



**WORLD ORGANISATION FOR ANIMAL HEALTH**  
*Protecting animals, preserving our future*

14th Conference of the  
OIE Regional Commission for the Middle East  
Istanbul, Turkey, 2 to 6 October 2017

**FINAL REPORT**



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## LIST OF ABBREVIATIONS

AHS:	African horse sickness
AIC:	Akaike information criterion
AMR:	Antimicrobial resistance
AOAD:	Arab Organization for Agricultural Development
CAMENET:	Camel Middle East Network
CFT:	Complement Fixation Test
EC:	European Commission
EDFZ:	Equine disease-free zone
EHV:	Equid herpesvirus
FAO:	Food and Agriculture Organization of the United Nations
FEI:	International Federation for Equestrian Sports
FMD:	Foot and mouth disease
GEMP:	Good Emergency Management Practice
GF-TADs:	Global Framework for the Progressive Control of Transboundary Animal Diseases
GLM:	Generalised linear model
HHP:	High health, high performance
HPAI:	High pathogenicity avian influenza
IFHA:	International Federation of Horseracing Authorities
IHR:	International Health Regulations
IHSC:	International Horse Sports Confederation
IZS:	Istituto Zooprofilattico Sperimentale
JEE:	Joint External Evaluation
JUST:	Jordan University of Science and Technology
MEF:	Monitoring and Evaluation Framework
MERS:	Middle East respiratory syndrome
CoV:	Coronavirus
NGO:	Non-governmental Organisation
OIE:	World Organisation for Animal Health
PCP:	Progressive Control Pathway
PPE:	Personal protective equipment
PPR:	Peste des petits ruminants
PVS:	Performance of Veterinary Services
RAWS:	Regional Animal Welfare Strategy

REMESA:	Mediterranean Animal Health Network
RT-PCR:	Real-time reverse transcription polymerase chain reaction
SPS:	Sanitary and Phytosanitary
TBDs:	Tick-borne diseases
UAE:	United Arab Emirates
USDA-APHIS:	United States Department of Agriculture - Animal and Plant Health Inspection Service
WAHIS:	World Animal Health Information System
WHO:	World Health Organization
WTO:	World Trade Organisation

## Introduction

1. Following the kind invitation of the Government of Turkey, the 14th Conference of the OIE Regional Commission for the Middle East was held in Istanbul from 2 to 6 October 2017.
2. A total of 67 participants, comprising OIE Delegates and/or representatives of 11 Member Countries and senior officers from 5 regional and international organisations, attended the Conference. In addition, representatives of the private sector as well as private veterinary organisations from the region and from the host country were present (see list of participants in Annex 1).

Members of the Commission: Bahrain, Cyprus, Iraq, Jordan, Kuwait, Lebanon, Libya, Qatar, Saudi Arabia, Turkey and United Arab Emirates.

International/regional organisations: AOAD<sup>1</sup>, EC<sup>2</sup>, FAO<sup>3</sup>, IHSC<sup>4</sup> and WHO<sup>5</sup>

3. Dr Nihat Pakdil, OIE Delegate of Turkey, Dr Botlhe Michael Modisane, President of the OIE World Assembly of Delegates and Delegate of South Africa, Dr Monique Eloit, OIE Director General, Dr Jean-Philippe Dop, Deputy Director General "Institutional Affairs and Regional Activities", Dr Majid Al-Qassimi, President of the OIE Regional Commission for the Middle East and Delegate of United Arab Emirates, Dr Etienne Bonbon, President of the OIE Terrestrial Animal Health Standards Commission, Dr Ghazi Yehia, OIE Regional Representative for the Middle East, Dr John Stratton, Deputy Head of the OIE Regional Activities Department, and Dr Paula Cáceres, Head of the OIE World Animal Health Information and Analysis Department, also participated in the Conference. The speakers presenting Technical Items, namely Prof. Ahmad M. Al-Majali from the Jordan University of Science and Technology (JUST), for Technical Item I, and Dr Idris Al Abaidani, Director of the Communicable Disease Surveillance Department at the Ministry of Health of Oman, and Dr Salim A. Salim Mohamednour, WHO Consultant, for Technical Item II, honoured the Conference with their presence.
4. The Conference was also honoured by the presence of His Excellency, the Minister of Agriculture of Jordan.

## MONDAY 2 OCTOBER 2017

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### Opening Ceremony

5. The opening ceremony was moderated by Dr Ghazi Yehia, OIE Regional Representative for the Middle East. The following authorities addressed welcome messages to the participants:
  - Dr Pakdil Nihat, Deputy Undersecretary and OIE Delegate;
  - Dr Botlhe Michael Modisane, President of the OIE World Assembly of Delegates and Delegate of South Africa;
  - Dr Majid Al-Qassimi, President of the OIE Regional Commission for the Middle East and Delegate of United Arab Emirates;
  - Dr Monique Eloit, OIE Director General.

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<sup>1</sup> AOAD: Arab Organization for Agricultural Development

<sup>2</sup> EC: European Commission

<sup>3</sup> FAO: Food and Agriculture Organization of the United Nations

<sup>4</sup> IHSC: International Horse Sports Confederation

<sup>5</sup> WHO: World Health Organization

## **Approval of the Agenda and Programme**

6. The Provisional Agenda and Programme were adopted with a small amendment. (Programme available in Annex 2).

### **The OIE Sixth Strategic Plan and its implementation in the Middle East region**

7. Dr Monique Eloit, OIE Director General, delivered a presentation on the OIE Sixth Strategic Plan and its implementation in the Middle East region. She briefly reminded the Delegates of the Strategic Plan, its objectives and cross-cutting areas. Dr Eloit then indicated key issues relevant to the region for each strategic objective, underlining the positive aspects and commenting on issues that could be better addressed by the Members of the region. She also gave details of how the OIE can help its Members resolve these issues so to achieve a better implementation of the OIE Strategic Plan at regional and global levels. Dr Eloit also reminded Members of the region of what is expected of them in terms of implementing OIE activities in the region so as to ensure compliance with the OIE's objectives. She finally emphasised the importance of strong and active leadership and coordination from the members of the Bureau of the Regional Commission and the Council as crucial OIE institutional bodies responsible to liaise with the other Members of the Region. Dr Eloit concluded by confirming the commitment of the Regional Representation and Headquarters in supporting the Region. She emphasised that the OIE aimed to be a truly global organisation, fairly representing the interests of all its regions and Member Countries. However, for this to be a reality all regions of the world needed to be actively involved in developing and implementing its standards, guidelines, policies and processes.
8. The Director General's presentation and a panel discussion involving the Members of the Bureau of the Regional Commission and to which all participants were invited to participate, led to the following conclusions:

*a) Strategic Objective 1: Securing animal health and welfare by appropriate risk management*

- The region should actively participate in the standard-setting process by providing written comments on Specialist Commission reports in a timely manner and identifying new regional issues relevant to standard setting. The private sector and other stakeholders such as in other Ministries and academia should also be provided with the opportunity to contribute comments as relevant via their Delegates. A new project by the OIE on Public-Private Partnerships aimed to better inform how the OIE could better support their Members in engaging with their private sector stakeholders. Given its strong response to the recent call for OIE Specialist Commission and ad hoc group expert nominations, the region should maintain a strong involvement in the scientific work of the OIE by continuing to provide the OIE with suggestions for experts for such groups, as further opportunities arose;
- The OIE Regional Commission for the Middle East should analyse the feasibility and relevance for the Middle East of the new approach established in some regions to develop common positions thereby enabling harmonised comments to be presented during the General Session of the World Assembly of OIE's Delegates;
- The OIE was initiating a new Standards Observatory project to investigate closely which OIE standards were not being implemented well (by public or private sectors) and the reasons, to either improve the standards or provide greater written guidance or training on their implementation to its Members. It was noted that the Veterinary Services needed to work with Food Safety Authorities in the region, who often had greater influence and higher budgets, to ensure that relevant OIE standards were implemented;



- Regarding equine disease status, the OIE Director General reported on some difficulties with applications for African horse sickness (AHS) freedom status in the region. Thus, in order to better support its Members, the OIE is working to strengthen the procedure for recognition and maintenance of status, including evidence-based assessment and dedicated workshops. Members should apply for official AHS free status and submit for publication self-declarations of freedom for equine or other animal diseases. There is also strong interest in the region for the concepts HHP<sup>6</sup> and EDFZ<sup>7</sup>, however, some gaps in the understanding of these concepts have to be addressed;
- Regarding AMR and the antimicrobial use database, the region needs to more actively participate in data submission. The Members discussed difficulties in terms of needing to improve coordination with public health authorities who generally had the lead on AMR and other One Health issues. Given global and regional One Health coordination was strong and established, such as through the recent FAO-OIE-WHO Tripartite Commitment and growing links between the OIE PVS Pathway and the WHO International Health Regulations Monitoring and Evaluation Framework (IHR MEF), such global models could be leveraged to also strengthen national One Health collaboration between Ministries. Good examples of One Health committees and joint AMR national action planning in some countries were reported. The need to address health security risks at the animal source was identified as a key argument for stronger intersectoral cooperation;
- Regarding animal welfare, Members of the region should commit to the update and implementation of a Middle East Regional Animal Welfare Strategy (RAWS). They could identify animal welfare priorities that align with other domestic priorities as a good starting point for focused effort, such as responsible dog ownership (alignment with rabies control) and animal welfare during transport and slaughter (alignment with livestock trade). The region needed to evolve beyond the limited concept of animal welfare as predominately a focus for pet animals, and the OIE standards were a key mechanism to achieve this, particularly relating to land and sea transport of live animals, including for sport animals and during religious pilgrimages. This required consultation with all stakeholders and NGOs and, the development of relevant legislation and its implementation, including through training.
- Regarding livestock disease control, all Members should utilise the tools provided by the FAO and OIE including the FMD Progressive Control Programme and the PPR Monitoring and Evaluation Tool to ensure they contribute to regional and global disease control and eradication efforts.

*b) Strategic Objective 2: Establishing trust through transparency and communication*

- Regarding disease transparency and reporting, the region should follow through on the efforts already undertaken by the OIE to support their timely and quality disease reporting. Concerns were expressed with immediate import bans being applied in response to reporting, which seemed to punish transparency, such as with Glanders in horses. These issues could be overcome with the correct application of the relevant OIE standards, such as zoning and compartmentalisation, and through fostering greater trust by working bilaterally and multilaterally together and by being consistent whether an importer or exporter.
- Regarding disease transparency and the need to work together as a region, the Middle East region faced specific issues that made this even more important such as risks from the massive migration of people, animals and animal products during festivals, and geo-political instability resulting in difficulties managing border risks;

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<sup>6</sup> HHP: high-health, high-performance horse

<sup>7</sup> EDFZ: equine disease-free zone

c) *Strategic Objective 3: Ensuring the capacity and sustainability of Veterinary Services*

- With regard to commitment to the PVS Pathway, Members of the region should provide the OIE with PVS Pathway success stories, engage in the evolution of the PVS Pathway and explore the possibility of contributing to the World Animal Health and Welfare Fund;
- With regard to the establishment of OIE Twinning projects, Members of the region should take advantage of the OIE Twinning programme, support the candidate laboratories in the post-Twinning phase and improve scientific and technological capacities through the Camel Middle East Network (CAMENET), among others. The WHO reported admiration of the success of laboratory twinning projects and expressed an interest in further exploring intersectoral twinning such as between human and animal health laboratories;
- It was noted that given almost all Members have coastal areas, with growing aquatic animal industries, there should be a corresponding increased focus on aquatic animal health as part of the regional Veterinary Services' mandate and capacity.

d) *Cross-cutting Area C: Governance*

- Members of the Bureau of the Regional Commissions and Council get a greater support from their Ministerial Authorities to better exercise their role and prerogatives as laid down in the OIE Basic Texts;
- The OIE should consider providing training for newly elected members of the Bureau and the Council in order to provide them with a full understanding of the responsibilities related to such positions;
- The members of the Bureau of the Regional Commissions are key actors in the work of the OIE; thus, they should act as a bridge between the OIE and Member Countries of the region in order to support the implementation of OIE activities at national level and to collaborate on improving the technical and/or financial contribution of Member Countries to OIE activities.
- The relationship between the Council, the Bureau of the Regional Commission, the OIE Headquarters and the OIE Regional and Sub-Regional Representations is of paramount importance for the success of OIE activities and it should be reinforced through better communication using available modern technology;
- Member Countries of the region should more explicitly communicate their concerns to the members of the Bureau and the Council, who will then be in a better position to advise the OIE;
- The member of the Council and the members of the Bureau of the Regional Commission should strengthen contacts with OIE through participation in the preparatory activities for Regional Conferences (selection of Technical Items and speakers and development of the agenda), during the Conference itself (propositions for the recommendations, participation in working groups and discussions), as well as after the Conference (follow up of recommendations);
- The active and useful discussions on regional technical issues during the OIE Bureau panel discussion proved that improved regional coordination and collaboration around OIE issues, such as through a Regional "Core Group" or similar mechanism should urgently be developed. The OIE is preparing some guidelines on this "Core Group" approach that could orientate the region;
- The regional member of the Council and the Bureau of the Regional Commission should actively contribute to the preparation of the OIE General Session within the region: strategic discussions regarding the OIE *Codes* (e.g. revision of a chapter); determining common positions within the region; discussing how to improve scientific support to the OIE; proposing quality candidates for institutional elections; involvement in the development of the agenda for the meeting of the Regional Commission during the General Session;

- The Regional Commission and the regional member of the Council should take advantage of the meetings already scheduled (Regional Conferences, and the meetings of the Regional Commission during the General Session) to discuss topics of mutual interest. When needed, videoconferencing or conference calls should be considered as options to facilitate communication.

**Ministry of Food, Agriculture and Livestock,  
and general animal health situation in Turkey**

9. Dr Veli Gulyaz, Deputy Director General of the Turkish General Directorate of Food and Control, reported on the Turkish Veterinary Services' structure, functions, challenges, policies and activities.
10. Following Dr Gulyaz's presentation, it was noted that Turkey had very good experience with developing and implementing vaccination, particularly for FMD. There could be many valuable lessons learnt for the region in learning from their experience. The OIE should also realise how much capacity existed within the region and use it to support others in the region. Turkey related its experiences with FMD vaccine matching over recent years and offered to actively assist other countries in their vaccination and control programmes. Turkey emphasised the importance of collaboration as diseases such as FMD could only be controlled through a regional approach given difficulties with border control due to geo-political instability in some parts of the region.

**TUESDAY 3 OCTOBER 2017**

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**Appointment of the  
Conference Committee**

11. The Conference Committee was elected by participants as follows:

Chairperson:	Dr Pakdil Nihat (Turkey)
Vice-Chairperson:	Dr Al Qassimi Majid (United Arab Emirates)
Rapporteur General:	Dr Aladwan Sami (Jordan)

**Appointment of session chairpersons  
and rapporteurs**

12. Chairpersons and Rapporteurs were designated for the Technical Items and the Analysis of the Animal Health situation as follows:

Technical Item I:	Dr AlSalloom Fajer (Bahrain), (Chairperson) Dr Abbas Salahv (Iraq), (Rapporteur)
Technical Item II:	Dr Ibrahim Elias (Lebanon), (Chairperson) Dr Aldoweriej Ali (Saudi Arabia), (Rapporteur)
Analysis of the Animal Health situation:	Dr Alkandari Abdulrahman (Kuwait), (Chairperson) Dr Pakdil Nihat (Turkey), (Rapporteur)

**Analysis of the animal health situation in  
Member Countries in the region  
during 2016 and 2017**

13. Following the presentation of the analysis of the animal health situation in the region by Dr Paula Caceres, Head of the OIE World Animal Health Information and Analysis Department (see report in Annex 3), the OIE Regional Commission for the Middle East noted and concluded that:
- Members should, in accordance with OIE standards, continue the timely reporting of outbreaks of infection with avian influenza viruses, including outbreaks in wildlife, to ensure a clear epidemiological understanding of the disease situation and to avoid any unjustified impact on trade, especially in poultry and poultry products;
  - Members are encouraged to pursue their efforts to implement the Global Strategy for the eradication of infection with peste des petits ruminants (PPR) virus by 2030, including improving communication between Members through timely notifications and ensuring the application of the recommended preventive and control measures, especially during at-risk periods. The OIE should continue to provide feedback to Members and gauge progress towards disease control and eradication at regional and global level based on analyses of WAHIS<sup>8</sup> data;
  - With regard to infection with foot and mouth disease (FMD) virus, Members should strengthen their efforts towards characterisation of circulating strains, as this is crucially important for outbreak investigations, vaccine selection and disease containment. The OIE should improve WAHIS to enable reporting and dissemination of detailed data on pathogenic agents to support Members' disease prevention and control activities;
  - Given the importance of infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis*, from both a public health and an animal production perspective, Members are encouraged to collect and report surveillance data in all susceptible species, including camelids, to improve the epidemiological knowledge of the disease in these species. Considering the current lack of a validated diagnostic test to detect brucellosis in camelids, the OIE, in collaboration with the Reference Centres, should continue to support the development, standardisation and accreditation of the diagnostic methods for major camel diseases;
  - Considering the importance of high value horses in the Region, Members should strengthen their surveillance and control measures for OIE-listed equine diseases and infections and extend these measures to other equine populations. Implementation of surveillance and control programmes in susceptible populations is of major importance for effective disease control and eradication, to substantiate and maintain freedom, as well as for Members intending to apply for an official disease status.
  - Some Members' comments that OIE's regional epidemiological analysis as presented was based only on reported results, and may not reflect the reality on the ground. As an example, there were only four OIE listed equine diseases reported in the region. Without a real commitment to timely reporting, underreporting may impact the results, including the analysis on regional disease associations with seasonality or religious festivities.
  - All Members were encouraged to follow the lead of others in the region with an excellent track record of timely and detailed disease information reporting to WAHIS, as this was a key part of a regional approach to transboundary diseases. Members should make full use of OIE support in areas such as WAHIS training, the OIE reference laboratory network, laboratory Twinings and the PVS Pathway to improve their capacity for accurate and timely reporting.

