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## REPORT OF THE MEETING OF THE OIE SCIENTIFIC COMMISSION FOR ANIMAL DISEASES

Paris, 30 September – 2 October 2008

The meeting of the OIE Scientific Commission for Animal Diseases was held at the OIE Headquarters in Paris, France, from 30 September to 2 October 2008. The Commission was welcomed by Dr Gideon Brückner, Deputy Director General of the OIE outlining the important issues to be discussed on the agenda both within the Commission and during a combined meeting on 2 October with the Terrestrial Animal Health Standards Commission. Dr Bernard Vallat, Director General of the OIE during his welcome to the participants outlined the importance of consensus among the Scientific and Code Commissions on issues related to standards that need to be applied by the 172 Members of the OIE. He urged the Scientific Commission to carefully consider the issues that emanated from the 76th General Session of the OIE and to also discuss to reach agreement with the Code Commission.

The draft agenda was adopted.

The meeting was chaired by Dr. Alejandro Schudel, Vice-President of the Scientific Commission and Dr Preben Willeberg was rapporteur.

The agenda and the list of participants are attached as Appendices I and II.

### **1. Report of the meeting of the Scientific Commission for Animal Diseases of 30 July 2008**

The Commission reviewed and adopted the report of the meeting of the Scientific Commission of 30 July 2008.

### **2. Review of *ad hoc* Group reports**

#### **2.1. *Ad hoc* Group on swine vesicular disease (SVD) (Appendix III)**

The Commission discussed the need for a revised SVD chapter in view of the general perception that the main reason for considering SVD as an important disease is as a differential diagnosis giving clinical signs that can be confused with foot and mouth disease in pigs. It was acknowledged that in some countries the disease might also be a concern in terms of bilateral trade. With modern laboratory methods it is less of a problem to get a quick differential diagnosis established. However, in a meeting with the Head of the OIE Animal Health Information Department, the Commission was informed that the criteria for listing SVD as an OIE listed disease had been confirmed in 2006 and that the criteria for increased morbidity was met. The arguments about the differential diagnosis were also considered but since access to modern diagnostics might vary by country and since regional spread of SVD should be avoided, an up-dated chapter would be appropriate.

The Commission reiterated that the relative importance of the epidemiological relationship between domestic and wild pig populations should be consistently applied across all diseases, and that there might be a need to adjust the draft chapter on SVD. The Commission outlined the possible need to reconsider the draft chapter and surveillance guidelines for SVD pending the final decision on the chapter on

classical swine fever (CSF). The Commission also noted that conditions to move animals out of a containment zone would probably only make sense regarding movement directly for slaughter and not for live animal export. The report of the *ad hoc* Group was endorsed but the draft chapter and surveillance guidelines will be reconsidered during the February 2009 meeting pending the final recommendations of the revised chapter on CSF.

## **2.2 *Ad hoc* Group on porcine reproductive and respiratory syndrome (PRRS) ([Appendix IV](#))**

The Commission endorsed the report and accepted the recommendations of the *ad hoc* Group on PRRS that it would not be opportune to draft a chapter that might have the potential to be harmful to the international trade in pig and pig products due to the current insufficient scientific information on the differentiation between highly pathogenic and low pathogenic (including vaccine) virus strains of the disease. The Commission however stressed that it is important to establish the necessary scientific basis, so that a chapter can be drafted as soon as possible. It was agreed that the information paper on the prevention and control of the disease drafted by the *ad hoc* Group should be published on the OIE website for the information of Members and should also be considered for publication in the OIE *Bulletin*.

## **2.3. *Ad hoc* Group on Wildlife Disease Notification, 2 - 4 July 2008 ([Appendix V](#))**

The Head of the OIE Animal Health Information Department in his address to the Commission to comment on the meeting of the *ad hoc* Group, explained the changes being carried out in WAHIS in relation to the reporting of occurrence of diseases in wildlife. He outlined the process of how information emanating from the current annual questionnaire for Members on wildlife diseases, will be integrated into WAHIS and which wildlife data will be accessible to Delegates or the broader public. The aim would be to encourage Members to report on diseases in wildlife avoiding negative consequences such as unjustified trade restrictions. The definition of different categories of wildlife for the purpose of animal disease notification was reviewed and the recommendation of the *ad hoc* Group on the need of refinement of these categories was recognized.

The Commission agreed with the changes suggested by the *ad hoc* Group.

## **2.4. *Ad hoc* Group on Epidemiology, 11 – 12 June 2008 ([Appendix VI](#))**

The report was endorsed and the proposal of the *ad hoc* Group for the outlay and contents of the proposed handbook on animal health surveillance was further discussed (see agenda item 3).

## **2.5. *Ad hoc* Group on Epidemiology, 3 – 5 September 2008 ([Appendix VII](#))**

The proposal of the *ad hoc* Group to amend the current General guidelines on animal health surveillance to accommodate the proposals of the *ad hoc* Group on Wildlife disease surveillance was accepted and endorsed by the Commission. The amended text will be submitted to the Code Commission to be circulated for comments by Members.

The Commission accepted the recommendations of the *ad hoc* Group on the draft chapter on classical swine fever but reiterated that the concept of the presence of a listed disease in wildlife and its relevance to the disease status of the domestic animal population of a country or zone, should also be further discussed as the concept relates to other diseases such as foot and mouth disease. The Commission reiterated that it is essential for the OIE to adopt a consistent approach on this concept in the future development of standards.

The Commission discussed and reached consensus on the application of a *buffer zone* as it relates to foot and mouth disease thereby confirming the previous proposal recommended by the *ad hoc* Group and emphasising that the important issues are bio-security, geographical barriers, control measures and increased surveillance i.e. the application of acceptable animal health control measures. A *buffer zone* should be optional and not obligatory as long as the conditions specified have been met. The proposal of the *ad hoc* Group is also consistent with a proposal on this aspect received from the Permanent Veterinary Committee of the southern cone countries (CVP). The Commission recommended that the word “buffer” should be replaced by “protection” without any changes to the definition i.e. the definition for *buffer zone* should be replaced by a similar definition for a *protection zone* and the former deleted. It was indicated that there are with some Members a negative connotation associated to the word “buffer

zone” and that for translation purposes into the three official languages of the OIE, the word “protection zone” would be more acceptable. It was recommended that the option of whether the proposed *protection zone* should be within or outside a free zone should be left to the discretion of the country or countries concerned and pending on the disease situation. An outbreak of a disease within a *protection zone* should also not necessarily affect the status of an adjoining free zone. Recommendations for changes to the relevant chapters in the *Terrestrial Code* will be forwarded to this effect for consideration by the Code Commission. The definition of a *protection zone* also refers very clearly to the need for specific surveillance and it was further recommended that the Code Commission should therefore consider to delete “*surveillance zone*” from the list of definitions in the glossary of the *Terrestrial Code* as it could be regarded as redundant and contribute to confusion.

## **2.6. Ad hoc Group on general guidelines for the use of epidemiological models for the management of animal diseases, 13 – 15 August 2008**

The report was discussed by the Commission and also taking note of the comments of the Director General on the draft report. The next meeting of the *ad hoc* Group is tentatively planned for June or July 2009.

The Commission also discussed how the guidelines on the use and application of epidemiological modelling could be made accessible to Members and it was therefore suggested that presentation of the guidelines with appropriate examples should be considered for meetings of OIE Regional Commissions.

## **3. Handbook for animal health surveillance**

The proposal from the *ad hoc* Group on Epidemiology that external funding should be sought to remunerate contributors for writing various sections of the proposed handbook, will be discussed with the Director General. The Commission accepted the proposal that an official from the Scientific and Technical Department could be tasked to coordinate the activities of contributing writers and the designated OIE Collaborating Centres to ensure that the momentum of the process is maintained and to expedite the eventual publishing of the handbook. It was foreseen that the first edition could possibly be available early in 2011.

## **4. Foot and mouth disease (FMD)**

### **4.1. OIE FMD mission to South America**

The Commission was informed that following a request from the Permanent Veterinary Committee (CVP) of the southern cone countries, the Director General has agreed that the mission initially intended to be conducted in November 2008, should be postponed until March 2009. It was also indicated that the mission will be preceded by a pre-mission visit by an official OIE Regional Representative of the Americas to assist the countries to prepare for the OIE mission in March. The OIE Scientific and Technical Department will finalise the itinerary and logistical arrangements with the help of the OIE Regional Representative for the Americas. The countries that will be visited by the mission are: Argentina, Paraguay, Brazil and Bolivia with the main aim to assess progress with the implementation of the Agreement between the OIE and the respective countries for a regional approach for the control of foot and mouth disease in the Region.

### **4.2. The implementation of the concept of a buffer zone as it relates to FMD**

See paragraph 2.5 above and paragraph 13. below.

### **4.3. OIE/FAO Global conference on FMD**

It was confirmed that the conference will be held in Asunción, Paraguay, from 24 to 26 June 2009. A Steering Committee will shortly be convened between OIE and FAO to proceed with the arrangements and planning of the conference. A first announcement has also already been placed on the OIE website.

#### **4.4. Letters to Brazil, Bolivia and Colombia**

Following the outcome and recommendations of the meeting of the OIE *ad hoc* Group on country evaluation for foot and mouth disease, letters conveying the recommendations of the Commission to the respective countries were addressed by the Director General of the OIE. The Commission took note of the letters and the responses received by the Central Bureau.

#### **5. Epidemiological factors that favour the global spread of animal diseases**

Following the discussions of the Commission during its previous meeting on this aspect, the Commission took note that a scientific background paper has been requested from an OIE expert. The President of the Commission has in addition also indicated that he will supply a background paper on this subject. It is foreseen that aspects related to this important subject will be addressed in the Technical Theme on Climatic changes that will be presented during the 77<sup>th</sup> OIE General Session in May 2009 and that following the General Session, a newly constituted *ad hoc* Group will be proposed to the Director General to address this aspect with the view to assess the impact thereof on future international standard setting of the OIE.

#### **6. Networks of OIE Reference Laboratories and Collaborating Centres**

Drs. David Paton and Jeff Hammond of the OIE/FAO Reference Laboratory for foot and mouth disease at Pirbright, UK, were invited by the Commission to give an insight to the Commission on the management and progress with the implementation of the OIE/FAO FMD Reference Laboratories network. Slide presentations and a report on the work of the reference laboratory and past and recent meetings of the network were given resulting in positive discussions between the Commission and the delegation from the Pirbright FMD Reference Laboratory. The Commission was also informed that the theme of the OIE Symposium during the biennial conference of the World Association for Veterinary Laboratory Diagnosticians (WAVLD) in Madrid, Spain in June 2009, will be *Veterinary Laboratory networks and networking*. The planning of the one day OIE symposium will be done under the auspices of the OIE Biological Standards Commission. The Commission was informed that there are currently three recognised subject specific OIE reference laboratory networks namely for FMD (managed by Pirbright, UK); bluetongue (managed by Teramo, Italy) and OFFLU (OIE/FAO network for avian influenza). There is however, a need for expansion of this concept as already identified in the Resolutions adopted at the First Conference of OIE Reference Laboratories and Collaborating Centres held in Florianópolis, Brazil, in December 2006.

#### **7. Develop a working procedure to integrate more closely the human/animal/wildlife disease pathogen interface in a scientific approach to the development of standards.**

The Commission was informed that this issue was discussed during the OIE/FAO/WHO annual tri-partite meeting held in Athens in March 2008. The WHO/OIE/FAO conference to be held in Verona, Italy during October 2008, will specifically address this issue and it will also be the subject of discussion during the Ministerial Conference scheduled to be held in Sharm-El-Skeikh at the end of October 2008. The intention is that a proposal will be made to establish an OIE/WHO/FAO Collaborating Centre for this purpose at Padova, Italy in collaboration with the WHO centre for zoonotic diseases in Athens, Greece.

The Commission resolved to closely follow further developments in this respect and will give the necessary inputs as requested by the Director General.

#### **8. Procedure for the evaluation of dossiers for the recognition of official OIE disease status**

A document prepared by the OIE Scientific and Technical Department was presented for discussion to obtain agreement from the Commission for the operating procedures to be applied by the Scientific and Technical Department, the relevant *ad hoc* Groups and the Scientific Commission for processing, managing and evaluating applications from Members for disease status recognition. The Commission endorsed the proposal from the Department and accepted that the procedures proposed would be used as a standard reference and internal document for future use to manage the process of country evaluations. The Commission expressed interest for addition of a paragraph on the annual reconfirmation procedures to be discussed at the next meeting.

The document containing the operating procedures will be accessible for Members on the OIE website at [http://www.oie.int/scad/eng/en\\_scad.htm](http://www.oie.int/scad/eng/en_scad.htm).

The Commission also resolved to request the Code Commission to consider including the country questionnaires for the four diseases subject for official OIE recognition of status, within the relevant chapters of the *Terrestrial Code*.

#### **9. Issues referred to the Scientific Commission by the Code Commission**

On request of the Terrestrial Code Commission, the Commission reviewed Member comments on Terrestrial *Code* chapters on Anthrax, Bluetongue, Rabies, Avian Influenza, Newcastle Disease, Bovine Tuberculosis, African Horse Sickness and West Nile fever. Detailed comments were referred to the Terrestrial Code Commission (see item 13).

