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**Towards global eradication of peste des petits ruminants**

**Fifteen years.** That is the target international animal health specialists have set themselves to eradicate peste des petits ruminants (PPR). This is only half the time it took to eradicate rinderpest. This is an ambitious yet realistic target and will be achieved through coordinated joint action by the various national, regional and global parties involved.

During the past 15 years, PPR has spread at an alarming rate, reaching regions not previously infected. Identified in Côte d’Ivoire in 1942, this devastating disease now affects nearly 70 countries in Africa, the Middle East and Asia, which are home to more than 80% of the world’s sheep and goat populations.

The disease is highly contagious. Once introduced, the virus can infect up to 90% of a flock, and the disease can then kill 30% to 70% of infected animals. The economic losses induced by PPR strike at the heart of vulnerable rural populations, ruining animal production at the national and regional level. Affected countries have suffered cumulative annual losses ranging from tens to hundreds of millions of dollars.

In the absence of any control plan, PPR could spread still further, causing more devastating socio-economic losses and hardship for the millions of poor farmers, mostly women, who rely on sheep and goats for their livelihoods.

This explains why the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO), in a bid to stop the spread of the disease and ultimately eradicate it, have developed a Global Strategy for the Control and Eradication of PPR, within the FAO/OIE Global Framework for the Control of Transboundary Animal Diseases (GF-TADs) Working Group.

At the beginning of April, over 300 high-level representatives from all corners of the Earth met in Abidjan, Côte d’Ivoire, at an international conference organised by the OIE and FAO with the aim of adopting this global strategy. The Ministerial recommendations issued by the meeting defined PPR as a top-priority disease that should be eradicated in the next two decades.

The objective of global control and eradication of the disease within fifteen years will only be achieved if sufficient funding can be obtained and if good coordination exists at all levels, coupled with a strong political commitment.

Fortunately, valuable lessons have been learned from the past and show the path to success. To date, only two diseases have been successfully wiped off the face of the planet: human smallpox, eradicated under the auspices of the World Health Organization (WHO), and the much-feared animal disease rinderpest, eradicated under the auspices of the OIE and FAO.

Based on the rinderpest model, a gradual, step-by-step method has been developed for the global control and eradication of PPR.
At a national level, the strategy is implemented in four stages, the ultimate aim being to obtain the status of a country officially recognised as free from PPR by the World Assembly of National Delegates of OIE Member Countries. It is also possible for each infected country to apply for OIE endorsement of its national PPR control programme, based on the standards in the OIE Terrestrial Code.

At the global level, a joint governance and coordination mechanism is being implemented within the framework of the GF-TADs agreement, established between the OIE and FAO in 2004. In addition to this, there is a specific mechanism for managing the resources allocated to PPR eradication by the programme’s financial partners.

It should be emphasised that the Global Strategy for the Control and Eradication of PPR is not presented as a ‘stand-alone’ activity, but rather as a combination of three inter-related components: namely, the control and eradication of PPR, the strengthening of Veterinary Services, and the parallel prevention and control of other major diseases of small ruminants. These three pillars form the Global Strategy adopted in Abidjan.

Based on these three pillars, the aim of global eradication of PPR is also the starting point to achieve sustainable progress in the performance of national animal health systems and, in turn, to improve the animal health status for other diseases of small ruminants and the health status of small village flocks.

The countries meeting in Abidjan thus undertook to strengthen the capacities and expertise of their Veterinary Services to ensure proper implementation of the eradication strategy, notably through the development of surveillance plans for the disease, capacity-building programmes for staff, technology transfer, public–private partnerships, and the use of vaccines that comply with OIE intergovernmental standards.

The global investment needed during the next fifteen years will be substantial and at the present time is difficult to evaluate precisely. Nevertheless, the target is achievable and will have a significant impact on food production, nutrition, incomes and the livelihood resilience of more than 330 million poor farmers in many parts of the world, by improving the productivity and profitability of their flocks.

Supporting Veterinary Services by helping them to achieve compliance with OIE standards of quality will also improve the effectiveness of prevention and control of all other animal diseases, demonstrating even further the cost-effectiveness of the investment made.

In the current context of globalised trade, paving the way for large-scale dissemination of pathogens, the activities of Veterinary Services and the control of transboundary animal diseases such as PPR at their source are in the interests of all countries, infected or otherwise. These activities should, more than ever, be considered as global public goods.

The OIE and FAO are continuing to implement the Global Foot and Mouth Disease Control Strategy adopted at the Bangkok Conference in 2012. The OIE, WHO and FAO are also continuing with the Global Control Programme for Canine Rabies. A world conference on the subject, organised by WHO, the OIE and FAO, is due to be held at WHO Headquarters in Geneva in December 2015.
Peste des petits ruminants (PPR) is one of the most damaging of all animal diseases, and around 70 countries have either reported the disease to the OIE or are suspected of being infected. Of these, more than 60% are in Africa, the other infected countries being in Asia (People’s Republic of China, South Asia, Central Asia/West Eurasia, including Turkey) and the Near and Middle East. Fifty other countries are considered to be at risk of PPR.

In the worst situations, PPR-related morbidity is as high as 100%, with a mortality rate that can reach 90%. In areas where the disease is endemic the mortality rate may be lower, but the disease has a more insidious impact on flock productivity. Each year, PPR causes economic losses worth an estimated USD 1.2 to 1.7 billion, due to animal deaths, reduced production and the cost of fighting the disease.

The FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) Global Steering Committee in 2012, the FAO Council and the Committee on Agriculture (COAG), and the OIE, in the form of a Resolution of the World Assembly of Delegates of the OIE in 2014, all recommended the development of a Global Strategy for the Control and Eradication of PPR (hereinafter “the Global Strategy”) and
expressed a strong willingness to address animal health problems in a systematic way, dealing with horizontal as well as more disease-specific (i.e. vertical) issues, relating to PPR or to other diseases.

The Global Strategy has been prepared by the GF-TADs Working Group on PPR, in collaboration with numerous experts and representatives of key countries, regional organisations, specialised organisations and the private sector.

The overall objective of the Global Strategy is a small ruminant sector contributing to global food security and nutrition, human health and economic growth, particularly in developing countries, thereby alleviating poverty, increasing income generation and improving the livelihoods of smallholder farmers and general human wellbeing. The specific objectives are the eradication of PPR by 2030, while at the same time, through reinforcing the Veterinary Services, improving animal health globally by reducing the impact of other major infectious diseases of small ruminants.

The experience gained and the lessons learned during the Global Rinderpest Eradication Programme (GREP) are important assets, and there are several factors conducive to Global Strategy implementation, such as the availability of effective vaccines, suitable diagnostic assays, favourable epidemiological conditions and a political context that is now quite conducive to PPR control and eradication.

Other factors provide strong incentives, such as the possibility to strengthen the small ruminant sector by combining PPR control with control activities for other important diseases, and indeed the possibility of obtaining official OIE recognition of a ‘PPR free’ status or endorsement of national PPR control programmes.

Nevertheless, Global Strategy implementation will have to contend with significant challenges, such as the level of effectiveness of the Veterinary Services, the difficulty of finding vaccine delivery systems that are effective in all locations, even in remote or war-torn areas, and also the considerable mobility of small ruminants.

The Global Strategy has three integrated components. While eradication of PPR (Component 1) is the ultimate goal, it cannot be achieved independently of the other two components, namely strengthening the Veterinary Services (Component 2) as a country moves towards PPR eradication and better prevention and control of other priority diseases of small ruminants (Component 3).

At national level, the strategic approach is based on four stages, beginning with Stage 1, when the epidemiological situation is being assessed, and culminating with Stage 4, when the country can provide evidence that there is no virus circulation and is ready to apply for official OIE recognition of the status ‘free from PPR’.

In addition to the PPR vaccine and specific diagnostic assays that are already available, a variety of tools will be used during implementation of the Global Strategy, such as the OIE PVS Pathway, the PPR Monitoring and Assessment Tool (PMAT) and the Post-Vaccination Evaluation (PVE) tool. The aim of the PMAT is to categorise countries according to the four stages identified in the Global Strategy. The PVE tool will enable the effectiveness of the vaccination campaign to be evaluated. The Global Strategy will also establish a Global PPR Research and Expertise Network (PPR-GREN).
The five technical elements that characterise each stage are related to:
- PPR diagnosis
- surveillance systems
- prevention and control systems
- the legal framework in place
- stakeholder involvement.

The activities will begin by controlling the disease in areas where it is highly endemic, and they will then consolidate these efforts by concentrating on zones where a low endemic level has been achieved. For countries already free from PPR, this status will be maintained.

At regional level, the emphasis is on the need to harmonise strategies and activities through strong partnerships with the relevant regional economic communities or other relevant regional organisations, such as the African Union – Inter-African Bureau for Animal Resources (AU-IBAR) in Africa, as well as through the development of regional networks for laboratories and epidemiology. The GF-TADs Regional Animal Health centres (RAHCs) can play an important role at regional level. Countries will participate in (sub-)regional roadmaps that provide for evaluation and validation of the various stages.

At global level, the GF-TADs governing bodies, principles and mechanisms will be maintained and a new FAO/OIE Global PPR Control and Eradication Programme (PPR-GCEP) will be established, with its own FAO/OIE joint global Secretariat. FAO/OIE global networks of PPR Reference Laboratories/Centres and Epidemiology Collaborating Centres for PPR will be established.

Monitoring and evaluation are key elements of Global Strategy implementation and the PPR Monitoring and Evaluation Tool (PMAT) and Post-Vaccination Evaluation tool (PVE) will be used for this purpose.

The timelines of the PPR Global Strategy foresee three five-year phases, with constant epidemiological evaluation and monitoring and a global evaluation of the results in 2020, which will provide guidance on the continuation or updating of programme activities.

The undiscounted costs for a fifteen-year Global Strategy are between USD 7.6 and 9.1 billion. The annual cost during the initial five-year period is estimated to be in the region of USD 0.5 billion.

In the event of a rapid decrease in PPR incidence in countries employing an effective vaccination strategy, the costs could be lower than the original estimates. In all the scenarios tested, vaccination campaigns are significant components and their cost could well be reduced by strong targeting of at-risk populations through careful epidemiological and economic analysis.

The annual direct impact of PPR is currently between USD 1.2 and 1.7 billion, and this impact would be reduced to zero if the eradication programme were successful. It is important to realise that without the Global Strategy anything between USD 4.0 and 5.5 billion would be spent over a 15-year period on poorly targeted vaccination campaigns that are unlikely to lead to eradication.

Global strategy for the control and eradication of peste des petits ruminants: www.oie.int/eng/PPR2015/Document.html
new OIE publications

Terrestrial Animal Health Code

The aim of the OIE Terrestrial Animal Health Code (Terrestrial Code) is to contribute to the improvement of terrestrial animal health and welfare and veterinary public health worldwide and to assure the sanitary safety of international trade in terrestrial animals (mammals, birds and bees) and their products.

The standards in the Terrestrial Code are based on the most recent scientific and technical information and have been formally adopted by the World Assembly of OIE Delegates. They are also recognised as the international standard for animal health and zoonotic diseases within the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures.

The Terrestrial Code should be used by the Competent Authorities of importing and exporting countries for early detection, reporting and control of agents pathogenic to terrestrial animals, and, in the case of zoonoses, for humans, and to prevent their transfer via international trade in terrestrial animals and their products, while avoiding unjustified sanitary barriers to trade.

This 24th edition incorporates modifications to the Terrestrial Code agreed at the 83rd General Session in May 2015. It includes an updated version of the table of contents, user’s guide and glossary, as well as three new chapters: animal welfare and dairy cattle production systems (7.11.) (volume I), infection with epizootic hemorrhagic disease virus (8.7.) (volume II) and infection with Taenia solium (15.3.) (volume II).

Additionally, volume I includes revised text in the following chapters: procedures for self declaration and for official recognition by the OIE, evaluation of Veterinary Services, collection and processing of in vivo derived embryos from livestock and equids, high health status horse subpopulation, general obligations related to certification, certification procedures, prevention, detection and control of Salmonella in poultry, harmonisation of national antimicrobial resistance surveillance and monitoring programmes, risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals, animal welfare and broiler chicken production systems.

The following chapters in volume II were also updated: infection with bluetongue virus, infection with Brucella abortus, B. melitensis and B. suis, infection with foot and mouth disease virus, infection with Rift Valley fever virus, infection with avian influenza viruses and bovine spongiform encephalopathy.

Aquatic Animal Health Code

The aim of the OIE Aquatic Animal Health Code (Aquatic Code) is to contribute to the improvement of the health of aquatic animals and welfare of farmed fish worldwide and to assure the sanitary safety of international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products.

The standards in the Aquatic Code are based on the most recent scientific and technical information and have been formally adopted by the World Assembly of OIE Delegates. They are also recognised as the international standard for aquatic animal health within the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures.

The Aquatic Code should be used by the Competent Authorities of importing and exporting countries for early detection, reporting and control of agents pathogenic to aquatic animals, and to prevent their transfer via international trade in aquatic animals and their products, while avoiding unjustified sanitary barriers to trade.

The 2015 edition includes an updated version of the table of contents, user’s guide and glossary, and revised text in the following chapters:

- diseases listed by the OIE
- import risk analysis
- control of pathogenic agents in aquatic animal feed
- general obligations related to certification
- certification procedures
- infection with *Batrachochytrium dendrobatidis*
- infection with ranavirus
- infection with *Perkinsus olseni*.

In addition, the text in Articles X.X.7. and X.X.11. of disease-specific chapters has been merged, and some amendments have been made in Articles 10.4.4. and 10.4.6.

This edition also includes two new chapters: Recommendations for surface disinfection of salmonid eggs (4.3.) and Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in aquatic animals (6.5.).
Legal and Administrative Affairs Unit

Mr Rodney de Souza
Head of the Unit

Rodney de Souza joined the OIE on 1 January 2015 as Head of the Legal and Administrative Affairs Unit, a new unit created because of an increasing need for internal legal support within the Organisation. He was also appointed acting Head of the Human Resources Unit on 28 January. Since then, as well as handling human resources matters, Rodney has been responsible for drafting contracts with international organisations and other third parties; monitoring the OIE’s governance and institutional relations; and overseeing the internal audit.

Before joining the OIE, Rodney worked as an attorney at an international law firm in New York, where he represented businesses, institutions, research centres and start-up companies involved in biotechnology, clean technology, diagnostics, medical devices and pharmaceuticals, in various litigations and cross-border transactions.

Rodney holds law degrees from Cornell University (New York), King’s College (London) and the Sorbonne (Paris).

Regional Activities Department

Dr Pablo Belmar von Kretschmann
Chargé de mission

Dr Pablo Belmar von Kretschmann joined the staff of OIE Headquarters in January 2015, as Chargé de mission in the Regional Activities Department. His responsibilities primarily involve activities associated with the Performance of Veterinary Services Pathway (PVS Pathway), the OIE’s global programme which aims to strengthen national Veterinary Services. These include: helping to organise OIE assessments of the performance of Veterinary Services (PVS Evaluations), PVS Gap Analyses, Veterinary Legislation Missions and Follow-up Missions; and taking part in the analysis of PVS Pathway Mission reports; as well as contributing to the activities of the OIE Veterinary Legislation Support Programme (VLSP).

Dr Belmar von Kretschmann graduated as a DVM from the University of Chile, later gaining an MSc in Food Safety from Wageningen University in the Netherlands. He spent seven years working as a Veterinary Officer for food/feed safety at Chile’s competent authority in the area of aquatic animals. Here, he gained experience in applying the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), negotiating animal health and food safety requirements with trading partners and the inspection and certification of animal products for export. He was also responsible for implementing the programme for the control of residues of pharmaceutical and environmental pollutants in aquaculture fish in Chile.
Activities of the Communication Unit

The OIE at the Paris International Agricultural Show 2015

For the fifth year running, the OIE was present at the Paris International Agricultural Show, held during the week of 21 February to 1 March 2015.

This was the 52nd Paris International Agricultural Show, featuring several thousand animals and welcoming nearly 700,000 visitors during the week.

In partnership with the European Commission’s Directorates General for Health and Food Safety (DG SANTE) and Agriculture (DG AGRI), the OIE informed visitors to the show about the various stages in the food production chain ‘from farm to fork’, and the rules and standards set by the European Commission and the OIE to ensure food safety.

Numerous events, including videos, quizzes and a tasting workshop, helped to raise awareness among visitors of all ages of the role played by professionals, and especially veterinarians, in ensuring that the rules on animal health and welfare are followed and the safety and quality of animal products protected.

The OIE updates its fact sheets and launches a new one on intergovernmental standards

The OIE’s fact sheets have been updated to give a clear overview of topics of interest for the Organisation, such as transparency of the world animal health situation, the role of Veterinary Services, food safety and animal welfare. Through this comprehensive update, the OIE provides a review of its key texts, programmes and tools aimed at improving animal health and welfare throughout the world.

As well as these updates, the OIE will publish a new fact sheet on its intergovernmental standards. The aim is to provide information on intergovernmental standard-setting documents, which set out the rules that Member Countries can use to protect themselves from the introduction of diseases and pathogens without setting up unjustified animal health barriers.

What is an OIE standard? Where can one find the OIE's standards? Why are they developed? How and by whom? The new OIE fact sheet answers these and many other questions.

The OIE fact sheets can be consulted on the OIE website. They are available in English, French and Spanish.

We hope you’ll find them informative!
Activities of the Communication Unit

The OIE launches the 2015 edition of its ‘A-Z’, an on-line handbook for a clearer understanding of the OIE

The OIE presents the 2015 edition of the Organisation’s on-line handbook, the ‘A-Z’. This essential tool for national and international decision-makers in the field of animal health and welfare is a collection of key documents, information and data designed to inform users about the OIE and familiarise them with the way the Organisation functions.

This interactive tool’s user-friendly format makes it ideal for rapid reference. Users can navigate the document in several different ways.

The chapters are as follows:
- General presentation of the Organisation and the role of the representatives of its 180 Member Countries
- Veterinary Services and their role in matters of animal health, public health and animal welfare
- OIE standards applicable in matters of animal health, including zoonoses
- The OIE’s World Animal Health Information System: WAHIS/WAHID
- The official disease status of Member Countries with respect to several priority animal diseases
- The OIE’s global scientific network, the central core that enables the OIE to remain at the forefront of world veterinary scientific expertise and successfully carry out its key missions
- OIE Publications, a chapter containing normative texts, serial publications and the proceedings of international conferences aimed at informing public debate and policy development worldwide.

OIE A → Z:
www.oie.int/fileadmin/vademecum/OIE_A-Z_2015.html
Activities of the Scientific and Technical Department
Summaries of the OIE Specialist Commission, Working Group and Ad hoc Group meetings
January to March 2015

Specialist Commissions

Biological Standards Commission ('Laboratories Commission')

OIE Headquarters, Paris, 28–30 January 2015

The Laboratories Commission met at the OIE Headquarters under the chairmanship of its President, Prof. Vincenzo Caporale, and addressed, among others, the following issues:

1. OIE Reference Centres

The Commission accepted one request for designation as an OIE Reference Laboratory. Following the meeting, this request was endorsed by the OIE Council along with two others that had been waiting for an answer from the Council to a question from the Commission; all will be proposed for adoption by the World Assembly of Delegates through a formal resolution at the OIE General Session in May 2015.

Annual reports of activities in 2014 were received from most Reference Centres. The new online web-based annual report template has been used by the Collaborating Centres for the first time. The web-based reporting system makes it easy to identify areas for the Commission’s focus. For example, many OIE Reference Laboratories produce and supply reference materials but few produce and supply OIE-approved reagents. The Commission will be able to review its guidelines on the preparation, validation and distribution of approved materials and encourage participation in its standardisation programme. The Commission expressed its ongoing appreciation for the enthusiastic support and expert advice given to the OIE by the Reference Centres.

2. Ad hoc Groups

The Commission endorsed the report of the OIE ad hoc Group on High Throughput Sequencing, Bioinformatics and Computational Genomics (HTS–BCG), held on 13 and 14 November 2014 (see Bulletin, no. 2015–1, p. 15), and encouraged the implementation of the work plan drafted by this Group.

The Commission also endorsed the report of the ad hoc Group on Biosafety and Biosecurity in Veterinary Laboratories, held on 26 and 27 January 2015.


The Commission reviewed and approved the proposals of the Enlarged Bureau Group: 18 chapters and the glossary of the Terrestrial Manual were approved for circulation to Member Countries as the final versions that would be proposed for adoption by the Assembly in May 2015.

4. OFFLU (the Joint OIE–FAO Network of Expertise on Animal Influenza)

An OFFLU strategy meeting was held on 27 and 28 October 2014 by the combined OFFLU Steering and Executive Committees at the OIE Headquarters to discuss and recommend strategic directions for OFFLU. In identifying broad strategic areas in which OFFLU should be delivering recognised outcomes, the group reaffirmed the importance of OFFLU being recognised as an authoritative source of information on influenza in animals globally and as an effective laboratory network for diagnosing influenza in animals. In recognition of significant gaps in surveillance for influenza infections in animal populations, the meeting agreed that OFFLU should promote and advocate for more comprehensive surveillance. In line with developments in both the OIE and FAO on the increasingly important role of sequence data in animal disease control, OFFLU should participate in existing and future international efforts to develop more standardised processes for capturing, storing, ensuring the quality of and analysing molecular data, together with corresponding epidemiological, clinical and other relevant data. Current work on the analysis of avian influenza isolates for antigenic matching for the purposes of vaccine antigen selection in both humans and poultry should be continued, broadened and improved, along with the similar work undertaken for equine influenza.
Activities of the Scientific and Technical Department

Scientific Commission for Animal Diseases (‘Scientific Commission’)

OIE Headquarters, Paris, 9–13 February 2015

The Scientific Commission met at the OIE Headquarters under the chairmanship of its President, Dr Gideon Brückner, and addressed, among others, the following issues:

1. Endorsement of the reports of the OIE ad hoc Groups convened for:
   - evaluation of the foot and mouth disease (FMD) status of Member Countries and revision of the amended Terrestrial Animal Health Code (Terrestrial Code) chapter on FMD
   - evaluation of the contagious bovine pleuropneumonia status of Member Countries
   - evaluation of the classical swine fever status of Member Countries
   - evaluation of the bovine spongiform encephalopathy (BSE) risk status of Member Countries
   - evaluation of the peste des petits ruminants (PPR) status of Member Countries
   - evaluation of the African horse sickness disease status of Member Countries
   - developing a global database on the use of antimicrobial agents in animals and the revision of the relevant amended Terrestrial Code chapters
   - revision of the notification of animal diseases procedure and of the disease-listing criteria for pathogenic agents.


3. Comments from Member Countries on the new and amended draft chapters of the Terrestrial Code on:
   - high health status horses, including the draft model veterinary certificate for the international movement for not more than 90 days of a high-health, high-performance (HHP) horse for competitions or races
   - porcine respiratory and reproductive syndrome
   - glanders.

4. Liaison with the Biological Standards Commission on issues raised during previous Scientific Commission meetings on the diagnostic strategies and proposed amendments of the Terrestrial Manual.

5. Evaluation of the request of a Member Country to be designated as a Collaborating Centre for Training Veterinary Officials and Diagnosing Infectious Animal Diseases and Zoonosis in Tropical Africa.

6. Evaluation of the twinning project proposal between the USDA–APHIS1–Veterinary Services (USA) and the Department of Agriculture, Forestry and Fisheries (South Africa), in partnership with the Epidemiology Unit of the Faculty of Veterinary Science, University of Pretoria, South Africa.

7. A review of the outcomes of the OIE expert missions conducted since September 2014 and discussion on the expert missions scheduled for 2015 and 2016.

8. Prioritisation of the future work of the Scientific Commission, including the new planned Ad hoc Groups.

The Scientific Commission was updated on specific disease issues, such as the procedure for designating holding facilities for material containing rinderpest virus and on the state of play of the Global Control Strategy for FMD, including the post-vaccination monitoring guidelines, and of the Global Control Strategy for PPR. The Commission was informed on the main outcomes of scientific meetings relevant to OIE activities and on progress in organising the OIE Global Conference on Biological Threat Reduction (30 June – 2 July 2015) and the Global Conference on Rabies (December 2015).

Additionally, the Scientific Commission and the Terrestrial Animal Health Standards Commission held a joint meeting chaired by the OIE Deputy Director General to coordinate the working programmes of both Commissions. Several important cross-cutting items were discussed, including the finalisation of the amended chapter on FMD; the progression of the development of Chapter 4.16. for the high health status horse subpopulation movements for international equestrian competitions and the model certificate; the progress of work on antimicrobial resistance; and the impact of atypical BSE on official status recognition. Both Commissions emphasised the importance of documenting Commission decisions when communicating with Member Countries.

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1 USDA–APHIS: United States Department of Agriculture – Animal and Plant Health Inspection Service
Ad hoc Groups

Evaluation of African horse sickness (AHS) status of Member Countries

**OIE Headquarters, Paris, 14–15 January 2015**

The Group evaluated two applications for freedom from AHS in accordance with the *Terrestrial Code*, one for AHS-free country status and the other for an AHS-free zone.

The Group was also informed of the status of harmonisation of the *Terrestrial Code* chapters on bluetongue (Chapter 8.3.), AHS (Chapter 12.1.) and epizootic haemorrhagic disease (draft chapter), and considered additional comments from two Member Countries on the AHS chapter, as tasked by the Scientific Commission.

Biosafety and Biosecurity in Veterinary Laboratories

**OIE Headquarters, Paris, 26–27 January 2015**

Although the 180 Member Countries adopted *Terrestrial Manual* Chapter 1.1.3a., ‘Standard for managing biorisk in the veterinary laboratory and animal facilities’, at the OIE General Session in May 2014, some Member Countries expressed concerns about the chapter’s approach to biosafety and biosecurity in veterinary laboratories, based only on a biological risk analysis.

The Group took note of these comments and decided to reassess the information and approaches in Chapters 1.1.3., ‘Biosafety and biosecurity in the veterinary diagnostic microbiology laboratory and animal facilities’, and 1.1.3a., for the purposes of developing an approach that would meet the requirements of Member Countries and also realistically deliver those standards for the management of biological risks associated with laboratories and animal facilities needed by the international community.

The Group merged the current Chapters 1.1.3. and 1.1.3a. of the *Terrestrial Manual*, and developed a new Chapter 1.1.3., ‘Biosafety and biosecurity: standard for managing biological risk in veterinary laboratory and animal facilities’.

Foot and Mouth Disease (FMD)

**OIE Headquarters, Paris, 27–28 January 2015**

The Group finalised the evaluation of three dossiers from Member Countries for the recognition of an FMD-free zone and for the endorsement of official FMD control programmes.

The Group was also asked to conduct an overall review of the revised version of the new chapter on FMD in the *Terrestrial Code* and Member Countries’ comments.

International Horse Movement for Equestrian Sport

**OIE Headquarters, Paris, 3–5 March 2015**

The Group met for the fifth and last time. It was informed of Member Countries’ comments received by the Terrestrial Animal Health Standards Commission at its February meeting (see next page) on the draft revised *Terrestrial Code*, Chapter 4.16., and on the draft model high-health, high-performance (HHP) health certificate. The Group discussed the supporting guidance documents for the practical implementation of the HHP concept (biosecurity guidelines, management guidelines) and for the establishment of equine-disease-free zones (EDFZ). It was agreed that further expert sub-group meetings would be needed to finalise the HHP guidelines.

The Group was also updated on the progress made with this project since its last meeting in June 2014. It approved a 2015–2019 work plan, co-funded by the Federation Equestre Internationale (FEI) and the International Federation of Horseracing Authorities (IFHA), which includes the development of joint OIE–industry communication activities to promote the HHP initiative, as well as funding for research programmes on the prevention and diagnosis of priority diseases.
Activities of the International Trade Department
Summaries of the OIE Specialist Commission, Working Group and Ad hoc Group meetings
January to March 2015

Ad hoc Groups

Disaster management and risk reduction in relation to animal health and welfare and veterinary public health
OIE Headquarters, Paris, 27–29 January 2015

The Group, chaired by Dr Gary Vroegindewey, thoroughly discussed the report of the first meeting and finalised the draft Guidelines on disaster management and risk reduction in relation to animal health and welfare and veterinary public health (Guidelines for National Veterinary Services), and also developed some guiding principles for the OIE in this field, as it engages with this new area of work. The draft guidelines were presented for Member Countries’ consideration in the report of the February 2015 meeting of the Terrestrial Animal Health Standards Commission (‘the Code Commission’). The Group also drew up a proposed strategy to facilitate the use of the guidelines by Veterinary Services and their partners.

A final meeting of the Group, if needed, will be held after the September 2015 meeting of the Code Commission.

Susceptibility of crustacean species to infection with OIE-listed diseases
OIE Headquarters, Paris, 10–12 February 2015

The Group held its first meeting from 10 to 12 February 2015. This was convened to review the list of species susceptible to infection with OIE-listed crustacean diseases, in accordance with the recently adopted new Aquatic Animal Health Code Chapter 1.5., ‘Criteria for listing species as susceptible to infection with a specific pathogen’. The Group reviewed the relevant scientific literature and developed a list of species susceptible to infection with yellow head virus to be considered for inclusion in the relevant chapters of the Aquatic Animal Health Code and the Manual of Diagnostic Tests for Aquatic Animals.

The Group report was sent to the Aquatic Animal Health Standards Commission for its consideration at the March 2015 meeting.

Specialist Commissions

Terrestrial Animal Health Standards Commission (‘Code Commission’)
OIE Headquarters, Paris, 10–19 February 2015

The Terrestrial Animal Health Standards Commission reviewed Member Countries’ comments on the texts circulated after the Commission meeting in September 2014, together with the reports of the OIE ad hoc Groups on ‘Salmonella in cattle’, ‘Notification of animal diseases and pathogenic agents’ and ‘Animal welfare and disaster management’; and the report of the OIE Working Group on Animal Production Food Safety.

The Commission also reviewed several new or revised draft chapters received from the Scientific Commission for Animal Diseases.

The Commission will propose the following new or revised chapters for adoption in the Terrestrial Animal Health Code at the 83rd OIE General Session in May 2015:

- the user’s guide
- the glossary
- The evaluation of Veterinary Services
- Collection and processing of in vivo-derived embryos from livestock and equids
- General obligations related to certification
- Certification procedures
- The prevention, detection and control of Salmonella in poultry
- Animal welfare and dairy cattle production systems
- Animal welfare and broiler chicken production systems
- Slaughter of animals
- Infection with epizootic haemorrhagic disease virus
- Infection with bluetongue virus
- Infection with Taenia solium
- Infection with foot and mouth disease virus and procedures for self-declaration and official recognition by the OIE
- Infection with Rift Valley fever virus
- Infection with Brucella abortus, B. melitensis and B. suis
- Infection with avian influenza viruses
- The high health status horse subpopulation
Activities of the International Trade Department

- Bovine spongiform encephalopathy
- Harmonisation of national antimicrobial resistance surveillance and monitoring programmes and risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals.

The Commission also decided to circulate the following revised chapters and documents for Member Countries' comments:
- the glossary
- notification of diseases, infections and infestations, and provision of epidemiological information
- criteria for the inclusion of diseases, infections and infestations in the OIE list
- infection with African swine fever virus
- a model veterinary certificate for the international movement of not more than 90 days of a high-health, high-performance horse for competition or racing
- draft guidelines on disaster management and risk reduction in relation to animal health and welfare and veterinary public health.

Member Country comments on these texts will be reviewed at the Commission's next meeting in September 2015.

Aquatic Animal Health Standards Commission (‘Aquatic Animals Commission’)

OIE Headquarters, Paris, 2–6 March 2015

The Aquatic Animal Health Standards Commission (Aquatic Animals Commission) addressed Member Country comments on texts circulated as part of the Commission’s report on its September 2014 meeting and the work of the OIE ad hoc Groups on ‘Susceptibility of crustacean species to infection with OIE-listed diseases’ and ‘Notification of animal diseases and pathogenic agents’.

The Aquatic Animals Commission will propose amended texts for adoption in the Aquatic Code at the 83rd General Session in May 2015 on:
- the glossary
- the user’s guide
- Diseases listed by the OIE (Chapter 1.3.)
- Import risk analysis (Chapter 2.1.)
- Recommendations for disinfection of salmonid eggs (new Chapter 4.X.)
- Control of hazards in aquatic animal feed (Chapter 4.7.)
- General obligations related to certification (Chapter 5.1.)
- Certification procedures (Chapter 5.2.)
- Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in aquatic animals (new Chapter 6.5.)
- Infection with *Batrachochytrium dendrobatidis* (Chapter 8.1.)
- Infection with ranavirus (Chapter 8.2.)
- Articles X.X.7. and X.X.11. of disease-specific chapters
- Articles 10.4.4. and 10.4.6.
- Infection with *Perkinsus olseni* (Article 11.6.2.).

The Aquatic Animals Commission will propose amended texts for adoption in the Aquatic Manual at the 83rd General Session in May 2015 on:
- Infectious hypodermal and haematopoietic necrosis (Chapter 2.2.2.)
- Necrotising hepatopancreatitis (Chapter 2.2.4.)
- Taura syndrome (Chapter 2.2.5.)
- Yellow head disease (Chapter 2.2.8.)
- Infection with *Perkinsus olseni* (Chapter 2.4.7.).

