of the World Association of Veterinary Laboratory Diagnosticians, to be held in Ames, Iowa, in 1983. The FAO had already established a number of reference laboratories around the world, for specific diseases (e.g. foot and mouth disease [FMD] or for more generalised topics, e.g. diseases of poultry). It was felt that this information would form a good basis for the development of a list of OIE RLs.

In 1984, at a joint meeting of the Norms and Code Commissions, the proposed establishment of regional FMD reference centres in Botswana and Thailand was discussed. It was agreed that, while capacity-building at these regional centres should continue, the OIE was not yet in a position to apply a formal designation. Meanwhile, the Norms Commission continued to work on a set of criteria for the designation, functions and responsibilities of OIE RLs. This was finalised in 1985 and, after circulation to Member Countries, was adopted by the International Committee in **May 1986**.

Reference Laboratories would be characterised by offering a specific function or range of functions related to the diagnosis and immunoprophylaxis of the most important infectious diseases of animals. Selection criteria would include the national and international scientific standing of the laboratory, the staff and facilities to be offered for OIE work, the stability of staffing and funding, and the capacity to fulfil a role in support of OIE activities. Designation was to be made by the International Committee on the advice of the Norms Commission, and with the agreement of the Director of the laboratory in consultation with the national government. No financial support was implied from the OIE. The functions of the RLs were listed under nine headings:

1. The provision of expertise on the subject and standardisation of methodology

2. The supply of standard strains, diagnostic standards, antisera, antigens and other reagents

3. The development of new methods

4. The collection and analysis of epizootiological data

5. Consultancy for the OIE

6. Training

7. The organisation of scientific meetings for the OIE

8. The coordination of collaborative studies

9. The publication and dissemination of information.

Although these functions have subsequently been refined and developed, the basic concepts remain in place today.

The reports of the Norms Commission through the late 1980s indicate several discussions on candidate RLs, and apparently the first documented designation was for a leptospirosis laboratory in Amsterdam, the Netherlands, in **1987**. The first listing of OIE RLs appears in an appendix to the report of the Standards Commission in February 1989, covering six diseases and eight laboratories:

– foot and mouth disease: the United Kingdom (Pirbright Laboratory), Thailand, Botswana and Brazil (Panaftosa Laboratory)

– African horse sickness: South Africa (Onderstepoort Laboratory)
– bluetongue: South Africa (Onderstepoort Laboratory)
– equine influenza: Germany (University of Munich)
– enzootic bovine leukosis: Denmark (Copenhagen)
– Newcastle disease: United Kingdom (Weybridge Laboratory).

The Commission had further laboratories under consideration for these diseases, as well as proposals for RLs for additional diseases (rinderpest, peste des petits ruminants, contagious bovine pleuropneumonia, lumpy skin disease, Rift Valley fever, sheep and goat pox, African swine fever, classical swine fever and fowl plague).

In reviewing the role of RLs at that time (February 1989), the Standards Commission took note of the evolving positions of WHO and FAO regarding their own reference centres, which were tending to move away from the concept of individual centres of expertise towards expert groups as focal points for coordinating advances in research. Another key point was the recognition (still valid today) that an RL designation often depends on the presence of a specific individual expert, and could be difficult to sustain when those individuals retired or moved elsewhere. Even at that early date, the Commission was also considering the parallel roles of expertise in particular fields and disciplines (e.g. biotechnology, vaccinology), rather than the disease-specific focus of an RL. This presaged the development of the concept of OIE Collaborating Centres.

Signing of the agreement establishing the OIE Regional Collaborating Centre for Surveillance and Control of Animal Diseases in Africa, Onderstepoort Veterinary Institute, 26 November 1993

Defining the formal list of Reference Centres

In an initial attempt to increase numbers, the OIE had written in 1989 to 26 Delegates of Member Countries, calling for proposals of RLs for 21 listed diseases. Subsequently, the Standards Commission (in consultation with the Code Commission) expanded this to 10 diseases on List A and 26 on List B. The new list was sent to all Member Countries, seeking proposals for RL designations. Replies were received from 35 countries, the responses were analysed by the Standards Commission in September 1990, and a list of 80 proposed designations was prepared, covering the 36 diseases, with named experts at each RL. Fish diseases were deferred to the Fish Diseases Commission for consideration. The list was subsequently adopted by the OIE International Committee in **May 1991**.

Thus, although there had been preliminary designations in the late 1980s, this published listing in 1991 was the start of the formal establishment of the OIE Reference Laboratories. The list of RLs now became (and still is) a standing agenda item for the meetings of the Standards Commission, and it was subsequently published in the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*, with the latest listing being available on the OIE website.

The discussions that led to the designation of OIE Collaborating Centres (CCs) are less clearly documented as the responsibility was shared between the Standards and Regional Commissions, with the final recommendation being made by the OIE Administrative Commission. The first two CCs were for veterinary medicines, at Fougères, France, and for immunoenzymatic and molecular diagnostic methods at the laboratory of the FAO/IAEA Joint Division at Seibersdorf, Austria. These were included with the updated list of RLs in an appendix to the September 1992 report of the Standards Commission. The list of CCs has expanded considerably since then and a notable development has been the designation of multi-centre CCs (in some cases, even in different countries), linking together individual centres of expertise.

In **May 1993**, the OIE International Committee adopted a new formal set of Mandate and Rules for the RLs and

CCs, the Mandate being based on the nine functions listed above, and the Rules setting out the procedures for applications, designations, entitlements and obligations. One of the obligations was to submit an annual report to the OIE on the laboratory's activities on behalf of the OIE. The template for these reports was devised by the Standards Commission. The reports were collated and circulated annually to all the RLs, CCs and Member Country delegates – initially in hard copy and latterly on CD-ROM. A summary analysis of the global activities was presented to the International Committee each year by the Standards Commission.

Throughout the 1990s and into the next century, new applications have continued and a steadily increasing number of designations have been made. Some RLs have voluntarily withdrawn their status as their activities and expertise have changed. RLs have also been designated for some economically important diseases that are not included in the OIE List.

The 20-year trends are indicated in the table below.

Year	1992	2002	2012
Number of diseases covered	37	59	79
Number of Reference Laboratories	97	169	201
Number of countries providing Reference Laboratories	22	27	32
Number of Collaborating Centres	2	12	38
Number of countries providing Collaborating Centres	2	9	22

Notes:
– Many individual designations include more than one disease on the OIE List; for example, brucellosis, salmonellosis, bee diseases. For the purposes of this table, these are counted as one.
– Data for RLs excludes aquatic animal diseases.

Building collaborations

For some diseases there is only one RL and in some cases global expertise is difficult to find. Nevertheless, for most of the major diseases, more than one RL exists, with up to nine in some cases, for diseases such as FMD and avian influenza.

As the new century progressed, the OIE expressed an increasingly strong interest in the development of laboratory networks that encourage the RLs to work together in a complementary manner, exchanging data and biological materials towards the goal of uniform global standards for disease diagnosis and immunoprophylaxis. As part of this process, the RL networks are expected to develop joint programmes for the preparation and supply of reference materials, for the validation of diagnostic tests, and for ongoing inter-laboratory comparisons as an element of external quality assurance. A significant responsibility for RLs and these networks is to draft and update texts for the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

A major step forward in the development of such networks was the staging in **2006** of the First International Conference of OIE Reference Laboratories and Collaborating Centres, held in Florianopolis, Brazil. The RL and CC representatives were able to share challenges and seek common solutions. One of the recommendations was to use laboratory networks to harmonise and exchange data, information and reference materials to improve disease surveillance and control worldwide. This was strongly endorsed by the Second Conference, held in Paris in 2010. Informal RL networks have existed for many years for some diseases, such as brucellosis and bluetongue, while more formal arrangements have been in place for FMD, and (from 2005) influenza in the OFFLU network, managed jointly with FAO.

In **May 2011**, the World Assembly of Delegates of the OIE (formerly called the International Committee) adopted a new set of criteria and internal rules for OIE 'Reference Centres', which is the new collective title, with new terms of reference for RLs and CCs, respectively. These governing documents explicitly require OIE Reference Centres to establish and maintain a network among all the OIE Reference Centres designated for the same pathogen or specialty. Participation in the networks is compulsory. The new

terms of reference may be viewed in full on the OIE website[1]. They are based on the principles established at the end of the 1980s, but they have been expanded, are more explicit and place stronger obligations on the designated institutions.

Building capacity and extending coverage

One long-standing concern for the OIE has been that the geographical spread of RLs is heavily biased towards the developed, industrialised countries, particularly in Europe and the Americas, whereas the need for expert laboratory support is greatest in the developing and transitional countries of Africa and Asia.

One tool to address this situation, starting in 2006, has been to establish a twinning programme, managed by the OIE and financially supported by the OIE World Fund. Further information is available on the OIE website, but the essential aim is to pair a laboratory in a developing country (the 'candidate' laboratory) with an existing OIE RL as a partner, to exchange personnel, provide training for staff and build the technical capacity of the twinned laboratory, initially to enhance its performance as a national laboratory and hopefully, in some cases, to bring them to the point where they can apply to become an RL in their own right. This principal objective of establishing more OIE Reference Centres was first achieved at the 80th OIE General Session (May 2012), when three twinning 'candidate laboratories' were designated as OIE Reference Laboratories for their expertise in rabies, avian mycoplasmosis and contagious bovine pleuropneumonia. Two additional laboratories were recognised at the recent 82nd General Session (May 2014), one of which is the first 'candidate laboratory' to become an OIE Collaborating Centre: for Veterinary Epidemiology and Public Health, in consortium with the currently existing Collaborating Centre in New Zealand.

Conclusion

The establishment of OIE Reference Centres has been a great success story. The global veterinary laboratories community has moved over the past quarter-century from reliance on a dispersed uncoordinated group of individual centres of expertise, to a well-integrated network of laboratories with rigorous quality systems, operating to common standards, and providing national and international Veterinary Services with reliable data based on robust technologies. The OIE has provided impetus, support and encouragement. However, it is also important to recognise the key role of national Veterinary Services, which provide the funding to enable these reference centres to deliver their activities to the benefit of the global animal health community and to the OIE.

Further reading

Edwards S. (2007). – International Reference Laboratory Networks: challenges and benefits. *Dev. Biol.* (Basel), **128**, 97-102.

Edwards S. & Alexander D. (1998). – National and international veterinary reference laboratories for infectious diseases. *In* Veterinary laboratories for infectious diseases (J.E. Pearson, ed.). *Rev. sci. tech. Off. int. Epiz.*, **17** (2), 418-425.

OIE/FAO Network of Expertise on Animal Influenza (OFFLU) (2013). – Influenza – an example of successful networking and intersectoral collaboration. OIE *Bulletin*, **2013**-1, 49–50.

Timoney P. & Chambers T. (2013). – What's in an OIE Reference Laboratory? OIE *Bulletin*, **2013**-2, 50-51.

1 www.oie.int/fr/notre-expertise-scientifique/presentation/

news from Member Countries

Self-declaration

Other than for African horse sickness, bovine spongiform encephalopathy, classical swine fever, contagious bovine pleuropneumonia, foot and mouth disease and peste des petits ruminants, for which the OIE currently has a procedure of official recognition of status, the self-declaration of freedom of a country or a territory from a given OIE-listed disease is under the responsibility of the Member concerned. The OIE is not responsible for inaccuracies in the publication of self-declarations concerning the status of a country or zone with regard to a disease.

Self-declaration from the Republic of Korea of zonal freedom for equine diseases

submitted to the OIE on 22 May 2014 by Dr Taeyung Kim, Delegate of the Republic of Korea to the OIE, General Animal Health Division, Ministry of Agriculture, Food and Rural Affairs, Republic of Korea

Background information

The Republic of Korea is hosting the 17th Asian Games Equestrian Events in Incheon from 19 September to 4 October 2014. To facilitate the international participation of horses from Asian countries, the OIE had advised the Korean Veterinary Services to embrace the principles of the high health, high performance (HHP) equine subpopulation concept as currently being developed by the OIE, as well as the principles of equine disease-free zones (EDFZ), as already tested during the Asian Games in Guangzhou, on the equestrian competition site in Conghua, the People's Republic of China. The EDFZ is a **temporary** establishment of a free zone for multiple equine diseases.