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<sup>8</sup> WAHIS: World Animal Health Information System

- The guidance, as per the OIE standards, for immediate reporting vs six monthly reporting. Only six-monthly reporting was required for stable endemic situations. Immediate reporting was required when there was an exceptional epidemiological change such as the appearance of a new serotype or a significant jump in incidence or host range. For example, recent advice had been received from OIE to immediately report on a new strain (based on advice from the FMD World Reference Laboratory) of FMD spreading in the region, given it posed a threat due to challenges with vaccine matching and the ability to control its spread.
- OIE, with FAO, will hold back to back an FMD and PPR regional roadmap meeting in Amman, Jordan, from 15-19 October 2017, which will cover issues such as surveillance, timely disease reporting and vaccine matching.
- WHO uses an alternative system of public health disease reporting involving grading or classifying outbreaks based on their level of public health risk. The OIE could consider such a similar approach for animal diseases as part of its ongoing development of WAHIS+.
- Geo-political instability within the region was resulting in huge migrations of people and their animals with attendant risks of animal disease spread and also impacts on budgets to manage these risks. Members were encouraged to strengthen border measures, surveillance and disease reporting in this context.
- The threat from FMD strains coming from Asia and Africa which further emphasised the need for timely reporting and working together in the region.

**OIE Terrestrial Animal Health Standards Commission:  
Implementation of OIE standards into  
national legislations, rules and policies**

14. Following the presentation by Dr Etienne Bonbon, President of the OIE Terrestrial Animal Health Standards Commission, on “Implementation of OIE standards into national legislations, rules and policies”, in which he explained the international status of OIE standards, indicating that they are not a law per se, but a commonly agreed reference and basis for Member Countries to develop their own legislation, rules and policies, the OIE Regional Commission for the Middle East noted and concluded that:
- As part of their obligations, Member Countries must notify OIE-listed diseases as per Chapter 1.1. of the OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*) and Chapter 1.1. of the OIE *Aquatic Animal Health Code* (the *Aquatic Code*). Moreover, as Member Countries of the OIE, they have a commitment to implement the international standards adopted by the World Assembly of OIE Delegates.
  - The User’s Guide is an important tool for Member Countries to gain a good grasp of the OIE *Codes* and to draw up national policies, decisions, regulations or legislations based thereon.
  - Veterinary Authorities are responsible for the drafting and implementation of veterinary legislation, with particular reference to Chapter 3.4. of the *Terrestrial Code*.
  - There is a need for more support for those countries that have not yet engaged in the comprehensive process of implementing OIE standards and transposing them into national regulations and policies. There is also a need for tools and actions, at both regional and national level, to be made more relevant than ever. The OIE and FAO which have made such tools available (e.g. OIE PVS Pathway, FAO GEMP<sup>9</sup>) should receive more support from the international community.

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<sup>9</sup> GEMP: Good Emergency Management Practice

- Official reporting to the OIE, as all aspects of the OIE standards, were not only an ethical but a legal commitment of countries as signatories to the WTO SPS agreement. In addition, Member Countries risked a loss of international reputation and trust if they were not transparent, which in turn affected their capacity to trade. Members were advised to develop bilateral and regional agreements based on OIE standards to build trust and make trade safer and freer. Although the OIE did not implement activities at national level, the OIE PVS Pathway provided a strong mechanism to evaluate Member Veterinary Services' performance and capacity to implement OIE standards, to resource and strengthen systems, and build transparency and trust.
- Rapid and sudden growth in aquatic animal industries in the region and the challenges this created including the need for good biosecurity to manage aquatic animal disease risks. Compartmentalisation was a mechanism provided in the OIE standards, where governments could partner with the private sector to better protect highly productive and vertically integrated industries and their markets. In some cases, this required governments and industries to develop bilateral or regional agreements and also engage with smaller producers where they presented a risk.
- Member Countries' queries on the role of the OIE regarding genetic diseases, as well as the information provided by the President of the OIE Code Commission that one OIE Code Chapter is relevant to address health risks relating to genetic manipulation techniques while other Chapters deal with infection risks in products of semen and embryos. However, there was no OIE list of relevant genetic diseases as they did not generally present a risk of transboundary spread.
- The FAO reported that there was a unit devoted to animal genetic resources based at their Headquarters in Rome.

**Disease Prevention and Control:  
new and revised chapters of  
Section 4 of the OIE *Terrestrial Code***

15. Dr Bonbon provided details on the current work of the Terrestrial Animal Health Standards Commission (Code Commission), and in particular Section 4 of the *Terrestrial Code* on Disease Prevention and Control, which will no longer consist solely of "general recommendations" but provide more detailed and practical guidance for Member Countries.
16. Following the presentation by Dr Bonbon, the OIE Regional Commission for the Middle East noted and concluded that:
  - Members of the region need to actively participate in the standard-setting process. With regard to Section 4 of the *Terrestrial Code* on Disease Prevention and Control, it is of paramount importance that they provide as many relevant comments as possible in order to strongly support the proposed texts.
  - There is a need for the development of suitable tools to help Member Countries implement these standards throughout their territories regarding disease management and preparedness.
  - Member Countries were again recalled of the GEMP tool.
  - Greater collaboration and cooperation between countries and regions and with international organisations involved in disease prevention and control, such as FAO and WHO, is essential to enhance the implementation of OIE standards.
  - Member Countries were reminded that they are legally committed to implementation when they agree to standards, and therefore they should review them closely and comment as necessary (or at least focus on the chapters for which they have a significant interest). The OIE reminded Delegates that Code changes were translated into Arabic on the OIE regional website every year and in preparation for the OIE General Session, to help facilitate regional inputs.

**Technical item I (with questionnaire):  
Sustainable strengthening of the epidemio-surveillance systems  
in Middle East Member Countries**

17. Prof. Ahmad M. Al-Majali, from the Jordan University of Science and Technology (JUST), presented Technical Item I on “Sustainable strengthening of the epidemio-surveillance systems in Middle East Member Countries”. The presentation was followed by a lively discussion among participants that enabled the OIE Regional Commission for the Middle East to draft a recommendation in accordance with the OIE General Rules (see Recommendation 1 in Annex 4).

**Brucellosis control programme in Turkey:  
Mass vaccination with strains S-19 and Rev-1  
administered by conjunctival route**

18. Following the presentation of Dr Ahmet Murat Saytekin from the Pendik Veterinary Control Institute from Turkey regarding the Brucellosis control programme in the country, the OIE Regional Commission for the Middle East noted that:
- There are many challenges in undertaking a brucellosis control and eradication programme, in all relevant livestock, as experienced by Turkey over many decades. Good legislation and strong Veterinary Services were a pre-requisite. There had been recent success in the use of mass vaccination with live S19 vaccine where risks of abortion and false positives were being managed through conjunctival delivery of non-pregnant animals at lower than full doses. A three-stage strategy involving mass vaccination, then vaccination of only calves coupled with adult test and slaughter, and then test and slaughter only, was being implemented depending on the level of herd sero-prevalence. Accurate sero-surveillance mostly depended on indirect Rose Bengal screening tests and confirmation via a Complement Fixation Test (CFT). PENDIK was undertaking a OIE twinning programme on brucellosis and was aiming to become a brucellosis reference laboratory and could support other countries in the region with their diagnostic needs. Farmers were being supported by the Veterinary Services to partner in implementing this programme, and training of vaccinators had minimised risks to human health and safety from vaccine delivery.
  - Turkey had not reached the stage of managing risks from wildlife reservoirs although there had been isolated cases of both isolation and serological detections in wild goats and swine.

**Biodiversity in the Eastern Mediterranean Sea,  
including its impact on aquatic animal health in the Middle East**

19. Following a presentation by Dr Gaby Khalaf, Senior Advisor at the National Centre for Marine Sciences in Lebanon, the OIE Regional Commission for the Middle East noted and concluded that:
- Protection of biodiversity is crucial both for animals and humans as biodiversity is essential for the evolution and adaptation of living organisms, including wild and domestic animals, in particular at a time of enormous global challenges due to human population growth, increased demand for protein, increasing movement of goods, animals and people, together with pathogens and invasive species, pollution and climate change, among others.
  - Nowadays, global challenges lead to new interfaces that may favour degradation of the marine environment, loss of biodiversity, contamination and intoxication of marine animals, disappearance or replacement by toxic substances of species of high socio-economic value and, of particular concern for animal and human health, emerging and re-emerging of diseases transmissible among wildlife, domestic animals and humans.
  - Biodiversity constitutes a vast field of research aimed at achieving a better understanding of ecosystems. There is a need to better understand the relationship between climate change and ecosystem health, biodiversity loss and the spread of diseases that impact on animal health and welfare and on public health.
  - Protection of biodiversity is one of the platforms where intersectoral collaboration between

animal and human health and environmental health needs to be developed and reinforced under the “One Health” concept.

- It is the responsibility of the Veterinary Services and their government partners to protect and improve animal health, including aspects related to wildlife and biodiversity. Thus, there is a need for all OIE Member Countries to increase their capacity for surveillance, early detection and response with regard to diseases in wildlife.
- The OIE should continue developing science-based standards on disease detection, prevention and control as well as safe trade measures to harmonise the policies related to disease risks at the interface between wildlife, domestic animals and humans.
- The OIE should also continue supporting and updating the notification mechanisms for wildlife diseases through WAHIS and assist Members to strengthen their Veterinary Services to protect animal health, including aspects related to wildlife and biodiversity (e.g. OIE PVS Pathway, regional training seminars for OIE National Focal Points and Twinning programmes).

#### **Intervention and report from Saudi Arabia**

20. Members heard from Saudi Arabia on the rapid growth and importance of aquatic animal industries to the country including ambitious production targets in the coming years including the seeking of export markets. There were significant risks from aquatic animal diseases as experienced in recent years with very large drops in production due to infection with viruses such as White Spot Disease Virus of shrimp.
21. Saudi Arabia reported that since these problems an aquatic biosecurity programme has been developed between the government and the private sector over the last 5-6 years involving protocols and technical guidance (e.g. Best Aquaculture Practices and biosecurity manuals), training of government and stakeholders, a regular sampling and testing programme, movement controls for stock involving pre-movement testing, and OIE twinning programmes such as with Arizona University to increase laboratory capacity.
22. Member Countries were informed of the need to increase the focus in the region on emerging aquatic animal industries and their Veterinary Services requirements, including exploring the option of an OIE regional seminar for Aquatic Animal Health Focal Points that could be hosted by Saudi Arabia in 2018, pending funding availability.

**WEDNESDAY 4 OCTOBER 2017**

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#### **Technical item II (without questionnaire): Addressing Challenges in the Middle East at the Human–Animal Interface under the One Health concept**

23. Technical Item II on “Addressing Challenges in the Middle East at the Human–Animal Interface under the One Health concept” was jointly presented by Dr Idris Al Abaidani, Director of the Communicable Disease Surveillance Department at the Ministry of Health of Oman, and Dr Salim A. Salim Mohamednour, WHO Consultant. The presentation was followed by a panel discussion between WHO, FAO and five previously selected countries that had officially notified Middle East respiratory syndrome (MERS) to the OIE. The stimulating discussions that ensued enabled the OIE Regional Commission for the Middle East to draft a recommendation in accordance with the OIE General Rules (see Recommendation 2 in Annex 5).



### **Impact of tick-borne diseases of livestock in the Middle East**

24. Subsequent to the presentation by Dr Ilaria Pascucci from the Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise G. Caporale in Italy, regarding the impact of tick-borne diseases (TBDs) of livestock in the Middle East, the OIE Regional Commission for the Middle East noted and concluded that:
- TBDs are widely distributed throughout the world, particularly in the tropics and subtropics, and represent a substantial proportion of all animal diseases affecting the livelihood of smallholder farmers, causing direct and indirect damage to livestock production.
  - Estimating the impact associated with TBDs is problematic because disease incidence is variable depending on local environmental conditions and the immune status of animals and is poorly recorded, due to the lack of reliable diagnostic methods for use in the field and the inaccessibility of small farms. Information on production losses has been included in only a few studies, many of which did not address the situation in small or marginal farms, which are usually more severely affected by tick-associated conditions.
  - Estimates need to be as accurate as possible when trying to evaluate the impact of tick-borne diseases on livestock. This means using reliable diagnostic methods that are also capable of identifying asymptomatic carriers, as well as evaluating social and environmental conditions. The study of such pathologies must therefore take into account a holistic approach that considers the ecosystem in its entirety.
  - Furthermore, the estimation of the impact on production systems has to include the cost of tick control, which is still usually achieved through the use of acaricides, despite their well-known ecological disadvantages. More effective and sustainable control methods will need to take into account the fact that persistence in the ecosystem of the agents of TBDs is closely related to the presence of wild and domestic carrier animals, the density of vectors and also socio-economic factors.
  - There is no ideal tick and TBD control method, but more methods need to be integrated and their use modulated according to the biology of the parasite, the specific ecology of the vectors and the epidemiological situation of each specific TBD, using a holistic approach that also considers the cost-benefit ratio.
  - There was a lack of data from the region on the tick species present. There was a need to improve this knowledge with field studies, but these must be designed and implemented carefully to reflect the true results.
  - Updates from the President of the OIE Code Commission relating to the current single Code Chapter on Theileriosis. There was a current proposal to develop two chapters, one for large ruminants, and one for small ruminants. There was also a proposal to review the Theileria species as currently only two were covered. There was a need to improve diagnostic methods to identify the new species and genotypes, as well as more closely studying their biology and epidemiology, including pathogen-host-environment interactions. The President of the Code Commission encouraged the Member Countries of the Middle East to participate in the process.
  - There were serious problems with acaricide resistance, similar to AMR. It was essential to tailor acaricide use to the biology, host species and behaviour of the tick species to minimise risks. There would be benefit in developing geographical mapping in the region of both ticks and their resistance. Effective acaricides also presented human health risks (some could be carcinogenic). Safer biological controls, immunogenics and tick vaccines were being developed with one vaccine registered for use against *Boophilus* spp. Saudi Arabia commented on their experience where poultry production in the vicinity of camels had proven very successful in overcoming camel tick problems.

**Laboratory research on camel diseases:  
update on MERS-CoV**

25. Following the presentation by Dr Ahmed Zahran from the United Arab Emirates regarding laboratory research on camel diseases, including an update on MERS-CoV, the OIE Regional Commission for the Middle East noted and concluded that:
- CAMENET was an essential regional coordination network of expertise in all relevant areas relating to camel diseases, including laboratory diagnosis, epidemiology and good husbandry.
  - An OIE twinning project with the Istituto Zooprofilattico Sperimentale laboratory network in Italy targeted the Abu Dhabi Food Control Agency becoming an OIE collaborating centre for epidemiological analysis and diagnosis in camel diseases. A key need was the development of properly validated diagnostic tests for the most important camel diseases, which would facilitate their inclusion as OIE listed diseases and stronger reporting, including within the region.
  - A key area of research into MERS CoV was its epidemiology, particularly at the human-animal interface. Although there were genomic similarities between MERS-COV in humans and camels, it was noted that the epidemiological link was not yet clearly confirmed, any route of transmission from camels to humans had yet to be identified, and that the majority of human cases did not have contact with camels. Another research area, the molecular pathogenesis in humans and camels had demonstrated that rapid genetic recombination over time suggested the potential for the emergence of new strains.
  - Regarding camel racing and other major gatherings, which may result in up to 5,000 camels entering the UAE, required screening tests of camels were undertaken as well as veterinary inspection and placing imported camels into quarantine prior to racing. Fortunately, no cases in humans had been associated with these events to date, although personal protective equipment (PPE) was ready for use if required.
  - Research was being undertaken on MERS-COV vaccine for camels, with several candidate vaccines, though it was not being used in the UAE.
  - Saudi Arabia reported on a study of 12,000 camels which also did not find any conclusive link to human cases. Camel vaccination was being undertaken. Greater awareness was required in the use of PPE.
  - The OIE had supported WHO with MERS-COV camel vaccine research and development, on the condition that it also resulted in complementary research which improved knowledge and understanding of other emerging diseases, to assist with their surveillance and management.
  - FAO advice that more information was required on socio-economic aspects of MERS-COV risk.
  - The next meeting of CAMENET would take place on 12-15 November 2017 in Abu Dhabi.

**Animal welfare in transport of animals  
by land and by sea**

26. Following the presentation by Dr Tomasz Grudnik, Animal Welfare specialist at the OIE Sub-Regional Representation in Brussels, on animal welfare in transport of animals by land and by sea, the OIE Regional Commission noted and concluded that:
- The Regional Animal Welfare Strategy for the Middle East and its first (2016-2019) companion Action Plan were developed at the request of the OIE Regional Commission for the Middle East to improve animal welfare in the region, especially in the areas of long distance transport by land and sea, slaughter of animals for human consumption and stray dog population control. The aim of the Strategy and Action Plan was to empower the Veterinary Services of the Region to take actions in these priority areas in compliance with OIE standards (Section 7 of the OIE *Terrestrial Code*).

- In the field of transport, whether local or long distance, many animal welfare shortcomings are routinely deplored. A set of activities is proposed in the Middle East Action Plan to address these shortcomings in a sustainable and comprehensive manner, looking at legal, educational (initial and continuing) and awareness aspects (Train-the-Trainer Workshops) as well as communication/coordination among competent authorities (Whole Journey Scenario Concept), to ensure that welfare conditions are respected throughout the whole journeys of animals, especially in the context of inter-regional trade of slaughtering livestock to the Middle East.
- The 14th Conference of the OIE Regional Commission for the Middle East calls for urgent financial support to implement the animal welfare Action Plan in the region and for the active participation of Member Countries in the proposed OIE activities.
- There was an ongoing lack of clarity and detail within the OIE Animal Welfare standards, for example, suitable livestock space requirements for land or sea transport. It was noted different countries and regions had different references. It was advised that the OIE could refer to the experience of such countries and devise clearer guidance, but that these countries needed to provide this information to the OIE.
- The European Commission commended the work undertaken to date, and work committed to ongoing support for 2017-18 in animal welfare in the region, including relating to long distance transport.
- The explanation from the President of the OIE Code Commission that Member Countries did not generally wish for the standards to be too prescriptive, but rather to have an outcome focus. However, it may be possible for the OIE to develop more detailed Guidelines based on country experiences and relevant field studies.
- The OIE had assisted in the development of a regional Technical Note used in training, which already provided detailed information on space requirements for long distance transport from other countries such as Australia and the European Union countries, and relevant studies.