#### **10. Issues referred to the Scientific Commission by the Biological Standards Commission**

No items were transferred.

#### **11. Terms of reference and composition of the ad hoc Group on FMD surveillance and NSP test interpretation**

The Commission, after discussing the need for an *ad hoc* Group to discuss this issue, concluded that it is essential for guidance and help to the *ad hoc* Group on country evaluations for FMD to get more clarity and scientific backup for the decision-making process of both the *ad hoc* Group and the Commission. It was noted that three successful workshops were held on this aspect by the OIE Collaborating Centre in Belgium for *Validation, Quality Assessment and Quality Control of Diagnostic Assays and Vaccine Testing for Vesicular Diseases in Europe*, and that the Collaborating Centre will therefore be requested to provide a background paper on their findings and recommendations following the workshops to assist the proposed *ad hoc* Group to formulate recommendations and guidelines for future use.

#### **12. Terms of reference and composition of the ad hoc Group on CCHF**

The Commission resolved to maintain the establishment of an *ad hoc* Group for CCHF on the working programme for 2008/2009, but acknowledged that due to the possibility of scheduling additional *ad hoc* Group meetings for country evaluations, the first meeting of the proposed *ad hoc* Group for the development of a new chapter for the *Terrestrial Code* on CCHF might be postponed until the latter half of 2009.

#### **13. Meeting of the Scientific Commission with the Terrestrial Animal Health Standards Commission (2 October)**

The meeting as scheduled took place on 2 October 2008 and was attended by both Commissions and the Director General of the OIE. The purpose of the meeting was to convey issues discussed by the Scientific Commission and to get clarity on issues referred to the Scientific Commission by the Code Commission. The following issues were discussed:

##### **13.1. Implementation of a buffer zone for foot and mouth disease**

The two Commissions agreed on the proposal that the word *buffer* be replaced in all text in the *Terrestrial Code* with the word *protection*. A protection zone should be an optional measure, could be either in the free or infected zone or country and an outbreak within it should not compromise the status of the free country or zone. The following text was proposed to amend the existing text in the *Terrestrial Code*:

~~Buffer~~ Protection zone:

means a *zone* established to protect the health status of animals in a free country or *free zone*, from those in a country or *zone* of a different *animal health status*, using measures based on the epidemiology of the *disease* under consideration to prevent spread of the causative pathogenic agent into a free country or *free zone*. These measures may include, but are not limited to, vaccination, movement control and an intensified degree of *disease surveillance*

## Rationale for Scientific Commission proposal:

Based on the health situation of the various zones, on their geographical and production characteristics and on the evaluation of the epidemiological situation, each Official Veterinary Service has the legal authority and competence to provide the appropriate guarantees for the preservation of the free zone including the appropriate location of the protection zone (inside or outside the free zone). For instance, a free zone without vaccination could have a protection zone with vaccination situated outside the free zone, while a free zone with vaccination could have a protection zone that protects it from a zone or country with a different disease status, with the protection zone situated inside the free zone.

### 13.2. Proposed amendments to Chapter 8.5 on foot and mouth disease

The Scientific Commission proposed to change the following articles in chapter 8.5 (Foot and mouth disease) in accordance with the definition as proposed. Emphasis is placed on the separation of animal subpopulations; the application of animal health measures to prevent the entry of the virus while taking into consideration physical or geographical barriers and making it optional to create a 'protection zone' and it is proposed that Articles 8.5.2 to 8.5.5 should be changed to reflect this. This would still give the Scientific Commission the much needed legal text and support in the evaluation of country dossiers for disease status.

#### Article 8.5.2

Susceptible animals in the FMD free country where vaccination is not practised can be separated from neighbouring infected countries ~~by a buffer zone, or physical or geographical barriers, by implementing~~ and animal health measures that effectively prevent the entry of the virus ~~should be implemented, taking into consideration physical and geographical barriers. These measures may include a protection zone.~~

#### Article 8.5.3.

Susceptible animals in the FMD free country where vaccination is practised can be separated from neighbouring infected countries ~~by a buffer zone, or physical or geographical barriers, by implementing~~ and animal health measures that effectively prevent the entry of the virus ~~should be implemented, taking into consideration physical and geographical barriers. These measures may include a protection zone.~~

#### Article 8.5.4.

An FMD free zone where vaccination is not practised can be established in either an FMD free country where vaccination is practised or in a country of which parts are infected. In defining such zones the principles of Chapter 4.3. should be followed. ~~Susceptible animals in the FMD free zone can be separated by a buffer zone or by physical/geographical barriers from the rest of the country and from neighbouring countries if they are of a different animal health status, and animal health measures that effectively prevent the entry of the virus should be implemented. Susceptible animals in the FMD free zone where vaccination is not practised should be separated from the rest of the country and from neighbouring countries if they are of a different animal health status by implementing animal health measures that effectively prevent the entry of the virus, taking into consideration physical or geographical barriers. These measures may include a protection zone.~~

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### **Deletion of the definition of *surveillance zone***

The Commission is of the opinion that the definition of *protection zone* as defined above, sufficiently provides for surveillance to be conducted and the definition of *Surveillance zone* could thus be deleted. The application of surveillance *per se* is a managerial option for disease control purposes and is applied at the discretion of the country concerned and should not be confused with the application of a *protection zone*.

### **Surveillance zone as captured in Article 8.5.7 (6)**

For ease of deleting the definition of *surveillance zone* it is proposed that Article 8.5.7 (6) where it relates to a *containment zone*, be deleted as the current definition of containment zone covers this requirement.

~~6. containment zone should be large enough to contain the disease and comprise both a restricted/protection zone and larger surveillance zone.~~

## **13.3. Proposed amendments to Chapter 4.3 on zoning and compartmentalisation (Article 4.3.3)**

### **“Principles for defining a zone or compartment, including containment zone**

In conjunction with the above considerations, the following principles should apply when Members define a *zone* or a *compartment*.

1. The extent of a *zone* and its geographical limits should be established by the *Veterinary Authority* on the basis of natural, artificial and/or legal boundaries, and made public through official channels.
2. The free status of the established zone would not be compromised in the event of an outbreak of disease limited to the *Protection zone*. A protection zone may be inside or outside the free country or free zone at the discretion of the country or countries concerned.”

### *Classical Swine Fever disease status and wildlife*

The two Commissions agreed on the basic principles as proposed by the *ad hoc* Group on Epidemiology. Discussions were held on the degree of (active) surveillance in wildlife. The primary objective would be to establish a CSF free status in the domestic population and not to conduct extensive and costly surveillance to confirm infection in wildlife.

### *Revised guidelines for animal disease surveillance (wildlife considerations)*

Both Commissions confirmed the changes by the Epidemiology *ad hoc* Group

### *Progress with the finalisation of the revised chapter on CBPP*

The Code Commission received only minor comments on the circulated CBPP draft chapter and the chapter will be proposed for adoption in May 2009

### *Questionnaires for official disease status and its integration into the Code*

The Code Commission will consider the request from the Scientific Commission to include the questionnaires within the relevant *Code* chapters.

### *Guidelines on vector surveillance*

The Commissions agreed on the need to include vector surveillance guideline into the *Code*.

### *PRRS guidelines (web publication)*

The information supplied by the *ad hoc* Group on PRRS will be published on the OIE website and in the *OIE Bulletin*.

#### **14. Next meeting of the Scientific Commission**

The next meeting of the Scientific Commission for Animal Diseases will be from 11 to 13 February 2009 at OIE headquarters, Paris.

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.../Appendices



**REPORT OF THE MEETING  
OF THE OIE SCIENTIFIC COMMISSION FOR ANIMAL DISEASES**

**Paris, 30 September – 2 October 2008**

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**Agenda**

- 1. Report of the meeting of the Scientific Commission for Animal Diseases of 30 July 2008**
- 2. Review of *ad hoc* Group reports**
  - 2.1. *Ad hoc* Group on swine vesicular disease (SVD)
  - 2.2. *Ad hoc* Group on porcine reproductive and respiratory syndrome (PRRS)
  - 2.3. *Ad hoc* Group on Wildlife Disease Notification, 2 - 4 July 2008
  - 2.4. *Ad hoc* Group on Epidemiology 11 – 12 June 2008
  - 2.5. *Ad hoc* Group on Epidemiology 3 – 5 September 2008
  - 2.6. *Ad hoc* Group on general guidelines for the use of epidemiological models for the management of animal diseases, 13 – 15 August 2008
- 3. Handbook for animal health surveillance**
- 4. Foot and mouth disease (FMD)**
  - 4.1. OIE FMD mission to South America
  - 4.2. The implementation of the concept of a buffer zone as it relates to FMD
  - 4.3. OIE/FAO Global conference on FMD
  - 4.4. Letters to Brazil, Bolivia and Colombia
- 5. Epidemiological factors that favour the global spread of animal diseases**
- 6. Networks of OIE Reference Laboratories and Collaborating Centres**
- 7. Development of a working procedure to integrate more closely the human/animal/wildlife disease pathogen interface in a scientific approach to the development of standards.**
- 8. Procedure for the evaluation of dossiers for the recognition of official OIE disease status**
- 9. Issues referred to the Scientific Commission by the Code Commission**
- 10. Issues referred to the Scientific Commission by the Biological Standards Commission**
- 11. Terms of reference and composition of the *ad hoc* Group on FMD surveillance and NSP test interpretation**
- 12. Terms of reference and composition of the *ad hoc* Group on CCHF**
- 13. Meeting of the Scientific Commission with the Terrestrial Animal Health Standards Commission (2 October)**
  - 13.1. Implementation of a buffer zone for foot and mouth disease
  - 13.2. Proposed amendments to Chapter 8.5 on foot and mouth disease
- 14. Next meeting of the Scientific Commission**



**REPORT OF THE MEETING  
OF THE OIE SCIENTIFIC COMMISSION FOR ANIMAL DISEASES**

**Paris, 30 September – 2 October 2008**

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## **REPORT OF THE OIE AD HOC GROUP ON SWINE VESICULAR DISEASE**

**Paris, 24 - 25 April 2008**

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A meeting of the OIE Ad hoc Group on Swine Vesicular Disease (SVD) was held at the OIE headquarters in Paris from 24 to 25 April 2008.

Dr Tomoko Ishibashi, Deputy-Head of the Scientific and Technical Department welcomed the Group members on behalf of Dr Bernard Vallat, the OIE Director General. She explained the procedures for revising chapters of the OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*) as well as the OIE's concerns about whether the current Chapter on SVD captures sufficiently the disease characteristics and reflects recent scientific findings. She also conveyed the OIE's expectations for this Group, which are to develop an updated Chapter for safe trade without unnecessary trade restrictions and to discuss the need for developing disease-specific surveillance guidelines for SVD.

Dr Silvia Bellini chaired the meeting, and Dr David Paton acted as rapporteur. The draft agenda was agreed, with addition of a discussion on the appropriateness of the listing of SVD by OIE. The agreed agenda and list of participants are attached as Appendices I and II, respectively.

### **1. Update on the current situation of swine vesicular disease in the world and brief discussion of OIE listing**

Dr Bellini briefly described the SVD situation in Italy. In 2006 there were 51 outbreaks requiring 83,707 pigs to be slaughtered. In 2007 there were 89 outbreaks requiring 70,089 pigs to be slaughtered. For many years, SVD has been endemic in southern Italy. Here, pig keeping is on a small-scale without trade incentives for improved control. Dealers' premises have played an important role in perpetuation of the disease. Recently, the disease has spread into northern Italy affecting areas of intensive pig production, associated with a higher number of affected animals and more significant economic damage. It has been very difficult to get public acceptance of the need to slaughter large numbers of healthy pigs that do not pose any risk to human health.

Dr Paton gave an overview of the worldwide SVD situation with reference to last year's report from the European Community Reference Laboratory for SVD. SVD was first recognised in 1966 in Italy and afterwards in Hong Kong. A number of other European and Far Eastern countries have reported the disease in the '70's, '80's and '90's (see Table 1); SVD has not been reported from other parts of the world. The SVD virus is thought to have originated from human coxsackie B5 virus. However, SVD virus is not a significant zoonosis. The last reported case of SVD from the Far East was in Taiwan in 2000. In Europe, outbreaks affected Netherlands, Spain, Portugal and Italy in the early '90's. Since then, only Italy and Portugal have reported cases; Italy in every subsequent year, but in Portugal two isolated incidents in 2003/4 and 2007. The clinical severity of SVD appears to have decreased and Italian studies show that subclinical infection is now far more common than clinically apparent forms of the disease. Consequently, clinical surveillance is likely to have a very low sensitivity for detecting SVD virus circulation. Phylogenetic studies suggest a link between outbreaks in Italy and Portugal, but the direction of the spread and the possible involvement of a third country or countries is unresolved. The lack of identified genetic progenitors for the SVD viruses from Portugal and parts of Italy shows that there has been an undisclosed reservoir of SVD virus infection during the last ten

years. Surveillance for SVD varies considerably within Europe; three countries undertake very extensive serological surveillance (Netherlands, Spain, Italy), some carry out more targeted serosurveillance and many rely primarily on clinical diagnosis. Due to the frequently subclinical nature of SVD virus infection and the lack of information on surveillance methods, the global distribution of the virus cannot be ascertained with certainty.

