SCIENTIFIC NETWORKS ON AVIAN INFLUENZA INCLUDING REGIONAL VIRUS BANKS

Dr Gounalan Pavade
OIE regional workshop, Tokyo, 26-28 August 2014
OIE Standards, Guidelines and recommendations

• Founded on:
  - Objective criteria
  - Scientifically valid evaluations provided by independent experts

• It was and is necessary to strengthen the OIE’s expertise capabilities to respond even more effectively to the requirements of its Members
1991: a network is born

• In response to a questionnaire, the Biological Standards Commission selected 75 laboratories to be proposed for designation by the International Committee as OIE Reference Laboratories and one to be proposed as OIE Collaborating Centre

• Laboratories for diseases of aquatic animals were designated later

• In 1993 official mandates and rules were formally adopted
1991: a network is born

• A network of expertise that could provide advice and aid on, for example:
  ▪ technical and scientific matters
  ▪ the basis for the setting of international standards

• International points of reference for disease diagnosis, prevention and control

• Constitutes the central core of the OIE’s scientific excellence
247 laboratories, 117 diseases/topics in 38 countries

OIE Reference Centers
May 2014

49 Collaborating Centres
46 topics in 26 countries
Reference Centres: evolution

- **Reference Laboratories:**
  - 160 in 2006 ➞ 247 in May 2014

- **Collaborating Centres:**
  - 20 in 2006 ➞ 49 in May 2014
OIE Reference Laboratories and Experts

• Must fulfil the role of centres of expertise and standardisation of methodology in their particular disease

• Centres for data processing, standardisation of diagnostic protocols, preparation and distribution of reference reagents, research, technical consultation and training

• The Expert should be a leading and active researcher
The OIE’s scientific network

Reference Laboratories

- Develop, perform and validate diagnostic tests
- Store and distribute reference reagents
- Organise laboratory proficiency testing of other Members’ laboratories
- Coordinate scientific and technical studies
- Provide scientific and technical training to Members

- Are under the responsibility of an expert of reference
- The list of Reference Laboratories is validated by the World Assembly of Delegates annually
OIE Collaborating Centres

• Cover a specialised sphere of activities rather than a given animal disease
• Activities are global in coverage
• A large part of their work is of particular help to developing countries
• Not necessarily laboratory based
The OIE’s scientific network

- Assist in the development of procedures to update and promote international standards and guidelines on animal health and welfare
- Coordinate scientific studies
- Organise training seminars
- Organise and host technical meetings in collaboration with the OIE
The OIE Network of Reference Laboratories and Collaborating Centres

Crucial role for OIE and its Members

- Worldwide expertise
- Essential role in prevention, detection and control of animal diseases
- Supports OIE in the establishment of standards
- Strengthens OIE capability to respond to the new challenges

➤ international solidarity
HPAI and LPAI OIE Reference Laboratories

1. Dr Frank Wong, CSIRO, Geelong, Australia
2. Dr John Pasick, Winnipeg, Canada
3. Dr Hualan Chen, Harbin, China
4. Dr Timm C. Harder, Riems, Germany
5. Dr Chakradhar Tosh, Bhopal, India
6. Dr Ilaria Capua, Padova, Italy
7. Prof. Hiroshi Kida, Sapporo, Japan
8. Prof. Ian Brown, AHVLA, Weybridge, UK
9. Dr Mia Torchetti, Ames, USA
Collaborating Centres


2. Istituto Zooprofilattico Sperimentale delle Venezie, Italy (Diseases at the Human-Animal interface)

3. Southeast Poultry Research Laboratory, USA (Research on Emerging Avian Diseases)

4. Harbin Veterinary Research Institute, China (Zoonoses of Asia-Pacific)

5. Australian Animal Health Laboratory (New and emerging diseases)
OIE Reference Centres

• OIE is committed to:
  ▪ expanding and strengthening this network of expertise
  ▪ creating synergy so as to continue to meet the emerging challenges in a globalising world

• All participating institutions in the network must share a common vision and regularly communicate
Aims and objectives

• Extend the OIE network of expertise to provide better global geographical coverage

• Strengthen scientific networks (national and international)

• Improved access to high quality diagnostics and technical assistance for more OIE Member

