CHAPTER 15.2.

INFECTION WITH CLASSICAL SWINE FEVER VIRUS

Article 15.2.1.

General provisions

The pig (*Sus scrofa*, both domestic and *wild*) is the only natural host for classical swine fever virus (CSFV). For the purposes of this chapter, a distinction is made between:

– domestic and *captive wild* pigs, permanently captive or farmed free range, used for the production of *meat*, or other commercial products or use, or for breeding; and

– *wild* and *feral* pigs.

For the purposes of the *Terrestrial Code*, classical swine fever (CSF) is defined as an *infection* of pigs with CSFV.

The following defines the occurrence of *infection* with CSFV:

1) a strain of CSFV (excluding vaccine strains) has been isolated from samples from a pig;

OR

2) antigen or nucleic acid specific to CSFV (excluding vaccine strains) has been identified in samples from a pig showing clinical signs or pathological lesions suggestive of CSF, or epidemiologically linked to a suspected or confirmed *case* of CSF, or giving cause for suspicion of previous association or contact with CSFV;

OR

3) antibodies specific to CSFV that are not a consequence of *vaccination* or *infection* with other pestiviruses, have been identified in samples from a pig showing clinical signs or pathological lesions consistent with CSF, or epidemiologically linked to a suspected or confirmed *case* of CSF, or giving cause for suspicion of previous association or contact with CSFV.

A *notification* of *infection* of *wild* and *feral* pigs with CSFV does not affect the free status of a country or *zone* as recognised by the OIE provided that the provisions of Article 15.2.3. are complied with. A Member Country should not impose bans on the international trade of domestic and *captive wild* pig *commodities* in response to such *notifications*.

For the purposes of the *Terrestrial Code*, the *incubation period* shall be 14 days.

Pigs exposed to CSFV postnatally have an *infective period* of up to three months. Pigs exposed to CSFV prenatally may not show clinical signs at birth and may be persistently infected throughout life.

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

Article 15.2.2.

Safe commodities

When authorising import or transit of the following *commodities*, *Veterinary Authorities* should not require any CSF-related conditions, regardless of the CSF status of the *exporting country* or *zone*:

1) *meat* in a hermetically sealed container with an F0 value of 3 or above;

2) gelatine.

Other pig *commodities* can be traded safely if in accordance with the relevant articles of this chapter.

Article 15.2.3.

Country or zone free from CSF

A country or *zone* may be considered free from CSF when the relevant provisions in point 2 of Article 1.4.6. have been complied with, and when within the proposed free country or *zone* for at least the past 12 months:

1) there has been no *case* of *infection* with CSFV in domestic and *captive wild* pigs;
2) the *Veterinary Authority* has current knowledge of, and authority over, all domestic and *captive wild* pig *herds* in the country or *zone*;
3) the *Veterinary Authority* has current knowledge of the distribution, habitat and indication of disease occurrence through passive *surveillance* of *wild* and *feral* pigs in the country or *zone*;
4) appropriate *surveillance* has been implemented in accordance with:
   a) Article 1.4.6. where historical freedom can be demonstrated; or
   b) Articles 15.2.28. to 15.2.33. where historical freedom cannot be demonstrated;
5) measures to prevent the introduction of the *infection* have been in place: in particular, the importations or movements of *commodities* into the country or *zone* have been carried out in accordance with this chapter and other relevant chapters of the *Terrestrial Code*;
6) no *vaccination* against CSF has been carried out in domestic and *captive wild* pigs unless there are means, validated according to Chapter 3.8.3. of the *Terrestrial Manual*, of distinguishing between vaccinated and infected pigs;
7) if relevant, the domestic and *captive wild* pig populations have been separated by appropriate *biosecurity*, effectively implemented and supervised, from the *wild* and *feral* pig populations, based on the assessed likelihood of spread of the disease within the *wild* and *feral* pig populations and *surveillance* in accordance with Article 15.2.33.