There is debate as to whether SVD meets the criteria for OIE listing since it is neither a significant zoonosis nor a significant cause of morbidity or mortality. Some consider the requirements to control the disease by stamping out and for stringent international controls on trade as disproportionate. It is a special case, listed due to its clinical similarity to foot-and-mouth disease (FMD). The development of good laboratory methods for differentiation of FMD and SVD reduces the difficulty of differentiation between these two diseases. If a frequently subclinical disease is made notifiable, then reliance on clinical detection may give rise to under-reporting and silent spread of infection. It is hard to judge whether or not this has happened to any great extent internationally. Other than the inferences from the above-mentioned cases in Portugal, there is little evidence so far that undisclosed infection has occurred or is widespread.

## **2. Review of the recent research developments and research initiatives of SVD**

SVD research has not been a high priority in recent years. There are good laboratory tests to detect virus and antibodies and as mentioned, differentiation from FMD is readily achieved in the laboratory. Inactivated vaccines were developed many years ago, but not used. Over the last ten years, attempts have been made to establish whether or not the virus is really changing in virulence and to determine the genetic basis for differences in virulence between SVD virus isolates. These studies have been somewhat inconclusive, due primarily to difficulties in establishing animal models that reliably distinguish between viruses of differing virulence. Explanations for the sporadic occurrence of clinically apparent cases is therefore lacking along with certainty as to whether or not this could become more frequent. Swill feeding has been considered a major risk factor for the spread of SVD virus. However, it seems relatively unimportant in recent Italian outbreaks – either because swill feeding is now banned or due to the less virulent viruses disseminating to muscle less effectively than earlier strains. SVD virus is present in muscle due to viraemia and not local replication, so if low virulent strains give rise to transient, low level viraemia this may provide more limited opportunity for contamination.

## **3. Development of a revised draft Code Chapter on SVD**

The aim is to prepare a new version of the Chapter for review by the Scientific Commission in September 2008 and by the Terrestrial Animal Health Standards Commission shortly thereafter. This could enable a proposal to be sent for Member comments in time to prepare a resolution for the General Session in May 2009.

The discussion was based on a tentative draft Chapter prepared by a member of the Group in which measures incorporated into the FMD *Code* Chapter were adapted for SVD. Compared to FMD, the likelihood of uncontrolled spread of SVD is much less, since the virus is not transmitted by the airborne route, travels slowly from pen-to-pen, and can be blocked from entering adjacent farms by biosecurity measures. Furthermore, pigs can realistically be confined within well managed operations. Consequently, the concepts of “Compartmentalisation” and of “Containment Zones” are appropriate for SVD. Another difference between SVD and FMD is that whereas the *Code* Chapter for FMD requires regular declarations from Member States and authorisation of the OIE free status, this is considered over-burdensome for the lesser risk associated with SVD. In consideration of a new *Code* chapter for SVD, reference was therefore made to the chapter for classical swine fever (CSF) which also affects pigs and is spread by swill; but again taking account of the lesser severity of SVD compared to CSF.

Changes made to the SVD *Code* chapter

1. In Article 2.6.5.1., the incubation period was not changed, but the susceptible species were listed as domestic and wild pigs and a definition was inserted stating that an animal infected with SVD virus is a case of SVD. For international trade, consideration should be given to the presence of SVD virus infection that may not be associated with clinical signs. Diagnostic indicators of SVD virus infection were listed.
2. A new Article, 2.6.5.2., was introduced to define historical freedom or freedom based on a specific surveillance programme including reference to a new guideline for SVD surveillance. The principle of being able to have free zones and compartments as well as free countries was introduced along with the fundamental requirements for separation of regions of differing status. It was agreed to leave in the option of using a buffer zone. The group considered that a 25 year period is unnecessarily long to achieve historical freedom from SVD. Shortage of data make it difficult to give a firm recommendation for a more appropriate period, but allowing for the lack of obvious clinical signs, a period of 5 years could be more appropriate providing that stamping out has been used to eradicate the infection. Currently, the *Code* Chapter on SVD requires a 2 year waiting period without evidence of SVD. A period of one year was considered sufficient to demonstrate freedom with the assistance of appropriate surveillance for clinical and subclinical infection providing that stamping out has been used to control outbreaks. In the absence of stamping out, this period should be extended to 3 years.
3. A new Article, 2.6.5.4., allows for establishment of a Containment Zone in the event of a limited outbreak in a free region. The Article follows closely the wording of the equivalent article in the FMD *Code* Chapter.
4. For the recovery of free status, in Article 2.6.5.5., it was considered appropriate to have an interval of two incubation periods (i.e. 2 months or 60 days) for the recovery after stamping out and a containment zone have been applied and this waiting period was considered appropriate for use in other Articles as well. A waiting period of 12 months rather than 2 years is considered appropriate for recovery of the free status where stamping out and surveillance, but no containment zone had been applied.
5. A new Article was entered at 2.6.5.6., to provide conditions for transfer of pigs from an infected zone to slaughter within a free zone. Various safeguards were required and the meat could not go for international trade.
6. Major changes were not made to the Articles covering trade of specific categories of animals and commodities except that the principle of zones and compartments were added. Compartments are not considered appropriate for wild pigs. In the case of the new Article 2.6.5.8., for trade in wild pigs from free countries or zones, a requirement was added for serological testing if the animals came from a free region that bordered an infected one. This was necessary because of the risk that the animals could have had contact with infected wild pigs. Changes were also introduced into Article 2.6.5.11., on trade in semen from infected regions, to increase assurance that semen could not be traded from recently infected pigs that had not yet shown clinical signs or seroconverted.
7. The old articles on trade in pig commodities were replaced by a single article, 2.6.5.13., listing requirements for importing countries according to the model proposed in the CSF *Code* Chapter. The ad hoc group agreed that in the case of fresh meat, it would not be appropriate to make provision for trade to free regions from infected countries or zones.

**4. Discussion on the need of disease specific surveillance guidelines**

The draft new SVD *Code* Chapter makes reference to surveillance guidelines specific to SVD and therefore it was agreed that such guidelines should be developed. However, it was acknowledged that this would not be needed if either (a) the changes to the new *Code* chapter were rejected, or (b) it was decided to remove SVD from the OIE listing.

It was agreed to use a draft document prepared by a member of the Group as a starting point for the development of SVD surveillance guidelines. These guidelines are modelled on the approach for FMD and repeat many of the points set out in that guide. Both documents are wordy and philosophical and it was questioned whether this level of detail is needed and if so, whether some of it could be incorporated into the general disease surveillance guidelines to avoid repetition in different disease specific guides. It was also commented that if there is going to be a requirement to develop disease specific guidelines for all listed diseases, then it may be considered strange to have prioritised SVD ahead of other more important diseases.

The guideline state that knowledge of the occurrence of SVD in wild pigs would lead to loss of free status, but that surveillance of wild pigs is not required. This apparently contradictory statement was justified on the basis that SVD in wild pigs is only a hypothetical problem.

There was discussion of the necessity to apply stamping out to control outbreaks of SVD. It was agreed that the measure is advisable due to the possibility of continuing spread of virus that would otherwise be associated with ongoing faecal shedding and prolonged environmental persistence of virus. Consequently, if stamping out is not applied, it was agreed that the time taken to regain the free status should be extended to 3 years instead of 1 year.

A flow chart would be helpful in order to clarify the different pathways towards establishing SVD freedom and their associated time periods.

Due to lack of time, the discussion of the surveillance guidelines could not be completed and it was agreed to finish its review by email.

**Table 1. Countries affected by SVD**

<b>Country</b>	<b>Last recorded outbreak*</b>
Italy	2008
Portugal	2007
Taiwan	2000
Netherlands	1994
Belgium	1993
Spain	1993
Hong Kong	1991
Romania	1987
France	1983
United Kingdom	1982
Ukraine	1975
Malta	1975
Switzerland	1973
Austria	1973
Japan	1973
Poland	1973
Russia	1972
Greece	1971
Romania	1971

\* Unofficial data from records of the European Community Reference Laboratory for SVD

.../Appendices



**REPORT OF THE OIE AD HOC GROUP ON SWINE VESICULAR DISEASE**

**Paris, 24 - 25 April 2008**

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**Agenda**

1. Appointment of chairman and rapporteur
  2. Adoption of Agenda
  3. Update on the current situation of swine vesicular disease (SVD) in the world and brief discussion of OIE listing
  4. Review of the recent research developments and research initiatives of SVD
  5. Development of a revised draft Code Chapter on SVD
  6. Discussion on the need of disease specific surveillance guidelines
  7. Other issues
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Appendix II**REPORT OF THE OIE AD HOC GROUP ON SWINE VESICULAR DISEASE****Paris, 24 - 25 April 2008****List of participants****MEMBERS**

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**REPORT OF THE OIE AD HOC GROUP ON  
PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME**

**Paris, 9 - 11 June 2008**

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A meeting of the OIE Ad hoc Group on Porcine Reproductive and Respiratory Syndrome (PRRS) was held at the OIE headquarters in Paris from 9 to 11 June 2008.

Dr Tomoko Ishibashi, Deputy-Head of the Scientific and Technical Department welcomed the Group members on behalf of Dr Bernard Vallat, the OIE Director General. She noted that PRRS is recognized as a notifiable disease by the OIE but as of this time, no chapter has been written for the OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*). She explained that, considering the growing concern over the emergence and spread of highly pathogenic (HP) type of PRRS, the main purpose of the meeting is to discuss the ways to give advice to OIE Members to protect themselves from the damage caused by PRRS, including the possible development of a *Code* chapter on PRRS and the need for disease-specific surveillance guidelines for PRRS.

Dr Trevor Drew chaired the meeting and Dr Scott Dee acted as rapporteur. The draft agenda was agreed, with the deletion of the reference to recent research: the Group did not feel that a review of research needs was practical given the limited information available and time constraints. The Group identified an opportunity to provide the OIE with this information consequent upon workshops to be held in the coming month and Dr Drew undertook to inform the OIE of the findings of these workshops. The agreed agenda and list of participants are attached as Appendices I and II, respectively.

**1. Update on the current situation of PRRS around the world**

Dr Buhrmann presented an overview of the 2004 outbreak in South Africa. He noted that the source of the infection was suspected to be galley waste from harbour floor sweepings, not imported frozen pork. Regarding the pathway of disease spread, he stated that a) swill feeding spread the disease between herds located in close proximity to the harbour and within 30 km of each other; b) buyers of pigs for live market used same transport and fomites when moving from farm-to-farm; and c) insects fed on fish/poultry waste that was used as feed for outdoor units. He noted that there is research which supports PRRS virus (PRRSV) spread via those vehicles and vectors.

Dr Drew with his co-authors Drs Nguyen and Yang presented an overview of Porcine High Fever Disease (PHFD) and its association with PRRSV.

1) Overview of the disease development

- China
  - April 2006: First awareness.
  - June 2006: New disease recognized.
  - Sept 2006: PHFD reported to OIE.
  - April-July 2007: Re-emergence and extensive spread through other provinces.
  - Oct 2007: Vaccines developed.
- Vietnam
  - March 2007: Reported PHFD secondary to pig movement

- Russia
  - September 2007: HP strain isolated by OIE reference lab (Vladimir).
- Other countries
  - Disease suspected in Laos, Cambodia, Myanmar, Indonesia, and Philippines.

2) The phylogentic relation of PHFD-PRRSV to other known isolates

Highly Pathogenic PRRSV isolate has emerged from previous Chinese isolates:

- 95% similar to CH-1a (original Chinese strain)
- 97% similar to HB-1 (more recent Chinese isolate)
- 86% similar to US MN-184

Dr Nguyen presented an overview of the Vietnamese situation in regard to PHFD, of which keys issues are as follows:

- 1) PRRSV entered the country via seropositive quarantined breeding stock from the US, but no outbreaks were reported until March 2007.
- 2) The disease spread throughout the country from March-July, with a total of 18 provinces affected, > 70,000 cases and > 11,800 deaths in 2007.
- 3) Intervention began June 2007 (stamping out).
- 4) Pig movement via transport, both legal and illegal, has been the primary means of spread of the disease throughout the country.
- 5) In 2008 (March-April), there have been 259,310 reported with 259,018 deaths across 10 provinces.
- 6) Many opportunistic agents (CSF, *M. hyopneumoniae*, *P. multocida*, *S. suis*, PCV-2, etc) have been routinely recovered from cases, but not consistently in all cases.
- 7) Molecular analysis of Vietnamese isolates indicates a high degree of homology to the Chinese PHFD strain of PRRSV and is consistently recovered from cases.
- 8) Control measures have been implemented focusing on controlling movement of animals, personnel, vehicles, sanitation of depopulated farms, and banning the sale of pigs and pork products within infected areas.
- 9) A national vaccination program has not yet been established.