Import health requirements were developed in line with the HHP concept, allowing horses to undergo appropriate health preparation in resident countries, travel to Korea to compete and travel back to their resident country. No post-arrival quarantine in Korea is required, as all horses are expected to be of the same health status.

Description of the EDFZ

The establishment of this EDFZ follows the principles of zoning and compartmentalisation as described in Chapter 4.3. and 4.4. of the OIE *Terrestrial Animal Health Code*. The venue for the equestrian competitions, 'Dream Park', has been designated as a 'core zone', which is surrounded by a surveillance zone of 10 km in radius. Horses arriving at the international airport some 35 km away will be transported to Dream Park through a bio-secure safe passage route, as shown on the map below.

The 'core zone' venue is isolated by water canals from the outside environment. Fences separate stable buildings from the rest of the venue to regulate the entry of animals, humans and equipment, and special approval is required to enter the stable area.

Zone/Path		Range
EDFZ	Core zone	Dream Park equestrian venue
	Surveillance zone	10 km radius around the equestrian venue
Safe passage route		Incheon International Airport → Cheongna Interchange → Dream Park equestrian venue (approx. 35 km)

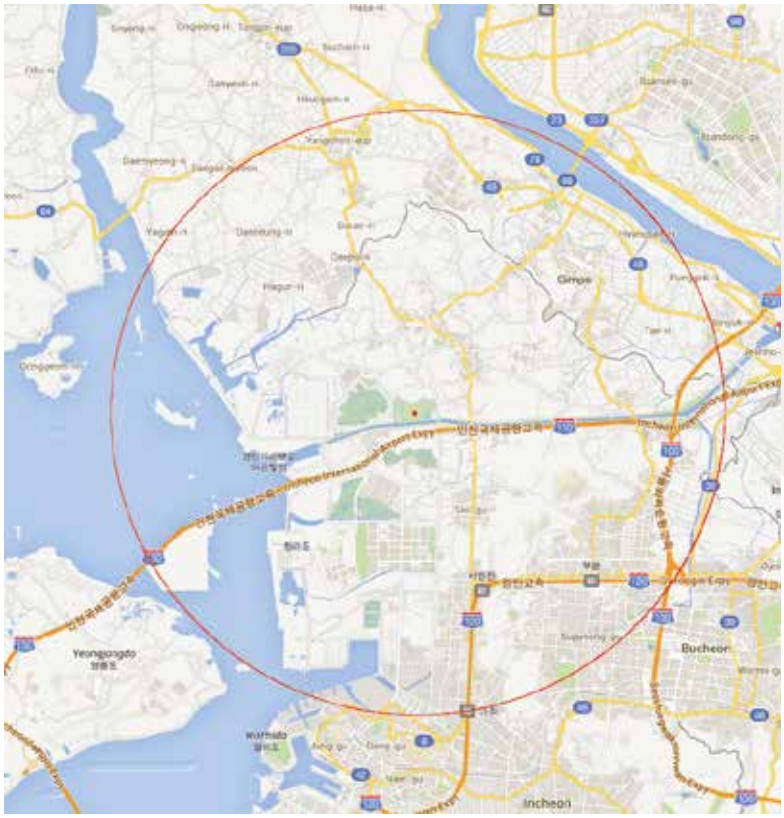


Fig. 1
Horses arriving at the international airport will be transported to Dream Park through a bio-secure safe passage route

Equine disease situation in the Republic of Korea

Korea reports regularly to the OIE as being free from major equine diseases and is recognised by the European Union as an approved third country for the importation of registered horses. The census data for equines in Korea show that only 0.5% of the population is located in Incheon. Within the surveillance zone of the EDFZ, 101 horses are being raised at seven locations.

In the Republic of Korea, major equine diseases are classified as 'notifiable'. No outbreaks of such diseases have been reported in the last three years countrywide, with the exception of a case of piroplasmosis in the province of Yangju-si, Gyeonggi-do. As for other notifiable diseases that also affect horses, cases of rabies in dogs have been reported during the last three years in other provinces.

Equine disease surveillance

Active serosurveillance for equine diseases is carried out twice a year on a representative sample of horses from throughout the country for the following diseases: African horse sickness, vesicular stomatitis, equine infectious anaemia, West Nile fever and Japanese encephalitis. Telephone surveillance of any establishment of more than five animals is carried out twice a month to check for any other disease.

In addition to this routine surveillance programme, an enhanced surveillance system will be put in place for one month before, during and one month after the Asian Games, with telephone surveillance of all farms within the EDFZ every second day, and twice a month for all farms outside the EDFZ.

Biosecurity Plan before, during and after the Asian Games

Horses arriving at the international airport will undergo individual verification of their identification documents and health certificates, as

well as a clinical examination after disembarkation. If a horse is found to be healthy and fit, it will be directly transported to Dream Park through the bio-secure safe passage route.

At Dream Park, horses will be stabled according to their countries/regions in separate stable blocks and Piroplasma-seropositive horses will be kept in a separate stable block. A schedule will be developed, assigning specific times for residents of different stable blocks to use the training facilities. Horses will be inspected regularly and their rectal temperatures will be taken twice daily.

There are isolation boxes available as well as a veterinary clinic and a separate room to take samples for doping control.

Regular pest and insect control of the empty venue will start one month before the Games begin and continue during the Games. Disinfection will also be carried out on the seven farms located in the surveillance zone, where a strict movement ban will also be applied during the period between the arrival and departure of the competition horses.

Contingency plan

A contingency plan has been prepared to cover accidents during transport, minor and major injuries during competition and the outbreak of an infectious disease at the venue. Furthermore, if active and passive surveillance during the period of the Games give rise to suspicion within the surveillance zone, immediate diagnosis will be attempted and appropriate control measures in line with the Act on the Prevention of Contagious Animal Diseases will be implemented.

Conclusion

All measures have been put in place to isolate the Dream Park equestrian event location from the rest of the country, including a surrounding surveillance zone. Passive and active surveillance have demonstrated the EDFZ to be free from the following diseases: African horse sickness, equine encephalomyelitis (all types), vesicular stomatitis, glanders, dourine, equine infectious anaemia, rabies, anthrax and Japanese encephalitis.

Fig. 2
Dream Park equestrian venue

Progress in the development of a direct rapid immunohistochemical test for diagnosing rabies

C.E. Rupprecht [1, 2]*, F. Cliquet [3], C. Fehlner-Gardiner [4], A.R. Fooks [5], T. Mueller [6], C. Sabeta [7] & D. Slate [8]

(1) Ross University School of Veterinary Medicine, St Kitts, West Indies
(2) Global Alliance for Rabies Control, Manhattan, Kansas, United States of America
(3) French Agency for Food, Environmental and Occupational Health & Safety, OIE Reference Laboratory for Rabies, Nancy, France
(4) Canadian Food Inspection Agency, OIE Reference Laboratory for Rabies, Ottawa, Canada
(5) Animal Health and Veterinary Laboratories Agency, Weybridge, OIE Reference Laboratory for Rabies, Surrey, United Kingdom
(6) Friedrich-Loeffler-Institut, OIE Reference Laboratory for Rabies, Greifswald-Insel Riems, Germany
(7) Onderstepoort Veterinary Institute, OIE Reference Laboratory for Rabies, Pretoria, Republic of South Africa
(8) United States Department of Agriculture, Wildlife Services, Concord, New Hampshire, United States of America
*Corresponding author: crupprecht@rossvet.edu.kn

The findings and conclusions in this report are those of the authors only, and do not necessarily reflect the views of their institutions or those of the OIE.

Summary: *At present, the direct fluorescent antibody test (FAT) is an OIE-prescribed and WHO-recommended test and is considered the 'gold standard' for sensitive and specific rabies diagnosis. The FAT provides consistent results on fresh brain specimens in more than 95% to 99% of cases. As plans for the global elimination of canine rabies advance, the need for additional relevant diagnostic testing is crucial to improve laboratory-based surveillance and monitor programme success, especially in developing countries. A direct rapid immunohistochemical test (DRIT) for rabies diagnosis has been developed as one alternative to meet this need. Similarly to the FAT, the DRIT involves the examination of brain impressions but, rather than immunofluorescence, employs light microscopy and biotin-labelled antibodies. Using the DRIT, tens of thousands of suspect animal brains have been examined since 2008 by diagnosticians and researchers in the Americas, Africa, Asia and Europe. Despite widely varying conditions by locale, species tested, sample quality, viral type, and background conditions, test sensitivity and specificity have approached 100%. All currently recognised lyssavirus species have been identified in naturally or experimentally infected mammals using the DRIT. In the United States, it is applied to laboratory confirmatory testing of equivocal FAT results and to enhance surveillance under field conditions. For example, in support of oral rabies vaccination programmes, more than 60,000 specimens have been tested within North America and, as with the FAT, the DRIT is included in routine proficiency testing. Moreover, preliminary inter-laboratory comparisons, using different monoclonal and polyclonal conjugates, with antibodies tested against a wide variety of viral variants, support the basic premise of the DRIT as a relevant test for future validation and OIE consideration as a prescribed test for rabies diagnosis.*

Keywords: diagnosis – direct fluorescent antibody test – direct rapid immunohistochemical test – DRIT – FAT – immunohistochemistry – lyssavirus – neglected disease – rabies – surveillance.

Introduction

During the major historical achievement of the eradication of rinderpest, three interrelated attributes were identified as crucial for long-term veterinary programme success: applicable diagnostics, efficacious vaccines, and the epidemiological knowledge to harness both effectively for practical global prevention and control [1]. All of these facets come into operation when extending a similar programme to another high-impact, rapidly moving, transboundary disease: the acute progressive encephalitis due to rabies. As with rinderpest, pure, potent, safe and efficacious biologics for rabies prophylaxis became available over the past century for domestic animals, as well as for humans and wildlife [2, 3, 4]. Moreover, the case for substantive intervention is well supported by a modern understanding of lyssavirus epidemiology from a theoretical as well as an applied perspective [2, 3, 5, 6]. Lastly, laboratory diagnostics form the cornerstone to any modern rabies management plan [2, 3, 7]. Obviously, without a method to measure success in the initiation of herd immunity, efforts at canine vaccination become exercises in futility. Nevertheless, as with many infectious agents in the developing world, ineffectual laboratory-based surveillance systems for rabies are plagued by a debilitating cycle of neglect. Few, or no, reported human or canine cases each year do not capture substantive public attention. A lack of epidemiological focus fails to garner the required resources to manage rabies at its source in reservoir species. Minimal support leads to eroded and ineffective surveillance efforts. Often, with no comprehensive detection mechanisms, political will, national support or local champions, laboratory systems falter. Similar cycles continue for most neglected zoonotic diseases, demanding renewed advocacy [8].

Historical perspectives in rabies diagnosis

Despite the current tenuous diagnostic situation, there has been a significant development of technical acumen related to this viral zoonosis for over a century. Historically, most suspicions about rabies were based upon clinical grounds alone. Gradually, during the late 1800s and early 1900s, the usefulness of laboratory diagnostic methods was demonstrated, indicating a non-specific viral encephalitis, based upon histological examination of the brain. Shortly after, the 1903 description of the Negri bodies, as intra-cytoplasmic inclusions within infected neurons, revolutionised rabies virus diagnosis [9]. By the 1950s, the superiority of other laboratory techniques became clear, such as the direct fluorescent antibody test (FAT) [10]. Over the next several decades, the FAT became the 'gold standard' for reliable detection of viral antigens within the brains of rabid animals [2, 3]. Gradually, within this framework, the impetus arose during the 1990s for other diagnostic options from the FAT. Suitable rapid alternatives were needed, equivalent to the FAT, to maintain high standards of sensitivity and specificity and to preserve the underlying concept of an anatomic-pathological basis for detecting intra-neuronal inclusions within the brain, while allowing for greater adaptability without the need for an expensive fluorescence microscope (or even, necessarily, electricity).

