

TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION

SEPTEMBER 2010 REPORT

CHAPTER ~~815.164~~.

SWINE VESICULAR DISEASE

USA Comments

Note: US suggestions, comments and recommendations are shown as either a strike-through or as double underlined and in blue font.

General Comment: The United States requests that the OIE provide the scientific basis used by the ad hoc group charged with updating the Code Chapter on Swine Vesicular Disease (SVD). Since there are no articles cited, no peer-reviewed journals mentioned, or any other technical documentation referenced, the United States has great concerns with some of the technical recommendations that are made in this chapter. Further, since the report of the ad hoc group was not included in either the Scientific Commission's or the Terrestrial Animal Health Standards Commission's most recent meeting reports, the technical basis for the recommendations made in this chapter are completely unknown. Therefore, and in line with its policy of openness and transparency, we ask that the OIE provide such information (reports) as it does for other ad hoc groups. Given this lack of information and the other concerns and comments the United States has (which we have noted below in the individual Articles of this Chapter), we request that this chapter be tabled and further reviewed by competent and knowledgeable experts and any proposal be shared with Members before it is considered for adoption by the World Assembly.

Article ~~815.164.1~~.

The pig is the only natural host for swine vesicular disease (SVD) virus. The definition of pig includes all varieties of *Sus scrofa*, both domestic and wild.

For the purposes of the *Terrestrial Code*, the *incubation period* for swine vesicular disease (SVD) shall be 28 days.

For the purposes of this Chapter, the *Terrestrial Code*, SVD is defined as an infection of susceptible animals include ~~domestic~~ and wild pigs.

Rationale: All pigs (domestic and wild) as defined in this chapter should be included in the definition of those animals which can be infected. Wild pigs are included in other chapters for diseases affecting pigs including FMD and classical swine fever. Wild pigs are a risk to domestic pigs for SVD and are a reservoir of the disease.

Domestic pig is defined as all domesticated pigs, permanently captive or farmed free range, used for the production of *meat* for consumption, for the production of other commercial products or for breeding these categories of pigs.

For the purposes of the *Terrestrial Code*, the *incubation period* for SVD shall be 28 days.

~~For the purposes of this Chapter, a case includes an animal infected with SVD virus (SVDV).~~

~~For the purposes of *international trade*, ¶This chapter deals not only with the occurrence of clinical signs caused by SVDV virus (SVDV), but also with the presence of infection with SVDV in the absence of clinical signs.~~
For the purposes of this Chapter, virus The following defines the occurrence of infection means presence of with SVDV as demonstrated by:

1. virus isolation, or detection of virus antigen or virus nucleic acid, or
2. seroconversion, or
3. clinical signs associated with serological evidence, or
4. clinical signs or serological evidence associated with an epidemiological link.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

A Member should not impose trade bans in response to a notification of *infection* with SVDV in wild pigs according to Article 1.2.3. of the *Terrestrial Code*.

Article 15.4.1. bis.

General Comment of this Article 15.4.1 bis: The same principles of separation between wild and domestic pigs that are outlined in the CSF chapter should be used and can be applied to the SVD chapter. The United States asks that the Code Commission take those principles (which are found in Article 15.2.2 of the CSF chapter) and apply them to the SVD chapter to ensure that rigorous biosecurity measures are appropriately implemented to prevent transmission of SVD from wild pig populations to domestic pig populations

Determination of the SVD status of a country, zone or compartment

The SVD status of a country, *zone* or *compartment* can only be determined after considering the following criteria, as applicable:

1. SVD should be notifiable in the whole territory, and all clinical signs suggestive of SVD should be subjected to appropriate field and ~~to~~ laboratory investigations;

Rationale: Any investigation should not be limited to just “field” activities. A proper and responsible investigation also necessitates a laboratory component. A diagnosis cannot be based on field observations alone.