The presentations were followed by a discussion and the key points are as follows:

- 1) Dr Yang commented that the HP PRRSV variant has been isolated from clinically normal herds;
- 2) Dr Drew reported that while a small number of challenge experiments using the HP variant have failed, a summary of research supports fulfillment of Koch's postulates: rescued virus from infectious clone similarly pathogenic;
- 3) HP variant has Nsp2 deletion but is not MN-184: Nsp2 is a cysteine protease which affects arterial integrity but other are effects unknown;
- 4) Dr Yang reported that the presence of Nsp2 deletion is not clearly related to virulence based on infectious clone research. Therefore, whilst we can distinguish the Asian HP variant from other NA strains using Nsp2 as a marker, we cannot use this as a definition of HP strains in general;
- 5) Dr Dee reported that PHFD-like syndrome has not been reported in US nor has the PRRSV associated with PHFD ever been identified in the US.

## 2. Discussion on the development of a draft Code Chapter on PRRS

The Group shared concerns regarding the inability to develop a *Code* Chapter due to the following issues and missing knowledge:

- 1) The global status of the disease;
- 2) The lack of a diagnostic marker to accurately predict the virulence of an isolate;
- 3) The variation in the diagnostic lab capabilities/resources across and within countries;
- 4) A lack of a standardized approach/history of successful PRRS eradication for endemic countries.

To clarify the specific challenges for developing a chapter on PRRS, the Group then examined the draft chapter on SVD which was recently prepared by another ad hoc Group for discussion by OIE Members. The Group inserted directly in the draft Chapter on SVD recommendations and deviations pertaining specifically to PRRS, for future consideration by the OIE.

The Group met Dr Gideon Bruckner, Deputy Director General, and Dr Alex Thiermann, President of the OIE Terrestrial Animal Health Code Commission (the Code Commission) and conveyed its concerns over the difficulty of developing a *Code* Chapter. Drs Bruckner and Thiermann expressed appreciation of the work done by the Group using the draft Chapter on SVD to clarify PRRS-specific problems and suggested preparing a scientific summary paper on PRRS to help OIE Members to control the disease, rather than drafting a *Code* Chapter which would have trade implications. Following such suggestion, the Group drafted a summary paper titled “*PRRS: the disease, its diagnosis, prevention and control*” ([Appendix III](#)) for publication outside of the framework of the OIE Standards: the Group noted that, considering the current global status of the epidemiology and the lack of certain knowledge as discussed at the onset of this agenda item, any measures referred to in such paper should not be interpreted as OIE recommendations for trade.

## 3. Discussion on the need of PRRS-specific surveillance guidelines

Following the overview given by Dr Willeberg on the basis of the general guidelines for surveillance, per Appendix 3.8.1 of the *Terrestrial Code*, the Group reviewed such guidelines as to whether they were applicable to PRRS. Although the existing guidelines are considered by and large applicable, the Group agreed that there are merits to developing specific surveillance guidelines for PRRS.

Issues identified by the Group as critical for such guidelines are as follows:

- 1) A case and an outbreak should be defined clearly;
- 2) Clarification that the knowledge of PRRS status of countries, zones, and compartments will dictate the use and interpretation of various tests;
- 3) For each test, the appropriateness and sensitivity/specificity should be evaluated and communicated; specifically, the following issues need to be considered:
  - a) there should be a general requirement that any test shall adhere to the quality guidelines recommended by the OIE;
  - b) tests currently listed in the *Terrestrial Manual* are not considered robustly validated to the point of allowing equivalence across laboratories. This is because of the variation in genotype and the protocols used; this assessment should be initiated by the OIE reference laboratory;
  - c) a coordinated approach is recommended to better understand the on-going global diversity of the PRRS virus.
- 4) Specific sample size calculations for use in targeted sampling schemes will need to be determined by epidemiologists according to status, population type, etc.

Regarding 1), the Group provided the following definitions for case and outbreak of PRRSV infection in a free country;

**Case:** Demonstration of viral antigen, viral RNA, or isolation of the agent from a clinically normal or affected animal. In a free country, the presence of virus-specific antibodies to the agent in more than one animal will also constitute a case.

**Outbreak:** As per general definition of the code, with the addition of the presence of virus-specific antibodies in more than one animal in a free country also constituting an outbreak.

The Group noted that there will be difficulties providing a definition of case and outbreak in infected countries where live vaccine is used due to the fact that live vaccine virus is known to be shed post-vaccination and can be transmitted to non-vaccinates. In addition, a DIVA vaccine and companion test do not exist at this time.

Regarding 2), the group developed PRRS-specific sampling guidelines in the form of decision-trees for three different situations: a) free country, wanting to demonstrate its continued freedom and for early detection of infection, b) formerly free country, zone or compartment wishing to re-establish its free status after an outbreak, and c) a country, zone or compartment of unknown status wishing to determine its prevalence. The diagrams and supporting notes are attached as Appendix IV.

#### 4. Other issues

The Group considered that it would be useful for OIE Members if a technical paper summarizing emerging issues related to PRRS becomes available. The Group agreed to jointly work for such a paper, tentatively titled "*Emerging issues on PRRS related to diagnosis, prevention and control in the context of status and trade*", which will focus on what is new as of 2005 and beyond. Sources of information will include the AusVetPlan (Drew will contact authors regarding permission) and a literature review summarizing PRRSV transmission and biosecurity by Cho and Dee recently published in *Theriogenology*, and necessary permissions for the reference will be sought by Dr Drew.

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.../Appendices

Appendix I

**MEETING OF THE  
OIE AD HOC GROUP ON PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME**

**Paris, 9 – 11 June 2008**

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**Agenda**

1. Appointment of chairman and rapporteur
  2. Adoption of Agenda
  3. Update on the current situation of porcine reproductive and respiratory syndrome (PRRS) in the world
  4. Discussion on the development of a draft *Code* Chapter on PRRS
  5. Discussion on the need of PRRS specific surveillance guidelines
  6. Other issues
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Appendix II

**MEETING OF THE  
OIE AD HOG GROUP ON PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME**

**Paris, 9 - 11 June 2008**

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## Appendix III

## PRRS: the disease, its diagnosis, prevention and control

Porcine reproductive and respiratory syndrome (PRRS) can manifest as lowered farrowing rates, a marked increase in abortions, stillborn, mummified and weak live born piglets and deaths. There is also respiratory disease, which can be severe, particularly when other agents are present and can result in high death rates in suckling and weaned pigs. However, in some herds, infection is asymptomatic.

### A. Aetiology

The aetiological agent of PRRS is an RNA virus of the order *Nidovirales*, family *Arteriviridae*, genus *Arterivirus*. There are two related but antigenically and genetically distinguishable strains: genotype 1, with the prototype Lelystad virus representing the viruses predominating in Europe and genotype 2, represented by VR 2332, the prototype of strains originally mostly found in North America. A variant of genotype 2 is the cause of severe disease in Asia.

### B. Susceptible species

The pig (*Sus scrofa*), whether domestic or feral, is the only species known to be naturally susceptible to this disease. Other species of wild pig and members of family *Suidae* may be susceptible.

### C. Geographical distribution

PRRS was first recognised in North America in the mid to late 1980s and spread rapidly throughout the world. In Europe, a similar disease caused by a distinct genotype of the virus also spread rapidly in that region during 1990–92. The disease is now present throughout the world, with the exception of Australia, New Zealand, Finland, Norway, Sweden, and Switzerland. Certain other countries are actively engaged in eradication campaigns.

### D. Diagnostic criteria

#### • Clinical signs

The clinical signs of PRRS vary with the strain of virus, the immune status of the herd and management factors. Infection may also be asymptomatic. Clinical disease in a herd is a consequence of acute viraemia in individuals and transplacental transmission of virus from viraemic dams to their foetuses, which can occur at any time, though infections in the last third of pregnancy can result in severe disease. Concurrent infections with other pathogens are also common.

In adults:	In affected litters:	In weaned pigs:
• reduced appetite	• stillborn pigs	• loss of appetite & lethargy
• fever	• high pre-weaning mortality	• obvious failure to thrive
• premature farrowing and abortion	• mummified pigs	• laboured or rapid breathing and/or respiratory distress
• death in up to 10% or more of sows	• variably sized weak-born pigs	• blotchy reddening of the skin
• loss of balance, circling and falling to one side	• oedema around the eyes	• rough hair coats.

In sows, a period of acute illness is seen, characterised by lethargy and reduced appetite. With highly pathogenic strains, respiratory disease may also be evident. The disease spreads quickly through a herd over 7–10 days.

As sows become infected and farrow infected litters, the second, or reproductive, phase of the disease occurs as a result of the transplacental transmission. This phase is characterised by late-term reproductive failure and can last from one to four months. Pigs that survive the pregnancy and neonatal phase usually succumb to infection after weaning, although this stage may be masked or exacerbated by concurrent infection with other disease agents, such as *Mycoplasma hyopneumoniae* and *Haemophilus parasuis*.

- **Pathogenesis**

PRRS virus has a tropism for macrophages, also compromising the cellular immune response and damaging mucosal surfaces. The virus replicates mainly in macrophages of the lymphoid tissues and lungs in the acute phase of infection and persists in tonsil and lung macrophages. PRRS virus antigen has been found in the resident macrophages of a variety of tissues, as well as in other cells, including muscle tissues.

- **Gross lesions**

PRRS virus produces a multisystemic infection in pigs, but gross lesions are usually only observed in respiratory and lymphoid tissues. Both gross and microscopic lesions are most marked in neonatal and young weaned pigs. The gross pathology observed after uncomplicated infection of PRRS virus in finishing pigs may be anything from severe to unremarkable.

In severe disease, lungs are mottled, tan and red, and fail to collapse; the cranioventral lobes are most affected. Lymph nodes are moderately to severely enlarged and tan in colour and, for some strains of virus, may be haemorrhagic. Under field conditions, most PRRS virus infected pigs are co-infected with one or more pathogens, which complicates the diagnosis of PRRS based on pathology.

## **E. Laboratory tests**

Laboratories handling live virus should ensure that facilities and protocols are in place to ensure biocontainment. This is especially important where a genotype of the virus is used which is not present in the pig population of the country concerned. We would recommend a minimum of animal biosafety level 3 in such cases.

- **Specimens required**

The following specimens should be collected.

– *For virus isolation and RT-PCR* — whole blood (EDTA) and also serum, lung, respiratory tract, spleen and tonsils of affected animals. Samples from mummified or aborted litters are unlikely to yield virus, but can still be useful for RT-PCR.

– *For antibody testing (serology)* — serum from up to 20 exposed animals in the herd.

Specimens should be chilled and forwarded unfrozen on water ice or with frozen gel packs.

- **Virus isolation**

Buffy coat, serum, lung, lymph nodes, spleen and tonsils are the specimens of choice. The virus replicates well on swine pulmonary alveolar macrophages and some strains, particularly those of genotype 2, on Marc 145 cells. Cytopathic effects are evident in 1–4 days. Perform two 7-day passages for maximum sensitivity.

- **RT-PCR**

Whole blood (EDTA), buffy coat and clarified homogenates of the above tissues are best. At this time, there is no fully validated PCR that has international acceptability. Please consult the OIE Manual for suggested methods.

- **Serological tests**

IgM can be detected within 7 days of infection and IgG can be detected within 14 days. Humoral antibody titres reach a maximum about 5–6 weeks after infection. Antibody can be detected by ELISA and by the indirect staining of pre-prepared monolayers of infected cells (IPMA and IFA). Antibody levels can drop quite quickly in the absence of circulating virus.

## F. Differential diagnosis

In the field, suspicion of PRRS is based on clinical signs of reproductive failure and high levels of neonatal mortality. Analysis of farm records will provide helpful information.

The following diseases should be considered within the differential diagnosis of PRRS:

Reproductive disease	Respiratory and postweaning disease
– classical swine fever	– swine influenza
– African swine fever	– enzootic pneumonia
– leptospirosis	– proliferative and necrotising pneumonia
– porcine parvovirus	– <i>Haemophilus parasuis</i> infection
– porcine enterovirus	– haemagglutinating encephalomyelitis virus
– haemagglutinating encephalomyelitis virus	– porcine respiratory coronavirus
– Aujeszky's disease	– syncytial pneumonia and myocarditis
	– porcine circovirus-associated disease
	– Nipah virus infection

## G. Immunity

- **Passive immunity**

Seropositive sows can transmit maternal antibodies to their offspring via colostrum. Passive immunity appears to decline and gives way to infection soon after weaning.

- **Active immunity**

Pigs infected with PRRSV can generate a specific immune response that is easily detected by the presence of serum antibodies within 7–14 days after infection, reach maximal levels after 30–50 days, and decline to low or non-detectable levels after 4–6 months. Recovered animals are well protected following homologous challenge; however, cross-protection is variable following heterologous challenge.

- **Vaccination**

Modified-live virus vaccines and killed virus vaccines for PRRS are commercially available in many countries; however, each type of vaccine possesses strengths and limitations. It is important to match the genotype of the vaccine with that circulating in the pig population. In general, while vaccination of pigs does not prevent PRRSV infection, it may reduce transmission of wild-type virus and clinical disease. In addition, modified-live vaccine virus can persist in pigs and be disseminated to naïve animals through semen and oral fluids. At this time, it is not possible to differentiate vaccinal antibody from that induced by field virus.