• Support PVS objectives
Status May 2014

• 19 projects completed
• 30 projects underway
• 17 projects approved and waiting to start (‘in the pipeline’)
• 3 Most popular topics
  ▪ Avian influenza and Newcastle disease (10)
  ▪ Brucellosis (8)
  ▪ Rabies (6)
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<tr>
<th>MAY 2012 (7)</th>
<th>MAY 2013 (5)</th>
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<tbody>
<tr>
<td>AVIAN INFLUENZA &amp; NEWCASTLE DISEASE</td>
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<td>CBPP</td>
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<td>• EQUINE PIROPLASMOSIS</td>
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<td>• Italy-Botswana</td>
<td>• INFECTIOUS SALMON ANEMIA</td>
<td>• Japan – India</td>
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<td>• Italy – Cuba (also epidemiology)</td>
<td>• Canada - Chile</td>
<td>• VETERINARY MEDICINAL PRODUCTS</td>
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<td>RABIES</td>
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<td>• France – Senegal</td>
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<td>• South Africa - Nigeria</td>
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<td>• IMPROVED DIAGNOSTIC CAPACITY</td>
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# Projects underway (30)

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<td>• UK – Afghanistan (also mycoplasma)</td>
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Contribution of twinning to OIE Reference Centre network

Adopted (May 2012)
• RABIES - Changchun Veterinary Research Institute, P. R. China
• AVIAN MYCOPLASMOSIS - National Centre for Animal and Plant Health, Cuba
• CONTAGIOUS BOVINE PLEUROPNEUMONIA (CBPP) - National Veterinary Laboratory, Botswana

Adopted (May 2014)
• OIE Reference Laboratory for infectious salmon anaemia - Aquaculture Pathology Laboratory, Chile
• OIE Collaborating Centre for Veterinary Epidemiology and Public Health - China Animal Health and Epidemiology Centre (CAHEC), P.R. China
Outputs from twinning

- Stronger global disease surveillance networks
- Improved access to rapid and accurate detection and characterisation of pathogens
- Putting biosafety, biosecurity and bioethics on the agenda
- Stronger scientific networks
- Capability to respond to disease events
First international conference

• To enhance the scientific cooperation and to facilitate future interactions and networking OIE organised two meetings:

The first International Conference of OIE Reference Laboratories and Collaborating Centres, Florianopolis (Brazil), 3-5 December 2006
Second international conference

• Second Global Conference of OIE Reference Laboratories and Collaborating Centres
  OIE Headquarters, Paris, France, 21–23 June 2010
Third international conference

- Third Global Conference of OIE Reference Centres - *Challenges and expectations for the future*

Incheon (Seoul), Korea (Rep. of), 14 – 16 October 2014
OIE-FAO Network of Expertise on Animal Influenza

Experts working to protect health and livelihoods through global cooperation

www.offlu.net
OFFLU’s vision

The animal health community will provide early recognition and characterisation of emerging influenza viral strains in animal populations, and effective management of known infections, thereby better managing the risk to human health and promoting global food security, animal health and welfare, and other community benefits derived from domestic animals and wildlife.
OFFLU’s objectives

- To exchange scientific data and biological materials (including virus strains) within the network, to analyse such data, and to share such information with the wider scientific community.

- To offer technical advice, training and veterinary expertise to Member Countries to assist in the prevention, diagnosis, surveillance and control of animal influenza.

- To collaborate with the WHO influenza network on issues relating to the animal-human interface, including early preparation of human vaccine.

- To highlight influenza research needs, promote their development and ensure co-ordination
Global OFFLU expertise

• Avian influenza
• Swine influenza
• Equine influenza
• Links with other animal species influenza experts
OFFLU network animal influenza experts

Including OIE Reference Laboratories for avian influenza and for equine influenza, FAO Reference Centres for avian influenza, and OFFLU regional laboratory contacts for avian influenza, and current members of OFFLU SIV group.
OFFLU’s contribution to animal influenza surveillance and research
OFFLU Technical Activities

- Applied epidemiology group
- Biosafety
- OFFLU research agenda
- Vaccination group
- Proficiency testing/Ring trial
- Development of standardized reference materials
- RNA standard
- OFFLU Swine influenza group
- Code of conduct group
- Training
OFFLU Surveillance strategy


- Highlight
  - Objectives and benefits for surveillance in each animal species
  - Influenza in Poultry, wild birds, pigs, horses
  - Pandemic H1N1 2009 in pigs and poultry
  - approaches and options to surveillance
  - Options for appropriate actions

- Provide high level strategic guidance
- Coordinate and harmonise approaches to animal influenza surveillance
- World – wide relevance
OFFLU Research Agenda

- Comprehensive list of research priorities on avian influenza (poultry and wild birds), swine influenza and equine influenza

- Enumerates research priorities on
  - Control and education
  - **Diagnostics and surveillance**
  - Ecology and epidemiology
  - Immunology and immune responses
  - Pathogenesis
  - Transmission
  - Vaccines and vaccination
  - Virus characteristics and evolution
OFFLU evaluation of AI control measures

- OFFLU conducted a comprehensive evaluation of AI control measures especially the vaccine and vaccination component of the control measures applied in 69 countries.