**OIE PVS Pathway Evolution – Tailored PVS solutions mark  
a new era in OIE Veterinary Services support**

27. Dr John Stratton, Deputy Head of the OIE Regional Activities Department, updated participants on the active process of OIE PVS Pathway Evolution, which had culminated in a highly successful OIE PVS Pathway Think Tank Forum (the Forum) in April 2017, coinciding with the 10-year anniversary of the OIE PVS Pathway. The Forum Report had now been finalised and would soon be available on the OIE website. The aspect of PVS Pathway Evolution of most relevance to Member Countries was the on-going development and piloting of new options for their PVS Pathway engagement, tailored to each Member Country's own particular governance or technical priorities. These new options included; 1.PVS Training to Member Countries (to develop PVS National Specialists and/or potentiate PVS Self-Evaluation), 2.PVS Strategic Planning Support, 3.PVS Specific Content (e.g. PPR/AMR), and 4.PVS Pathway/WHO International Health Regulations linkages. The OIE was currently delivering an intensive Preparation/Planning/Piloting phase with the intention to formally offer these new forms of PVS Pathway engagement to all Member Countries after an official launch of PVS Evolution at the 2018 OIE General Session. Regional examples of pilot PVS Pathway activity to date included Turkey (PVS specific content) and a new proposal for Jordan to link their upcoming PVS Gap Analysis with a strategic planning workshop afterwards.

28. After a brief explanation of the different forms of PVS Pathway engagement being developed, Dr Stratton led participants through an interactive PVS Evolution prioritization exercise where each member Country voted and discussed the new forms of PVS Pathway engagement of most interest to them. The results of the Member Country voting tallies were 1<sup>st</sup> – PVS Training (23 votes), 2<sup>nd</sup> – PVS Strategic Planning (21 votes), 3<sup>rd</sup> – PVS/IHR linkages (14 votes), and 4<sup>th</sup> – PVS Specific Content (8 votes). The results of the Partners voting tallies were 1<sup>st</sup> – PVS Strategic Planning, 2<sup>nd</sup> – PVS/IHR linkages, 3<sup>rd</sup> – PVS Specific Content, and 4<sup>th</sup> – PVS Training. The reduced external donor funding for PVS Pathway activities to the region was highlighted, with the OIE, its Member Countries and Partners encouraged to consider all possible forms of PVS Pathway financial support that may be available, including for a possible PVS Pathway training in the region in 2018.
29. The OIE Regional Commission for the Middle East noted and concluded that:
- The OIE is fully supported to continue working on evolving its PVS Pathway after more than 10 years of success, to avoid complacency and ensure the flagship OIE programme is adapted for the future.
  - The OIE is implementing the outcomes of a successful PVS Pathway Think Tank Forum in April 2017 which brought together 74 participants comprising OIE Member Country representatives, donors/partners, OIE staff and PVS experts to review the programme's successes, build on lessons learnt and collectively plan for the strategic evolution of the PVS Pathway.
  - The OIE publish the final Forum Report on the OIE website for all OIE Member Countries and stakeholders to freely access, and continue to prepare, plan and pilot PVS Pathway evolution over coming months, targeting an official PVS Evolution launch at the 2018 OIE General Session.
  - Member Countries note the ongoing OIE development of new options for their PVS Pathway engagement, tailored to particular governance or technical priorities, such as: 1. PVS Training to Member Countries (develop PVS National Specialists and/or potentiate PVS Self-Evaluation), 2. PVS Strategic Planning Support, 3. PVS Pathway/WHO International Health Regulations linkages, 4. PVS Specific Content (e.g. PPR/AMR).
  - Member Countries continue to deliberate on such new options for their OIE PVS Pathway engagement, considering the national and regional results of the PVS Evolution Prioritisation Exercise undertaken, and consider official requests to the OIE for PVS Pathway training and/or missions with them in mind.
  - Member Countries, OIE and relevant Partners note the reduced funding for PVS Pathway activities in the region, and are encouraged to consider all possible forms of PVS Pathway financial support that may be available, including for a possible PVS Pathway training in the region late 2018.

### **Discussion of recommendations**

30. Draft Recommendations 1 and 2 on the two Technical Items of the Conference were presented to participants and put forward for discussion. Both draft Recommendations will be submitted for adoption at the Friday session with amendments as per participants' suggestions and discussions.
31. Following adoption by the Regional Commission, the Recommendations will be submitted for endorsement by the World Assembly of OIE Delegates in May 2018. Once endorsed by the Assembly, they will serve as an important guideline for Member Countries of the OIE Regional Commission for the Middle East, as well as for the Organisation as a whole.

**Proposal of dates and venue for the  
15th Conference of the OIE Regional Commission  
for the Middle East**

32. The President of the Commission asked Delegates present if any of their countries wished to host the 15th Conference of the OIE regional Commission for the Middle East.
33. The Delegate of United Arab Emirates expressed the wish for his country to host the next Conference, to be held in September 2019.
34. The proposal of United Arab Emirates was endorsed unanimously.

**THURSDAY 5 OCTOBER 2017**

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**Cultural visit**

35. Participants greatly appreciated the cultural visit organised for the day by the host country. Sincere thanks were extended to the organisers for their kind hospitality.

**FRIDAY 6 OCTOBER 2017**

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**Activities of the  
OIE Regional Representation for the Middle East**

36. Dr Ghazi Yehia, OIE Regional Representative for the Middle East, presented the activities of the OIE Regional Representation during the year. He explained that the primary objective of the OIE Regional Representation was the reinforcement of Veterinary Services' capacities in Middle East countries to enable them to control and manage animal diseases and zoonoses, in compliance with OIE international standards.

**Adoption of the Draft Final Report and  
Recommendations**

37. Dr Jean-Philippe Dop, Deputy Director General, explained the procedures for adopting the report and recommendations of the Conference. Delegates could submit comments or suggestions for consideration during the Conference itself. Further comments on the report received at the OIE Headquarters by 20 October 2017 would also be taken into consideration. However, the recommendations had to be adopted during the current session and could not be changed subsequently, only editing changes are permitted.
38. The two draft recommendations were adopted, with minor amendments taking into account participants' suggestions and discussions.

**Closing ceremony**

39. On behalf of the Bureau of the OIE Regional Commission for the Middle East, the OIE Headquarters and the Conference participants, Dr Majid Al-Qassimi, President of the OIE Regional Commission for the Middle East read the traditional motion of thanks addressed to the host country.

40. Dr Ghazi Yehia, OIE Regional Representative for the Middle East, thanked the host country, all participants, the OIE Secretariat as well as all those that participated in the organisation of the Conference in order to ensure the success of such an important event for the region. Dr Yehia thought that the Conference agenda was relevant to the region and the social programme most enjoyable.
41. Dr Michael Modisane, President of the World Assembly of Delegates, thanked all participants for their active participation. He expressed his sincere appreciation to the host country and the OIE Secretariat for the excellent work carried out to ensure the success of the Conference. He hoped that participants enjoyed their stay in Istanbul.
42. Dr Nihat Pakdil, OIE Delegate of Turkey, expressed his gratitude to the OIE Director General, to the OIE Deputy Director General, the OIE Secretariat, the Regional Representation, to all the participants and the speakers for the productive Conference.
43. Dr Al-Qassimi thanks the Conference organisers for the perfect organisation, warm welcome and excellent hospitality, including the cultural visit appreciated by all participants. He also thanked the Delegates for their constructive contribution to the discussions.
44. Dr Al-Qassimi declared the Conference officially ended at 11.00 a.m.

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## PROGRAMME

MONDAY 2 OCTOBER 2017

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10: 00 a.m. – 2:00 p.m.	Registration of participants and document distribution
2:00 p.m.	Opening ceremony
2:40 p.m.	Approval of the Agenda and Programme
2:45 p.m.	Group Photo / Break
3:15 p.m.	The OIE Sixth Strategic Plan and its implementation in the Middle East region (Dr Monique Eloit, OIE Director General)
3:45 p.m.	Panel discussion with the OIE Director General and the Members of the Bureau and the Council (moderator: Dr Ghazi Yehia, OIE Regional Representative for the Middle East)
4:15 p.m.	Ministry of Food, Agriculture and Livestock, and general animal health situation in Turkey (Dr Veli Gülyaz, Deputy Director General, Turkish General Directorate of Food and Control)
4:45 p.m.	Introduction to the Posters Session
5:00 p.m. – 6:30 p.m.	Posters Session

TUESDAY 3 OCTOBER 2017

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9:00 a.m.	- Appointment of the Conference Committee (Chairperson, Vice-Chairperson and General Rapporteur) - Appointment of session chairpersons and rapporteurs (Technical items and Animal Health Situation)
9:15 a.m.	Analysis of the animal health situation in Member Countries in the region during 2016 and 2017 (Dr Paula Cáceres, Head of the OIE World Animal Health Information and Analysis Department)
10:00 a.m.	Discussion
10:30 a.m.	Break
11:00 a.m.	OIE Terrestrial Animal Health Standards Commission: Implementation of OIE Standards into national legislations, rules and policies (Dr Etienne Bonbon, President of the OIE Terrestrial Animal Health Standards Commission)
11:30 a.m.	Discussion
12:00 p.m.	Disease Prevention and Control: new and revised chapters of Section 4 of the OIE <i>Terrestrial Code</i> (Dr Etienne Bonbon)
12:30 p.m.	Discussion

- 1:00 p.m. Lunch
- 2:15 p.m. Technical item I (with questionnaire):  
Sustainable strengthening of the epidemio-surveillance systems in Middle East Member Countries (Prof. Ahmad M. Al-Majali, Jordan University of Science and Technology (JUST))
- 3:00 p.m. Discussion
- 3:30 p.m. Brucellosis control programme in Turkey: Mass vaccination with strains S-19 and Rev-1 administered by conjunctival route (Dr Ahmet Murat Saytekin, Pendik Veterinary Control Institute, Turkey)
- 4:00 p.m. Discussion
- 4:30 p.m. Break  
(Preparation of Recommendation No. 1 by designated small group)
- 5:00 p.m. Biodiversity in the Eastern Mediterranean Sea, including its impact on aquatic animal health in the Middle East (Dr Gaby Khalaf, Senior Advisor, National Center for Marine Sciences of Lebanon)
- 5:30 p.m. Discussion
- 6:00 p.m. Intervention and report from Saudi Arabia
- 6:30 p.m. End of the session
- 7:30 p.m. Reception hosted by the OIE

### **WEDNESDAY 4 OCTOBER 2017**

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- 9:00 a.m. Technical item II (without questionnaire):  
Addressing Challenges in the Middle East at the Human-Animal Interface under the One Health concept (Dr Idris Al Abaidani, Director of the Communicable Disease Surveillance Department at the Ministry of Health of Oman and Dr Salim A. Salim Mohamednour, WHO Consultant)
- 09:45 a.m. Panel discussion with Delegates and relevant International Organisations
- 10:15 a.m. Break  
(Preparation of Recommendation No. 2 by designated small group)
- 10:45 a.m. Impact of tick-borne diseases of livestock in the Middle East (Dr Ilaria Pascucci, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G.Caporale)
- 11:15 a.m. Discussion
- 11:45 p.m. Laboratory research in camel diseases: update on MERS-CoV (United Arab Emirates' representative)
- 12:15 p.m. Discussion
- 12:45 p.m. Lunch
- 2:00 p.m. Animal welfare in transport of animals by land and by sea (Dr Tomasz Grudnik, Animal Welfare specialist, OIE Sub-Regional Representation in Brussels)



- 2:30 p.m. Discussions
- 3:00 p.m. OIE PVS Pathway Evolution – Tailored PVS solutions mark a new era in OIE Veterinary Services support (Dr John Stratton, Deputy Head OIE Regional Activities Department)
- 3:30 p.m. Discussions
- 4:00 p.m. Break
- 4:30 p.m. Discussion of recommendations
- 5:00 p.m. Proposal of date and venue of the 15th Conference of the OIE Regional Commission for the Middle East

#### **THURSDAY 5 OCTOBER 2017**

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Cultural visit

- 7:30 p.m. Reception hosted by Turkey

#### **FRIDAY 6 OCTOBER 2017**

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- 09:00 a.m. Activities of the OIE Regional Representation for the Middle East (Dr Ghazi Yehia, OIE Regional Representative for the Middle East)
- 09:30 a.m. Adoption of the Draft Final Report and Recommendations
- 10:30 a.m. Break
- 11:00 a.m. Closing ceremony



**ANALYSIS OF THE ANIMAL HEALTH SITUATION IN  
MEMBER COUNTRIES IN THE REGION  
DURING 2016 AND 2017  
(Update 11 July 2017)**

*Report prepared by Paolo Tizzani, Lina Awada, Neo Mapitse and Paula Cáceres,  
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This report is based on information obtained from six-monthly reports, annual reports and immediate notifications and follow-up reports submitted to the OIE by the 21 countries and territories of the Middle East<sup>10</sup> up to 11 July 2017. Special attention is given to the 2016 and 2017 reporting period.

The report reviews the situation in the Middle East regarding some specific diseases notified during this period: infection with influenza A viruses of high pathogenicity; infection with peste des petits ruminants virus; infection with foot and mouth disease virus; infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis*; as well as equine diseases and infections.

### **1) Infection with influenza A viruses of high pathogenicity**

Since 2003, infection with influenza A viruses of high pathogenicity (HPAI) has severely impacted the economy and public health in the Middle East<sup>11</sup>, with more than 4 million birds lost (dead or destroyed) and 370 human cases reported by the World Health Organization<sup>12</sup>. The recent geographical distribution of HPAI in the Middle East, during the period 1 January 2016 to 11 July 2017, is shown in Figure 1. During this period, a total of 19 countries and territories provided information on the disease, which was reported present by 26% of them (5/19). It should be noted that not all countries were able to provide information on HPAI within their reports to the OIE.

Among the four countries that reported the presence of subtype H5N1 in domestic birds (Figure 1a), three submitted immediate notifications to the OIE. Iraq reported two events. The disease recurred in the country in domestic birds, starting in December 2015, and later on in the provinces of Baghdad and Wasit, starting in June 2016. Lebanon also reported the recurrence of subtype H5N1 in domestic birds, in the Al Biqa' province, starting in April 2016, following illegal movement of animals. A recurrence of HPAI subtype H5N1 was reported in Iran in poultry, with a starting date in January 2017. Following this event, Iran declared itself free from the disease with effect from 1 May 2017, in compliance with the OIE *Terrestrial Animal Health Code* (hereafter, the *Terrestrial Code*).

Additionally, for the first time in more than 10 years, another subtype was reported in the Region. Three countries reported the presence of subtype H5N8 in domestic birds and two countries, namely Egypt and Iran, also identified and reported this subtype in wild birds (Figure 1b). Egypt and Iran reported the first occurrence of subtype H5N8 in domestic and wild birds, with a starting date in November 2016. Kuwait reported the first occurrence of the same subtype in domestic birds, with a starting date in December 2016. In these three countries, intensive epidemiological surveillance was applied and Kuwait declared itself free from the disease with effect from 28 March 2017, in compliance with the *Terrestrial Code*.

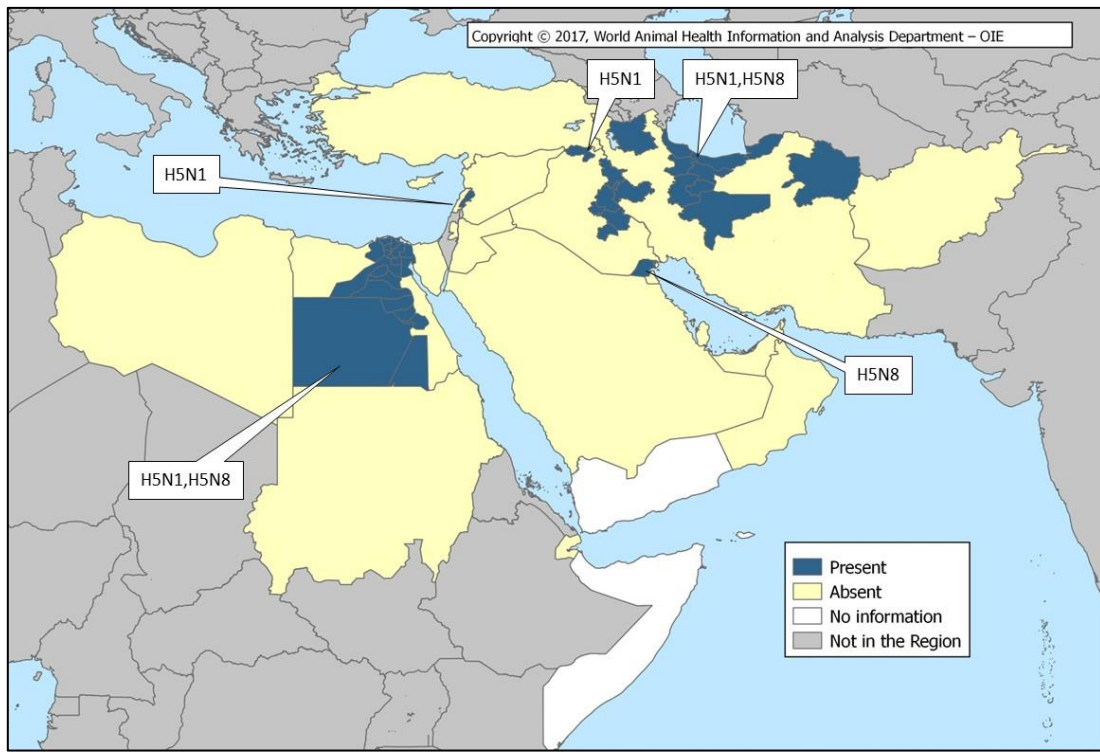
<sup>10</sup> 20 Member Countries of the OIE Regional Commission of Middle East and Palestinian Autonomous Territories

<sup>11</sup> Alkhamis M, Hijmans R, Al-Enezi A, Martínez-López B, Perea AM. The Use of Spatial and Spatiotemporal Modeling for Surveillance of H5N1 Highly Pathogenic Avian Influenza in Poultry in the Middle East. *Avian Dis.* 2016 May;60(1 Suppl):146-55. doi: 10.1637/11106-042115-Reg