2. an on-going awareness programme should be in place to encourage reporting of all *cases* suggestive of

SVD:

3. the *Veterinary Authority* should have current knowledge of, and authority over, all domestic pigs in the country, *zone* or *compartment*;
4. the *Veterinary Authority* should have current knowledge about the population and habitat of wild pigs in the country or *zone*;
5. for *domestic* pigs, appropriate *surveillance*, capable of detecting the presence of *infection* even in the absence of clinical signs, is in place; this may be achieved through a *surveillance* programme in accordance with Articles 15.4.14. to 15.4.19.

Rationale: surveillance cannot be limited just to domestic pigs. If one is to accept and apply the concept of zone and compartment to SVD, a country needs to know the SVD status of its wild pigs population as well. Hence, surveillance needs to be conducted in wild pigs as well.

Article ~~815.164.2.~~

SVD free country, *zone* or *compartment*

~~Susceptible animals in the SVD free country or *zone* or *compartment* should be separated from neighbouring infected countries or *zones* by animal health measures (bio-security measures, which may include a *buffer zone*) that effectively prevent the entry of the virus, or by physical barriers.~~

Susceptible animals in the SVD free country or *zone* or *compartment* should be separated from neighbouring infected countries or *zones* by animal health measures (bio-security measures, which may include a *buffer zone*) that effectively prevent the entry of the virus, or by physical barriers.

Rationale: The United States does not support removing this paragraph. The existing paragraph (which is being proposed for deletion) makes technical sense and is consistent with language required when incorporating the concepts of ‘zone’ and ‘compartment’ into OIE disease specific chapters. It is an important paragraph to keep in this Code Chapter.

~~The SVD status of a country, *zone* or *compartment* can only be determined by applying *surveillance* recommendations described Chapter 1.4. according to two possibilities:~~

1. Historically free status

A country or *zone* may be considered free from the *disease* without formally applying a pathogen specific *surveillance* programme if the provisions of Article 1.4.6. are complied with.

2. Free status as a result of a specific surveillance programme

A country, *zone* or *compartment* which does not meet the conditions of point 1 above may be considered free from SVD when:

- a) *surveillance* for both SVD and SVDV infection in accordance with Articles 15.4.14 -15.4.19 and Chapter 1.4. has been in place for at least 3 years;
- b) no *outbreak* of SVD and no evidence of SVDV circulation has been found during the past 3 years;
- c) regulatory measures for the prevention and control of SVD have been implemented, including the control of the movement of ~~susceptible animals~~ pigs and other relevant measures for preventing the entry of the virus.

If a *stamping-out policy* was applied in respect of the most recent *outbreak*, the requirement of 3 years in points a) and b) above is shortened to 12 months.

Article ~~815.164~~.3.

SVD infected country or zone

An SVD infected country or ~~zone~~ is ~~a country or zone~~ one that does not fulfill the requirements to be considered as free.

Article ~~815.164~~.4.

Establishment of a containment zone within an SVD free country or SVD free zone

In the event of a limited *outbreak* within an SVD free country or SVD free *zone*, a single *containment zone*, which includes all *cases*, can be established for the purpose of minimizing the impact on the entire country or *zone*. For this to be achieved, the *Veterinary Authority* should be able to provide documented evidence that:

1. the *outbreak* is limited based on the following factors:
 - a) immediately on suspicion, a rapid response including notification has been made;
 - b) standstill of ~~animal~~ pig movements has been imposed, and effective controls on the movement of other *commodities* mentioned in this chapter are in place;
 - c) the infection has been confirmed;
 - d) epidemiological investigation (trace-back, trace-forward) has been carried out~~completed~~;
 - e) the primary outbreak has been identified and investigations of the likely ~~the~~ source of the *outbreak* has~~ve~~ been identified carried out;
 - f) all *cases* have been shown to be epidemiologically linked;
2. *surveillance* in accordance with Articles 15.4.14 -15.4.19 and Chapter 1.4. is in place and demonstrates that there are no undetected *cases* in the *containment zone*;

[a. surveillance in the containment zone has been increased above that of other areas and shows no evidence of infection beyond the containment zone](#)

Rationale: The United States recommends including the added language to make it clear that the affected country needs to be very thorough in its response to the outbreak and ensure that any infection is contained within the self-imposed containment area.