The Aquatic Animals Commission also circulated the following chapters for Member Countries' comments in the Aquatic Code:
- Notification of diseases and epidemiological information (Chapter 1.1.)
- Criteria for listing (Chapter 1.2.)
- Infection with yellow head virus (Chapter 9.2.)
- and the Aquatic Manual:
- Acute hepatopancreatic necrosis disease (new draft Chapter X.X.X.).

The Aquatic Animals Commission discussed the outcomes and recommendations of the OIE Global Conference on Aquatic Animal Health, held in Ho Chi Minh City, Vietnam, from 20 to 22 January 2015 (see p. 103).

The Commission agreed that one of the objectives of the conference – to set priorities for the future work of the Aquatic Animals Commission – was achieved and noted a number of work items that should be considered when formulating the Commission’s work plan at its next meeting in September 2015.
Facilitating safe trade
by using the Terrestrial Animal Health Code to set health measures for trade in terrestrial animals and products

In addition to providing measures for the prevention and control of animal diseases, the OIE sets standards for preventing the spread of animal diseases and zoonoses via the international movement of animals and animal products; standards that are central to the World Trade Organization (WTO) rules-based framework for trade.

The OIE is one of the three international standard-setting organisations recognised in the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement). To this end, the OIE provides guidance on the use and application of the OIE standards on its website.

This article concerns a document entitled Devising import health measures for animal commodities, which has recently been revised and updated to address the adoption of the new WTO Trade Facilitation Agreement [1] in 2014.

National Customs Agencies are the leaders in the implementation of the new Trade Facilitation Agreement. These agencies do not usually have a mandate to safeguard health; rather, this is one of the roles of national Veterinary Services. The OIE saw a need for guidance on how Veterinary Services can contribute to the objectives of the WTO Trade Facilitation Agreement without compromising health. The OIE document, ‘Facilitating safe trade: how to use the Terrestrial Code to set health measures for trade in terrestrial animals and products’ [2] provides this guidance.

The revised document addresses the goal of facilitating safe trade, which involves preventing the introduction and
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spread of animal diseases and zoonoses while avoiding the imposition of unjustified trade barriers. The document focuses on the Terrestrial Animal Health Code and three commonly traded commodities: beef, pork and poultry meat. It provides information on key topics, such as the identification of hazards, including the use of the World Animal Health Information System (WAHIS). It explains how to comply with disciplines included in the SPS Agreement, such as harmonisation and regionalisation, when setting import measures. With an emphasis on practical information, the document includes three tables that summarise the Terrestrial Code’s provisions on trade in beef, pork and poultry meat.

This document may be useful in training and for discussions between national Veterinary Services and other government agencies or stakeholders. Together with the other guidance provided by the OIE, this document is relevant to the negotiation of market access and the conduct of import risk analyses. The OIE encourages members of the Veterinary Services, especially those working in import/export, to provide feedback to the OIE International Trade Department.

If requested by Member Countries, the OIE will provide guidance on commodities other than meat, as well as on aquatic animals and their products.

References


OIE portal on international standard-setting:
www.oie.int/en/international-standard-setting/overview/

Facilitating safe trade: how to use the Terrestrial Code to set health measures for trade in terrestrial animals and products:
www.oie.int/en/international-standard-setting/overview/facilitating-safe-trade/
Arrival

OIE Regional Representation for Africa

Dr Karim Tounkara

Dr Karim Tounkara was born in Bamako, Mali. He graduated as a DVM from the Moscow Veterinary Academy (Former Soviet Union) in 1978, and obtained a PhD in microbiology in 1982. He also obtained certificates in epidemiology, virology, serology and molecular biology from the University of Reading (United Kingdom), Washington State University (United States of America) and the International Atomic Energy Agency (IAEA).

Dr Tounkara has more than 30 years’ working experience at the national and international level in the field of animal disease control: he was Head of Diagnosis and Research at the Central Veterinary Laboratory of Bamako, and has been a consultant for the FAO and IAEA on many assignments in Africa and Asia. He worked at the IAEA as an international consultant and member of staff for five years (2001–2006). He then worked at the African Union – Intercontinental Bureau for Animal Resources (AU-IBAR) as a Regional Expert in Animal Disease Control, on the Pan African Programme for the Control of Epizootics (PACE) and Quality Assurance for Southern African Development Community (SADC) countries. He provided technical support to the Veterinary Services of many AU Member States in the process of eradicating rinderpest.

In June 2006, Dr Tounkara joined the African Union as a Director of the Pan African Veterinary Vaccine Centre (AU-PANVAC), in Debre Zeit, Ethiopia, within the Department of Rural Economy and Agriculture. During his tenure in office, AU-PANVAC became an OIE Collaborating Centre in Quality Control of Veterinary Vaccine. Dr Tounkara successfully managed the OIE sub-grant to AU-PANVAC to strengthen the capacity of the Centre to guarantee the quality of vaccines against peste des petits ruminants in Africa. He left the African Union in November 2014 and joined the OIE as Deputy Regional Representative for Africa in early 2015.
Meetings

Seminar on the development of public–private partnerships to support Veterinary Services

Rabat, Morocco, 16 February 2015

A one-day seminar for African National Delegates to the OIE on the development of public–private partnerships to support Veterinary Services was held on 16 February 2015 in Rabat. It was held back to back with the 21st Conference of the OIE Regional Commission for Africa, which took place at the same venue.

The seminar was attended by 88 participants, comprising OIE Delegates from 36 Member Countries and senior officials from six international and regional organisations, including the Interafrican Bureau for Animal Resources of the African Union (AU–IBAR), the Intergovernmental Authority on Development (IGAD) and the West African Economic and Monetary Union (WAEMU). It was co-financed by the Bill and Melinda Gates Foundation and facilitated by OIE experts.

In its commitment to assisting its Members to meet the intergovernmental standards for national Veterinary Services as embodied in the OIE Terrestrial Animal Health Code and Aquatic Animal Health Code, and recognising that government Veterinary Services face enormous challenges in meeting their mandates due to declining budgets, the OIE organised this seminar to promote public–private partnerships between official Veterinary Services and organisations and actors in the private sector; most notably, veterinarians and veterinary para-professionals in private practice.

The seminar was divided into four sessions, covering:

- intergovernmental standards on the quality and responsibilities of Veterinary Services
- an overview of the OIE’s services to Members through the Performance of Veterinary Services (PVS) Pathway
- information on and examples of partnerships between official Veterinary Services and private veterinarians
- public–private partnerships involving Veterinary Services and livestock owners working together.

Departure

OIE Regional Representation for Asia and the Pacific

Dr Chantanee Buranathai

Dr Chantanee Buranathai, who has been working as a Regional Project Coordinator at the OIE Regional Representation for Asia and the Pacific, Tokyo, left the OIE at the end of January 2015, having completed her four-year secondment from the Ministry of Agriculture and Cooperatives, Royal Government of Thailand.

Dr Buranathai first joined the OIE in February 2011, as Officer in Charge of the FAO/OIE Regional Steering Committee of GF-TADs1 for Asia and the Pacific, attached to the Permanent Secretariat. She also worked on the implementation of the OIE/Japan Trust Fund Project on Foot and Mouth Disease Control in Asia, a project which established an FMD Roadmap for East Asia and saw the implementation of FMD field studies and vaccination campaigns in Laos, Myanmar and Mongolia.

Dr Buranathai has returned to Thailand to resume her position in the Department of Livestock Development in Bangkok.

The OIE wishes her all the best in her new endeavours.

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1 GF-TADs: FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases
Several case studies were presented to display examples of success stories in the context of public–private partnership. For example, the Delegate of Uganda described his country’s participation in the Veterinary Legislation Support Programme (VLSP) and how this has led to the drafting of new legislation to establish a veterinary statutory body for the regulation of veterinarians and veterinary para-professionals in Uganda as a basis for establishing animal health mandates. The Delegate of Morocco reported his country's success in dramatically improving vaccination coverage for national disease control programmes in small ruminants through the use of private veterinary practitioners under animal health mandate contracts. Outside Africa, Afghanistan was the subject of a case study by Dr David Sherman in which the establishment of a national network of community-based veterinary para-professionals, working in the private sector to provide basic veterinary services to farmers, gradually led to the cooperation of these same veterinary para-professionals with the government Veterinary Services through animal health mandates to provide disease reporting, disease surveillance and disease control activities. The Afghanistan story provided an interesting model for the re-establishment of veterinary services in post-conflict situations, which also exist within Africa.

Participants understood the importance of public–private partnerships to more effectively and efficiently meet their domestic and global obligations for animal and human health. The main challenge arising from this is the fact that, to have a productive and successful public–private partnership in the veterinary domain, any official veterinary services provided on behalf of the government by the private sector must be properly regulated. This requires the development and enactment of quality veterinary legislation that allows for the delegation of official responsibilities, and which sets clear, enforceable standards for those performing such responsibilities.

To address this concern, the OIE has developed the PVS Pathway and the VLSP to build capacity within countries to prepare meaningful legislation, establish and manage effective veterinary statutory bodies, and enforce standards of practice.

21st Conference of the OIE Regional Commission for Africa
Rabat, Morocco, 17–20 February 2015

On the kind invitation of the government of Morocco, the 21st Conference of the OIE Regional Commission for Africa was held in Rabat from 17 to 20 February 2015.

A total of 120 participants, comprising OIE Delegates and/or nominees of 36 Member Countries, three observer countries and senior officers from 12 regional and international organisations, attended the conference.

The opening ceremony was chaired by Dr Abderrahman El Abrak, Delegate of Morocco to the OIE, accompanied by Mr Ahmed Bentouhami, Director of the Moroccan National Office for Food Safety (ONSSA), who gave a speech on behalf of Mr Aziz Akhannouch, Minister of Agriculture and Marine Fisheries of Morocco. Participants were welcomed by Dr Marosi Molomo, President of the OIE Regional Commission for Africa; Dr Yacouba Samaké, OIE Regional Representative for Africa; Dr Karin Schwabenbauer, President of the OIE World Assembly of Delegates;
Dr Awilo Ochieng-Pernet, President of the Codex Alimentarius Commission; and Dr Bernard Vallat, Director General of the OIE, while also in attendance were Dr Monique Eloit, OIE Deputy Director General; Dr Gideon Brückner, President of the OIE Scientific Commission for Animal Diseases; and Dr Franck Berthe, President of the OIE Aquatic Animal Health Standards Commission.

The conference had a very full agenda which made for some fruitful discussion.

Two Technical Items of interest for the region were presented and lead to the adoption of two recommendations that will be submitted to the World Assembly of Delegates of the OIE for approval in May 2015. Once these have been endorsed by the Assembly, they will provide important guidelines for the 54 Member Countries of the OIE Regional Commission for Africa.

Technical Item I, based on the answers of Member Countries to a questionnaire, addressed the ‘Impact of animal diseases on animal productivity and public health in Africa’, and was presented by Dr Delia Grace, Programme Manager, Food Safety and Zoonoses, at the International Livestock Research Institute (ILRI).

Technical item II concerned the ‘Cross-border movements of animals and animal products and their relevance to the epidemiology of animal diseases in Africa’, and was presented by Prof. Mohammed Bouslikhane from the Institute of Agronomy and Veterinary Medicine Hassan II from Rabat.

The agenda also covered, among other items:
– the OIE’s activities and vision for the 21st Century,
– challenges for animal health from antimicrobial resistance,
– OIE perspectives on tsetse-transmitted trypanosomosis,
– the One Health concept: OIE approaches and collaboration with FAO and WHO, particularly towards rabies control,
– lessons learned from the Regional Animal Welfare Strategy (RAWS) in other regions, and
– the animal health situation of Member Countries in the region.

Dr Monique Eloit, OIE Deputy Director General, in collaboration with Dr Botthe Michael Modisane, Delegate of South Africa and Vice-President of the OIE World Assembly of Delegates, presented a review of regional perspectives on the OIE Sixth Strategic Plan (2016–2020), with particular emphasis on the main challenges facing the OIE, such as sanitary concerns, and societal and environmental issues. She stressed the need for modernised governance of the OIE to ensure that the Organisation’s statutory organs were ready to face these challenges.
A workshop was held in Panama City, from 10 to 12 March 2015, to train Veterinary Service officials from OIE Member Countries in the Americas on current procedures for obtaining OIE official recognition of their classical swine fever and bovine spongiform encephalopathy status. The event was made possible by the financial support of the Spanish Agency for International Development Cooperation (AECID).

A further aim was to improve the quality of applications for OIE official recognition of the disease status of Member Countries in the Americas, to help avoid the most common difficulties and problems observed in preparing applications.

The workshop was attended by 45 Veterinary Service officials from 24 countries in charge of prevention and/or control programmes for the two diseases, including Dr Marvin Vega, representing the Delegate of Panama; Dr Mark Trotman, Delegate of Barbados; and Dr Nimia Lissette Gómez, Delegate of the Dominican Republic. The workshop was also attended by representatives of the Food and Agriculture Organization of the United Nations (FAO), Inter-American Institute for Cooperation on Agriculture (IICA) and the International Organisation for Plant Protection and Animal Health (Organismo Internacional Regional de Sanidad Agropecuaria – OIRSA), who shared their views about opportunities for coordinating activities in the Americas.

Participants were divided into two groups, one for each disease. Group activities included an analysis of the recent epidemiological situation, as well as a review of disease status recognition procedures and the relevant OIE international standards.

Each group discussed a sample case study of a fictitious application for OIE official recognition, analysing the critical points and the most common mistakes made when preparing these applications.

The OIE presented real-life experiences of country disease status recognition. Dr Germán Cáceres Garrido, from Spain’s Ministry of Agriculture, Food and Environment (MAGRAMA), pointed to the support his country had provided, adding that the initiative would help to improve the region’s animal health status.

Dr John Pasick and Dr Javier Blanco Viera expressed the views of OIE Reference Laboratories, stressing the importance of the interactions between Veterinary Service laboratories and the laboratory twinning projects offered by the OIE.

As the workshop coincided with the meeting of the Bureau of the OIE Regional Commission for the Americas, Delegates attending that meeting were able to participate in the closing of the workshop. Dr Guilherme Figueiredo Marques, Delegate of Brazil to the OIE and President of the Commission, said that the exercise would do much to help countries to secure OIE official recognition for their disease status.
The 12th Meeting of the Upper Mekong Working Group on Foot and Mouth Disease (FMD) Zoning and Animal Movement Management (UMWG) was organised from 4 to 6 February 2015 in Vinh Phuc, Vietnam, by the OIE Sub-Regional Representation for South-East Asia (OIE SRR–SEA), in cooperation with the Vietnamese Department of Animal Health. Twenty-four representatives (17 men and 7 women) from the Veterinary Services of the People’s Republic of China, Laos, Myanmar, Thailand and Vietnam were in attendance, as well as partners from the FAO Regional Office for Asia and the Pacific (FAO–RAP), and the OIE Regional Representation for Asia and the Pacific (OIE RR–AP). The meeting was also attended by observers from the Department of Animal Health of Vietnam, OIE Special Advisor Dr Gardner Murray, and Dr Stéphane Forman of the World Bank Group.

The 12th UMWG meeting provided a forum for Member Countries and partners to share experiences and information on the current status of FMD in the region, and to provide updates on past and continuing initiatives for prevention and control. In particular, participants provided updates on FMD control activities in the Upper Mekong Zone, with inputs from the OIE RR–AP and the FAO–RAP on activities in the region. Technical presentations reviewed the importance of animal movement management and monitoring vaccination programmes, and highlighted the ways in which participatory epidemiology (PE) could be used to support these endeavours. Plenary discussions focused on the progress made on recommendations from previous meetings, and refined future recommendations for priority action for the South-East Asia and China Foot-and-Mouth Disease Campaign (SEACFMD) and Member Countries over the coming year.

Facilitated workshops were conducted on the first and second days, starting with discussions of potential applications of PE to improve FMD control in the region. Members outlined current practices for animal movement management and vaccination and post-vaccination monitoring, and recorded country-specific benchmarks. These workshops in turn provided an opportunity for participants to suggest and develop regionally relevant strategies to improve FMD investigations, movement management and vaccination monitoring in the Upper Mekong Zone.

A field trip on day three gave participants the chance to view the facilities and management procedures for cross-border animal movement at the Huu Nghi International Border Gate in Lang Son, Vietnam.

Over all, the 12th UMWG meeting enabled participants to share information, interact, network, plan together and discuss options and complementarities for FMD plans and activities. Key recommendations included an agreement to develop cross-border animal movement guidelines and conduct pilot PE outbreak investigation studies with a view to developing PE guidelines for the whole region. The enthusiastic discussions, resulting recommendations and positive feedback on the event pointed to a successful step forward on the way to FMD control in the Upper Mekong Zone.
The Ninth Meeting of the Regional Animal Welfare Strategy (RAWS) – Asia, the Far East and Oceania (AFEO) Coordination Group (CG) – was held in Kuala Lumpur on 26 and 27 March 2015 to:

− allow members to report on and review the progress of RAWS
− examine the nature and format of the current Action Plan and identify key developments since RAWS CG 8 (see Bulletin, no. 2015-1, p. 35)
− discuss future governance and organisational options for RAWS
− recommend small project/meeting options to support RAWS, should funding be available.

The RAWS CG reported significant and continuing progress on animal welfare, made by those countries and organisations that are members of the CG, as well as the observer countries and organisations that attended the meeting. As requested in past meetings, it is important that Member Countries of the OIE provide short annual summaries of animal welfare activities so that the implementation of RAWS can be assessed.

The RAWS CG updated the Action Plan and made a number of recommendations on its nature, format and modus operandi, to improve clarity as well as regional coordination. This will provide useful support documentation for future RAWS arrangements. Given the importance of this issue, a small drafting group comprising the OIE, Malaysia and the non-governmental organisation, World Animal Protection, will revise the Action Plan and provide advice on how the programme can be improved.

The RAWS CG reinforced the importance of RAWS and the need to have a system in place to provide advice and to help drive its implementation. It was decided that the OIE Regional Commission for Asia, the Far East and Oceania should assume responsibility for ongoing RAWS activities and that an advisory group or equivalent should also be established to provide recommendations. If funds became available, it was agreed that a workshop should be held for selected participants to consider future and transitional arrangements for RAWS.

A number of potential small projects were also identified to help support RAWS.

Dr Gardner Murray, Chairman of the RAWS CG, pointed out that the animal welfare strategy was an innovative and significant global initiative, which provided a solid framework for the implementation of OIE and other relevant animal welfare standards. He thanked all those who have been involved over the years in developing the Strategy and providing advice to the Regional Commission and the OIE on RAWS’ progress. He also thanked the Australian Government for funding the RAWS Initiative, a model that has been used in other OIE regions to improve animal welfare.
The OIE Scientific and Technical Department, the Regional Representation in Moscow and the OIE Sub-Regional Foot-and-Mouth-Disease (FMD) Coordination Unit Office in Astana, with the support of the Kazakh government, organised a Workshop on the OIE Procedure for Official Recognition of Member Countries’ Disease Status and for the Endorsement of Official National Control Programmes with regard to FMD, in Astana, Kazakhstan, from 26 to 27 March 2015.

The workshop was attended by 22 participants from 11 countries and 31 observers from the host country, Kazakhstan. There were more than 53 attendees in total, and the workshop was publicised by the media of Kazakhstan.

Prof. Kazimieras Lukauskas, OIE Regional Representative in Moscow, opened the workshop by emphasising the importance of implementing the OIE procedure for the official recognition of Member Countries’ disease status and for the endorsement of official national control programmes. He stressed that the OIE procedure for the official recognition of a Member Country’s freedom from, or risk status in relation to, certain diseases is of growing interest to many countries in the world, particularly in the case of FMD in this region.

Ms Gulmira Issayeva, Vice-Minister of Agriculture of Kazakhstan, welcomed participants on behalf of her country and affirmed Kazakhstan’s willingness to support and contribute to future OIE activities.

General presentations were given on the OIE, with an emphasis on Veterinary Services and on development, as well as on the current FMD situation. The Head of the OIE Sub-Regional FMD Coordination Unit Office in Astana, Dr Mereke Taitubayev, introduced the role of this new Office and participants were updated on the OIE PVS Pathway status. Dr Samat Tyulegenov, Delegate of Kazakhstan to the OIE, shared his country’s experiences and the efforts being made to control FMD.

Dr Laure Weber-Vintzel, Officer in Charge of the Recognition of Countries’ Status, together with Dr Min Kyung Park from the OIE Scientific and Technical Department, presented

− the ‘standard operating procedures’ for official recognition of disease and for the endorsement of official control programmes;

− the general requirements of the FMD Terrestrial Animal Health Code (‘Terrestrial Code’) chapter for official recognition and endorsement of a national official control programme; and

− a description of the questionnaire(s) and feedback on the most common shortcomings found by the evaluating ad hoc groups in dossiers submitted so far.

Prof. Trevor Drew, an OIE Expert, presented the Terrestrial Code requirements for FMD surveillance and zoning.

Significant time was allocated for the participants to work in groups on practical exercises. During this session, participants worked on quizzes covering the important points from the topics presented, and put together fictitious dossiers for official recognition of FMD-free status and for the endorsement of a national control programme for FMD. At the end of the workshop, time was allowed to share opinions and suggestions.

On the whole, participants expressed their satisfaction with the workshop and some countries noted their interest in applying for future OIE endorsement of their national official control programme for FMD. Some participants also expressed interest in receiving additional training focusing on specific technical points involved in structuring a national control programme. There was also discussion on the need for a regional vaccine bank.
17 October 2014
Belarus
Dr Vasili Pivavar
Deputy Minister, Chief of the Department of Veterinary and Food Surveillance, Chief State Veterinary Officer of the Republic of Belarus, Department of Veterinary and Food Surveillance, Ministry of Agriculture and Food

1 November 2014
Albania
Dr Edi Fero
Director, Veterinary Directorate, Ministry of Agriculture, Rural Development and Water Administration

1 January 2015
Cyprus
Dr Penelope Stylianou
Acting Director, Veterinary Services, Ministry of Agriculture, Natural Resources and Environment

2 February 2015
Ghana
Dr Ben Aniwa
Deputy Director, Veterinary Services Department, Ministry of Food and Agriculture

17 February 2015
Oman
Dr Hadi Mohsin Al-Lawati
Director for Animal Health Department, Ministry of Agriculture and Fisheries

27 February 2015
Laos
Dr Syseng Khounsy
Deputy Director General, Department of Livestock and Fisheries, Ministry of Agriculture and Forestry

28 February 2015
India
Mr Ashok Kumar Angurana
Secretary, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture

5 March 2015
Gambia
Dr Duto Sainy Fofana
Acting Director General, Department of Livestock Services, Ministry of Agriculture

30 March 2015
Georgia
Mr Zaza Dolidze
Directeur de l’Agence nationale de l’alimentation, Ministère de l’agriculture

31 March 2015
Chile
Dr José Ignacio Gómez Meza
Jefe de la División de Protección Pecuaria del Servicio Agrícola y Ganadero (SAG), Ministerio de Agricultura

1 April 2015
Turkmenistan
Mr Dovlet Nuriyev
Acting Chief Veterinary Officer, Veterinarian Union of Turkmenistan
Appointment of permanent Delegates

7 April 2015
Moldova
Dr Vitalie Caraus
Head, Sanitary and Veterinary Surveillance Division, National Food Safety Agency

9 April 2015
Romania
Dr Marius Grigore
Director, National Sanitary Veterinary and Food Safety Authority, Ministry of Agriculture and Food

13 April 2015
Somalia
Dr Ahmed Gedi
Director of Animal Health, Ministry of Livestock, Forestry and Range

23 April 2015
Bahrain
Dr Abdalla Fadlalla Azrug
Animal Health Director, Ministry of Works, Municipalities Affairs and Urban Planning

1 May 2015
France
Dr Loïc Evain
Inspecteur général de la santé publique vétérinaire, Directeur général adjoint de l'alimentation et CVO, Ministère de l'agriculture, de l'agroalimentaire et de la forêt

5 May 2015
Tajikistan
Dr Sherali Vazirov
Chief of the State Veterinary Inspection Service, Ministry of Agriculture

6 May 2015
Lebanon
Dr Elias Ibrahim
Director of Animal Resources, Ministry of Agriculture

12 May 2015
Trinidad and Tobago
Dr Simone Titus
Director, Animal Production and Health Division, Ministry of Food Production

13 May 2015
Bulgaria
Dr Damyan Iliev
Chief Veterinary Officer & Deputy Executive Director of the Bulgarian Food Safety Agency, Ministry of Agriculture and Food

1 June 2015
Finland
Dr Taina Aaltonen
Chief Veterinary Officer and Deputy Director General in the Ministry of Agriculture and Forestry
strengthening of Veterinary Services

PVS Evaluation missions
State of Play – as at 22 June 2015

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PVS Evaluation mission requests

- **Africa (53)**

- **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 (24)**

- **Europe (18)**
  Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Iceland, Israel, Kazakhstan, Kyrgyzstan, Former Yug. Rep. of Macedonia, Romania, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

- **Middle East (13)**
  Afghanistan, Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian N.A. (observer), Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen.

In red: completed missions
Legislation missions
State of Play – as at 22 June 2015

<table>
<thead>
<tr>
<th>OIE Region</th>
<th>OIE Members</th>
<th>Requests received</th>
<th>Missions completed</th>
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<td><strong>44</strong></td>
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</table>

Legislation mission requests
- **Africa** (40)
- **Americas** (7)
  Barbados, Bolivia, Dominican Rep., Guatemala, Haiti, Honduras, Paraguay.
- **Asia/Pacific** (6)
  Bhutan, Cambodia, Laos, Mongolia, Papua New Guinea, 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 22 June 2015

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<tr>
<th>OIE Region</th>
<th>OIE Members</th>
<th>Requests received</th>
<th>Missions completed</th>
<th>Reports available for distribution to donors and partners</th>
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PVS Gap Analysis mission requests
- **Africa** (46)
- **Asia-Pacific** (18)
- **Europe** (9)
  Armenia, Azerbaijan, Bosnia and Herzegovina, Israel, Kazakhstan, Kyrgyzstan, Serbia, Tajikistan, Turkey.
- **Middle East** (8)
  Afghanistan, Kuwait, Lebanon, Oman, Palestinian N.A. (observer), Syria, United Arab Emirates, Yemen.

In red: completed missions
OIE Regional Workshops for focal points and Information Seminars for new Delegates

Workshop on the World Animal Health Information System (WAHIS) for newly appointed National Focal Points for Animal Disease Notification to the OIE

OIE Headquarters, Paris, 20–22 January 2015

The OIE World Animal Health Information and Analysis Department organised a training workshop on the World Animal Health Information System (WAHIS) and its public interface (WAHID) in collaboration with the Regional Activities Department. The workshop was held at the OIE Headquarters from 20 to 22 January 2015. It was intended for National Focal Points for Animal Disease Notification to the OIE that had recently been appointed or had not previously received specific training.

Training was given by staff of the World Animal Health Information and Analysis Department and was designed to train Focal Points in the use WAHIS and WAHID, based on presentations and real-life practical exercises. Exercises on entering information in the various types of reports, checking reports and identifying the most common errors gave participants a better grasp of the different aspects of notifying animal health information to the OIE. Participants examined the latest six-monthly report submitted to the OIE by their country, enabling them to put these skills into practice in a real-life situation. Participants also practised conducting information searches in WAHID and uploading CSV files – uploading information in this way is a useful option for notifying a large number of disease outbreaks in follow-up reports, monthly reports and six-monthly reports.

Nineteen (19) participants took part in the training, representing 18 countries, namely Australia, Bhutan, Brazil, Chad, Chile, Dominican Republic, El Salvador, Ghana, Honduras, Indonesia, Iran, Iraq, Republic of Korea, Namibia, Niger, Saudi Arabia, South Sudan and Sweden. For the benefit of participants, a team of interpreters relayed the training in three languages (English, French and Spanish).

At the end of training, participants were asked to complete an evaluation questionnaire. Questions were scored from 1 to 4 (1: dissatisfied; 4: completely satisfied). The results of the workshop evaluation showed that participant appreciated the practical exercises on data entry in WAHIS, which obtained a mean score of 3.84,
and the module on identifying the most common errors made by Focal Points in reports submitted to the OIE, which obtained a mean score of 3.65. The mean score for training organisation and content was 3.87.

The participants unanimously agreed that after the training they considered themselves capable of submitting the various types of notification reports to the OIE. Indeed, shortly after the workshop, the OIE began to receive animal health reports from Focal Points who had taken part in the workshop.

Lastly, the participants were highly appreciative of the exchanges they had had with other participants and with workshop facilitators, at both a professional and a human level. Some participants felt that the workshop was too short given the density of the content and wished that in future it could be increased in length.

Regional Seminar for OIE National Focal Points for Aquatic Animals

*Ho Chi Minh City, Vietnam, 22–23 January 2015*

This Regional Seminar for OIE National Focal Points for Aquatic Animals, which was held on 22 and 23 January 2015 in Ho Chi Minh City, Vietnam, was attended by 35 participants, including 16 assigned Focal Points and seven proxies from 23 Regional Member Countries, two members of the Aquatic Animals Commission, two experts on emergency disease response, a representative from the Network of Aquaculture Centres for Asia–Pacific, and staff of the OIE. Since this was the third seminar in the region, the one-and-a-half-day programme focused on emerging diseases and emergency response, both vital aspects of aquatic animal health management. Each topic was introduced by short informative presentations, followed by a group work exercise.

**The first working group session** was a facilitated discussion on
assessing emergency response capability. Participants individually measured their country’s progress against ten critical competencies from the Aquatic PVS Tool that related to emergency response, and also examined the adequacy of the OIE standards in these areas. Most countries reported strengths in laboratory capacity, international export procedures, surveillance and transparency on sharing disease information. In contrast, weaknesses included: no specific national funding for an emergency response, difficulties in applying the principle of zoning in aquaculture because of the local landscape and small-scale farming, and differences in disease reporting between epidemiological units in various countries.

The second working group session aimed to help participants to apply such knowledge in an emergency response scenario. They worked in small groups to consider the elements required for an effective emergency response against a new or emerging disease outbreak, with very high and rapid mortality in a semi-closed system and no indication of the causal agent of concern. Each group reported back on what information they would provide to the Chief Veterinary Officer or Fisheries Director in such a situation: e.g. reporting the disease situation to the relevant Competent Authorities, setting up a task force, conducting surveillance, removing infected animals and water, movement controls, raising public awareness, improving communication with farmers and continuing laboratory diagnosis until the pathogen was identified. Participants discussed additional comments and suggestions on the mitigation and control of emergency diseases.

The seminar highlighted the fact that emerging diseases and disease outbreaks are a major threat to the sustainability of aquaculture – due to the diversity of aquatic animal species and changes in relationships between the host, pathogen and environment, as well as host switching of pathogens in modern aquatic animal production settings.

The Focal Points also attended the Third OIE Global Conference on Aquatic Animal Health (see p. 103), where they were able to promote awareness of the importance of aquatic animal health and of building a worldwide framework to improve the management, prevention and control of aquatic animal diseases.