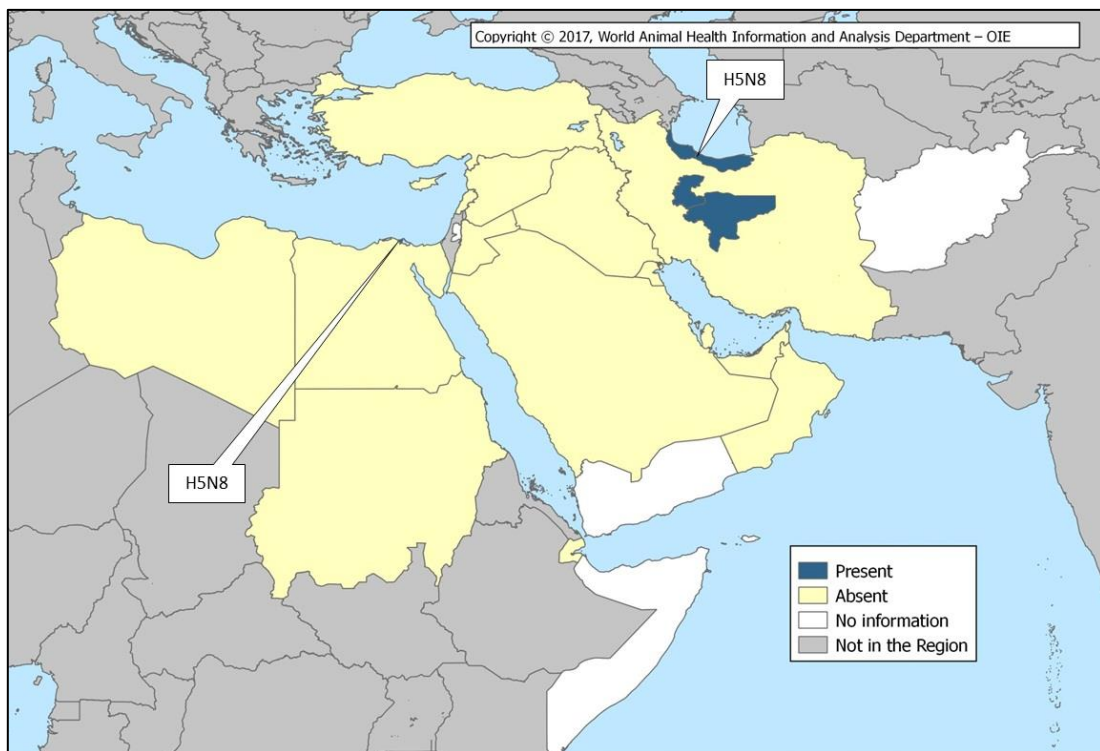
<sup>12</sup> Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2017, [http://www.who.int/influenza/human\\_animal\\_interface/2017\\_07\\_25\\_tableH5N1.pdf?ua=1](http://www.who.int/influenza/human_animal_interface/2017_07_25_tableH5N1.pdf?ua=1)

**Figure 1. Distribution of HPAI in the Middle East in domestic and wild birds in 2016 and 2017 (up to 11 July 2017)**

**1a) Domestic birds**

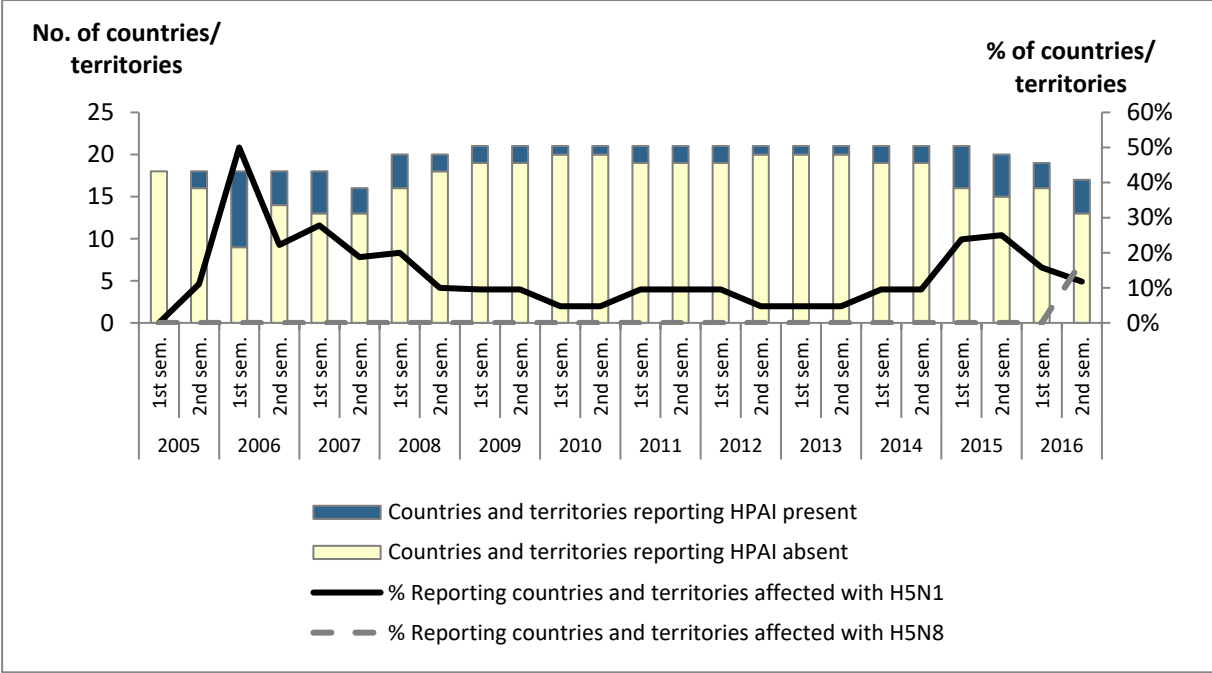


**1b) Wild birds**



After this description of the recent HPAI situation, the following part of the analysis describes the trend for the percentage of countries and territories reporting the disease present during the period from 2005 to 2016, to provide background historical information. As shown in Figure 2, the disease was absent from the Region in the first semester of 2005; the percentage then suddenly increased to 50% in the first semester of 2006. The percentage then decreased to 10% in the second semester of 2010, after which the situation remained stable with an average of 8% of countries and territories affected from 2008 to 2014. The percentage then increased again, reaching 25% in 2015, showing a re-emergence of the disease in the Region. The year 2016 was marked by the emergence of subtype H5N8 in the Region, with the percentage of countries and territories reporting this subtype reaching 18% in the second semester.

**Figure 2. Percentage of the reporting countries and territories for each semester between 2005 and 2016 that notified HPAI present (data based on reports received up to 11 July 2017)**



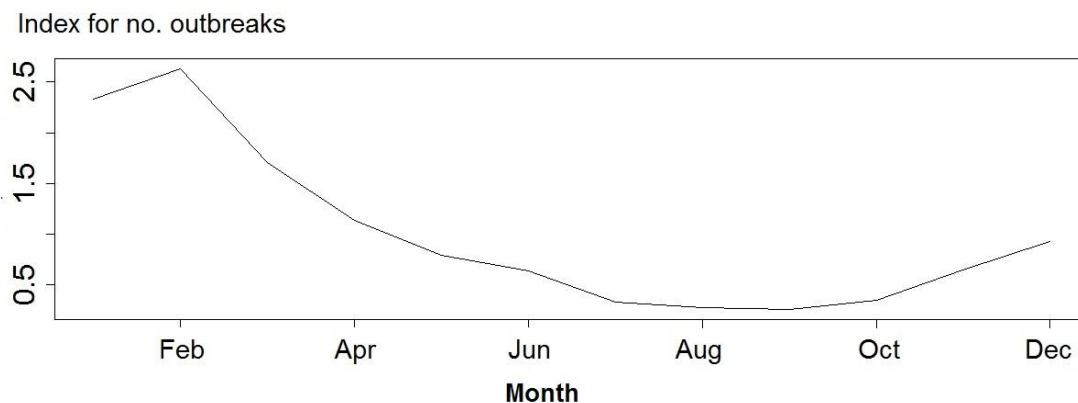
The seasonality analysis in domestic birds is of high interest to public health and animal health authorities as it provides useful information for preparedness, highlighting periods of both high and low risk. For this reason, the following analysis was carried out, with the aim of describing in greater detail the reporting of the disease in the Region in domestic birds by means of a temporal analysis. To analyse the seasonal pattern of HPAI in domestic birds at the level of the Region, a dataset was prepared containing information on the number of HPAI outbreaks aggregated by month from 2005 to 2016, based on their starting dates. These figures included 3198 outbreaks, corresponding to all the outbreaks identified in domestic birds reported by countries from 2005 to 2016. Monthly outbreak incidences were formatted into time series. A seasonal decomposition by moving averages was applied<sup>13</sup>. Multiplicative models were used, given that, in the raw data, variations increased with increasing incidence.

<sup>13</sup> Wynn, HP., 1985. The advanced theory of statistics, Vol. 3, 4th Edition, Kendall, Sir Maurice, Stuart, A. and Ord, J. K., High Wycombe: Charles Griffin, 1983. Price: £37.50. Pages: 780. J. Forecast. 4, 315. doi:10.1002/for.3980040310

The results obtained show a seasonality pattern: HPAI incidence starts increasing each year in October, with a peak in February and a lower activity period from July to September (Figure 3). The February peak is consistent with findings described in other studies for the Region, suggesting this is a higher risk period<sup>14</sup>. The February peak also mirrors the higher number of cases detected in humans, suggesting that monitoring of the disease in animals is important for risk assessment in public health<sup>14,15</sup>. Low transmission periods are also important from a public and animal health standpoint.

However, it should be noted that a very high proportion of these outbreaks (88%) were reported by Egypt, the most affected country in the Region. Therefore, the dynamics of HPAI in this country strongly impacted the results obtained at Regional level.

**Figure 3. Seasonal trend of HPAI outbreaks in domestic birds in the Middle East, from 2005 to 2016**



In conclusion, this section shows the recent re-emerging situation of HPAI in the Middle East, with an increase observed in subtype diversity. Bearing in mind the devastating impact of the disease in the Region since 2006, the OIE urges countries and territories in the Region to maintain and, where necessary, step up their efforts for the early detection and reporting of HPAI events through WAHIS.

The implementation of surveillance activities in the Region is heterogeneous, with some countries not able to provide any information on HPAI through their reports to the OIE, and others implementing surveillance in domestic birds but not in wildlife. Despite the crucial importance of HPAI monitoring in wild birds for early detection of HPAI events<sup>16</sup>, only 16 outbreaks were reported to the OIE by countries and territories in the Region from 2005 to 2016 (compared to more than 3000 for domestic birds). The OIE therefore encourages countries and territories in the Region to improve surveillance in wildlife and to continue timely reporting of all outbreaks through WAHIS. It is very important to emphasise that the notification of HPAI in wildlife serves to ensure an epidemiological understanding of the current risk situation for preparedness purposes and should not have an impact on trade in poultry and poultry products, in accordance with OIE standards. To this end, the OIE has implemented separate reporting through WAHIS for the disease in wildlife (under “Influenza A viruses of high pathogenicity (infection with) in birds other than poultry including wild birds”), with effect from the beginning of the 2017 reporting period.

<sup>14</sup> Rabinowitz PM, Galusha D, Vegso S, Michalove J, Rinne S, Scotch M, et al. (2012) Comparison of Human and Animal Surveillance Data for H5N1 Influenza A in Egypt 2006–2011. PLoS ONE 7(9): e43851. <https://doi.org/10.1371/journal.pone.0043851>

<sup>15</sup> Rabinowitz PM, Odofin L, Dein FJ., From "us vs. them" to "shared risk": can animals help link environmental factors to human health? *Ecohealth*. 2008;5(2):224-9. doi: 10.1007/s10393-008-0170-4. Epub 2008 May 7.

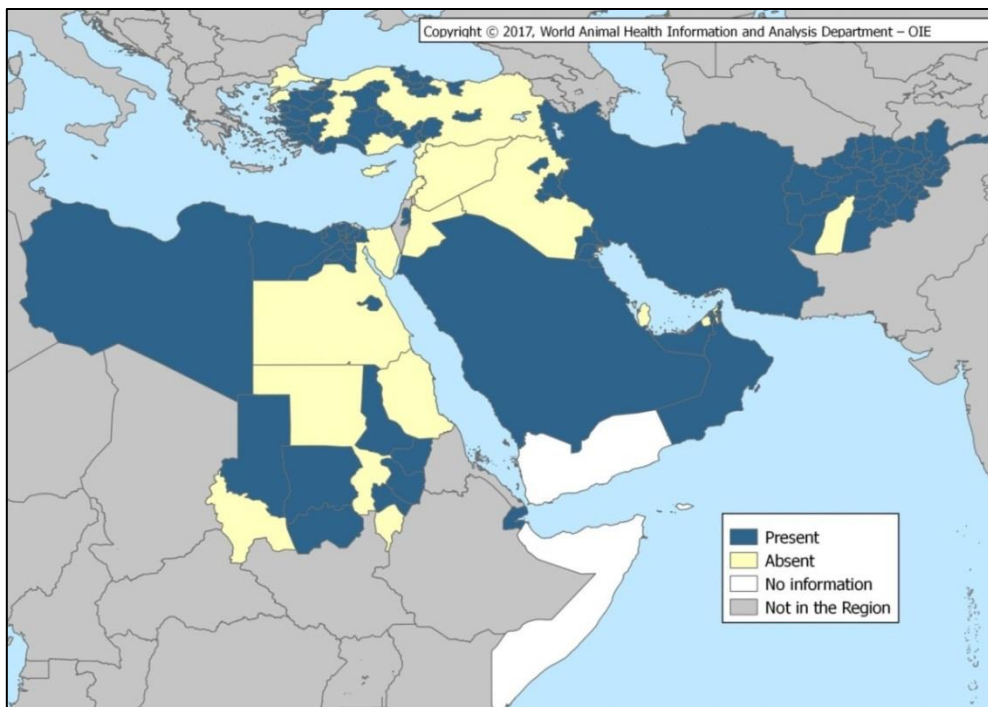
<sup>16</sup> The Global Consortium for H5N8 and Related Influenza Viruses, Role for migratory wild birds in the global spread of avian influenza H5N8, *Science* 2016;354(6309):213-7. DOI: 10.1126/science.aaf8852

## 2) Infection with peste des petits ruminants virus

Infection with peste des petits ruminants (PPR) virus is one of the priority diseases of the FAO-OIE Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) five-year Action Plan (2013-2017). In 2015, in Abidjan, Côte d'Ivoire, high-level authorities and Chief Veterinary Officers from 70 countries endorsed the PPR Global Control and Eradication Strategy<sup>17</sup>, which was subsequently confirmed at the 84th General Session of the OIE in May 2016 with the adoption of Resolution No. 25 by the World Assembly of Delegates of the OIE. To lay the foundation for implementing the Global Strategy, the first five-year PPR Global Eradication Programme (PPR GEP) was developed and officially launched in 2016 (see FAO-OIE joint press release<sup>18</sup>) following its endorsement by FAO and the OIE.

PPR is endemic in most countries in the Middle East. Its recent geographical distribution, during the period 1 January 2016 to 11 July 2017, is shown in Figure 4. During this period, a total of 19 countries and territories provided information on the disease, which was reported present by 68% of them (13/19). Given the stable situation in the Region, the disease was reported only through six-monthly reports and no immediate notifications were submitted during this period. It should be noted that not all countries were able to provide information on PPR within their reports to the OIE.

**Figure 4. Distribution of PPR in the Middle East in 2016 and 2017 (up to 11 July 2017)**

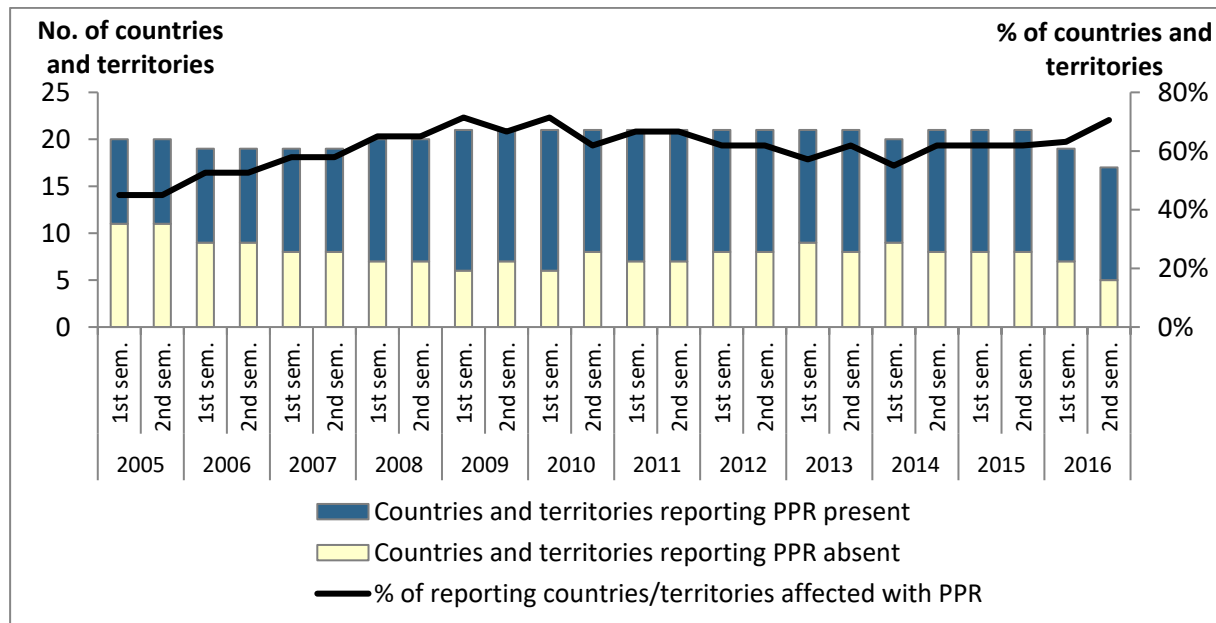


<sup>17</sup> Global Strategy for the control and eradication of PPR. OIE and FAO, 2015. <http://www.oie.int/eng/ppr2015/doc/PPR-Global-Strategy-2015-03-28.pdf>

<sup>18</sup> <http://www.oie.int/en/for-the-media/press-releases/detail/article/oie-and-fao-present-initial-battle-plan-in-global-campaign-to-eradicate-pestes-des-petits-ruminants/>

Figure 5 presents the historical situation of PPR in the Region. The percentage of countries and territories reporting the disease present, by semester, from 2005 to the second semester of 2016 was analysed. As shown in the figure, the percentage increased from 45% in 2005 to 71% in 2010, reflecting the spread of PPR in the Region during this period. The situation then remained stable with an average of 63% of countries and territories affected from 2011 to 2016. A significantly positive correlation ( $\rho=0.4$ ,  $p=0.05$ ) between the percentage and the semesters was measured using the Spearman rank correlation test, confirming the overall deterioration of the epidemiological situation in the Region from 2005 to 2016.