Conception of an alternative diagnostic test for rabies

The preliminary work for an alternative method was undertaken during 1999, initially as an indirect immunohistochemical test, using an experimental cocktail equivalent to five anti-rabies virus monoclonal antibodies purified from mouse ascites fluid. Within a few years, the number of antibodies was reduced to two and both were directly linked to biotin to simplify the test. Conceptually based on the antibody-antigen detection of viral inclusions in the mammalian central nervous system (CNS), as in the FAT, the direct rapid immunohistochemical test (DRIT) was developed by 2002, but with several distinct differences (Table I). In

contrast to the FAT, one prominent feature of the DRIT included a brief fixation of brain impression slides in 10% buffered formalin, which not only provides excellent morphological preservation and ready access for antibody diffusion into tissue, but also inactivates lyssavirus infectivity, as an important biosafety improvement over acetone. Also, instead of the fluorochrome-linked conjugates used in the FAT, the DRIT employs antibodies linked covalently to biotin (either hyperimmune serum, such as goat anti-rabies immunoglobulin G or murine monoclonal antibodies), and light microscopy, using a colorimetric streptavidin-biotin, sensitivity-boosting detection system, with resistance to organic solvents, denaturants, detergents, proteolytic enzymes, and extremes of temperature and pH, with post-impression results obtained in approximately less than one hour (Table II).

Hence, the DRIT was developed upon the same immunological premise for focal post-mortem diagnosis as the FAT. Moreover, it was built upon the

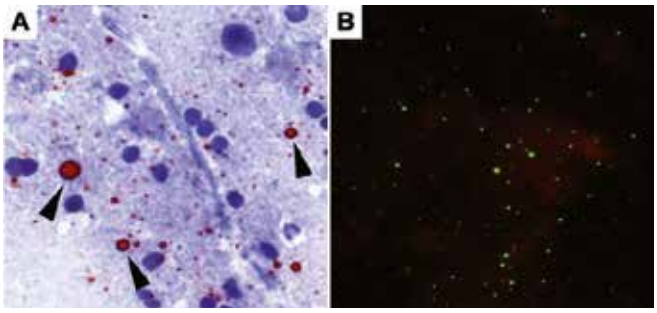
Table I
Comparison of direct fluorescent antibody test and direct rapid immunohistochemical test procedures for diagnosing rabies

Attribute	Fluorescent antibody test (FAT)	Direct rapid immunohistochemical test (DRIT)
Tissue	Brain	Brain
Material	Impressions on microscope slides	Impressions on microscope slides
Reagent	Anti-rabies monoclonal or polyclonal antibody	Anti-rabies monoclonal or polyclonal antibody
Principle	Antibody-antigen recognition	Antibody-antigen recognition
Observation	Intra-neuronal inclusions	Intra-neuronal inclusions
Usefulness	High sensitivity and specificity	High sensitivity and specificity
Equipment	Fluorescence microscope	Light microscope
Conjugate	Fluorescein isothiocyanate	Biotin
Fixative	Acetone	Formalin
Time	~1.5–4 hours (or longer)	<1 hour

Table II
Synopsis of the direct rapid immunohistochemical test procedure for rabies diagnosis

1. Make brain touch impressions on microscope slides.
2. Allow slides to air-dry.
3. Fix brain impression slides in 10% buffered formalin for 10 minutes.
4. Treat slides with hydrogen peroxide for 10 minutes.
5. Incubate slides with primary biotinylated antibodies for 10 minutes.
6. React slides with streptavidin-peroxidase for 10 minutes.
7. Add peroxidase substrate to slides for 10 minutes (3-amino-9-ethylcarbazole, AEC).
8. Counterstain (with Gill's haematoxylin) for 2 minutes.
9. Mount the cover slip with water-soluble mounting media.
10. Read the slides using light microscopy to detect stained viral inclusions.

technical evolution in the rabies diagnostic field, from the advent of immunohistochemistry in pathology, in addition to hybridoma production of monoclonal antibodies directed against linear or conformational determinants of viral antigens [11, 12, 13, 14, 15]. The initial selection of monoclonal antibodies was dependent upon prior years of use in the antigenic typing of viral variants and the broad recognition of some antibodies, versus the discriminatory use of other monoclonal antibodies, to differentiate lyssavirus serotypes [16, 17]. Additionally, not all monoclonal antibodies were equally useful in the DRIT after formalin fixation, without the need for prior digestion, so selection was dependent upon a number of properties. For example, monoclonal antibodies WI 502 (developed at the WHO Collaborating Centre, Wistar Institute, Philadelphia, Pennsylvania, USA, during 1978) [15, 16] and FLI 239.17 (developed at the WHO Collaborating Centre, Tubingen, Germany, during 1982), directed against the rabies virus nucleoprotein, not only recognised epitopes on all known lyssaviruses (and became antibodies used in commercial FATs), but also maintained ideal binding in the DRIT, after the brief formalin fixation step. Depending upon the type of antibody, the choice of colour development system and the counterstains selected for detection via simple light microscopy, viral inclusions appear as discrete magenta bodies to finer, reddish 'antigenic dust', distributed against a bluish-purple background of neuronal tissue (Figs 1 & 2).

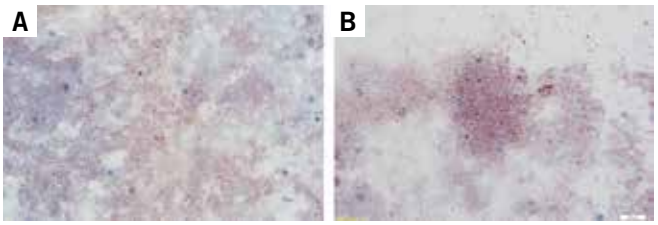


© C.E. Rupprecht

Fig. 1
Microscopic touch impressions from a rabid Tanzanian dog brain, preserved in 50% glycerol saline solution for approximately 15 months, before testing by the direct rapid immunohistochemical test (DRIT) and retesting by the fluorescent antibody test (FAT) after approximately 5 months

A. Brain stained by DRIT: rabies virus antigens appear as magenta inclusions (arrowheads) against a blue neuronal haematoxylin counterstain. Magnification × 630

B. Immunofluorescent apple-green rabies virus inclusions in the same rabid canine brain, by FAT. Magnification × 200 [24]



© F. Cliquet

Fig. 2
Microscopic touch impressions of infected mouse brain tissue tested by the direct rapid immunohistochemical test, demonstrating positive detection of lyssavirus inclusions (magnification × 400).

A. A French isolate of a BBLV sample

B. A French isolate of a EBLV-1 sample

Application of the DRIT in enhanced s urveillance of canine and wildlife rabies

The preliminary experimental work in the evolution of the DRIT between 1999 and 2002 was focused upon the selection, purification and biotinylation of the most suitable, broadly cross-reactive monoclonal antibodies, simplification of the protocol steps, and the determination of reliable common sources for the other reagents. The advantages of the DRIT included the ability to perform the test at ambient temperatures in the laboratory, without the need for 4°C or –20°C refrigeration during fixation, or incubation at 35°C to 37°C during the antibody-antigen reactions. Thereafter, in collaboration with state health departments throughout the United States (USA), phase I testing began to evaluate operator ability to perform the test upon local species and variants. All New World rabies virus variants were recognised by the DRIT, as were all other lyssaviruses that had been identified by the start of the new millennium (Table III). Between 2005 and 2012, the DRIT was being used experimentally in phase II comparisons for limited, decentralised, enhanced rabies surveillance attempts in the Americas, Africa and Eurasia, primarily for diagnosis in domestic animals, but later in wildlife as well [18, 19, 20, 21, 22, 23, 24, 25]. As shown by prior comparative testing, the brainstem is a readily accessible and pathologically relevant major brain region for selection in the DRIT, rather than focusing upon less critical CNS

Table III
Global experience in the use of the direct rapid immunohistochemical test for rabies diagnosis

Location	Primary taxa	Findings[a]	Reference
Canada (Quebec, Ontario)	Wildlife (n > 3,500)	Concordant to fluorescent antibody test	Unpublished[b]
Chad	Dogs (n > 35)	~100% sensitivity	18
China	Dogs, humans (n > 70)	~100% sensitivity	19, 20
India	Dogs (n > 400)	~100% sensitivity	21
Middle East (Afghanistan, Iraq)	Dogs (n > 370)	~100% sensitivity	22
South Africa	Dogs, wildlife (n > 250)	~100% sensitivity	23
Tanzania	Dogs, wildlife (>150)	~100% sensitivity	24
United States	Wildlife (>60,000 samples tested to date)	>95% sensitivity	25

a) Compared for diagnostic agreement to the gold standard FAT upon brain tissue from suspect animals
b) www.healthywildlife.ca/drit-and-rabies-surveillance-in-quebec/

areas which are more difficult to access, such as the cerebral hemispheres or hippocampus. The brainstem is also more easily dissected in a few minutes by use of a scalpel, or other simplified sampling methods [26].

The most widespread use of the DRIT has occurred in North America, due to a need for improved wildlife rabies surveillance. It is worth noting that a key proof of concept for the oral rabies vaccination (ORV) of wildlife occurred during the 1960s to 1970s [27]. Since that time, ORV has emerged as a viable method for rabies management in multiple species of wild meso-carnivores, including red (*Vulpes vulpes*) and grey foxes (*Urocyon cinereoargenteus*), raccoon dogs (*Nyctereutes procyonoides*), coyotes (*Canis latrans*) and raccoons (*Procyon lotor*), at landscape scales. For example, the elimination of rabies in the red fox over broad areas of western Europe and eastern Canada, and the management of raccoon dog rabies in the Baltic region, as well as the elimination of the disease in coyotes in Texas (due to a focus on domestic dog sources in Mexico), and the prevention of any appreciable westward spread of raccoon rabies from the mid-Atlantic region of the USA, highlight the value of intervention with ORV in specific wildlife reservoir species [28, 29, 30, 31, 32, 33]. As with canine rabies prevention, the efficient and effective application of ORV requires a clear understanding of the spatial-temporal distribution of specific viral variants in real time. Independent human and domestic animal exposure-based surveillance alone does not provide the sampling scope and intensity to delineate rabies distribution among wild reservoir species, which is required to make sound ORV decisions. Moreover, due to uncertain economic pressures, many cooperating agricultural and public health laboratories have experienced budget reductions over the past decade, which inhibit their ability to process increasing numbers of suspected rabid wildlife samples by the FAT, beyond those that must be tested as a priority to protect public health. This course of events created a specialised niche for a simple, field-efficient, rabies diagnostic test that could be applied by trained biologists to evaluate an increasing sample burden – one unrelated to human or domestic animal exposures, which are the ostensible responsibility of local public health and agricultural officials.

To this effect, during 2004, limited enhanced rabies surveillance began near ORV zones in the USA, as a complement to routine public health surveillance, to ensure more sensitive decision-making for disease control programmes [34, 35, 36]. In addition, a paradigm shift took place in 2005, when the DRIT became available to United States Department of Agriculture Wildlife Services rabies biologists, who had been trained in basic testing procedures to provide diagnostic results based upon enhanced wildlife surveillance. After selected wildlife

biologists were given thorough training in biosafety, standard operating procedures, etc. the DRIT was implemented in earnest, with all positive samples (and 10% of random negative samples) of brain tissue being sent for confirmation by FAT. By 2008, DRIT proficiency testing was established with the Wisconsin State Laboratory of Hygiene as a standard means of providing quality assurance in comparison to the FAT. Between 2005 and 2011, by comparison to the approximately 100,000 suspect animal samples tested each year by public health laboratories, approximately 49,000 of more than 62,000 enhanced wildlife surveillance samples, collected in or within 80 km of ORV zones, were tested using DRIT, identifying the location of nearly 900 additional rabid animals to refine management strategies [25]. Enhanced wildlife rabies surveillance included the following types of samples obtained from free-ranging meso-carnivores, without a known human or domestic animal exposure history: animals brought to the attention of local field biologists, or collected by cooperators, with unusual behaviours suggestive of rabies, which typically have the highest rabies prevalence (among animals not involved in human exposure events); fresh road kills; animals live-captured in preparation for or during ORV monitoring, with gross lesions or behaviours suggestive of rabies; animals collected in close proximity to recently detected rabies cases that pose a risk to ORV success; and occasional nuisance animals trapped in areas of dense human habitation [32]. Based upon positive outcomes, DRIT remains a central method of rabies evaluation in wild meso-carnivores in the USA, with more than 60,000 samples tested by DRIT from over 77,000 suspected wildlife cases, collected for enhanced rabies surveillance by 2013. The use of DRIT has been similar in Canada, for enhanced ORV surveillance among suspect wildlife in both Ontario and Quebec, focused primarily on carnivores[1].