1 PVS: OIE Tool for the Evaluation of Performance of Veterinary Services and/or Aquatic Animal Health Services
## Meetings and Visits

Names and positions of OIE permanent staff who participated in meetings or visits from January to March 2015

<table>
<thead>
<tr>
<th>OIE Headquarters</th>
<th>International Trade Department</th>
<th>Scientific and Technical Department</th>
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<tr>
<td><strong>General Directorate</strong></td>
<td><strong>Director General</strong></td>
<td><strong>Head of Department</strong></td>
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<tr>
<td>Bernard Vallat</td>
<td><strong>Adviser to the Director General</strong></td>
<td><strong>Deputy Head of Department</strong></td>
</tr>
<tr>
<td>Alex Thiermann</td>
<td><strong>and President of the OIE Terrestrial Animal Health Standards Commission</strong></td>
<td><strong>Animal Welfare Coordinator</strong></td>
</tr>
<tr>
<td>Catherine Bertrand-Ferrandis</td>
<td><strong>Head of the Communication Unit</strong></td>
<td><strong>Chargé de mission</strong></td>
</tr>
<tr>
<td>Marina Domingo Monsonis</td>
<td><strong>Chargée de mission</strong></td>
<td><strong>Chargé de mission</strong></td>
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<tr>
<td>Yael Farhi</td>
<td><strong>Deputy Director General (Administration, Management, Human Resources and Regional Activities)</strong></td>
<td><strong>Chargé de mission</strong></td>
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<tr>
<td>Monique Eloit</td>
<td><strong>Coordinator of the World Animal Health and Welfare Fund</strong></td>
<td><strong>Chargé de mission</strong></td>
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<tr>
<td>Alain Dehove</td>
<td><strong>Project Officer (World Fund)</strong></td>
<td><strong>Project Officer</strong></td>
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<tr>
<td>Julie Macé</td>
<td><strong>Project Officer (World Fund)</strong></td>
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<td>Emily Tagliaro</td>
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<td><strong>Chargé de mission</strong></td>
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<tr>
<td>Victoria Wong</td>
<td><strong>Project Officer (World Fund)</strong></td>
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<tr>
<td>Sophie Rivière</td>
<td><strong>Head of the Legal and Administrative Affairs Unit</strong></td>
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<tr>
<td>Rodney De Souza</td>
<td><strong>Head of the Budget and Financial Unit</strong></td>
<td><strong>Ofli Flu Assistant</strong></td>
</tr>
<tr>
<td>Alix Weng</td>
<td><strong>Head of the Human Resources Unit</strong></td>
<td><strong>Veterinarian Adviser</strong></td>
</tr>
<tr>
<td>Jean-Pierre Croiziers</td>
<td><strong>Head of the Accounts Unit</strong></td>
<td><strong>Chargée de mission</strong></td>
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<tr>
<td>Gilles Seigneurin</td>
<td><strong>Deputy Director General (Animal Health, Veterinary Public Health and International Standards)</strong></td>
<td><strong>Biosecurity Oﬃcer</strong></td>
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<tr>
<td>Brian Evans</td>
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<tr>
<td>Daniel Chaisemartin</td>
<td><strong>1st Deputy Head of Department and Head of the Systems Management and Events Unit</strong></td>
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<tr>
<td>Bertrand Flahault</td>
<td><strong>Trilingual Conference Coordinator</strong></td>
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<td>Ingrid Contreras Arias</td>
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<td>Elisabeth Boucaud</td>
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<td>Annie Souyri</td>
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<td>Tamara Benicasa</td>
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<td><strong>World Animal Health Information and Analysis Department</strong></td>
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<td>Paula Cáceres Soto</td>
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<td>Marija Popovic</td>
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<td>Daniel Bourzat</td>
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<tr>
<td>Alou Sangaré</td>
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<td>Moetapele Letshwenyo</td>
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<td>Walter Masiga</td>
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<td><strong>Asia and the Pacific</strong></td>
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<tr>
<td>Hirofumi Kugita</td>
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<td>Tokyo, Japan</td>
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<tr>
<td>Chantanee Buranathai</td>
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<td>Ronello Abila</td>
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<td>Bangkok, Thailand</td>
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<tr>
<td>Phillip Widders</td>
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<td>Mary Joy Gordoncillo</td>
<td>Science and One Health Coordinator</td>
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<td>Pennapa Matayompong</td>
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<td>Cecilia Dy</td>
<td>M&amp;E Coordinator and Communication Officer</td>
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<td>Karan Kukreja</td>
<td>Project Officer</td>
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<td>Corissa Miller</td>
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<tr>
<td>Nikola T. Belev</td>
<td>Regional Representative for Eastern Europe</td>
<td>Sofia, Bulgaria</td>
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<tr>
<td>Aleksandra Miteva</td>
<td>Technical Assistant</td>
<td>Sofia, Bulgaria</td>
</tr>
<tr>
<td>Rina Kostova</td>
<td>Secretary</td>
<td>Sofia, Bulgaria</td>
</tr>
<tr>
<td>Kazimieras Lukauskas</td>
<td>Regional Representative in Moscow</td>
<td>Moscow, Russia</td>
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*OIE Regional and Sub-Regional Representations*
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<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Region</th>
</tr>
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<tbody>
<tr>
<td>Ekaterina Panina</td>
<td>Technical and Administrative Assistant (Moscow, Russia)</td>
<td></td>
</tr>
<tr>
<td>Nadège Leboucq</td>
<td>Sub-Regional Representative in Brussels (Belgium)</td>
<td>Middle East</td>
</tr>
<tr>
<td>Stéphane de La Rocque</td>
<td>Chargé de mission – Veterinary Public Health (Brussels, Belgium)</td>
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<tr>
<td>Stanislav Ralchev</td>
<td>Technical Assistant (Brussels, Belgium)</td>
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<tr>
<td>Mereke Taitubayev</td>
<td>Head of the Sub-Regional FMD Coordination Unit (Astana, Kazakhstan)</td>
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<tr>
<td>Assylbek Kozhumratov</td>
<td>Technical Assistant (Astana, Kazakhstan)</td>
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<tr>
<td>Hassan Abdel Aziz Aidaros</td>
<td>Member of the OIE Scientific Commission for Animal Diseases</td>
<td></td>
</tr>
<tr>
<td>Ali Abdullah Al-Sahmi</td>
<td>Member of the OIE Council and Delegate of Oman to the OIE (until 16 February 2015)</td>
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<tr>
<td>Marc Artois</td>
<td>Member of the OIE Working Group on Wildlife (Marcy-l’Étoile, France)</td>
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<tr>
<td>Franck Berthe</td>
<td>President of the OIE Aquatic Animal Health Standards Commission</td>
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<tr>
<td>Francisco Javier Blanco Viera</td>
<td>OIE Expert, OIE Reference Laboratory for Bovine Spongiform Encephalopathy and Scrapie (Buenos Aires, Argentina)</td>
<td></td>
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<tr>
<td>Etienne Bonbon</td>
<td>Vice-President of the OIE Terrestrial Animal Health Standards Commission</td>
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<tr>
<td>Gideon Brückner</td>
<td>President of the OIE Scientific Commission for Animal Diseases</td>
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</tr>
<tr>
<td>German Caceres</td>
<td>Expert on Classical Swine Fever</td>
<td></td>
</tr>
<tr>
<td>John Clifford</td>
<td>Member of the OIE Council and Delegate of the United States of America to the OIE</td>
<td></td>
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<tr>
<td>Susan Corning</td>
<td>OIE Consultant</td>
<td></td>
</tr>
<tr>
<td>Carlos A. Correa Messuti</td>
<td>Past President of the World Assembly of OIE Delegates and Delegate of Uruguay to the OIE</td>
<td></td>
</tr>
<tr>
<td>Trevor Drew</td>
<td>OIE Expert, OIE Reference Laboratory for Bovine Viral Diarrhea and Classical Swine Fever (Weybridge, United Kingdom)</td>
<td></td>
</tr>
<tr>
<td>Nicholas Kauta</td>
<td>Member of the OIE Council and Delegate of Uganda to the OIE</td>
<td></td>
</tr>
<tr>
<td>Toshiro Kawashima</td>
<td>Member of the OIE Council and Delegate of Japan to the OIE</td>
<td></td>
</tr>
<tr>
<td>Geneviève Libeau</td>
<td>OIE Expert, OIE Reference Laboratory for Rinderpest and Peste des petits ruminants (Montpellier, France)</td>
<td></td>
</tr>
<tr>
<td>Botthe Michael Modisane</td>
<td>Vice-President of the OIE Council and Delegate of South Africa to the OIE</td>
<td></td>
</tr>
<tr>
<td>Gérard Moulin</td>
<td>OIE Expert, OIE Collaborating Centre for Veterinary Medicinal Products (Fougères, France)</td>
<td></td>
</tr>
<tr>
<td>Gardner Murray</td>
<td>OIE Special Adviser</td>
<td></td>
</tr>
<tr>
<td>Evgeny Nepokonov</td>
<td>Member of the OIE Council and Delegate of Russia to the OIE</td>
<td></td>
</tr>
<tr>
<td>Jean-Pierre Orand</td>
<td>OIE Expert, OIE Collaborating Centre for Veterinary Medicinal Products (Fougères, France)</td>
<td></td>
</tr>
</tbody>
</table>
List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AAVMC</td>
<td>Association of American Veterinary Medical Colleges</td>
</tr>
<tr>
<td>AEGCD</td>
<td>ASEAN Expert Group on Communicable Diseases</td>
</tr>
<tr>
<td>AFD</td>
<td>French Development Agency</td>
</tr>
<tr>
<td>AGISAR</td>
<td>Advisory Group on Integrated Surveillance of Antimicrobial Resistance</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of South-East Asian Nations</td>
</tr>
<tr>
<td>ASF</td>
<td>African swine fever</td>
</tr>
<tr>
<td>ASWGL</td>
<td>ASEAN Sectoral Working Group on Livestock</td>
</tr>
<tr>
<td>AU-IBAR</td>
<td>African Union-Interafrican Bureau for Animal Resources</td>
</tr>
<tr>
<td>BSE</td>
<td>bovine spongiform encephalopathy</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CIC</td>
<td>International Council for Game and Wildlife Conservation</td>
</tr>
<tr>
<td>CIRAD</td>
<td>French Agricultural Research Centre for International Development</td>
</tr>
<tr>
<td>CIS</td>
<td>Commonwealth of Independent States</td>
</tr>
<tr>
<td>CMC-AH</td>
<td>Crisis Management Centre – Animal Health</td>
</tr>
<tr>
<td>CSF</td>
<td>Classical swine fever</td>
</tr>
<tr>
<td>CVDs</td>
<td>Chief Veterinary Officers</td>
</tr>
<tr>
<td>DG DEVCO</td>
<td>European Commission’s Directorate General for International Cooperation and Development</td>
</tr>
<tr>
<td>DG SANCO</td>
<td>European Commission’s Directorate General for Health and Consumers</td>
</tr>
<tr>
<td>EFFORT</td>
<td>Ecology from Farm to Fork Of microbial drug Resistance and Transmission (project co-funded by the European Union)</td>
</tr>
<tr>
<td>EFSA</td>
<td>European Food Safety Authority</td>
</tr>
<tr>
<td>ESVAC</td>
<td>European Surveillance of Veterinary Antimicrobial Consumption</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EWDA</td>
<td>European Wildlife Disease Association</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>FEI</td>
<td>International Equestrian Federation</td>
</tr>
<tr>
<td>FMD</td>
<td>Foot and mouth disease</td>
</tr>
<tr>
<td>FVE</td>
<td>Federation of Veterinarians of Europe</td>
</tr>
<tr>
<td>GALVMed</td>
<td>Global Alliance for Livestock Veterinary Medicines</td>
</tr>
<tr>
<td>GARC</td>
<td>Global Alliance for Rabies Control</td>
</tr>
<tr>
<td>GCC</td>
<td>Gulf Cooperation Council</td>
</tr>
<tr>
<td>GF-TADs</td>
<td>FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases</td>
</tr>
<tr>
<td>GHSA</td>
<td>Global Health Security Agenda</td>
</tr>
<tr>
<td>GLEWS</td>
<td>Global Early Warning System</td>
</tr>
<tr>
<td>HHP</td>
<td>High-Health High-Performance (FEI concept for horses)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>IETS</td>
<td>International Embryo Transfer Society</td>
</tr>
<tr>
<td>IFAH</td>
<td>International Federation for Animal Health</td>
</tr>
<tr>
<td>ILRI</td>
<td>International Livestock Research Institute</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring &amp; Evaluation</td>
</tr>
<tr>
<td>MAN-IMAL</td>
<td>First training in France based on the concept ‘One World, One Health’ (programme receiving financial support from French State managed by the French National Agency for Research)</td>
</tr>
<tr>
<td>MERS-CoV</td>
<td>Middle East Respiratory Syndrome Coronavirus</td>
</tr>
<tr>
<td>NRPCP</td>
<td>National Rabies Prevention and Control Program (the Philippines)</td>
</tr>
<tr>
<td>OFFLU</td>
<td>Joint OIE/FAO worldwide scientific network for the control of animal influenzas</td>
</tr>
<tr>
<td>OIE</td>
<td>World Organisation for Animal Health</td>
</tr>
<tr>
<td>PAN-SPSO</td>
<td>Participation of African Nations in Sanitary and Phytosanitary Standard-setting Organisations</td>
</tr>
<tr>
<td>PVMA</td>
<td>Philippine Veterinary Medical Association</td>
</tr>
<tr>
<td>RAWS</td>
<td>Regional Animal Welfare Strategy</td>
</tr>
<tr>
<td>REMESA</td>
<td>Mediterranean Animal Health Network</td>
</tr>
<tr>
<td>RISKSUR</td>
<td>Risk-Based Animal Health Surveillance Systems (European Union-funded project)</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
</tr>
<tr>
<td>SCAR</td>
<td>Standing Committee on Agricultural Research</td>
</tr>
<tr>
<td>SEACFMD</td>
<td>South-East Asia and China Foot and Mouth Disease Campaign</td>
</tr>
<tr>
<td>SPS</td>
<td>Sanitary and phytosanitary measures</td>
</tr>
<tr>
<td>STANDZ</td>
<td>Stop Transboundary Animal Diseases and Zoonoses</td>
</tr>
<tr>
<td>STAR-IDAZ</td>
<td>Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses</td>
</tr>
<tr>
<td>STDF</td>
<td>Standards and Trade Development Facility</td>
</tr>
<tr>
<td>STRIVES</td>
<td>Strengthening Initiative for Veterinary Services</td>
</tr>
<tr>
<td>TAIEX</td>
<td>Technical Assistance and Information Exchange Instrument of the European Commission</td>
</tr>
<tr>
<td>TAW</td>
<td>Towards a Safer World</td>
</tr>
<tr>
<td>UMA</td>
<td>Arab Maghreb Union</td>
</tr>
<tr>
<td>VETGOV</td>
<td>Reinforcing Veterinary Governance in Africa (EU-funded project implemented by AU-IBAR in partnership with OIE and FAO)</td>
</tr>
<tr>
<td>VIV Asia</td>
<td>International platform of trade shows for the Meat Industry in Asia</td>
</tr>
<tr>
<td>WAHIS</td>
<td>OIE World Animal Health Information System</td>
</tr>
<tr>
<td>WCO</td>
<td>World Customs Organization</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organization</td>
</tr>
<tr>
<td>WVA</td>
<td>World Veterinary Association</td>
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# January 2015

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concertation meeting for the organisation of the FAO/OIE International Conference for the Control and Eradication of Peste des Petits Ruminants (PPR), to be held in Abidjan, Côte d’Ivoire, from 31 March to 2 April 2015</td>
<td>FAO Headquarters, Rome, Italy</td>
<td>8 January</td>
<td>Dr D. Chaisemartin</td>
</tr>
<tr>
<td>1st EFFORT Annual Meeting</td>
<td>Madrid, Spain</td>
<td>8–9 January</td>
<td>Dr E. Erlacher-Vindel</td>
</tr>
<tr>
<td>Workshop on ‘Research priorities in Animal Influenza’</td>
<td>EFSA Headquarters, Parma, Italy</td>
<td>8–9 January</td>
<td>Dr G. Pavade</td>
</tr>
<tr>
<td>IETS Preconference Symposium: ‘Safe International Trade in Embryos’</td>
<td>OIE Headquarters, Paris, France</td>
<td>10 January</td>
<td>Dr B. Vallat, Dr A. Thiermann, Dr D. Belton &amp; Prof. M. Thibier</td>
</tr>
<tr>
<td>41st IETS Annual Conference</td>
<td>Versailles, France</td>
<td>11–13 January</td>
<td>Prof. M. Thibier</td>
</tr>
<tr>
<td>Workshop on Monitoring and Evaluation for the STANDZ-funded Rabies Project in the Philippines</td>
<td>Manila, the Philippines</td>
<td>12 January</td>
<td>Dr M.J. Gordoncillo &amp; Ms C. Dy</td>
</tr>
<tr>
<td>Rinderpest Holding Facility Site Inspection</td>
<td>Debre Zeit, Ethiopia</td>
<td>12–16 January</td>
<td>Dr K. Hamilton</td>
</tr>
<tr>
<td>Visit of students from the French National School of Veterinary Services (ENSV)</td>
<td>OIE Headquarters, Paris, France</td>
<td>13 January</td>
<td>Dr P. Cáceres Soto, Dr C. Bertrand-Ferrandis, Dr D. Chaisemartin</td>
</tr>
<tr>
<td>5th Meeting of the ISO/TC 212 Working Group on Laboratory Biorisk Management</td>
<td>London, United Kingdom</td>
<td>13–14 January</td>
<td>Dr F. Diaz</td>
</tr>
<tr>
<td>WHO Workshop on Strengthening Integrated Surveillance of Foodborne Diseases and Antimicrobial Resistance in the Caribbean and Antimicrobial Resistance Awareness Seminar</td>
<td>Saint Augustine, Trinidad and Tobago</td>
<td>13–16 January</td>
<td>Dr M. Arroyo Kuribreña</td>
</tr>
<tr>
<td>GLEWS Task Force Meeting</td>
<td>OIE Headquarters, Paris, France</td>
<td>14 January</td>
<td>Dr D. Chaisemartin, Dr P. Cáceres Soto &amp; Dr M. Popovic</td>
</tr>
<tr>
<td>Ebola Virus Disease Preparedness for High Risk Countries in Africa</td>
<td>Geneva, Switzerland</td>
<td>14–16 January</td>
<td>Dr S. de La Rocque</td>
</tr>
<tr>
<td>High-Level Meeting with the Secretary General of the WCO, Mr Kunio Mikuriya, to consider strengthening the existing cooperation between the OIE and the WCO in the context of the recent ratification of the WTO Trade Facilitation Agreement and the increase in the traffic of counterfeit medicines</td>
<td>WCO Headquarters, Brussels, Belgium</td>
<td>15 January</td>
<td>Dr B. Vallat, Dr D. Belton, Dr N. Leboucq &amp; Dr E. Bonbon</td>
</tr>
<tr>
<td>Consultative Meeting on Surveillance, Preparedness, and Response for Important Zoonotic Influenza in Myanmar</td>
<td>Naypyidaw, Myanmar</td>
<td>15 January</td>
<td>Dr H. Thidar Myint</td>
</tr>
<tr>
<td>Title of the event</td>
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<td>Participants</td>
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<tr>
<td>VETGOV Post Mid-Term Review (MTR) Retreat, organised by AU-IBAR, to coordinate the revision of the logframe and the budget in line with the recommendations of the MTR Report</td>
<td>Naivasha, Kenya</td>
<td>15–16 January</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>Risk Assessment Orientation Workshop for Avian Influenza A (H7N9) in Myanmar</td>
<td>Naypyidaw, Myanmar</td>
<td>16 January</td>
<td>Dr H. Thidar Myint</td>
</tr>
<tr>
<td>International Green Week 2015</td>
<td>Berlin, Germany</td>
<td>16–25 January</td>
<td>Dr K. Schwabenbauer, Dr C. Bertrand-Ferrandis, Dr Y. Farhi, Ms E. Boucaud &amp; Dr S. Münstermann</td>
</tr>
<tr>
<td>Preparation Workshop for FMD Vaccination Campaign in Central Myanmar</td>
<td>Mandalay, Myanmar</td>
<td>19–22 January</td>
<td>Dr P. Widders &amp; Dr C. Miller</td>
</tr>
<tr>
<td>Animal Rabies Communication Planning Workshop</td>
<td>Tagaytay City, the Philippines</td>
<td>19–22 January</td>
<td>Ms C. Dy</td>
</tr>
<tr>
<td>Meeting between OIE and FVE</td>
<td>OIE Headquarters, Paris, France</td>
<td>20 January</td>
<td>Dr B. Vallat &amp; Ms M. Domingo Monsonis</td>
</tr>
<tr>
<td>GHSA teleconference on ‘Workforce’ (‘Detect-5’) Action Package</td>
<td>Rome, Italy</td>
<td>20 January</td>
<td>Dr S. Corning</td>
</tr>
<tr>
<td>Preparatory meeting of the Organising Committee for the 7th International Symposium on Emerging and Re-Emerging Pig Diseases, to be held in Kyoto, Japan, from 21 to 24 June 2015</td>
<td>Kyoto, Japan</td>
<td>20–21 January</td>
<td>Dr Y. Aoyama</td>
</tr>
<tr>
<td>3rd OIE Global Conference on Aquatic Animal Health: ’Riding the wave to the future’</td>
<td>Ho Chi Minh City, Vietnam</td>
<td>20–22 January</td>
<td>Dr K. Schwabenbauer, Dr B. Vallat, Dr D. Chaisemartin, Ms I. Contreras Arias, Dr G. Mylrea, Dr D. Bourzat, Dr M. Letshwenyo, Dr A. Ripani, Dr P. Bastiaensen, Dr M. Arroyo Kuribreña, Dr H. Kugita, Dr H. Thidar Myint, Dr R. Abila, Ms M. Ruengjumroonnath, Prof. K. Lukauskas, Dr N. Leboucq &amp; Dr G. Yehia</td>
</tr>
<tr>
<td>OIE Training Workshop on WAHIS for Recently Appointed National Focal Points for Animal Disease Notification to the OIE</td>
<td>OIE Headquarters, Paris, France</td>
<td>20–22 January</td>
<td>Dr P. Cáceres Soto &amp; Dr N. Mapitse</td>
</tr>
<tr>
<td>OIE Training Course on: ‘Livestock vaccines: concepts, developments, regulations and applications’</td>
<td>Zaragoza, Spain</td>
<td>21 January</td>
<td>Dr B. Freischem</td>
</tr>
<tr>
<td>GHSA teleconference on ‘Nationwide Laboratory Systems’ (‘Detect-1’) Action Package</td>
<td>Rome, Italy</td>
<td>21 January</td>
<td>Dr S. Corning</td>
</tr>
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</table>
## January 2015 (contd)

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings with writing team members to update the Cambodia National FMD Plan</td>
<td>Phnom Penh, Cambodia</td>
<td>21–22 January</td>
<td>Dr K. Kukreja</td>
</tr>
<tr>
<td>3rd Regional Seminar for OIE National Focal Points for Aquatic Animals for Asia and the Pacific</td>
<td>Ho Chi Minh City, Vietnam</td>
<td>22–23 January</td>
<td>Dr G. Mylrea, Dr H. Kugita, Dr H. Thidar Myint, Dr R. Abila, Dr P. Widders, Dr C. Miller &amp; Ms M. Ruengjumroonnath</td>
</tr>
<tr>
<td>STAR-IDAZ Network Management Board Meeting</td>
<td>Bogota, Colombia</td>
<td>23 January</td>
<td>Dr B. Freischem</td>
</tr>
<tr>
<td>1st GHSA Steering Committee Meeting</td>
<td>Geneva, Switzerland</td>
<td>24 January</td>
<td>Dr A. Dehove, Dr B. Evans &amp; Dr S. Corning</td>
</tr>
<tr>
<td>Special session on the response to Ebola in West Africa</td>
<td>Geneva, Switzerland</td>
<td>25 January</td>
<td>Dr B. Evans</td>
</tr>
<tr>
<td>Antimicrobial Resistance Prevention Strategy Workshop, organised by GCC</td>
<td>Riyadh, Saudi Arabia</td>
<td>25–27 January</td>
<td>Dr E. Erlacher-Vindel</td>
</tr>
<tr>
<td>136th Session of the WHO Executive Board</td>
<td>Geneva, Switzerland</td>
<td>26–31 January</td>
<td>Dr B. Evans &amp; Dr S. de La Rocque</td>
</tr>
<tr>
<td>CMC-AH mission on avian influenza</td>
<td>West Bank, Palestinian Autonomous Territories</td>
<td>26 January – 2 February</td>
<td>Dr G. Pavade</td>
</tr>
<tr>
<td>Rinderpest Holding Facility Site Inspection</td>
<td>Tokyo, Japan</td>
<td>26 January – 2 February</td>
<td>Dr D. Visser</td>
</tr>
<tr>
<td>Meeting between OIE and WVA</td>
<td>OIE Headquarters, Paris, France</td>
<td>27 January</td>
<td>Dr B. Vallat, Dr C. Bertrand-Ferrandis &amp; Dr Y. Farhi</td>
</tr>
<tr>
<td>Preparatory meeting for the organisation of the FAO/OIE International Conference for the Control and Eradication of Peste des Petits Ruminants (PPR), to be held in Abidjan, Côte d’Ivoire, from 31 March to 2 April 2015</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>27–29 January</td>
<td>Dr D. Chaisemartin &amp; Dr Y. Samaké</td>
</tr>
<tr>
<td>Preparatory meeting for the GHSA meeting on workforce development, national laboratory system strengthening and antimicrobial resistance in East Asia Pacific Region</td>
<td>Bangkok, Thailand</td>
<td>29 January</td>
<td>Dr M.J. Gordoncillo, Dr P. Matayompong &amp; Dr S. Zaari</td>
</tr>
<tr>
<td>Meeting of the SCAR Collaborative Working Group on Animal Health and Welfare Research and meeting of the SCAR Foresight and Programming Unit</td>
<td>Rome, Italy</td>
<td>30 January</td>
<td>Dr B. Freischem</td>
</tr>
</tbody>
</table>
## Meetings and Visits

### February 2015

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting with Professor Louis Nel, Executive Director of the GARC</td>
<td>OIE Headquarters, Paris, France</td>
<td>3 February</td>
<td>Dr B. Vallat &amp; Dr A. Dehove</td>
</tr>
<tr>
<td>Meeting with the Department of Animal Health of Vietnam</td>
<td>Hanoi, Vietnam</td>
<td>3 February</td>
<td>Dr R. Abila, Dr P. Widders &amp; Dr G. Murray</td>
</tr>
<tr>
<td>SADC Livestock Technical Committee Meeting</td>
<td>Pretoria, South Africa</td>
<td>4–5 February</td>
<td>Dr M. Letshwenyo</td>
</tr>
<tr>
<td>Joint Georgia–Azerbaijan–Kazakhstan Electronic Integrated Disease Surveillance System (EIDSS) Best Practices and Regional Disease Surveillance Cooperation Meeting</td>
<td>Baku, Azerbaijan</td>
<td>4–6 February</td>
<td>Dr S. Corning</td>
</tr>
<tr>
<td>12th Meeting of the Upper Mekong Working Group on FMD Zoning and Animal Movement Management</td>
<td>Vinh Phuc, Vietnam</td>
<td>4–6 February</td>
<td>Dr Y. Oh, Dr R. Abila, Dr P. Widders, Dr K. Kukreja, Dr C. Miller, Ms O. Benjavejbhaisan &amp; Dr G. Murray</td>
</tr>
<tr>
<td>SADC Sanitary and Phytosanitary Coordinating Committee Meeting</td>
<td>Pretoria, South Africa</td>
<td>5 February</td>
<td>Dr M. Letshwenyo</td>
</tr>
<tr>
<td>2nd Steering Committee Meeting of the Epidemiological Surveillance and Emergency Response Management (SEGA) Network of the Indian Ocean Commission (IOC)</td>
<td>Saint-Gilles-les-Bains, Reunion, France</td>
<td>5–6 February</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>World Bank Mission on H5N1</td>
<td>Abuja, Nigeria</td>
<td>5–7 February</td>
<td>Dr J. Domenech</td>
</tr>
<tr>
<td>4th International Symposium on the Global Harmonisation for Animal Epidemic Prevention Strategies</td>
<td>Tokyo, Japan</td>
<td>6 February</td>
<td>Dr H. Kugita, Dr H. Thidar Myint, Dr Y. Aoyama &amp; Dr L. Liu</td>
</tr>
<tr>
<td>2nd Coordination Committee Meeting of the Northern Laos FMD Project</td>
<td>Luang Prabang, Laos</td>
<td>9 February</td>
<td>Dr R. Abila, Dr P. Widders &amp; Dr G. Murray</td>
</tr>
<tr>
<td>Opening Ceremony of the OIE Veterinary Education Twinning Programme between the Royal Veterinary College (United Kingdom) and the Jordan University of Science and Technology</td>
<td>Irbid, Jordan</td>
<td>9 February</td>
<td>Dr G. Yehia</td>
</tr>
<tr>
<td>2nd Advisory Group Meeting of the Northern Laos FMD Project</td>
<td>Luang Prabang, Laos</td>
<td>10 February</td>
<td>Dr R. Abila, Dr P. Widders &amp; Dr G. Murray</td>
</tr>
<tr>
<td>21st FAO/OIE/WHO Tripartite Annual Executive Coordination Meeting</td>
<td>OIE Headquarters, Paris, France</td>
<td>10–11 February</td>
<td>Dr B. Vallat, Dr C. Bertrand-Ferrandis, Dr M. Eloit, Dr A. Dehove, Ms E. Tagliaro, Dr D. Chaisemartin, Dr P. Cáceres Soto, Dr G. Mylrea, Dr B. Evans, Dr E. Erlacher-Vindel, Dr J. Domenech, Dr K. Hamilton, Dr G. Pavade, Dr G.J. Torres Peñalver &amp; Dr S. de La Rocque</td>
</tr>
<tr>
<td>GHSA teleconference on ‘Antimicrobial Resistance’ (‘Prevent-1’) Action Package</td>
<td>Rome, Italy</td>
<td>11 February</td>
<td>Dr S. Corning</td>
</tr>
</tbody>
</table>
### February 2015 (contd)

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Meeting of the Standing Group of Experts on ASF in the Baltic and Eastern Europe Region, under the GF-TADs Umbrella</td>
<td>Tallinn, Estonia</td>
<td>11–12 February</td>
<td>Prof. K. Lukauskas &amp; Dr N. Leboucq</td>
</tr>
<tr>
<td>STDF Policy Committee Meeting</td>
<td>OIE Headquarters, Paris, France</td>
<td>12 February</td>
<td>Dr B. Vallat, Dr A. Thiermann &amp; Dr B. Evans</td>
</tr>
<tr>
<td>GF-TADs Management Committee Meeting</td>
<td>OIE Headquarters, Paris, France</td>
<td>12 February</td>
<td>Dr M. Eloit, Dr D. Chaisemartin &amp; Dr F. Caya</td>
</tr>
<tr>
<td>Meeting with the Bulgarian Union of Hunters and Anglers in relation with the 62nd CIC General Assembly, to be held in Pravets, Bulgaria, from 23 to 25 April 2015</td>
<td>Sofia, Bulgaria</td>
<td>12 February</td>
<td>Prof. N.T. Belev</td>
</tr>
<tr>
<td>Preparation of an OIE twinning project on small ruminant diseases (CIRAD, France and Central Veterinary Laboratory, Kuwait)</td>
<td>Kuwait City, Kuwait</td>
<td>15–17 February</td>
<td>Dr G. Yehia, Dr F. Thiaucourt &amp; Dr G. Libeau</td>
</tr>
<tr>
<td>Seminar for OIE African National Delegates on the development of public–private partnerships to support Veterinary Services</td>
<td>Rabat, Morocco</td>
<td>16 February</td>
<td>Dr K. Schwabenbauer, Dr B.M. Modisane, Dr B. Vallat, Dr M. Eloit, Dr N. Mapitse, Dr E. Erlacher-Vindel, Dr J. Domenech, Dr F. Caya, Ms N. Monsalve, Dr D. Sherman, Dr M. Petitclerc, Dr Y. Samaké, Dr K. Tounkara, Dr D. Bourzat, Ms A. Bagayoko, Dr M. Letshwenyo, Dr R. Bouguedour, Dr A. Ripani, Dr J. Mérat, Ms I. Guitouni, Dr P. Bastiaensen, Dr S. de La Rocque, Dr N. Kauta, Dr G. Brückner &amp; Dr F. Berthe</td>
</tr>
<tr>
<td>Inception workshop of the TCP/CMB/3505 (&quot;Curriculum Development for the new Faculty of Veterinary Medicine of the Royal University of Agriculture (RUA&quot;)</td>
<td>Phnom Penh, Cambodia</td>
<td>16–17 February</td>
<td>Dr P. Matayompong</td>
</tr>
<tr>
<td>21st Conference of the OIE Regional Commission for Africa</td>
<td>Rabat, Morocco</td>
<td>17–20 February</td>
<td>Dr K. Schwabenbauer, Dr B.M. Modisane, Dr B. Vallat, Dr M. Eloit, Dr N. Mapitse, Dr E. Erlacher-Vindel, Dr J. Domenech, Dr F. Caya, Ms N. Monsalve, Dr D. Sherman, Dr M. Petitclerc, Dr Y. Samaké, Dr K. Tounkara, Dr D. Bourzat, Ms A. Bagayoko, Dr M. Letshwenyo, Dr R. Bouguedour, Dr A. Ripani, Dr J. Mérat, Ms I. Guitouni, Dr P. Bastiaensen, Dr S. de La Rocque, Dr N. Kauta, Dr G. Brückner &amp; Dr F. Berthe</td>
</tr>
<tr>
<td>Regional Rabies Coordinators’ Meeting</td>
<td>Cebu, the Philippines</td>
<td>17 February</td>
<td>Dr R. Abila &amp; Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>Title of the event</td>
<td>Place</td>
<td>Date</td>
<td>Participants</td>
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</tr>
<tr>
<td>Workshop on Effective Inter-agency Interoperability and Coordinated Communication</td>
<td>The Hague, the Netherlands</td>
<td>18–20 February</td>
<td>Dr K. Hamilton &amp; Dr D. Visser</td>
</tr>
<tr>
<td>and Coordinated Communication in case of Chemical and/or Biological Attacks,</td>
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<tr>
<td>organised by the United Nations Counter-Terrorism Implementation Task Force</td>
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<td>(UN-CTITF)</td>
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</tr>
<tr>
<td>WHO/FAO/OIE Joint Technical Mission on MERS-CoV</td>
<td>Riyadh, Saudi Arabia</td>
<td>18–20 February</td>
<td>Dr G. Yehia</td>
</tr>
<tr>
<td>82nd PVMA Scientific Conference and Annual</td>
<td>Cebu, the Philippines</td>
<td>18–20 February</td>
<td>Dr R. Abila &amp; Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>Convention</td>
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</tr>
<tr>
<td>Meeting of the CIS Intergovernmental Council</td>
<td>Sochi, Russia</td>
<td>19–20 February</td>
<td>Dr M. Taitubayev &amp; Dr A. Kozhumratov</td>
</tr>
<tr>
<td>for Cooperation in Veterinary Field between CVOs of CIS countries</td>
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</tr>
<tr>
<td>GHSA teleconference of Action Package leaders</td>
<td>Rome, Italy</td>
<td>20 February</td>
<td>Dr S. Corning</td>
</tr>
<tr>
<td>Multidisciplinary Symposium: ‘Ebola: how far have we come, where do we go from</td>
<td>Brussels, Belgium</td>
<td>21 February</td>
<td>Prof. P.-P. Pastoret</td>
</tr>
<tr>
<td>here?’, organised by the Royal Academy of Medicine of Belgium</td>
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</tr>
<tr>
<td>52nd International Exhibition of Agriculture 2015</td>
<td>Paris, France</td>
<td>21 February –</td>
<td>Dr C. Bertrand-Ferrandis, Ms M. Domingo Monsonís, Dr Y. Farhi, Ms T. Benicasa,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 March</td>
<td>Dr L. Awada, &amp; Dr M. Dominguez</td>
</tr>
<tr>
<td>Vet Youth Summit Japan 2015: ‘International cooperation in the veterinary industry’</td>
<td>Osaka, Japan</td>
<td>23 February</td>
<td>Dr H. Kugita</td>
</tr>
<tr>
<td>Launch of the Central Myanmar FMD Vaccination Campaign</td>
<td>Mandalay, Myanmar</td>
<td>23–24 February</td>
<td>Dr C. Miller</td>
</tr>
<tr>
<td>31st VICH Steering Committee Meeting and 5th VICH Outreach Forum Meeting</td>
<td>Washington, DC, United States</td>
<td>23–26 February</td>
<td>Dr B. Freischem &amp; Dr J.-P. Orand</td>
</tr>
<tr>
<td>Rinderpest Holding Facility Site Inspection</td>
<td>Plum Island, United States</td>
<td>23–26 February</td>
<td>Dr K. Hamilton</td>
</tr>
<tr>
<td>4th WHO Strategic and Technical Advisory Group Meeting on Antimicrobial Resistance</td>
<td>WHO Headquarters, Geneva, Switzerland</td>
<td>24–25 February</td>
<td>Dr J. Domenech &amp; Dr S. Corning</td>
</tr>
<tr>
<td>Workshop on alternatives to pig castration</td>
<td>Brussels, Belgium</td>
<td>25 February</td>
<td>Dr T. Grudnik</td>
</tr>
<tr>
<td>Implementing Partners Technical Coordination</td>
<td>Nairobi, Kenya</td>
<td>25 February</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>Meeting of the PAN-SPSO Project Consolidation Phase</td>
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<tr>
<td>CIRAD-AFD Round table on One Health at the 52nd International Exhibition of</td>
<td>Paris, France</td>
<td>25 February</td>
<td>Dr S. de La Rocque</td>
</tr>
<tr>
<td>Agriculture</td>
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</tr>
<tr>
<td>Seminar within the Master Programme ‘Veterinary Administration’, at the Thracian</td>
<td>Stara Zagora, Bulgaria</td>
<td>25 February</td>
<td>Prof. N.T. Belev</td>
</tr>
<tr>
<td>University, Stara Zagora</td>
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</tbody>
</table>
## February 2015 (contd)