The country or *zone* will be included in the list of countries or *zones* free from CSF in accordance with Chapter 1.6.

Retention on the list requires annual reconfirmation of compliance with all points above and relevant provisions under point 4 of Article 1.4.6. Documented evidence should be resubmitted annually for points 1 to 5 above. Any changes in the epidemiological situation or other significant events should be notified to the OIE in accordance with Chapter 1.1.

Article 15.2.4.

Compartment free from CSF

The establishment and bilateral recognition of a *compartment* free from CSF should follow the relevant requirements of this chapter and the principles laid down in Chapters 4.4. and 4.5.

Article 15.2.5.

Country or zone infected with CSFV

A country or *zone* is considered as infected with CSFV when the requirements for acceptance as a free country or *zone* are not fulfilled.

Article 15.2.6.

Establishment of a containment zone within a country or zone previously free from CSF

In the event of *outbreaks* of CSF within a country or *zone* previously free from CSF, including within a *protection zone*, a *containment zone*, which includes all epidemiologically linked *outbreaks*, can be established, in accordance with Article 4.4.7., to minimise the impact on the rest of the country or *zone*.

For this to be achieved and for the Member Country to take full advantage of this process, the *Veterinary Authority* should submit documented evidence as soon as possible to the OIE.

The *surveillance* programme should take into consideration the involvement of *wild* and *feral* pigs and measures to avoid their dispersion.

The free status of the areas outside the *containment zone* is suspended while the *containment zone* is being established. The free status of the areas outside the *containment zone* may be reinstated, irrespective of the provisions of Article 15.2.7., once the *containment zone* has been approved by the OIE.

In the event of the recurrence of CSF in the *containment zone*, as described in point 7 of Article 4.4.7., the approval of the *containment zone* is withdrawn and the free status of the country or *zone* is suspended until the relevant requirements of Article 15.2.7. have been fulfilled.

The recovery of the CSF free status of the *containment zone* should follow the provisions of Article 15.2.7. and be achieved within 12 months of its approval.

Article 15.2.7.

Recovery of free status

Should an *outbreak* of CSF occur in a previously free country or *zone*, its status may be recovered when *surveillance* in accordance with Article 15.2.32. has been carried out with negative results and three months after:

1) the *disinfection* of the last affected *establishment*, provided that a *stamping-out policy* without *vaccination* has been implemented; or

2) the *disinfection* of the last affected *establishment* and the *slaughter* of all vaccinated *animals*, provided that a *stamping-out policy* with emergency *vaccination* and *slaughter* of vaccinated *animals* has been implemented; or

3) the *disinfection* of the last affected *establishment* provided that a *stamping-out policy* with emergency *vaccination* without the *slaughter* of vaccinated *animals* has been implemented, when there are means, validated according to Chapter 3.8.3. of the *Terrestrial Manual*, of distinguishing between vaccinated and infected pigs.

The CSF free status of the country or *zone* will be reinstated only after the submitted evidence has been accepted by the OIE.

Article 15.2.8.

Direct transfer of pigs within a country from an infected zone to a free zone for slaughter

In order not to jeopardise the status of a free *zone*, pigs should only leave the *infected zone* if transported by mechanised *vehicle* directly for *slaughter* in the nearest designated *slaughterhouse/abattoir* under the following conditions:

1) no pig has been introduced into the *establishment* of origin and no pig in the *establishment* of origin has shown clinical signs of CSF for at least 30 days prior to movement for *slaughter*;

2) the pigs were kept in the *establishment* of origin under *approved biosecurity* for at least three months prior to movement for *slaughter*;

3) CSF has not occurred within a 10-kilometre radius of the *establishment* of origin for at least three months prior to movement;

4) the pigs should be transported, under biosecure conditions under the supervision of the *Veterinary Authority* in a *vehicle*, which was subjected to *disinfection* before *loading*, directly from the *establishment* of origin to the *slaughterhouse/abattoir* without coming into contact with other pigs;

5) such a *slaughterhouse/abattoir* is under *approved biosecurity* and is not approved for the export of *fresh meat* from the time the pigs arrive from the *infected zone* until the *meat* of those pigs has left the premises and the *vehicles* and the *slaughterhouse/abattoir* have been subjected to *disinfection* immediately after use.