3. a *stamping-out policy* has been applied;
4. the pig population within the *containment zones* should be clearly identifiable as belonging to the *containment zone*;
45. increased passive and targeted *surveillance* in accordance with Articles 15.4.14 -15.4.19 and Chapter 1.4. in the rest of the country or *zone* has been carried out and has not detected any evidence of *infection*;
56. measures to prevent spread of the *infection* from the *containment zone* to the rest of the country or *zone*, are in place.

The free status of the area outside the *containment zone* would be suspended pending the establishment of the *containment zone*. The suspension of free status of this area could be lifted irrespective of the provisions of Article ~~815.464.5.~~, once the *containment zone* is clearly established, by complying with points 1 to ~~56~~ above.

The recovery of the SVD free status of the *containment zone* should follow the provisions of Article ~~815.464.5.~~

When importing from *containment zones*, provisions of Articles ~~815.464.6., 815.464.98., 815.464.140., 15.4.12. and 815.464.13.~~, concerning the importation from countries or *zones* considered infected with SVD, should be applied.

Article ~~815.464.5.~~

Recovery of free status

When an SVD ~~outbreak or SVDV infection~~ occurs in an SVD free country or *zone*, one of the following waiting periods is required to regain the status of SVD free country or *zone*:

1. 2 months after the *stamping-out* of the last *case*, where a *containment zone* and serological *surveillance* have been applied in accordance with this chapter and Chapter 1.4.; or
2. 12 months after the *stamping-out* of the last *case*, where the conditions for the establishment of a *containment zone* are not fulfilled, a *stamping-out policy* and serological *surveillance* have been applied in accordance with this chapter and Chapter 1.4.

Where both a *stamping-out policy* and serological *surveillance* in accordance with this chapter ~~XX.~~ have not been practiced, the above waiting periods do not apply, and Article ~~815.464.2.~~ applies.

Article ~~815.464.6.~~

Direct Transfer of pigs from an infected zone for directly to slaughter of SVD-susceptible animals from an infected zone to in a free zone within a country

In order not to jeopardise the status of a free *zone*, ~~pigs SVD-susceptible animals~~ should only leave ~~the an~~ infected zone if ~~moved by mechanised~~ transported directly to slaughter in ~~to~~ the nearest designated *abattoir*; located in the *buffer zone* (if established), directly to slaughter under the following conditions:

In the absence of an *abattoir* in the *buffer zone*, or in the absence of a *buffer zone*, live SVD-susceptible animals can be transported to the nearest *abattoir* in a free *zone* directly to slaughter only under the following conditions:

1. no ~~SVD-susceptible animal pig~~ has been introduced into the *establishment* of origin and no ~~animal pig~~ in the *establishment* of origin has shown clinical signs of SVD for at least 60 days prior to movement;
2. a representative sample of ~~animals of pigs in~~ the *herd* of origin, including all ~~animals pigs~~ to be moved for *slaughter* has been serologically tested with negative findings;
3. the ~~animals pigs~~ were kept in the *establishment* of origin for at least 2 months prior to movement;
4. SVD has not occurred within a 1 kilometre radius of the *establishment* of origin for at least 2 months prior to movement;
5. the ~~animals pigs~~ ~~must~~ should be transported under the supervision of the *Veterinary Authority* in a *vehicle*, which was cleansed and disinfected before *loading*, and officially sealed, directly from the *establishment* of origin to the *abattoir* without coming into contact with other ~~susceptible animals pigs~~;

Rationale: The integrity of such movements needs to be fully ensured. One way to further ensure it is to have the vehicle officially sealed by the *Veterinary Authorities* once it is loaded and ready for transporting the pigs.