## H. PRRS virus transmission

- **Direct routes of transmission**

PRRS virus (PRRSV) is easily spread following direct contact and virus can be detected in saliva, urine, milk, colostrum, and faeces of infected animals. Transmission by semen can also occur, both via natural service and artificial insemination. PRRSV produces chronic infections and viral RNA been recovered from the oropharyngeal region of growing pigs up to 251 days post-infection (PI) and from the sera of piglets infected *in utero* up to 210 days PI.

- **Indirect routes of transmission**

Transmission of PRRSV to pigs fed infected pig meat has been experimentally reproduced. Mechanical transport and transmission has been reported via contaminated needles, fomites (boots and coveralls), farm personnel (hands), transport vehicles (contaminated trailers), and insects (houseflies and mosquitoes). Airborne spread of the virus has been experimentally documented out to 120m under specific meteorological conditions, i.e. prevailing winds.

- **Local spread**

PRRSV can spread rapidly through intensive pig-rearing regions. Significant risk factors for spread between farms include proximity to infected neighbouring herds, purchase of animals from herds incubating infection, and the purchase of semen from boars at PRRS-infected AI centres.

## **I. Control and eradication**

In order to control and eventually eliminate PRRSV, critical issues that allow for maintained circulation of PRRSV within herds must be addressed including the co-existence of genetically diverse isolates, the existence of naïve breeding herd sub-populations, and improper management of gilt replacement pools. Current control measures include the use of vaccines, the management of incoming replacement gilts and implementation of biosecurity protocols validated to reduce the risk of PRRSV spread within and between herds. Methods of eliminating virus from endemically infected herds include whole herd depopulation/repopulation, test and removal and herd closure.

## **J. Prevention of introduction into a herd**

Biosecurity protocols to reduce the risk of PRRSV entry into farms and between herds include the quarantine and testing of incoming breeding stock, use of semen from PRRSV-naïve AI centres, proper sanitation of transport vehicles using validated disinfectants and drying periods, implementation of strategies for personnel/fomite entry into and between farms, proper management of needles, and methods of insect control. In addition, recent evidence suggests that the application of filtration systems to the air inlets may significantly reduce the risk of PRRSV entry via bio-aerosols into farms located in swine dense regions.

## **K. Prevention of introduction into a country**

The main way in which PRRSV has been introduced into previously free countries is undoubtedly via pig movements. The importation of semen has also played a part, in some cases. Whilst there is a theoretical risk posed by fresh meat, there has been no documented case of such. Since the movement of such products is a regular occurrence, even to those countries which remain free, this risk is considered small, provided the hazard of exposure to the pig population of the importing country is ameliorated. This can be achieved by banning swill feeding and/or ensuring that pig-meat is not included therein. The risk posed by vaccinal virus should not be forgotten, since there is documented evidence of circulation and reversion to more virulent form among such.

Protocols are in place, to reduce the risk posed by live pigs and semen. For live pigs, these include sourcing from farms certified free of infection, use of quarantine periods and serological and virological monitoring, both pre- and post-import. For semen, RT-PCR has proved a useful tool in demonstrating absence of virus in semen batches, but care should be taken to ensure that any extender is compatible with such tests.

The borders of a country obviously form the first line of any defence. Illegal pig movements should always be prevented. Where wild pigs may be present, steps should be taken to ensure domestic populations are protected from contact. Ports and airports may also provide a potential avenue for introduction, via galley waste and, in the case of ports, the illegal sale of pigs or pigmeat transported on board.

**Further online reading:**

AusVetPlan

<http://www.animalhealthaustralia.com.au/fms/Animal%20Health%20Australia/AUSVETPLAN/prrs3final.pdf>

New Zealand risk analysis

<http://www.biosecurity.govt.nz/files/regs/imports/risk/prrs-risk-analysis.pdf>

EFSA Report on risk posed by fresh meat

[http://www.efsa.eu.int/EFSA/Scientific\\_Opinion/ahaw\\_op\\_ej239\\_porcinereprespirasyndrprrs\\_en2.0.pdf](http://www.efsa.eu.int/EFSA/Scientific_Opinion/ahaw_op_ej239_porcinereprespirasyndrprrs_en2.0.pdf)

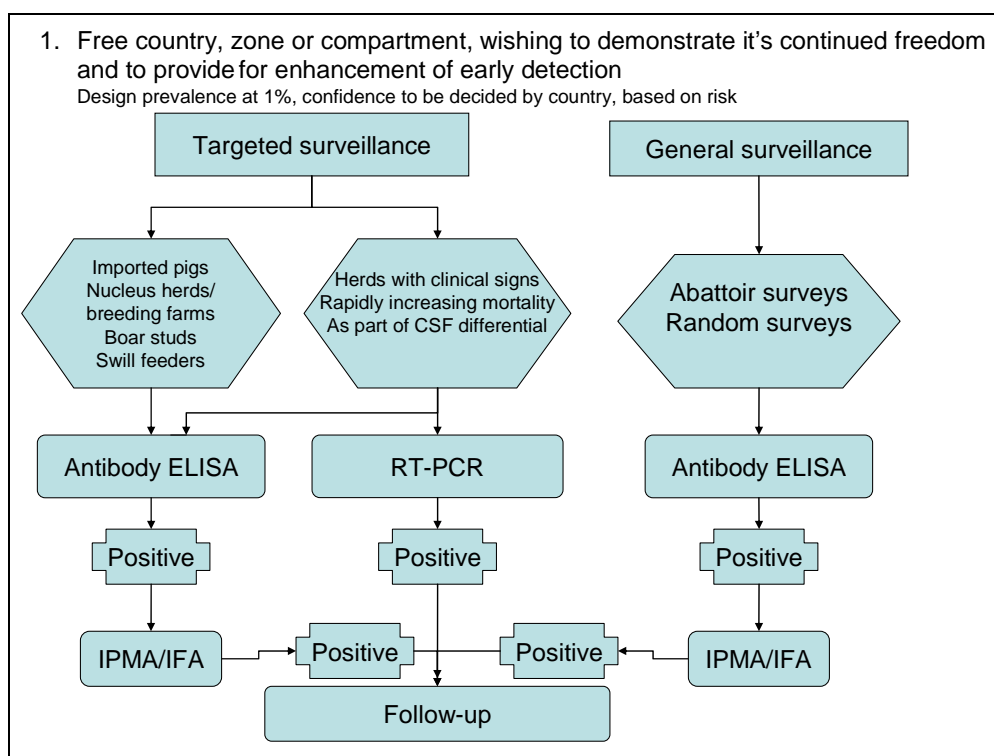
OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals

[http://www.oie.int/eng/normes/mmanual/2008/pdf/2.08.07\\_PRRS.pdf](http://www.oie.int/eng/normes/mmanual/2008/pdf/2.08.07_PRRS.pdf)

PRRS Compendium

<http://www.pork.org/NewsAndInformation/News/Publications/pubIssues.aspx?id=113>

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Appendix IV

**1. Free country, wanting to demonstrate its continued freedom and for early detection of infection.**  
( $\leq 1\%$  design prevalence, confidence to be decided by country, based on risk)

\*An early detection system would be on-going while demonstration of freedom would sample at regular intervals.

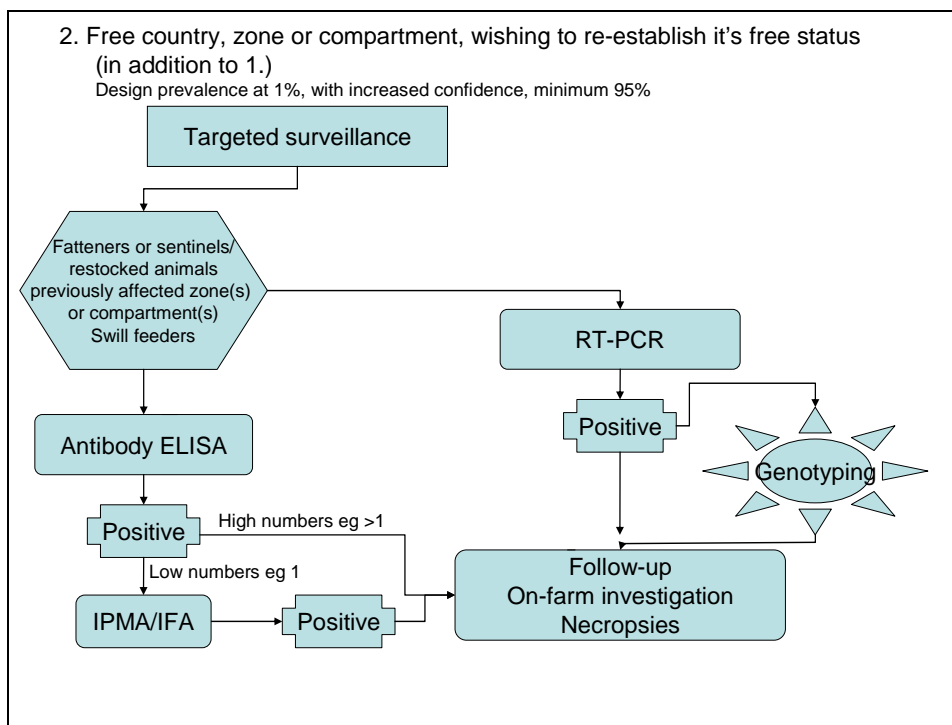
a. Tests = ELISA and PCR

**b. Targeted surveillance**

- i. Imported pigs: ELISA
- ii. Nucleus/breeding herds: ELISA
- iii. AI centers: ELISA
- iv. Swill feeders: ELISA
- v. Clinical herds: Both
  1. necropsies included
- vi. Herds with reports of rapidly increased mortality w/o known cause: Both
  1. CSF differential

**c. General surveillance**

- i. Abattoirs: ELISA

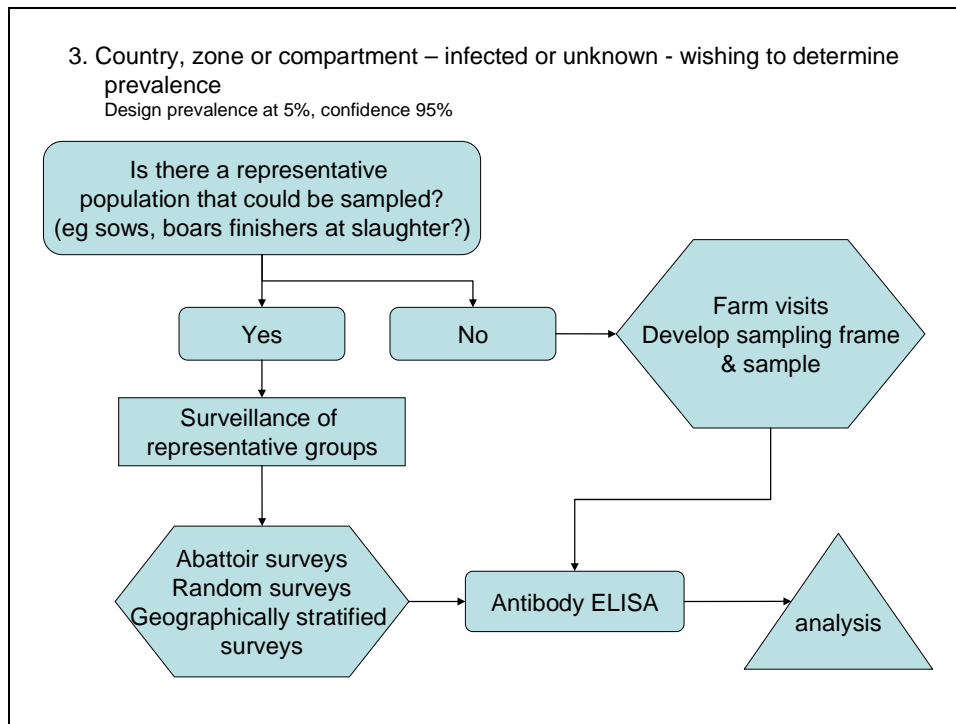


**2. Free country, wishing to re-establish its free status**

(Design prevalence of at least 1%, confidence at a minimum of 95%)

Same as #1 as well as sampling of previously infected herds/ zones, swill feeders, fatteners, sentinels and re-stocked animals and including:

1. Managing of singleton positive samples
  - a. Re-test using both tests and an additional antibody test.
  - b. IPMA or IFA
2. Follow up visit to herd with subsequent monitoring.
  - a. Necropsies of suspect animals
  - b. Additional testing at herd level
    - i. genotyping
  - c. Assessment of clinical signs



**3. An infected country, zone or compartment of known or unknown status wishing to determine its prevalence**

(Design prevalence at 5%, confidence 95%)

1. Select a representative population for sampling, such as:
  - a. Slaughter surveillance of breeding animals and finishers
    - i. Type of production systems will determine which group to select
      1. Multiple site vs F-F one site
  - b. If no such population exists, a standardized sampling procedure, i.e. cross-sectional could be developed according to production system
  - c. Samples: Blood, meat juice at slaughter
  - d. Tests: ELISA
  - e. Random surveys could be conducted across farms
    - i. Geographically stratified
    - ii. GIS tools could be used to summarize findings in a pictorial format.