The pigs should be subjected to ante- and post-mortem inspections in accordance with Chapter 6.2. with favourable results and the *meat* should be treated in accordance with Article 15.2.23. The *fresh meat* from those pigs should be identified and kept separate from other pig products until treated.

Any other products obtained from the pigs, and any products coming into contact with them, should be considered contaminated and treated in accordance with Article 15.2.22. or Articles 15.2.24. to 15.2.26. to destroy any CSFV potentially present.

Article 15.2.9.

Recommendations for importation from countries, zones or compartments free from CSF

For domestic and captive wild pigs

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

1) showed no clinical sign of CSF on the day of shipment;

2) were kept since birth or for at least the past three months in a country, *zone* or *compartment* free from CSF;

3) were not vaccinated against CSF, nor are they the progeny of vaccinated sows, unless there are means, validated in accordance with Chapter 3.8.3. of the *Terrestrial Manual*, of distinguishing between vaccinated and infected pigs.

Article 15.2.10.

Recommendations for importation from countries or zones infected with CSFV

For domestic and captive wild pigs

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

1) showed no clinical sign of CSF on the day of shipment;

2) and either:

   a) were kept since birth or for the past three months in a CSF free *compartment*; or

   b) were isolated for 28 days prior to shipment in a *quarantine station*, and were subjected to a virological test and a serological test performed on a sample collected at least 21 days after entry into the *quarantine station*, with negative results;

3) were not vaccinated against CSF, nor are they the progeny of vaccinated sows, unless there are means, validated in accordance with Chapter 3.8.3. of the *Terrestrial Manual*, of distinguishing between vaccinated and infected pigs.

Article 15.2.11.

Recommendations for importation from countries, zones or compartments free from CSF

For semen of domestic and captive wild pigs

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

1) the donor males:

   a) were kept since birth or for at least three months prior to collection of the semen in a country, *zone* or *compartment* free from CSF;

   b) showed no clinical sign of CSF on the day of collection;

2) the semen was collected, processed and stored in accordance with the provisions of Chapters 4.6. and 4.7.

Article 15.2.12.

Recommendations for importation from countries or zones infected with CSFV

For semen of domestic and captive wild pigs

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

1) the donor males:
   a) were kept for at least three months prior to collection of the semen in an *establishment* in which *surveillance*, in accordance with Articles 15.2.28. to 15.2.33., demonstrated that no *case* of CSF occurred during that period;
   b) showed no clinical sign of CSF on the day of collection;
   c) met one of the following conditions:
      i) were subjected to a virological test performed on a blood sample taken on the day of collection, with negative results; or
      ii) were not vaccinated against CSF and were subjected to a serological test performed on a sample taken at least 21 days after collection, with negative results; or
      iii) have been vaccinated against CSF and were subjected to a serological test performed on a sample taken at least 21 days after collection, which demonstrated that any antibody was elicited by the vaccine;
2) the semen was collected, processed and stored in accordance with the provisions of Chapters 4.6. and 4.7.

Article 15.2.13.

Recommendations for importation from countries, zones or compartments free from CSF

For *in vivo* derived embryos of domestic pigs

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

1) the donor females:
   a) were kept since birth or for at least three months prior to collection of the embryos in a country, *zone* or *compartment* free from CSF;
   b) showed no clinical sign of CSF on the day of collection;
2) the semen used to inseminate the donors complied with the conditions in Article 15.2.11. or Article 15.2.12., as relevant;
3) the embryos were collected, processed and stored in accordance with Chapters 4.8. and 4.10., as relevant.

Article 15.2.14.