**Figure 5. Number and percentage of the reporting countries and territories for each semester between 2005 and 2016 that notified PPR present (data based on reports received up to 11 July 2017)**



The following analysis further describes the reporting of the disease in the Region 1) in domestic animals, through a temporal analysis in relation to the period of Muslim festivities and pilgrimage; and 2) in wildlife, describing the surveillance activities implemented in the Region.

In the Middle East, there is a significant annual rise in animal movements and trade throughout the Muslim world in the weeks before the religious holiday of Eid al-Adha, which occurs at the end of Haj, the annual pilgrimage to Mecca<sup>19</sup>. Furthermore, hundreds of thousands of small ruminants are imported every year into Saudi Arabia for the purpose of slaughtering during the pilgrimage season, a situation that is believed to involve a significant risk of livestock disease spread<sup>20</sup>. Conversely, international trade is reduced during festivities periods (end of Ramadan to Eid al-Adha) and pilgrimage.

To test the association between PPR incidence and Muslim festivities and pilgrimage, a dataset was prepared containing information on (1) the number of PPR outbreaks aggregated by month from 2005 to 2016, based on their starting dates, (2) the months overlapping with periods of Muslim festivities and pilgrimage from 2005 and 2016, and (3) the years of occurrence of the outbreaks.

<sup>19</sup> Sherman DM; The spread of pathogens through trade in small ruminants and their products; Rev Sci Tech. 2011 Apr;30(1):207-17.

<sup>20</sup> Boshra H, Truong T, Babiuk S, Hemida MG; Seroprevalence of Sheep and Goat Pox, Peste Des Petits Ruminants and Rift Valley Fever in Saudi Arabia. PLoS One 2015;13(10): e0140328. doi: 10.1371/journal.pone.0140328. eCollection 2015.



An average of 69% of affected countries and territories per semester provided information on the number of PPR outbreaks. These countries and territories reported 23 358 outbreaks during the period of analysis. However, the month in which the outbreak started was not reported for 77% of these outbreaks. Therefore, the dataset included only 7708 outbreaks, corresponding to 33% of all outbreaks identified by countries and territories from 2005 to 2016. It should be noted that a very high proportion of these outbreaks (78%) were reported by Iran and Oman. Therefore, the seasonal pattern of PPR in these countries strongly impacted the results obtained at regional level.

The relationship between the dependent variable (PPR incidence) and the independent variables (year and period of Muslim festivities and pilgrimage) was modelled using a generalised linear model (GLM) with Poisson family distribution. Model selection was done choosing a model by Akaike information criterion (AIC) in a stepwise algorithm<sup>21</sup>. The selected model was able to explain 70% of the total variance of the null model.

The results show that PPR incidence varied significantly among years and that within each year, PPR incidence was lower during periods of Muslim festivities and pilgrimage ( $p < 0.001$ ), when trade of live animals is low. It should be noted that during the period from 2005 to 2016, Muslim festivities and pilgrimage mostly occurred during winter, and the results obtained may therefore also be interpreted as a seasonal effect in disease development<sup>22</sup>.

The next part of the analysis focuses on PPR in wildlife. Indeed, one of the prerequisites for the success of the PPR Global Control and Eradication Strategy is the absence of a wildlife reservoir for PPR. The available evidence indicates that PPR does not persist in wildlife populations and exposure to infected sheep and goats precedes outbreaks in wildlife<sup>23</sup>. Wildlife populations have not been noted to sustain infection or act as a source of infection for domestic animals<sup>24</sup>. However, their exact role in the epidemiology of PPR is not yet well understood<sup>22,25</sup>. Questions have been raised, in particular after the PPR event that occurred in Mongolia in 2016/2017, which caused more than 3000 deaths in Mongolian saigas (*Saiga tatarica mongolica*), an endangered species.

Therefore, to enable experts to gather more information on PPR in wildlife, the OIE recommends that its Members implement PPR surveillance in both domestic and wild animals. This is particularly important for the Middle East, as several countries have already reported the presence of PPR in wildlife. For example, Iran reported 368 cases in wild bovidae in 2015/2016 and two cases in wild cervidae (species unidentified) in 2015, Libya reported four cases in Barbary sheep (*Ammotragus jervia*) in 2013, while Kuwait reported 20 cases in wild animals in 2009. Other cases in wildlife have been reported in the scientific literature<sup>22</sup>.

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<sup>21</sup> Hastie TJ and Pregibon D. (1992) Generalized linear models. Chapter 6 of Statistical Models in S eds J. M. Chambers and T. J. Hastie, Wadsworth & Brooks/Cole

<sup>22</sup> Parida S et al. Peste des petits ruminants. Vet Microbiol. 2015;181:90–106.

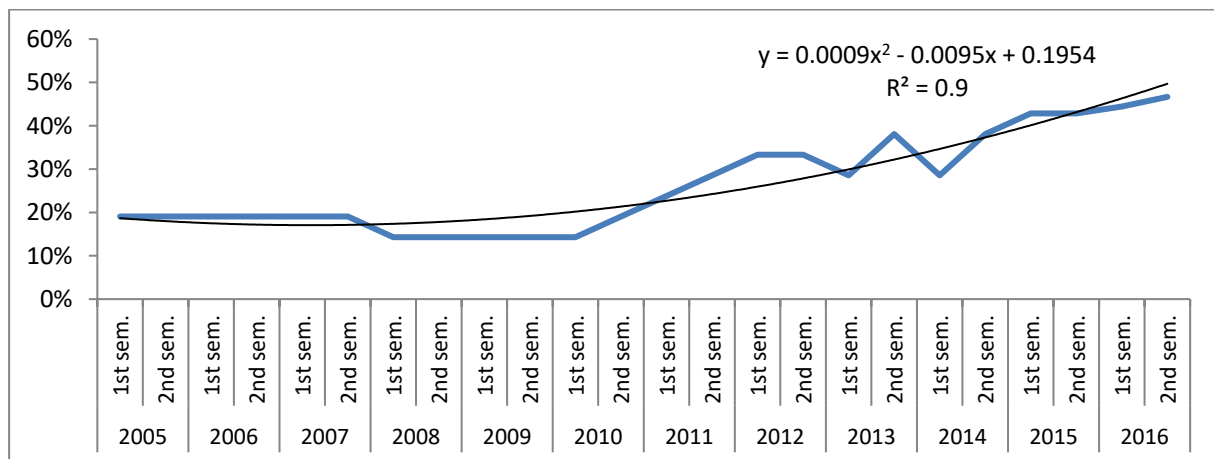
<sup>23</sup> Mahapatra M, Sayalel K, Muniraju M, Eblate E, Fyumagwa R, Shilinde L, Mdaki M, Keyyu J, Parida S, Kock R., Spillover of Peste des Petits Ruminants Virus from Domestic to Wild Ruminants in the Serengeti Ecosystem, Tanzania. Emerg Infect Dis. 2015;21:2230-4. doi: 10.3201/eid2112.150223.

<sup>24</sup> Munir M. Role of wild small ruminants in the epidemiology of peste des petits ruminants. Transbound Emerg Dis. 2014;61(5):411-24. doi: 10.1111/tbed.12052. Epub 2013 Jan 10.

<sup>25</sup> Kumar N et al. Peste Des Petits Ruminants Virus Infection of Small Ruminants: A Comprehensive Review. Viruses 2014;6:2287–327.

Figure 6 shows the evolution in time of the percentage of countries and territories in the Middle East reporting surveillance activities<sup>26</sup> for PPR in wildlife through their six-monthly reports. As shown in the graph, this percentage remained relatively low at around 17% from 2005 to 2010, and progressively increased from 24% in the first semester of 2011 to 47% in the second semester of 2016. A significantly positive correlation ( $\rho=0.8$ ,  $p<0.001$ ) between the percentage and the semesters was found using the Spearman rank correlation test, indicating an increase in the implementation of PPR surveillance in wildlife in the Region. The trend shown on the figure was further described using a quadratic regression model ( $p<0.001$ ). These results are encouraging. The OIE urges its Members to pursue these efforts and to report any relevant findings to the OIE.

**Figure 6. Percentage of countries and territories reporting surveillance activities in wildlife in the Middle East from 2005 to 2016 (up to 11 July 2017)**



In conclusion, this section has shown the endemic and deteriorating context of PPR in the Middle East over the past 12 years. To achieve eradication of PPR by 2030, the OIE urges its Members to implement surveillance and to report sanitary information to the OIE, while noting that certain countries in the Region are currently not able to do so.

This section has shown that data sharing between countries and territories through WAHIS is important for several reasons. Firstly, WAHIS constitutes a useful tool for risk assessments, especially in the Middle East which acts as a crossroads for livestock trade. The provision of data with temporal details makes it possible to identify periods that present a higher or lower risk for disease spread. These results may be very useful for national disease control and preparedness. However, there is clearly room for improving the accuracy of the data since temporal details for PPR outbreaks were provided for only 33% of the outbreaks that occurred during the period of analysis. Therefore, the OIE encourages its Members to share information with a sufficient level of detail to enable such epidemiological analyses to be performed, as these constitute invaluable feedback from the OIE to reporting countries and territories.

Secondly, WAHIS is a useful tool for gathering the scientific information needed to answer crucial questions, such as the exact role of wildlife in PPR epidemiology, within the context of the Global Control and Eradication Strategy. The OIE encourages its Members to share scientific findings through WAHIS, as well as through scientific publications.

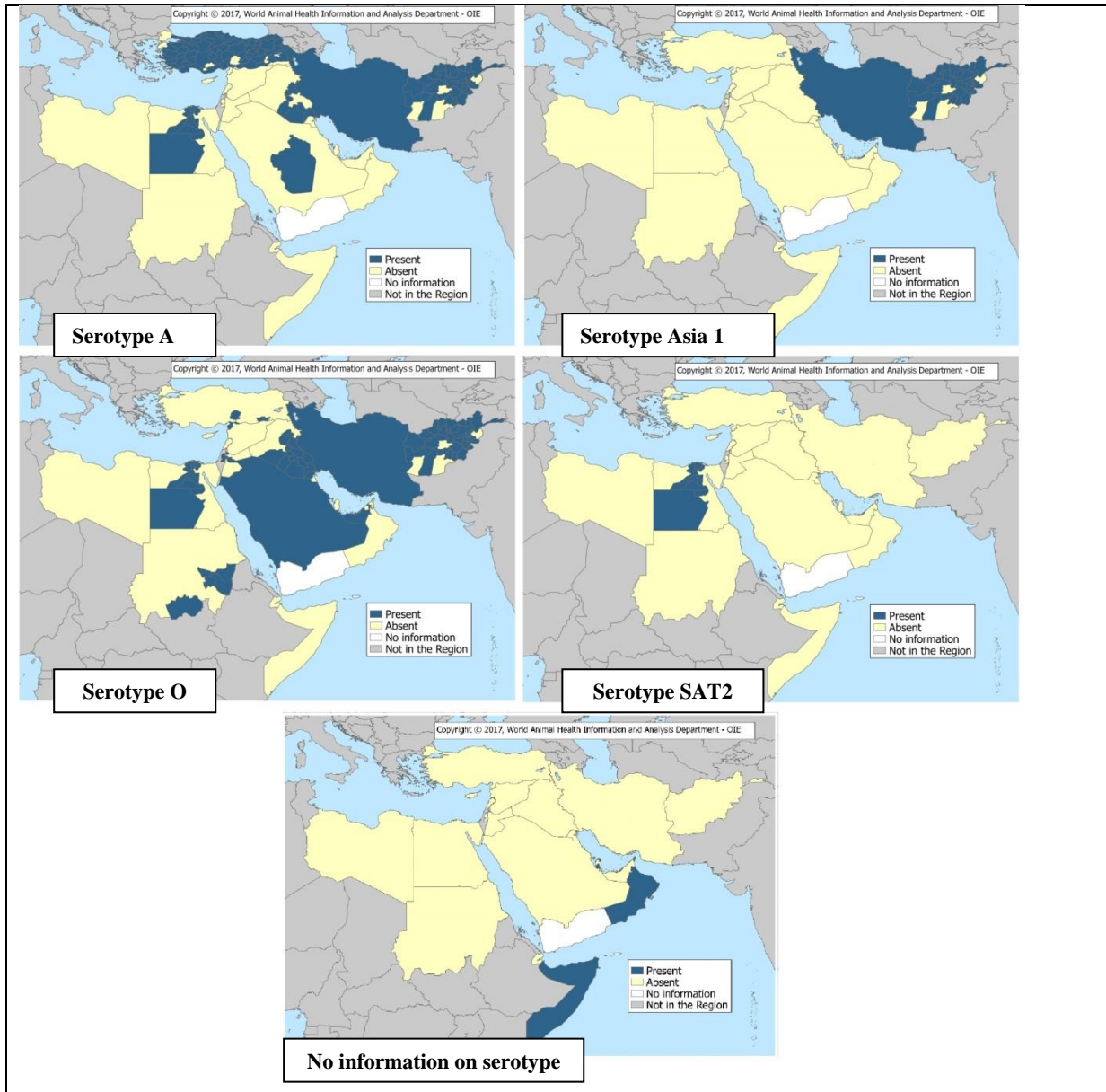
<sup>26</sup> Surveillance activities include: disease notification, general surveillance, monitoring, screening or targeted surveillance.

### **3) Infection with foot and mouth disease virus**

Infection with foot and mouth disease (FMD) virus is endemic in several countries within the Region. The geographical distribution of FMD in the Middle East during the period from 1 January 2016 to 11 July 2017 is shown in Figure 7. During this period, 21 countries and territories provided information on the disease, which was reported present by 67% of them (14/21). Four serotypes were reported during this period (A, Asia 1, O and SAT2). Serotype O was the most frequently reported, as it was notified by 52% of the countries and territories (11/21), followed by serotype A, reported by 28% (6/21), serotype Asia 1, reported by two countries (Afghanistan and Iran), and serotype SAT2, reported by Egypt. Three countries (Oman, Qatar and Somalia) were not able to provide information on circulating serotype(s) through their six-monthly reports.

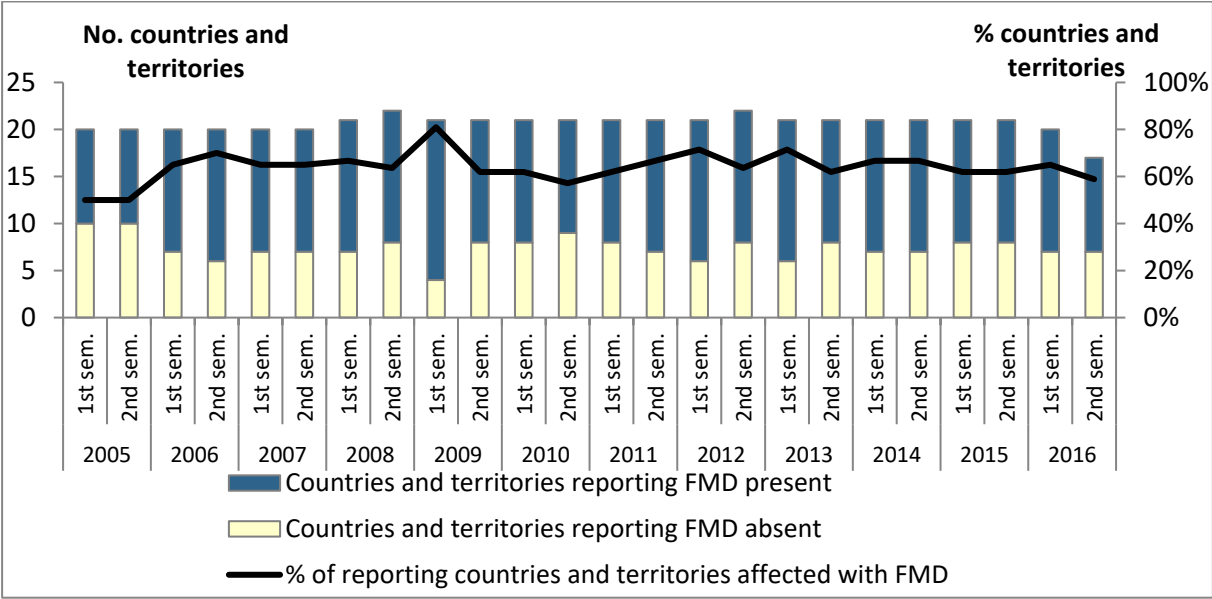
During this period, FMD was reported by means of immediate notifications by five countries and territories. Iran reported the occurrence of a new strain of serotype A (Genotype VII) in the country, with a starting date in August 2015 and reported to the OIE on January 2016. The origin of the affected animals was traced to a live animal market located in the western part of Iran. Kuwait reported the recurrence of serotype O in the country, the event starting in January 2016; Saudi Arabia reported the recurrence of serotype A in the administrative division of Ar Ryad, starting in October 2016. For both events, the source of introduction remains unknown, and the events were resolved following vaccination in response to the outbreaks. Recurrences of serotype O were reported with starting dates in February 2017 in Jordan and in the Gaza Strip (Palestinian Autonomous Territories). The recurrence in the Gaza Strip was due to the introduction of live animals. Finally, a recurrence of FMD (serotype identification still pending) in the West Bank was reported by the Palestinian Autonomous Territories, with a starting date in May 2017. The source of introduction remains unknown. Two Member Countries in the Region have a recognised official disease status for FMD: Cyprus (FMD free country where vaccination is not practised) and Turkey (one FMD free zone where vaccination is practised).