Reference testing and inter-laboratory comparisons

Given the growing laboratory and field experience in the use of this test for domestic animal and wildlife rabies surveillance, additional evaluation of the DRIT took place at several OIE Rabies Reference Centres during 2013. A variety of lyssavirus isolates and animal species were compared in each laboratory. Both monoclonal and polyclonal conjugates were employed in the DRIT evaluation (Fig. 2). In this preliminary analysis, there was 100% concordance between the FAT and the DRIT, if the results from all individual monoclonal antibodies were considered together (Table IV).

Three additional findings were apparent from the comparative testing at the reference laboratories:

a) to avoid confusion, inter-laboratory harmonisation of procedures and standardisation of supplies are essential for any new test evaluation in comparison to a gold standard, as minor variations in biotinylation quality, the choice of reagents, fixation times, etc. may produce subtle differences in interpretation;

b) to prevent over-dilution, antibody conjugates must be titrated carefully to determine a standard working concentration, one which is more than adequate to cover the taxonomic breadth of the viral genus and locally important variants; and

c) to ensure the broadest possible range of sensitivity, a combination of at least two pan-reactive monoclonal antibodies should be considered, recognising different viral epitopes. Although scores of monoclonal antibodies have been generated during the past 35 years to differentiate among lyssavirus antigens, truly pan-reactive antibodies (e.g. WI 502, FLI 239.17, etc.) are uncommon.

Conclusions

As with the general acceptance of Negri body detection in the early 1900s, and its gradual replacement by the FAT during the later 20th Century, other tests for rabies diagnosis are expected to be developed throughout the 21st Century [2, 3, 37]. In addition to the use of other antigen detection or serological assays, molecular methods have increasingly proven their capability in the diagnostic arena, in support of FAT findings. While real-time polymerase chain reaction (RT-PCR) and next-generation sequencing offer high sensitivity and specificity when applied to lyssavirus diagnostics, and are decreasing in cost, such tests may be limited at the present time to centralised reference laboratories [38, 39]. It is unlikely that these applications will be readily available at the local

1 www.healthywildlife.ca/drit-and-rabies-surveillance-in-quebec/

Table IV
Comparison of lyssavirus diagnosis by the fluorescent antibody test and the direct rapid immunohistochemical test

Lyssavirus	Fluorescent antibody test (FAT)		Direct rapid immunohistochemical test (DRIT)	
	Positive	Negative	Positive	Negative
ABLV[a]	2		2	
BBLV[b]	3		3	
DUVV[c]	3		3	
EBLV-1[d]	8		8	
EBLV-2[e]	5		5	
IKOV[f]	1		1	
LBV[g]	1		1	
MOKV[h]	1		1	
RABV[i]	92	66	92	66
Total	**116**	**66**	**116**	**66**

a) Australian bat lyssavirus; *b)* Bokeloh bat lyssavirus; *c)* Duvenhage virus; *d)* European bat lyssavirus-1; *e)* European bat lyssavirus-2; *f)* Ikoma virus; *g)* Lagos bat virus; *h)* Mokola virus; *i)* rabies virus (samples included bats, camels, cats, cattle, deer, dogs, ferrets, foxes, hedgehogs, humans, jackals, mongoose, raccoons, rodents, sheep, skunks, wolves).

level in most developing countries, where canine rabies persists, and prevention, control and elimination plans are focused [6, 40, 41]. Point-of-care diagnostics, such as lateral flow assays, might permit rapid suggestions of viral detection in suspect animal fluids, but these are costly, lack adequate sensitivity and specificity for all lyssavirus species, and are totally dependent upon the importation of foreign devices [2, 3, 42]. Alternatives to fluorescence microscopy, such as the DRIT, offer comparable sensitivity and specificity to the current gold standard FAT; allow the observation of viral inclusions of the correct size, shape, distribution, colour and association in mammalian CNS tissues and provide concomitant antigenic typing of positive samples, while allowing the local development of monoclonal or polyclonal conjugates in a rapid, economic, flexible and reliable format [43]. Considering its promising results, the DRIT is an asset for all laboratory-based rabies diagnosis and, as such, will foster improved rabies surveillance in many parts of the world, particularly in developing countries, with support from reference laboratories. After further test validation and consideration by the OIE, the DRIT should, in the future, be approved as an OIE-prescribed and WHO-recommended test for rabies, to provide local diagnostic support for continuing efforts towards the global elimination of canine rabies.

Acknowledgements

The authors thank their many collaborators throughout the world for their continued dedication to and demonstrated expertise in enhanced laboratory-based surveillance and improved diagnostics necessary for the application of rapid, sensitive, specific and affordable tests, such as the DRIT, for the primary detection of lyssaviruses and the modern management of rabies on a global basis, including: R. Chipman, A. Coetzer, R. Franka, C. Freuling, T. Goddard, H. Goharriz, D. Horton, J. Kliemt, M.K. Knowles, I. Kuzmin, L. Nel, M. Niezgoda, and A. Servat.

The authors would also like to thank Dr H.C. Ertl and colleagues at the Wistar Institute, for research collaborations on the suitability of various monoclonal antibodies as candidates for diagnostic testing.

References

1. Njeumi F., Taylor W., Diallo A., Miyagishima K., Pastoret P.P., Vallat B. & Traore M. (2012). – The long journey: a brief review of the eradication of rinderpest. *Rev. sci. tech. Off. int. Epiz.*, **31** (3), 729–746.

2. World Organisation for Animal Health (OIE) (2013). – Terrestrial Animal Health Code, 22nd Ed. OIE, Paris. Available at: www.oie.int/en/international-standard-setting/terrestrial-code/access-online/ (accessed on 16 June 2014).

3. World Health Organization (WHO) (2013). – 2nd Expert Consultation on Rabies. *WHO. Tech. Rep. Ser.*, **982**, 1–13.

4. Briggs D.J. (2012). – The role of vaccination in rabies prevention. *Curr. Opin. Virol.*, **2** (3), 309–314.

5. Rupprecht C.E., Turmelle A. & Kuzmin I.V. (2011). – A perspective on lyssavirus emergence and perpetuation. *Curr. Opin. Virol.*, **1** (6), 662–670.

6. Hampson K., Dushoff J., Cleaveland S., Haydon D.T., Kaare M., Packer C. & Dobson A. (2009). – Transmission dynamics and prospects for the elimination of canine rabies. *PLoS Biol.*, **7** (3), e53.

7. Fooks A.R., Johnson N., Freuling C.M., Wakeley P.R., Banyard A.C., McElhinney L.M., Marston D.A., Dastjerdi A., Wright E., Weiss R.A. & Müller T. (2009). – Emerging technologies for the detection of rabies virus: challenges and hopes in the 21st century. *PLoS. negl. trop. Dis.*, **3** (9), e530.

8. Mableson H.E., Okello A., Picozzi K. & Welburn S.C. (2014). – Neglected zoonotic diseases – the long and winding road to advocacy. *PLoS. negl. trop. Dis.*, **8** (6), e2800.

9. Kristensson K., Dastur D.K., Manghani D.K., Tsiang H. & Bentivoglio M. (1996). – Rabies: interactions between neurons and viruses. A review of the history of Negri inclusion bodies. *Neuropathol. Appl. Neurobiol.*, **22** (3), 179–187.

10. Dean D.J., Abelseth M.K. & Atanasiu P. (1996). – The fluorescent antibody test. *In* Laboratory techniques in rabies (F.-X. Meslin, M.M. Kaplan & H. Koprowski, eds), 4th Ed. World Health Organization, Geneva, 66–79.

11. Barnard B.J.H. & Voges S.F. (1982). – A simple technique for the rapid diagnosis of rabies in formalin preserved brain. *Onderstepoort J. vet. Res.*, **49**, 193–194.

12. Feiden W., Feiden U., Gerhard L., Reinhardt V. & Wandeler A. (1985). – Rabies encephalitis: immunohistochemical investigations. *Clin. Neuropathol.*, **4** (4), 156–164.

13. Bourgon A.R. & Charlton K.M. (1987). – The demonstration of rabies antigen in paraffin-embedded tissues using the peroxidase-antiperoxidase method: a comparative study. *Can. J. vet. Res.*, **51** (1), 117–120.

14. Fekadu M., Greer P.W., Chandler F.W. & Sanderlin D.W. (1988). – Use of the avidin-biotin peroxidase system to detect rabies antigen in formalin-fixed paraffin-embedded tissues. *J. virol. Meth.*, **19** (2), 91–96.

15. Wiktor T.J. & Koprowski H. (1978). – Monoclonal antibodies against rabies virus produced by somatic cell hybridization: detection of antigenic variants. *Proc. natl Acad. Sci. USA*, **75** (8), 3938–3942.

16. Rupprecht C.E., Dietzschold B., Wunner W. & Koprowski H. (1991). – Antigenic relationships of lyssaviruses. *In* The natural history of rabies (G.M. Baer, ed.), 2nd Ed. CRC Press, Boca Raton, Florida, 69–101.

17. Hamir A.N., Moser G. & Rupprecht C.E. (1992). – Morphologic and immunoperoxidase study of neurologic lesions in naturally acquired rabies of raccoons. *J. vet. diagn. Invest.*, **4** (4), 369–373.

18. Dürr S., Naïssengar S., Mindekem R., Diguimbye C., Niezgoda M., Kuzmin I., Rupprecht C.E. & Zinsstag J. (2008). – Rabies diagnosis for developing countries. *PLoS. negl. trop. Dis.*, **2** (3), e206.

19. Zhang Y.Z., Fu Z.F., Wang D.M., Zhou J.Z., Wang Z.X., Lv T.F., Xiong C.L., Zou Y., Yao W.R., Li M.H., Dong G.M., Xu G.L., Niezgoda M., Kuzmin I.V. & Rupprecht C.E. (2008). – Investigation of the role of healthy dogs as potential carriers of rabies virus. *Vector-borne zoonotic Dis.*, **8** (3), 313–319.

20. Tao X.Y., Niezgoda M., Du J.L., Li H., Wang X.G., Huang Y., Jiao Y., Cao L., Tang Q. & Liang G.D. (2008). – The primary application of direct rapid immunohistochemical test to rabies diagnosis in China. *Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi*, **22** (3), 168–170.

21. Madhusudana S.N., Subha S., Thankappan U. & Ashwin Y.B. (2012). – Evaluation of a direct rapid immunohistochemical test (dRIT) for rapid diagnosis of rabies in animals and humans. *Virol. Sin.*, **27** (5), 299–302.

22. Saturday G.A., King R. & Fuhrmann L. (2009). – Validation and operational application of a rapid method for rabies antigen detection. *U.S. Army med. Dept J.*, January–March, 42–45.

23. Coetzer A., Markotter W., Sabeta C.T. & Nel L.H. (2013). – Comparison of biotinylated monoclonal and polyclonal antibodies in an evaluation of a direct rapid immunohistochemical test for the routine diagnosis of rabies in southern Africa. University of Pretoria, Master's degree, Microbiology and Immunology.

24. Lembo T., Niezgoda M., Velasco-Villa A., Cleaveland S., Ernest E. & Rupprecht C.E. (2006). – Evaluation of a direct, rapid immunohistochemical test for rabies diagnosis. *Emerg. infect. Dis.*, **12** (2), 310–313.

