



**Technical meeting
4-6 December 2013
Beijing**

**VACCINATION AS A CONTROL TOOL AGAINST
HIGHLY PATHOGENIC AVIAN INFLUENZA
(HPAI)**

*Developing guidance on vaccines and vaccination against HPAI
from lessons learned*



**Standards for AI vaccines
and vaccination
OIE position and activities**

Joseph Domenech and Gounalan Pavade

**Technical meeting on Vaccination
as a control tool against HPAI**

OIE/FAO Network of Expertise on Animal Influenza (OFFLU)

4-6 December 2013, Beijing, People's Republic of China

A. Horizontal approaches

**Improving animal health
is a global public good**

**Veterinary Services
are at the heart of animal health systems
tasked with preventing and controlling
animal diseases**

(See OIE definition VS)

The role of OIE in transforming sciences into practice and policy making

Through the publication of standards, guidelines and recommendations

Which will be translated in tools, methods, strategies and policies, laws & regulations

OIE standard setting process

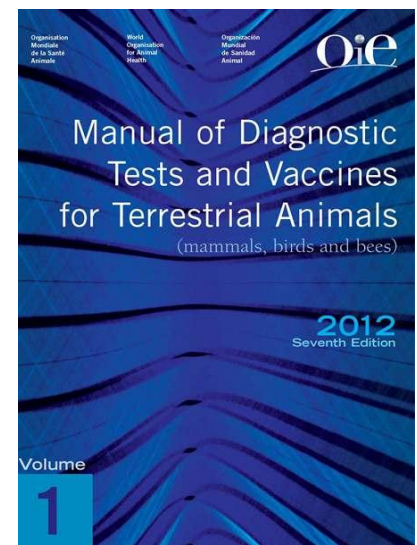
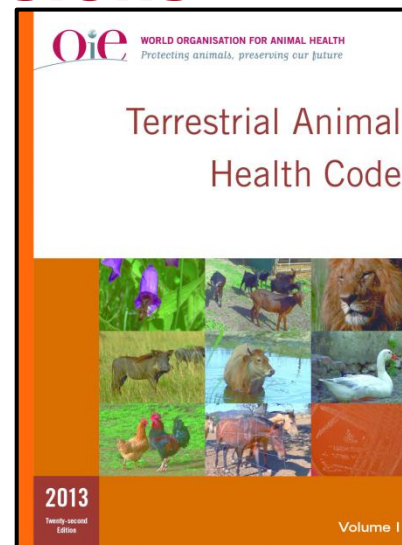
- **Specialized Commissions: Scientific Com., Biol. Stand. Com...**
- **Ad Hoc Groups and Working Groups**

Proposed Standards sent to all OIE Delegates

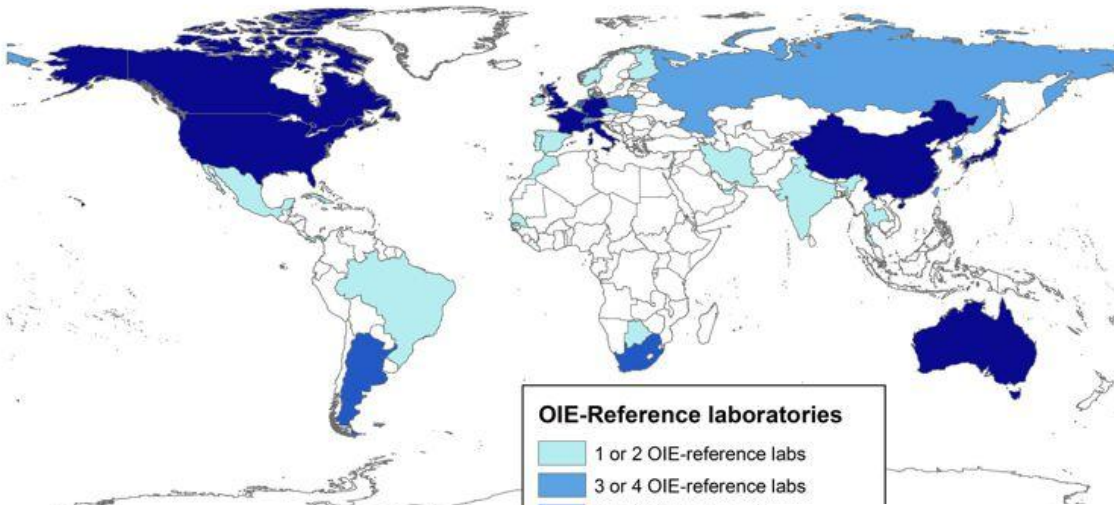
- **Comments from all OIE Delegates**
- **Consultation of major partners**
- **Second round of discussions with Commissions...**



General Session May Adoption: vote of all Delegates during the World Assembly



World distribution of the OIE-Reference Laboratories



**Reference
Laboratories**

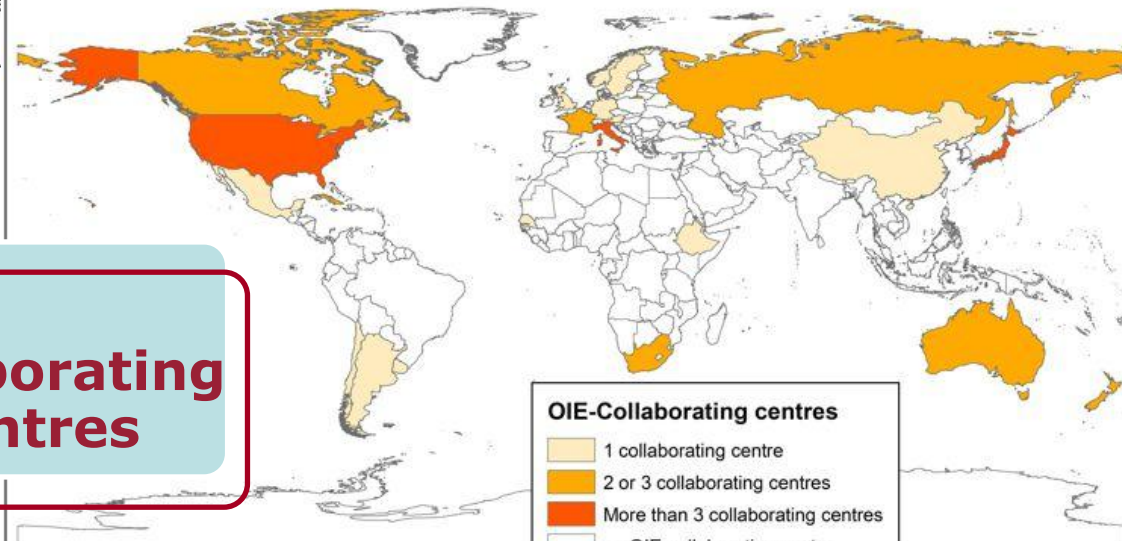
**241 laboratories,
116 diseases/topics
in 37 countries**

Oie

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**OIE Reference
Centers
May 2013**