6. such an *abattoir* is not approved for the export ~~of fresh meat~~ during the time it is handling the *meat* of ~~animals pigs~~ from the *infected zone* and, to be re-approved, ~~must~~ should apply ~~disinfections able to~~ that will destroy ~~any~~ residual infectivity;

Rationale: The abattoir should not be approved to export any product, not just fresh meat. It is well known and has been shown that even ‘cured’ meat can harbour SVD virus for up to 400 days.

References:

-McKercher, P.D. *et al* Survival of Viruses in Parma Ham; *Can Inst Food Sci Technol J* Vol 20 No. 4 pp. 267-272, 1987

-Graves, JH and McKercher, PD, 1975. Swine Vesicular Disease, p 346-352. In HW Dunne and AD Leman (ed). *Diseases of Swine*, 4th ed. Iowa State University Press, Ames, IA.

-McKercher, PD, Graves, JH, Callis, JJ, Carmichael, F. Swine Vesicular Disease: virus survival in pork products. *Proc Annual Mtg, US Anim Health Assoc* 1974 (78): 213a-213g.

7. *vehicles* and the *abattoir* ~~must~~ should be subjected to thorough cleansing and ~~disinfection able to~~ that will destroy ~~any~~ residual *infectivity* immediately after use.

All products obtained from the ~~animals pigs~~ and any products coming into contact with them ~~must~~ should be identified and traded only on domestic market.

~~Animals Pigs~~ moved into a free *zone* for other purposes ~~must~~ should be moved under the supervision of the *Veterinary Authority* and comply with the conditions in Article ~~815.164.98~~.

Article ~~8~~15.164.7

Recommendations for importation from SVD free countries, zones or compartment
for domestic pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the ~~animals~~ pigs:

1. showed no clinical sign of SVD on the day of shipment;
2. were kept in an SVD free country, *zone* or *compartment* since birth or for at least the past 60 days.

~~Article 8.16.8.~~

Recommendations for importation from SVD free countries or zones
for wild pigs

~~*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the ~~animals~~ pigs:~~

- ~~1. showed no clinical sign of SVD on the day of shipment;~~
- ~~2. come from an SVD free country or *zone*;~~

~~if the country or *zone* of origin has a common border with a country or *zone* considered infected with SVD:~~

- ~~3. were kept in a *quarantine station* for the 60 days prior to shipment and were subjected to a prescribed serological test for SVD with negative results during that period.~~

Article ~~8~~15.164.98.

Recommendations for importation from countries or zones considered infected with SVD

for ~~domestic and wild~~ pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the ~~animals~~ pigs:

1. showed no clinical sign of SVD on the day of shipment;
2. were kept in a *quarantine station* for the 60 days prior to shipment and were subjected to a prescribed serological test for SVD with negative findings at the end of ~~during~~ that period.

General comment and observation: As further evidence to show that this chapter needs additional work, the United States requests that the OIE clarify and provide its rationale when using the terms “pig” and “domestic pig”. For example **Article ~~8~~15.164.7, Recommendations for importation from SVD free countries, zones or compartment**, applies to domestic pigs and sets recommendations for importing domestic swine from SVD free areas. The next article **~~Article 8.16.8. Recommendations for importation from SVD free countries or zones~~** which is being proposed for deletion would, if accepted, remove recommendations for importing wild pigs from SVD free areas. However, **Article ~~8~~15.164.98 Recommendations for importation from countries or zones considered infected with SVD** applies to “pigs” – which, as written, allows for importing both wild and domestic pigs from countries and zones infected with SVD as long as they are quarantined and tested. So the implication is that it is acceptable to import wild pigs from countries that are infected with SVD as long as you meet the quarantine and testing requirements, but not acceptable for wild pigs to be imported from SVD free countries, zones, or compartments. The United States does not imply to favor the importation of wild pigs, but rather, we use this example as an illustration of some of the issues and implications that seem to riddle this chapter.

Article ~~815.164.109~~.