25. Rupprecht C.E. & Slate D. (2012). – Rabies prevention and control: advances and challenges. *In* Rhabdoviruses: molecular taxonomy, evolution, genomics, ecology, host-vector interactions, cytopathology, and control (R.G. Dietzgen & I.V. Kuzmin, eds). Caister Academic Press, Norfolk, United Kingdom, 215–252.

26. Barrat J. (1996). – Simple technique for the collection and shipment of brain specimens for rabies diagnosis. *In* Laboratory techniques in rabies (F.-X. Meslin, M.M. Kaplan & H. Koprowski, eds), 4th Ed. World Health Organization, Geneva, 425–432.

27. Baer G.M., Abelseth M.K. & Debbie J.G. (1971). – Oral vaccination of foxes against rabies. *Am. J. Epidemiol.*, **93**, 487–490.

28. MacInnes C.D., Smith S.M., Tinline R.R., Ayers N.R., Bachmann P., Ball D.G.A., Calder L.A., Crosgrey S.J., Fielding C., Hauschildt P., Honig J.M., Johnston D.H., Lawson K.F., Nunan C.P., Pedde M.A., Pond B., Stewart R.B. & Voigt D.R. (2001). – Elimination of rabies from red foxes in eastern Ontario. *J. Wildl. Dis.*, **37**, 119–132.

29. Sidwa T.J., Wilson P.J., Moore G.M., Oertli E.H., Hicks B.N., Rhode R.E. & Johnston D.H. (2005). – Evaluation of oral rabies vaccination programs for control of rabies epizootics in coyotes and gray foxes: 1995–2003. *JAVMA*, **227**, 785–792.

30. Cliquet F., Combes B. & Barrat J. (2006). – Means used for terrestrial rabies elimination in France and policy for rabies surveillance in case of re-emergence. *Dev. Biol. (Basel)*, **125**, 119–126.

31. Rosatte R.C., Power M.J., Donovan D., Davies J.C., Allan M., Bachmann P., Stevenson B., Wandeler A. & Muldoon F. (2007). – Elimination of arctic fox variant rabies in red foxes, metropolitan Toronto. *Emerg. infect. Dis.*, **13**, 25–27.

32. Slate D., Algeo T.P., Nelson K.M., Chipman R.B., Donovan D., Blanton J.D., Niezgoda M. & Rupprecht C.E. (2009). – Oral rabies vaccination in North America: opportunities, complexities, and challenges. *PLoS negl. trop. Dis.*, **3**, e549.

33. Müller T., Demetriou P., Moynagh J., Cliquet F., Fooks A.R., Conraths F.J., Mettenleiter T.C. & Freuling C. (2012). – Rabies elimination in Europe – A success story. *In* Towards sustainable prevention at the source, Compendium of the OIE Conference on Rabies Control, Incheon–Seoul, Republic of Korea (A.R. Fooks & T. Müller, eds), 31–43.

34. Blanton J.D., Manangan A., Manangan J., Hanlon C.A., Slate D. & Rupprecht C.E. (2006). – Development of a GIS-based, real-time Internet mapping tool for rabies surveillance. *Int. J. Hlth Geogr.*, **5**, 47.

35. Blanton J.D., Dyer J., McBrayer J. & Rupprecht C.E. (2012). – Rabies surveillance in the United States during 2011. *JAVMA*, **241**, 712–722.

36. Slate D. & Rupprecht C.E. (2012). – Rabies management in wild carnivores. *In* Fowler's Zoo and wild animal medicine: current therapy (R.E. Miller & M.E. Fowler, eds). Elsevier Saunders, St. Louis, Missouri, 366–377.

37. Banyard A.C., Horton D.L., Freuling C., Müller T. & Fooks A.R. (2013). – Control and prevention of canine rabies: the need for building laboratory-based surveillance capacity. *Antiviral Res.*, **98** (3), 357–364.

38. Fooks A.R., McElhinney L.M., Horton D., Banyard A., Johnson N., Marston D., Freuling C., Hoffmann B., Fehlner-Gardiner C., Sabeta C.D., Cliquet F., Müller T. & Rupprecht C.E. (2012). – Molecular tools for rabies diagnosis in animals. *In* Towards sustainable prevention at the source, Compendium of the OIE Conference on Rabies Control, Incheon–Seoul, Republic of Korea (A.R. Fooks & T. Müller, eds), 75–85.

39. Fischer M., Wernike K., Freuling C.M., Müller T., Aylan O., Brochier B., Cliquet F., Vázquez-Morón S., Hostnik P., Huovilainen A., Isaksson M., Kooi E.A., Mooney J., Turcitu M., Rasmussen T.B., Revilla-Fernández S., Smreczak M., Fooks A.R., Marston D.A., Beer M. & Hoffmann B. (2013). – A step forward in molecular diagnostics of lyssaviruses – results of a ring trial among European laboratories. *Plos.One*, **8** (3), e58372.

40. Clavijo A., Del Rio Vilas V.J., Mayen F.L., Yadon Z.E., Beloto A.J., Vigilato M.A., Schneider M.C. & Cosivi O. (2013). – Gains and future road map for the elimination of dog-transmitted rabies in the Americas. *Am. J. trop. Med. Hyg.*, **89** (6), 1040–1042.

41. Meslin F.X. & Briggs D.J. (2013). – Eliminating canine rabies, the principal source of human infection: what will it take*?* *Antiviral Res.*, **98** (2), 291–296.

42. Markotter W., York D., Sabeta C.T., Shumba W., Zulu G., Le Roux K. & Nel L.H. (2009). – Evaluation of a rapid immunodiagnostic test kit for detection of African lyssaviruses from brain material. *Onderstepoort. J. vet. Res.*, **76** (2), 257–262.

43. Dyer J.L., Niezgoda M., Orciari L.A., Yager P.A., Ellison J.A. & Rupprecht C.E. (2013). – Evaluation of an indirect rapid immunohistochemistry test for the differentiation of rabies virus variants. *J. virol. Meth.* **190** (1–2), 29–33.

Annual report of the OFFLU network in 2013

The OIE/FAO joint network of expertise on animal influenza (OFFLU) presents its annual report, which summarises the main activities carried out in 2013 and previews the activities planned for 2014.

In 2013, OFFLU organised three Steering Committee and Executive Committee meetings to provide strategic guidance and coordinate its various technical activities. Several projects, including, for example, loop-mediated isothermal amplification (LAMP) assays, were completed and are already providing results that will eventually help to reduce the risks to public health, animal health and agriculture posed by animal influenza viruses.

In April 2013, various experts on H1N1 influenza ('swine influenza') met in Rome to share data about the current situation in pig populations all over the world. Furthermore, collaboration has continued between OFFLU and the STAR IDAZ scientific network (Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses), notably with the convening of a consultation in Paris in April 2014 to define a global agenda for research in the field of influenza (see pp. 97-98).

OFFLU continues to expand, in terms of both scope of action and size, and now includes experts from networks specialising in equine influenza, swine influenza and avian influenza. The network has a new management team: Dr Peter Daniels (from the Australian Animal Health Laboratory) succeeded Prof. Steve Edwards at the end of 2013, as Chair of the Steering Committee, and Dr David Swayne (OIE expert at the Southeast Poultry Research Laboratory) succeeded Dr Daniels as Chair of the Executive Committee.

The OIE and FAO jointly manage OFFLU

Since 2005, the three international organisations of the FAO, WHO and OIE have made a commitment, as stated in their Tripartite Agreement, to work closely together on biological risks at the animal–ecosystems interface. Relations between WHO and OFFLU are an example of this: the official agreement under which OFFLU undertakes to collaborate in the WHO Vaccine Strain Selection Process, by supplying timely information on relevant strains of animal origin, was renewed in 2013 for a period of five years, until 2018.

One of the main objectives of the network is to share animal influenza data with WHO, to assist with the timely selection of the most appropriate viruses for the development of human vaccines.

For further information:
www.offlu.net/fileadmin/home/en/publications/pdf/OFFLU_Annual_Report_2013.pdf
www.offlu.net/index.php?id=295
www.offlu.net/fileadmin/home/en/meeting-reports/pdf/offlu_star_idaz/OFFLU_STAR-IDAZ_Executive_Summary_final.pdf

Animal influenza research

OFFLU and STAR-IDAZ become partners to develop a strategic agenda

OFFLU and STAR-IDAZ consultation in Paris, April 2014

OFFLU (the OIE/FAO Network of Expertise on Animal Influenza) and STAR-IDAZ (Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses) have joined forces to develop a strategic agenda for animal influenza research.

Sixty key experts from the field of influenza were invited to a consultation on 8 and 9 April 2014, at the OIE Headquarters in Paris, where they were asked for their opinion on a strategy for animal influenza research and to identify the research priorities for their sectors. These experts came from a broad range of institutions, interests and research areas, including animal health and public health; animal production and trade (poultry, eggs and pork); the pharmaceutical sector; equine sports; policy; and research-funding bodies.

The consultation took a global perspective and identified common research priorities that would benefit the research community, as well as all the key stakeholders, and the donors who fund the research.

The experts were assigned to working groups and used the feedback from a survey sent out before the consultation to develop a consensus vision and establish a consolidated list of priority topics.

The experts agreed that their collective vision was '**global coordinated research to minimise animal and human health risks and maximise social, economic and environmental outcomes**'.

The priority areas for research were grouped into six subjects, namely: :

- surveillance and risk assessment
- diagnostic development
- prevention and control interventions (risk management)
- vaccine development and delivery mechanisms
- host-pathogen interaction
- socio-economics and policy.

For each of the priority areas, the group identified whether this priority was **short-term applied research** (studies needed to determine effective intervention strategies with potential for immediate impact); **longer-term applied research** (studies most likely to reduce the disease burden in economic and health terms); or **priority basic research** (studies which may ultimately lead to effective intervention strategies or a reduced disease burden).

These research priorities may apply to a defined sector (poultry, pork, equine, wildlife or animal– human interface), in which case this is specified, or cut across a number of these sectors. The priorities were not ranked in order of importance and the three categories of 'short-term applied research', 'longer-term applied research' and 'priority basic research' are all considered to be of equal importance.

In general, three themes emerged from the consultation:

– research is needed to identify the multifactorial determinants of health risk from influenza viruses and to support risk assessment, surveillance and intervention strategies

– integrated approaches to influenza research and surveillance should be undertaken across species (at the interface between animals and humans, and between animal species) and surveillance findings should be shared swiftly

– there is a need to improve technologies to develop more effective and universal influenza vaccines and diagnostics.

In addition to the benefits that the consultation will bring to coordinating animal influenza research, it is hoped that this exercise will be a model for other research areas where there is a need for coordinated strategic research towards a common objective.

Of course the meeting also provided an excellent opportunity for the experts to network and enjoy each other's company in the evening after a hard day's work.

Full information on the consultation:
www.offlu.net/index.php?id=308

special

Visit of the Director General of the OIE to Myanmar

On 14 March 2014, Dr Bernard Vallat, Director General of the OIE, made a courtesy visit to the Authorities of Myanmar during his stay in Nay Pyi Taw, Myanmar, attending the 20th meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia and China (SEACFMD).