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Asia Regional Workshop on Rabies Elimination</td>
<td>Bangkok, Thailand</td>
<td>25–26 February</td>
<td>Dr R. Abila, Dr M.J. Gordoncillo, Ms C. Dy &amp; Dr S. Zaari</td>
</tr>
<tr>
<td>OIE Council’s Meeting</td>
<td>OIE Headquarters, Paris, France</td>
<td>25–27 February</td>
<td>Dr K. Schwabenbauer, Dr B.M. Modisane, Dr C.A. Correa Messuti, Dr B. Vallat, Dr M. Eloit, Dr B. Evans, Dr A. Thiermann, Ms A. Weng, Dr M. Schipp, Dr E. Nepoklonov, Dr N. Kauta, Dr T. Kawashima, Dr J. Clifford &amp; Dr A.A. Al-Sahmi</td>
</tr>
<tr>
<td>5th Steering Committee Meeting of the PAN-SPSO Project Consolidation Phase (Phase 2)</td>
<td>Nairobi, Kenya</td>
<td>26 February</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>5th AU-IBAR Advisory Committee Meeting</td>
<td>AU-IBAR Headquarters, Nairobi, Kenya</td>
<td>27 February</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>Preparatory meeting for the organisation of the 2015 Regional Rabies Scientific Conference, to be held in Wuhan, P.R. China, from 16 to 17 April 2015</td>
<td>Beijing, P.R. China</td>
<td>28 February -- 2 March</td>
<td>Dr Y. Oh</td>
</tr>
</tbody>
</table>

## March 2015

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of laboratory equipment and supplies and to conduct hands-on training on laboratory diagnosis to national FMD laboratory staff for the Northern Laos FMD Project post vaccination monitoring field samples in the National Animal Health Laboratory of the Department of Livestock and Fisheries</td>
<td>Vientiane, Laos</td>
<td>1–7 March</td>
<td>Dr B. Verin</td>
</tr>
<tr>
<td>Meeting with the FVE Working Group on Animal Welfare</td>
<td>Brussels, Belgium</td>
<td>2 March</td>
<td>Dr N. Leboucq</td>
</tr>
<tr>
<td>High-Level Meeting with Dr Thomas Frieden, CDC Director, accompanied by its senior staff representatives in order to pursue and strengthen efficient cooperation between the two organisations</td>
<td>CDC Headquarters, Atlanta, United States</td>
<td>2–3 March</td>
<td>Dr B. Vallat &amp; Dr A. Dehove</td>
</tr>
<tr>
<td>Meeting of the Technical Working Group on multinational case study of MERS-CoV control</td>
<td>Riyadh, Saudi Arabia</td>
<td>2–3 March</td>
<td>Dr G. Pavade</td>
</tr>
<tr>
<td>ESVAC Annual Stakeholders Meeting 2015</td>
<td>London, United Kingdom</td>
<td>3 March</td>
<td>Dr F. Diaz, Dr B. Freischem &amp; Dr G. Moulin</td>
</tr>
<tr>
<td>March 2015 (contd)</td>
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<tr>
<td><strong>Title of the event</strong></td>
<td><strong>Place</strong></td>
<td><strong>Date</strong></td>
<td><strong>Participants</strong></td>
</tr>
<tr>
<td>ESVAC Annual Network Meeting 2015</td>
<td>London, United Kingdom</td>
<td>3–4 March</td>
<td>Dr F. Diaz, Dr B. Freischem &amp; Dr G. Moulin</td>
</tr>
<tr>
<td>2nd International Conference on Dog Population Management: ‘Inter-sectorial collaboration, innovation and evidence-based solutions for dog population management’</td>
<td>Istanbul, Turkey</td>
<td>3–5 March</td>
<td>Dr L.H. Stuardo Escobar &amp; Dr N. Leboucq</td>
</tr>
<tr>
<td>Regional workshop on highly pathogenic avian influenza</td>
<td>Yogyakarta, Indonesia</td>
<td>3–6 March</td>
<td>Dr H. Thidar Myint</td>
</tr>
<tr>
<td>GHSA teleconference on ‘Biosafety and Biosecurity’ (‘Prevent-3’) Action Package</td>
<td>Rome, Italy</td>
<td>4 March</td>
<td>Dr S. Corning</td>
</tr>
<tr>
<td>International Livestock Congress (ILC): ‘Providing Animal Protein to the World’</td>
<td>Houston, United States</td>
<td>4–5 March</td>
<td>Dr B. Vallat &amp; Dr A. Dehove</td>
</tr>
<tr>
<td>Conference on policies for competitive smallholder livestock production, organised by ILRI</td>
<td>Gaborone, Botswana</td>
<td>4–5 March</td>
<td>Dr M. Letshwenyo</td>
</tr>
<tr>
<td>Kick-off meeting of the DG DEVCO One Health project</td>
<td>Brussels, Belgium</td>
<td>5 March</td>
<td>Ms E. Tagliaro &amp; Dr S. de La Rocque</td>
</tr>
<tr>
<td>Livestock Global Alliance (LGA) Meeting</td>
<td>Houston, United States</td>
<td>5–6 March</td>
<td>Dr B. Vallat &amp; Dr A. Dehove</td>
</tr>
<tr>
<td>NRPCP Medium Term Plan Writing Workshop</td>
<td>Manila, the Philippines</td>
<td>5–6 March</td>
<td>Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>OIE Information Seminar for Veterinary Educational Establishments</td>
<td>Bangkok, Thailand</td>
<td>6 March</td>
<td>Dr P. Matayompong &amp; Dr S. Zaari</td>
</tr>
<tr>
<td>National Rabies Awareness Month Kick-off</td>
<td>Manila, the Philippines</td>
<td>7 March</td>
<td>Dr M.J. Gordoncillo &amp; Ms C. Dy</td>
</tr>
<tr>
<td>Steering Committee Meeting of the OIE Sub-Commission for SEACFMD Campaign and Rabies Steering Committee Meeting</td>
<td>Manila, the Philippines</td>
<td>9 March</td>
<td>Dr M. Eloit, Ms E. Tagliaro, Dr J. Domenech, Dr H. Kugita, Dr Y. Oh, Dr R. Abila, Dr P. Widders, Dr M.J. Gordoncillo, Dr K. Kukreja, Dr C. Miller, Ms M. Ruengjumroonnath, Dr G. Murray &amp; Dr B. Verin</td>
</tr>
<tr>
<td>Visit to the Pirbright Institute and presentation made on the OIE HHP concept</td>
<td>Pirbright, United Kingdom</td>
<td>9 March</td>
<td>Dr S. Münstermann &amp; Dr M. Dominguez</td>
</tr>
<tr>
<td>Meeting of the DG SANCO Animal Health Advisory Committee</td>
<td>Brussels, Belgium</td>
<td>9 March</td>
<td>Dr N. Leboucq</td>
</tr>
<tr>
<td>Workshop to improve welfare practices during transport and at the time of slaughter in some Middle East countries, organised by TAIEX</td>
<td>Beirut, Lebanon</td>
<td>9–10 March</td>
<td>Dr L.H. Stuardo Escobar, Dr G. Yehia, Dr X. Pacholek, Dr A. El Romeh &amp; Prof. H.A.A. Aidaro</td>
</tr>
<tr>
<td>Expert Inspection of the Pirbright Facilities to be approved by FAO/OIE as Rinderpest Holding Facility</td>
<td>London, United Kingdom</td>
<td>9–12 March</td>
<td>Dr D. Visser</td>
</tr>
</tbody>
</table>
## March 2015 (contd)

<table>
<thead>
<tr>
<th>Title of the event</th>
<th>Place</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Level Meeting on Pastoralism at the French Ministry of Foreign Affairs</td>
<td>Paris, France</td>
<td>10 March</td>
<td>Dr B. Vallat &amp; Dr A. Dehove</td>
</tr>
<tr>
<td>STANDZ Steering Committee Meeting</td>
<td>Manila, the Philippines</td>
<td>10 March</td>
<td>Dr R. Abila, Dr P. Widders, Dr M.J. Gordoncillo &amp; Ms C. Dy</td>
</tr>
<tr>
<td>Workshop on the OIE procedure for the official recognition of Member Countries’ disease status with regard to CSF and BSE risk for the Americas</td>
<td>Panama City, Panama</td>
<td>10–12 March</td>
<td>Dr L. Weber-Vintzel, Dr D. Rassow, Dr M.K. Park, Dr L.O. Barcos, Dr M. Minassian, Dr M. Arroyo Kuribreña, Dr B. Molina Flores, Dr M. Gonzalez Cano, Ms L. Castro de Ceballos, Dr J. Pasick, Dr F.J. Blanco Viera &amp; Dr G. Caceres</td>
</tr>
<tr>
<td>21st Meeting of the OIE Sub-Commission for SEACFMD Campaign</td>
<td>Manila, the Philippines</td>
<td>10–13 March</td>
<td>Dr M. Eloit, Ms E. Tagliaro, Dr J. Domenech, Dr H. Kugita, Dr Y. Oh, Dr R. Abila, Dr P. Widders, Dr K. Kukreja, Dr C. Miller, Ms M. Ruengjumroonnath, Dr G. Murray &amp; Dr B. Verin</td>
</tr>
<tr>
<td>4th Regional workshop of the regional task force on pastoralism of the Regional Sahel Pastoralism Support Project (PRAPS)</td>
<td>Dakar, Senegal</td>
<td>10–14 March</td>
<td>Dr K. Tounkara &amp; Dr D. Bourzat</td>
</tr>
<tr>
<td>OIE/GALVMed/SADC Meeting on the Harmonization of Veterinary Drugs Registration</td>
<td>Gaborone, Botswana</td>
<td>11 March</td>
<td>Dr M. Letshwenyo</td>
</tr>
<tr>
<td>9th Maghreb Permanent Veterinary Committee Meeting (UMA’s Secretariat General)</td>
<td>Rabat, Morocco</td>
<td>11–12 March</td>
<td>Dr R. Bouguedour</td>
</tr>
<tr>
<td>VIV Asia 2015</td>
<td>Bangkok, Thailand</td>
<td>12 March</td>
<td>Dr M.J. Gordoncillo, Dr P. Matayompong, Dr S. Zaari, Ms P. Srithep, &amp; Ms O. Benjawejhaisan</td>
</tr>
<tr>
<td>Preparatory meeting for the GHSA meeting on workforce development, national laboratory system strengthening and antimicrobial resistance in East Asia Pacific Region</td>
<td>Bangkok, Thailand</td>
<td>12 March</td>
<td>Dr M.J. Gordoncillo, Dr P. Matayompong &amp; Dr S. Zaari</td>
</tr>
<tr>
<td>2015 AAVMC Annual Conference: ‘Recruiting and Selecting for the Future of Veterinary Medicine’ and Meeting with the US Department of State</td>
<td>Washington, DC, United States</td>
<td>13 March</td>
<td>Ms V. Wong</td>
</tr>
<tr>
<td>Working Session for the TASW Network</td>
<td>Sendai, Japan</td>
<td>13 March</td>
<td>Dr H. Thidar Myint</td>
</tr>
<tr>
<td>Wilton Park Workshop on: ‘Antimicrobial Resistance in humans and animals in low and middle income countries: How can knowledge be strengthened at national level?’</td>
<td>Wiston House, Steyning, United Kingdom</td>
<td>13–15 March</td>
<td>Dr B. Freischem</td>
</tr>
<tr>
<td>3rd United Nations World Conference on Disaster Risk Reduction</td>
<td>Sendai, Japan</td>
<td>14–17 March</td>
<td>Dr H. Kugita, Dr T. Wijayathilaka &amp; Dr H. Thidar Myint</td>
</tr>
<tr>
<td>March 2015 (contd)</td>
<td>Title of the event</td>
<td>Place</td>
<td>Date</td>
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</tr>
<tr>
<td>3rd International ‘One Health’ Congress: ‘Prevention at the Source’</td>
<td>Amsterdam, the Netherlands</td>
<td>15–18 March</td>
<td>Dr S. Corning</td>
</tr>
<tr>
<td>Public forum: ‘Testing successful solutions: a collaborative approach to reducing animal losses from disasters’</td>
<td>Sendai, Japan</td>
<td>16 March</td>
<td>Dr H. Kugita, Dr T. Wijayathilaka &amp; Dr H. Thidar Myint</td>
</tr>
<tr>
<td>10th REMESA Joint Permanent Committee Meeting</td>
<td>Heraklion, Crete island, Greece</td>
<td>16–17 March</td>
<td>Dr M. Eloit, Dr R. Bouguedour, Dr A. Ripani, Dr J. Mérot, Dr X. Pacholek &amp; Dr A. El Romeh</td>
</tr>
<tr>
<td>WCO Regional (Asia-Pacific) Workshop on Strategic Initiatives for Trade Facilitation</td>
<td>Jakarta, Indonesia</td>
<td>16–18 March</td>
<td>Dr R. Abila</td>
</tr>
<tr>
<td>National Strategy for Rabies Control and Elimination Workshop</td>
<td>Phnom Penh, Cambodia</td>
<td>16–20 March</td>
<td>Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>Inception Workshop of the WHO-AGISAR Pilot Project on Integrated Surveillance of Antimicrobial Resistance in Uganda</td>
<td>Kampala, Uganda</td>
<td>17 March</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>IFAH Board Meeting</td>
<td>Brussels, Belgium</td>
<td>17–18 March</td>
<td>Dr B. Vallat &amp; Dr N. Leboucq</td>
</tr>
<tr>
<td>Eggs Production and Marketing Congress, organised by the Paulista Poultry Association</td>
<td>Ribeirão Preto, Brazil</td>
<td>17–19 March</td>
<td>Dr L.O. Barcos</td>
</tr>
<tr>
<td>1st Session of the OIE ‘Train the Trainers’ Regional Workshop on animal welfare during transport and slaughter</td>
<td>Tbilisi, Georgia</td>
<td>17–20 March</td>
<td>Dr R. Kolesar &amp; Dr S. Ralchev</td>
</tr>
<tr>
<td>MAN-IMAL Colloquium 2015 on: ‘One World, One Health’</td>
<td>Nantes, France</td>
<td>18 March</td>
<td>Dr E. Erlacher-Vindel</td>
</tr>
<tr>
<td>Engaging Intergovernmental Organizations Programme (EIO 2015) from the University of Minnesota, United States of America</td>
<td>OIE Headquarters, Paris, France</td>
<td>23 March</td>
<td>Dr B. Vallat, Dr A. Thiermann, Dr Y. Farhi, Ms E. Tagliaro, Dr L. Awada, Dr L.H. Stuart Escobar, Dr G. Pavade &amp; Dr G.J. Torres Peñalver</td>
</tr>
<tr>
<td>One-day think-tank: ‘One Health: Impacts, Measures and Metrics’</td>
<td>Nairobi, Kenya</td>
<td>23 March</td>
<td>Dr P. Bastiaensen</td>
</tr>
<tr>
<td>WTO-STDF Working Group Meeting</td>
<td>WTO Headquarters, Geneva, Switzerland</td>
<td>23–25 March</td>
<td>Dr D. Belton</td>
</tr>
<tr>
<td>Monitoring mission of the Central Myanmar FMD Vaccination Campaign</td>
<td>Mandalay, Myanmar</td>
<td>23–25 March</td>
<td>Dr P. Widders &amp; Dr C. Miller</td>
</tr>
<tr>
<td>4th Meeting of the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA)</td>
<td>Amsterdam, the Netherlands</td>
<td>23–25 March</td>
<td>Dr N. Leboucq</td>
</tr>
<tr>
<td>FMD Outbreak Investigation and Management Training</td>
<td>Battambang, Cambodia</td>
<td>23–27 March</td>
<td>Ms C. Dy</td>
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<td>Title of the event</td>
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<td>Participants</td>
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<tr>
<td>Symposium: ‘Animal Health Surveillance 2.0’, organised by the RISKSUR consortium</td>
<td>Ghent, Belgium</td>
<td>24 March</td>
<td>Dr G.J. Torres Peñalver</td>
</tr>
<tr>
<td>OIE Veterinary Legislation Support Programme (VLSP) Training Seminar</td>
<td>OIE Headquarters, Paris, France</td>
<td>24–26 March</td>
<td>Dr B. Vallat, Dr M. Eloit, Dr A. Dehove, Dr G. Mylrea, Dr F. Diaz, Dr F. Caya, Dr M.E. González Ortiz, Dr S. Pupulin, Dr V. Sharandak, Dr D. Sherman, Dr M. Petitclerc, Dr P.A. Belmar von Kretschmann, Dr J. Mérot, Dr M. Arroyo Kuribreña &amp; Dr X. Pacholek</td>
</tr>
<tr>
<td>Engaging Intergovernmental Organizations Programme (EIO 2015) from the University of Minnesota, United States of America</td>
<td>WTO and WHO Headquarters, Geneva, Switzerland</td>
<td>24–26 March</td>
<td>Dr Y. Farhi</td>
</tr>
<tr>
<td>Training for Caribbean Veterinary Services on Animal Disease Recognition and Response</td>
<td>Port of Spain, Trinidad and Tobago</td>
<td>24–26 March</td>
<td>Dr K. Hamilton</td>
</tr>
<tr>
<td>9th Regional workshop on animal welfare for veterinary practitioners</td>
<td>Stara Zagora, Bulgaria</td>
<td>25–26 March</td>
<td>Prof. N.T. Belev</td>
</tr>
<tr>
<td>62nd WTO SPS Committee Meeting and two informal meetings</td>
<td>Geneva, Switzerland</td>
<td>25–27 March</td>
<td>Dr D. Belton</td>
</tr>
<tr>
<td>1st Consultation Meeting with Partners and Stakeholders of the OIE Platform on Animal Welfare for Europe</td>
<td>OIE Headquarters, Paris, France</td>
<td>26 March</td>
<td>Dr N. Leboucq</td>
</tr>
<tr>
<td>High-Level Technical Meeting: ‘Overcoming Gaps in Research and Development on Antimicrobial Drug Resistance’, co-organised by WHO and the Ministry of Health of Brazil</td>
<td>Brasilia, Brazil</td>
<td>26–27 March</td>
<td>Dr B. Freischem &amp; Dr M. Minassian</td>
</tr>
<tr>
<td>Workshop on the OIE procedure for the official recognition of Member Countries’ disease status and for the endorsement of their official national control programmes with regard to FMD for Eastern Europe</td>
<td>Astana, Kazakhstan</td>
<td>26–27 March</td>
<td>Dr L. Weber-Vintzel, Dr M.K. Park, Prof. K. Lukauskas, Dr M. Taitubayev, Dr A. Kozhumratov &amp; Prof. T. Drew</td>
</tr>
<tr>
<td>9th RAWS Coordination Group Meeting</td>
<td>Kuala Lumpur, Malaysia</td>
<td>26–27 March</td>
<td>Dr L.H. Stuarto Escobar, Dr H. Kugita, Dr Y. Oh, Dr R. Abila, Dr P. Matayompong &amp; G. Murray</td>
</tr>
<tr>
<td>Final Workshop Laboratory Twinning Project between the Istituto Zooprofilattico Sperimentale delle Venezie and the Central Vietnam Veterinary Institute</td>
<td>Nha Trang, Vietnam</td>
<td>26–27 March</td>
<td>Dr S. Zaari</td>
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<tr>
<td>Title of the event</td>
<td>Place</td>
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<tr>
<td>Engaging Intergovernmental Organizations Programme (EIO 2015) from the University of Minnesota, United States of America</td>
<td>FAO Headquarters, Rome, Italy</td>
<td>27 March</td>
<td>Dr Y. Farhi</td>
</tr>
<tr>
<td>6th EWDA Student Workshop: ‘Human drivers of emerging diseases’</td>
<td>Veyrier-du-Lac, France</td>
<td>27–29 March</td>
<td>Dr F. Diaz &amp; Prof. M. Artois</td>
</tr>
<tr>
<td>1st AEGCD-ASWGL Joint Consultative Workshop on Development of Action Plan to implement the ASEAN Rabies Elimination Strategy</td>
<td>Chiang Mai, Thailand</td>
<td>30–31 March</td>
<td>Dr H. Kugita, Dr H. Thidar Myint, Dr Y. Aoyama, Dr R. Abila &amp; Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>GHSA teleconference on ‘Real-time Biosurveillance’ (‘Detect-2/3’) Action Package</td>
<td>OIE Headquarters, Paris, France</td>
<td>31 March</td>
<td>Dr P. Cáceres Soto, Dr L. Awada &amp; Dr P. Tizzani</td>
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<tr>
<td>2nd FAO/OIE Sub-Regional Meeting on GF-TADs for ASEAN Member Countries</td>
<td>Chiang Mai, Thailand</td>
<td>31 March</td>
<td>Dr H. Kugita, Dr H. Thidar Myint, Dr Y. Aoyama, Dr R. Abila &amp; Dr M.J. Gordoncillo</td>
</tr>
<tr>
<td>FAO/OIE International Conference for the Control and Eradication of Peste des Petits Ruminants (PPR)</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>31 March – 2 April</td>
<td>Dr B. Vallat, Dr C. Bertrand-Ferrandis, Dr D. Chaisemartín, Ms I. Contreras Anas, Dr N. Mapitse, Dr J. Domenech, Dr S. Münstermann, Dr D. Sherman, Dr Y. Samaké, Dr K. Tounkara, Dr D. Bourzat, Dr M. Letshwenyo, Dr R. Bouguedour, Dr A. Ripani, Dr J. Mérot, Dr P. Bastiaensen, Dr N. Leboucq, Dr X. Pacholek &amp; Dr N. Kauta</td>
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<tr>
<td>Meeting with the Minister of Livestock of Somalia</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>1 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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<tr>
<td>Meeting with the Adviser in charge of animal production to the Ministry of Agriculture of the Democratic Republic of Congo</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>1 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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<tr>
<td>Meeting with the Minister of Livestock of Mauritania</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>2 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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<td>Hearing with His Excellency Mr Alassane Ouattara, President of the Republic of Côte d’Ivoire</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>3 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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<tr>
<td>Hearing with the Prime Minister of Côte d’Ivoire</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>3 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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<tr>
<td>Meeting with the Minister of Livestock and Fishery Resources of Côte d’Ivoire</td>
<td>Abidjan, Côte d’Ivoire</td>
<td>3 April</td>
<td>Dr B. Vallat &amp; Dr Y. Samaké</td>
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</table>
Official procedure for PPR disease status

Introduction

Peste des petits ruminants (PPR) is an acute, contagious viral disease affecting sheep and goats and, occasionally, wild small ruminants. It represents one of the most economically important diseases affecting the livelihoods of smallholders who rely on small ruminants. First described in Côte d’Ivoire in 1942, the distribution of PPR has steadily expanded from West Africa to the Middle East and South and Central Asia. The disease has recently spread to North Africa and to the People’s Republic of China and has been reported to be moving southwards in Africa (see map on p. 56).

The importance of PPR is recognised by the OIE World Assembly of Delegates (the Assembly). During the 81st General Session, the Assembly adopted two resolutions in this regard:

– Resolution No. 29, which amended the chapter of the Terrestrial Animal Health Code (Terrestrial Code) on PPR

– Resolution No. 30, which included PPR in the procedure by which the OIE officially recognises the disease status of countries.

From this time, Member Countries could request the Assembly to officially recognise their freedom from PPR for their whole country or for a zone, and also to endorse their national control programme for PPR.

Member Countries with an officially recognised PPR-free status or a national control programme endorsed by the OIE

The procedure for official recognition of disease status was first developed in 1994, as a result of Member Countries’ requests concerning foot and mouth disease (FMD), and then progressively extended to other diseases, according to the Assembly’s prerogative. The procedure currently includes the official recognition of disease status for African horse sickness, classical swine fever, contagious bovine pleuropneumonia (CBPP), rinderpest, PPR and bovine spongiform encephalopathy risk status, as well as the endorsement of official control programmes for FMD, CBPP and PPR.

A Member Country wishing to be officially recognised by the OIE as free from one of the diseases listed above, or asking for endorsement of its official control programme by the OIE, should submit its request to the Director General of the OIE, accompanied by the relevant questionnaire laid out in Chapter 1.6. of the Terrestrial Code and any other relevant information, in compliance with the specific chapter of the Terrestrial Code.

Chapter 14.7. and Article 1.6.9. of the Terrestrial Code lay down the specific requirements that must be fulfilled by a Member Country to be included in the list of PPR-free Member Countries. Article 1.6.12. is concerned with Member Countries wishing to have their official control programme for PPR endorsed by the OIE.

In autumn 2013, Member Countries could, for the first time, submit an application to be officially recognised as free from PPR.

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1 See Bulletin, no. 2013–4, pp. 44–46
2 See Bulletin, no. 2013–4, pp. 46–49
Since it considers that adjusted surveillance to substantiate historical freedom from the disease, in accordance with the provisions in Article 1.4.6.(1), is valid for PPR, the Scientific Commission for Animal Diseases offered Member Countries that have historically been free from PPR the opportunity to apply through a shorter process that would be valid for one year. A modified and shortened questionnaire was developed for these countries.

The first list of PPR-free Member Countries officially recognised by the OIE was adopted by the Assembly in Resolution No. 20 during the 82nd General Session in May 2014 and included 48 countries, as shown in Table I.

Table I
OIE Member Countries’ Official Disease-free Status for Peste des Petits Ruminants, as of May 2014

<table>
<thead>
<tr>
<th>Region</th>
<th>Member Country</th>
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<tr>
<td><strong>Africa</strong></td>
<td>Mauritius</td>
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<td>South Africa</td>
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<td><strong>Americas</strong></td>
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<td>Paraguay</td>
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<td>United States of America</td>
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<td><strong>Asia and the Pacific</strong></td>
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<td>Chinese Taipei</td>
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<td>Korea (Rep. of)</td>
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<td>Myanmar</td>
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<td>Bosnia and Herzegovina</td>
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<td>Denmark</td>
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<td>The Netherlands</td>
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<td>United Kingdom</td>
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Five additional Member Countries were proposed for official recognition by the Assembly during the 83rd General Session in May 2015, in accordance with the provisions of Article 14.7.3. of the Terrestrial Code: the Czech Republic, Mexico, the Philippines and Swaziland were included in the list of Member Countries free from PPR and the zone of Namibia located south of the Veterinary Cordon Fence was recognised as a zone free from PPR (Fig. 1).

Despite the offered procedure, to date none of the OIE Member Countries has applied for endorsement of its official PPR control programme. However, the OIE is expecting several applications, in line with the recent official implementation of the Global Control and Eradication Strategy for PPR.
Equine influenza activity in 2014

During 2014, individual animal cases and outbreaks of equine influenza were reported by France, Germany, Ireland, Sweden, the United Kingdom (UK) and the United States of America (USA).

Sources of equine influenza viruses characterised

Equine influenza A (H3N8) viruses were isolated and/or characterised from outbreaks in all the countries listed above.

Field data

Equine influenza virus infections were confirmed in both vaccinated and unvaccinated horses.

In 2014 there was an increase in influenza activity in Europe particularly in the UK and Ireland with cases confirmed on 31 and 18 premises respectively. The majority of the clinically affected horses were unvaccinated or of unknown vaccination history, but vaccination breakdown was recorded in several racing yards in Ireland.

Equine influenza outbreaks were confirmed on 28 premises in 19 states in the USA. The vaccination history was unknown in the majority of cases but vaccination breakdown was recorded in a boarding facility in Tennessee.

Characterisation of viruses identified in 2014

Viruses isolated/identified from outbreaks in France, Germany, Ireland, Sweden, the UK and the USA were genetically characterised by sequencing the haemagglutinin (HA) gene. The sequences of the neuraminidase (NA) genes for several virus isolates from Ireland, Sweden, the UK and the USA were determined.
Viruses isolated in Ireland, the UK and the USA were also characterised antigenically by the haemagglutination inhibition (HI) assay, using post-infection ferret antisera and chicken red blood cells.

**Genetic characterisation**

All HA sequences obtained from viruses were of the American lineage (Florida sublineage).

The viruses detected in the USA were characterised as clade 1 viruses.

The viruses detected in France, Germany, Ireland, Sweden and the UK were characterised as clade 2 viruses. Two subpopulations of clade 2 viruses have been identified with amino acid substitutions in HA1 at either position 144 or position 179. The majority of 2014 viruses characterised had a valine at position 144 and an isoleucine at position 179. No equine influenza viruses were identified in Asia in 2014, but clade 2 viruses from Asia are distinguishable from those circulating in Europe.

The NA gene sequences of viruses from clade 1 and clade 2 were clearly distinguishable.

Representative sequences for HA and NA are available on GenBank and the Global Initiative on Sharing All Influenza Data (GISAID).

**Antigenic characteristics**

Haemagglutination inhibition data available for viruses isolated in 2014, and antigenic cartography analyses of these same data, show that the two clades of the Florida sublineage continue to co-circulate and evolve but currently remain closely related antigenically to the recommended vaccine viruses of that lineage.

**Conclusions**

No Eurasian viruses were detected in 2014. Those viruses that were isolated and characterised came from clades 1 and 2 of the Florida sublineage. Viruses of both clades were associated with vaccination breakdown.

**Level of surveillance and updating of vaccines**

The OIE Expert Surveillance Panel on Equine Influenza Vaccine Composition continues to emphasise the importance of increased surveillance and further investigation of vaccination breakdown in different countries.

Increased surveillance in Asia has been facilitated by the OIE laboratory twinning programme.

The rapid submission of viruses to Reference Laboratories is essential if antigenic and genetic drift is to be monitored effectively on a global basis.

Although some vaccines have been updated to include a virus from clade 2, in accordance with the recommendations of 2010 to 2014, the majority of the current vaccines contain outdated strains.

Updating vaccines with epidemiologically relevant viruses is necessary for optimum protection. The OIE Expert Surveillance Panel welcomes the replacement of the European Medicines Agency (EMA) note for guidance on the harmonisation of requirements for equine influenza vaccines (EMEA/CVMP/112/98-FINAL) by the Guideline on data requirements for changes to the strain composition of authorised equine influenza vaccines in line with OIE recommendations (EMA/CVMP/IWP/97961/2013)¹ and any amendments to regulatory procedures that allow equine influenza vaccines to be updated as speedily as possible without compromising safety and efficacy.

**Recommendations (March 2015)**

These are unchanged from those made in March 2014.

It is not necessary to include an H7N7 virus or an H3N8 virus of the Eurasian lineage in vaccines as these viruses have not been detected in the course of the most recent surveillance and are therefore presumed not to be circulating.