Recommendations for importation from countries or zones infected with CSFV

For *in vivo* derived embryos of domestic pigs

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

1) the donor females:
   a) were kept for at least three months prior to collection of the embryos in an *establishment* in which *surveillance*, in accordance with Articles 15.2.28. to 15.2.33., demonstrated that no *case* of CSF occurred during that period;
   b) showed no clinical sign of CSF on the day of collection;
   c) met one of the following conditions:
      i) were subjected to a virological test performed on a blood sample taken on the day of collection, with negative results; or
      ii) were not vaccinated against CSF and were subjected, with negative results, to a serological test performed at least 21 days after collection; or
      iii) were vaccinated against CSF and were subjected to a serological test performed on a sample taken at least 21 days after collection, which demonstrated that any antibody was elicited by the vaccine;
2) the semen used to inseminate the donors complied with the conditions in Article 15.2.11. or Article 15.2.12., as relevant;

3) the embryos were collected, processed and stored in accordance with Chapters 4.8. and 4.10., as relevant.

Article 15.2.15.

Recommendations for importation from countries, zones or compartments free from CSF

For fresh meat of domestic and captive wild pigs

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

1) were kept in a country, *zone* or *compartment* free from CSF, or which were imported in accordance with Article 15.2.9. or Article 15.2.10.;
2) were slaughtered in an approved *slaughterhouse/abattoir*, where they were subjected to ante- and post-mortem inspections in accordance with Chapter 6.2. with favourable results.

Article 15.2.16.

Recommendations for importation from countries or zones infected with CSFV, where an official control programme exists

For fresh meat of domestic pigs and captive wild pigs

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

1) the pigs from which the *meat* is derived complied with Article 15.2.10.;
2) the pigs were transported under the supervision of the *Veterinary Authority*, in a *vehicle* which was subjected to *disinfection* before the pigs were loaded;
3) the pigs were transported directly to the *approved slaughterhouse/abattoir* without coming into contact either during transport or at the *slaughterhouse/abattoir* with other pigs that did not fulfil the conditions of Article 15.2.10.;
4) the pigs were slaughtered in a *slaughterhouse/abattoir*:
    a) which is approved for export by the *Veterinary Authority*;
    b) in which no *case* of CSF was detected during the period between the last *disinfection* carried out before *slaughter* and the consignment for export has been dispatched from the *slaughterhouse/abattoir*;
5) the pigs were subjected to ante- and post-mortem inspections in accordance with Chapter 6.2. with favourable results;
6) appropriate precautions were taken after *slaughter* to avoid cross-contamination of the *fresh meat* with any source of CSFV.

Article 15.2.17.

Recommendations for the importation of meat products of pigs

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

1) were prepared:
    a) exclusively from *fresh meat* meeting the conditions laid down in Article 15.2.15. or Article 15.2.16.;
    b) in a processing facility that, at the time of processing:
        i) was approved for export by the *Veterinary Authority*;
        ii) processed only *meat* from pigs satisfying the conditions in Article 15.2.15. or Article 15.2.16.;

OR

2) were processed in accordance with one of the processes in Article 15.2.23. in a facility approved by the *Veterinary Authority* for export purposes, and that appropriate precautions were taken after processing to avoid cross-contamination of the product with any source of CSFV.

Article 15.2.18.

Recommendations for the importation of bristles

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

1) originated from domestic or *captive wild* pigs in a country, *zone* or *compartment* free from CSF and were processed in a facility approved by the *Veterinary Authority* for export purposes; or
2) were processed in accordance with one of the processes in Article 15.2.25. in a facility approved by the *Veterinary Authority* for export purposes, and that appropriate precautions were taken after processing to avoid cross-contamination of the product with any source of CSFV.

Article 15.2.19.

Recommendations for the importation of litter and manure from pigs

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

1) originated from domestic or *captive wild* pigs in a country, *zone* or *compartment* free from CSF and were processed in a facility approved by the *Veterinary Authority* for export purposes; or
2) were processed in accordance with one of the procedures in Article 15.2.26. in a facility approved by the *Veterinary Authority* for export purposes, and that appropriate precautions were taken after processing to avoid cross-contamination of the product with any source of CSFV.