Recommendations for importation from SVD free countries or zones or compartments

for semen of pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
 - a) showed no clinical sign of SVD on the day of collection of the semen;
 - b) were kept in an SVD free country or *zone* or *compartment* for not less than 60 days prior to collection;
2. the semen was collected, processed and stored in conformity with the provisions of Chapter 4.6.

Article ~~815.164.110~~.

Recommendations for importation from countries or zones considered infected with SVD

for semen of pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

1. the donor ~~animals~~ pigs showed no clinical sign of SVD on the day of collection of the semen and were subjected to a prescribed serological test for SVD with negative findings;
2. the donor ~~animals~~ pigs were kept in the *exporting country* or *zone* for the 60 days prior to collection, in an *establishment* or *artificial insemination centre* where no *case* of SVD was officially reported during that period, and that the *establishment* or *artificial insemination centre* was not situated within one km from an *outbreak* occurring in the last 60 days;
3. a representative sample of ~~animals~~ pigs ~~of in~~ the *herd* of origin has been serologically tested with negative findings;
4. the semen was collected, processed and stored in conformity with the provisions of Chapter 4.6.

Article ~~815.164.121~~.

Recommendations for importation from SVD free countries, zones or compartments

for fresh meat of pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat* comes from animals:

1. which have been kept in an SVD free country, *zone* or *compartment* since birth or for at least the past 60 days;
2. which have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for SVD with favourable outcome.

All the necessary measures have been taken to avoid cross contamination.

Article 15.4.12.

General Comment – Article 15.4.12: As with other disease specific chapters where fresh meat and meat products are a known risk factor for transmitting the pathogen (i.e. Code Chapters on FMD, Classical Swine Fever, and African Swine Fever) the United States strongly urges the Code Commission to develop an Article which specifically addresses procedures for inactivating the SVD virus. This would include the inactivation of the virus in fresh meat using heat treatment, fermentation and maturation methods, as well as the conditions for inactivating the virus in dry cured pork meat. Although we comment on some of the points under this article below, the United States believes that this article is not properly constructed, has recommendations that are not scientifically based, and consequently should be withdrawn from consideration until it can be revised using technically sound information. The United States cannot support the SVD chapter with language in this article as currently proposed.

Recommendations for importation from SVD infected countries, zones or compartments

for meat products of pigs

Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the entire consignment of meat products have been processed in an establishment approved by the Veterinary Authority so as to ensure the destruction of the SVD virus by either:

1. Heat treatment in a hermetically sealed container with an F0 value of 3,00 or more, or
2. heat treatment at a minimum temperature of 70 °C, which must be reached throughout the meat, or
3. heat treatment in a hermetically sealed container to ~~at least 60 °C for a minimum of 4 hours, during which time the~~ a core temperature of ~~must be~~ at least 70 °C for 30 minutes, or

Rationale: Heating to at least 60C to attain an internal core temperature of at least 70C appears to be physically impossible. The United States recommends simply emphasizing that the core temperature of the product needs to reach 70C for at least 30 minutes.

4. natural fermentation and maturation ~~of not less than nine months, resulting in the following characteristics: Aw value of not more than 0,93 or a pH value of not more than 6,0, and~~

Rationale: the SVD virus has been shown to survive at pH ranges of 2.5 to 12. However, the recommended pH values presented in this chapter appear to be taken directly from the CSF Code chapter – Article 15.3.21. The United States, therefore, questions the scientific basis of this recommendation and asks that the OIE reconsider this option and provide its recommendation based on accurate and technically correct data.