**MEETING OF THE  
OIE AD HOC GROUP ON WILDLIFE DISEASE NOTIFICATION  
Paris, 2 - 4 July 2008**

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The meeting of the OIE *ad hoc* Group on Wildlife Disease Notification was held from 2 to 4 July 2008, at the OIE Headquarters in Paris.

**1. Outline and purpose of the meeting**

The Group was requested:

- 1.1. To review and evaluate the OIE's experience with collection of wildlife disease information using the annual questionnaire of the Working Group on Wildlife Diseases.
- 1.2. To examine proposals to improve data capturing through a new wildlife disease data collection, notification and reporting system proposed for integration with the WAHIS-WAHID system.
- 1.3. To determine the type of outputs of the system keeping in mind the need to minimize the impact of disease notification in wildlife on the unjustified implementation of trade barriers.

Dr. Gideon Brückner, Deputy Director General of the OIE, welcomed the Group on behalf of Dr Bernard Vallat, Director General of the OIE. He informed the Group that Dr Vallat would convey his views to the Group on return from his mission. Dr Brückner explained the purpose of the meeting emphasising that the OIE recognizes the importance of diseases in wild animals in the global management of animal and human health, and is enhancing its engagement with wildlife diseases on many fronts. At the same time, the OIE is sensitive to the potential for misinterpretation of information concerning wildlife disease occurrences and potential consequences to trade in animals and animal products associated with such misinterpretations. The Group should thus especially consider how to advise the OIE on how best to gather and report on occurrences of wild animal diseases without provoking unjustified trade restrictions.

Dr Vallat in his address to the Group explained the OIE's new approach to wildlife. Whereas the field was not a priority in the past, it has now been integrated into the system, a situation that created new challenges. To accommodate these changes the composition of the Working Group on Wildlife Diseases has been changed and their activities have been integrated into the mainstream activities of the OIE. He emphasized that the notification policies for listed wildlife diseases are now the same as for domesticated animals, and that work is needed on diagnostic methods for diseases of wildlife. He also indicated that many of the current reference laboratories are not focussed on wildlife and that they will have to adapt to the new situation. The Terrestrial Code will have to be adapted and notification of the diseases of wildlife will have to be done in such a fashion that the process will not have undue economic consequences and influence trade adversely. He stressed that to deal with these matters in a scientific way, knowledge about the diseases of wildlife, and their effects on livestock will have to be determined.

He indicated that the practice of regional focal points has been terminated and that CVOs will now have the responsibility to enter relevant wildlife data into the WAHIS reporting system. Each CVO is to nominate a focal point for the country (keeping in mind that the system of reporting can be adapted on a country basis and depending on the prevailing structures of the Directorates in the various countries) that would be responsible for collecting and entering data. He was of the opinion that a large proportion of the CVOs of member countries have accepted the change in policy related to reporting wildlife diseases, and that they would support the process.

He stressed that the notifiable diseases of wildlife should be entered into the WAHIS system, as is the case for livestock and he raised the question as to whether the current list of wildlife diseases (OIE non-listed diseases) should be retained.

Finally, he indicated that the issue of zoonoses has become important within the context of the OIE. There is an agreement with the WHO that they would retain the responsibility to deal mainly with information pertaining to the zoonoses originating from primates and that the OIE will deal with zoonoses originating from other animals.

The meeting was chaired by Prof. Nick Kriek, and Prof. Ted Leighton was appointed as Rapporteur.

The agenda and list of participants in the *ad hoc* Group meeting are given in Appendices I and II

## **2. Background Information on the OIE Wildlife Disease Questionnaire**

Dr. Artois presented a summary of the programme of the Working Group on Wildlife Diseases to gather information on the global occurrence of diseases in wild animals since 1993. The program has gathered a wealth of data that has been synthesized and presented to the International Committee each year. The Working Group developed a Questionnaire to obtain wildlife disease occurrence information for diseases included in the OIE List of Notifiable Diseases and for a second list of diseases in wildlife which were not on the OIE List of Notifiable Diseases but which were of importance nonetheless (see item 4, below). The most commonly reported diseases in wildlife over the years have been diseases which are on the OIE List of Notifiable Diseases: foot-and-mouth disease, anthrax, bovine tuberculosis, rabies, brucellosis, avian cholera, classical swine fever, and Newcastle disease. However, only about 20% of the OIE Member Countries have responded to the OIE Wildlife Disease Questionnaire in any one year.

### **Incorporation of Wildlife Disease Reporting into the On-line WAHIS/WAHID Disease Notification and Reporting System**

Dr. Ben Jebara had provided the Group with several documents regarding the WAHIS/WAHID system in advance of the meeting. He reviewed the rationale, structure, and function of the system for the Group and answered questions. He explained that, for OIE-Listed diseases, the WAHIS/WAHID system now supports notification and reporting of disease occurrences in all species, domestic and wild. He then presented a proposal for integration of the Wildlife Disease Questionnaire fully into the WAHIS/WAHID system through creation of a module specifically for data input and presentation for the wild animal diseases covered by the Wildlife Disease Questionnaire and for those that are not included on the OIE List of Notifiable Diseases. He noted that reporting of these wildlife diseases that are not on the OIE List now, is voluntary and would remain voluntary in the new on-line module of WAHIS/WAHID.

## **3. Discussion of the WAHIS/WAHID for Wildlife Disease Notification and Reporting**

### **3.1. Rationale for Collection of Data by OIE on Wildlife Diseases not on the OIE List:**

The consensus of the Group was that the OIE should undertake such collection of data. Several diseases in wild animals that do not meet the criteria for inclusion on the OIE List of Notifiable Diseases nonetheless are important to the socio-economic well-being of people around the world. Some are zoonoses that affect human health directly. Some can infect domestic animals and cause economic harm. Some affect wild animal populations and harm economies and livelihoods dependent on these wild populations. Some of the diseases have a negative impact on social, environmental, and ecological needs

and objectives of member countries. Some are signals of environmental changes harmful to human well-being and thus could serve to inform member countries. Some are caused by pathogens with the potential to become highly important in recognizing effects of climate or other environmental changes, and should be monitored for this reason.

### 3.2. Review of the WAHIS/WAHID reporting system for use with Wildlife Diseases that are not on the OIE List of Notifiable Diseases

**3.2.1. Wildlife Focal Points:** The Group noted the critical importance of wildlife focal points appointed by the country Delegates to the functionality of the wildlife disease data project. The wildlife focal points will work under the authority of the Delegates but must also be fully connected with the wildlife and public health sectors of their countries. Through the Delegate, these wildlife focal points will provide the OIE with the data it needs to properly account for wild animals in its disease notification and reporting programme.

Recommendation: The Group recommends that the OIE offer to wildlife focal points programmes of general wildlife disease information, and specific orientation to the WAHIS/WAHID system, to support them in their reporting roles.

**3.2.2. Host Animal Identification:** The Group was unanimous in emphasizing the need to correctly identify host animals to the level of species. The current situation, whereby wild animal species are all identified simply as “fauna,” fails to provide the critical information regarding the species that are affected by the disease. This information is needed to properly evaluate these disease occurrences.

Recommendation: The WAHIS/WAHID module for wildlife should include two methods of host animal species identification: 1) a convenient short list of known susceptible species, by Latin and common name. These lists may increase in length over time as information is received from the member countries, and 2) a window/module/drop-down list that permits finding and entering the correct scientific (Latin) name for any vertebrate species. This should be based on internationally-standardized taxonomy in *Taxon 2000*.

**3.2.3. Frequency of Reporting:** The Group is concerned that the time currently allowed to member countries (wildlife focal points) to enter data on the on-line system is limited and may negatively affect provision of information. The Group also recognizes that the provision to the OIE of information on the occurrence of diseases in wildlife that are not on the OIE List of Notifiable Diseases is not urgent. The Group therefore sought a balance between the benefits of frequent data provision and the work required to provide the data.

Recommendation: That data on the occurrence of wildlife diseases not on the OIE List of notifiable disease be submitted to the OIE once each year. These data should be provided to distinguish occurrences that occur in the first 6-month period from those that occurred in the second 6-month period. Submission of data will occur only once, at the end of the year. The information will be provided for the whole country.

**3.2.4. Data Input Forms (on-line screens):** The Group reviewed the data input screens

#### Recommendations:

3.2.4.1. Data input will use an adaptation of the current WAHIS *Template II, Quantitative Information for Entire Country*. This includes adoption of the WAHIS selection of diagnostic methods, WAHIS codes to indicate the status of each disease or pathogen (infection versus disease), number of outbreaks, and control measures applied.

3.2.4.2. The WAHIS wildlife module should include a facility to permit draft data input reports to be created and stored as data are received during the year. These inputs would then be reviewed, finalized and officially submitted only once, at the end of the year.

3.2.4.3. Before final implementation, the data input screens developed for this wildlife module should be tested by a small group of wildlife focal points to ensure that instructions and intended functions are clear to users.

**3.2.5. Data output on-line reports:** The Group wishes the output from the wildlife disease information module to be clearly understood and not to provoke misinterpretations

Recommendations:

3.2.5.1. The output reports (information screens) pertaining to occurrences in wild animals of diseases on the OIE List of Notifiable Diseases should be presented separately (through the standard WAHID module) from the output reports regarding occurrences in wildlife of diseases that are not on the OIE List of Notifiable Diseases. Likewise, the output reports of non-OIE-listed wildlife diseases should be presented with explicit notice that the diseases are not on the list of notifiable diseases and do not have any bearing on trade restrictions.

3.2.5.2. Because data are collected and displayed only for the whole country as the geographic unit, maps showing the geographic distribution of wildlife disease occurrences should not be created or displayed. Such maps could be misleading. Instead, tables listing occurrence locations should be presented.

3.2.5.3. Other tables that should be provided are:

- 3.2.5.3.1. The wildlife diseases occurring in each country
- 3.2.5.3.2. The countries in which each wildlife disease has occurred
- 3.2.5.3.3. The diseases that have occurred in each wild animal host species
- 3.2.5.3.4. The wild animals host species in which each disease has occurred

3.2.5.4. As a longer-term goal, OIE should consider how it might acquire more precise geographical and time-related data and thus benefit from analysis of global wild animal disease distribution and trends in occurrence over time.

**3.3. Review of WAHIS/WAHID to record the occurrence in Wildlife of Diseases on the OIE List of Notifiable Diseases**

The Group considered the current WAHIS system for OIE-listed diseases to be satisfactory for recording occurrences of these diseases in wild animals, with the exception of the classification of animal species only as “fauna.”

Recommendation: The records of occurrences of OIE Listed diseases in wild animals include the identification of the host animal to species, achieved in the same way as recommended for the wildlife records of diseases not on the OIE List (4b, above).

**4. Review of the List of Wild Animal Diseases and Pathogens which are not on the OIE List of Notifiable Diseases and are to be reported to the OIE through the new WAHIS/WAHID Wildlife module**

The Group reviewed the current list of such diseases on the 2007 Wildlife Disease Questionnaire of the OIE Working Group on Wildlife Diseases. This review led to identification of several criteria by which diseases which do not meet the criteria for inclusion on the OIE List of Notifiable Diseases could be considered for inclusion on the wildlife disease list. The guiding principles for such inclusion should be relevance.

- a) to human health, livelihoods and well-being,
- b) to domestic animal health and
- c) to environmental integrity and ecological sustainability

Emerging diseases affecting wildlife or important human or domestic animal disease for which wild animals serve as affected or unaffected reservoirs are examples of candidates for inclusion.

The Group recognized that some non-infectious disease also should be considered for inclusion on the wildlife disease list. These may cause significant mortality and have effects on wildlife at the population level (e.g. botulism, diclofenac). It may be important to recognize these diseases to distinguish them from occurrence of diseases of more direct concern to the OIE, such as avian influenza or Newcastle disease. Such outbreaks also may serve a sentinel function for risk of the same non-infectious diseases to humans and domestic animals.

The Group considered whether the OIE should seek information on wildlife mortality events of undetermined cause. Some of these may be sentinels for emerging diseases. At the same time, recording of such events could overwhelm the capacity of wildlife focal points to prepare annual disease occurrence reports.

The Group revised the wildlife disease list from the 2007 Wildlife Disease Questionnaire for use as the initial list to be reported through the WAHIS/WAHIS wildlife module.

#### Recommendations:

- 4.1. The OIE should pursue further the establishment of criteria (reasons) by which to assess wild animal diseases that do not meet the criteria for inclusion on the OIE List of Notifiable Diseases for inclusion of the wildlife disease list for annual reporting.
- 4.2. The criteria for inclusion on the wildlife disease list for annual reporting should not preclude non-infectious diseases
- 4.3. The diseases listed in Appendix C should be accepted as a provisional list of wildlife diseases which are not on the OIE List of Notifiable Diseases and which should be reported on an annual (voluntary) basis to the OIE through the WAHIS wildlife module
- 4.4. The OIE should seek annual expert review of the wildlife disease list (Appendix C)
- 4.5. That wildlife focal points be given the option, through the WAHIS/WAHID wildlife module, to reporting wildlife mortality events of unknown cause which they consider to be of significance.