World distribution of the OIE-Collaborating Centres



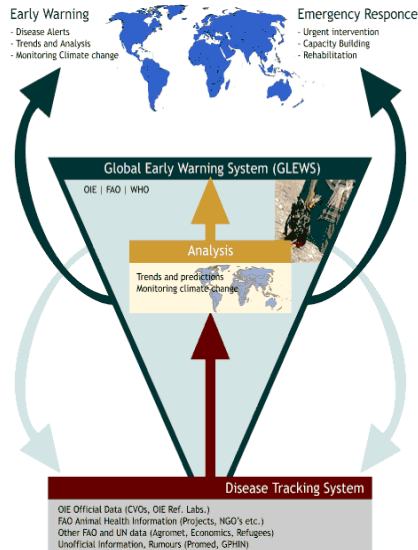
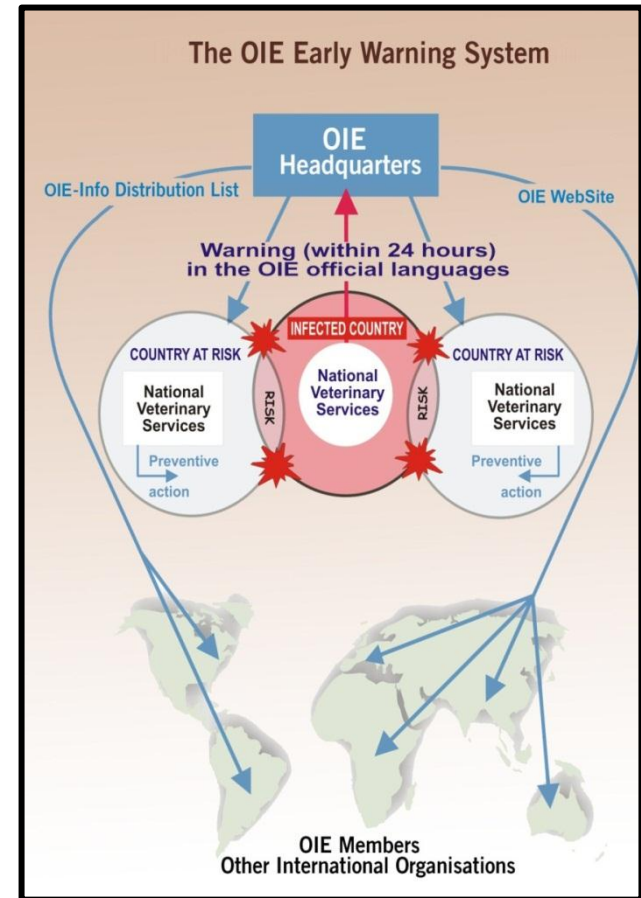
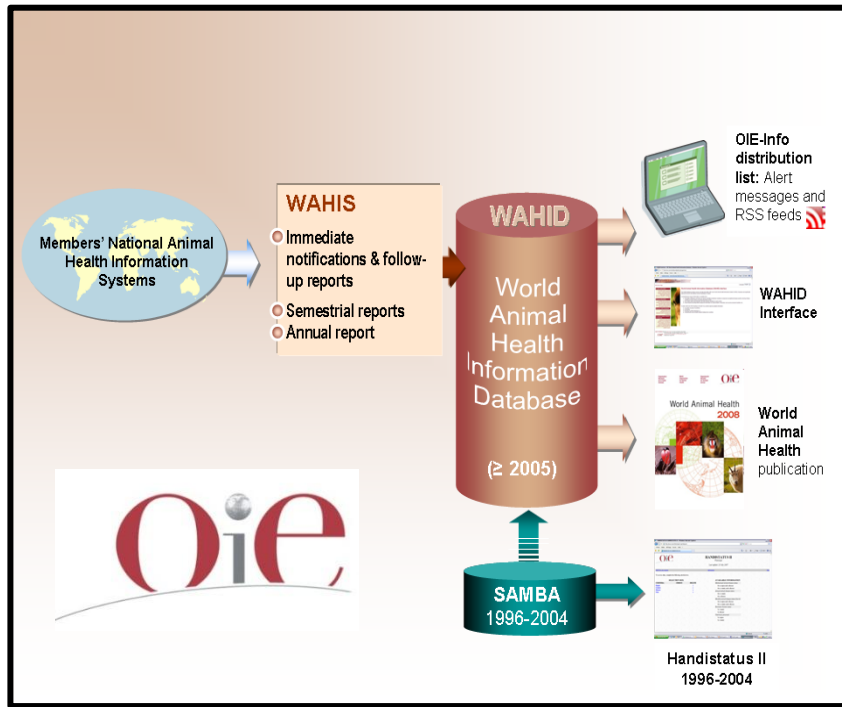
**Collaborating
Centres**

**43 Collaborating Centres
42 topics in 24 countries**

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Oie

Disease information - Reporting



Global Early Warning System (GLEWS)





Global Strategies for Animal Disease Control, (3) 2013



Organisation Mondiale de la Santé Animale

Taille de la police: - AAA+ Langue: | **Français** | English | Español

Mots-clés + Recherche avancée

[Accueil](#) | [A propos](#) | [Notre expertise scientifique](#) | [Appui aux Membres de l'OIE](#) | [Santé animale dans le monde](#) | [Normes Internationales](#) | [Bien être animal](#) | [Une seule santé](#) | [Publications et documentation](#)

Pour les médias

- A la « Semaine verte » de Berlin, l'OIE et la Commission Européenne confirment leur engagement commun dans les politiques de santé animale
 - Le Directeur général de l'OIE présente à la presse l'action de l'Organisation en matière de réduction des menaces biologiques
 - Le Fonds mondial pour la santé et le bien-être animal de l'OIE élargit ses activités en matière de prévention des risques biologiques
- [+ Voir tous les communiqués de presse](#) 
[+ Accéder à toutes les ressources médias](#)

A la une

Journée mondiale vétérinaire 2012



[+ Vidéos de l'OIE](#)

Alertes - Informations sanitaires

06.02.12: **Influenza aviaire hautement pathogène en Inde**

- + Actualités sanitaires 
- + Base de données mondiale d'informations sanitaires (WAHID)
- + Cartes de distribution des maladies



Editorial

Vers la maîtrise de la fièvre aphteuse dans le monde



La fièvre aphteuse demeure l'une des maladies animales à caractère épidémiologique les plus répandues dans le monde. Plus de 100 pays

Publications et documentation

- Librairie en ligne
- Revue scientifique et technique

- Numéros les plus récents :
- * Numéro plurithématique, Vol. 30 (3), décembre 2011
 - * Modèles de gestion
 - * La dissémination

Coordinating surveillance policies in animal health and food safety 'from farm to fork'

Coordination des politiques de surveillance de la santé animale et de la sécurité sanitaire des aliments « de l'étable à la table »

Coordinación de las políticas de vigilancia de la sanidad animal y la inocuidad de alimentos "de la granja a la mesa"

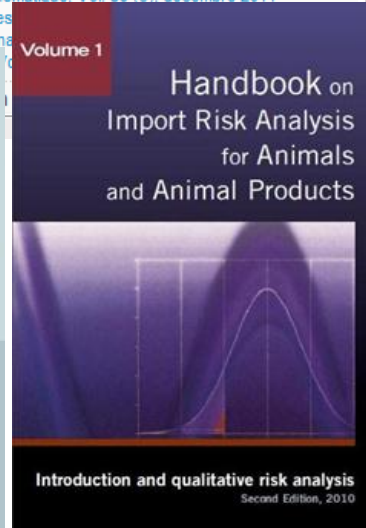
Vol. 32 (2), 2013



Volume 1

Handbook on Import Risk Analysis for Animals and Animal Products

Introduction and qualitative risk analysis
Second Edition, 2010



PUBLICATIONS 2012 CATALOGUE DES PUBLICATIONS
CATALOGO DE PUBLICACIONES



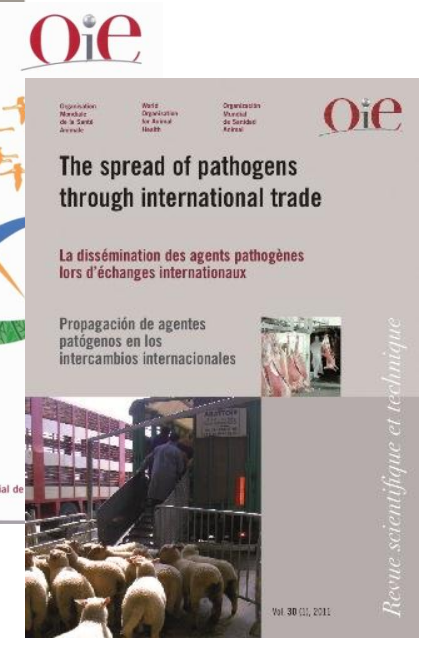
Organisation Mondiale de la Santé Animale • World Organisation for Animal Health • Organización Mundial de la Salud

The spread of pathogens through international trade

La dissémination des agents pathogènes lors d'échanges internationaux

Propagación de agentes patógenos en los intercambios internacionales

Vol. 30 (1), 2011





OIE Global Conference on
Wildlife, Paris (France)
23-25 February 2011

International Conferences



**Permanent
institutional
cooperation**



FAO - Food and Agric. Org.