**Figure 7. Distribution of FMD in the Middle East in 2016 and 2017 (up to 11 July 2017)**



The following part of the analysis describes the trend in notifications of the disease since 2005, to provide more background historical information. As shown in Figure 8, variations in the percentage of countries and territories reporting FMD present were observed from 2005 to 2016. An increase in the percentage was observed from 2005 (50%) to the first semester of 2009 (81%), followed by a decrease in the following year and then positive or negative oscillations around the average value calculated for the whole period 2005–2016 (64%). No statistically significant correlation was observed between the variation of the percentage and the years (Spearman rank correlation test,  $p > 0.05$ ). These results show that the percentage of countries affected by FMD did not follow any regular increasing or decreasing trend during the period of analysis, its variations being irregular.

**Figure 8. Percentage of the reporting countries and territories for each semester between 2005 and 2016 that notified FMD present (data based on reports received up to 11 July 2017)**



To better characterise the epidemiological situation of FMD in the Middle East, an analysis of the historically circulating serotypes, based on WAHIS data (2005–2016), and associated direct losses (due to mortality, stamping out and slaughter) was carried out.

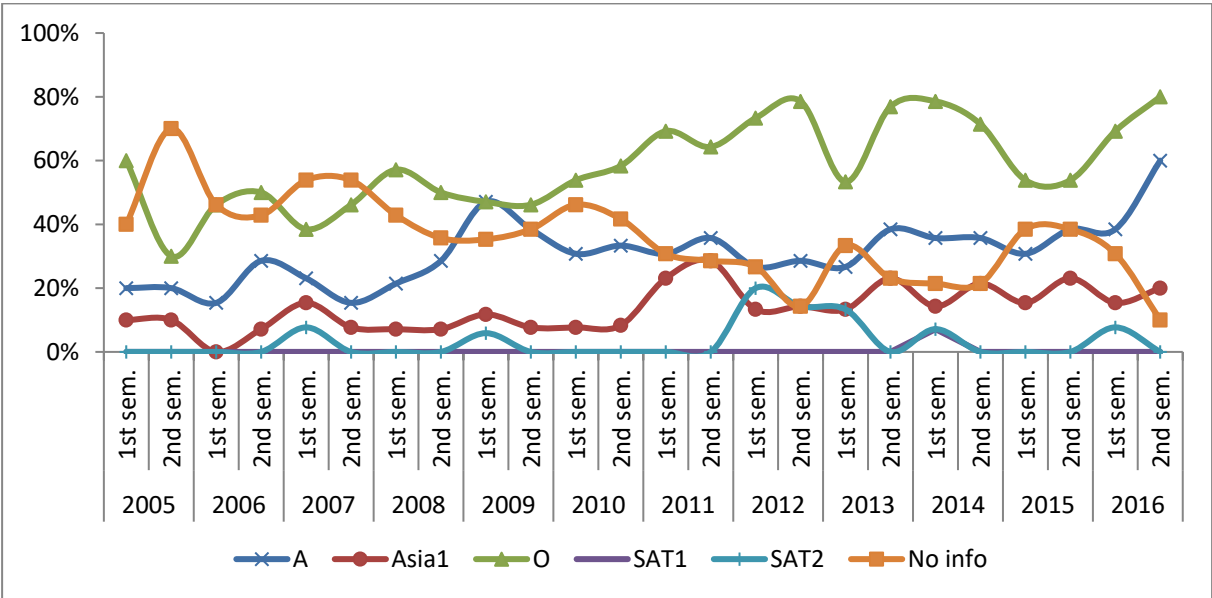
Firstly, the percentage of countries and territories reporting each serotype during the period of study was measured and the results plotted against the semesters from 2005 and 2016 (Figure 9). For the period under study, five serotypes (A, Asia 1, O, SAT1 and SAT2) were reported to the OIE through WAHIS by Members in the Region. Two serotypes were predominant in the Region during this period: serotypes O and A, which were respectively reported on average by 59% and 31% of the countries and territories during the period. The distribution of serotype Asia 1 was more localised (overall, reported in 24% of the countries and territories). Serotype SAT2 was occasionally reported during the period (in 19% of the reporting countries and territories), while serotype SAT1 was reported only in Afghanistan (in 2014).

A significant positive correlation was measured using the Spearman correlation test between the percentage of affected countries and the semesters for serotype O ( $\rho=0.7$ ,  $p<0.001$ ), serotype A ( $\rho=0.7$ ,  $p<0.001$ ) and serotype Asia 1 ( $\rho=0.7$ ,  $p<0.001$ ). These results show that these serotypes progressively spread within the Region from 2005 to 2016<sup>27</sup>.

Two peaks were observed for the percentage of countries and territories reporting serotype A, the first in 2009 and the second in 2016. These peaks were related to the appearance and spread in the Region of new strains: A-Iran-05 in 2006/2007<sup>28</sup>; and A/SAU/1/2015 (A/ASIA/G-VII lineage)<sup>29</sup>, respectively. Previous studies have highlighted a regular time pattern for the appearance of new serotype A strains in the Region every five to ten years<sup>28</sup>, with important implications for ensuring proper vaccine coverage to avoid disease spread.

This analysis shows that the percentage of affected countries not able to characterise the circulating serotype(s) significantly decreased from 70% in 2005 to 10% in 2016 ( $\rho=-0.7$ ,  $p<0.001$ ), indicating an improvement in the ability of Veterinary Services in the Region to access diagnostic services for strain typing.

**Figure 9. Percentage of the reporting countries and territories for each semester between 2005 and 2016 by FMD serotypes (data based on reports received up to 11 July 2017)**



Secondly, the direct losses (due to mortality, stamping out and slaughter) associated with FMD were measured by semester, to illustrate the economic impact of the disease.

A total of 157 716 animals were lost during the period under study, as reported by the affected countries and territories in immediate notifications, follow-up reports and six-monthly reports.

<sup>27</sup> Di Nardo A, Knowles NJ, Paton DJ. Combining livestock trade patterns with phylogenetics to help understand the spread of foot and mouth disease in sub-Saharan Africa, the Middle East and Southeast Asia. *Rev Sci Tecg Off Int Epiz.* 2011;30: 63.

<sup>28</sup> Knowles NJ, et al. Recent spread of a new strain (A-Iran-05) of foot-and-mouth disease virus type A in the Middle East. *Transboundary and Emerging Diseases* 2009;56:157-169.

<sup>29</sup> Bachanek-Bankowska K, et al. Complete genome sequence of a serotype A foot-and-mouth disease virus from an outbreak in Saudi Arabia during 2015. *Genome announc.* 2016; 4(1): e01591-15. doi:10.1128/genomeA.01591-15

These results are incomplete and almost certainly underestimate the true impact of direct losses, considering that: (i) only 75% of FMD-affected countries and territories reported quantitative information during the period of study; (ii) some countries provided information on an irregular basis; (iii) important gaps have been noted between the figures for direct impact officially reported to the OIE and the information available in the scientific literature<sup>30</sup>, suggesting some bias in the quantitative data reported.

Overall, the results of this analysis highlight some already well-known information: the disease is endemic and widespread in the Region, without clear signs of significant improvement in the regional epidemiological situation. There are marked differences in the percentage of reporting countries and territories affected between years, but there is no clear (positive or negative) trend. Besides, periodic epidemics occur, spreading across national and regional borders.

In the Middle East, areas with a high density of ruminant livestock and areas with extensive pastoral and nomadic livestock populations constitute significant risk factors that make the monitoring and control of the disease in the Region challenging<sup>31</sup>. Moreover, international movements of animals pose a significant risk for the introduction of new strains (e.g. SAT1 and SAT2) from East Africa to the Middle East<sup>27</sup>. Besides, the Region is at risk for the spread of transboundary animal diseases, given that this area acts as a crossroads for livestock trade between Europe, Africa and Asia. Indeed, some scientific publications have referred to the Middle East as a 'mixing vessel' for introducing FMD viruses from either the Far East or African countries. In view of this situation, the Region is characterised by a constantly evolving epidemiological status.

The capacity of FMD to move outside African endemic areas has been confirmed by outbreaks of African strains reported in previously unaffected areas of the Middle East: phylogenetic analysis has, for example, revealed a high level of similarity in sequence identity (>90%) between some SAT2 viruses isolated Saudi Arabia and in Eritrea, thus indicating the north-eastern region of Africa as the most likely source of the viruses introduced into the Middle East<sup>32</sup>. Moreover, other connections found between isolates from Afghanistan, Pakistan, Saudi Arabia, Iran and Turkey suggest that FMD probably spreads from South-Central Asia westwards along what has been described as the "Eurasian ruminant street"<sup>33</sup>. The serotypes involved in these spread events represent what epidemiological studies carried out by Pirbright Institute (based on phylogenetic analysis) identified as "long distance 'trans-pool' movements" (e.g. O/ME-SA/Ind-2001d or A/ASIA/G-VII). The livestock rearing system in the Region is another factor that affects the status of the disease, since frequent and often large-scale livestock movements are still quite common in some countries. Finally, the Region is facing a complex epidemiological situation given that five different serotypes are circulating and some of them have shown a capacity for mutation with the appearance of new strains (e.g. serotype A).

For all these reasons, the monitoring of FMD in the Region requires special attention, and the quality and transparency of information provided by Member Countries and territories is crucial.

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<sup>30</sup> Knight-Jones, TJD, Rushton J. The economic impacts of foot and mouth disease—What are they, how big are they and where do they occur? *Preventive Veterinary Medicine* 2013;112:161-73.

<sup>31</sup> Slingenbergh J, Gilbert M, de Balogh K, Wint W. Ecological sources of zoonotic diseases. *Rev Sci Off Int Epiz.* 2004;23:467-84.

<sup>32</sup> Bastos AD, Haydon DT, Sangare O, Boshoff CI, Edrich JL, Thomson GR. The implications of virus diversity within the SAT 2 serotype for control of foot and-mouth disease in sub-Saharan Africa. *J. Gen. Virol.* 2003; 84 :1595-606.

<sup>33</sup> Slingenbergh J. Clarifying disease spread in the Eurasian ruminant street. In Report of the 35th Session of the European Commission for the Control of Foot-and Mouth Disease, 9-11 April, Rome, 2003. pp 111-115.

The analysis of WAHIS data shows gaps in the quantitative information provided and a lack of information concerning serotyping, despite the improvement observed in recent years. Serotyping is essential for vaccine selection, disease containment and tracing the source of the outbreaks<sup>34</sup>.

Special attention needs to be paid to serotype A, given the periodic emergence of antigenically distinct variants necessitating the development of new vaccine strains. The importance of vaccine matching for effective vaccination and the prevention of disease spread is illustrated by the peaks observed in countries affected by serotype A in 2009 and in 2015/2016.

For this reason, the next version of WAHIS will be able to collect information not only about serotypes, but also about detailed viral strains and genetic information, via a link to an OIE genomic platform. It is foreseen that the OIE will achieve this objective in collaboration with its Reference Centres that provide specific expertise in virus sequencing. The availability of high quality genetic information will be important not only for vaccine-matching but also to better identify and implement strategies to prevent the spread of FMD within the Region. A deeper understanding of the main routes of disease spread will allow improved prevention and preparedness.

Working with our Members and other partners, the OIE is making major contributions to the global framework for FMD prevention and control, including:

- 1) WAHIS, which allows prompt sharing of quality information, as well as early warning. Next version of the system (WAHIS+) will improve the quality of the information collected and facilitate data sharing;
- 2) the Progressive Control Pathway for FMD control (PCP-FMD), which is expected to form the backbone of the Global FAO/OIE Strategy for the Control of FMD. Most of the countries in the Region are still at stage 1 of the pathway (“gain an understanding of the epidemiology of FMD in the country and develop a risk-based approach to reduce the impact of FMD”);
- 3) the procedure for official recognition of FMD free status and endorsement of official national control programmes for FMD;
- 4) OIE standards, such as those in the *Terrestrial Code* on risk management during trade in animals and animal products from free and infected countries, aimed at minimising the risk of disease introduction and spread in countries, and those in the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (hereafter the *Terrestrial Manual*) on diagnostic assays and vaccine standards;
- 5) the OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool), designed to help countries to improve their Veterinary Services’ compliance with OIE standards.

The OIE encourages its Members to use these tools in the development of their national disease surveillance and control strategies.

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<sup>34</sup> Reid, SM, et al. Development of tailored real-time RT-PCR assays for the detection and differentiation of serotype O, A and Asia-1 foot-and-mouth disease virus lineages circulating in the Middle East. *Journal of Virological Methods* 2014;207:146-53.



#### 4) **Infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis***

Brucellosis is still endemic in the Middle East and has a significant economic and public health impact. Brucellosis is considered the most common anthroozoonosis worldwide<sup>35</sup>, with minimal mortality but significant morbidity in humans, and significant losses in terms of animal productivity<sup>36</sup>.

Countries have the possibility to report specific information through WAHIS for each of the three pathogenic agents of brucellosis: *Brucella abortus*, *Brucella melitensis* and *Brucella suis*. The recent geographical distribution of infection with *B. abortus*, *B. melitensis* and *B. suis* in the Middle East, during the period 1 January 2016 to 11 July 2017, is shown in Figure 10. During this period, 20 countries and territories provided information on the disease (for at least one of the three notifiable causal agents), which was reported present by 85% of them (17/20). In particular, 35% of the countries (7<sup>37</sup>/20) reported the presence of *B. abortus*, 80% of the countries and territories (16<sup>38</sup>/20) reported the presence of *B. melitensis* and 5% of the countries (1<sup>39</sup>/20) reported the suspicion of *B. suis*.

The map below shows that *B. abortus* was present mainly in the north-eastern part of the Region, *B. melitensis* was widespread through the whole Region and *B. suis* was limited to only one country (suspected in wildlife). During this period, no immediate notification was submitted from the Region to the OIE for infection with *B. abortus*, *B. melitensis* and *B. suis*.

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<sup>35</sup> Pappas G, Papadimitriou P, Akritidis N, Christou L, Tsianos EV. The new global map of human brucellosis. *Lancet Infect Dis.* 2006;6:91-9.

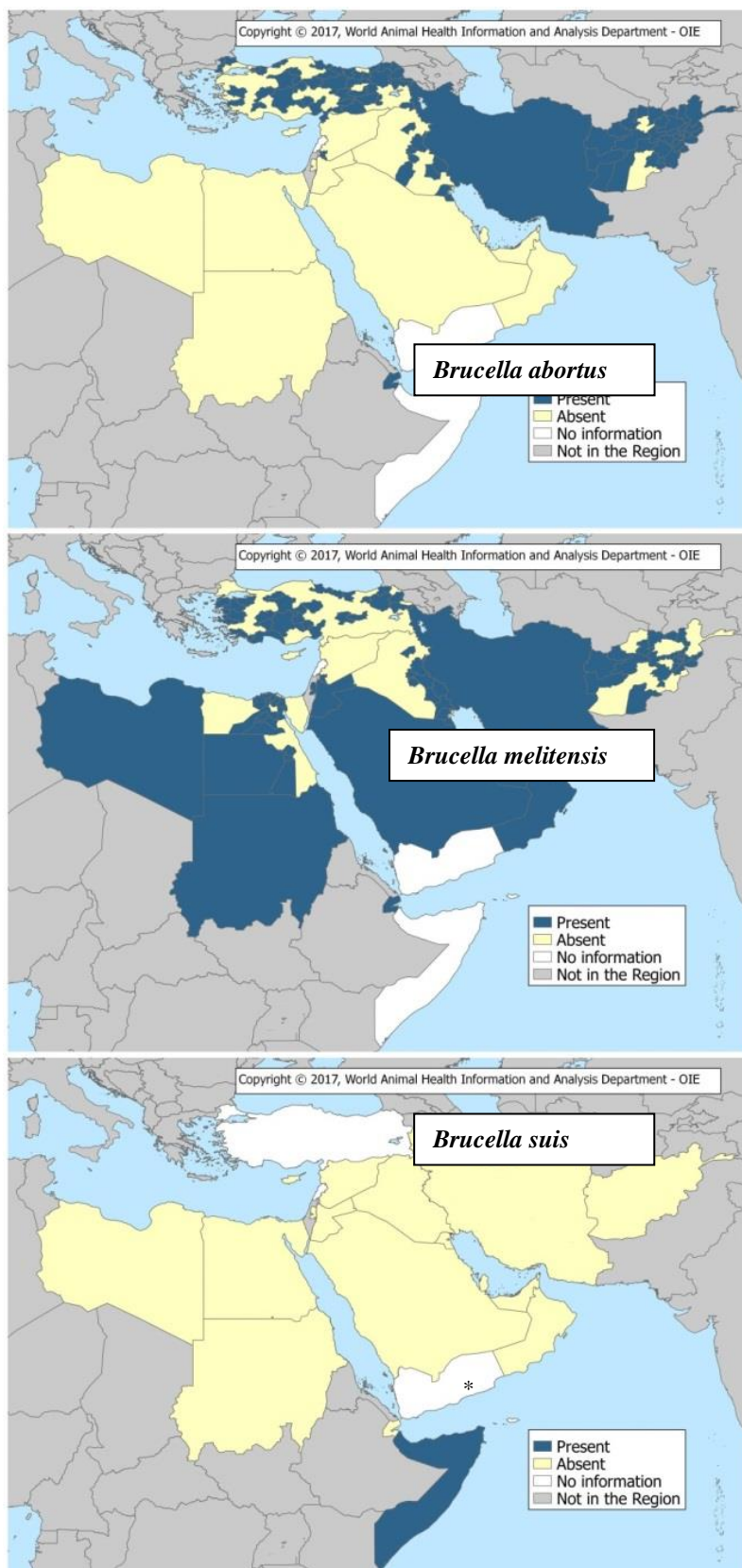
<sup>36</sup> Pappas G, Akritidis N, Bosilkovski M, Tsianos E. Brucellosis. *N Engl J Med* 2005;352:2325-36.