#### **5. Definition of “Wildlife” for the purposes of WAHID/WAHIS**

The Group reviewed by the definition of “wildlife” formulated by the Working Group on Wildlife Diseases. This definition is based on a 2 x 2 matrix to distinguish among categories of wild and domestic animals, as follows:

	Typically reliant on human care	Not strictly reliant on human care
Genotype/phenotype selected by humans	Domestic animal	Feral animal
Genotype/phenotype established through natural selection	Captive wildlife	Free-ranging wildlife

The Group recognized the usefulness of categorizing the host animals associated with disease outbreaks according to these criteria. It was not determined whether these categories were adequate for the purpose, or whether they could be incorporated into WAHIS/WAHID for wildlife.

Recommendation:

Defining the categories of wildlife will need further consideration and this matter should be further pursued by the OIE

The Meeting adjourned at 16:00, 4 July 2008.

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.../Appendices

Appendix I

**MEETING OF THE  
OIE AD HOC GROUP ON WILDLIFE DISEASE NOTIFICATION  
Paris, 2-4 July 2008**

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**Agenda**

1. Appointment/selection of Chairman/President and rapporteur(s)
2. Background information on OIE's data collection for diseases in wildlife (the annual questionnaire): Historical information and evaluation of the situation in reporting by Members, in terms of quantity and quality of provided information since the start of this notification system
3. New obligations of disease notification by Members and WAHIS on line notification system and its output (WAHID)
4. Revision of data collected as part of the annual questionnaire: Are there improvements to be made to reach OIE's objectives?
5. Presentation of the Animal Health Information Department proposal to develop an online notification system for wild animal diseases linked with WAHIS
6. Discussion of the proposed on-line notification system for wild animal disease notification and how to make it can assist in reaching the Strategic objectives of the OIE in wild animals.
7. Description of possible outputs of the system: What is the best way to display the collected information from the annual reports while minimising the impact that disease notification in wildlife may have on the possible implementation of unjustified trade barriers by users?
8. The way forward in implementing the new online notification system for diseases in wildlife.
9. Preparation of the Ad hoc Group report

Appendix II

**MEETING OF THE  
OIE AD HOC GROUP ON WILDLIFE DISEASE NOTIFICATION  
Paris, 2-4 July 2008**

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## Appendix III

**Tentative list of Diseases in Wildlife which are not on OIE List of Notifiable Disease  
and are to be reported annually to the OIE on a voluntary basis**

<b>Infectious Diseases</b>	
Botulism	can affect wild populations, distinguish from other epidemic diseases - e.g. avian influenza
Chronic Wasting Disease	can effect wildlife populations
European Brown Hare Syndrome (EBHS)	significant to populations, evolving/emerging
Feline Leukaemia (FLV)	Threatens medium/lesser wild cat populations namely when domestic cat population overlaps
Fibropapillomatosis in sea turtles	spreading, affect populations
Infection by <i>Baylisascaris procyonis</i>	Zoonosis, spread by alien species (invasive Raccoon in Europe)
Infection by Large Liver Flukes	Fascioloides magna, invasive parasite which can affect health of native population of deer
Infection by Meningeal worm of cervids - <i>P. tenuis</i>	Also add Elaphostrongylus - population effect
Lyme borreliosis	Significant emerging zoonosis, responsive to climate change
Marburg virus disease	zoonosis and affects wildlife, obligation to WHO
Morbilliviruses (Bat infection, Canine distemper, Cetacean infection, Phocine distemper)	Must list these diseases separately, potential to affect populations
Plague ( <i>Yersinia pestis</i> infection)	zoonosis and affects wildlife, obligation to WHO
Pseudotuberculosis ( <i>Yersinia pseudotuberculosis</i> infection)	Of increasing importance as zoonosis, wildlife as sentinel/index
Psoroptic Mange	population effect, contagious, translocation
Salmonellosis ( <i>Salmonella enterica</i> )	var typhimurium, only when epidemic in wild birds
Sarcoptic Mange	population effect, contagious, translocation
Tick Borne Encephalitis	emerging in Europe, rodent reservoir
Toxoplasmosis	can effect wildlife populations, zoonosis of concern, sentinel
Trichomonas sp. infection	Epidemic in wild birds, can effect prey bird populations, spreading to predators birds which can be threatened
<b>Non-Infectious Diseases</b>	Category to permit reporting by country of wildlife non-listed diseases of importance to country
Algal toxicosis	
Botulism	When can affect population, distinguish from other infectious/contagious causes/sentinel for livestock & people
Chemical poisoning	
Mycotoxin poisoning	
<b>Diseases of Unknown Cause</b>	Report unusual large extent mortality or morbidity even if cause is not recognized.



## MEETING OF THE OIE AD HOC GROUP ON EPIDEMIOLOGY

Paris, 11-12 June, 2008

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Dr. Gideon Brückner, Deputy Director General of the OIE, welcomed the group and explained the main task, the drafting of an outline for the OIE the future Manual for Animal Disease Surveillance.

The meeting was chaired by Prof. Arnon Shimsony with Dr Cristobal Zepeda as rapporteur.

The agenda and list of participants are indicated in Appendices I and II.

### 1. OIE Handbook on terrestrial animal health surveillance

The group met to discuss the outline of the proposed OIE Handbook on terrestrial animal health surveillance and draft a working plan for its development.

The group agreed that the manual should address surveillance from a broad perspective, including for example diseases which may have a significant impact on production and not only have a trade-related emphasis. The handbook will address vector surveillance as well as wildlife disease surveillance in particular as they relate to domestic animals and public health.

The handbook should be user friendly and include tables, diagrams, decision and scenario trees, practical examples and lessons learnt throughout. The intention is not to write a textbook on surveillance but rather a practical guide to approach the implementation of surveillance in the field. An example of a possible approach to follow is included in Appendix IV.

The group discussed and reviewed several publications related to animal disease surveillance. Considering the mission and mandates of the OIE the group ratified the importance of developing the OIE Handbook on Terrestrial Animal Health Surveillance and agreed to develop an outline taking into consideration the users and objectives of the handbook and then see how these publications could contribute.

The group considered to indicate to the users of the handbook the availability of free software packages to facilitate the design and interpretation of surveillance data.

The group proceeded to draft the outline of the proposed handbook (Appendix III). The development of the handbook will be a joint effort between various OIE Collaborating Centers and other designated institutions and experts. The group took note of the progress in the development of the handbook on Aquatic Animal Health Surveillance.

The following outline will be distributed to the Collaborating Centers in Teramo, Colorado and Denmark for comments including nominations of potential contributors. Dr. Mariner expressed his interest to have ILRI involved in this process.

Dr. Willeberg agreed to draft the introductory section for review at the next meeting in September.

The group discussed the need to include food and feed safety aspects in the handbook. Clarification on this issue will be sought from the Director General.

The Director General clarified after the Group's meeting that surveillance for food and feed safety preferably be covered by the handbook, but surveillance for these aspects should be restricted to the farm level only.

## **2. Future working programme**

In view of the discussions that occurred during the last General Session, the group agreed to discuss the following issues during its next meeting scheduled for 3-5 September, 2008:

- Specify the measures to be applied in the separation of zones and countries having a different status as an alternative to buffer zones
- For classical swine fever, define the status of countries and zones where infection exists in wildlife but not in domestic animal populations taking into consideration the approach followed in the chapter on avian influenza

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.../Appendices

Appendix I

**MEETING OF THE  
OIE AD HOC GROUP ON EPIDEMIOLOGY  
Paris, 11 – 12 June 2008**

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**Agenda**

1. OIE Handbook on terrestrial animal health surveillance
  2. Future working programme
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Appendix II

**MEETING OF THE  
OIE AD HOC GROUP ON EPIDEMIOLOGY  
Paris, 11 – 12 June 2008**

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Appendix III**Proposed outline of the Handbook on terrestrial animal health surveillance**

- Introduction
  - Statement of purpose
  - Overview and importance of surveillance
  - Key definitions
  - How to use the handbook
  - Key players in surveillance and their role
  - Main users
    - CVOs and their staff, including field and laboratory personnel
    - Other professionals involved in surveillance
    - International and regional organizations (OIE, FAO, WHO, ILRI, AU-IBAR etc.)
    - Producer organizations
  
- Financing and sustainability
  - Describe the importance
  - Mechanisms to seek resources
  - Drivers of sustainability – communication, transparency, value of information, credibility
  - Public-private partnerships
  - Provide examples
  
- Legal basis, institutional framework
  
- Purpose, justification, objectives and outputs of surveillance
  - Determine the status of existing diseases (monitoring and surveillance)
  - Determine changes in patterns of existing diseases/infections
    - Prevalence, incidence estimates
    - Temporal and spatial distribution
  - Impact of disease – economic effects, production losses, trade impacts, etc.
  - Use of surveillance in control and eradication
    - Determination of immunity
    - Temporal and spatial patterns in the face of control/eradication activities
  - Demonstrate the absence of infection
    - Evidence of presence or absence of infection
    - Historical freedom
    - Confidence in disease absence
    - Surveillance in the face of vaccination
  - Early detection of OIE listed diseases
  - Detect emerging diseases
  - <sup>1</sup>Determine, on the farm level, the safety of animals for food and feed production, including their testing for zoonotic pathogens, determination of antimicrobial resistance of listed microorganisms and monitoring of chemical drug residues
  - Integration of surveillance activities

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<sup>1</sup> Inserted after the meeting following clarification with the Director General

For each objective a matrix/decision tree will be developed to guide the user to the relevant sections of the handbook. An example on a possible matrix to be used is given in [Appendix IV](#). The strategies, tools and outputs for each objectives above should be clearly specified.

- Methods and tools
  - Passive surveillance
  - Active surveillance
    - Non-random
    - Random
    - Risk-based surveillance
    - Sentinel herds
    - Participatory disease surveillance
  - Agent surveillance
  - Vector surveillance
  - Serological surveillance
  - Clinical/syndromic surveillance
  - Surveys and sampling
    - Presence/absence
    - Prevalence
    - Immunity coverage
  - Integration of different data sources in surveillance – randomized, non-randomized, active, passive, targeted, clinical – to increase confidence and optimize the use of resources

The methods and tools above should cover domestic and wildlife populations as appropriate.

- Data sources – for each source we need to indicate its use, limitations, biases and integration in overall confidence of the surveillance system.
  - Notifications
  - Serum banks
  - Laboratory submissions
  - Abattoir surveillance
  - Sentinel herds/animals
  - Import/Export testing (including quarantine)
  - Sampling/testing including sentinels
  - Clinical records
  - Trapping data (vectors)
  - Hunting samples
  - Vaccination records/production
  - Herd health systems
  - Scientific publications
  - Mortality and animal disposal data
  - Animal movement records (traces, risk-based surveillance)
- Denominator data (population)
  - Number and distribution of herds/animals (Identification schemes, censuses etc.)
  - Production systems
  - Population dynamics (deaths, births, introductions)
  - Seasonal fluctuations and flows
  - Vector distribution (spatial and temporal patterns)
  - Wildlife populations and distribution
- Disease reporting – describe the role and obligations
  - Farmers
  - Official veterinarians (national, sub-national, local)
  - Private/industry veterinarians
  - Community animal health workers/para-veterinarians
  - Laboratories
  - Others, NGOs



- Data processing and analysis
  - Investigation procedures for suspect and positive results
    - Including clinical, epidemiological and laboratory examination of a representative number of animals in the affected herd
    - Trace-back and trace-forward and other types of follow-up
  - Communication and sharing of information
    - Emphasizing the use of maps, tables and other presentation tools to facilitate communication at all levels of the system
  - Assessment of the quality of the surveillance system
    - Performance indicators
    - Diagnostic capability
      - National laboratories
      - Accredited laboratories
      - OIE reference laboratories
      - Performance of diagnostic tests (Se, Sp)
  - Future trends
    - Private standards
    - Compartmentalization
-

Appendix IV**Example of matrices for surveillance objectives****Matrice 1**

Zones	Objective	Strategies	Tools	Frequency	Minimum requirements
Free zones	Early detection of BTV incursions and BTV freedom demonstration	Passive clinical surveillance	Routine passive surveillance and reporting	All over the year but reinforced during the vector season activity	Compulsory
		Cross sectional surveys(1)	Bulk milk ELISA in selected herds not having vaccinated animals, or other designs (i.e. blood samples taken for other purposes, sera banks)	At least once a year when likelihood of detecting seroconversion is higher	At least one of the four options
		Targeted risk based active surveillance (4)	Adjusted to the population defined at higher risk: i.e. post movement sampling or other sampling strategies (2)	All over the year but reinforced during the vector season activity	
		Sentinels(3)	Designated sentinel not vaccinated animals	Monthly during the vector activity season	
			Sampling young non vaccinated animals at abattoir or other designs (i.e. selected fattening units)	Monthly during the vector activity season	

(1) Sample size: must be designed in such a way that the samples are representative of the bovine population in the zone and the sample size has been calculated to detect a prevalence of 0,5 % with 95 % confidence in the bovine population of that Member State or geographical area.