- David Swayne deputed to OFFLU to complete this project. Information collected through questionnaire and official visits.

- Highlights AI vaccines and vaccination from 2002-2010; vaccine bank; vaccine usage; conditions for use and non-use of vaccines; exit strategy; several recommendations for more effective HPAI and LPNAI control programmes.

- Two manuscripts published in the OIE Scientific and Technical Review:
OFFLU ring trial

• Two OFFLU global proficiency test completed. Third in progress.

• Reference labs and 11 regional labs participated.

• Brasil, Colombia, Chile, South Africa, Bostwana, Ethiopa, Nigeria, Vietnam, Thailand, Senegal, Malaysia

• Real time PCR detection of AI strains using a panel of inactivated influenza viruses from different geographical regions

• Helps in consistency in diagnostic testing by labs worldwide
OFFLU collaboration with WHO

- A great success!
- Ongoing 2-way exchange of information (both official and non official)
- Technical collaboration at all levels
- Tested by pandemic H1N1 2009
- LPAI H7N9 outbreaks in China
Technical collaboration with WHO

- Several joint WHO-OFFLU technical initiatives
- OFFLU participation in WHO vaccine strain selection meetings
- WHO participation in OFFLU working groups and meetings
- Exchange of viruses and diagnostic reagents
- Exchange of virological and epidemiological information
OFFLU sources of information for VCM

Genetic data
• OFFLU avian influenza laboratories
• Publicly available databases
• FAO national and regional offices

Antigenic data
• HI data in collaboration with WHO CC
  St Jude’s Children’s Hospital

Epidemiological data
• FAO (empres i) and OIE (WAHID) databases
  • Year 2013 - 200 H5 and H9 virus genetic sequences shared
  • Year 2012 - 274 H5 and H9 virus genetic sequences shared
  • Year 2011 – 262 H5 sequences shared
OFFLU Swine Influenza Virus group

- Experts on swine influenza engaged in research and surveillance
- Represents both animal and public health
- Meets annually
- Four annual technical meetings completed so far
OFFLU SIV group objectives

• Provide expert opinion and technical advice to international organizations and other relevant stakeholders

• Gather, exchange, and disseminate global knowledge of SIV and keep under continuous review

• Identify and define gaps in knowledge in surveillance and research

• Evaluate and communicate information regarding viruses posing potential risk to veterinary and public health
Scientific networking through OFFLU technical meetings

- OFFLU annual technical meeting, April 2012, London
- OFFLU technical meeting, November 2010, Rome
- OFFLU technical meeting, September 2009, Paris
- OFFLU applied epidemiology technical activities meeting, 2008, Paris

- OFFLU fourth SIV group meeting, March 2013, USA
- OFFLU third SIV group meeting, April 2013, Rome
- OFFLU second SIV group meeting, March 2012, Paris
- OFFLU first SIV group meeting, April 2011, Paris
OFFLU response to H7N9

- OFFLU compiled laboratory algorithms, protocols and validation data for detection and characterisation of H7N9
- Rapid data exchange mediated through OFFLU
- Information directly informed global preparedness
OFFLU vaccination technical meeting
Beijing, China (Dec. 2013)
OFFLU-STAR IDAZ Global animal influenza research agenda meeting, Paris (April 2014)
OIE avian influenza vaccine bank

- 2006 – Regional vaccine bank for avian influenza vaccines in Africa
- 2007 – Global vaccine bank for AI
- 62,017 million H5N2 doses were delivered: Mauritania, Senegal, Egypt, Mauritius, Ghana, Togo and Vietnam
  - Egypt: 28 million
  - Vietnam: 26.7 million

- EU funded HPED vaccine bank programme to Asia
- 40% for Avian influenza
OIE avian influenza vaccine bank

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Thank you for your attention!