1. OIE technical card:
http://www.oie.int/eng/maladies/Technical%20disease%20cards/SWINE%20VESICULAR%20DISEASE_FINAL.pdf
2. Fry, et al, Crystal Structure of SVD and implications for host adaptation. Journal of Virology, May 2003, p. 5475-5486, Vol. 77, No. 9

Recommendations for the importation of *meat products* of pigs (~~either domestic or wild~~), or for products of ~~animal~~ pig origin (from *fresh meat* of pigs) intended for use in animal feeding, for agricultural or industrial use, or for pharmaceutical or surgical use, ~~or for trophies derived from wild pigs~~

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the products:

1. have been prepared:
 - a) ~~exclusively~~ from *fresh meat* meeting the conditions laid down in Article ~~8.15.4.12.1~~, as relevant; or
 2. from *meat products* meeting the conditions laid down in Article 15.4.12.;
- b) ~~in a processing establishment:~~
 - i) ~~approved by the *Veterinary Authority* for export purposes;~~
 - ii) ~~processing only *meat* meeting the conditions laid down in Article 8.16.12, as relevant;~~

OR

2. ~~have been processed in an establishment approved by the *Veterinary Authority* for export purposes so as to ensure the destruction of the SVD virus.~~

Article 15.4.14.

Surveillance: introduction

The Articles 1i.4.14. – 15.4.19. define the principles and provides a guide for the *surveillance* of SVD complementary to Chapter 1.4., applicable to Members seeking to determine their SVD status for the whole country or a *zone*, or a *compartment*. Guidance on *surveillance* for countries seeking re-establishment of freedom from SVD for the whole country or a *zone*, or a *compartment* following an *outbreak*, as well as for demonstrating the maintenance of SVD free status is also provided.

Consideration should be given to the known characteristics of SVD epidemiology, which include the impact of different production systems on *disease* spread, the lack of pathognomonic gross lesions and clinical signs, and the frequency of clinically inapparent *infection*. Serological cross-reactivity with other agents has to be taken into consideration when interpreting data from serological surveys.

Clinically, SVD may be indistinguishable from foot and mouth disease (FMD) and this is its main importance. And since any vesicular condition in pigs may be FMD, it is therefore essential that *cases* of SVD be distinguished urgently from FMD by laboratory investigation.

Article 15.4.15.

Surveillance: general conditions and methods

1. A *surveillance* system in accordance with Chapter 1.4. should be under the control of the *Veterinary Authority*.
 - a) a formal and ongoing system for detecting and investigating *outbreaks* of *disease* or SVDV infection should be in place;

- b) a procedure should be in place for the rapid collection and transport of samples from suspect cases of SVD to a laboratory for SVD diagnosis as described in the *Terrestrial Manual*;
- c) a system for recording, managing and analysing diagnostic and *surveillance* data should be in place.

2. The SVD *surveillance* programme should:

- a) include an early warning system throughout the production, marketing and processing chain for reporting suspicious cases. Farmers and workers, who have day-to-day contact with livestock, as well as diagnosticians, should report promptly any suspect case of SVD. All suspected cases of SVD should be investigated immediately. ~~Where suspicion cannot be resolved by epidemiological and clinical investigation,~~ samples should be taken and submitted to an approved laboratory. This requires that sampling kits and other equipment are available for those responsible for the *surveillance*. Personnel responsible for the *surveillance* should be able to call for assistance from a team with expertise in vesicular diseases diagnosis and control;

Rationale: Above indicate sentence needs to be deleted. Where ever there is suspicion of a disease, samples need to be taken and tested. It is difficult to diagnose a disease in the field, and a lack of clinical signs does not indicate lack of circulating virus.

- b) implement when relevant, regular and frequent clinical inspection and serological testing of high-risk groups of *animals* (*risks* linked to the types of production cycle, local trade pattern, holding with poor bio-security measures, possible direct or indirect contact with other pigs).

An effective *surveillance* system will periodically identify suspicious cases that require follow-up and investigation to confirm or exclude that the cause of the condition is SVD. The rate at which such suspicious cases are likely to occur will differ between epidemiological situations and cannot, therefore, be reliably predicted. Recognition for freedom from SVD infection should, as a consequence, provide details of the occurrence of suspicious cases and how they were investigated and dealt with. This should include the results of laboratory testing and the control measures to which the *animals* concerned were submitted during the investigation (quarantine, movement stand-still orders, etc.).

Article 15.4.16.