WHO - World Health Organization

C O D E X A L I M E N T A R I U S
International Food Standards



WTO - World Trade Organization



IPPC - Int. Plant Prot. Org.



World Bank



CABI - CAB Int.



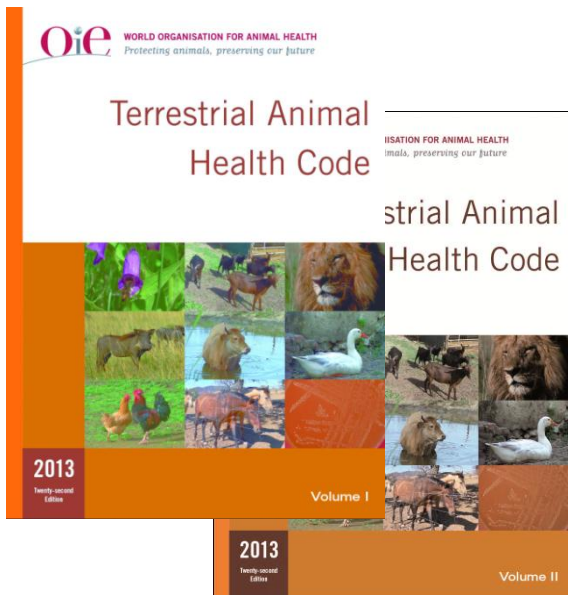
ILRI - Int. Livestock Res. Inst.

FAO - OIE GF TADS

**Global Framework for the
Progressive Control of
Transboundary Animal Diseases**

**And cooperation with Regional public
organisations and private sector bodies
(more than 50 agreements)**

OIE assistance to countries

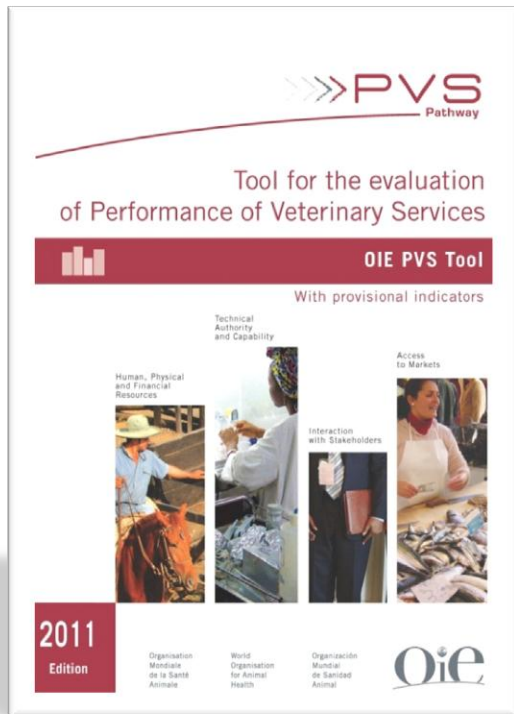


OIE Terrestrial Animal Health Code

- > **Chapter 3.1. Veterinary Services**
- > **Chapter 3.2. Evaluation of Veterinary Services**

The screenshot shows the OIE website interface. At the top, there is the OIE logo and the text 'World Organisation for Animal Health'. To the right, there are options for 'Font size: - AAA+' and 'Language: | Français'. Below this is a search bar with the text 'Keywords' and a 'Search' button. A navigation menu is visible with items: 'Home', 'About us', 'Our scientific expertise', 'Support to OIE members', 'Animal health in the World', 'International Standard Setting' (highlighted), 'Animal welfare', and 'One Health'. Below the navigation menu, there is a breadcrumb trail: 'Home > International Standard Setting > Terrestrial code > Access online'. The main content area is titled 'Terrestrial Animal Health Code' and includes a 'Contents | Index' link. Below this, the section is titled 'SECTION 3. QUALITY OF VETERINARY SERVICES'. A table of contents is displayed below the section title:

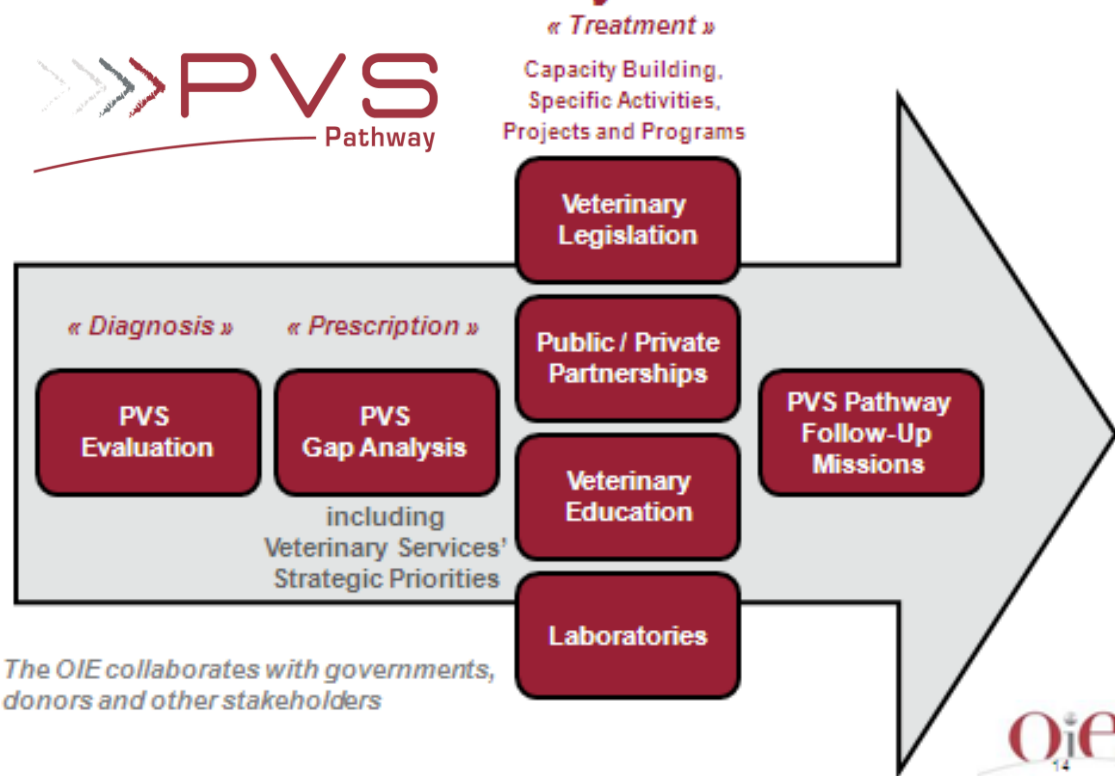
Chapter 3.1.	Veterinary Services
Chapter 3.2.	Evaluation of Veterinary Services
Chapter 3.3.	Communication



PVS Evaluation PVS Gap Analysis

**OIE PVS Legislation missions,
Veterinary Education (twinning)
Veterinary Stat Body (twinning)
Laboratory PVS Gap Analysis,
One Health PVS mission.
PVS Pathway Follow-up Eval.
Round tables with donors.**

The OIE PVS Pathway



**A continuous
Process to improve
the compliance of
VS with
international
standards**



B. Disease specific approaches

OIE International standards and guidelines on Infection with Avian Influenza Virus

OIE standards and recommendations act as the front-line of prevention and control against the spread of disease and related challenges.