Article 15.2.20.

Recommendations for the importation of skins and trophies from pigs

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

1) originated from domestic or *captive wild* pigs in a country, *zone* or *compartment* free from CSF and were processed in a facility approved by the *Veterinary Authority* for export purposes; or
2) were processed in accordance with one of the procedures in Article 15.2.27. in a facility approved by the *Veterinary Authority* for export purposes, and that appropriate precautions were taken after processing to avoid cross-contamination of the product with any source of CSFV.

Article 15.2.21.

Recommendations for the importation of other pig commodities

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

1) originated from domestic or *captive wild* pigs in a country, *zone* or *compartment* free from CSF and were processed in a facility approved by the *Veterinary Authority* for export purposes; or
2) were processed in a manner that has been demonstrated to inactivate CSFV in a facility approved by the *Veterinary Authority* for export purposes, and that appropriate precautions were taken after processing to avoid cross-contamination of the product with any source of CSFV.

Article 15.2.22.

Procedures for the inactivation of CSFV in swill

For the inactivation of CSFV in swill, one of the following procedures should be used:

1) the swill is maintained at a temperature of at least 90°C for at least 60 minutes, with continuous stirring; or
2) the swill is maintained under saturated steam conditions at a temperature of at least 121°C for at least 10 minutes at an absolute pressure of 2 bar; or

3) the swill is subjected to an equivalent treatment that has been demonstrated to inactivate CSFV.

Article 15.2.23.

Procedures for the inactivation of CSFV in meat

For the inactivation of CSFV in *meat*, one of the following procedures should be used:

1. Heat treatment

   Meat should be subjected to:

   a) a heat treatment for at least 30 minutes at a minimum temperature of 70°C, which should be reached throughout the *meat*;

   b) any equivalent heat treatment which has been demonstrated to inactivate CSFV in *meat*.

2. Natural fermentation and maturation

   The *meat* should be subjected to a treatment consisting of natural fermentation and maturation resulting in the following characteristics:

   a) an a_w value of not more than 0.93; or

   b) a pH value of not more than 6.0.

3. Dry cured pig meat

   Meat should be cured with salt and dried for a minimum of six months.

Article 15.2.24.

Procedures for the inactivation of CSFV in casings of pigs

For the inactivation of CSFV in *casings* of pigs, the following procedure should be used: treatment for at least 30 days with: phosphate supplemented salt, containing 86.5% NaCl, 10.7% Na_2HPO_4 and 2.8% Na_3PO_4 (weight/weight/weight), either dry, or as or saturated brine (a_w< 0.80), and at a temperature of 20°C or above.

Article 15.2.25.

Procedures for the inactivation of CSFV in bristles

For the inactivation of CSFV in bristles for industrial use, they should be boiled for at least 30 minutes.

Article 15.2.26.

Procedures for the inactivation of CSFV in litter and manure from pigs

For the inactivation of CSFV in litter and manure from pigs, one of the following procedures should be used:

1) moist heat treatment for at least one hour at a minimum temperature of 55°C, which should be reached throughout the product;

2) moist heat treatment for at least 30 minutes at a minimum temperature of 70°C, which should be reached throughout the product;

3) any equivalent treatment that has been demonstrated to inactivate CSFV.

Article 15.2.27.

Procedures for the inactivation of CSFV in skins and trophies

For the inactivation of CSFV in skins and trophies, one of the following procedures should be used:

1) boiling in water for an appropriate time, to ensure that any matter other than bone, tusks or teeth is removed;
2) gamma irradiation at a dose of at least 20 kiloGray at room temperature (20°C or higher);
3) soaking, with agitation, in a 4% (w/v) solution of washing soda (sodium carbonate [Na_2CO_3]) maintained at pH 11.5 or above for at least 48 hours;
4) soaking, with agitation, in a formic acid solution (100 kg salt [NaCl] and 12 kg formic acid per 1,000 litres water) maintained below pH 3.0 for at least 48 hours,wetting and dressing agents may be added to the solution;
5) in the case of raw hides, salting for at least 28 days with sea salt containing 2% washing soda (sodium carbonate [Na_2CO_3]).