<sup>37</sup> Afghanistan, Djibouti, Iran, Iraq, Kuwait, Syria and Turkey.

<sup>38</sup> Afghanistan, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Libya, Oman, Palestinian Auton. Territories, Qatar, Saudi Arabia, Sudan, Syria, Turkey and United Arab Emirates.

<sup>39</sup> Somalia

Figure 10. Distribution of infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis* in the Middle East in 2016 and 2017 (up to 11 July 2017)

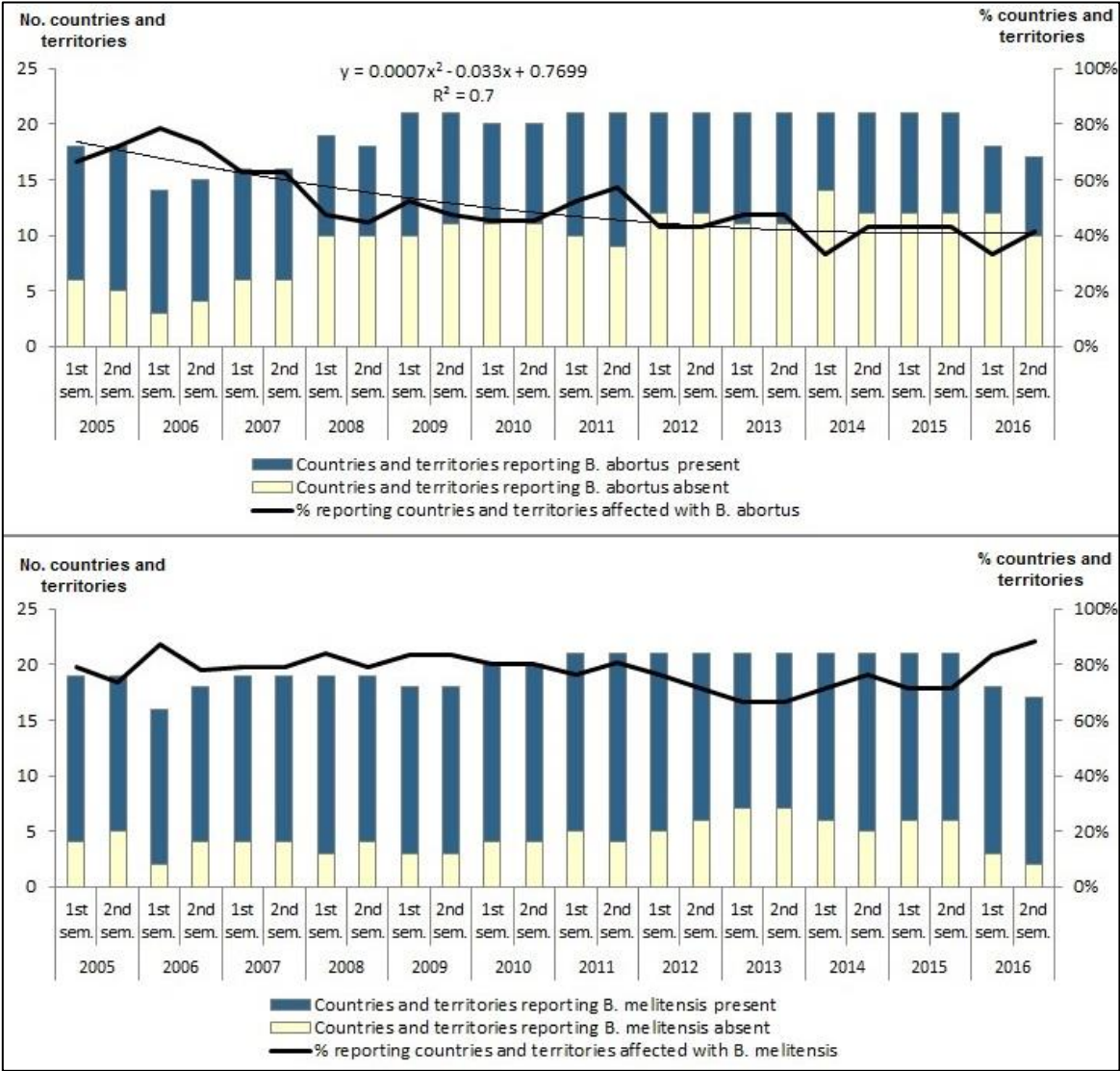


\* *Brucella suis* in Somalia is reported suspected in wildlife

After the description of the geographical distribution of the disease, the following part of the analysis describes the trend in notifications of the disease since 2005, to provide more background historical information and to illustrate the impact on OIE Member Countries. The trend is presented separately for *B. abortus* and *B. melitensis* (Figure 11). No trend is presented for *B. suis* considering that during the whole period the only reports were from Somalia, which reported suspicion of the disease in 2015 and 2016 in wildlife.

A significant negative correlation was observed between the percentage of countries reporting *B. abortus* present and the period of study (Spearman test [ $\rho=-0.8$ ;  $p<0.001$ ]), showing an improvement of the epidemiological situation of the disease in the Region. In contrast, the situation for *B. melitensis* was relatively stable, with no significant positive or negative trend detected ( $p>0.05$ ). The only trend line shown on the graph is for *B. abortus*, which showed a significant trend. On average, during the period under study, *B. abortus* was reported by 49% of the reporting countries and territories, and *B. melitensis* by 78% of the reporting countries and territories in the Region.

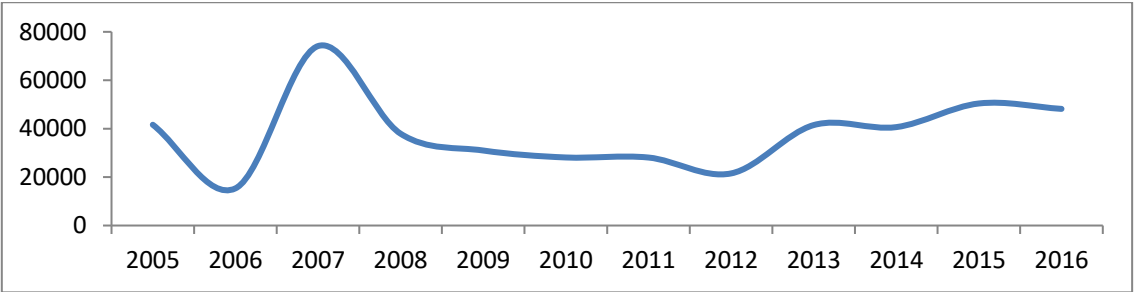
**Figure 11. Percentage of the reporting countries and territories for each semester between 2005 and the first semester of 2017 that notified infection with *Brucella abortus* and *Brucella melitensis* present (data based on reports received up to 11 July 2017)**



Considering that the disease (*B. melitensis* in particular) is highly endemic in the Region and in view of its economic and public health impact, the analysis focuses on the description of the burden of the disease in humans (number of cases), in the traditionally affected animal species, namely cattle, small ruminants and swine (losses) and in camels (losses). For the purpose of the analysis, “losses” means the total number of animals lost due to mortality, slaughter or stamping out.

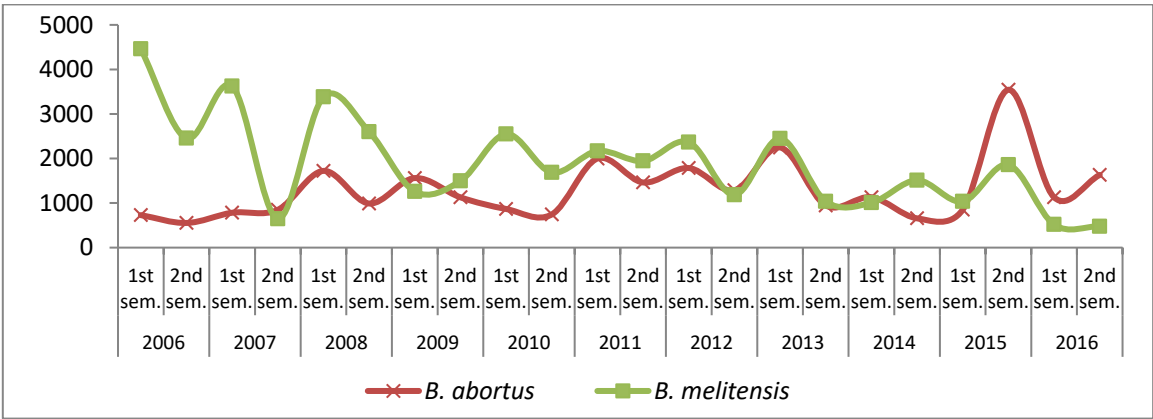
More than 400 000 human cases were reported through WAHIS during the period 2005–2016 by countries and territories in the Region, making brucellosis one of the main zoonoses in the Region. A major peak in the number of cases reported was observed in 2007 (around 75 000) and a lower peak in 2015 (around 50 000). A large majority of the cases were reported by only a few countries: Iran, Syria and Yemen reported around 75% of the total number of cases in the period of the study. A large variability in the number of cases reported was observed, with no clear and significant trend in the period of the study (Figure 12).

**Figure 12. Trend in the number of human cases of brucellosis reported by countries and territories in the Region during the period 2005–2016 (data based on reports received up to 11 July 2017)**



The trend in the number of animal losses during the period 2005–2016 is presented in Figure 13, separately for *B. abortus* and *B. melitensis*. Both trends showed large variations in the quantitative data reported throughout the period of study. No significant trend was observed for *B. abortus*, while the trend for *B. melitensis* showed a significant decrease for the period 2005–2016 ( $\rho = -0.6$ ,  $p < 0.05$ ).

**Figure 13. Trend in the number of animal losses (deaths, slaughtered and stamping out) reported by countries and territories in the Region for *B. abortus* and *B. melitensis* during the period 2005–2016 (data based on reports received up to 11 July 2017)**



In particular, during the period under study, more than 70 000 animal losses were declared by countries and territories of the Region. *B. melitensis* caused the higher proportion (60%) of losses, with sheep and goats being the most affected species and accounting for 56% of the total number of losses. *B. abortus* accounted for 39% of losses, with cattle being the most affected species at 43% of the total losses.

The remaining 1% of losses involved *Camelidae*, and mainly related to infection with *B. melitensis* (only 1 case reported for *B. abortus*). The reporting of brucellosis in camels through WAHIS is very important, considering the sparse epidemiological information currently available at global level and in the scientific literature.

The low level of reporting of brucellosis in camels is due to the following:

- Lack of clinical signs: in contrast to other animal species, such as cattle, camels present few clinical signs of brucellosis<sup>40</sup>.
- Lack of validated diagnostic tests: most of the serological tests used for camels have been transposed from cattle without adequate validation<sup>41</sup>.
- Lack of active monitoring: on average in the period from 2005 to 2016, passive surveillance (i.e. the disease is notifiable in the country and/or a general surveillance strategy is implemented) was applied by 57% of countries and territories for *B. abortus* and 48% for *B. melitensis*. Moreover, active surveillance plans (monitoring, screening or targeted surveillance reported in the countries' reports) were declared on average by only 34% of the countries and territories for *B. abortus* and 36% for *B. melitensis*.
- Type of production: camel production usually coincides with remote areas and consequently the infrastructure to perform diagnosis may be lacking<sup>42</sup>.

The analysis in this chapter shows once more the importance of the disease in the Region and the huge differences in the distribution and impact of the three pathogenic agents causing the disease. *B. melitensis* is by far the most important of the three, being widespread in the Region and accounting for 60% of the losses. These results are in accordance with a recent systematic review of studies on brucellosis in the Middle East<sup>43</sup>, which summarised information published in 87 papers.

Although *B. melitensis* at country level is endemic in the Region, with no significant reduction in the percentage of countries reporting the disease present, the quantitative data provided show that the economic impact of the disease (animal losses) has been decreasing over the years. *B. abortus*, on the other hand, is progressively being brought under control in the Region, with a decreasing number of countries reporting the disease present, even if its economic impact has not significantly decreased.

Brucellosis in camels is particularly important for the Region<sup>44</sup>, and the data collected by countries and territories are crucial to better clarify the poorly known epidemiology of the disease in this species. The role of the WAHIS system in collecting and sharing information with the international community is once more highlighted. In particular, this chapter has underlined a reliance on passive surveillance activities for brucellosis in the Region. Given the importance of the disease from both a public health and an animal production perspective, active surveillance across all susceptible animal species, including camels, would enable Members to collect high quality epidemiological data. Countries and territories in the Region should continue their efforts to control and eradicate *B. abortus* and *B. melitensis*, and the first and most important approach is to share with the other countries high quality information through WAHIS in a transparent manner. The OIE encourages Member Countries to improve their efforts in this direction.

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<sup>40</sup> Mousa AM et al. Brucellosis in Kuwait. Transactions of the Royal Society of Tropical Medicine and Hygiene 1987;81:1020–1021.

<sup>41</sup> Gwida M, et al. Brucellosis in camels. Research in Veterinary Science 2012;92: 351-5.

<sup>42</sup> Schwartz, HJ. Productive performance and productivity of dromedaries (*Camelus dromedarius*). Animal Research and Development 1992;35:86–98.

<sup>43</sup> Musallam II, et al. Systematic review of brucellosis in the Middle East: disease frequency in ruminants and humans and risk factors for human infection. Epidemiology & Infection 2016;144: 671-85.

<sup>44</sup> Gul ST, Khan A. Epidemiology and epizootology of brucellosis: A review. Pakistan Veterinary Journal 2007 ;27: 145.

Moreover, considering the current lack of a validated diagnostic test to detect brucellosis in camels, the OIE supports the Steering Committee of the Camel Middle East Network (CaMeNet), and in particular the Network's objective to contribute to the development, standardisation and accreditation of the diagnostic methods for major camel diseases in accordance with OIE standards and procedures. The implementation of CaMeNet's work plan will improve the scientific and technological capacities in the epidemiology and diagnosis of camel diseases and facilitate cooperation between Members of the Region and OIE Reference Laboratories.

The human burden of the disease is also considerable in the Region, with more than 400 000 cases being reported during the past 11 years. However, little information about human deaths is available in the Region, as most of the reporting countries and territories did not provide this information in their annual reports. The lack of complete information makes it difficult to evaluate important epidemiological parameters, such as disease mortality rates. It is worth pointing out that the OIE's data on zoonoses in humans is provided by the Veterinary Services through WAHIS. The quality and accuracy of the data provided by the Veterinary Services depends on the level of collaboration and networking with the Ministry of Health or relevant competent authority in order to obtain the relevant data. Data on the occurrence and epidemiology of brucellosis in humans can also be obtained from the World Health Organization and by reviewing scientific literature (e.g. Musallam et al., 2016<sup>43</sup>), though it should be noted that scientific publications cannot be considered as 'official information'. Once again the OIE encourages Member Countries to provide complete information through WAHIS in their annual reports and to liaise with their Health Ministry counterparts to obtain more data on zoonoses in humans.

## **5) Equine diseases and infections**

In the Middle East, international trade in high performance horses has been an important activity of the Region for more than 20 years<sup>45</sup>. This section describes the sanitary situation and laboratory diagnostic capacities for OIE-listed equine diseases and infections in the Region.

A total of 10 diseases and infections are covered in this analysis, namely contagious equine metritis, dourine, equine infectious anaemia, equine influenza, equine piroplasmosis, glanders, infection with African horse sickness virus, infection with equid herpesvirus-1 (EHV-1), infection with equine arteritis virus and West Nile fever. Eastern equine encephalomyelitis, Venezuelan equine encephalomyelitis and western equine encephalomyelitis have been excluded from the analysis as the traditional distribution range of these diseases does not include the Middle East<sup>46</sup>.

Figure 14 shows the number of countries and territories in the Middle East having reported these OIE-listed equine diseases and infections present or suspected, or absent, in 2016, or having provided no information. Out of the 10 diseases and infections considered, four were reported present in 2016 through six-monthly reports: infection with equid herpesvirus-1 (EHV-1) was reported by Egypt with three cases in the Muhafazah of Al Qahirah; Jordan reported the presence of equine piroplasmosis and the suspicion of West Nile fever without quantitative details; and glanders was reported by Iran with 50 cases in the country during the year. No immediate notification was submitted between 1 January 2016 and 11 July 2017 for OIE-listed equine diseases and infections, showing that the situation is stable in the Region.

Furthermore, as indicated in Resolution No. 27 (85th General Session of World Assembly, May 2017), Cyprus, Kuwait, Oman, Qatar, Turkey and United Arab Emirates are recognised as free from infection with African horse sickness virus in accordance with the provisions of Chapter 12.1. of the *Terrestrial Code*.