Font size: - + Language: Français English Español

Keywords Advanced search

Home About us Our scientific expertise Support to OIE members Animal health in the World

Home > International Standard Setting > Terrestrial code > Access online

International Standard Setting

- Overview
- Terrestrial code [Access online](#)
- Terrestrial manual
- Aquatic code
- Aquatic manual
- Specialists commissions & groups
- Implications of private standards

CHAPTER 10.4.
INFECTION WITH
AVIAN INFLUENZA VIRUSES
Article 10.4.1.

Contact Links

2013
Seventh Edition
Volume I

2013
Seventh Edition
Volume II

2012
Seventh Edition
Volume 1

2012
Seventh Edition
Volume 2

Reporting

Font size: - AAA+ Language: | Français | English | Español

Keywords Search + Advanced search

Home | About us | Our scientific expertise | Support to OIE members | **Animal health in the World** | International Standard Setting | Animal welfare | One Health | Publications and documentation

Home > Animal health in the World > OIE-Listed diseases 2013

OIE-Listed diseases, infections and infestations in force in 2013

Resolutions passed by the International Committee and recommendations issued by the Regional Commissions instructed the OIE Headquarters to establish a single OIE list of notifiable terrestrial and aquatic animal diseases to replace the former the Sanitary and Phytosanitary Agreement of and giving all listed diseases the same degree

to examine t al diseases - a and in the san eases accord t entered into f d by the World following year.

WAHID
Online bookshop
For the media
OIE world

Avian diseases and infections

- Avian chlamydiosis
- Avian infectious bronchitis
- Avian infectious laryngotracheitis
- Avian mycoplasmosis (*M. gallisepticum*)
- Avian mycoplasmosis (*M. synoviae*)
- Duck virus hepatitis
- Fowl typhoid
- Highly pathogenic avian influenza in birds
- and low pathogenic avian influenza in poultry (Terr. Code Chapter 10.4)
- Infectious bursal disease (Gumboro dis.)
- Newcastle disease
- Pullorum disease
- Turkey rhinotracheitis

Obligations in terms of reporting:

- Immediate notification
- Monitoring (6 monthly and annual reports)

WAHIS II

WAHIS-wild

Manual of Diagnostic Tests and Vaccines

Chapter 2.3.4. on Avian Influenza

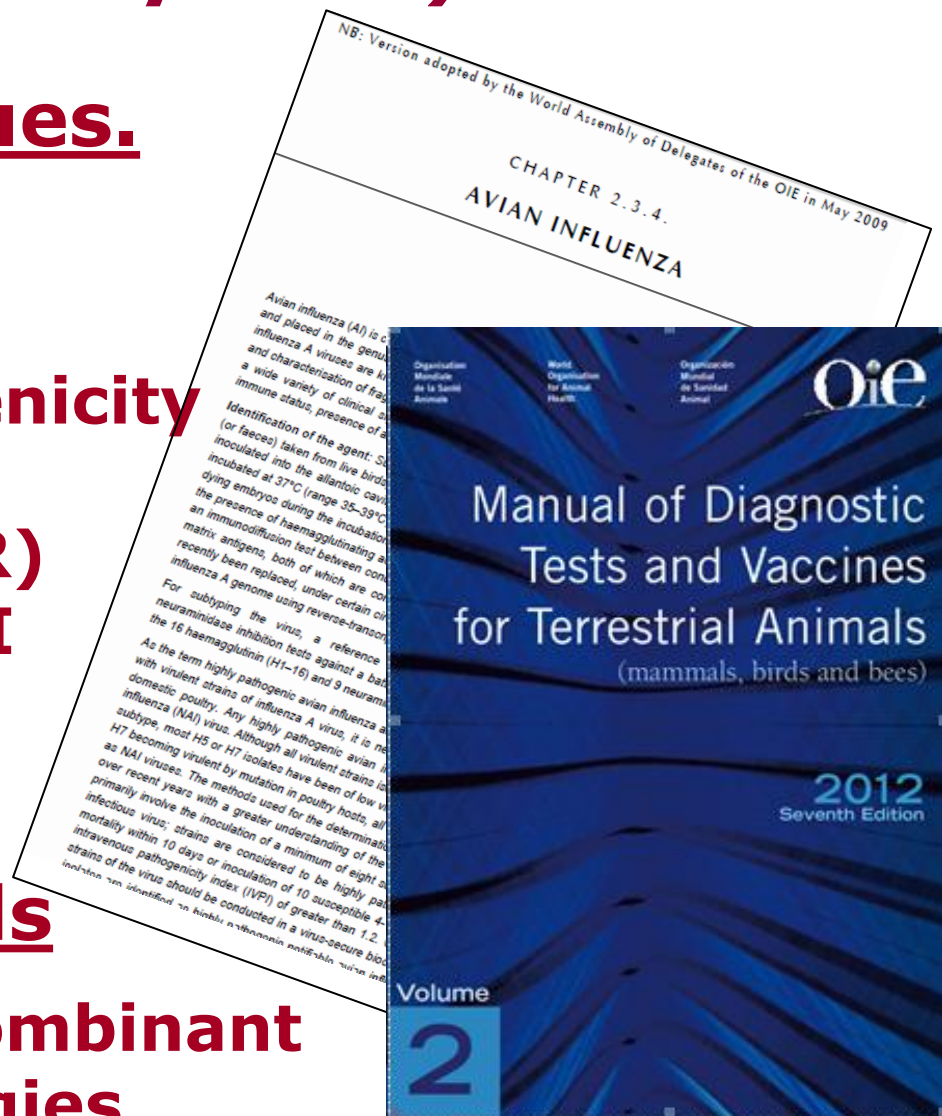
(revised May 2009)

- Diagnostic techniques. prescribed test:

- Agent identific. and assessment of pathogenicity
- Antigen detection and RNA detection (RT-PCR)
- Serology: AGID, HA/HI ELISA...