Vaccines for the international market should contain both clade 1 and clade 2 viruses of the Florida sublineage:

- Clade 1 is represented by A/eq/South Africa/4/2003-like or A/eq/Ohio/2003-like viruses. Recent clade 1 viruses are available from the OIE Reference Laboratories.
- Clade 2 is represented by A/eq/Richmond/1/2007-like viruses. Recent clade 2 viruses are available from the OIE Reference Laboratories.

Manufacturers producing vaccines for a strictly national market are encouraged to liaise with Reference Laboratories. The selected viruses should induce responses which are immunogenically relevant to the equine influenza viruses circulating nationally. A sequence determination of both HAs and NAs should be completed before use.

Reference reagents

Freeze-dried post-infection equine antisera to A/eq/Newmarket/1/93 (American lineage H3N8) and A/eq/South Africa/4/2003 (Florida clade 1, sublineage of the American lineage) are available from the European Directorate for the Quality of Medicines (EDQM). These sera have been assigned single radial haemolysis (SRH) values through an international collaborative study and can be used as primary reference sera for the assay.

There is no SRH reference serum currently available for A/eq/Richmond/1/2007, representative of Florida clade 2. The need for such a reference serum is recognised by the panel.

There is currently a shortage of standardised antigen for the purpose of quantifying HA. Single radial diffusion (SRD) reagents will no longer be produced by the National Institute for Biological Standards and Control (NIBSC), the UK. Vaccine companies should inform the OIE if there is a need for updated SRD reagents or other standards.

Recent virus strains, including suitable vaccine candidates for clades 1 and 2, are available from the OIE Reference Laboratories. In the event that an OIE Reference Laboratory cannot supply suitable vaccine candidates for both clades, it will assist the vaccine company to source the viruses from an alternative OIE Reference Laboratory.

Small quantities of ferret antisera for antigenic characterisation are available from the OIE Reference Laboratories in Ireland and the UK.
Piloting solutions to best inform and shape the Global Strategy for the control and eradication of PPR

Peste des petits ruminants (PPR) is the most serious disease among small domestic ruminants, affecting an estimated 30 million animals every year globally. PPR is contagious, transboundary, and has severe negative socio-economic impacts on the income of livestock farmers and, in particular, the livelihoods and food security of the most vulnerable rural livestock farmers, notably of women.

The geographical distribution of PPR has expanded considerably over the past ten years. It now affects a large number of countries in Africa, the Middle East, and Asia (Fig. 1). This has devastating consequences on families, communities and countries. Mortality can affect 90% of animals in flocks and morbidity can range from 50 to 100%, which results in production losses of 20% or higher (due to weight loss, reduced fertility, reduced milk production…).

Fig. 1
Current global PPR situation and occurrence of outbreaks between 2007 and 2014

Source: OIE WAHIS and FAO EMPRES-i
The benefits and profits accrued from controlling the disease may result in improved productivity, food security, income generation and social empowerment. The elimination of PPR is key to poverty reduction. The need to tackle this disease as a priority has also been recognised by the Bill & Melinda Gates Foundation in the Agricultural Development, Livestock Overview and Approach published in April 2012.

In October 2012, the Bill & Melinda Gates Foundation provided funding to the OIE to implement a two-year programme to tackle PPR in two donor-selected countries (Burkina Faso and Ghana) through the Vaccine Standards and Pilot Approach to PPR Control in Africa (VSPA) programme.

The VSPA programme was composed of the following three complementary and interrelated components:

Component 1: Establishment of an OIE PPR Vaccine Bank for Africa
Component 2: Strengthening of the capacities of AU-PANVAC1
Component 3: Development of a pilot strategy to progressively control/eradicate PPR in 2–3 countries.

Establishment of an OIE PPR Vaccine Bank for Africa

With relation to Component 1, and based on the OIE experiences in the establishment of vaccine banks (see p. 61), the OIE launched an international call for tenders for the establishment of a vaccine bank to control PPR in Africa. Following a selection process involving independent international experts, the OIE negotiated a contract with an Africa-based vaccine supplier and provided a total of 14 million doses of PPR vaccine (and the respective diluent) to supply vaccines to a total of four African countries.

This programme has underlined that the availability of high quality and OIE compliant PPR vaccine is of paramount importance for implementing effective vaccination campaigns and that OIE regional vaccine banks play a key role for the delivery of such quality vaccines.

Strengthening of the capacities of AU-PANVAC

Component 2 provided an opportunity for the OIE and AU-PANVAC to reinforce an existing partnership and build on new strengths and responsibilities2.

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1 AU-PANVAC: African Union Pan-African Veterinary Vaccine Centre
2 At the 81st General Session of the World Assembly of Delegates to the OIE (May 2013) and through Resolution no. 32, AU-PANVAC was recognised as an OIE Collaborating Centre for Quality Control of Veterinary Vaccines
Key outputs of this component included the development of a Quality control strategy for PPR vaccines produced in Africa as well as a comprehensive analysis of PPR vaccine production capacities in Africa; these two documents have been used in the development of the Global Strategy for the control and eradication of PPR.

Thanks to the support provided by ANSES\(^3\), Colorado State University, CIRAD\(^4\), IAEA\(^5\) and OVI\(^6\), a series of training courses were organised for both African PPR vaccine producers and AU-PANVAC staff (more than 35 individuals trained). The efforts made and accomplishments achieved through this component will positively contribute and shape future continental efforts to eradicate PPR.

**Development of a pilot strategy**

Using an array of techniques and in close strong partnership with the national Veterinary Services, CIRAD and other relevant actors, the OIE conducted a pilot study to define a control strategy which would offer the most complete vaccination coverage possible to progressively reduce and control PPR in Burkina Faso and Ghana (Component 3).

The vaccination delivery scenarios tested were:

- No vaccination: non treated area (control group).
- Scenario 1: vaccines provided free of charge to the Veterinary Services without additional support.
- Scenario 2: vaccines provided free of charge, as well as contributing to a portion of the operational costs sustained by the Veterinary Services for the vaccination campaigns.
- Scenario 3: vaccines provided free of charge, as well as a portion of the operational costs linked to the vaccination campaigns, and correlated incentives, such as the free distribution of anthelmintic.

With the collaboration and support of the National Veterinary Services and CIRAD, the following specific activities were undertaken:

- Pre-vaccination participatory disease searching (PDS) surveys to estimate pre- and post-vaccination PPR clinical incidence at village level. The PDS surveys and serological results clearly demonstrated that PPR was widespread in the pilot study areas, thereby enabling the assumption that the post-vaccination differences in seroprevalence rates, PPR clinical incidence rates and small ruminant productivity were related to different vaccine delivery scenarios tested.
- Field training of Veterinary Services in various topics and subject matter, including participatory epidemiology, sociological research techniques, vaccination techniques, etc.

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\(^3\) ANSES: Agence nationale de sécurité sanitaire de l’alimentation, de l’environnement et du travail (French Agency for Food, Environmental and Occupational Health & Safety)

\(^4\) CIRAD: Centre de coopération internationale en recherche agronomique pour le développement (French Agricultural Research Centre for International Development)

\(^5\) IAEA: International Atomic Energy Agency

\(^6\) OVI: Onderstepoort Veterinary Institute, South Africa
Using the vaccines from the OIE PPR Vaccine Bank for Africa, vaccination campaigns were conducted in both Burkina Faso and Ghana using the vaccination delivery scenarios.

Sero-epidemiological surveys were conducted to cross-check the results of PDS surveys, estimate the post-vaccination serological prevalence rate and provide an estimate of post-vaccination immunity coverage.

Animal productivity surveys to estimate animal and financial herd productivity on the basis of PPR-infected compared to non-infected animals. Productivity indexes were used to make an indicative and preliminary cost–benefit analysis of the different vaccination strategies implemented in the VSPA programme.

Sociological surveys to identify how socio-technical animal-health networks negatively impact and influence the PPR vaccination campaign, and to assess farmers and vaccinators perception of vaccination and vaccine delivery.

A great detail of data and many lessons were learnt through this pilot study and will be used to define the national programmes for PPR control in both Burkina Faso and Ghana.

Among key lessons learned, this pilot strategy has demonstrated that:

1. effective collaboration, communication and coordination with all relevant national actors are fundamental, particularly with farmers at farm level and private veterinarians;
2. flexibility and capacity to adapt the vaccination delivery systems to the different farming systems are critical;
3. vaccination periods must be carefully selected to ensure an efficacious campaign notably according to the climate seasons, flock movements, parturition peak and agricultural calendar and availability of the farmers;
4. monitoring and evaluation of the vaccination campaign are key and should use a range of diverse yet complementary methods (conventional surveillance, laboratory investigations, participatory and sociological methods, etc.).

The VSPA has been a largely successful programme and has, to a large extent, better informed the development of the Global Strategy for the control and eradication of PPR presented and supported by the international community at the FAO/OIE International Conference for the Control and Eradication of PPR held in Abidjan, Côte d’Ivoire, from 31 March to 2 April 2015.
Top five accomplishments:

1. Rapidity and efficacy in establishing the OIE PPR Vaccine Bank for Africa, including the cost and quality of the vaccine.

2. Significant leverage effect created by direct purchases from the OIE PPR Vaccine Bank for Africa by countries through funds provided by the World Bank.

3. Extensive and comprehensive field operations in two priority countries, Burkina Faso and Ghana, using an array of techniques and successfully implemented in partnership with National Veterinary Services and animal health networks of both countries with the support of OIE Collaborating Centre, CIRAD.

4. The lessons learned and data produced by this programme have contributed to and supported the definition of the Global Strategy for the control and eradication of PPR.

5. The project has generated global interest from donors and partners on PPR and supported the disease being targeted as the next disease for global eradication.

OIE portal on PPR:
Peste des petits ruminants (PPR) is a highly contagious disease of sheep and goats caused by a Morbillivirus closely related to the rinderpest virus and is considered to be one of the most damaging livestock diseases in Africa, the Middle East and Asia.

Lessons learned from the Global Rinderpest Eradication Programme demonstrate that the use of a highly efficacious rinderpest vaccine capable of immunising animals against all rinderpest virus strains was a vital contributor to the campaign’s success. A similar tool also exists for the prevention and control of PPR; efficient live attenuated PPR vaccines are available and can induce life-long protective immunity in vaccinated animals.

Vaccination is thus one of the key tools to controlling PPR and has been identified as the main option in Stage 2 ‘Control’ and Stage 3 ‘Eradication’ (Fig. 1), of the Global Strategy for the control and eradication of PPR presented and supported by the international community at the FAO/OIE International Conference for the Control and Eradication of PPR held in Abidjan, Côte d’Ivoire, from 31 March to 2 April 2015.

Recognising that PPR can be eradicated and that vaccination is central to the achievement of this much-needed endeavour, in 2012 and in the framework of the Vaccine Standards and Pilot Approach to PPR control in Africa (VSPA) programme financed by the Bill & Melinda Gates Foundation¹, the OIE established a PPR vaccine bank for Africa (pilot programme in West Africa, at the donor’s request²).

¹ See article on pp. 56–60 of this Bulletin for detailed information on the VSPA programme
² See article on pp. 78-85 of this Bulletin for detailed information on the pilot programme
Based on previous OIE experiences in the establishment of vaccine banks (avian influenza, foot-and mouth disease and rabies\(^3\)), the OIE launched an international call for tenders for the establishment of a vaccine bank to control PPR in Africa. Following a selection process involving independent international experts and AU-PANVAC\(^4\), the OIE negotiated a contract with an Africa-based vaccine supplier for an initial period of 20 months (extended until September 2015) to supply vaccines (and the respective diluent).

As an outcome of the selection process, the PPR vaccine bank mechanism allows high-quality vaccines complying with OIE intergovernmental standards to be delivered in batches of 500,000 doses or more (in multi-dose vials\(^5\)), with two delivery speed options and scheduled production of batches of 2 million doses. The rolling mechanism of this vaccine bank ensures that the purchased vaccines are produced upon request, thereby extending the expiry date of vaccines delivered to the country. It also helps limit the multiplication of procurement procedures in countries, and enables economies of scale through the reduction of purchase costs per vaccine.

As of March 2015 and in the framework of the VSPA programme, the OIE has already delivered a total of 10 million doses of high-quality vaccines complying with OIE intergovernmental standards to African countries infected with PPR. An additional 4 million doses of PPR vaccine were purchased directly from the OIE PPR vaccine bank for Africa and delivered to an Africa country further to a loan received from the World Bank. In order to establish this mechanism, the OIE procurement procedure for the establishment of the PPR vaccine bank was analysed and evaluated by World Bank procurement experts. During the VSPA programme’s closing meeting conducted at OIE Headquarters on 2 and 3 October 2014, the World Bank representative stated that ‘OIE vaccine banks are an excellent mechanism and we are confident when supporting purchases from these banks as the focus is on the quality at an incomparable price’.

The OIE is exploring opportunities to sustain and expand its PPR vaccine bank in order to continue to provide its Member Countries with access to high quality vaccines at a highly competitive rate in the future. This is clearly in line with the FAO/OIE International Conference for the Control and Eradication of PPR recommendation no. 16, which states that ‘regional PPR vaccine banks [should] be established using OIE successful experiences to respond to emergencies and improve quality controlled vaccine delivery in countries on a competitive process based on quality and price’.

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\(^3\) See Bulletin, No. 2014-3, pp. 9–11, for an overview of OIE vaccine banks
\(^4\) AU-PANVAC: African Union Pan-African Veterinary Vaccine Centre
\(^5\) Based on the size of vials offered by the supplier selected through the competitive call for tenders process
Benefits of the OIE PPR vaccine bank

- **Quality-related incentives:**
  - Vaccines supplied to countries are of high quality and comply with OIE intergovernmental standards
  - Vaccines are delivered with required flexibility and based on request/availability of the country
  - A reduction in the risks associated with storing large quantities of formulated vaccine in potentially sub-optimal conditions
  - Virtual stock/replenishment mechanisms ensure that purchased vaccines do not expire before use.

- **Fluid logistics:**
  - Timely dispatch of emergency stocks in line with field needs
  - Possible delivery of relatively small quantities
  - Easy procurement and delivery systems, limiting 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
  - Possible management of a multi-supplier supply chain
  - Multi-supplier approach available.

- **Cost incentives:**
  - Contract foresees sophisticated financial mechanisms with clauses for direct purchase by countries
  - Economies of scale
  - A cost reduction per vaccine unit (one call for tender and contract for large quantities resulting in a reduced fixed cost)
  - Management of multi-donor financial support allows earmarking of funds (eligible countries/activities): low overheads, economies of scale and very low fixed costs
  - Synergies and leverage effects.

- **Better coordination:**
  - Harmonisation and coordination of regional control programmes
  - Implementation of global control strategies
  - Support for multi-party vaccination campaigns
  - Public–private partnerships
  - Country incentives to become engaged.
Quality control of PPR vaccines in Africa: the role of AU-PANVAC

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**Keywords**

1. Introduction

Peste des Petits ruminants (PPR), also called rinderpest of small ruminants, is an acute contagious disease of sheep and goats which causes a devastating plague with morbidity and mortality rates as high as 100% and 90% respectively. PPR is an OIE listed disease because of the morbidity and mortality it causes and of its economic importance as a transboundary viral disease that constitutes a threat to livestock production in many developing countries, particularly in West Africa, East Africa, the Arabian Peninsula and South-East Asia. The control of PPR is considered a priority for poverty alleviation as it is a major constraint in augmenting the productivity of small ruminants in developing countries and particularly severely affects poor farmers’ economy.

Following the rinderpest eradication celebrations of the OIE in May 2011 and the FAO¹ in June 2011, attention suddenly turned to other transboundary animal diseases. The OIE and FAO have recognised PPR as one of the most economically important animal diseases and also its huge impact on production; and, given its many similarities with cattle rinderpest, have considered it a strong candidate for eradication.

Several technical factors were taken into consideration to work towards achieving global eradication of the PPR virus. In addition to the fact that the causal agents of both diseases are closely related and belong to the *Morbillivirus* genus [2], these include: availability of low-cost safe attenuated vaccines [1, 5] conferring life-long immunity with a single shot; availability of diagnostic tests for sero-monitoring vaccination programmes and virus detection; effective sero-conversion achieved with sub-minimal doses of the vaccine ($10^{0.8}$ TCID$_{50}$) [5].

On the basis of this knowledge, the international community consensually selected PPR as one of the next animal diseases to be eradicated and this gave rise to the development of a global strategy for the control and eradication of the disease by the OIE and the FAO.

Drawing on the lessons learned from the role played by the African Union (AU) Pan African Veterinary Vaccine Centre (PANVAC) in ensuring the quality of the vaccines used in the rinderpest eradication campaign, the quality of PPR vaccines to be used was considered a key element especially given the enormous challenges faced by the majority of developing countries in producing and distributing PPR vaccine.

2. Role of AU-PANVAC

AU-PANVAC is the only organisation mandated by the AU Member States to provide the quality assurance of all veterinary vaccines either produced or imported into Africa. The subsequent Institutionalisation of PANVAC under the AU as an AU Technical Centre of Excellence was made in recognition of PANVAC’s contribution to the success of the Pan African Rinderpest Campaign (PARC). It was also based

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¹ FAO: Food and Agriculture Organization of the United Nations
on that recognition that the AU-PANVAC mandate was eventually expanded to include the quality control of all veterinary vaccines and the production of basic diagnostic reagents. Thus AU-PANVAC was founded on the belief that livestock health in Africa, especially with regards to major infectious vaccine-preventable diseases, can be substantially improved by the use of good quality vaccines and good laboratory diagnostic support.

The AU-PANVAC mandates include:

- provision of international independent quality control of veterinary vaccines produced in Africa and imported to Africa;
- production and distribution of essential biological reagents for animal disease diagnosis and surveillance;
- facilitating the standardisation of veterinary vaccines production and harmonisation of their quality control techniques in Africa;
- promoting the transfer of appropriate vaccine production technologies in Africa; and
- providing training and technical support services to veterinary vaccine production and quality control laboratories.

2.1. Certification of veterinary vaccines on the continent

AU-PANVAC continues to ensure that laboratory networks throughout Africa are supported to achieve high performance standard by promoting the adoption of improved methods for the production and quality control of priority vaccines. Providing International Independent quality of all veterinary vaccines used in Africa has been a major activity of the AU-PANVAC since its inception in 1986. This has resulted in significant improvements in the quality of vaccines produced and used on the African continent, which is a clear demonstration of the importance of an independent and secondary level quality testing [3]. Roll-out of this service was most extensive in Africa between 1988 and 1993, when PANVAC tested a total of 694 batches of rinderpest vaccine used in PARC [4]. In the last five years alone, AU-PANVAC has tested more than four times the number of batches and the quality improvement rate of vaccines from African laboratories has now exceeds 90% compared to about 30% in the early days. The responsibilities of AU-PANVAC continue to increase with regards to animal disease control, along with stakeholders’ appreciation and recognition of its performance. A number of evaluation and review teams reported that PANVAC’s activities in the rinderpest eradication campaign have resulted in a significant improvement in the quality of rinderpest vaccine produced in Africa, thereby contributing to the success of the PARC. One review team noted that ‘The success of the PARC and the Pan African Programme for the Control of Epizootics (PACE) clearly demonstrated that no amount of vehicles, syringes, trained personnel, communication materials, would have eliminated rinderpest if the vaccine batches used had been of poor quality. The secondary and independent level of quality control assessment assured by PANVAC played a major role for this success and at the same time led to sustained improvement in the quality of vaccines against rinderpest and contagious bovine pleuropneumonia produced in Africa’. The then OAU Council of Ministers decided to elevate PANVAC to the level of an OAU Specialised Agency in 1998 and eventually institutionalised it under the African Union as AU-PANVAC in 2003 with a view to sustaining this achievement in the interests of Africa.

2.2. Transfer of new vaccine production technologies

In addition to ensuring the quality of vaccines produced, and providing training to technicians from National
Vaccine Production Laboratories in Africa, PANVAC has also been involved with the transfer of new vaccine production technologies to Africa and the improvement of existing technologies. Accordingly, PANVAC pioneered the development of an alternative method for preparing thermo-tolerant vaccines known as the Xerovac process which demonstrated that the vaccine was capable of withstanding 45 °C for a period of 14 days with minimal loss of potency and with the distinct advantage of a shorter, cheaper and simpler process compared to other ‘thermostable’ vaccines [11].

This technology ensures that the vaccine will maintain the minimum titre required when it reaches the field. The minimum requirement for attenuated PPR vaccine dose is $10^{2.5} \text{TCID}_{50}$ per ml. The recommended value for the field efficacy should be 1 to 2 log higher than the minimum protective dose. This technology has been transferred to several vaccine-producing laboratories in Africa.

2.3. Recognition of AU-PANVAC by the OIE

AU-PANVAC has collaborated with the OIE and has participated actively in its activities since inception. AU-PANVAC has taken part in the OIE Working Group on Veterinary Drug Registration and the FAO/AU-IBAR/ OIE/IAEA Consultative Group on Contagious Bovine Pleuropneumonia (CBPP) for several years. It has also been invited annually to attend the General Session of the OIE which takes place in May. In recognition of the key role AU-PANVAC has played in animal disease control by providing quality control of vaccines produced in Africa, and the expertise it has gained through the years, AU-PANVAC was officially designated as an OIE Collaborating Centre for Quality Control of Veterinary Vaccines by the OIE World Assembly of Delegates in May 2013.

2.4. Maintaining Africa free from rinderpest

During the ‘Declaration of global eradication of rinderpest and the follow-up measures to maintain the world free of rinderpest’, the OIE World Assembly of Delegates through Resolution No. 18 of its 79th General Session in 2011 [7], requested the Director of the OIE to approve facilities where material containing the rinderpest virus can be held, and to conduct regular site visits of those facilities to verify whether their biosafety/biosecurity conditions are adequate. Furthermore, the Assembly urged Member States to ‘destroy, under the supervision of the Veterinary Authority, rinderpest virus-containing materials or assure the storage or use of these materials in a biosecure facility in their country or, where applicable, assure the safe transfer to an approved laboratory in another country in agreement with the Veterinary Authority of the receiving country and complying with the standards of the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (the Terrestrial Manual) [10] and the Guidelines elaborated by the Joint FAO/OIE Committee on Global Rinderpest Eradication’. It is in compliance with the general framework of the global eradication of rinderpest and specifically in order to maintain Africa free of the disease, that the Ministers responsible for Animal Resources in Africa during their 8th Conference held in Entebbe, Uganda, in May 2010 recommended Member States of the AU to destroy all rinderpest virus strains held in Africa and to hand over what is deemed necessary to AU-PANVAC for safe storage. This Recommendation was subsequently endorsed by all the Heads of State of the AU during their January Summit of 2011.

In Resolution No. 23 of the 82nd General Session of the World Assembly of Delegates in 2014 [9], the OIE established procedures for designating and approving facilities holding material containing rinderpest virus to maintain global freedom from rinderpest, and in
collaboration with FAO to ensure the full implementation of the activities of the Joint Rinderpest Advisory Committee to provide technical advice and oversee post-rinderpest eradication activities.

To pursue its actions, the AU Commission made available adequate resources to AU-PANVAC to acquire bio-safety level 3 required by the international veterinary community for the following:

− safekeeping rinderpest vaccine seed stocks;
− safekeeping of emergency preparedness rinderpest vaccine stock (1.5 million doses); and
− maintain laboratory diagnostic capacity for rinderpest.

In recognition and support of the major role played by AU-PANVAC in maintaining Africa free of rinderpest, the FAO made a grant of 166,800 USD to AU-PANVAC in 2011 through a letter of agreement to strengthen its capacity for the sequestering rinderpest virus in its level 3 bio-safety laboratory. The FAO also jointly organised a workshop with AU-PANVAC on bio-safety, sequestration and risk analysis for laboratories holding rinderpest virus in Debre Zeit, Ethiopia, in July 2011. In view of the need for transparency on information about remaining stocks of virus and the importance of reducing the existing rinderpest virus stocks, the OIE World Assembly of Delegates recommended in its Resolutions nos. 33 (2012) [8] and 23 (2014) [9] that respectively appointed a limited number of OIE Reference Laboratories as ‘rinderpest holding facilities’ and urged Member Countries to ensure that the remaining stocks of all material containing rinderpest virus to be safely transferred to one of the designated rinderpest holding facilities.

On the basis of these recommendations and those of the Ministers responsible for animal resources in Africa, the OIE/FAO Joint Advisory Committee on Rinderpest indicated and assessed AU-PANVAC for rinderpest holding capacity. The Committee recommended that AU-PANVAC facility should be considered for holding rinderpest virus material subject to the implementation of a number of corrective actions that AU-PANVAC has subsequently implemented. AU-PANVAC will ensure full compliance with the corrective actions recommended by the Committee within the stipulated time.

3. The OIE Sub-grant and the Pan African Quality Control Strategy for PPR vaccines

3.1. OIE Sub-grant to AU-PANVAC

After the eradication of rinderpest, scientists’ attention turned to PPR which has been devastating small ruminant production in Africa and some parts of Asia. On account of the role played by AU-PANVAC in the eradication of rinderpest, it was considered to strengthen AU-PANVAC to ensure the use of good quality vaccines during the PPR eradication campaign. In line with this, a sub-grant of USD 1 million was given by the OIE to AU-PANVAC for three years to establish capacity for AU-PANVAC [6]. This project was awarded within the framework of a Bill & Melinda Gates Foundation funded grant to the OIE ‘Vaccine Standards and Pilot Approach to PPR Control in Africa’ (VSPA).

The sub-grant project aimed to build capacity for PPR quality control at AU-PANVAC, develop the capacity of PPR vaccine-producing laboratories to produce good quality PPR vaccine, develop a quality control strategy for ensuring the use of good quality PPR vaccines in Africa and contribute to the definition of a sound scientific PPR reduction programme in Africa. Under the terms of this project, which was implemented in collaboration with and under the responsibility of the OIE, AU-PANVAC monitored the PPR vaccine cold chain in the field and the quality of the vaccines used in a pilot PPR reduction programme implemented by the OIE in West Africa.

A Pan African quality control strategy was developed in collaboration with all the major stakeholders and capacities for quality control and good manufacturing practices were built in all PPR vaccine-producing laboratories. Finally, the PANVAC role and the continental strategy for quality control of PPR vaccines produced and used in Africa were used to support the regional and continental initiatives for the control/eradication of PPR in Africa.
3.2. The Pan African Quality Control Strategy

As part of the implementation of activity 8 of the OIE Sub-grant, AU-PANVAC and the OIE in collaboration with consultants/experts defined a PPR vaccine quality control strategy, to ensure the production of good quality PPR vaccines in Africa. Activity 8 of OIE Sub-grant to AU-PANVAC – ‘Define a quality control strategy for PPR vaccines produced in Africa’ – was one of the 11 activities relating to VSPA. The two consultants recruited by AU-PANVAC to develop the Pan African Quality Control Strategy in collaboration with the OIE were Geneviève Libeau, Head of the OIE Reference Laboratory for PPR, CIRAD, and Pierrette Mefomdjo, an expert with several years’ experience as head of vaccine quality control in Africa. During the implementation phase of this activity, several meetings were organised by the OIE and AU-PANVAC in collaboration with the consultants, including one which was held at the OIE Headquarters in Paris. The strategy developed and provided a general framework for PPR vaccine quality control with a view to promoting the use of good quality PPR vaccines in Africa. The strategy also determined the roles and responsibilities of PPR vaccine-producing laboratories, PPR vaccine importers, National Veterinary Services and AU-IBAR, National Veterinary Institute of Ethiopia (AU-PANVAC Host Institute) and AU-PANVAC in a PPR eradication campaign. This strategy will enable AU-PANVAC to perform its core mandate of international independent quality control and also support other PPR disease control activities in full.

The key elements of the strategy include:

- general considerations for vaccine quality certification;
- defining the procedures to be followed by PPR vaccine producers for vaccine shipments to AU-PANVAC;
- defining the role of National Veterinary Services and AU-IBAR in ensuring the exclusive use of quality-certified PPR vaccine in the field;
- defining the procedures to be followed by PPR vaccine importers for requesting AU-PANVAC to undertake quality control on imports of PPR vaccine batches;
- defining the role of National Veterinary Institute of Ethiopia for the purpose of facilitating the rapid clearance of PPR vaccine samples from Ethiopian Customs; and
- defining the tests to be undertaken by AU-PANVAC for PPR vaccine quality certification and developing their standard operating procedures.

The major issues considered necessary within the strategy for enhanced and efficient implementation of quality control of vaccines in Africa include:

- ensuring that there is adequate expertise to implement the independent quality control of all PPR vaccines produced and delivered in a sustainable manner;
- promoting the harmonisation of quality assurance for veterinary vaccine manufacture;
- AU-PANVAC playing a leading role in facilitating the harmonisation of veterinary vaccine registration on the African continent;
- strengthening vaccine manufacturing capacity in Africa to meet national and regional vaccine supply needs;
- AU-PANVAC support of the vaccine delivery network by ensuring that transportation, storage and distribution are implemented through an appropriate cold-chain, at national and regional levels; and
- support for the implementation of post-vaccination monitoring by AU Member States.

3.3. Responsibility of AU-PANVAC in the PPR control strategy

3.3.1. Ensuring that adequate expertise exists to implement the independent quality control of all PPR vaccines produced and delivered sustainably

As an OIE Collaborating Centre for quality control of vaccines, AU-PANVAC will continue to ensure that all methods implemented for ensuring PPR vaccine Quality certification are consistent with OIE requirements and standards. The OIE is the world organisation responsible for the development
and promotion of international animal health standards, guidelines, and recommendations affecting trade in live animals and animal products. The OIE provides a normative framework for laboratory diagnosis and for production and control of vaccines and other biological products through the *Terrestrial Manual* that comprises internationally-agreed methods.

The methods currently used by AU-PANVAC for vaccine testing include:

− test of vaccine identity
− freedom from contamination test
− vaccine efficacy test
− vaccine safety and stability tests.

The relevant *Terrestrial Manual* 2014 chapters that outline the requirements for the production of conventional vaccines before authorisation for use are included in the following chapters:

− Chapter 1.1.7. Tests for sterility and freedom from contamination of biological materials
− Chapter 1.1.8. Minimum requirements for vaccine production facilities
− Chapter 1.1.9. Quality control of vaccines (revision of the chapter is in progress)
− Chapter 1.1.10. International standards for vaccine banks.

The specific chapter dedicated to PPR is Chapter 2.7.11.: Peste des Petits Ruminants.

### 3.3.2. Promoting the harmonisation of quality assurance for veterinary vaccine manufacture

AU-PANVAC will support AU Member States’ (AUMS) laboratories to ensure that all vaccine production procedures and techniques comply with standards and that the vaccines produced meet accepted international standards. AU-PANVAC will continue to support participation of vaccine production laboratories in both internal and external assessments to ensure the harmonisation of Quality Assurance for veterinary vaccine manufacture; and will ensure that they are accredited under ISO 9005 for production and ISO 17025 for internal quality control which covers sterility, safety, potency, identity and stability tests. AU-PANVAC will play a greater role in facilitating/negotiating a regional contract with certified calibration organisations on behalf of the AUMS laboratories for the maintenance and calibration of their laboratory equipment.

### 3.3.3. AU-PANVAC to play a leading role in facilitating the harmonisation of veterinary vaccine registration on the African continent

Several African countries have in recent years, adopted veterinary medicinal products legislation, but only a few possess an effective regulatory system for licensing of biological products such as vaccines to ensure that that they are pure, safe and potent. In the few countries where regulations relating to vaccine quality standards and registration exist, these regulations vary from one country to the next. In third countries, veterinary medicinal products are licensed on the basis of the application submitted by the suppliers. These tend to be unreliable and do not comply with laboratory or field data from assessment by the National Authorities responsible for vaccine approval.

To remedy this situation, AU-PANVAC was mandated by the Seminar for OIE National Focal Points on Veterinary Products held in Johannesburg in November 2010 to coordinate the harmonisation of veterinary vaccine registration in the Regional Economic Communities (RECs) with the support of Global Alliance for Livestock Veterinary medicine (GALVmed) and the OIE. Since then, several meetings and workshops have been organised by AU-PANVAC and GALVmed in support of this initiative. The harmonised dossier for the registration of veterinary vaccines and biological products in the East African Community (EAC) is already at the stage of implementation. Workshops on harmonising veterinary vaccine registrations have also been organised in the Economic Community of West Africa States.
3.3.4. Strengthening vaccine manufacturing capacity in Africa to meet national and regional vaccine supply needs

By implementing its mandate, AU-PANVAC has provided technical expertise to vaccine-producing laboratories to strengthen vaccine manufacturing capacity and improve their productivity to meet national and regional vaccine needs. Accordingly, AU-PANVAC recently organised training on PPR vaccine production and quality control within the framework of the OIE Sub-grant for Member States vaccine production laboratories. Furthermore, AU-PANVAC recently assessed the performance of PPR vaccine production laboratories using questionnaires and visits to all vaccine manufacturers in Africa with a view to improving the capacity and quality of the PPR vaccines produced. These crucial activities by AU-PANVAC will enable it to continue to play a leading role in supporting vaccine-producing laboratories in Africa through its laboratories network at continental level to ensure the production of good quality vaccines in Africa. This network will provide a forum for sharing expertise and make for the harmonisation of techniques, training and development of scientific and technical exchanges to resolve major vaccine production-related problems.