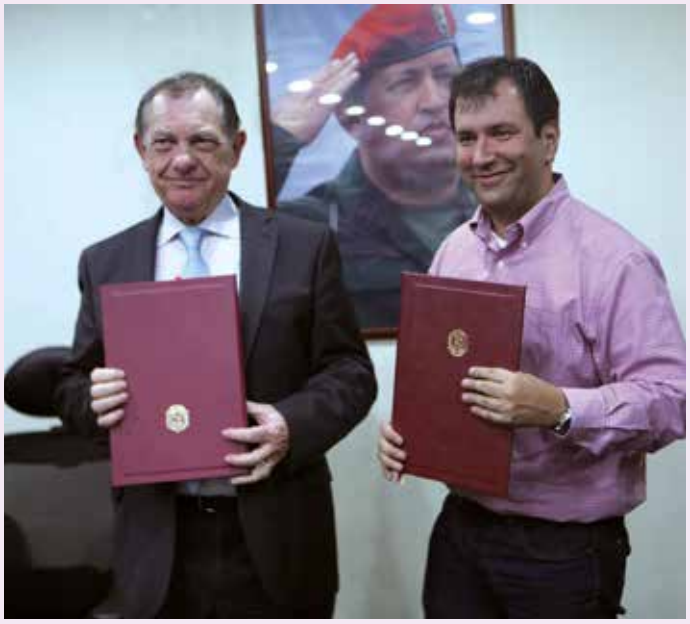
Mr U Nyan Tun, Vice-President of Myanmar, expressed his appreciation to the OIE for its continued support for FMD control in Myanmar under the SEACFMD campaign. Dr Vallat stressed the importance of preventing and controlling animal diseases such as FMD and rabies for the development of agriculture and the Myanmar economy. Then he briefed the Authorities on the wide range of technical support that the OIE provides to Members, including the strengthening of Veterinary Services through the OIE capacity-building programme, dispatching experts, establishing laboratory

twinning projects to create and improve the quality of veterinary diagnosis capacity, and the establishment of vaccine banks. He explained how the OIE assists Member Countries to enhance the capacity of their national Veterinary Services through the OIE PVS Pathway, including modernising veterinary legislation to improve compliance with OIE international standards. In a discussion with Mr U Ohn Myint, Minister of Livestock, Fisheries and Rural Development, Dr Vallat raised the possibility of the OIE providing assistance to Myanmar in the areas of veterinary education and aquatic animal health.

This meeting between the Vice-President of Myanmar and the Director General of the OIE was an excellent forum to discuss the importance of animal health, and hopefully signals closer cooperation between Myanmar and the OIE in the future.

© Kyaw Soe Win (Minister Office, Ministry of Livestock, Fisheries and Rural Development)

Visit of the Director General of the OIE to Venezuela, Colombia and Ecuador



© Andrea Abreu, Ministry of Agriculture and Lands of Venezuela

Left to right: Dr Bernard Vallat, Director General of the OIE, and Mr Yván Gil Pinto, Minister for Agriculture and Lands of Venezuela

The Director General of the OIE, Dr Bernard Vallat, and the OIE Regional Representative for the Americas, Dr Luis O. Barcos, visited Venezuela, Colombia and Ecuador between 30 March and 4 April 2014.

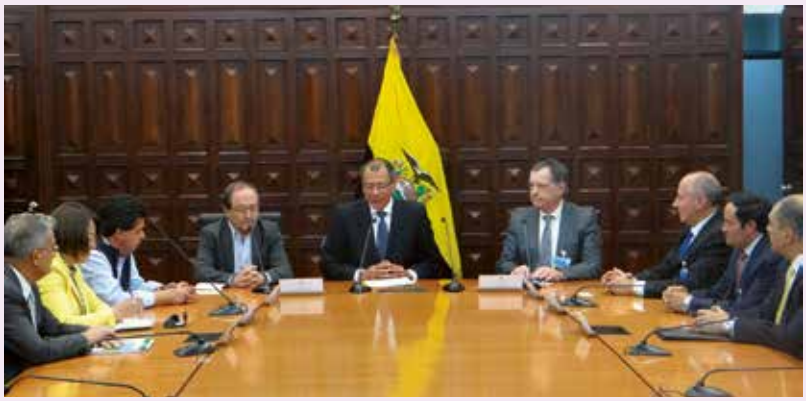
The main aim of the visits was to raise awareness among the policy-makers of these countries of the need to strengthen their Veterinary Services, particularly their programmes for the control and eradication of foot and mouth disease (FMD).

In Venezuela they met with both the Minister for Agriculture and Lands and the National Delegate to the OIE, who confirmed that strengthening Venezuela's Veterinary Service (INSAI[1]) and their FMD programme were national priorities. A specific agreement regarding FMD surveillance, prevention, control and eradication activities was signed by the Director General of OIE and the Minister for Agriculture and Lands.

1 INSAI: Instituto Nacional de Salud Agrícola Integral (National Institute for Comprehensive Agricultural Health)

© ICA Communication Office

Left to right: Mr Rubén Darío Lizarralde, Minister for Agriculture of Colombia, Dr Bernard Vallat, Director General of the OIE, Dr Luis Barcos, OIE Regional Representative for the Americas, Ms Olga Lucia Díaz Martínez, Director General of ICA



© AGROCALIDAD

Meeting with the Vice-President of the Republic of Ecuador, Mr Jorge Glas, and the Minister for Agriculture, Livestock, Aquaculture and Fisheries, Mr Javier Ponce

In Colombia, Dr Vallat and Dr Barcos attended meetings with staff of the Veterinary Service (ICA[2]), private-sector representatives and, lastly, with the Minister for Agriculture who pledged his support for building ICA's capacity. In Ecuador, Dr Vallat and Dr Barcos held discussions with the central Veterinary Service and all district directors. They also had very constructive and well-attended meetings with representatives of various private associations – both livestock producer and veterinary associations and the University. Finally, they had an extremely positive meeting with the Vice-President of the Republic of Ecuador, who reaffirmed his country's commitment to continue strengthening their Veterinary Services and the FMD programme, and who undertook to include the veterinary profession in the high-level education programme currently being developed by Ecuador.

2 ICA: Instituto Colombiano Agropecuario (Colombian Agriculture and Livestock Institute)

The global health security agenda

On 13 February 2014, representatives from 29 nations, the European Union, WHO, FAO and the OIE launched the Global Health Security agenda at WHO Headquarters, Geneva

The Global Health Security agenda is an initiative from the United States White House, involving US Departments of Health and Human Services (HHS), Agriculture (USDA), State, Defense, and the US Agency for International Development (USAID), among others. The United States is committed to working in partnership with other nations, international organisations, and civil society to better shield people from the threat of infectious disease.

The United States government is closely coordinating with WHO, the OIE and FAO to accelerate progress toward achieving the goals of the International Health Regulations (IHR) and facilitating other Global Health Security measures in support of

the nine objectives of the Global Health Security agenda, which are focused on:

– preventing epidemics,
– detecting biological threats early,
– and rapidly responding to disease outbreaks, whether naturally occurring, intentionally produced, or accidentally caused.

This endeavour will support existing agreements under the WHO International Health Regulations 2005, the OIE Animal Health *Codes*, and the Codex Alimentarius International Food Standards and will complement existing multilateral efforts in this area.

Pathogens of animal origin are an important threat for human health, food security, food safety and biodiversity, globally. The prevention and control of those pathogens should be based on good governance incorporating appropriate legislation, policies and methods implemented mainly at the country level. National systems complying with such principles provide for early detection, rapid response, data-sharing, and transparency on notification and communication.

Efficient national systems should respect and implement existing intergovernmental agreements, regulations and standards. The respect of such obligations allows the global harmonisation of prevention and control policies and methods. Together they are key to achieving success. This is also highly relevant for the surveillance and prevention of antimicrobial resistance.

The WHO and OIE are working together at the national level to assist Member Countries to fulfil the International Health Regulation commitments of their public health services and to better comply with OIE standards on the quality of Veterinary Services. This is possible through the use of the WHO IHR costing tool and the OIE Performance of Veterinary Services (PVS) Evaluation and Gap Analysis tools. In particular, this enables developing countries to better organise cooperation between public health and animal health services; to evaluate the cost of compliance to meet their IHR and OIE international obligations, including binding animal disease notifications to the OIE, when relevant; and to provide donors with well-documented funding and capacity-building requests.

In all cases, it is crucial that disease detection and information systems addressing any natural, accidental or intentional biological events are constantly improved. All improvements should use new technologies and be based on public–private partnerships. A partnership composed of the collaboration between farmers, private veterinarians, wildlife managers and users, and public Veterinary Services should be involved when tackling the threats from animal pathogens.

The Tripartite alliance of the OIE, WHO and FAO is a key global mechanism supporting Member Countries and improving cooperation in these fields. The Tripartite alliance should be a pillar within the Global Health Security agenda and the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.

Dr Bernard Vallat
Director General of the OIE
13 February 2014

On 5 and 6 May 2014, a Global Health Security agenda commitment development meeting was held in Helsinki, Finland

During this meeting, Dr Bernard Vallat, Director General of the OIE, gave a presentation on 'Preventing human pandemics by improving animal health: WHO/IHR and OIE/PVS as a foundation for global health security'.

Among other items, he presented the *Good Governance of Human and Animal Health Services Operational Guide* and the *OIE Biological Threat Reduction Strategy*.

Dr Vallat also informed the participants about the OIE Global Conference on Health and Security: 'Building capacity to reduce biological threats through stronger and integrated health systems', which will be held in Paris from 30 June to 2 July 2015.

1 www.globalhealth.gov/global-health-topics/global-health-security/GHS Agenda.pdf

Dr Thomas R. Frieden, Director of CDC (Centers for Disease Control and Prevention), coordinates technical aspects of the Global Health Security agenda.

Many countries have joined the initiative: Canada, the People's Republic of China, the European Union, India, Indonesia, Japan and Thailand, among others.

The OIE, through the use of the PVS Pathway, is considered as a pillar of the implementation of the Global Health Security agenda.

General information on the OIE PVS Pathway:
www.oie.int/en/support-to-oie-members/pvs-pathway/

General information on WHO IHR:
www.who.int/ihr/about/general_information/en/

General information on the Global Health Security agenda:
www.globalhealth.gov/global-health-topics/global-health-security/ghsagenda.html

WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

WSAVA
Global Veterinary Community

OIE-WSAVA Joint Statement on Control of Canine Rabies

6 November 2013

The bond between people and small companion animals is a fundamental element of human society. Nonetheless, this social interaction carries some degree of risk of exposure to infectious disease.

The most striking example of this is canine rabies virus infection, which is estimated to cause over 60,000 human deaths annually — the majority of these in the developing nations of Africa and Asia and the greatest proportion involving children. Rabies also creates a serious welfare problem for those animal species affected by the disease. Veterinary practitioners work at the interface between people and their pets and, at the level of public health, between human populations and free-roaming companion animals. Canine rabies provides an excellent example of a disease that impacts significantly on the human population and therefore requires a 'One Health' approach to management.

The OIE and the World Small Animal Veterinary Association (WSAVA) urge the governments of the world, especially of countries in which canine rabies virus infection is endemic, to engage with control programmes to work towards the global elimination of this major vaccine-preventable zoonosis.

Based on the discussions of a recent joint OIE-WSAVA symposium, the following seven key recommendations related to global canine rabies control and ultimate elimination are proposed.

1. **Define and promote the key messages** – Canine rabies is a fatal and entirely preventable disease. Where canine rabies is endemic in Asia and Africa, control of rabies in dogs prevents rabies in people, wildlife and livestock. Effective rabies control programmes lead to a significant reduction in the incidence of those human dog bites requiring post-exposure prophylaxis.
2. **Surveillance creates an evidence base** – The successful elimination of canine rabies depends on having a strong evidence base, founded in clinical and laboratory-based disease surveillance, in order to underpin the commitment of governments and NGOs, drive community action and guide interventions. Data on dog populations and demographics, as well as disease prevalence, are required.

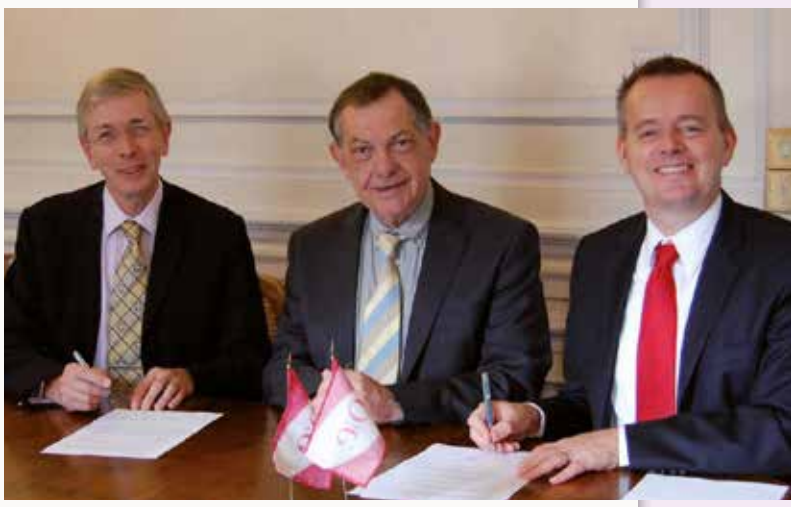
As rabies is an OIE-listed disease, the OIE World Animal Health Information System (WAHIS) is recommended for disease notification.