- Vaccine and Biological Standards

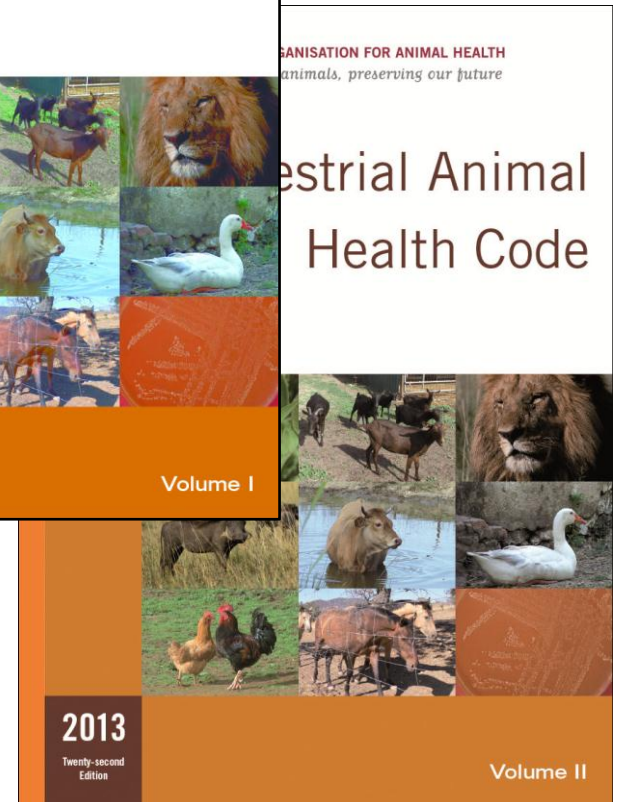
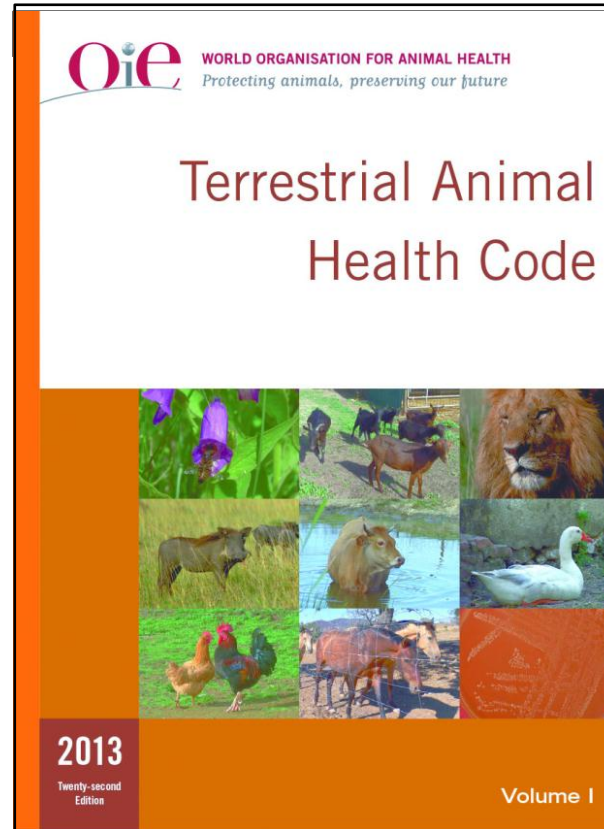
Conventional and recombinant vaccines, DIVA strategies



OIE Terrestrial Animal Health Code, 2013

Chapter 10.4. Infection with Avian Influenza Virus

Science based and
regarding import of
commodities risk
analysis approaches



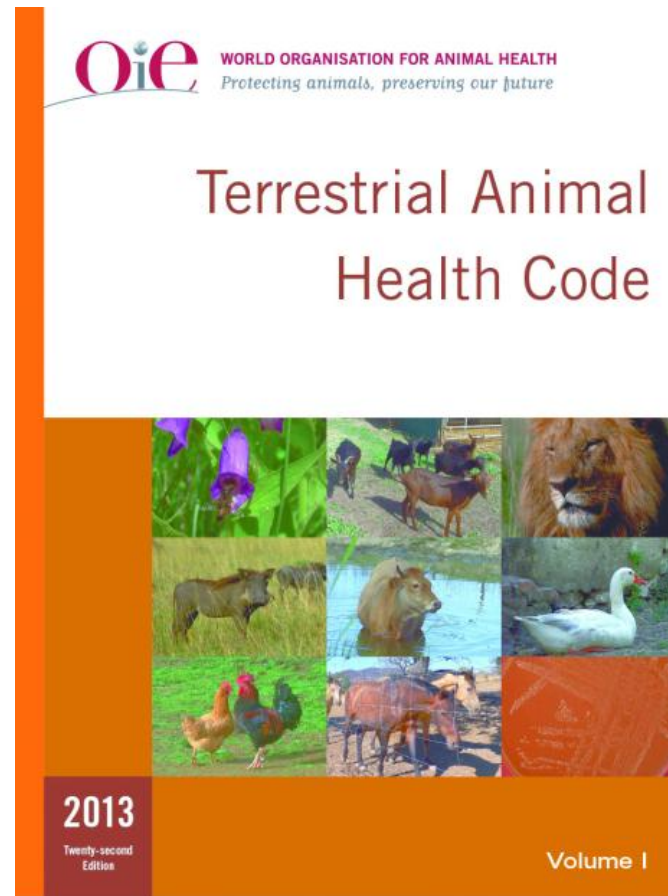
Horizontal Chapters

- Diseases notification (1.1)
- List of notifiable diseases (1.2)
- Diagnostic tests for notif. Dis. (1.3)
- Disease Surveillance (1.4)
- Self/Official declaration of status (1.6)
- Import risk analysis (2.1)
- Quality and Eval. of Vet. Serv. (3.1, 3.2)
- Veterinary legislation (3.4)
- Zoning and Compartmentalization (4.3, 4.4)
- Imp/export. procedures (5.1, 5.2)
- Biosecurity proc in poultry production (6.4)
- Slaughter and killing (7.5, 7.6)

Disease Specific Chapters (vertical)

AI Chapt. 10.4 contains articles on:

- Case definition, species
- Criteria for sanitary statuts: country, zone or compartment
- No risk commodity
- Recommendation for import of live animals and commodities
- Pathogen inactivation
- Specific disease surveillance



Slides in black: not to be read but included in the PPT for information

Chapter 1.1. Notification of diseases , infections, infestations and epidemiological information

Article 1.1.3.

Veterinary Authorities shall, under the responsibility of the Delegate, send to the Headquarters:

- 1) in accordance with relevant provisions in the disease-specific chapters, notification through the World Animal Health Information System (WAHIS) or by fax or e-mail, within 24 hours, of any of the following events:***
 - a) first occurrence of a listed disease, infection or infestation in a country, a zone or a compartment;***
 - b) re-occurrence of a listed disease, infection or infestation in a country, a zone or a compartment following a report declared the outbreak ended;***
 - c) first occurrence of a new strain of a pathogen of a listed disease, infection or infestation in a country, a zone or a compartment;***
 - d) a sudden and unexpected increase in the distribution, incidence, morbidity or mortality of a listed disease, infection and infestation prevalent within a country, a zone or a compartment;***

Article 1.1.3. (cont.)

e) an emerging disease with significant morbidity or mortality, or zoonotic potential;

f) evidence of change in the epidemiology of a listed disease, infection or infestation (including host range, pathogenicity, strain) in particular if there is a zoonotic impact;

2) weekly reports subsequent to a notification under point 1 above, to provide further information on the evolution of the event which justified the notification. These reports should continue until the disease, infection or infestation has been eradicated or the situation has become sufficiently stable so that six-monthly reporting under point 3 will satisfy the obligation of the Member Country; in any case, a final report on the event should be submitted;

3) six-monthly reports on the absence or presence, and evolution of listed diseases, infections or infestations and information of epidemiological significance to other Member Countries;

4) annual reports concerning any other information of significance to other Member Countries. Although Member Countries are only required to notify listed diseases, infections and infestations and emerging diseases according to points 1 to 4 above, they are encouraged to inform the OIE of other important animal health events.

Chapter 1.2. Criteria for the inclusion of diseases,¹⁹ infections and infestations on the OIE list

Article 1.2.2

The criteria for the inclusion of a disease, infection or infestation in the OIE list are as follows:

1) International spread of the agent (via live animals or their products, vectors or fomites) has been proven.

AND

2) At least one country has demonstrated freedom or impending freedom from the disease, infection or infestation in populations of susceptible animals, based on the animal health surveillance provisions of the Terrestrial Code, in particular those contained in Chapter 1.4.

AND

3)

a) Natural transmission to humans has been proven, and human infection is associated with severe consequences.

OR

b) The disease has been shown to cause significant morbidity or mortality in domestic animals at the level of a country or a zone.

OR

c) The disease has been shown to, or scientific evidence indicates that it would, cause significant morbidity or mortality in wild animal populations.

AND

4) A reliable means of detection and diagnosis exists and a precise case definition is available to clearly identify cases and allow them to be distinguished from other diseases, infections and infestations.

OR

5) The disease or infection is an emerging disease with evidence of zoonotic properties, rapid spread, or significant morbidity or mortality and a case definition is available to clearly identify cases and allow them to be distinguished from other diseases or infections.

Article 1.2.3.