Article 15.2.28.

Introduction to surveillance

Articles 15.2.28. to 15.2.33. define the principles and provide guidance on the *surveillance* for CSF, complementary to Chapter 1.4., applicable to Member Countries seeking the OIE recognition of free status. This may be for the entire country or a *zone*. Guidance is also provided for Member Countries seeking recovery of free status for the entire country or for a *zone* following an *outbreak* and for the maintenance of free status.

The impact and epidemiology of CSF may vary in different regions of the world. The *surveillance* strategies employed for demonstrating freedom from CSF at an acceptable level of confidence should be adapted to the local situation. For example, the approach should be tailored in order to prove freedom from CSF for a country or *zone* where *wild* or *feral* pigs provide a potential reservoir of *infection*, or where CSF is present in neighbouring countries. The method should examine the epidemiology of CSF in the region concerned and adapt to the specific risk factors encountered. This should include provision of scientifically based supporting data. There is, therefore, latitude available to Member Countries to provide a well-reasoned argument to prove that absence of *infection* with CSFV is assured at an acceptable level of confidence.

Surveillance for CSF should be in the form of a continuing programme designed to establish that susceptible populations in a country, *zone* or *compartment* are free from *infection* with CSFV or to detect the introduction of CSFV into a population already defined as free. Consideration should be given to the specific characteristics of CSF epidemiology which include:

– the role of swill feeding, the impact of different production systems and the role of *wild* and *feral* pigs in disease spread;
– the role of semen in transmission of the virus;
– the lack of pathognomonic gross lesions and clinical signs;
– the frequency of clinically inapparent *infections*;
– the occurrence of persistent and chronic *infections*;
– the variability in genotype, antigens, and virulence exhibited by different strains of CSFV.

Article 15.2.29.

General conditions and methods for surveillance

1) A *surveillance* system in accordance with Chapter 1.4. and under the responsibility of the *Veterinary Authority* should address the following aspects:
    a) formal and ongoing system for detecting and investigating *outbreaks* of disease or CSFV *infection* should be in place;
    b) a procedure should be in place for the rapid collection and transport of samples from suspected *cases* to a *laboratory*;
    c) appropriate laboratory testing capability for CSF diagnosis;
    d) a system for recording, managing and analysing diagnostic and *surveillance* data should be in place.

2) The CSF *surveillance* programme should:

a) include an *early warning system* throughout the production, marketing and processing chain for reporting suspected *cases*. Diagnosticians and those with regular contact with pigs should report promptly any suspicion of CSF to the *Veterinary Authority*. The reporting system under the *Veterinary Authority* should be supported directly or indirectly (e.g. through private *veterinarians* or *veterinary paraprofessionals*) by information programmes. Given that many strains of CSFV do not induce pathognomonic gross lesions or clinical signs, *cases* in which CSF cannot be ruled out should be immediately investigated. Other important diseases such as African swine fever should also be considered in any differential diagnosis.

As part of the contingency plan, personnel responsible for *surveillance* should be able to call for assistance from a team with expertise in CSF diagnosis, epidemiological evaluation, and control;

b) implement, when relevant, regular and frequent clinical inspections and laboratory testing of high-risk groups (for example, where swill feeding is practised), or those neighbouring a country or *zone* infected with CSFV (for example, bordering areas where infected *wild* and *feral* pigs are present).