Surveillance strategies

1. Introduction

The population targeted by *surveillance* programs aimed at identifying *disease* and *infection* should include domestic pig populations within the country or *zone* or *compartment* to be recognised as free from SVD.

Given the existence of clinically inapparent *infection* and difficulties associated with clinical diagnosis of SVD, serology is often the most effective and efficient *surveillance* methodology. In some circumstances, which will be discussed later, clinical and virological *surveillance* may also have a value.

2. Clinical surveillance

SVD can be sub-clinical, mild or severe depending on the strain of virus involved, the route and dose of infection, and the husbandry condition under which the pigs are kept.

Clinically, SVD is indistinguishable from FMD and, when a vesicular condition is seen in pigs, it must be assumed to be FMD until investigated by laboratory tests and proven otherwise.

Nevertheless, SVD caused by mild strains may remain unobserved, and in this case the value of clinical examination alone is insufficient as a surveillance tool: in this case serology is often the most effective and efficient surveillance methodology.

Clinical surveillance and laboratory testing should always be applied in series to clarify the status of suspected cases detected by either of these complementary diagnostic approaches. Laboratory testing may confirm clinical suspects, while clinical surveillance may contribute to confirmation of positive serology. Any sampling unit within which suspicious animals are detected should be classified as infected until contrary evidence is produced.

Identification of suspected cases is vital to identify the sources of SVDV. It is essential that SVDV isolates are sent regularly to a Reference Laboratory to enable the determination of the molecular, antigenic and other biological characteristics of the virus.

3. Virological surveillance

Virological surveillance using tests described in the *Terrestrial Manual* should be conducted:

- a) to monitor an at risk population;
- b) to confirm clinically suspected cases;
- c) to follow up positive serological results.

The most suitable samples for virological testing are vesicular lesion materials from clinically affected pigs and faeces from pigs without lesions.

4. Serological surveillance

Serological surveillance aims at the detection of antibodies against SVD. Positive SVD antibody test results can have three possible causes:

- a) natural infection with SVD;
- b) maternal antibodies derived from immune sows (no published data exist so far on the duration of maternal passive immunity against SVD);
- c) non-specific reactors.

Article 15.4.17.

The use and interpretation of serological tests

Any positive test result should be followed up immediately using appropriate clinical, epidemiological, serological and virological investigations of the reactor animals at hand, and of susceptible animals of the same epidemiological unit and those that have been in contact or otherwise epidemiologically associated with the reactor animals. If the follow-up investigations provide no evidence for SVDV active infection, the reactor animal shall be classified as non SVD infected. In all the other cases, including the absence of such follow-up investigations, the reactor animals should be classified as SVD positive.

It is suggested that in the primary sampling units where at least one animal reacts positive to the screening test, the following strategy should be applied (Figure 1):

1. In case of positive results to the screening test (ELISA), all positive sera from the *herd* should be tested using the Virus Neutralization (VN) test. If there are pigs that test serologically positive by VN test, the positive sample may be tested to identify the isotype of antibody (IgM or IgG).
2. The positive *herd* should undergo clinical examination with collection of samples for virological testing (vesicular lesions and/or faeces). In the presence of symptoms compatible with SVD and/or detection of virus, the *herd* is to be considered infected.
3. Identification of the isotype of antibody present in positive sera can be helpful in the evaluation of the epidemiological meaning of results, as sera from recently infected pigs usually contain specific IgM alone, subsequently both IgM and IgG, and later exclusively IgG. Therefore, in the sero-positive *herd*:
 - a) The clinical examination and virological testing of sero-positive *animals* and *animals* in contact should be targeted to the IgM positive *animals* and to those living in their proximity, rather than to the IgG positives.
 - b) The presence of IgG positives exclusively may indicate a low likelihood of SVDV circulation.

Rationale: The above statement is incorrect. Pigs have been known to shed SVD virus for up to three months, and IgM has been shown to persist for up to 49 days, while IgG up to 150 days. Therefore, one could have a pig late in the 2nd month of infection that has IgG only, but is shedding virus.