The following are included within the category of avian diseases and infections:

- Avian chlamydiosis**
- Avian infectious bronchitis**
- Avian infectious laryngotracheitis**
- Avian mycoplasmosis (*Mycoplasma gallisepticum*)**
- Avian mycoplasmosis (*Mycoplasma synoviae*)**
- Duck virus hepatitis**
- Fowl typhoid**
- Infection with avian influenza viruses and infection with influenza A viruses of high pathogenicity in birds other than poultry including wild birds**
- Infectious bursal disease (*Gumboro disease*)**
- Newcastle disease**
- Pullorum disease**
- Turkey rhinotracheitis.**

Chapter 1.6. Procedures for self declaration and for official recognition by the OIE ²¹

Article 1.6.1. General principles

Member Countries may wish to make a self declaration as to the freedom of a country, zone or compartment from an OIE listed disease. The Member Country may inform the OIE of its claimed status and the OIE may publish the claim. Publication does not imply endorsement of the claim.

The OIE does not publish self declaration for bovine spongiform encephalopathy (BSE), foot and mouth disease (FMD), contagious bovine pleuropneumonia (CBPP), African horse sickness (AHS), peste des petits ruminants (PPR) and classical swine fever (CSF). But countries may request official recognition by the OIE as to the risk status of a country or zone with regard to these 6 diseases

The OIE does not grant official recognition for other diseases.

Chapter 3.1. Veterinary Services

5 articles on:

- Fundamental principles of quality**
 - Evaluation of its Veterinary Services where the initiating Member Country is an actual or a prospective importer or exporter of commodities**
 - Procedures for the evaluation of the Veterinary Services: OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool).**
-

Chapter 3.2. Evaluation of Veterinary Services

14 articles describing the scope, the evaluation criteria for the organisational structure and material resources, legislation and functional capabilities, animal health controls, veterinary public health controls. They also address the performance assessment and audit programmes, the participation in OIE activities and the evaluation of the veterinary statutory body

This article outlines appropriate information requirements for the self-evaluation or evaluation of the Veterinary Services of a country.

Chapter 3.4. Veterinary Legislation

13 articles on:

- **Objectives, definitions, principles, methods for drafting the texts,**
 - **Definition of the competent authority, veterinarians and para professionals,**
 - **Outline of legislation for laboratories, production sector, animal diseases and welfare, medicines and biologicals, human food production chain, import-export and certification**
-

Chapt.6.4. Biosecurity procedures in poultry prod.

7 articles on:

- **Definitions, purpose, scope**
- **Recommendations: on the location and construction of poultry establishments, applicable to the operation of poultry establishments, for prevention of further dissemination of infectious agents of poultry, to prevent the dissemination of infectious agents to and from live bird markets**

Chapter 10.4.

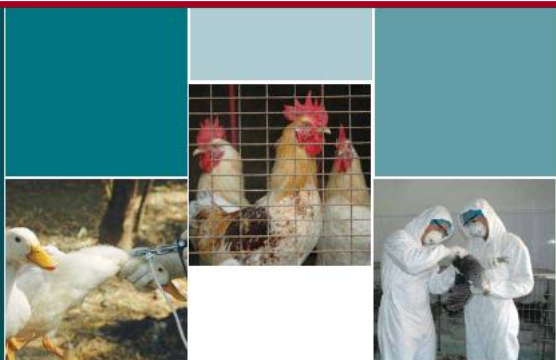
Infection with Avian Influenza Virus

33 articles including :

- 1 article on general provisions: pathogenicity and criteria for notific., incub., case definition...**
- 6 articles for importing safe commodities after destruction of the virus**
- 3 article on determination of self AI status for a country/zone/compartment**
- 14 articles on recommendations for importing of commodities**
- 2 articles on inactivation of the virus**
- 7 articles on surveillance**

The articles on surveillance define the principles and provides a guide for the surveillance of AI in accordance with Chapter 1.4. applicable to Member Countries seeking recognition of country or zonal freedom from CBPP or seeking reestablishment of freedom following an outbreak.





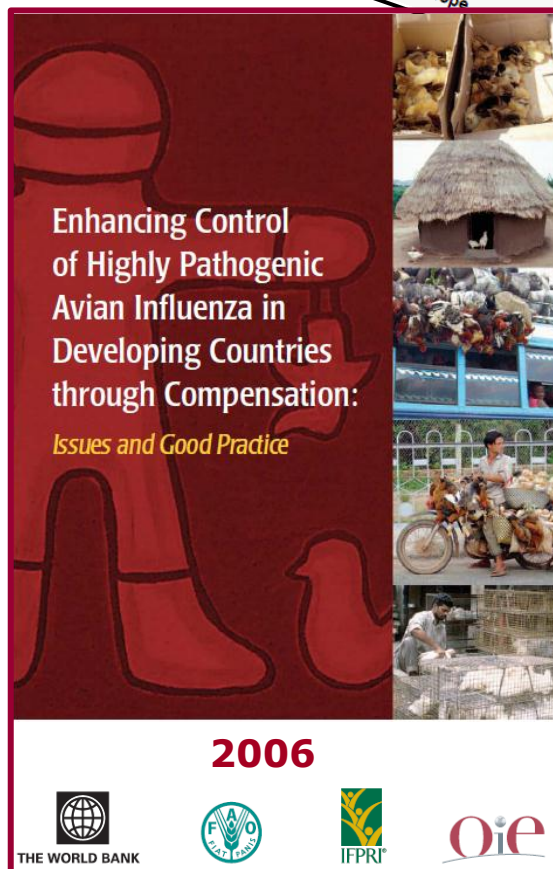
THE GLOBAL STRATEGY FOR
PREVENTION AND CONTROL
OF H5N1 HIGHLY PATHOGENIC
AVIAN INFLUENZA