3.3.5. AU-PANVAC to support vaccine delivery network by ensuring that transportation, storage and distribution are implemented through appropriate cold-chain, at national and regional levels

Vaccines must be stored properly from the time they are manufactured until they are administered to ensure that vaccines meet the requirements for quality assessment at AU-PANVAC or that they are delivered in good condition in the field. AU-PANVAC will provide support through its laboratory network to ensure that distribution of vaccine is made with minimal adverse impact on vaccine potency. All vaccine shipments from manufacturers to AU-PANVAC for quality control and to the field for use will be made in accordance with IATA\(^4\) regulations. AU-PANVAC has produced guidelines describing the procedure to be followed for vaccine handling and shipment from the manufacturer to the field to contribute to ensuring the appropriate shipment of the vaccine from the manufacturer to the country or region, while the national veterinary authorities can proceed with vaccine delivery after shipment. These Guidelines provide the necessary facilities and procedures used in the transport, storage and handling of vaccines through a proper cold chain. AU-PANVAC will also encourage the use of data loggers for cold chain monitoring to be included in the vaccine parcels to ensure cold chain integrity.

3.3.6. Support for the implementation of post-vaccination monitoring by African Union Member States

AU-PANVAC will support vaccination campaigns by implementing vaccine quality control by random sampling in the field during vaccination campaigns. This will be performed as audit missions to monitor the quality of PPR vaccines used during vaccination campaigns in Africa.

The audit will comprise:

a) evaluating the vaccine quality in terms of potency by titration to ensure that vaccine potency is maintained at the time of administration;

b) supporting the sero-monitoring process at national level throughout Africa by ensuring that the relevant laboratory techniques for sero-monitoring are transferred (in collaboration with IAEA) and that data obtained from the field can be used for monitoring the vaccination campaign;

c) making the link between a) and b) to monitor vaccine performance;

d) making the information obtained from the random sampling of vaccines from the field available to the different target groups, especially the vaccine manufacturers and the Veterinary Services.

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\(^4\) IATA: International Air Transport Association
All these activities will be implemented in support of and in close cooperation with the National Laboratories and Veterinary Services to ensure that effective sero-monitoring is undertaken and the results obtained are processed on completion of the vaccination campaign.

4. Conclusion

The heavy economic and social losses caused by PPR, necessitated international intervention and the conclusion that global eradication was not only the viable option available to overcome the continuing spread and impact of the disease on food security and livelihoods of poor livestock farmers. Just like rinderpest, total eradication of PPR infection from the world is justified and technically feasible. Now, all conditions are in place for ensuring the availability of good quality PPR vaccines produced or imported to Africa. AU-PANVAC will support all global initiatives to control and eradicate PPR incorporating the lessons learned from the global rinderpest eradication campaign. Consequently, the overall objectives of the OIE Sub-grant Project which was to ensure the production and use of good quality PPR vaccines in Africa as a major tool of PPR control and eradication strategies and programmes, has been achieved and is ready for implementation at AU-PANVAC.

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References


Introduction

Peste des petits ruminants (PPR) constitutes one of the major hurdles to the improvement of small-ruminant production directly affecting animal keepers. Its huge impact on small-ruminant production has led to the development of a global control and eradication strategy [8]. Vaccination is the key, acknowledged tool used to control and eradicate PPR. CIRAD has been greatly involved in the development of vaccines since the 1980s as exemplified by the achievement of the first PPR vaccine by attenuation of the Nigeria 75-1 isolate [7]. As with all members of the Paramyxoviridae family, PPRV is heat-sensitive requiring an effective cold chain in hot climates. The drawback of this thermosensitivity has been partly overcome by the use of stable freeze-drying formulations resulting in enhanced stability during manufacturing, shipping and storage [20] or the use of thermostable capripox vaccine backbone for inserting PPR transgenes by homologous recombination to prepare multivalent and thermotolerant vaccines [2, 3, 6]. Furthermore, CIRAD team is undertaking major efforts towards developing new generation vaccines against PPR that lead to DIVA and antiviral strategies expected for successful PPR control and eradication.

Development of vaccines against peste des petits ruminants: CIRAD’s achievements and future challenges

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Summary
CIRAD, France, in collaboration with the Pirbright Institute, United Kingdom, was the first laboratory to develop a live attenuated vaccine against peste des petits ruminants (PPR). This vaccine available in the 1980s was shown to provide a life-long immunity after a single injection [5] and is now widely used in sheep and goats. New vaccines are in development, more specifically thermotolerant vaccines for use in tropical conditions and DIVA (differentiating infected from vaccinated animals) vaccines to gain virus-free status more easily and rapidly. This paper reviews most of the current and recently developed vaccines at CIRAD and emphasises their adequate delivery and utilisation in the field, for successfully decreasing the incidence of PPR.

Keywords
CIRAD – peste des petits ruminants (PPR) – DIVA vaccine – thermotolerant vaccine.
Conventional attenuated PPRV vaccines

Effective live attenuated PPR virus vaccines are now widely available. One of the most currently produced vaccines is a live attenuated strain obtained at CIRAD in collaboration with the Pirbright Institute. The wild PPRV strain from which the vaccine is derived was isolated in Nigeria in 1975 [22] and attenuation obtained after 74 successive passages on Vero cell culture [7]. Soon after, field trials on nearly 100,000 animals were implemented by CIRAD, to demonstrate the efficacy of this vaccine which is also devoid of residual side effects such as abortion in pregnant animals. The vaccine confers clinical protection against all PPRV lineages and also prevents transmission of the challenge virus to in-contact animals. Protective antibodies generated after a single injection persist for at least three years, which is most of the time the economic life of a small ruminant. These results demonstrated the potential of this vaccine if used globally for the eradication of PPR. Several vaccine manufacturing facilities worldwide (Table I) received the seed strain directly from CIRAD or through AU-PANVAC based in Debre Zeit, Ethiopia, in the case of African laboratories. All now have the capacity to produce and deliver millions of PPR vaccine doses. Strict quality controls on the seed stock delivered by CIRAD are undertaken on a regular basis, including the certification of absence of pestivirus and mycoplasma contamination. In addition, by massive parallel sequencing using next generation sequencing technology, the seed of this vaccine was recently shown to be free of adventitious pathogens. To ensure the quality of these veterinary vaccines for safe use during vaccination campaigns in Africa, AU-PANVAC has an outstanding role, not

<table>
<thead>
<tr>
<th>Country</th>
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only on the quality assurance of PPR vaccines, but also in strengthening Africa’s capacity-building in veterinary vaccine development production. In addition to the PPR vaccine strain Nigeria 75-1, other live attenuated strains, such as Sungri 96, more recently developed by other laboratories – particularly in India (e.g. MSD Animal Health [Merck], Indian Immunologicals Ltd., Hester Biosciences Ltd.) –, Arasur 87 or Coimbatore 97 vaccines, successfully passed potency tests in sheep and goats according to the OIE guidelines [17].

Vaccines acceptable for a DIVA strategy

PPRV expresses two glycoproteins on its outer envelope, the haemagglutinin (H) and the fusion (F) proteins which are vital for cell attachment and penetration. These two proteins are also key antigens for inducing protective host immune response. The nucleoprotein (N) while unable to confer protective immunity, is a strong and early inducer of serum antibodies, and thus may serve as a negative mark in DIVA vaccines when combined with the serological diagnostic tests targeting this protein [13]. For better protection, a DIVA vaccine should be designed with at least H or F proteins. Such a DIVA vaccine should be linked to companion diagnostic tests capable of detecting both the marker and the specific glycoproteins to attest to induced immune response and therefore the guarantee of DIVA vaccination. DIVA vaccines and companion diagnostic tests would be ideal tools for emergency vaccination in case of the occurrence of an outbreak in a PPR-free country or zone and in the eradication phase of the disease since it would accelerate the process.

Different strategies are on-going for the development of DIVA vaccines, but they can be summarised as follows: the modification of the current attenuated vaccine by reverse genetics or the production of recombinant viruses expressing the H and/or F proteins.

Using reverse genetics technology, the PPR vaccine strain Nigeria 75-1 was modified to express marker proteins in order to differentiate vaccinated from infected animals, whilst maintaining characteristics of the original vaccine. For the moment the ideal marker for a commercial vaccine is not yet available. However, recent prototype vaccines have been developed bearing a fluorescent protein [10, 15]. The advantage of the reverse genetics strategy lies in process scale-up for steep rise in the production of the resulting DIVA vaccine since it is not expected to require a different manufacturing scheme than the parental PPR vaccine.

In the second strategy, most studies have dealt with recombinant PPR-capripoxvirus vaccines using the KS1 strain [2, 6]. KS1 recombinant vaccines expressing either H- or F-PPRV demonstrated protective efficacy when administered in a single subcutaneous shot in previously unexposed animals. Doses as low as 0.1 Particle Forming Units (KS1 expressing F-PPRV) proved to protect goats against challenges involving both virulent PPRV and capripoxvirus strains. More recently, a study demonstrated full protection against capripox challenge of animals with prior exposure to PPRV secondarily vaccinated with a recombinant KS1-PPR recombinant vaccine, demonstrating that pre-immunity against PPRV does not interfere with the immunogenicity of a recombinant PPR-capripoxvirus vaccine [3]. The same study showed partial protection against PPRV in animals with prior exposure to capripox virus secondarily vaccinated with a KS1-PPR recombinant vaccine. Researches are ongoing in order to develop new generation recombinants, integrating the DIVA strategy with an improved immunogenicity, safety and an increased efficacy in pre-immune animals.

Combined vaccines for multiple disease protection

CIRAD pioneered the use of combined vaccines against the viruses causing sheep pox, goat pox and PPR, the most obvious and simplest way of achieving protection against these diseases and particularly economically justifiable. Vaccines used in combination have been evaluated in sheep and goats [14] and proved to be safe and immunogenic as demonstrated by others [4, 9]. In addition, the vaccine strain was unable to spread from vaccinated animals to in-contact animals [7]. Different recombinant vaccines expressing a unique valence can be delivered in combination to confer protection against several different diseases. This implies that the vaccines, at least in small-scale experiments, do not interfere with the immunogenicity of the other. Broader studies performed in field conditions are now awaited to
confirm these results. The newly launched PPR eradication campaign is a great opportunity to target multiple diseases at the same time as previously undertaken, for example during the Pan-African Rinderpest Campaign by combining vaccines against rinderpest and contagious bovine pleuropneumonia (CBPP). Regional specificities will define which diseases to tackle to maximise the impact of vaccination and applied laboratory and field studies should be undertaken to verify whether the sheep or goats could be inoculated with monovalent vaccines against two or three diseases at the same time or whether bi- or trivalent vaccines using conventional vaccine strains (such as the bivalent rinderpest-CBPP vaccine for cattle) could be developed. Alternative strategies are currently being developed to generate a recombinant capripoxvirus vaccine with multiple valences (e.g. PPR and Rift Valley fever).

Thermotolerant vaccines

Given the enormous challenges associated with the distribution of PPR vaccine for the global eradication of PPR that are faced by the majority of developing countries, the key issue is the thermal stability of the vaccines. The thermostable capripox-based vaccines may offer significant contribution to this objective. The main focus of conventional attenuated PPRV strains is to improve stability by extending the virus half-life at high temperatures compatible with tropical conditions in order to maintain a viral titre higher than the minimal requested vaccine dose. Improvements have been made in terms of lyophilisation formulations. Collaborative work between CIRAD and Instituto de Biologia Experimental e Tecnológica (IBET, Portugal), under the framework of a project carried out at National Veterinary Institute (NVI) in Ethiopia clearly demonstrated the ability to produce higher quality PPR vaccines by replacing Weybridge medium by a Tris/Trehalose formulation [21]. Lyophilised vaccine half-life at 37 and 45 °C could be extended by up to 2.5 and 2 days, respectively. These results corresponded to previously published results [20] and demonstrated that improved formulation procedure could be rapidly and successfully transferred to a vaccine-producing laboratory.

Vaccination strategy and vaccine delivery

Mass vaccination of all animals in the target population is the only efficient vaccination strategy for PPR eradication. The target immunity threshold of 80% of small ruminants is generally considered appropriate in vaccination programmes to stop the spread of disease. But some field and experimental work has shown that it could be lower. More research should be carried out to achieve a better estimate of this threshold while allowing for the complex relationships between small-ruminant population dynamics, post-vaccination immunity coverage, and PPRV transmission (FAO/OIE). With this in mind, partial vaccination of the population, for example targeting small middle-aged stock [12] may reduce the virus load in circulation but comes with two major drawbacks: first, PPRV will continue circulating in the general population; second, the wild PPRV will have more opportunities to adapt and produce escape mutants. A similar situation probably occurred in the past with rinderpest virus, causing the emergence of so-called RPV lineage II and complicating the eradication process. Vaccination campaigns must also be coordinated at national and regional levels to ensure good vaccination coverage of all small ruminant populations. Practical implementation of vaccination campaigns is of great importance. This includes the acquisition of vaccine submitted to rigorous quality control, maintaining the cold chain (at least until a thermotolerant vaccine is made widely available), adequate means for the vaccination teams, as well as careful preparation of the campaigns. Successful mass vaccination in developing countries is a very challenging objective and calls for effective Veterinary Services, which involve public and private veterinarians. The effectiveness of delivery systems for animal health services particularly for vaccination is crucial and in this regard the participation of private veterinary para-professionals and representatives of producers’ and farmers’ communities (animal health workers) can be very effective in reaching small ruminants in difficult areas (e.g. remote or insecure areas) or when the animal population density is very low such as in smallholder village production systems in crop-based humid zones. This partnership requires effective implementation of appropriate legislation and veterinary supervision.

Treatment against PPR

Preventive measures are the main strategies for reducing the impact of PPRV in the world. Today, despite constantly improving vaccine strategies, vaccination of small ruminants against the disease remains problematic and in practice, is not applied continually during inter-epidemic waves. In addition, given the necessary delay of several days to mount an efficient immune response to induce sufficient
protection, vaccine cannot be used to stop an outbreak immediately. Effective and rapid control of PPR is foreseeable using cheap antiviral compounds. Antivirals based on synthetic short interfering RNAs (siRNAs), a new class of molecules with a significant potential for therapeutic applications could be good candidates since they can be delivered in viral vectors and biologically synthesised in the treated animals. A breakthrough has occurred in the last decade for the design options of siRNA to prevent the in vitro selective degradation of viral RNA. Although siRNA as potential emergency tools against PPR are not yet available, efficient in vitro activity making for more than 90% inhibition of PPRV replication was reached when targeting the N gene [11, 18, 19]. Excellent knock-down of PPRV replication brings us closer to a therapeutic application for the future. Such antiviral therapeutics could complement vaccination to limit the clinical impact of PPR quickly in emergency situations in the context of new introduction into free zones or of re-emergence in endemic areas. New therapies to treat infection may therefore be of particular interest.

Conclusion and outlook

PPR control is a priority for poverty alleviation. Because of the fast turnover of small ruminant populations, and insufficient investment or political commitment for improving their health and productivity, PPR control will not be an easy task. Post-vaccination evaluation of PPR clinical incidence and immune status of target populations will be needed to monitor the progress of PPR control. The development of marker vaccines will certainly facilitate the final control phase by preserving the ability to monitor the epidemiological situation during vaccination campaigns while contributing to secure international trade in animals and animal products. Full and reliable genome sequence knowledge of the PPR vaccine strain Nigeria 75-1 is the basis for the development of a DIVA vaccine. A double mark strategy, both recognised by small ruminants is ongoing at CIRAD to allow differentiation of vaccinated from infected and from vaccinated/infected animals. Multivalent capripox recombinant vaccines used differentially to protect ruminants against two or more diseases, depending on the local situation, is a strategy currently underway. In addition to the available PPR-capripox vaccine, recombinant capripoxvirus vaccines targeting bluetongue and Rift Valley fever have proved their efficacy [1, 16], a stepping stone toward second generation of tri- or quadri-valent recombinants. Ongoing trials with PPR-capripox vaccine will determine the duration of immunity in field conditions. Following the example of the work carried on the vaccinia virus, improvement of the capripox backbone is foreseen by subtracting neutralising epitopes and expanding the number of antigens expressed to comply with DIVA strategy and enhanced immunogenicity. Antiviral therapy still has an economically unbearable cost, but some cheap biological molecules could have an economic interest combined with vaccination in eradicating the disease.

Such innovative concepts and developments have been achieved thanks to the continuing collaboration with Southern partners, notably African countries. This collaborative work for science-based and integrated control programmes against PPR will be supported by strengthening the capacity of the team working on that subject with, for example, the recruitment of technicians and experts, notably in virology and in epidemiology-modelling as well as the development of the collaborative projects with the socio-economists working on animal health at CIRAD and in partners’ institutions.
References


Introduction

Prior to 2012, Burkina Faso’s Directorate-General of Veterinary Services sponsored and conducted several studies on the prevalence of peste des petits ruminants (PPR) in Burkina Faso. The results showed a prevalence of 15-30%, revealing active virus circulation in the country’s sheep and goat population.

After discussions and negotiations, the Bill & Melinda Gates Foundation signed an agreement with the OIE in October 2012 to co-finance a pilot project on PPR control protocols. The funding agreement followed in October 2013. Field activities began immediately. The project, planned to last 18 months, ultimately focused on Burkina Faso and Ghana.

The aim of the pilot project was to:

− control PPR by vaccinating 100% (at least 80%) of small ruminants in the project area;
− contribute to the development of a comprehensive PPR control and eradication strategy.

The proposed scenarios had to take into account the:

− eco-climatic zone and farming system
− level of external support to the national Veterinary Service
− number of vaccination campaigns per year
− private sector involvement.

Project

Geographical location

The project areas selected were in four administrative regions of Burkina Faso: Sahel; Nord; Centre-Nord and Boucle du Mouhoun (Fig. 1). This area hosts 27% of the country’s sheep and goat population.
Protocols

The various protocols tested were as follows:
- P1: Control areas (no vaccination).
- P2: Vaccination (vaccine alone) + farmer participation.
- P3: Vaccination + operating costs/vaccinator + farmer participation.
- P4: Vaccination + operating costs/vaccinator + farmer participation + farmer incentives (free deworming prior to vaccination).

These four protocols were duplicated in the Boucle du Mouhoun region to test the parameter ‘private operator versus public services’. The field component is illustrated in Figure 2.

Tools used

Tight deadlines prevented the implementation of a comprehensive serological survey of PPR prevalence across the area. It was decided instead to conduct a comprehensive survey of participatory PPR searching throughout the regions and departments concerned in order to ensure absence of bias linked with an uneven distribution of PPR outbreaks (Fig. 3). Any outbreaks based on farmers’ accounts were confirmed by serological testing of herds that had been declared positive.

The effectiveness of the vaccination campaign was verified at two levels:
- The African Union Pan African Veterinary Vaccine Centre (AU-PANVAC) conducted a study of vaccine and diluent quality starting from the central cold room and ending with the vaccinator’s syringe. The titre of the vaccine and quality of the cold chain were extensively documented.
- The seroconversion of vaccinated animals was monitored by the Ouagadougou central veterinary laboratory based on more than 5,000 samples.

Fig. 2
Pilot field component
With the support of researchers from the French Agricultural Research Centre for International Development (CIRAD), sociologists conducted a survey of vaccination acceptance and perception by farmers, industry stakeholders and the Veterinary Services concerned, in accordance with a participatory survey protocol.

Meanwhile, CIRAD animal production specialists conducted a survey of pre-and post-vaccination productivity using the twelve-month method.

Results

Vaccination coverage

It was necessary to implement the field component and organise the campaign in great haste. This meant that very little awareness could be raised among stakeholders and local contact points. Nevertheless, the performance of all operators, at both central and field levels, was outstanding. By the end of 2014, a total of 1,430,000 of the estimated 1,782,700 small ruminants throughout the vaccination areas had been vaccinated: a vaccination coverage rate of 80.20%. The protocols that provide the best vaccination coverage are P3, with external support from the Veterinary Service, and P4, with the addition of farmer incentives (anthelmintics coupled with vaccination). However, the fact remains that the average coverage rate achieved was enough to block virus circulation in the vaccinated population. Figure 4 illustrates this.
Fig. 4
Distribution of peste des petits ruminants outbreaks in accordance with the various post-vaccination protocols
N.B. The high incidence of outbreaks in the department of Pissila can be explained by a heavy bout of peste des petits ruminants just before the vaccination teams arrived, as the campaign had begun late in the season.

Prevalence and seroconversion

According to the PPR incidence rate graphs (Fig. 5), neither the agro-climatic zone nor the type of operator appear to significantly affect this marker.

The pre- and post-vaccination serological tests showed a significant increase in seroprevalence (Fig. 6). These results, coupled with the significant decrease in the number of outbreaks, show that the vaccine is highly effective.

Productivity

The productivity surveys show that PPR has a very heavy impact on the numeric productivity of herds and that vaccination provides substantial productivity gains. The following graph, compiled from surveys conducted in Ghana (Fig. 7), is very telling.

Sociological surveys

Sociological surveys were organised around two themes:

1) The socio-technical network of sheep and goat production present in 263 villages in the project area

The main findings of this survey are that:

- ‘vaccination’ is considered to mean an ‘injection’, whether preventive or curative (it is usually associated with a visit by the veterinarian to the villages closest to the veterinary station);
Fig. 5
Incidence rate of peste des petits ruminants
- the veterinarian’s availability depends on the group to which the farmer belongs (veterinarians give preference to farmers with large herds);
- the work of community animal health workers is perceived as being that of ‘illegal workers’ and/or traditional healers;
- farmers are well aware of other projects underway in their area.

2) Perception of the vaccination campaign by farmers and industry stakeholders

This survey, conducted through 20 group interviews with 18 vaccinators and 549 farmers, plus 62 individual interviews with agro-pastoralists, reveals that:

- perceptions of the effectiveness of the communication tools used varied widely;
- communities attach great importance to the identity of the vaccinator and to the origin of the project;
- the perception was that neither the village counsellors nor the presidents of village associations had been informed; this was seen as a weakness of the project (‘We have received no information’);
- short notice was given for organising vaccination;
- numerous messages were received simultaneously: vaccination, date, animals concerned, price, etc.
The challenges

The following two figures illustrate the main challenges facing vaccinators and farmers.

**Fig. 8**
Main challenges facing vaccinators

**Fig. 9**
Main challenges facing farmers
Main findings

The vaccination teams encountered many problems with implementing the PPR campaign, in particular:
- far too little time was allocated to awareness-raising;
- the timeframe for implementing the campaign was so short that it was impossible to implement two vaccination rounds per village or to do a search;
- the vaccination period (March to April) was inappropriate because most of the animals were already free grazing (goats) or in transhumance;
- farmer mistrust of the first ever campaign organised specifically for small ruminants (with the result that some farmers refused to vaccinate their entire herd);
- door-to-door vaccination, which was the only option for this campaign owing to lack of enclosures in every village, was very demanding in terms of time and resources;
- few or no logistical resources (motorcycles), the defective condition of the motorcycles used by vaccinators and of some vehicles;
- packaging of the vaccine in 100-dose phials was a constraint because it led to considerable losses of unused vaccine.

Conclusions

General principles of vaccination
- Mass vaccination (all animals over the age of three months), in the Sudano-Sahelian region, in a single round early in the cold dry season, in view of the transhumant/nomadic nature of livestock farming and the impossibility of defining epidemiological units that can be studied throughout the control/eradication process.
- Any other type of vaccination (such as targeted vaccination, which is of doubtful efficacy in Africa) would require preliminary studies (incurring a high additional cost) to ascertain the epidemiological status of the disease in the country.

Organisation of the campaign
- Planning by the public services, which must be strengthened; awareness-raising among professional organisations; involvement of private veterinarians with an animal health accreditation mandate where possible.
- Organisation of the rounds, teams, cold chain and distribution of the vaccine, diluent and additional equipment to ensure fast and effective vaccination with high coverage (greater than 80%).
- Laboratories that produce PPR vaccine should always supply it with the diluent and the AU PANVAC quality label.

Vaccine bank
- A vaccine bank ensures a fast and efficient supply of top-quality vaccine and diluent (VSPA showed that excellent seroconversion rates are essential) in support of the current insufficient capability of vaccine-producing laboratories.
- The cost price of the vaccine dose (vaccine + diluent) is the fairest in the market.

Epidemiological study and vaccine efficacy monitoring
- The national PPR control and eradication campaign provides a good opportunity to rehabilitate and revive national passive and active epidemiological surveillance networks. Serological testing, in accordance with a predefined sampling design, makes it possible to monitor vaccine efficacy and the population’s level of protection.
activities of Reference Laboratories & Collaborating Centres

Annual reports for 2014 of reference centres for terrestrial animal disease

Annual reports have been received from 190 out of 205 Reference Laboratories and from 39 out of 47 Collaborating Centres for terrestrial animal diseases or topics.

The international activities relevant to the work of the OIE are summarised in the following tables:

Table I
2014 OIE Reference Laboratory activities

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<td>1. Tests in use</td>
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<td>2a. Production of OIE-recognised standard reference reagents</td>
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<td>2b. Supply of standard reference reagents</td>
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<td>3. Production/supply of diagnostic reagents other than OIE-approved</td>
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<td>4. Production of vaccines</td>
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<tr>
<td>5. Supply of vaccines</td>
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<tr>
<td>6. Development of new diagnostic methods</td>
<td>20%</td>
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<td>7. Development of new vaccines</td>
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<td>8. Provision of diagnostic testing</td>
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<td>11. Collection of epizootiological data</td>
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<td>12. Dissemination of epizootiological data</td>
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<td>13. Method of dissemination of information</td>
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<tr>
<td>19. Participation in international scientific meetings</td>
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<td>21. Proficiency testing with other OIE labs</td>
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<td>22. Collaboration with other OIE laboratories for same disease</td>
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<td>23. Proficiency testing labs other than OIE labs</td>
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<td>24. Provision of consultant expertise</td>
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Table II
2014 OIE Collaborating Centre activities

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<tr>
<td>2. International harmonisation of regulations</td>
<td>90%</td>
</tr>
<tr>
<td>3. Maintenance of a network in same specialty</td>
<td>85%</td>
</tr>
<tr>
<td>4. Maintenance of a network in other disciplines</td>
<td>77%</td>
</tr>
<tr>
<td>5. Provision of consultant expertise</td>
<td>90%</td>
</tr>
<tr>
<td>6. Provision of scientific and technical training</td>
<td>87%</td>
</tr>
<tr>
<td>7. Organisation of international scientific meetings</td>
<td>59%</td>
</tr>
<tr>
<td>8. Coordination of scientific and technical studies</td>
<td>92%</td>
</tr>
</tbody>
</table>
The Pirbright Institute (previously the Institute for Animal Health) not only houses an OIE Reference Laboratory for peste des petits ruminants (PPR) and rinderpest viruses, it also maintains an active research programme in the biology of the PPR virus, led by Dr Michael Baron. The Institute has developed standard and real-time polymerase chain reaction (PCR) tests for PPR virus, as well as developing and distributing both a serological test (cELISA) for PPR antibodies and the first pen-side test for PPR virus infection. The Institute provides primary and confirmatory diagnostic services to any OIE Member Country. It also provides training in diagnostic laboratory management as well as PPR diagnostics to other laboratories through the OIE twinning programme.

National Diagnostic Center for Exotic Animal Diseases (CEAD)
China Animal Health and Epidemiology Center (CAHEC)
369 Nanjing Road, Qingdao 266032,
People’s Republic of China
Designated reference expert: Dr Zhiliang Wang

The National Diagnostic Center for Exotic Animal Diseases (CEAD) of the China Animal Health and Epidemiology Center (CAHEC) was designated as the National Reference Laboratory for PPR in 2007 and accepted as an OIE Reference Laboratory at the 82nd OIE General Session in 2014. CEAD applies multiple tools including both the traditional and the most advanced molecular techniques for PPR diagnosis. It also provides diagnostic reagents and laboratory training nationally and internationally. CEAD has been engaged in the prevention and control of PPR for many years, providing key technical support to policy-makers. It diagnosed the first outbreak of PPR in China in 2007 and has confirmed all of the outbreaks in 22 provinces, 119 cities and 257 counties since the disease was reintroduced into China in December 2013. CEAD also drafted the first national PPR contingency plan, surveillance plan and diagnostic standard, and updates them periodically.

In May 2014, invited by FAO, Dr Zhiliang Wang, the designated OIE reference expert, presented the current status and control strategies of PPR in China at FAO Headquarters in Rome.

In November 2014, the OIE Reference Laboratory organised an International Symposium on Newcastle Disease and PPR in Qingdao, and Dr Zhiliang Wang delivered a keynote lecture on PPR diagnosis and control. Participants from the OIE Regional Representation, the FAO Beijing office, the Pirbright Institute and countries in the region, such as Cambodia, Indonesia, Mongolia, Nepal, Thailand and Timor-Leste, shared their knowledge and experiences in PPR prevention and control.
In addition, more than 2,000 veterinary field staff from various provinces received training from the Reference Laboratory in 2014, and optimal and rapid diagnostic kits for PPR (400,000 ELISAs and 20,000 PCR tests) were produced and delivered to provincial laboratories for surveillance and screening.

Based on its contribution, CEAD was honoured with the titles of ‘Advanced Team’ of the Ministry of Agriculture and ‘National Innovative Team’ of the Ministry of Science and Technology.

CEAD is now drafting the national PPR eradication plan, based on FAO/OIE precepts, and preparing to contribute to the final eradication of this disease from the world.

**CIRAD-BIOS**

**Control of Exotic and Emerging Animal Diseases**

*Programme Santé animale*

Campus International de Baillarguet TA A-15/G, 34398 Montpellier Cedex 5, France

Designated reference expert: **Dr Geneviève Libeau**

The OIE reference laboratory for PPR – Biological Systems Department (BIOS) – is hosted by the French Agricultural Research Centre for International Development (CIRAD) in Montpellier. Ever since it was established, and later as part of its reference activities, the laboratory has developed diagnostic and surveillance tools and vaccines against PPR, which now makes it feasible to eradicate the disease. The reference laboratory also builds capacity in epidemiology and animal health economics to support strategic decision-making on disease control. The laboratory is involved in training, technology transfer and research through its network of partner national laboratories and experts, especially in Africa and the Middle East. In partnership with national Veterinary Services, it also develops laboratory twinning programmes, including the reinforcement of epidemiological surveillance, inter-laboratory tests and implementation of an ISO/IEC 17025 quality management system to build confidence in diagnoses and, more broadly, in research into PPR and other major transboundary animal diseases.
OIE twinning of the Biopharma Laboratory (Morocco) with CIRAD (France) for peste des petits ruminants

Since it was first described in Côte d’Ivoire in 1942, peste des petits ruminants (PPR) has spread steadily throughout Africa, the Middle East and Asia. As a result of illegal cross-border trade in animals, in July 2008 the disease occurred in Morocco for the very first time and went on to spread rapidly across almost the entire country. Investigations by the Moroccan Veterinary Services found that sheep farming and trade played a dominant role in the spread of the virus.

With exemplary responsiveness, Morocco’s Veterinary Services met the challenge by implementing immediate PPR control measures based on mass vaccination of the country’s domestic sheep and goat population, which enabled the disease to be successfully contained. Biopharma, Morocco’s national vaccine production and diagnostic laboratory, played a crucial role in this process by confirming PPR and producing the required vaccine doses within just three months of receiving the vaccine strain from the OIE Reference Laboratory for PPR, the French Agricultural Research Centre for International Development (CIRAD, see page 88). Biopharma produced 25 million doses between 1 September and 15 October 2008 and a total of over 20 million animals were vaccinated.

This initial collaboration between CIRAD, Biopharma and the Moroccan Veterinary Services led to the submission of a twinning project in 2013 to build regional PPR expertise and capacity by reinforcing the Biopharma laboratory’s diagnostic capability and boosting synergy with national epidemiological surveillance networks, in line with the regional strategy drawn up by the Mediterranean Animal Health Network for North Africa (REMESA). Nevertheless, the risk of PPR being reintroduced into Morocco remains high because of its confirmed presence throughout the Maghreb region.

The project was launched in December 2013 by two days of meetings devoted to presenting the teams and their twinning activities, as well as to drafting the future programme. One or more annual meetings, depending on the activity, are held to promote the Biopharma PPR diagnostic platform, quality system and accreditation project and to further the debate on implementing a PPR control strategy geared specifically to the region. The CIRAD and Biopharma teams have known and worked together since the PPR incursion into Morocco, which makes dialogue much easier. In addition, Montpellier in France and Rabat in Morocco are emblematic of North-South links in that they are both large Mediterranean cities with a relaxed pace of life, which has helped to establish close relations between the two teams during exchange visits.

The twinning project actually began when a young Moroccan veterinarian from Morocco’s National Office for Food Safety (ONSSA) enrolled, in 2013–2014, in a Master’s degree in epidemiological surveillance of human and animal diseases at France’s Alfort Veterinary School (ENVA) and Paris-Sud University. The veterinarian completed his degree with a six-month work placement in Morocco on the subject of PPR, under the supervision of two epidemiologists from CIRAD and the ONSSA epidemiological and health monitoring service. The following year, the epidemiologists and ONSSA experts used these initial results to set up an information system on animal movements, which was extended nationwide, and to define

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1 In parallel, the Veterinary Services implemented a major communication effort to halt the disease ahead of the Eid-al-Adha Muslim festival of sacrifice. Around 5 million sheep are traded and slaughtered each year during this period. In 2008 it took place in early December.
epidemiological indicators to strengthen surveillance in areas deemed to be at greatest risk. A training course on these aspects for ONSSA managers was designed and scheduled for June 2015 (to familiarise managers with the various information processing tools and enable them to build on the tools independently: data collection systems; social network analysis methods; geographic information system mapping; proposals for improving surveillance on the basis of results; and training course design).