3. **A consistent approach to control –** There is strong scientific evidence that effective control of canine rabies relies primarily on achieving and maintaining a minimum 70% vaccination coverage of canine populations and responsible pet ownership. Control of rabies cannot be effectively achieved through the culling of dogs, however if concurrent rabies vaccination and dog population control is performed this should respect OIE standards.
   An operational toolkit for rabies elimination, including rabies vaccine banks for developing countries, is provided by The Blueprint for Rabies Prevention and Control (www.rabiesblueprint.com).
4. **Elicit political support and commitment –** Rabies control saves human and animal lives and money. Elimination of canine rabies must be placed prominently on the agendas of government ministers, their Chief Veterinary and Medical Officers and their respective veterinary and medical services. This should incorporate the principles of good governance respecting WHO and OIE standards. In veterinary services, rabies elimination should be accorded the status and priority currently given to control of infectious disease in production animals.
5. **Control from community upwards –** The target of rabies elimination will require the commitment of communities and community leaders and be based in public awareness of animal welfare, veterinary care and the prevention and management of dog bites, particularly for children. All of these provisions should meet OIE standards. Support for this goal must be provided by government and may be supported by NGOs. Small companion animal veterinary practitioners should play a key role in these community-based programmes.
6. **Mobilise resources –** Elimination of canine rabies has financial implications. Whilst NGOs may initiate control programs the sustainability of such programmes should be the responsibility of government. Preventative vaccination of dogs can reduce the necessity for post-exposure prophylaxis of people, thereby saving considerable sums of public money, but requires effective engagement with medical profession.
7. **Demonstrate effectiveness –** The success of rabies elimination programmes should be monitored through effective rabies surveillance. Decentralized rabies diagnostic testing can facilitate analysis of samples from suspected cases.

These seven measures relate particularly to the control of canine rabies in free-roaming dog populations in the developing countries of Africa and Asia. However, recent sporadic cases of canine rabies in countries in which rabies is not endemic, related to the commercial movement of puppies and shelter adoptions of dogs from endemic areas, demonstrates the need for continued vigilance even in non-endemic nations and the global relevance and benefits of canine rabies elimination in developing countries.

The WSAVA represents some 180,000 small companion animal practitioners in over 75 nations. The OIE and the WSAVA encourage governments to fully engage the expertise and field access of the small companion animal veterinary community in the essential target of elimination of canine rabies. Canine rabies control creates an important opportunity for small animal practitioners to input into wider preventive healthcare of canine populations.

The OIE and the WSAVA support the ultimate goal of achieving the global elimination of canine rabies by the year 2030.



© OIE/C. Bertrand-Ferrandis

From left to right: Prof. M.J. Day, Chair of WSAVA One Health Committee; Dr B. Vallat, Director General of the OIE; Prof. J. Kirpensteijn, WSAVA Acting President

agenda

2014

October

3rd International Conference on Antimicrobial Research – ICAR2014
1–3 October
Madrid, Spain
www.icar-2014.org

Meeting of the Committee on Sanitary and Phytosanitary Measures
13–17 October
Geneva, Switzerland

3rd Global Conference of the OIE Reference Centres
14–16 October
Seoul, Republic of Korea

Regional Workshop for National Focal Points for Animal Disease Notification to the OIE
14-16 October
Sofia, Bulgaria

Meeting of OIE Regional and Sub-Regional Representatives
21–24 October
Paris, France

November

International Conference on Bluetongue and related Orbiviruses
5–7 November
Rome, Italy
www.btconference2014.izs.it

22nd Conference of the OIE Regional Commission for the Americas
10–14 November
Guanajuato, Mexico

Regional Seminar for OIE National Focal Points on Animal Welfare
12–14 November
Canberra, Australia

Regional Seminar for OIE National Focal Points on Veterinary Products
18–20 November
Ohrid, Former Yug. Rep. of Macedonia

4th International Meeting on the Control of Neglected Zoonotic Diseases: 'From Advocacy to Action'
19–20 November
WHO HQ, Geneva, Switzerland

Consulting group on aquatic animal health– Network of Aquaculture Centres in Asia–Pacific
22–23 November
Ho Chi Minh City, Vietnam

2nd International Congress of Agriculture and Food
26–30 November
Antalya, Turkey
www.tarimgidakongresi.org/homepage.html

December

Regional Seminar for OIE National Focal Points on Veterinary Products
2–5 December
Japan

2015

January

OIE Global Conference on Aquatic Animal Health: Riding the wave to the future
20–22 January
Ho Chi Minh City, Vietnam
www.oie.int/en/conferences-events/all-oie-world-conferences/

Regional Seminar for OIE National Focal Points on Aquatic Animals
22–23 January
Ho Chi Minh City, Vietnam

February

21st Conference of the OIE Regional Commission for Africa
16–20 February
Rabat, Morocco

March

3rd International 'One Health' Congress
15–18 March
Amsterdam,
The Netherlands
www.iohc2015.com

Global PPR Control Strategy
19–21 March
Abidjan (Côte d'Ivoire)
(to be confirmed)

May

83rd General Session of the World Assembly of Delegates of the OIE
24–29 May
Paris, France

June

17th International Symposium of the World Association of Veterinary Laboratory Diagnosticians (WAVLD)
15–18 June
Saskatoon, Saskatchewan, Canada
www.wavld.org

Global Conference on Biological Threat Reduction
30 June – 2 July
Paris, France

September

29th Conference of the OIE Regional Commission for Asia, the Far East and Oceania
14–18 September
Mongolia

November

13th Conference of the OIE Regional Commission for the Middle East
Oman

Questions and answers about rabies

Keywords

- Rabies kills **70,000** people a year, mainly children
- More than 95% of human cases are caused by **bites from infected dogs**
- Vaccinating **70%** of dogs allows rabies to be eradicated from a given endemic area
- **Three million doses** of rabies vaccine have already been distributed by the OIE in Asia (July 2014).

The disease

1. What is rabies?

Rabies is a **viral** disease that affects the **central nervous system** of **mammals**, including humans. The virus is present in the **saliva** of infected animals. It is generally transmitted by the bite of an infected animal — most commonly dogs and other carnivores. The incubation period varies, from several weeks to several months, but **once the symptoms appear** the disease is **fatal**, in animals as well as in humans.

2. What is the rabies virus?

The rabies virus belongs to the genus Lyssavirus, a group of viruses responsible for causing encephalitis. There are several strains of the classic rabies virus, each of which is generally confined to a major species as a reservoir. Rabies is most often found in domestic dogs, less often in cats, and — depending on the continent — may also be found in various other carnivore species (such as foxes and jackals, etc) or in chiroptera (bats).

3. Where is the disease found?

Rabies is present on all continents except Antarctica. Some countries have implemented stringent disease-control measures and have succeeded in eradicating the disease to meet the OIE requirements for rabies-free status. In other countries, the disease remains endemic with rabies being present in dogs and/or in wild animal hosts (e.g. bats).

4. What is the extent of rabies worldwide?

Every ten minutes someone dies from rabies. Each year, rabies kills as many as **70 000 people** worldwide. It especially strikes children in developing countries, with Africa and Asia being the worst hit regions. In countries where people are still dying from the disease, **dogs** are the **main vector of rabies**. Controlling the disease in dogs, and particularly in stray dogs, must therefore be the first priority to prevent lethal cases in humans.

5. How is rabies transmitted?

Rabies is transmitted through the **saliva** of an infected animal. Infection occurs primarily through bite wounds. **More than 95% of human cases are due to bites by infected dogs.**

6. What is the incubation period for rabies?

The period of time before clinical signs appear in an infected animal can vary **from several days to six months**, depending on the strain of the virus, the animal species, the individual and the point of entry in the body. The disease can therefore be **transmitted** to other animals and humans through the saliva of an infected animal, sometimes **even before the infected animal shows any clinical signs of the disease**, constituting an insidious threat to anyone coming into contact with that animal.

7. What are the clinical signs of rabies in animals?

The clinical signs of rabies vary, depending on the effect that the virus has on the brain.

In its classical form, the disease is expressed by sudden **behavioural changes**: infected animals, especially wild animals, can lose their natural fear of other animals and humans, allowing them to come into unusually close proximity and contact, especially in the case of humans. As the disease evolves, it causes **progressive paralysis** leading to **death**. In some cases, however, an animal may die rapidly without showing significant clinical signs.

8. What should you do in the case of bite by an animal, whether wild or domestic?

Any bite by a domestic or wild animal must be **investigated**. The incident must be reported to a veterinarian, who will then take the appropriate measures.

The OIE's strategy in the fight against rabies

9. What are the public health risks associated with this disease?

Rabies is regarded as **one of the world's most important zoonoses** (diseases that are naturally transmissible from animals to humans). The **occurrence of rabies in domestic dogs** poses a threat to humans and this is still a major concern in many developing and in-transition countries. The disease can sometimes have economic consequences in some countries, when it affects livestock (such as cattle, horses, small ruminants, etc.).

10. What are the OIE's aims for rabies control?

The OIE's aims are not only to encourage **transparency** among Member Countries in notifying the disease but also to encourage governments to invest in **priority control programmes**, such as rabies prevention programmes. Vaccinating dogs against rabies is particularly vital, since dogs are still the main reservoir and the main vector of this disease for humans.

11. Must cases of rabies be notified to the OIE?

Rabies is on the list of diseases in the OIE *Terrestrial Animal Health Code*. It is therefore **compulsorily notifiable to the OIE** by the veterinary authorities of the Member Country concerned, and comes under the responsibility of the Member Country's Delegate to the OIE.

12. What are the prevention and control measures for rabies?

In countries where the disease is endemic, measures are taken to reduce the risk of infection in **populations susceptible to the disease** (such as wildlife, stray animals, and domestic animals under their owner's control) and to create a buffer between the animal source of the disease and humans. These measures include:

– surveillance and reporting of suspected cases of rabies in susceptible animals
– research into the dynamics of the disease, suitable vaccines and vaccine delivery methods for target populations
– vaccination programmes for domestic animals, especially dogs, currently by injection
– vaccination programmes for wild animals (usually by distributing vaccine baits in the natural environment)
– population control programmes for stray animals, and vaccination programmes where possible.

Rabies control programmes are a major challenge for many countries. Nevertheless, the cost of vaccinating dogs remains minimal compared to the actual cost of emergency post-exposure treatments for people who have been bitten. Indeed, 10% of the overall cost of these treatments would be sufficient to considerably reduce or even eliminate canine rabies (see also Question 15, hereafter).

Occupational groups who regularly come into contact with animals, such as veterinarians and animal control and wildlife officers, must take preventive measures to avoid infection from saliva, salivary glands and nervous tissue from infected animals. In certain cases, they should obtain protection by vaccination before exposure can occur. In the event of a person being bitten by a domestic or wild carnivore, a physician should immediately initiate post-exposure prophylaxis (i.e. a group of medical measures taken to prevent the occurrence, worsening or spread of the disease), as detailed on the World Health Organization (WHO) website.

13. What is the purpose of rabies vaccination programmes?

Vaccination of dogs is the preferred method of controlling and eliminating rabies worldwide. For ethical, ecological and economic reasons, the culling of

animals that are potential vectors cannot be considered as the priority measure for the control and eradication of rabies. All successful rabies eradication campaigns have included measures to control and reduce stray dog populations and to vaccinate all dogs kept under their owner's control.

Vaccination campaigns are set up with the aim of achieving coverage of around 70% of the canine population in a zone where rabies is endemic.

In wild animals, oral immunisation, using vaccine-containing baits, has produced excellent results in some animal species (foxes, raccoons, skunks, etc.) and has proved an effective solution for, for example, controlling and even eradicating rabies in foxes in Western Europe.