(2) To be thoroughly described and documented

(3) The minimum number of sentinel animals per geographical unit must be representative and sufficient in order to detect a monthly incidence of seroconversion of 2% with a 95% confidence in each geographical unit. Sentinels animals

(4) Once defined a population at high risk such as specific animals in territories adjacent to restricted zones or animals from restricted zones or territories with particular weather conditions

**Matrice 2**

Zones	Objective	Strategies	Tools	Frequency	Minimum requirements
Restricted zones	Early detection of new BTV serotypes incursions or re-circulation of existing serotypes  and  Specific BTV serotypes freedom demonstration	Passive clinical surveillance	Reinforced passive surveillance and reporting with awareness campaigns (2)	All over the year but reinforced during the vector activity season	Compulsory
		Targeted PCR survey(1)	Random screening PCR followed by specific PCR targeted for serotypes expected to be present (multiplex PCR)	At least once a year when likelihood of detecting virus is higher	At least one of the four options
		Sentinels(3)	Sampling designated sentinel not vaccinated animals or young non vaccinated animals at abattoir or other designs (i.e. selected fattening units) followed by specific seroneutralisation or PCR targeted for serotypes expected to be present	Monthly during the vector activity season	
		Targeted serology (1)	Seroneutralisation targeted to serotypes expected to be present	At least once a year when likelihood of detecting seroconversion is higher	
		Targeted risk based active surveillance (4)	Adjusted to the population defined at higher risk: i.e. post movement sampling or other sampling strategies (2)	All over the year but reinforced during the vector season activity	
	Determination of seasonally free period(5)	Entomology	Trapping network(4)	Weekly since at least one month before the expected start of the vector free season until one month after the expected end of the vector free season and monthly during the vector free season	Compulsory for determination of the seasonally free period
		Sentinels(3)	Designated sentinel not vaccinated animals	Weekly since the expected start of the vector free season until the expected end of the vector free season and monthly during the vector free season	Optional
	Vector species involved identification(5)	Entomology	Trapping network(4)	All over the year but reinforced during the vector activity season	Optional
	Monitoring serotype distribution  and Vaccination	Specific type serology	Seroneutralisation targeted to serotypes expected to be present	All over the year	Optional
		Coverage	Random serology (survey)	At the end of the vaccination campaign	Optional
<p>(1) Sample size: must be designed in such a way that the samples are representative of the bovine population in the Member State or in an epidemiologically relevant geographical area and the sample size has been calculated to detect a prevalence of 0,5 % with 95 % confidence in the bovine population of that Member State or geographical area.</p> <p>(2) To be thoroughly described and documented</p> <p>(3) The minimum number of sentinel animals per geographical unit must be representative and sufficient in order to detect a monthly incidence of seroconversion of 2% with a 95% confidence in each geographical unit</p> <p>(4) At least one trap in each geographical unit</p> <p>(5) Also for free zones</p>					



## MEETING OF THE OIE AD HOC GROUP ON EPIDEMIOLOGY

Paris, 3 - 5 September 2008

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The Group was welcomed by Dr Lea Knopf who gave an overview on the main topics on the agenda. A new *ad hoc* Group participant, Dr Katsuaki Sugiura from Japan was introduced to the other members of the Group. Thereafter also the new colleagues from the Scientific and Technical Department, Dr Elisabeth Erlacher-Vindel (Deputy Head of Department) and Dr Yong Joo Kim (chargé de mission), introduced themselves to the *ad hoc* Group.

### 1. Meeting agenda

The meeting was chaired by Dr Preben Willeberg and Dr Cristobal Zepeda was designated to act as rapporteur.

The agenda and list of participants are indicated in Appendices I and II. The agenda was discussed and additional explanations and documentation were given to the Group. The Group adopted the agenda.

### 2. Handbook for Animal Disease Surveillance

The strategy to develop the Handbook would involve the OIE Collaborating Centers (CCs) related to epidemiology, it is possible, however, to identify potential authors from other institutions to develop particular sections of the Handbook.

The process for developing the Handbook was discussed again. Ideally an editor from each of the CCs and other contributing institutions should be identified to lead the development. The advantage of this approach would be to harmonize different views on surveillance, terminology and ensure overall coherence between sections of the Handbook.

The time commitment required to edit and write the Handbook is likely to be significant. Most likely this would involve a financial commitment from the OIE to ensure that the task is done in a timely manner. The group recommends that the OIE explores the possibility of obtaining funds for this activity and inform the group.

In the meantime, the outline of the Handbook will be distributed to the following institutions for comment:

- OIE Collaborating Centers on:
  - Animal Disease Surveillance Systems and Risk Analysis
  - Veterinary Training, Epidemiology, Food Safety and Animal Welfare
  - Research and Training in Population Animal Health Diagnosis and Surveillance Systems
- International Livestock Research Institute

Proposed timeline for development of the Handbook:

- Define the process for development of the **Handbook** – December, 2008
  - Role of Collaborating Centers and other organizations
  - Identify a project leader within each of the CCs and ILRI
- Clarify the resources required and available options for funding – October, 2008
- Define the proposed time frame for development -
  - Authorship of sections of the Handbook (identification of authors) – February, 2009
  - Compilation of all chapters for review by the Ad hoc group – February, 2010
  - Publication by the OIE publications Department – December, 2010

The Group met with Prof. Pastoret, head of the publications Department to discuss issues related to the publication of the Handbook. From the discussion it would seem that the manual should be published in-house within the OIE, this would reduce the cost and allow printing a larger number of copies. An estimate of a 1000 copies was suggested as appropriate.

### 3. Review of the report of the ad hoc Group on wildlife disease surveillance

The Group agreed that the inclusion of wildlife in surveillance programs is important, however, it should be included only when the added value of the information warrants the cost of collecting it. For example, whenever infection in wildlife compromises the status of domestic animal populations or presence of infection in wildlife is an indicator of increased risk for transmission. There may be alternative methods such as targeted surveillance in domestic animals that can achieve the same purpose at a lower cost.

The implications of infection in wildlife in regard to the status of the country for the purpose of international trade were discussed. In general, the presence of infection in wildlife should not necessarily affect the status of the domestic animal populations, unless unmitigated risk pathways are present. The Group was concerned, however, that some countries would be penalized by conducting surveillance and finding infection in wildlife. This situation should be addressed in the specific disease chapters.

The Group reviewed the proposed additions to the general guidelines for surveillance and the surveillance guidelines for foot and mouth disease. Concerns were expressed regarding the inclusion of mandatory surveillance in wildlife as a requirement to obtain FMD free status. The Group disagrees with this view and believes that surveillance in wildlife should only be conducted when the particular epidemiology of an outbreak warrants it. In addition, FMD diagnostic tests may not have been validated for the susceptible wildlife species of concern.

The Group agreed however, that domestic animals adjacent to wildlife populations can serve as sentinels for infection in wildlife and whenever possible should be used as an alternative to sampling wild animals.

### 4. Guidelines for the use of epidemiological models for the management of animal diseases

The Group discussed the process to finalize the draft guidelines for the use of epidemiological models for the management of animal diseases and decided that a second face-to-face meeting is necessary to complete the missing sections of the draft guidelines and discuss the comments received from members of the *ad hoc* Group on epidemiological modeling.

### 5. Review of comments received on buffer zones

The proposal of the Permanent Veterinary Committee of the Southern Cone countries related to buffer zones was discussed in the broader context of zoning requirements. The Group generally agreed with the proposal and it was decided to maintain the position that buffer zones should not be always a requirement for the recognition of status of FMD.

The Group felt that the text proposed during their meeting of 13-15 February, 2008, for Articles 2.2.10.2, 3, 4 and 5 is adequate with the exception of the explicit mention of buffer zones:

2.2.10.2. (currently 8.5.2) “Susceptible animals in the FMD free country where vaccination is not practiced should be separated from neighbouring infected countries by the application of animal health measures that effectively prevent the entry of the virus, taking into consideration physical or geographical barriers. ~~These measures may include a buffer zone...~~”

2.2.10.3. (currently 8.5.3) “Susceptible animals in the FMD free country where vaccination is practiced should be separated from neighbouring infected countries by the application of animal health measures that effectively prevent the entry of the virus, taking into consideration physical or geographical barriers. ~~These measures may include a buffer zone...~~”

2.2.10.4. (currently 8.5.4) “An FMD free zone where vaccination is not practised can be established in either an FMD free country where vaccination is practised or in a country of which parts are infected. In defining such zones the principles of Chapter 1.3.5. (currently 4.3) should be followed. Susceptible animals in the FMD free zone where vaccination is not practiced should be separated from the rest of the country and from neighbouring countries if they are of a different animal health status, by the application of animal health measures that effectively prevent the entry of the virus, taking into consideration physical or geographical barriers. ~~These measures may include a buffer zone...~~”

2.2.10.5. (currently 8.5.5) “An FMD free zone where vaccination is practised can be established in either an FMD free country where vaccination is not practised or in a country of which parts are infected. In defining such zones the principles of Chapter 1.3.5. (currently 4.3) should be followed. Susceptible animals in the FMD free zone where vaccination is practiced should be separated from the rest of the country and from neighbouring countries if they are of a different animal health status, by the application of animal health measures that effectively prevent the entry of the virus, taking into consideration physical or geographical barriers. ~~These measures may include a buffer zone...~~”

The Group proposes that buffer zones should not be mentioned as such in the text of the FMD chapter as the emphasis should be placed on the measures to prevent the introduction of the infections and appropriate surveillance to ensure early detection. Given that the concept of buffer zone has so far only been used in this chapter, the definition in Chapter 1.1.1 should be deleted. By doing this, there is no need to define other concepts contained in the proposal submitted by a member of the Scientific Commission.

## **6. Discussion on the status of countries or zones where infection exists in wildlife with specific regard to classical swine fever (CSF)**

In the light of the discussion regarding a possible common framework on the effect of infected wildlife on the status of the domestic populations (see above), the Group discussed the situation where CSF is present in wild pigs and absent in domestic pigs.

In general, the characteristics of the affected wildlife population and the epidemiology of the disease may affect the choice of strategy. For example, in the case of avian influenza, infected wild birds can be found worldwide and some migrate over great distances, therefore the status of countries is defined independently of infection in wild birds. In the case of classical swine fever, wild or feral pig populations may be infected or not. Moreover, these populations are generally confined to areas that can be geographically defined and therefore amenable to zoning.

In any case, it is possible to maintain domestic populations free of infection. The Group agreed that in order to maintain the disease free status of the domestic pig population, effective biosecurity measures to prevent the spread of infection between wild and domestic pigs should be implemented. The question was raised whether the entire domestic pig population in a country or zone could be considered as a compartment or if this would be a different concept.

The reflections above lead to a proposal and minor changes in the chapter on CSF.

The following text is proposed for consideration of the Scientific Commission:

Article 15.3.4.

**Country or zone free of CSF in the domestic pig population but with infection in the wild pig population**

Requirements in points 2a to 2e of Article 15.3.3., as relevant, are complied with, and the following additional conditions are complied with:

1. in wild pigs, a programme for the surveillance of CSF is in place according to point 2 of Article 15.3.31., taking into account the presence of natural boundaries, the ecology of the wild pig population, and an assessment of the risk of disease spread; in addition, measures to limit the spread of CSF within the wild pig population can be implemented;
2. Based on the assessed risk of spread and according to Article 15.3.30., the domestic pig population should be separated from the wild pig population by appropriate biosecurity measures to prevent transmission of CSF from wild pigs to domestic pigs and additional surveillance in the domestic pig population should be conducted.

If the conditions described above are fulfilled, the domestic pig population can be treated in the same manner as one in a disease free country or zone. The proposed changes would imply modifying the CSF Chapter to ensure consistency.

In reviewing the CSF chapter, the Group suggests to move the section on surveillance in wild pigs currently under point 2 of article 15.3.31. (recovery of free status) to a new point under the current Article 15.3.30. (Countries, zones or compartments declaring freedom from CSF: additional surveillance procedures).

The principles leading to the above considerations can be applied to all diseases that may have an epidemiological link with wildlife e.g. FMD, Aujeszky's disease and others.

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.../Appendices



Appendix I

**MEETING OF THE OIE AD HOC GROUP ON EPIDEMIOLOGY**  
**Paris, 3 – 5 September 2008**

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**Agenda**

1. Adoption of the agenda and appointment of a rapporteur
  2. Follow up outline and introduction of the future Handbook for Animal Disease Surveillance
  3. Review the wildlife disease surveillance *ad hoc* Group's proposed additions/changes to Appendix 3.8.1 of the *Terrestrial Code* ( now Chapter 1.4) to include wildlife considerations
  4. Review of the draft guidelines for the use of epidemiological models for management of animal diseases
  5. Specify the measures to be applied in the separation of zones and countries having a different status as an alternative to buffer zones
  6. For classical swine fever, define the status of countries and zones where infection exists in wildlife but not in domestic animal populations taking into consideration the approach followed in the chapter on avian influenza
  7. Finalisation and adoption of draft report
-

Appendix II

**MEETING OF THE  
OIE AD HOC GROUP ON EPIDEMIOLOGY  
Paris, 3 – 5 September 2008**

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