Year one also saw the first technical workshop on PPR diagnosis at CIRAD and the implementation and start-up by CIRAD of an inter-laboratory test involving the Biopharma laboratory and 21 other laboratories located in five Maghreb countries and four more African and Middle Eastern countries. The inter-laboratory test involved both serological and virological tests, in which all the laboratories proved to be fully proficient.

The diagnostic training curriculum delivered in Montpellier covers:
- setting up PPR serological analysis
- use of controls and internal reference materials
- implementing real-time PCR methods (qPCR)
- introduction to pipette calibration
- introduction to sequencing
- introduction to phylogenetics
- a review of International Air Transport Association (IATA) procedures.

Virologists and quality experts from the two laboratories have worked together in Rabat on several occasions, either for audit meetings or mid-term meetings to analyse the situation, assess progress and take stock of the training courses based on the progress made.

Region-wide inter-laboratory PPR diagnostic tests are being planned by the Biopharma laboratory and may be extended in the future to cement the legitimacy of Biopharma’s application to become an OIE reference laboratory. The existing quality management system was reviewed and proposals were made...
Members of the Biopharma scientific team involved in the twinning project
From left to right, Ms Ghizlane Sebbar, Ms Amina Aqari, Dr Safa El Ashari and Dr Khali Zro

for upgrading it to meet all the requirements of standard ISO/IEC 17025. Appropriate quality management system indicators were defined and discussed (maintaining customer satisfaction, maintaining staff competence, continuing to implement and enhance the quality management system and preparing accreditation of the enzyme-linked immunosorbent assay (ELISA) for PPR). The fact that everyone was involved helped to build the mutual trust needed for effective collaboration.

The quality management system is based on standard ISO/IEC 17025. The Biopharma personnel concerned underwent training on this standard and on metrology, and will soon undergo training on the validation of the ELISA method. This will help them to understand the requirements for implementing a quality system and defining an action plan to include the ELISA PPR test within the scope of accreditation. Assistance is provided to help Biopharma to organise PPR inter-laboratory tests.

Although the progress described above was of direct benefit to the candidate laboratory, the advantages for the parent laboratory should not be overlooked. Generally speaking, twinning improves the parent laboratory’s knowledge of a disease by enabling it to take specific local and regional circumstances into consideration, whether they be epidemiological (assessing health risks more accurately and adapting control strategies) or microbiological, paving the way for studies on such matters as identification, genetic evolution, pathogenicity or improved diagnosis, to meet the needs of the country and the region. Twinning also enables the personnel involved to show their skills and expertise, work with others from different disciplines, interact and/or take part in international expert groups.

Although the twinning process is not yet complete, Biopharma and CIRAD, as partners, welcome the results achieved so far and the opportunity to take part in such projects, which ultimately improve disease surveillance and control. First and foremost, this twinning has led to better communication and stronger links between the two teams, has created trust and transparency and has given them an opportunity to extend their collaboration beyond the twinning project.
news from Member Countries

German scientists discover new bornavirus in variegated squirrels. Potential link to fatal human infections

Information received on 31 March 2015 from Dr Karin Schwabenbauer, Delegate of Germany to the OIE, Director of Animal Health and Animal Welfare, Federal Ministry of Food and Agriculture, Bonn

Following up on three cases of lethal encephalitis among breeders of variegated squirrels (Sciurus variegatoïdes) in Germany between 2011 and 2013, the Bernhard Nocht Institute for Tropical Medicine (BNITM) investigated a possible infectious origin. Variegated squirrels are an exotic species in Germany, where they are kept as zoo and companion animals.

Initially, no clues for the cause of the disease could be found, until the Friedrich Loeffler Institute (FLI) investigated samples from a variegated squirrel belonging to one of the deceased breeders. By using a metagenomic approach with a comprehensive deep-sequencing strategy, the presence of high loads of the RNA of a novel bornavirus could be detected in samples from the squirrel.

Subsequent molecular biological and immunohistological tests confirmed the presence of the virus in the brain samples of the three breeders who had died. Phylogenetic analysis demonstrated that this novel virus, tentatively named variegated squirrel bornavirus 1 (VSBV-1), formed a separate lineage from that of the known species, with a sequence identity of less than 75% similarity with other mammalian bornaviruses. Investigations of further samples from different squirrel holdings in Germany identified more animals which tested positive for the virus, and serological studies revealed the presence of high bornavirus-specific antibody titres in both the squirrels that tested positive by polymerase chain reaction (PCR) and one of the dead patients.

From the available data and due to the epidemiological links, it seems likely that the disease affecting these three patients was caused by the transmission of this novel bornavirus from infected squirrels. However, at present, it is not known whether these are isolated cases, or how the infection occurred. Bites and scratches appear to be possible means of acquiring the infection.

Test methods for the detection of the new virus were developed and validated at the FLI and are available on request. Preliminary screening results of variegated squirrels on different holdings showed a high correlation between the PCR test results of oral swab samples and brain tissue.

The BNITM in Hamburg, the FLI on the Isle of Riems and the Robert Koch Institute in Berlin are cooperating with veterinary and health authorities at federal and state levels to further clarify the situation. The FLI is carrying out tests on the occurrence of this virus in animals. In addition, people who keep variegated squirrels are being screened to identify possible cases of infection. The BNITM is conducting analogous analyses of the spinal fluids of patients with encephalitis of unknown origin.

Until further data become available, the scientists working on this issue advise avoiding direct contact with variegated squirrels as a preventive measure. If a variegated squirrel develops a disease or dies from unknown causes, the owner should inform their veterinarian who can initiate further investigations. In the context of the FLI’s and BNITM’s discovery of this new and probably zoonotic bornavirus, we still need to clarify whether the virus was imported into Germany with infected squirrels or whether the squirrels were infected by another animal species.

1 Bernhard-Nocht-Institut für Tropenmedizin (BNITM), Bernhard-Nocht-Straße 74, 20359 Hamburg, Germany
2 Friedrich-Loeffler-Institut (FLI), Federal Research Institute for Animal Health and OIE Collaborating Center, Südufer 10, 17493 Greifswald-Insel Riems, Germany
3 Robert Koch-Institut (RKI), Postfach 65 02 61, 13302 Berlin, Germany
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 by Lithuania of freedom from rabies

submitted to the OIE on 9 March 2015 by Dr Jonas Milius, Delegate of Lithuania to the OIE, Director, State Food and Veterinary Service, Ministry of Agriculture, Vilnius

Notification

Rabies was enzootic in Lithuania and it is compulsory to notify any occurrence of this disease. Statistical information about rabies outbreaks in Lithuania is available back to 1960. Since 1992, in accordance with the Act on Veterinary Activities, every suspicion of rabies must be notified to the Veterinary Authorities.

Epidemiological background

Rabies was widespread in the whole territory of Lithuania. Wildlife rabies was enzootic whereas urban rabies has been eradicated. Carnivorous wild animals are the main reservoir of this disease, in addition to sporadic cases of rabies in domestic animals. Since 1960, 11 people have died of rabies: two infected by dogs; four infected by foxes; two by raccoon dogs; one by a badger; one by a cat and one case of unknown origin.

The main reservoir species for the rabies virus, and the animals which principally distributed the disease, were red foxes (Vulpes vulpes) and raccoon dogs (Nyctereutes procyonoides).

Rabies was more widespread in wooded areas but wild predators have also moved into areas of human settlement. For instance, foxes and raccoon dogs have become a common sight in urban areas. Under such conditions, reports of rabies cases in dogs, cats and foxes in the cities and villages have increased.
Eradication measures

The movements of companion (pet) animals are controlled at border entry points and vaccination against rabies is required, as are appropriate animal identification and veterinary certificate for the commercial movement of companion animals and approved passport or veterinary certificate for the non-commercial movement of animals. Since October 2004, all dogs and cats must be identified by tattoo or microchip for international movement. They should also be vaccinated against rabies with live or inactivated vaccine of at least one antigenic dose and an authorised veterinarian should carry out the vaccination. Pet passports should be used for the movement of animals between Member States of the European Union. All identified pet animals should be registered on a computerised database that is accessible to all relevant Competent Authorities.

In Lithuania, oral vaccination trials started as far back as 1983, using Russian vaccine-bait systems (employing an adapted ERA vaccine strain derivative in fish or meat baits). A 25% to 50% reduction in animal rabies cases was reported.

In the era of independence, the oral vaccination of wildlife was initiated in 1995, in accordance with the Lithuanian National Rabies Prevention Programme.

The first oral vaccinations of wild animals were conducted in 1995, over an area of 430 km², in the Panevėžys, Pakruojis and Joniškis districts. The Virbac-made vaccine SAG1 with a tetracycline biomarker was used.

In 1996, a spring vaccination campaign was organised over an area of 4,000 km² in 13 districts of northern Lithuania. Some 100,000 doses were used (approximately 25 baits per km²). The task was carried out manually, by placing the baits in forests and bushes, by animal dens. In one district (Biržai), a plane was used to complete the task.

In 1997, two vaccination campaigns, one in spring (May) and one in autumn (October–November), were carried out, over an area of 5,349 km². A total of 250,000 baits were distributed in 22 districts.

In 1998, a vaccination campaign was conducted over an area of 6,375 to 7,000 km² in 26 districts of northern and western Lithuania. A new type of vaccine, Lysvulpen, manufactured by Biovet in the Czech Republic, was used and 200,000 baits were distributed.

Over the five-year duration of the programme (1995–2000), a range of vaccines has been used and various geographic areas covered. In total, oral vaccination has been carried out over more than 8,000 km², with 820,000 baits distributed at various stages of the programme. Delivery methods have included distribution by hand (predominantly by hunters) and aerial distribution using fixed-wing aircraft in a few limited areas. The vaccines used have included SAG1 (1995–1997, 1999), Lysvulpen (1998) and Rabifox (2000), all incorporating tetracycline biomarkers. These campaigns have followed a twice-yearly delivery strategy, with baits distributed in March–April and October–November. The distribution of baits relied mainly on manual distribution through hunting clubs.

From 2006, the oral rabies vaccination campaign (for red foxes and raccoon dogs) was conducted by airplane.

The total oral vaccination area is 65,000 km² (the entire territory of Lithuania). A total of 1.3 million baits are used per campaign (i.e. 2.6 million vaccine baits per year).
baits are distributed by four Cessna-type small aircraft at a density of approximately no fewer than 20 baits km\(^2\). The aircraft flying lines were separated by 1,000 metres but, near the border with Belarus, the flying lines were 500 metres apart.

According to the Act on the Welfare and Protection of Animals in Lithuania, Municipal Administrations must organise activities to reduce the number of stray pets in a municipality, provide temporary care for homeless and stray animals and return stray animals to their owners, as well as establish pet cemeteries and organise the maintenance of these. In accordance with the procedure set out by the Head of the Municipal Administration, the Municipal Administration must, within its remit, participate in implementing stray cat neutering programmes drafted by animal care organisations.

The prevalence of stray dogs is negligible.

In accordance with requirements set forth by legal acts, animal owners or keepers must ensure that cats, dogs, ferrets and other animals susceptible to rabies are vaccinated against the disease.

Additionally, free-of-charge vaccination campaigns are organised several times per year by the municipalities in association with private veterinarians, i.e. on 28 September (World Rabies Day) and 4 October (World Animal Day).

According to the Act on the Welfare and Protection of Animals the requirement to identify all cats, dogs and ferrets in the country by microchip and to record the data in the Pet Animal Register shall enter into force on 1 January 2016.

**Legislation on rabies**

Legislation on rabies in Lithuania includes the following:

- Order of the Director of the State Food and Veterinary Service No. B1-463 of 11 May 2007, ‘On the approval of requirements for rabies control’
- Order of the Director of the State Food and Veterinary Service No. B1-281 of 12 April 2006, ‘On the approval of the programme for animal contagious disease control’
- Order of the Minister of Health and of the Director of the State Food and Veterinary Service No. V-146/B1-140 of 28 February 2002, ‘On the approval of the form of an information notice about suspected/confirmed cases of rabies in animals’

**Surveillance and monitoring**

Passive surveillance of rabies in Lithuania is based upon a network of authorised veterinarians and veterinary officials. All rabies-suspected cases should be notified to the State Food and Veterinary Service, relevant samples should be collected from suspected cases and further samples collected for rabies surveillance and the monitoring of oral rabies vaccination campaigns. These samples should be submitted to the National Food and Veterinary Risk Assessment Institute, which is the National Reference Laboratory for rabies in Lithuania. The costs of rabies investigations are covered from the State Budget.
The long-term strategy for the eradication of rabies in Lithuania began in 2006 and contains the following elements:

− the oral vaccination of wild animals should cover the entire territory of Lithuania
− the oral vaccination of wild animals, especially red foxes and raccoon dogs, should be conducted with a vaccine which creates sufficient immunity
− all Baltic states and Poland should start this campaign at almost the same time and coordinate their activities
− to ensure the complete eradication of rabies and avoid re-infection from neighbouring countries, cross-border oral vaccination was performed with the Kaliningrad region of Russia and Belarus.

The rabies eradication campaign should continue for two years after the last registration of a rabies case and include:

− the compulsory vaccination of dogs and cats
− the implementation of an identification and registration system for dogs and cats
− control of the population of stray dogs and cats.

In addition to the investigations of suspected rabies in wild and domestic animals mentioned above, and under the framework of monitoring the efficacy of the oral rabies vaccination programme which began in 2006, brain samples were collected from 8 foxes/raccoon dogs per 100 km² for virus investigation. In 2011 the sample size was reduced to 4 target animals per 100 km², as recommended by the WHO Expert Consultation on Rabies (First Report, 2005). Samples for monitoring the oral rabies vaccination programme are collected by authorised veterinarians in close collaboration with hunting associations.

To detect the virus, the preferred target groups are indicator animals (foxes and/or raccoon dogs showing abnormal behaviour suggestive of rabies, animals found dead and road-kill).

Importation procedures

In the European Union, conditions for the non-commercial movement of pet animals have been harmonised, as laid down in Regulation (EC) No. 998/2003 of the European Parliament and of the Council of 26 May 2003 on the animal health requirements applicable to the non-commercial movement of pet animals into a Member State from another Member State or from third countries.


At the time of pet movement from non-European Union countries, the owner or person responsible for the companion animal must be able to present to the relevant Authority responsible for animal health checks a pet passport or certificate certifying that the animal meets the requirements laid down for such movements.

Where such checks reveal that the animal does not meet the requirements, the Competent Authorities shall decide:

a) to return the animal to its country of origin
b) to isolate the animal under official control for the time necessary for it to meet the health requirements, at the expense of the owner or the person responsible for it, or
c) as a last resort, to put the animal down, without financial compensation, where its return or isolation in quarantine cannot be envisaged.

The measures are withdrawn when negative results are obtained from sample investigation or when, after 14 days of surveillance of the quarantined animal, rabies is excluded.
Conclusions

Through its use of oral rabies vaccination of wildlife with aircraft over the entire country, beginning in 2006, Lithuania has succeeded in eradicating rabies within seven years.

The last case of rabies in a dog was detected on 15 January 2013 in the Varena region, close to the border with neighbouring Belarus.

No cases in wildlife have been detected since 2012; therefore, it can be considered that the State Food and Veterinary Service has succeeded in eliminating terrestrial rabies in the territory of Lithuania.

The last (imported) human rabies case was reported in 2007.

An adequate system of laboratory-based rabies surveillance and oral rabies vaccination monitoring has been put in place and the investigation results obtained confirm the positive outcome of the programme.

Efforts will continue to maintain awareness and educate the public about the risk of re-introducing rabies via the illegal importation of pets or natural migration of infected wildlife.

Lithuania complies with the conditions to be considered a rabies-free country in accordance with Article 8.12.3. of the Terrestrial Animal Health Code (2014).

Therefore,
− considering the information above,
− considering the fact that more than two years have elapsed since the last case of rabies was detected on 15 January 2013 and resolved on the same day,
− and in accordance with Article 8.12.3. of Chapter 8.12. of the Terrestrial Animal Health Code (2014),

the Delegate of Lithuania to the OIE declares on 9 March 2015 that his country is free from rabies.
Self-declaration
by the Dominican Republic of
country freedom from avian influenza

submitted to the OIE on 27 January 2015 by Dr Nimia Lissette Gómez Rodríguez,
Delegate of the Dominican Republic to the OIE, Director, Animal Health Directorate,
Directorate-General for Livestock, Ministry of Agriculture, Santo Domingo

Overview of animal health services

The Directorate-General for Livestock (DIGEGA), which comes under
the Ministry of Agriculture, is responsible for protecting and promoting the
development of the Dominican Republic’s livestock industry.

Through its Animal Health Directorate, DIGEGA designs, manages, evaluates
and supervises national animal health programmes. It also organises and
implements training, skills development and the development and distribution of
educational material to strengthen animal health programmes. It is responsible
for custody, surveillance and quarantine control at ports, airports, post offices
and land borders, by monitoring and regulating products, by-products, medicinal
products, raw materials and live animals introduced into the country, in
accordance with the health regulations established in the Dominican Republic’s
agricultural legislation.

The Central Veterinary Laboratory (LAVECEN) is the national reference
laboratory. As the official diagnostic entity, it supports national policy on animal
health, food security and safety and the production of biologicals.

Legal framework

– The Dominican Republic’s Law 4030 of 15 January 1955 declares it in
the public interest to safeguard livestock health, control and eradicate epizootics,
and prevent animal diseases transmissible to humans.

– Law 8 of 8 September 1965 specifies that the functions of the Secretariat
of State for Agriculture (now the Ministry of Agriculture) should include
organising and managing the country’s livestock industry and promoting livestock
production.

– Ministerial Decision 29-2013 of 25 March 2013 established the executive
committee for avian influenza surveillance and Newcastle disease control.

Background to avian influenza in the Dominican Republic

In May 2006, an avian influenza surveillance plan was implemented
throughout the country’s poultry population and the national contingency plan for
avian influenza emergencies was developed.

As part of avian influenza surveillance of birds for export, on 10 December
2007 the LAVECEN laboratory detected specific antibodies against avian
influenza virus type A in a fighting cock.

The virus was identified as low pathogenicity subtype H5N2 and was
95.5% compatible with the strain that has been circulating in the United
States of America since 1994. The diagnosis was confirmed by the international
reference laboratory, National Veterinary Services Laboratories (NVSL) in Ames, Iowa, United States of America. This case triggered the warning system and nationwide surveillance was intensified.

The case was closed in February 2009. Since then no further occurrence of either low pathogenicity or highly pathogenic avian influenza virus has been detected.

Overview of poultry production

Poultry farming is one of the Dominican Republic’s most important agricultural sub-sectors. It continues to grow steadily and is contributing an increasing share to the national economy. It has a significant social impact because it creates jobs throughout the chain of poultry production and marketing and provides high-protein foods accessible to the neediest families.

From a total of 386 organised poultry producers, data are presented on the commercial and backyard poultry populations (Table I), drawn from the records of the Dominican Poultry Association (ADA), National Council for Livestock Production (CONAPROPE) and DIGEGA.

Table I
Breakdown of the poultry population in the Dominican Republic (December 2014)

<table>
<thead>
<tr>
<th>Description by category</th>
<th>Number</th>
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<tbody>
<tr>
<td>Layers</td>
<td>6,000,000</td>
</tr>
<tr>
<td>Broiler breeders</td>
<td>1,640,000</td>
</tr>
<tr>
<td>Layer breeders</td>
<td>58,000</td>
</tr>
<tr>
<td>Grandparent stock</td>
<td>36,000</td>
</tr>
<tr>
<td>Backyard poultry/fighting cocks*</td>
<td>2,256,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9,990,000</strong></td>
</tr>
</tbody>
</table>

Sources: Dominican Poultry Association (ADA)/National Council for Livestock Production (CONAPROPE)/Directorate-General for Livestock (DIGEGA)

The country produces 16 million broilers every month but there is no significant production of other avian species, such as turkeys or ducks.

There are poultry establishments throughout the Dominican Republic, 75% of which are in the Cibao region and produce chicks, hatching eggs, commercial eggs or grandparent stock, or are hatcheries or slaughterhouses. The remaining 25% are located around the province of Santo Domingo and in other parts of the country.

Another production system of great economic importance, especially for low-income households, is backyard poultry. The breeding of fighting cocks has also grown significantly in recent years. Both backyard poultry and fighting cocks are therefore included in animal health programmes.

There are wild and migratory birds in the country, which are concentrated in greater numbers around wetland areas, lakes and lagoons.

Prevention and control measures

DIGEGA issues guides to biosafety procedures, in accordance with which it performs inspections for the health accreditation of poultry establishments.

The system for the control of bird movements is being implemented through the guide to the movement of birds, bird products and by-products.
Epidemiological surveillance

Since 2006, the Dominican Republic has had a continuous surveillance system, based on compulsory reporting, for the early detection of avian influenza, an animal health emergency response system and diagnostic capacity for identifying the influenza virus.

For these activities, DIGEGA has veterinarians (46) and veterinary assistants (50) trained to collect and transporting samples.

Following the occurrence of the case of low pathogenicity avian influenza H5N2 in December 2007, active surveillance was initiated to investigate virus circulation on organised farms and among poultry and fighting, wild, migratory and ornamental birds. This was accompanied by geo-referencing of poultry establishments.

For the 2010–2012 period, a programme of ongoing technical visits was established to collect samples from organised farms, fighting cock breeding farms and bird sales outlets throughout the country.

Ten geographical locations of epidemiological risk were identified across the country, in which surveillance and monitoring of migratory and wild birds is carried out jointly with Ministry of Environment staff.

There is an ongoing system of passive surveillance, based on the immediate notification of clinical suspicion of avian influenza, and of active surveillance, based on sampling to confirm the absence of virus circulation.

During the 2006–2013 period, a total of 75,214 avian samples were collected and processed. Apart from the asymptomatic cases that had tested positive in the laboratory, which were reported to the OIE in 2007, all the remaining samples processed have given negative results. In 2014, a total of 8,337 samples were analysed from 256 producers nationwide, all of which gave negative results (Table II).

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>5,293</td>
</tr>
<tr>
<td>2007</td>
<td>6,664</td>
</tr>
<tr>
<td>2008</td>
<td>32,211</td>
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<tr>
<td>2009</td>
<td>3,681</td>
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<td>2010</td>
<td>8,850</td>
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<td>2011</td>
<td>2,357</td>
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<td>2012</td>
<td>3,636</td>
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<td>2013</td>
<td>4,185</td>
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<tr>
<td>2014</td>
<td>8,337</td>
</tr>
<tr>
<td>Total</td>
<td>75,214</td>
</tr>
</tbody>
</table>

Source: Avian Diseases Division, Animal Health Directorate, Directorate-General for Livestock (DIGEGA)
Diagnosis

LAVECEN is the official laboratory for the diagnosis of avian influenza. The tests used are: agar gel immunodiffusion (AGID), enzyme-linked immunosorbent assay (ELISA) and virus isolation.

Whenever results are inconclusive, the samples are sent to the international reference laboratory (NVSL) in Ames, Iowa, United States.

Public–private cooperation agreements

Through DIGEGA, the official sector has developed activities to prevent the introduction of the causal agent of avian influenza and to demonstrate the absence of virus circulation. All this work has been developed in close coordination and cooperation with the committee appointed for avian influenza surveillance, which covers the Dominican Poultry Association and the official Veterinary Service. These combined efforts have made possible this self-declaration of country freedom from avian influenza.

Therefore,
– in view of the above information,
– given that more than 70 months have elapsed since the last case was closed (26 February 2009), and
– in accordance with Chapter 10.4 of the OIE Terrestrial Animal Health Code (2014 edition),
the Delegate of the Dominican Republic to the OIE declares the country to be free from avian influenza as from 26 February 2015.

References

A. Documents from DIGEGA:
– Medidas de bioseguridad en plantes de ponedoras, manual de procedimientos no. 2. Programa de enfermedades aviares.
– Plan de vigilancia y control de influenza aviar de baja patogenicidad. Protocolo para el seguimiento de casos de influenza aviar, manual de procedimientos no. 1. Programa de enfermedades aviares.
– Plan de vigilancia para influenza aviar en República Dominicana.
– Plan de emergencias para enfermedades exóticas de animales domésticos en República Dominicana.

The OIE and the International Veterinary Students’ Association (IVSA) signed a Cooperation Agreement in May 2014 (see Bulletin, no. 2014–4, pp. 48–49). IVSA is the largest veterinary student association in the world, representing around 30,000 students in more than 40 countries on all continents. It is a non-profit organisation managed by volunteer veterinary students from across the globe, which aims to improve veterinary education through the exchange of knowledge, ideas and culture by encouraging worldwide collaboration among students, to enrich their experiences and improve their skills as future veterinarians.

The two organisations committed themselves to active collaboration in the field of veterinary education, to improve animal health and animal welfare worldwide. High-quality veterinary education is a major pillar of good governance to ensure the quality of national Veterinary Services. The backbone for this collaboration is the set of OIE Recommendations on the competencies of graduating veterinarians (‘Day 1 graduates’) to assure National Veterinary Services of quality1 and the companion OIE Guidelines on the Veterinary Education Core Curriculum2.

As a first step towards the implementation of this recently signed Agreement, the President of IVSA invited the OIE to the 63rd IVSA Winter Symposium and General Assembly, held from 13 to 17 December 2014 in Edinburgh, United Kingdom. More than 80 veterinary students from 22 IVSA Member Countries across the world attended the event. The IVSA General Assembly provided an excellent opportunity to raise awareness of the OIE’s mandate, objectives and activities. Particular attention was given to the OIE PVS Pathway as a means of improving national institutional capacity and expertise in veterinary education, notably using the OIE Veterinary Education Establishment Twinning Programme.

To further put the agreement into action, the OIE will take part in the 64th IVSA Summer Congress, scheduled for 28 July 2015 in Cluj-Napoca, Romania, as well as the first IVSA Animal Welfare Conference, planned for 29 April – 1 May 2016 in London. The

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1 Available at: www.oie.int/fileadmin/Home/eng/Support_to_OIE_Members/Vet_Edu_AHG/DAY_1/DAYONE-B-ang-vC.pdf
2 Available at: www.oie.int/Veterinary_Education_Core_Curriculum.pdf
The Third OIE Global Conference on Aquatic Animal Health was held in Ho Chi Minh City, Vietnam, from 20 to 22 January 2015. This conference was one of a series of global conferences that began in 2006 aimed at raising awareness of the importance of aquatic animal health, and building a global framework for improving the management, prevention and control of aquatic animal diseases.

The conference brought together over 250 key players in the aquaculture sector from nearly 100 countries, including representatives of national Veterinary Services and Aquatic Animal Health Services, international experts from OIE Reference Centres, representatives of national, regional and international organisations, private sector representatives, and representatives of other Competent Authorities.

The conference served as a reminder of the crucial importance of implementing OIE standards, both to safeguard aquatic animal health and to facilitate safe trade. In order to implement these standards, both the Veterinary Services and the Aquatic Animal Health Services must have the appropriate competency and capacity. However, with most aquaculture production originating in developing and emerging countries, there is also a

3rd OIE Global Conference on Aquatic Animal Health
Ho Chi Minh City, Vietnam, 20–22 January 2015

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RECOMMENDATIONS of the 3rd OIE Global Conference on Aquatic Animal Health

CONSIDERING THAT:

1. Aquaculture is one of the world’s fastest-growing food-producing sectors and food derived from aquatic animals is an important source of high-quality nutrition; aquaculture representing close to 50% of aquatic animal global consumption;

2. Aquatic animal diseases continue to cause significant losses in aquaculture production throughout the world and are having a major detrimental impact on national economies in some countries and regions;

3. Approximately 500 different aquatic animal species are farmed globally, with several new species brought to aquaculture every year;

4. Aquaculture production is very diverse worldwide, ranging from family farms to intensive integrated production systems, and from locally consumed to internationally traded production;

5. Countries need effective aquatic animal health programmes to secure potential investment and to increase the production of aquatic animals in an environmentally sustainable way and to participate in international trade;

6. Veterinarians and other aquatic animal health professionals play a key role in the establishment and implementation of aquatic animal health programmes;

7. Aquatic Animal Health Services, whether part of the Veterinary Services or not, frequently lack human and financial resources and infrastructure, including legislation, to implement efficient aquatic animal health programmes;

8. One of the objectives of the OIE is to improve aquatic animal health worldwide and the welfare of farmed fish, and to facilitate safe international trade;

9. The need for all OIE Member Countries to meet their OIE membership obligations, and to implement the OIE standards for disease prevention and control, and trade in aquatic animals in line with the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (as appropriate);

10. The need to clarify and develop the concept and application of compartmentalisation in aquaculture;

11. Private–public partnerships are an essential component to ensuring the effective implementation of OIE standards;

12. OIE Reference Centres are of crucial importance to help the OIE to fulfil its mandate relevant to diagnostic capacities and the setting of science-based standards, guidelines and recommendations on aquatic animal health; and noting that there are only two OIE Collaborating Centres for aquatic animal topics;

continuing need to strengthen the capacity of all Member Countries in this respect. The OIE provides Member Countries with appropriate support, notably through its PVS Pathway for evaluating the performance of Veterinary Services and/or Aquatic Animal Health Services.

The conference discussions achieved a greater awareness of the need for good governance of Veterinary Services and Aquatic Animal Health Services, including their public- and private-sector components, and encouraged veterinarians, aquatic animal health professionals and other partners to play their part in ensuring effective animal and veterinary public health risk management throughout the aquaculture production chain. The importance of partnerships between the public sector and the various private sector stakeholders was also highlighted.

One of the key objectives of the conference was to set priorities for the future work of the Aquatic Animal Health Standards Commission. The priority issues raised regarding surveillance, zoning and compartmentalisation will be considered in the formulation of the new Commission’s work plan at its next meeting in September 2015.

Conference presentations and abstracts: www.oie.int/fr/A_AAHWF2015/presentations.htm
13. The ongoing work of the OIE in reinforcing the capacity of Veterinary Services and Aquatic Animal Health Services, using the OIE PVS Pathway and the OIE standards published in the *Aquatic Animal Health Code* and *Manual of Diagnostic Tests for Aquatic Animals*;

14. One hundred and sixty-eight (168) OIE Member Countries have already nominated a National Focal Point for Aquatic Animals, under the responsibility of the National OIE Delegate; the OIE is providing ongoing capacity-building regional seminars for National Focal Points for Aquatic Animals to assist them to meet their responsibilities;

15. The successful global initiative for twinning of OIE Reference Centres;

16. The OIE has developed recommendations on the Competencies of graduating veterinarians (‘Day 1 graduates’) to assure National Veterinary Services of quality in both aquatic and terrestrial animals;

17. A number of important and relevant topics and issues were identified at the Second OIE Global Conference on Aquatic Animal Health, held in Panama in 2011, including the need for Member Countries to develop national aquatic animal health strategies.

**OIE MEMBER COUNTRIES ARE REQUESTED TO:**

1. Consider requesting an aquatic animal OIE PVS evaluation of their Veterinary Service and/or Aquatic Animal Health Service, if not yet done, with the objective of improving competencies and general compliance with OIE standards for aquatic animals, where aquaculture is an important or potentially growing sector;

2. Take steps to improve compliance with OIE standards, notably surveillance and early detection, notification to the OIE of aquatic animal diseases; and the control of pathogenic agents in aquatic animals and preventing their spread via trade, while avoiding unjustified sanitary barriers to trade;

3. Support participation of nominated Focal Points in OIE regional capacity-building seminars and other relevant activities while those Member Countries who have not yet done so should nominate National Focal Points for Aquatic Animals under the responsibility of the OIE Delegate;

4. Promote the development of public–private partnerships to ensure the effective implementation of OIE standards;

5. Ensure that the OIE standards and guidelines including the responsible and prudent use of antimicrobials are respected in their country;

6. Encourage veterinary education establishments to address the competence of graduating veterinarians (‘Day 1 graduates’) in aquatic animal health, as appropriate to the importance of the aquaculture sector in their country, using the OIE ‘Guidelines for a Model Core Veterinary Curriculum’;

7. Ensure that veterinarians accredited by the Veterinary Services to perform regulatory functions in aquatic animal health programmes receive appropriate training;

8. Encourage potential centres of expertise to apply to become an OIE Collaborating Centre or Reference Laboratory for an aquatic topic in order to expand the network of Reference Centres for aquatic animals;

9. Consider participation, if appropriate, in OIE twinning programmes for Reference Centres; and

10. As appropriate, comply with their WTO SPS obligations with respect to aquatic animal health certification for international trade.