An effective *surveillance* system will periodically identify suspected *cases* that require follow-up and investigation to confirm or exclude *infection* with CSFV. The rate at which such suspected *cases* are likely to occur will differ among epidemiological situations and cannot, therefore, be reliably predicted. Applications for recognition of free status should, as a consequence, provide details in accordance with Chapter 1.9. of the occurrence of suspected *cases* and how they were investigated and dealt with.

Member Countries should review their *surveillance* strategies whenever an increase in the likelihood of incursion of CSFV is identified. Such changes include but are not limited to:

a) an emergence or an increase in the prevalence of CSF in countries or *zones* from which live pigs or products are imported;

b) an increase in the prevalence of CSF in *wild* or *feral* pigs in the country or *zone*;

c) an increase in the prevalence of CSF in neighbouring countries or *zones*;

d) increased entry of, or exposure to, infected *wild* or *feral* pig populations from neighbouring countries or *zones*.

Article 15.2.30.

Surveillance strategies

1. Introduction

The population covered by *surveillance* aimed at detecting disease and *infection* should include the domestic and *captive wild* pig populations and *wild* and *feral* pig populations within the country or *zone* to be recognised as free from CSF.

The strategy employed to estimate the prevalence or demonstrate the absence of *infection* with CSFV may be based on clinical investigation or on randomised or targeted sampling at an acceptable level of statistical confidence. If an increased likelihood of *infection* in particular localities or subpopulations can be identified, targeted sampling may be an appropriate strategy. This may include:

a) swill fed farms;

b) pigs reared outdoors;

c) specific high-risk *wild* and *feral* pig subpopulations and their proximity.

Risk factors may include, among others, temporal and spatial distribution of past *outbreaks*, pig movements and demographics, and types of production system.

Serology in unvaccinated populations is often the most effective and efficient *surveillance* methodology, for reasons of cost, extended duration of antibody levels, and the existence of clinically inapparent *infections*. In some circumstances, such as differential diagnosis of other diseases, clinical and virological *surveillance* may also have value.

The *surveillance* strategy chosen should be justified as adequate to detect the presence of *infection* with CSFV in accordance with Chapter 1.4. and the epidemiological situation. Cumulative survey results in combination with the results of routine *surveillance*, over time, will increase the level of confidence in the *surveillance* strategy.

When applying randomised sampling, either at the level of the entire population or within targeted sub-populations, the design of the sampling strategy should incorporate epidemiologically appropriate design prevalences for the selected populations. The sample size selected for testing should be large enough to detect *infection* if it were to occur at a predefined minimum rate. The choice of design prevalence and confidence level should be justified

based on the objectives of *surveillance* and the epidemiological situation, in accordance with Chapter 1.4. Selection of the design prevalence in particular, needs to be based on the prevailing or historical epidemiological situation.

Irrespective of the approach selected, the sensitivity and specificity of the diagnostic tests should be considered in the survey design, the sample size determination, and the interpretation of the results obtained.

The design of the *surveillance* system should anticipate the occurrence of false positive reactions. This is especially true of the serological diagnosis of *infection* with CSFV because of the recognised cross-reactivity with ruminant pestiviruses, among other factors mentioned in point 4. There should be an effective procedure for following up positives to determine with a high level of confidence, whether or not they are indicative of *infection* with CSFV. This should involve confirmatory and differential tests for pestiviruses, as well as further investigations concerning the original sampling unit, as well as *animals* which may be epidemiologically linked.

2. Clinical surveillance

Clinical *surveillance* continues to be the cornerstone of detection of *infection* with CSFV. However, owing to the low virulence of some CSFV strains and the spread of diseases such as African swine fever, and those associated with porcine circovirus 2 *infection*, clinical *surveillance* should be supplemented, as appropriate, by serological and virological *surveillance*.

Clinical signs and pathological findings are useful for early detection; in particular, any situations in which clinical signs or lesions suggestive of *infection* with CSFV are accompanied by high morbidity or mortality should be investigated without delay. In CSFV *infections* involving low virulence strains, high mortality may only be seen in young *animals* and adults may not present clinical signs.