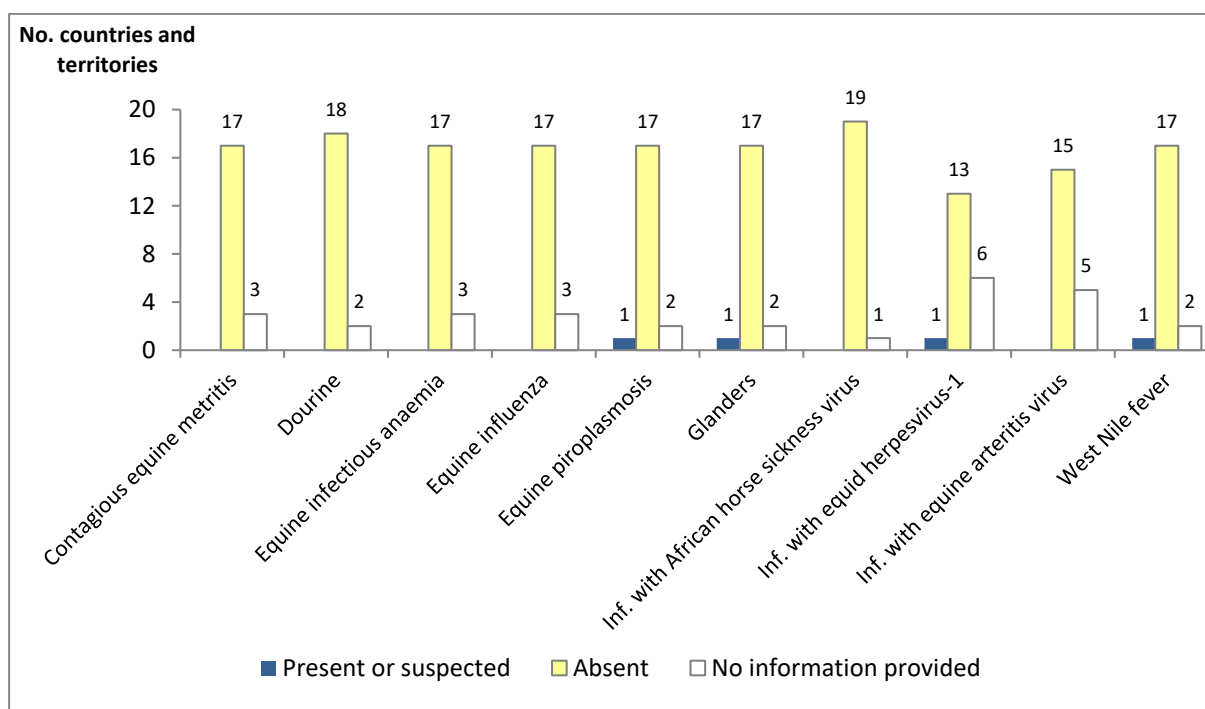
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<sup>45</sup> Problems associated with international trade and the movement of horses in the Middle East. Yehia G. Comprehensive reports on technical items presented to the International Committee 1994, pp 165-81

<sup>46</sup> OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2017, <http://www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/>

**Figure 14. Number of countries and territories in the Middle East having reported OIE-listed equine diseases and infections present or suspected, or absent, in 2016, or having provided no information**

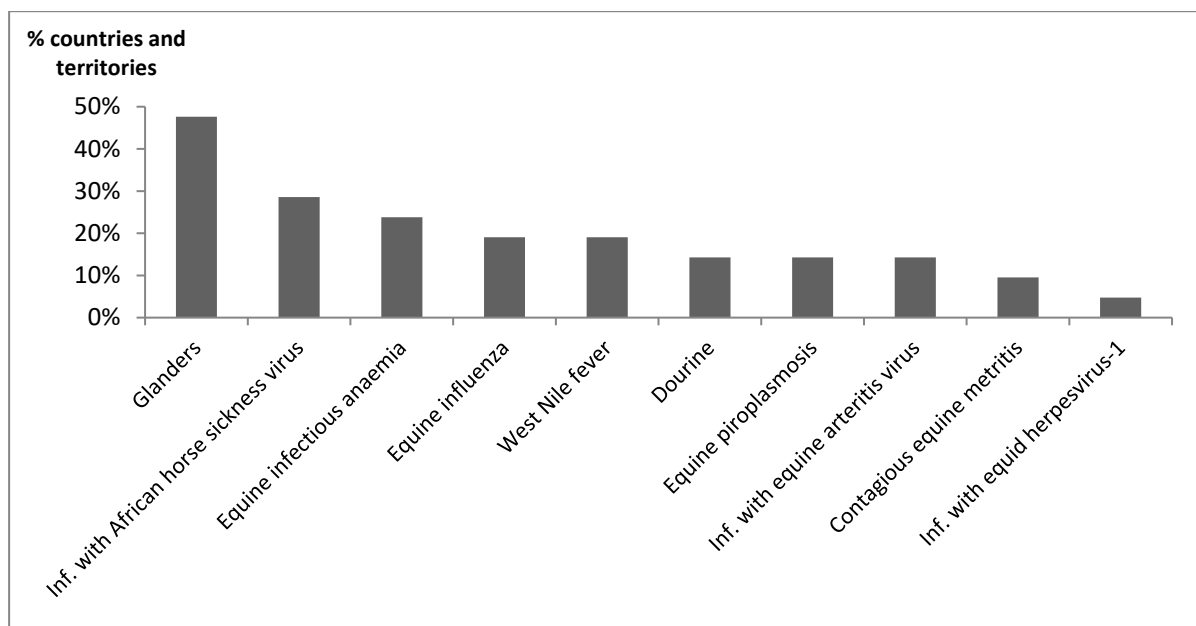
(data based on reports received up to 11 July 2017)



The next part of the section assesses the capacities for laboratory diagnosis of OIE-listed equine diseases and infections, as reported by countries and territories of the Middle East through their most recent annual reports. Annual reports contain valuable information; however, the percentages of countries presented below may be underestimated, as Focal Points for Animal Disease Notification to the OIE are not always aware of changes in national reference laboratories, and Focal Points for Veterinary Laboratories are rarely involved in completing WAHIS annual reports. Nevertheless, these data provide an overall estimation of regional capacities in this sphere.

Figure 15 shows the percentage of countries and territories in the Middle East having reported laboratory capacities for the diagnosis of 10 OIE-listed equine diseases and infections. Overall, for each of these diseases, less than 50% of countries and territories reported laboratory capacity. The disease with the highest percentage (48%) was glanders, which is clearly a disease of high interest for the Region, following the multiple glanders events that occurred between 2007 and 2012 in the Region. The Central Veterinary Research Laboratory of United Arab Emirates, an OIE Reference Laboratory for glanders, can also provide support to countries in the Region for the diagnosis of this disease. For other diseases, the percentage of countries and territories reporting laboratory capacities was relatively low, from 5% for infection with equid herpesvirus-1 (EHV-1) to 29% for infection with African horse sickness virus.

**Figure 15. Percentage of countries and territories in the Middle East having reported capacities for diagnosis of OIE-listed equine diseases and infections (data based on the most recent annual reports received up to 11 July 2017)**



For nine of these diseases, the OIE *Terrestrial Manual* provides recommendations on the intended purpose of each diagnostic method. In our analysis, a diagnostic method was associated with a purpose if it was either indicated as “recommended” or “suitable” in the *Terrestrial Manual*. The *Terrestrial Manual* also describes tests that may be used in some situations, but for which cost, reliability or other factors severely limits their application, and tests not appropriate for the listed purposes.

Table 1 therefore shows the number of countries and territories in the Middle East having reported laboratory diagnostic capacities through their most recent annual reports, classified by purpose. The table shows that on average, the reported tests are mostly aimed at demonstrating individual animal freedom from infection (particularly used for international trade) or confirming clinical cases. Fewer countries on average reported diagnostic tests aimed at demonstrating population freedom from infection or contributing to eradication policies.



**Table 1. Number of countries and territories in the Middle East having reported laboratory diagnosis capacities for OIE-listed equine diseases and infections, classified by purpose (data based on most recent annual reports received up to 11 July 2017)**

	Population freedom from infection	Individual animal freedom from infection	Contribution to eradication policies	Confirmation of clinical cases	Prevalence of infection – surveillance	Immune status in individual animals or populations post vaccination
Dourine	0	3	0	3	3	Not applicable
Equine infectious anaemia	5	5	5	3	3	Not applicable
Equine influenza	3	3	0	4	3	3
Equine piroplasmiasis	2	2	2	3	2	Not applicable
Glanders	6	6	6	0	6	Not applicable
Inf. with African horse sickness virus	6	6	6	6	6	6
Inf. with equid herpesvirus-1	0	1	0	1	0	0
Inf. with equine arteritis virus	0	3	0	3	3	1
West Nile fever	0	0	0	4	0	0
<b>Average (excluding not applicable)</b>	<b>2.4</b>	<b>3.2</b>	<b>2.7</b>	<b>3</b>	<b>2.8</b>	<b>2</b>

In conclusion, this section has shown that few events of OIE-listed equine diseases and infections were reported in the Region in 2016, while six countries (29%) were able to gain or maintain their free status from infection with African horse sickness virus during this period.

This official status may be particularly important for countries where the horseracing industry is a major sector. In this regard, an *ad hoc* Group on International Horse Movement for Equestrian Sport was established by the OIE in 2013 and has met on a regular basis. General principles of the High Health, High Performance horse concept, as well as supporting information on the management and biosecurity measures for these horses, have been developed by OIE experts for use all over the world. Furthermore, an ongoing public–private partnership between the OIE and the International Federation for Equestrian Sports (FEI) and the International Federation of Horseracing Authorities (IFHA) is coordinating a programme of research projects for the development or improvement of diagnostic tests and vaccines for equine diseases of importance for safe international movement and health certification, with the industry bodies providing the funding<sup>47</sup>.

However, the OIE recommends that surveillance and control measures are not only targeted to high value horses, but also to other equine populations. Implementation of surveillance and control programmes in such susceptible populations is of major importance for proper disease control and eradication, to substantiate freedom, as well as for OIE Members intending to apply for an official disease status.

<sup>47</sup> OIE, Facilitation of International Competition Horse Movement. <http://www.oie.int/en/our-scientific-expertise/specific-information-and-recommendations/international-competition-horse-movement/>

In addition, the analysis highlights the limited laboratory diagnostic capacities reported in the Region. The OIE provides the following mechanisms to address gaps in this respect: 1) provision of support by OIE Reference Laboratories in the case of a specific need; and 2) twinning programmes involving an OIE Reference Laboratory and a national Reference laboratory. Regarding the first mechanism, the OIE encourages Members to make use of the OIE's network of Reference Laboratories for diagnostic support, supply of reagents or laboratory training<sup>48</sup>. The level of interest in glanders within the Middle East region, as indicated by the analysis, is reflected in the presence of an OIE Reference Laboratory for Glanders at the Central Veterinary Research Laboratory, Dubai, United Arab Emirates. Concerning the second mechanism, with regard to OIE-listed equine diseases and infections and as of April 2017, one twinning programme had been completed (Italy with Turkey on West Nile fever).

Members are encouraged to take advantage of the support provided by the OIE through the *Terrestrial Manual*. Among others, it contains for each disease a concise guide as to which tests are appropriate for a given purpose.

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<sup>48</sup> <http://www.oie.int/en/our-scientific-expertise/reference-laboratories/list-of-laboratories/>

Recommendation No. 1

**Sustainable strengthening of the epidemio-surveillance systems  
in Middle East Member Countries**

GIVEN THAT:

1. OIE Member Countries have a responsibility to comply with the OIE standards and guidelines on animal disease surveillance and reporting;

CONSIDERING THAT:

2. Based on the responses to the questionnaire, filled in by the Member Countries of the Middle East region for the preparation of the Technical Item of the Conference, highly pathogenic avian influenza (HPAI), foot and mouth disease (FMD), brucellosis and bluetongue are the main diseases for which Member Countries perform surveillance;
3. The Veterinary Authority is the main body responsible for performing surveillance in Member Countries, which is of vital importance to manage global animal disease risks given the Middle East is at a geographical “crossroads” between three continents;
4. The Veterinary Authority use the World Animal Health Information System (WAHIS) for information on countries’ disease status;
5. Nine out of the 16 respondent Member Countries do not have an epidemiologist in their outbreak investigation teams, a situation that may adversely affect the quality of service provided and lead to the wrong decisions being taken by high officials;
6. Veterinary para-professionals have a major role in executing outbreak investigations;
7. The Veterinary Authority in the vast majority of Member Countries collaborates with other governmental agencies in the event of an outbreak, especially for diseases of public health importance such as brucellosis and infection with Middle East respiratory syndrome coronavirus (MERS CoV);
8. Half of the respondent Member Countries do not have a regular programme of capacity-building activities in the field of surveillance and outbreak investigations for relevant staff;
9. The main challenges faced by the epidemio-surveillance systems of the Member Countries are: shortage of field support staff, shortage of laboratory technical staff, budgetary constraints, insufficient level of capacity building and difficulty in obtaining diagnostic materials;
10. Training of relevant OIE National Focal Points and facilitating communication are the most requested actions the OIE could undertake to support building and improving the epidemio-surveillance systems in the Member Countries.

## THE REGIONAL COMMISSION FOR THE MIDDLE EAST

### RECOMMENDS THAT

1. Member Countries define their duties, develop relevant legislation and undertake surveillance planning, applying the general and disease-specific provisions of the OIE *Terrestrial Animal Health Code* when developing and implementing their epidemio-surveillance systems, especially the Chapters on Animal Health Surveillance, Infection with Avian Influenza Viruses, Infection with Foot and Mouth Disease Virus, Infection with *Brucellosis*, Infection with Bluetongue Virus, and Infection with peste-des-petits ruminants (PPR) virus;
2. Member Countries commit to enhancing surveillance, especially through better communication and collaboration between bordering countries, as well as in reporting disease occurrences;
3. Member Countries ensure they have the required number of suitably trained staff to perform epidemio-surveillance activities relevant to their animal health situation;
4. Member Countries nominate their relevant OIE National Focal Points, if not already undertaken, and ensure their participation in OIE capacity-building activities and any other training programme deemed necessary for the proper functioning of epidemio-surveillance systems;
5. Member Countries seek better understanding of surveillance and reporting challenges at field level, including incentives and disincentives to reporting by farmers, the private sector and private veterinarians, including the socio-economic impacts of response to disease;
6. Member Countries be actively involved in all relevant activities related to strengthening intersectoral collaboration, especially with regard to addressing zoonotic diseases;
7. Member Countries take advantage of the new proposed approaches of the PVS Pathway to better identify and address the challenges faced by their epidemio-surveillance systems including in advocacy for improved budgets, and relating to the surveillance and reporting chain of command;
8. Member Countries actively participate in existing initiatives, such as the OIE/FAO Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) and, when relevant, the Mediterranean Animal Health Network (REMESA), to strengthen the regional epidemiological network;
9. Member Countries take advantage of the veterinary education establishments in the Region, the network of OIE Collaborating Centres and other relevant academic institutes to help address continuing education needs in epidemiology and risk analysis, and also explore the opportunity of developing a regional epidemiological and risk analysis training centre;

### AND THAT

10. The OIE accelerate the modernisation of WAHIS (WAHIS +) to ensure the system remains a relevant tool for informing and analysing the animal health situation worldwide, including developing a longer term epidemio-surveillance analysis for presenting to its Members;
11. The OIE provide guidelines on the expected competencies of veterinary para-professionals involved in epidemio-surveillance activities;
12. The OIE continue to provide capacity-building activities for the benefit of relevant OIE National Focal Points;
13. The OIE secure funds, through exploring with interested partners and donors, to support the implementation of PVS Pathway missions and related activities in the Region;
14. The OIE, in collaboration with its partners, consider developing analysis of the economic and social costs of poor surveillance and delayed detection of animal diseases, including zoonoses, to promote advocacy to increase the budget allocations for improved surveillance activity.

## Recommendation No. 2

**Addressing Challenges in the Middle East at the Human-Animal Interface  
under the One Health Concept**

## CONSIDERING THAT:

1. The One Health concept, which was initiated in the 2000s, recognises that the health of people is intimately connected to the health of animals and the environment;
2. The risks for pathogens to spread to new areas and evolve into new forms are growing stronger with globalisation, climate change and change in human behaviour;
3. Most of the newly emerging diseases are zoonotic in origin;
4. There is a lack of understanding on how the One Health Concept can be implemented at the global, regional and national level;
5. The OIE, FAO and WHO, under the Tripartite, have recently published a Commitment reconfirming their engagement to provide multi-sectoral collaborative leadership in addressing health challenges by maintaining the momentum the Tripartite has achieved in combating antimicrobial resistance (AMR), rabies, and zoonotic influenzas and in reinforcing collaboration across national public health, animal health and food safety systems;
6. As part of the International Health Regulations (IHR) Monitoring and Evaluation Framework (MEF), the WHO undertakes, at the request of countries, Joint External Evaluation (JEE) missions, during which three of the Technical Areas evaluated, namely AMR, zoonotic diseases and food safety, are considered as the ones most likely to require intersectoral collaboration at the human–animal interface, with other relevant partners of animal health and food safety, such as FAO;
7. The analysis of the JEE average score for these three Technical Areas obtained by 11 Member Countries of the OIE Regional Commission for the Middle East indicates that, with the exception of two countries found to be in a state of critical challenge, the Region can generally be considered to be at the stage of establishing the One Health concept but not as yet having fully developed the required sustainable mechanisms to properly implement it;
8. The One Health concept, through collaboration with relevant stakeholders, has had a demonstrable impact on reducing the incidence of important zoonotic diseases, with examples in the region.

## THE REGIONAL COMMISSION FOR THE MIDDLE EAST

### RECOMMENDS THAT

1. Member Countries pursue their engagement in the OIE PVS Pathway by requesting PVS Evaluation or PVS Evaluation Follow-up missions and other missions of this programme and ensure not only that the results of these missions are made available and used during IHR Self-Evaluation, JEE missions and all other IHR MEF-related activities, but that the Veterinary Services also actively participate in these activities;
2. Member Countries establish and make fully active, if they have not already done so, a National One Health Committee(s) or equivalent as a forum to address the challenges at the human-animal-environment interface, and also consider intersectoral training, simulations or exchanges as part of implementing the One Health approach in all relevant fields;
3. Member Countries request the WHO and OIE to undertake IHR/PVS National Bridging Workshops in the Middle East Region as a process to map, support and strengthen intersectoral collaboration at the human-animal-environment interface, in priority areas such as anti-microbial resistance, zoonotic diseases and animal production food safety;
4. Member Countries advocate and communicate on the One Health concept among all relevant national stakeholders, and especially veterinary and human medical students, practitioners and officials, the private sector and communities. This communication should support early detection and response to zoonotic diseases and issues (e.g. AMR) of public health interest, and Member Countries are encouraged to reflect the One Health concept in legislative, institutional and implementation frameworks;

### AND THAT,

5. The OIE, in collaboration with FAO and WHO, communicate widely on the recent Tripartite Commitment Note and, through this renewed collaboration, ensure that future activities undertaken under the Tripartite collaboration, effectively support countries in strengthening the implementation of the One Health concept;
6. The OIE, in collaboration with WHO, strengthen connections between the PVS Pathway and the IHR MEF so to ensure that Veterinary Services are systematically considered as key actors and leading partners in global health security, supported by other key partners such as FAO as well as donors;
7. The OIE consider working with all its One Health partners to investigate the feasibility of establishing a Global One Health Awareness Week or similar to promote the important activities under the One Health approach;
8. The OIE continue training regional PVS experts and explore providing PVS Pathway training in the region, with the opportunity to develop new PVS experts, including as part of One Health capacity building, and include them in the relevant missions, pending a merit based selection process.