14. What is the OIE doing?

The OIE develops **science-based standards, guidelines and recommendations** to control the disease in animals and prevent its spread. The OIE also publishes standards for diagnosing the disease and the production of high-quality veterinary vaccines, as well as advising on stray dog population control.

The OIE's standards on rabies are regularly revised. The aim is to develop an approach that will allow the disease to be controlled in stages, placing the emphasis on the epidemiological importance of the animal species most frequently linked to human cases (generally dogs).

The OIE, in collaboration with WHO and FAO, also supports the organisation of international conferences on rabies, such as the Global Conference on Rabies Control, held in Seoul in September 2011.

The OIE develops regional vaccine banks for the vaccination of dogs and it provides technical assistance to its Member Countries on request (see below).

Programmes and support for OIE rabies control

15. Do we have the means to eliminate canine rabies?

Analysts have estimated that **just 10%** of the financial resources currently used for the emergency treatment of people bitten by potentially rabid dogs (i.e. post-exposure prophylaxis) would be enough to enable national Veterinary Services throughout the world to eradicate rabies at its source in domestic animals; namely, in dogs; and so prevent almost all human cases worldwide (currently around 70,000 deaths per year).

16. What support can the OIE rely on in the fight against rabies?

A rabies control strategy cannot be effective without the support of coordinated partners using the same strategies.

First of all, the OIE relies on the **Veterinary Services** of its 180 Member Countries. In cooperation with **FAO, WHO and the Global Alliance for Rabies Control**, the OIE develops recommendations aimed at ensuring effective collaboration between sectors and worldwide implementation of the most appropriate strategies.

The **Member Countries** themselves are responsible for implementing the control methods advocated by the OIE, through their Veterinary Services, Public Health Services, local authorities and police force. They can also receive support from non-governmental organisations.

17. Who are the OIE's experts?

The OIE has ten Reference Laboratories designated for their scientific excellence in the field of rabies. The reference experts are responsible to the OIE and all its Member Countries for scientific matters falling within their remit. They are internationally renowned researchers who actively help their Reference Laboratories to provide technical and scientific assistance and to give advice on rabies surveillance and control. They also offer scientific and technical training for Member Countries and coordinate scientific and technical studies in collaboration with other laboratories or organisations.

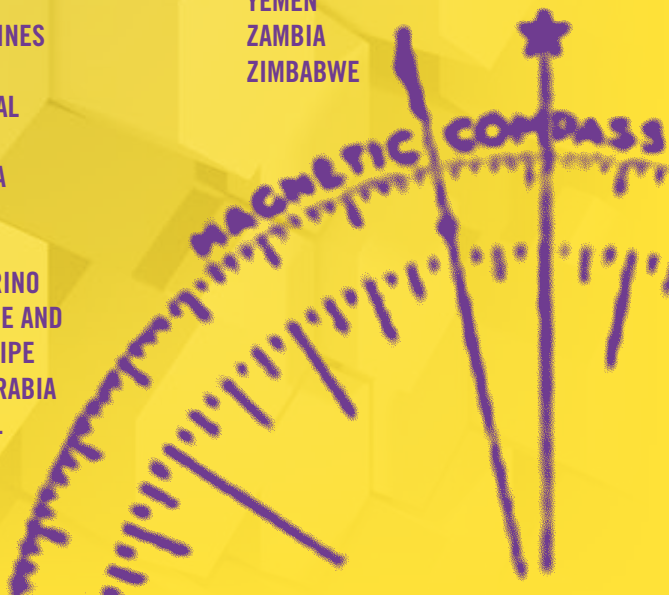
18. Does the OIE provide support for rabies vaccination?

The OIE's first regional rabies vaccine bank was launched in 2012. To date (July 2014), nearly **3 million doses** of rabies vaccine have been delivered to Asia, as a result of the financial support of the European Union and Australia. This groundbreaking programme could serve as a model for the establishment of new rabies vaccine banks for other regions of the world. It ensures that high-quality vaccines, produced in accordance with the OIE's international standards, are available and that, in an emergency, they can be delivered to developing countries to meet their actual requirements in the field. The deployment of vaccine banks of this kind would help to achieve economies of scale and facilitate the implementation of regional and national rabies control programmes.

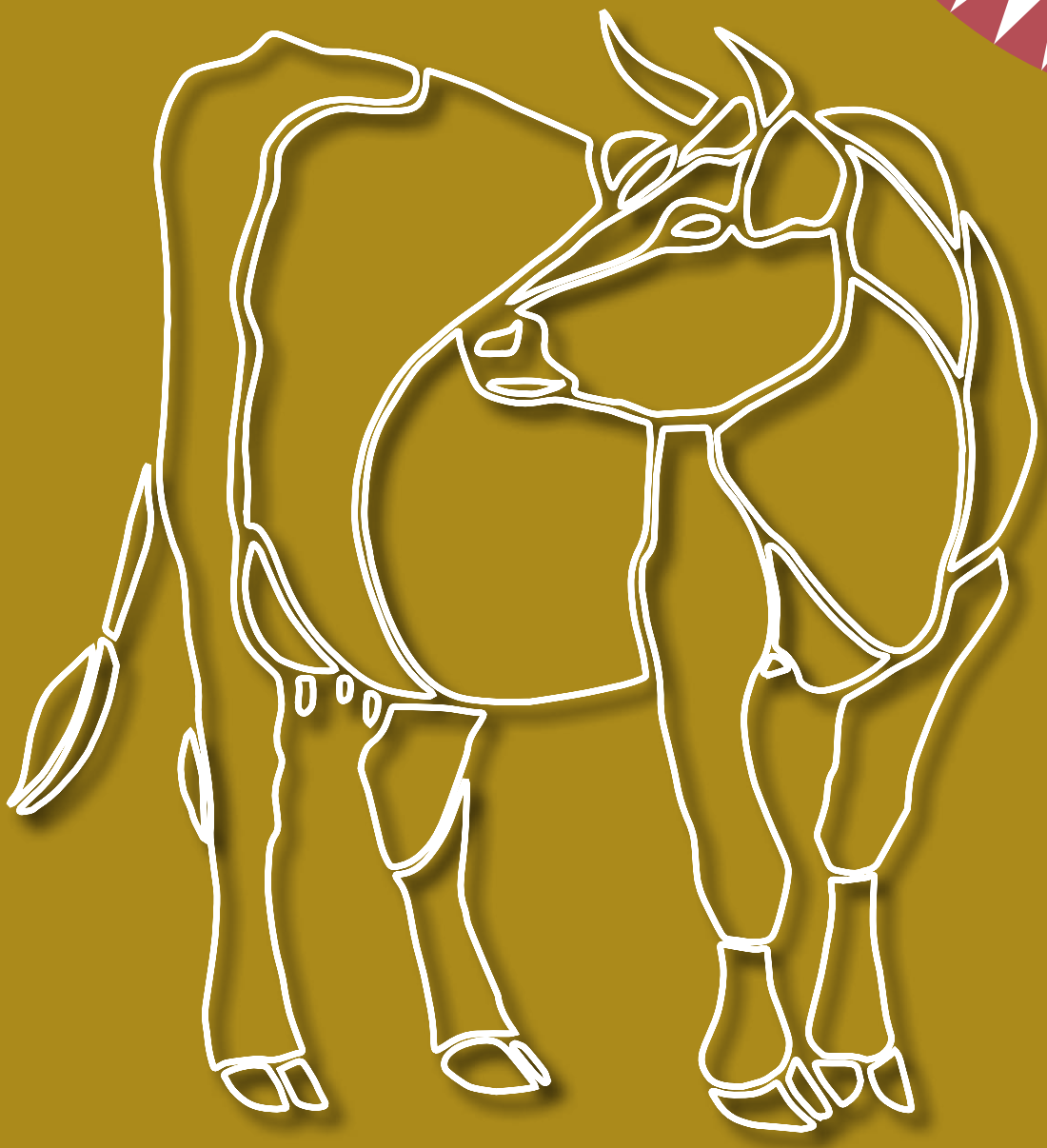
The OIE also contributes in experimental studies of small-scale oral rabies vaccination for stray dogs.

OIE members (180)

AFGHANISTAN
ALBANIA
ALGERIA
ANDORRA
ANGOLA
ARGENTINA
ARMENIA
AUSTRALIA
AUSTRIA
AZERBAIJAN
BAHAMAS
BAHRAIN
BANGLADESH
BARBADOS
BELARUS
BELGIUM
BELIZE
BENIN
BHUTAN
BOLIVIA
BOSNIA AND HERZEGOVINA
BOTSWANA
BRAZIL
BRUNEI
BULGARIA
BURKINA FASO
BURUNDI
CAMBODIA
CAMEROON
CANADA
CAPE VERDE
CENTRAL AFRICAN REP.
CHAD
CHILE
CHINA (PEOPLE'S REP. OF)
CHINESE TAIPEI
COLOMBIA
COMOROS
CONGO (REP. OF THE)
CONGO (DEM. REP. OF THE)
COSTA RICA
CÔTE D'IVOIRE
CROATIA
CUBA
CYPRUS
CZECH REPUBLIC
DENMARK
DJIBOUTI
DOMINICAN REP.
ECUADOR
EGYPT
EL SALVADOR
EQUATORIAL GUINEA
ERITREA
ESTONIA
ETHIOPIA
FIJI ISLANDS
FINLAND
FORMER YUG. REP. OF MACEDONIA
FRANCE
GABON
GAMBIA
GEORGIA
GERMANY
GHANA
GREECE
GUATEMALA
GUINEA
GUINEA BISSAU
GUYANA
HAITI
HONDURAS
HUNGARY
ICELAND
INDIA
INDONESIA
IRAN
IRAQ
IRELAND
ISRAEL
ITALY
JAMAICA
JAPAN
JORDAN
KAZAKHSTAN
KENYA
KOREA (DEM PEOPLE'S REP. OF)
KOREA (REP. OF)
KUWAIT
KYRGYZSTAN
LAOS
LATVIA
LEBANON
LESOTHO
LIBERIA
LIBYA
LIECHTENSTEIN
LITHUANIA
LUXEMBOURG
MADAGASCAR
MALAWI
MALAYSIA
MALDIVES
MALI
MALTA
MAURITANIA
MAURITIUS
MEXICO
MICRONESIA (FEDERATED STATES OF)
MOLDOVA
MONGOLIA
MONTENEGRO
MOROCCO
MOZAMBIQUE
MYANMAR
NAMIBIA
NEPAL
NETHERLANDS
NEW CALEDONIA
NEW ZEALAND
NICARAGUA
NIGER
NIGERIA
NORWAY
OMAN
PAKISTAN
PANAMA
PAPUA NEW GUINEA
PARAGUAY
PERU
PHILIPPINES
POLAND
PORTUGAL
QATAR
ROMANIA
RUSSIA
RWANDA
SAN MARINO
SAO TOME AND PRINCIPE
SAUDI ARABIA
SENEGAL
SERBIA
SEYCHELLES
SIERRA LEONE
SINGAPORE
SLOVAKIA
SLOVENIA
SOMALIA
SOUTH AFRICA
SOUTH SUDAN
SPAIN
SRI LANKA
SUDAN
SURINAME
SWAZILAND
SWEDEN
SWITZERLAND
SYRIA
TAJIKISTAN
TANZANIA
THAILAND
TIMOR-LESTE
TOGO
TRINIDAD AND TOBAGO
TUNISIA
TURKEY
TURKMENISTAN
UGANDA
UKRAINE
UNITED ARAB EMIRATES
UNITED KINGDOM
UNITED STATES OF AMERICA
URUGUAY
UZBEKISTAN
VANUATU
VENEZUELA
VIETNAM
YEMEN
ZAMBIA
ZIMBABWE



Read more about the anniversary of the OIE and test your knowledge on page **14**



90 years of expertise

3rd

OIE GLOBAL CONFERENCE ON

AQUATIC ANIMAL HEALTH

Vietnam, 20-22 January 2015

WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

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