October 2008

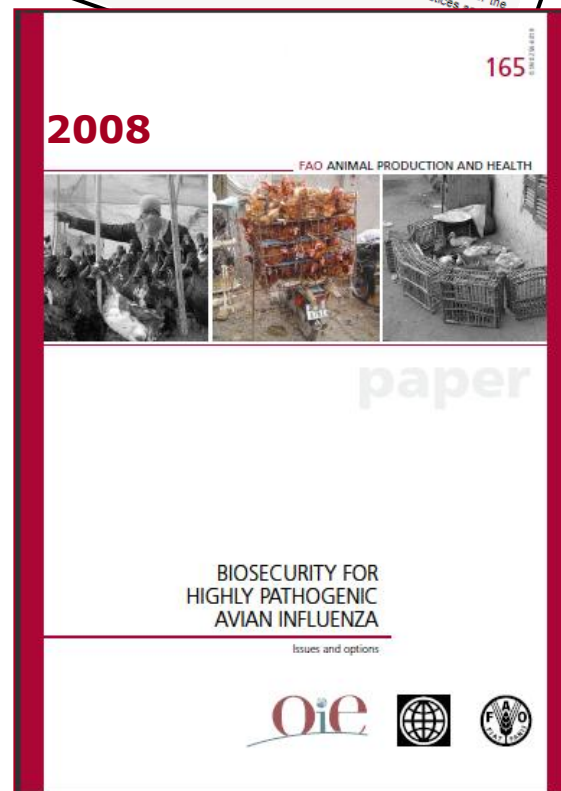
2008



Guidelines, Strategies and Standards



2006



2008

FAO ANIMAL PRODUCTION AND HEALTH

paper

BIOSECURITY FOR
HIGHLY PATHOGENIC
AVIAN INFLUENZA

Issues and options





OIE-FAO Network of Expertise on Animal Influenza

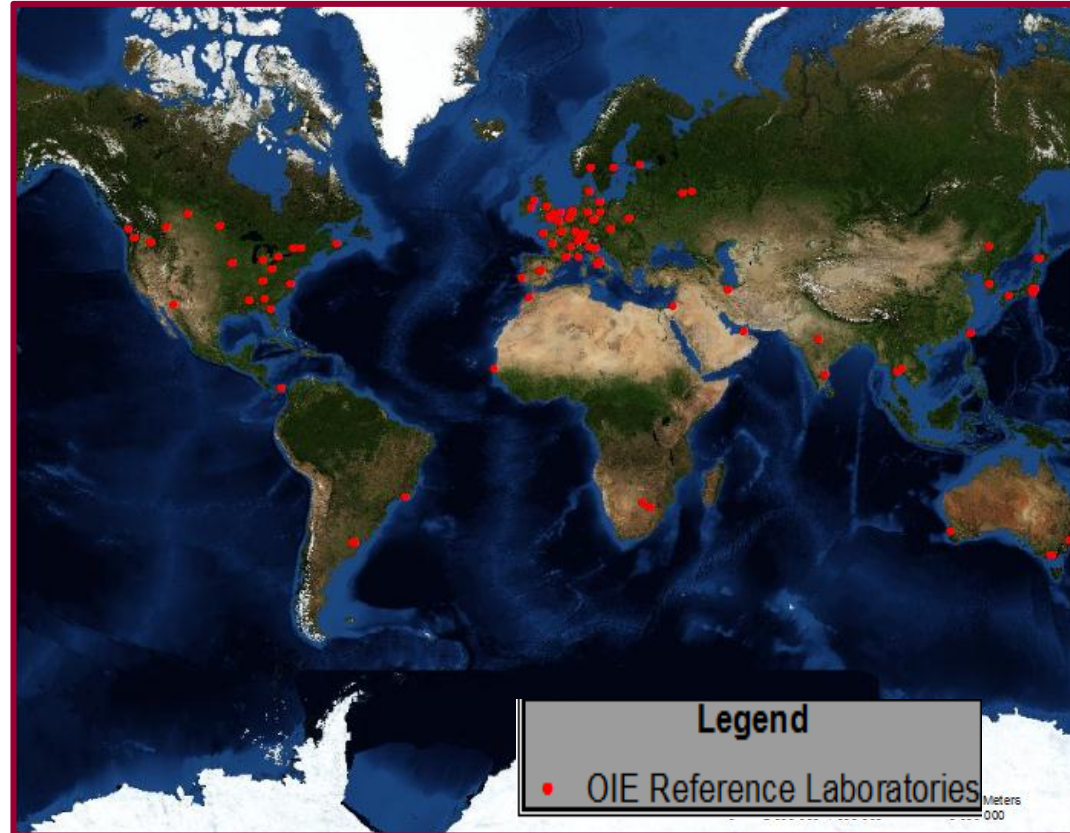


*Experts working
to protect health and
livelihoods through global
cooperation*

www.offlu.net

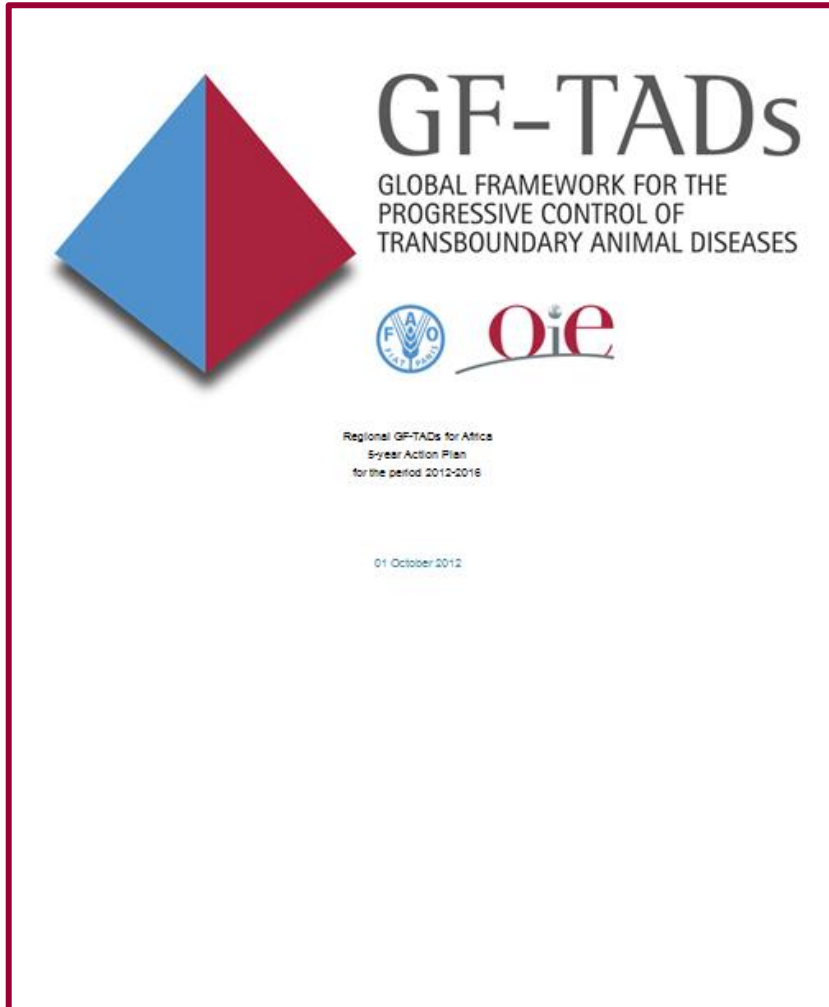
HPAI and LPAI OIE Reference Laboratories

- Dr Frank Wong, CSIRO, Geelong, Australia
- Dr John Pasick, Winnipeg, Canada
- Dr Hualan Chen, Harbin, China
- Dr Timm C. Harder, Riems, Germany
- Dr Chakradhar Tosh , Bhopal, India–
- Dr Ilaria Capua, Padova, Italy
- Prof. Hiroshi Kida, Sapporo, Japan
- Prof. Ian Brown, Weybridge, UK
- Dr Mia Torchetti, Ames, USA



5 Years Action Plan

Global and regional GF-TADs



HPAI is one of the priority diseases in Europe, Asia, Americas, and Middle East

As well as at the Global level



Vaccination



AVIAN INFLUENZA VACCINATION

---> *OIE information document*

---> *Verona Recommendations**



Organisation
Mondiale
de la Santé
Animale

World
Organisation
for Animal
Health

Organización
Mundial
de Sanidad
Animal

MEETING OF THE

OIE AD HOC GROUP ON VACCINATION STRATEGIES FOR AVIAN INFLUENZA

Paris, 3-4 October 2006

OIE information document on avian influenza vaccination

Acknowledgements

This document was prepared with the support of FAO and the valuable input of the OIE *ad hoc* group on AI vaccination guidelines, which first met in March 2006. Members of the *ad hoc* group are: Dr Annemarie Bouma (The Netherlands), Dr Hualan Chen (China), Dr Baltus Erasmus (South Africa), Dr Peter Jones (International Federation on Animal Health), Dr Stefano Marangon (Italy) and Dr Joseph Domenech (FAO).