**THE OIE IS REQUESTED TO:**

1. Continue to revise and develop OIE standards for aquatic animal health, notably standards on surveillance, zoning and compartmentalisation, diagnostic tools and vaccines, and responsible and prudent use of antimicrobials, in accordance with priorities set by the World Assembly of Delegates;

2. Provide more guidance in the OIE standards on the concept of compartmentalisation and its application and review the critical competency for compartmentalisation in the PVS Tool: Aquatic;

3. Assist Member Countries in strengthening their Veterinary Services and other Competent Authorities to promote good governance practices, including national legislation and regulatory
frameworks for import, marketing authorisation, production, distribution and use of quality antimicrobial agents in aquatic animals worldwide using, if needed, the OIE PVS Pathway;

4. Encourage veterinary education establishments to address the competence of graduating veterinarians (‘Day 1 graduates’) in aquatic animal health, as appropriate to the importance of the aquaculture sector in the country or region, using the OIE ‘Guidelines for a Model Core Veterinary Curriculum’;

5. Cooperate with governments and with relevant international and regional organisations to increase awareness of the need for aquatic animal health programmes; improve disease reporting and foster cooperation between veterinary and other relevant authorities at the national, regional and international level;

6. Continue to strengthen collaboration with donors and with regional and international organisations, such as FAO, to advocate for the key role of veterinarians and aquatic animal health professionals in the prevention and control of aquatic animal disease and to encourage governments and donors to invest in Veterinary Services and/or Aquatic Animal Health Services as a global public good, as well as in aquaculture and health control programmes;

7. Continue to encourage governments, relevant regional and international organisations and donors to provide resources for applied research in vaccines and alternative therapeutics to reduce the use of antimicrobial agents in aquatic animals;

8. Work closely with donors and international and regional organisations, and continue to provide appropriate technical support to Member Countries, especially developing countries, to meet the OIE standards for quality Veterinary Services and/or Aquatic Animal Health Services through the OIE PVS Pathway;

9. Develop its capacity-building activities including through negotiation with donors, to assist Delegates, supported by nominated Focal Points, to comply with the obligations and responsibilities of OIE membership, including participation in the standard-setting process and capacity-building activities;

10. Promote the role and responsibility of the Veterinary Services and/or Aquatic Animal Health Services (including public- and private-sector veterinarians and experts) in aquatic animal health;

11. Promote the development of public–private partnerships to ensure the effective implementation of OIE standards;

12. Collaborate with donors and governments, and continue to promote the use of twinning programmes for OIE Reference Centres;

13. Ensure that OIE Reference Laboratories apply OIE standards and guidelines for the validation of diagnostic tests so as to ensure confidence in and the reliability of diagnostic tests in the improvement of disease control programmes; and to achieve or maintain accreditation to the ISO 17025 or equivalent quality management system in diagnostic laboratories;

14. Request the Aquatic Animal Health Standards Commission to consider the development of recommendations for the use of serosurveillance for fish and for the concept of disease freedom at the supranational level;

15. Work together with FAO and WHO using the tripartite ‘One Health’ approach to reduce the impacts of zoonotic diseases on aquatic animals.
The FAO/OIE International Conference for the Control and Eradication of Peste des Petits Ruminants (PPR), held in Abidjan from 31 March to 2 April 2015, was organised by the OIE, FAO and the government of Côte d’Ivoire. The overall objective was to present the Global Strategy for the Control and Eradication of PPR (hereinafter ‘the Global Strategy’), prepared by the FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) Working Group on PPR. Adoption of the Global Strategy by Conference participants was expected to lay the foundations for launching a global control and eradication programme for PPR.

Preparation of the Global Strategy and the organisation of the Conference were in line with the recommendation adopted by the GF-TADs Global Steering Committee in Paris in October 2012, the Resolution of the World Assembly of national Delegates of the OIE adopted in May 2014, and the recommendations of the 24th Session of the FAO Committee on Agriculture (COAG, October 2014), subsequently endorsed at the 150th Session of the FAO Council (December 2014).

The Global Strategy was prepared by OIE and FAO experts in collaboration with representatives of regional and international organisations, key countries and specialised research and development bodies, as well as other, private sector stakeholders.

The Conference in Abidjan was attended by over 400 participants, representing 76 countries, including most of the countries and regions or sub-regions infected with PPR virus in Africa, the Middle East, Central Asia/Western Eurasia, including Turkey, South Asia and the People's Republic of China.

Numerous personalities were present, including 11 Ministers and 10 senior officials representing their respective Ministers, the Directors General of the OIE and FAO, the Delegates to the OIE / Chief Veterinary Officers of 41 countries, representatives of regional and international bodies, national and international development agencies and donors, research bodies, the private sector and non-governmental organisations.

The Conference agenda included an opening session followed by five scientific and technical sessions, during which the following topics were presented in turn:
- global issues relating to small ruminant production
- the PPR situation worldwide
- tools already available for PPR control
- specific tools developed to support the implementation of the Global Strategy and research issues
- experiences and programmes underway in various affected or free regions (presentations made by the representatives of 11 regions or sub-regions)
- socio-economic aspects.

This scientific and technical part concluded with a presentation of the Global Strategy and an evaluation of its cost.

A panel discussion introduced and led by panellists from seven key countries (Burkina Faso, China, Côte d'Ivoire, Ethiopia, India, Morocco, and Tunisia) concluded the second day.

During the second part of the Conference, entitled ‘High-level meeting on commitment and support’, speeches by the Prime Minister of Côte d’Ivoire, the Directors General of the OIE and FAO, the Minister of Livestock and Fishery Resources of Côte d’Ivoire, the Mayor of the municipality of Cocody, and the Director of AU-IBAR representing the African Union were followed by statements by Ministers and High Authorities representing...
21 countries (Bangladesh, Cameroon, Chad, China, Comoros, Dem. Rep. of the Congo, Côte d’Ivoire, Equatorial Guinea, Guinea, Kenya, Mali, Mauritania, Nepal, Niger, Nigeria, Uganda, Rwanda, Senegal, Sierra Leone, Somalia and Sudan), and the representatives of three donors (European Union, World Bank, French Development Agency), who presented their views and expressed strong support for implementation of the Global Strategy for the Control and Eradication of PPR.

The Director General of the OIE and the Assistant Director General of the FAO for Africa gave a presentation on ‘Global control and eradication of PPR: Investing in veterinary systems, food security and poverty alleviation’.

The Conference concluded with a reading of the recommendations and a motion of thanks to the authorities of Côte d’Ivoire.

Throughout the presentations and the debates that followed, the devastating effects of PPR on the economy of affected countries, its impact on the incomes of livestock farmers and especially on the livelihoods of the poorest smallholders and on food security were acknowledged, as was the consequent need to control the disease. The objectives of global eradication, along the lines of that achieved for rinderpest in 2011, were approved and the many high-level representatives who spoke indicated their political and financial commitment to support this vision.

The principles and the various components and activities of this control strategy were presented and were approved, along with the accompanying tools specifically developed for this purpose.

Emphasis was placed on the importance of strengthening the effectiveness of the Veterinary Services with regard to their public- and private-sector components, and on compliance with OIE standards for the Veterinary Services and for the various technical aspects (vaccines, surveillance systems, laboratories, etc.) and the regulations and legislation in force in the countries involved.

The recommendations of the Conference can be found on pages 111–114 of this issue of the Bulletin. The main points on which they are based and that were discussed during the sessions are itemised in the first part of the introduction to the recommendations (entitled ‘Considering that’) and emphasise:

− The importance of livestock for nutrition and food security, income generation, agriculture production and soil fertilisation, and the livelihoods of pastoralists and smallholders, and for the alleviation of hunger and poverty;
− The impact of infectious diseases of small ruminants, and in particular PPR, given that they can severely affect and disrupt community livelihoods and regional and international trade in live animals and their products;
− The need, in view of the increasing movement of animals and animal products that increases the risk of major pathogens spreading from one country or region to another, to consider the control of these diseases as a Global Public Good;
− The crucial role of animal health systems, including effective Veterinary Services complying with OIE standards on quality and supported by the public/private partnerships needed to obtain the support of animal owners and private sector veterinarians for the implementation of control strategies;
− The importance of using the lessons learned from rinderpest eradication, as well as those from national and regional PPR control projects (such as those implemented by FAO in Somalia and other countries, and by the OIE notably in Burkina Faso and Ghana supported by the Bill & Melinda Gates Foundation), including regional (particularly in Africa under AU-IBAR leadership) and international cooperation and coordination, with the support of the OIE and FAO;
− The need for socio-economic studies to justify investing in the eradication of PPR and other high impact animal diseases;
− The quality of the presented Global Strategy and accompanying tools (specific PPR Monitoring and
Assessment Tool [PMAT], Post-Vaccination Evaluation tool [PVE], PPR Global Research and Expertise Network [PPR-GREN]), with its three integrated components (control and eradication of PPR; strengthening of Veterinary Services; simultaneous prevention and control of other priority diseases of small ruminants), the organisation and governance of Global Strategy implementation following FAO/OIE GF-TADs principles and practices;

− The requirement that the vaccines used comply with OIE standards and are certified by independent bodies, such as the African Union Pan African Veterinary Vaccine Centre (AU-PANVAC) in the case of Africa;
− The need to strengthen diagnostic laboratories and epidemiology teams, working together within regional networks, and animal health delivery systems;
− The possibility of using the articles of the Terrestrial Animal Health Code adopted in 2013 establishing official disease status recognition for PPR and providing for official endorsement of national control programmes, which are seen as strong incentives for the countries concerned to engage in PPR control and eradication programmes;
− The demand for national and regional vaccine banks capable of meeting the needs of vaccination and control programmes and responding to emergencies;
− The need to continue research in the fields of epidemiology and vaccines and in socio-economics.

The recommendations adopted by the participants are preceded by a Declaration supported by the Ministers, donors and the High-Level Authorities present in Abidjan. The Declaration states that the control and eradication of PPR worldwide is officially and solemnly launched, with the vision of a world free of PPR by 2030; the FAO/OIE Global Control and Eradication Strategy (GCES) is officially endorsed along with its aforementioned three components; the national competent authorities, the international community; the veterinary profession and all stakeholders are encouraged as a whole to commit to its implementation and thereby take the necessary political, technical and financial means to ensure its success.

The recommendations directed at countries relate to the following key points:
− PPR should be considered as a priority disease, and agricultural development programmes at both regional and national level should include a component on the control of this disease and of other important diseases of small ruminants;
− The national Veterinary Services should be concomitantly strengthened so that PPR-specific activities are successfully implemented;
− The key principles based on rinderpest eradication lessons and PPR country experiences should be used and adapted to local situations, in compliance with the rules governing regional and international cooperation, with the active participation of regional organisations, for instance AU-IBAR in Africa;
− Vaccines must be compliant with OIE international standards and be used as recommended in the Global Strategy, and combined vaccinations with other small ruminant diseases should be encouraged;
− Delivery systems for animal health activities, including vaccinations, should be adapted to local conditions and situations;
− Diagnostic laboratories, surveillance teams and surveillance plans must be strengthened and support given to the establishment or strengthening of regional epidemiology, laboratory and socio-economic networks;
− The development of public-private partnerships between official Veterinary Service must be promoted;
− Regional meetings on the PPR control programmes will be organised under the GF-TADs umbrella and countries will attend them regularly to ensure the continuous evaluation and monitoring of the PPR situation and of the implementation of the Global Strategy, notably through the use of the PMAT and PVE tools;
− Countries will be encouraged to carry out a census of their small ruminant populations.

With regard to the OIE and FAO and other international and regional organisations, the Conference recommended that:
− FAO and the OIE put in place GF-TADs governance for the implementation of the Global Strategy and the subsequent Global Control and Eradication Programme (GCEP). This will include a joint FAO/OIE Global
Secretariat, joint fund-raising agreements, as well as strong collaborations with regional and sub-regional organisations;

- The GCEP be aligned with the Global Strategy and integrate the lessons learned from rinderpest eradication programmes, including major participation of regional bodies, such as AU-IBAR in Africa, and that it use north-south and south-south cooperation and OIE and FAO multilateral trust funds;
- Regional vaccine quality certifying bodies should be supported, as for example AU-IBAR in Africa;
- Regional PPR vaccine banks should be established, drawing on successful OIE experiences in this field, and appropriate mechanisms should be established to reduce the unit cost of vaccines purchased by countries or livestock owners;
- FAO and the OIE call for an expert meeting to discuss the cost of the Global Strategy, including the cost-effectiveness of bringing the Veterinary Services into compliance with OIE standards on quality, and that the results from expert groups should be made available immediately;
- FAO and the OIE provide annual reports on the implementation of the Global Strategy and the GCEP and that a mid-term review be conducted after the first five years (2020);
- A second International Conference on PPR be organised after the first five years;
- The OIE and FAO assist their member countries in implementing the Global Strategy and in strengthening their Veterinary Services and that the OIE PVS Pathway be used, where appropriate and on a voluntary basis;
- Socio-economic surveys and cost-benefit analyses be conducted, for the purpose of additional advocacy, and that the impact of control measures on the environment and biodiversity be part of these cost-benefit analyses, which should also take into account the benefit of increasing the availability of small ruminant meat to allow substitution of ‘bush meat’;
- Stakeholders should support the PPR Global Research and Expertise Network (PPR-GREN) and that FAO the OIE, the International Atomic Energy Agency (IAEA) and centres of excellence in scientific research – such as the OIE and FAO reference laboratories and the centres of the Consultative Group for International Agricultural Research (CGIAR) – should contribute to and support research and technology transfer (e.g. on vaccines, diagnostic assays, epidemiology and socio-economics).

The Conference proceedings will be published in the near future but participants and other interested parties can already access various Conference documents via the internet.

The Organising Committee teams at the OIE and FAO and at the Ministry of Livestock and Fishery Resources of Côte d’Ivoire are to be thanked for their excellent work, as are the members of the FAO/OIE GF-TADs Working Group, which was designated as the Scientific Committee for the Conference.
CONSIDERING THAT

− Livestock are an important component in nutrition and food security, income generation, agriculture production and soil fertilisation, the livelihoods of pastoralists and smallholders and in the alleviation of hunger and poverty. In subsistence livestock production systems and their associated value chains, millions of people, especially women and their families, depend on small ruminants to generate nutrition for their families and revenue for their daily life;

− Infectious diseases of small ruminants can severely affect and disrupt community livelihoods and regional and international trade in live animals and their products, causing significant financial damage. In developing countries, these diseases undermine access to quality nutritional products, food security and economic development at the level of village smallholders and the entire production chain;

− Following its first identification in Côte d’Ivoire in 1942, peste des petits ruminants (PPR) has spread to around 70 countries today in Africa, the Near and Middle East and Asia that are home to over 80% of the world’s sheep and goats, and to more than 330 million of the world’s poorest people who depend on them for their livelihoods. The economic losses caused by PPR, and the ever-increasing threat of its spread to non-infected areas, further cripple already vulnerable livelihoods as well as national and regional livestock production opportunities;

− The globalisation of trade, with rapid and long-distance movements of animals and animal products, increases the risk of major pathogens spreading from one country or region to another;

− Controlling transboundary animal diseases (TADs), such as PPR, at their source is a shared interest between infected and uninfected countries and should be considered as a ‘global public good’;

− In response to a resolution passed by the World Assembly of Delegates of the OIE and recommendations of FAO’s Committee on Agriculture (COAG) and the Council of FAO, the GF-TADs Working Group on PPR has developed a PPR Global Control and Eradication Strategy (GCES), which was presented at the FAO and OIE International Conference for the Control and Eradication of PPR held in Abidjan, Côte d’Ivoire, from 31 March to 2 April 2015;

− The control of PPR and other TADs cannot be sustained if good governance of animal health systems, including effective Veterinary Services complying with OIE standards on quality and the required and updated appropriate legislation, is not in place in many countries and further supported by efficient public–private partnerships;

− The Global Strategy is not presented as a ‘stand-alone’ activity but rather as a combination of three interrelated components, namely the control and eradication of PPR, the strengthening of Veterinary Services and the parallel prevention and control of other major diseases of small ruminants. The overall aim of the PPR Global Strategy is to eradicate PPR and this should be used as an entry point to achieve sustainable progress in the performance of Veterinary Services which, in turn, will improve animal health status in regard to other small ruminant diseases. The organisation and governance required to implement the Global Strategy is through the PPR Global Control and Eradication Programme (GCEP), which will follow the FAO/OIE GF-TADs principles and practices;

− Many countries in Africa, the Near and Middle East and parts of Asia are committed to the prevention and control of PPR, but more support and investment are needed;

− FAO and OIE worked on new agreements for a joint fundraising mechanism to support the PPR Control and Eradication Programme in the improvement of small ruminant production, the health of these animals and the communities that rely on them;

− Additional socio-economic studies, including cost–benefit analyses, are needed to justify investment in the eradication of PPR and other high-impact animal diseases in national animal health systems, including Veterinary Services and those services provided by other
Competent Authorities, professional education, extension services, and access to animal health goods and services;

- The key principles of control strategies, and lessons learned from the rinderpest eradication campaign, such as international and regional cooperation and coordination (particularly in Africa under AU-IBAR leadership), will be adapted in the PPR Control and Eradication Programme; as demonstrated during the rinderpest eradication programme, in which regional and sub-regional organisations had a pivotal role, with technical support from the OIE and FAO;

- Note should be taken of the lessons learned from country projects, such as those implemented by FAO and OIE;

- PPR situations and socio-economic contexts can be different in each region and country and control and eradication programmes have to reflect these differences;

- The eradication of PPR is achievable since there are several favourable factors, such as the fact that the disease is caused by only one serotype, that there is neither a carrier state nor a sustainable reservoir outside domestic small ruminants, and that effective diagnostic tools and vaccines are available;

- Vaccines must be quality certified in compliance with OIE standards and independent regional certification bodies should be encouraged (such as the African Union–Pan African Veterinary Vaccine Centre, AU–PANVAC, for Africa);

- Diagnostic laboratories and epidemiology teams are major tools for the prevention, detection, control and eradication of PPR and national/regional collaboration between them is crucial. However, several gaps and challenges have been highlighted with regard to quality assurance in diagnostic laboratories and their proficiencies, or epidemiological understanding of seasonal movement patterns or climatic influences for potential disease spread, which have to be addressed;

- There is a need to develop animal health delivery systems, particularly for the delivery of quality-assured, safe vaccines that can, in amplitude and frequency, reach all production systems, including those in remote and insecure areas, to create effective flock immunity;

- A specific PPR Monitoring and Assessment Tool (PMAT) and a Post-Vaccination Evaluation (PVE) tool have been developed for this Global Strategy and a PPR Global Research and Expertise Network (PPR-GREN) is being established;

- The OIE Terrestrial Animal Health Code articles adopted in 2013 establish PPR as a disease with official status recognition and the possibility of official national control programmes being endorsed by the OIE World Assembly as important steps and incentives that encourage countries to engage in PPR control and eradication programmes;

- Despite country specificities with regard to PPR and other small ruminant diseases, regional approaches are needed in order to harmonise and coordinate national programmes and to share experience and information on the PPR situation and the implementation of prevention and control programmes; these approaches must be aligned with the Global Strategy;

- There is value in having national and regional vaccine banks to respond to vaccination and control programmes as well as to emergencies, to ensure the availability of quality-assured vaccines that comply with OIE standards and have been selected by a panel including independent experts from OIE and FAO Reference Laboratories/Centres. Their demographic and strategic positioning should be a regional or global decision;

- Regional epidemiology and diagnostic laboratory networks are needed to harmonise surveillance and diagnostic methods, to undertake quality assurance, to support regional/national laboratory proficiency and training programmes, and to share and transfer technologies and expertise;

- Capacity-building at the technical (both at the laboratory and field levels) and managerial levels as well as regular and effective communication to build public–private partnerships and to gain the support of animal owners and private-sector veterinarians are crucial for any control strategy;

- Additional research is important to understand the possible role
of wildlife in PPR dynamics, to
develop new vaccines that allow us
to differentiate infected animals
from vaccinated animals (DIVA: dif-
teriation between infected
and vaccinated animals) when
used with a companion test, to
find such companion diagnostic
assays that can differentiate
serologically infected animals
from vaccinated animals, and to
investigate the possible use of
multivalent vaccines, value chains
in connection with socio-economic
analyses.

AND RECOMMEND:
A. To the countries, that:
1. PPR be considered as a top-
priority disease in the next two
decades in the global context
of improving nutrition and food
security, income generation and
smallholders’ livelihoods, and in the
alleviation of poverty and hunger;
and that agricultural development
programmes, both at the regional
and national level, systematically
include a component on PPR (and
other small ruminant diseases,
whenever feasible) prevention,
diagnosis, control and eradication
in line with the GCES and tailored
to the local context and needs;
2. National Veterinary Services –
including their public and private
components and by extension
the Veterinary Statutory Bodies
– and their good governance be
concomitantly strengthened so that
PPR-specific activities are properly
and sustainably implemented;
in doing so, that the countries
take steps to improve compliance
with OIE standards, notably
those related to surveillance,
eyearly detection, animal disease
notification to the OIE, and the
quality of their Veterinary Services,
including updated veterinary
legislation;
3. Key principles, based on rinderpest
eradication lessons and PPR
country experiences, such as
national control programmes
adapted to local situations
and regional and international
cooperation and coordination of
control methods and protocols, be
respected;
4. The countries use vaccines
compliant with OIE international
standards and comply with the
guidance provided in the GCES,
including in terms of PVE; and
that combined vaccinations with
other small ruminant diseases
be encouraged, provided the
vaccination protocols are
compatible;
5. Delivery systems be adapted to
local conditions and situations to
be able to reach all susceptible
animals in national herds. These
systems should aim at delivering
a safe vaccine to create effective
flock immunity, particularly in
regard to the cold chain;
6. Countries strengthen their national
diagnostic laboratory systems,
quality assurance (ring trials/
proficiency testing), transfer of
technologies, capacity-building
and staff training, and address
any gaps that may have been
identified in their capacity to
support the implementation of the
GCES;
7. Countries design and implement
robust surveillance plans to
ensure that the global surveillance
system for PPR in all susceptible
species, and for other small
ruminant diseases, obtains a good
understanding of PPR variants
circulating (or the lack thereof)
and their worldwide distribution;
8. Countries promote the
development of public–private
partnerships between official
Veterinary Services, livestock
owners, private veterinarians
and other partners to ensure
the acceptance and effective
implementation of the GCES, particularly for the delivery of vaccination campaigns and other animal health goods and services; and that special attention be paid to women whose role in small ruminant husbandry is crucial; 9. Countries regularly attend the regional PPR road map meetings under the GF-TADs umbrella, to ensure continuous evaluation and monitoring of the PPR situation and the implementation of the GCES worldwide; that countries use the PMAT and PVE specifically developed for this purpose; 10. The establishment or strengthening of regional epidemiology, laboratory and socio-economic networks is supported to provide relevant technical assistance to countries in the region; 11. Communication strategies are developed at both the national and regional level; 12. Countries put in place robust data management systems to collect PPR data with a view to conducting cost–benefit analyses. Countries are also encouraged to carry out a small ruminant population census; 13. The FAO and OIE put in place the proper GF-TADs governance for the implementation of the GCES and the subsequent GCEP, including a joint FAO–OIE PPR Global Secretariat and joint fundraising agreements, as well as strong collaborations with regional and sub-regional organisations; 14. The OIE and FAO develop a fully fledged GCEP aligned with the GCES, to learn from the experiences of the Global Rinderpest Eradication Programme (GREP), the Pan African Rinderpest Campaign (PARC) and the Pan African Control of Epizootics (PACE) programme, these last under AU-IBAR leadership, using North-South and South-South cooperation and OIE and FAO multilateral trust funds to implement the Global Strategy; 15. The establishment of regional vaccine quality-certifying bodies should be encouraged where possible or advisable, and that AU-PANVAC be supported in Africa; 16. Appropriate mechanisms be established to reduce the unit cost of produced vaccines, or a mechanism implemented by which livestock owners’ costs could be subsidised. In order to respond to emergencies, regional vaccine bank(s) could be established or strengthened. Regional PPR vaccine banks should be established, using the experience of the OIE to respond to emergencies and improve quality-controlled vaccine delivery in countries and employing a competitive basis in regard to quality and prices; 17. The FAO and OIE call for an expert meeting to discuss the cost of the Global Strategy, including the cost-effectiveness of Veterinary Services’ compliance with OIE standards on quality and the prevention and control of other small ruminant diseases; that results from expert groups be made available urgently; 18. The FAO and OIE provide annual reports on the implementation of the GCES and GCEP to their Member Countries. A mid-term review should be conducted after the first five years of implementation of the GCES (2020), as well as examining whether the vision can be achieved by the proposed timelines, with ‘corrective action’, if needed. A second International PPR Conference should be organised after five years to maintain the mobilisation of Member Countries towards the eradication vision; 19. The FAO and OIE assist Member Countries in implementing the GCES and in strengthening their Veterinary Services and other Competent Authorities to promote good governance practices, including appropriate national legislation complying with intergovernmental standards and regulatory frameworks for PPR control and eradication, using, when pertinent and on a voluntary basis, the OIE PVS Pathway; 20. The FAO and OIE conduct additional socio-economic surveys and cost–benefit analyses on PPR (and other small ruminant diseases) for the purpose of additional advocacy and the preparation of national control and
eradication strategies; that the impact of control measures on the environment and biodiversity be part of those cost–benefit analyses, as well as the benefits of increasing small ruminant meat availability to substitute for bushmeat;

21. All stakeholders are requested to support the PPR-GREN and that the FAO and OIE establish the PPR-GREN with a strong research component/expert group;

22. The OIE, FAO, International Atomic Energy Agency (IAEA) and centres of excellence in scientific research, including those of the Consultative Group for International Agricultural Research (CGIAR) (International Livestock Institute ILRI, International Centre for Agricultural Research in the Dry Areas ICARDA, International Food Policy Research Institute IFPRI), contribute to and support PPR research and technology-transfer through the PPR-GREN, with regard to, e.g. vaccines (DIVA vaccines and companion diagnostic tools, thermotolerant vaccines, combined vaccines against several diseases...), diagnostic assays, epidemiology (the role of other domestic animals and wild animals), value chains, socio-economics and other aspects that may contribute to the effective control and eradication of the disease by 2030.
Manual of poultry diseases

J. Brugère-Picoux, J.-P. Vaillancourt, H.L. Shivaprasad, D. Venne & M. Bouzouaia

A completely revised and augmented edition of an avian pathology textbook originally published in 1992 by ‘Chaire de pathologie médicale du bétail et des animaux de basse-cour’, Maisons-Alfort, France, is now available. The main objective of this new edition is to provide a comprehensive update on practical information related to avian diseases to assist in the diagnosis of diseases affecting all species of domestic poultry (chickens, turkeys, ducks, guinea fowl, quail, pheasants, partridges, pigeons, ratites). This new edition also focuses on the control of these diseases. Indeed, several chapters have been added on biosecurity, water sanitation, antibiotherapy, epidemiology, etc. Since disease diagnosis is largely based on post-mortem and histological examinations, special attention has been given to including high-quality photographic images, as well as illustrations, for a total of 2,700 figures.

This manual is the culmination of a long and fruitful collaboration with authors from around the world, whose diverse areas of expertise have contributed to the uniqueness of this publication. It has been simultaneously published in four different language editions (English, Spanish, French and Chinese).

Given that the main goal was to disseminate this manual at the lowest cost, the project was carried out without the help of a professional publisher. The French Association for the Advancement of Science (AFAS), a non-profit organisation, has taken up the role of publisher.

The manual can be ordered through AFAS (afas@orange.fr) or www.vetbooks.fr

Peste des petits ruminants disease in Turkana, Kenya
Risk factors, socio-economic impacts and disease control

Simon Kihu, George Chege Gitao & Lily Caroline Bebora

Clinical cases of peste des petits ruminants (PPR) have been reported in arid and semi-arid pastoral areas of northern Kenya since 2006. The Turkana community’s knowledge of PPR is analysed and validated with laboratory tests that provide information on the pathology, molecular epidemiology and seroepidemiology of PPR viral infection.

Using participatory epidemiology methods, the book analyses the PPR disease risk factors and the social and economic impact of the disease on the pastoral economy. This analysis is aimed at providing an impetus to develop an effective surveillance and control strategy for PPR in Kenya and the region.

Information: www.lap-publishing.com
2015

August

Training course on Viral Bioinformatics and Genomics
10–14 August
Glasgow, United Kingdom
www.bioinformatics.cvr.ac.uk

Annual meeting of OIE Regional and Sub-Regional Representatives
20–23 October
OIE Headquarters, Paris, France

Workshop on rabies surveillance and control
27 October – 7 November
Pasteur Institute, Phnom Penh, Cambodia
http://predemics.biomedtrain.eu

September

Regional Seminar for OIE National Focal Points for Animal Production Food Safety
8–10 September
Aguascalientes, Mexico

32nd World Veterinary Congress
13–17 September
Istanbul, Turkey
www.wvcistanbul2015.com

29th Conference of the OIE Regional Commission for Asia, the Far East and Oceania
14–18 September
Ulaanbaatar, Mongolia

October

3rd GRF One Health Summit 2015
4–7 October
Davos, Switzerland
http://onehealth.grforum.org/

Global Training Seminar on the OIE World Animal Health Information System (WAHIS)
6–8 October
OIE Headquarters, Paris, France

2016

May

84th General Session of the OIE World Assembly of Delegates
22–27 May
Paris, France

June

Conference on veterinary education
22–24 June
Thailand

September

27th Conference of the OIE Regional Commission for Europe
(dates to be confirmed)
Porto, Portugal

November

23rd Conference of the OIE Regional Commission for the Americas
14–18 November
Bolivia

Conference on animal welfare
30 November – 2 December
Mexico

2017

February

22nd Conference of the OIE Regional Commission for Africa
(dates to be confirmed)
Swakopmund, Namibia
It is with great sadness that the OIE learned that David Bayvel has passed away at the age of 70.

David was a recognised authority on animal welfare. He believed that the veterinary profession should take the leadership role as advocates for animals in society.

David had a long and distinguished veterinary career, from traditional practice to working for the New Zealand Government. After his retirement from the New Zealand Ministry for Primary Industries in 2012, David continued his contribution to animal welfare through his appointment as Chief Veterinary Adviser for World Animal Protection.

David was actively involved in the OIE's Animal Welfare Global Conferences in 2004, 2008 and 2012 and he was still involved in the development of OIE standards through the Ad hoc Group on Animal Welfare of Working Equids, which he chaired.


David’s enormous contribution to the OIE and animal welfare was recognised when he received the OIE Meritorious Service Award on 28 May 2010 during the 78th General Session (see photo).

David will be truly missed by his many colleagues and friends around the world.
It was with great sadness that we learned of the death, at age 68, of our colleague, Paul-Pierre Pastoret.

Emeritus Professor of the University of Liege (Belgium), Paul-Pierre Pastoret was passionate about his chosen fields of virology, immunology, vaccinology, epidemiology and biotechnology, as witnessed by his many publications and numerous distinctions.

In particular, Paul-Pierre Pastoret was involved, towards the end of the 1970s, in the development of the rabies vaccine, a recombinant vaccine made up of the rabies and vaccinia viruses, administered orally to wildlife, and so he became a major participant in the elimination of sylvatic rabies from several countries in Western Europe. From 1993 to 2002, he chaired the Immunological Working Group within the Committee for Veterinary Medicines at the European Agency for the Evaluation of Medicinal Products (EMEA). He also managed the Belgian Veterinary Medicines Agency. From 2002 to 2005 he directed the Institute for Animal Health (IAH), based in Compton, Pirbright and Edinburgh (United Kingdom).

In recognition of his dedicated service to animal health, the OIE awarded him its Meritorious Service Award in 2005. Paul-Pierre had been active in the OIE from 1997, as a member of the Editorial Committee of the Scientific and Technical Review. He led the OIE Publications Department from 2006 to 2009, then continued to work as its scientific adviser. As a result of his expertise, he made a significant contribution to the high scientific quality of OIE publications, he was the coordinating editor of several, and he also took part in scientific meetings and missions in various countries.

On 19 April 2015, the OIE lost an incomparable personality, an extraordinary colleague, cheerful and full of humour, and a passionate supporter of the veterinary community, who was well known all over the world.
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New developments in major vector-borne diseases

Part One: An overview

*Scientific and Technical Review*, Vol. 34 (1)

The first part of volume 34 of the *Scientific and Technical Review* focuses on the most important arthropod vectors (insects and ticks) and describes their taxonomy, biology, competence and development. It begins by defining ‘vector’, ‘vector-borne disease’ and ‘emerging disease’ and provides explanations that are in line with OIE standards. The zoonotic risks of infections transmitted by arthropod vectors are also discussed, as is the genetic resistance of certain vertebrate hosts to infection. In addition, this issue considers the influence of climatic and anthropogenic changes on the distribution of vectors and the infections they transmit. The last part of this issue focuses on surveillance and control methods for these infections.

Part Two: Important diseases for veterinarians

*Scientific and Technical Review*, Vol. 34 (2)

The second part of Volume 34 of the *Scientific and Technical Review* principally looks at viral diseases, but also considers bacterial diseases and, finally, parasitic diseases. The description of each disease has been updated in accordance with the most recent scientific research, focusing on epidemiology and control. Particular emphasis is placed on emerging diseases (such as infection with the Schmallenberg virus) and diseases that have a zoonotic component (such as West Nile fever). Diseases that have experienced a recent geographic expansion (bluetongue, fever due to the Chikungunya virus) are also discussed. In total, twenty-nine diseases are covered.

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