References

-Brocchi, et al. Development of two novel monoclonal antibody-based ELISAs for the detection of antibodies and the identification of swine isotypes against SVD virus. *Journal of Virological Methods* 52(1995) 155-167.

-Dekker, et al. Isotype specific ELISAs to detect antibodies against SVD and their use in epidemiology. *Epidemiol Infect.* 2002, 128(2): 277-284

- c) The presence of a single reactor, containing exclusively IgM also on re-testing, without increase of VN titre, in the absence of symptoms and seroconversion in *animals* in contact, is usually due to non-specific reaction.
4. In the case of seroreactor *herds* without clinical signs or positive virological findings, after an adequate interval of time has lapsed (at least 7 days), following clinical examination, a second serum sample should be collected from the positive *animals* and also from a representative number of pigs in contact with the positives in the primary sampling. These samples are tested using ELISA and VN test and antibody titres at the time of retest should be equal to or lesser than those observed in the initial test if virus is not circulating.
5. In case of the detection of an *outbreak*, an epidemiological investigation has to be performed and a representative sample of *animals* in all epidemiologically linked *herds* should be serologically tested.

Possible alternative strategies may be adopted, but in this case the country should justify the procedure chosen as adequate to detect the presence of SVDV infection. Possible shortcomings in the sensitivity of alternative diagnostic strategies should be addressed by appropriate changes in the *surveillance* design and in the sample size.

Fig 1: Should confirm that SVD virus could be demonstrated in samples from pigs on seroreactor *herds* before declaring an *outbreak*, even if clinical signs suggestive of SVD were found.

Article 15.4.18.**Countries, zones or compartments declaring freedom from SVD: Additional surveillance procedures****1. Country or zone free of SVD**

In addition to the general conditions described in this chapter, a Member declaring freedom from SVD for the entire country or a *zone* should provide evidence for the existence of an effective *surveillance* programme. The strategy and the design of the *surveillance* programme will depend on the prevailing epidemiological circumstances. It will be planned and implemented to demonstrate the absence of SVDV infection in susceptible populations, during the preceding 3 years, according to general conditions and methods described in this chapter. This requires the support of a national or other *laboratory* able to undertake identification of SVDV infection through virus detection and antibody tests described in the *Terrestrial Manual*.

This *surveillance* may be targeted to a pig population at specific *risks* linked to the types of production, local trade patterns, holdings with poor bio security measures in place.

2. Compartment free of SVD

The objective of *surveillance* is to demonstrate the absence of SVDV infection in the *compartment*. The provisions of Chapters 4.3. and 4.4. should be followed. The frequency and intensity of *surveillance* should be defined and adapted to the prevailing epidemiological situation in the country or *zone*. Any deterioration in the epidemiological situation should trigger a review of the biosecurity measures and an intensification of *surveillance*.

Article 15.4.19.**Recovery of status: Additional surveillance procedures**

In addition to the general conditions described in this chapter, a country, *zone* or *compartment* regaining freedom from SVDV infection should show evidence of an active *surveillance* programme aimed to demonstrate the absence of the *infection*.

The population under this *surveillance* programme should include:

- a) in the *establishments* in the area of the *outbreak*;
- b) in the *establishments* epidemiologically linked to the *outbreak*;
- c) used to re-populate affected *establishments*.
- d) wild pigs in the area of the *outbreak*.

Rationale: Since wild pigs are a reservoir, it would be irresponsible not to sample this population, and therefore show that there is no reservoir of the virus left in the area.

This will require *surveillance* incorporating virus detection and antibody tests described in the *Terrestrial Manual*.

In all circumstances, a Member self-declaring freedom of a country, *zone* or *compartment* after an *outbreak*, should report the results of an active *surveillance* programme in which pigs undergo regular active *surveillance*, planned and implemented according to the general conditions and methods described in this chapter.

Figure 1. Use and interpretation of serological tests