Verona 2010

13

FAO ANIMAL PRODUCTION AND HEALTH



proceedings

INFLUENZA AND OTHER EMERGING ZOO NOTIC DISEASES AT THE HUMAN-ANIMAL INTERFACE

FAO/OIE/WHO Joint Scientific Consultation
27-29 April 2010, Verona (Italy)



World Health
Organization

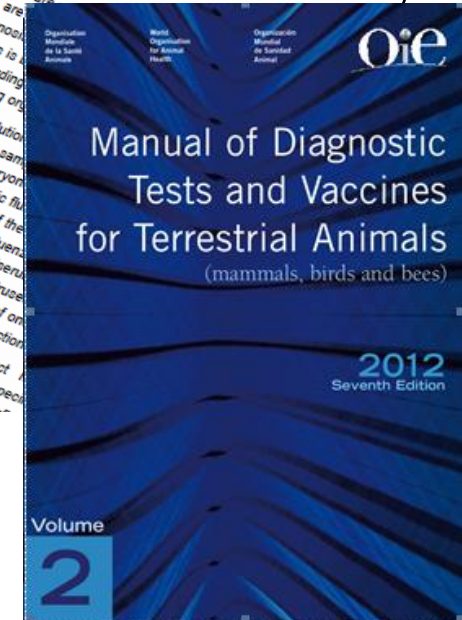
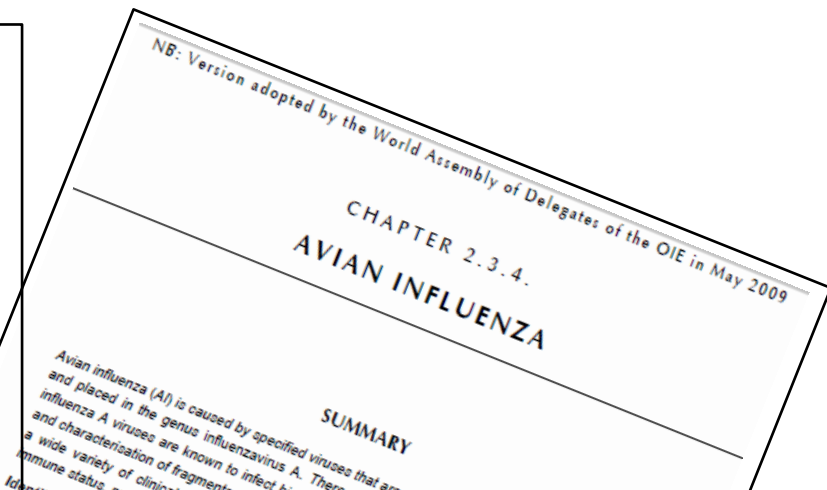


Vaccination of poultry in Vietnam against H5N1 highly pathogenic avian influenza

A Case Study by Dr Les Sims¹ and Dr Do Huu Dung²



© Commonwealth of Australia 2009



Avian influenza (AI) is caused by specified viruses that are and placed in the genus influenza A. There are influenza A viruses are known to infect birds. Diagnosis and characterization of fragments of its genome. Diagnosis a wide variety of clinical signs that may vary according immune status, presence of any secondary exacerbating or

Identification of the agent: Suspensions in antibiotic solution (or faeces) taken from live birds, or of faeces and pooled samples inoculated into the allantoic cavity of 9 to 11-day-old embryonating embryos during the incubation and all eggs at the end of the presence of haemagglutinating activity. The presence of influenza matrix antigens, both of which are common to all influenza A viruses, an immunodiffusion test between concentrated virus and an antiserum recently been replaced, under certain circumstances, by detection of influenza A genome using reverse-transcription polymerase chain reaction

For subtyping the virus, a reference laboratory should conduct neuraminidase inhibition tests against a battery of polyclonal or monospecific the 16 haemagglutinin (H1-16) and 9 neuraminidase (N1-9) subtypes of influenza A genome using reverse-transcription polymerase chain reaction

As the term highly pathogenic avian influenza and the historical influenza (NAI) virus. Any highly pathogenic avian influenza (NAI) virus, although all virulent H7 becoming virulent as NAI viruses

In Manual 2.3.4. Part C. REQUIREMENTS FOR VACCINES AND DIAGNOSTIC BIOLOGICALS

It is important that vaccination alone is not considered the solution to the control of NAI or LPAI subtypes if eradication is the desired result. Without the application of monitoring systems, strict biosecurity and depopulation in the face of infection, there is the possibility that these viruses could become endemic in vaccinated poultry populations

the OIE and its partners

activities of reference laboratories & collaborating centres

The Role of Vaccines and Vaccination in Avian Influenza Control and Eradication

High pathogenicity avian influenza (HPAI) and low pathogenicity notifiable avian influenza (LPNAI) in poultry are reportable to the World Organisation for Animal Health (OIE) by its Member Countries. Twenty-nine distinct epizootics of HPAI have occurred since 1959, with the H5N1 HPAI pandemic in Asia, Africa and Eastern Europe being the largest, affecting poultry and/or wild birds in 63 countries. The first case occurred in 1996 in the People's Republic of China, with the start of global spread in 2003. Historically, stamping-out was used to achieve eradication in 24 epizootics, while vaccination was used in four epizootics as an adjunct to stamping-out.

In response to the need for improved control and eradication, the OIE-FAO Network of Expertise on Animal Influenza (OFFLU) has conducted a global evaluation of control programmes employed between 2002 and 2010, focusing on avian influenza (AI) vaccines and vaccination. The survey showed that each country's response to an AI outbreak varied, according to economic status, poultry production systems, laboratory facilities, diagnostic capacity and various other factors

related to Veterinary Services. Higher poultry density in less-developed countries was associated with increased numbers and longer durations of AI outbreaks, and longer times till eradication. Low performance scores for Veterinary Services were associated with longer AI eradication times, higher mortality rates, higher culling rates and increased numbers of outbreaks.

Questionnaires were sent to 80 countries which had experienced HPAI and/or LPNAI outbreaks; 69 countries completed and returned the questionnaire. Over 113 billion doses of AI vaccine were used in at-risk national poultry populations of over 135 billion birds (50.3% vaccine coverage rate) in 15 countries. The global vaccine coverage rate was 13.7% for all poultry. Inactivated AI vaccines accounted for most of the vaccine used (95.6%), requiring catching and injection of individual birds, while live recombinant virus vaccines had minor usage (4.4%) but were more easily administered by spray application. Most of the AI vaccine was used in the H5N1 HPAI pandemic, and more than 99% of the vaccine was used in China, Egypt, Indonesia and Vietnam. Vaccination was implemented in these four

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Assessment of national strategies for control of high-pathogenicity avian influenza and low-pathogenicity notifiable avian influenza in poultry, with emphasis on vaccines and vaccination

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OFFLU 2012

OFFLU avian influenza vaccine guidance

Continued evaluation and updating of vaccine
seed strains to protect against emergent
variant field virus strains

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Experiences with vaccination in countries endemically infected with high pathogenic avian influenza: the Food and Agriculture Organization perspective

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Current OIE conclusions on vaccination against HPAI

- **Vaccination works if implemented appropriately (vaccination coverage...). It raises the level of protective flock immunity and increases the resistance to infection. It reduces viral replication and viral shedding.**
- **Needs appropriate vaccine (vaccine matching, Quality control), vaccination methods (cold chains, trained vaccinators...), Post Vacc Monitoring**
- **It is not an easy tool**
- **Vaccination cannot eradicate the disease/virus if used alone**
- **Importance of other methods: biosecurity in farms, live bird markets..., control of movements, stamping out...**

- **Knowledge of the prevailing epidemiological situation is of critical importance as well as of the poultry production system in place which influences the risk of virus introduction and spread.**
- **Logistical constraints have also to be known for adequate planning of field interventions.**
- **Need of effective veterinary Services**
- **Role of surveillance/early detection/early warning/immediate response (contingency and emergency planning...)**
- **Private-Public Partnership**

- **Specific problem related to backyard farming production systems (small village holders)**
- **Vaccination strategies: country or zonal massive vaccination, targeted vaccination (high risk areas/zones, important impact...), emergency vaccination, commercial farms vaccination (private good)**
- **Surveillance of circulating strains and identification of new possible field variants (virus characterization, vaccine matching studies...)**
- **Issue of new vaccines protecting 1 day old chicken and more effective in all duck species?**
- **Combination of various poultry vaccinations to be considered**



**Thank you for
your attention**