Wild and *feral* pigs rarely present the opportunity for clinical observation, but should form part of any *surveillance* scheme and should, ideally, be monitored for virus as well as antibodies.

3. Virological surveillance

Virological *surveillance* should be conducted:

a) to monitor at risk populations;
b) to investigate clinically suspected *cases*;
c) to follow up positive serological results;
d) to investigate increased mortality.

Molecular detection methods can be applied to large-scale screening for the presence of virus. If targeted at high-risk groups, they provide an opportunity for early detection that can considerably reduce the subsequent spread of disease. Epidemiological understanding of the pathways of spread of CSF can be greatly enhanced by molecular analyses of viruses in endemic areas and those involved in *outbreaks* in areas previously free from CSF. Therefore, CSFV isolates should be sent to an OIE Reference Laboratory for further characterisation.

4. Serological surveillance

Serological *surveillance* is aimed at detecting antibodies against CSFV. Positive CSFV antibody test results can have five possible causes:

a) natural *infection* with CSFV;
b) *vaccination* against CSF;
c) maternal antibodies;
d) cross-reactions with other pestiviruses;
e) non-specific reactors.

The *infection* of pigs with other pestiviruses may complicate a *surveillance* strategy based on serology. Antibodies to bovine viral diarrhoea viruses (BVDV) and Border disease virus (BDV) can give positive results in serological tests for CSF, due to common antigens. Such samples will require differential tests to confirm their identity. One route by which ruminant pestiviruses can infect pigs is the use of vaccines contaminated with BVDV.

Infection with CSFV may lead to persistently infected, seronegative young animals, which continuously shed virus. CSFV *infection* may also lead to chronically infected pigs that may have undetectable or fluctuating antibody levels.

Even though serological methods will not detect these animals, such animals are likely to be a minority in a *herd* and would not confound a diagnosis based on serology as part of a *herd* investigation.

It may be possible to use, for *surveillance* of CSF sera collected for other survey purposes. However, the principles of survey design and statistical validity should not be compromised.

In countries or *zones* where *vaccination* has been recently discontinued, targeted serosurveillance of young unvaccinated animals can indicate the presence of *infection*. Maternal antibodies are usually found at up to 8-10 weeks of age but may be occasionally last up to 4.5 months and can interfere with the interpretation of serological results.

Marker vaccines and accompanying DIVA tests which fulfil the requirements of the *Terrestrial Manual* may allow discrimination between vaccinal antibody and that induced by natural *infection*. The serosurveillance results using DIVA techniques may be interpreted either at animal or at *herd* level.

Article 15.2.31.

Additional surveillance for Member Countries applying for OIE recognition of free status

The strategy and design of the *surveillance* programme will depend on the prevailing epidemiological circumstances in and around the country or *zone* and should be planned and implemented according to the conditions for status recognition described in Article 15.2.3. and methods described elsewhere in this chapter. The objective is to demonstrate the absence of *infection* with CSFV in domestic and *captive wild* pigs during the last 12 months and to assess the *infection* status in *wild* and *feral* pig populations as described in Article 15.2.33.

Article 15.2.32.

Additional surveillance for recovery of free status

In addition to the general conditions described in this chapter, a Member Country seeking recovery of free status of a country or *zone*, including a *containment zone*, should show evidence of an active *surveillance* programme to demonstrate absence of *infection* with CSFV.

Populations under this *surveillance* programme should include:

1) *establishments* in the proximity of the *outbreaks*;
2) *establishments* epidemiologically linked to the *outbreaks*;
3) animals moved from or used to repopulate affected *establishments*;
4) any *establishments* where contiguous culling has been carried out;
5) *wild* and *feral* pig populations in the area of the *outbreaks*.

The domestic and *captive wild* pig populations should undergo regular clinical, pathological, virological and serological examinations, planned and implemented according to the general conditions and methods described in this chapter. Epidemiological evidence of the *infection* status in *wild* and *feral* pigs should be compiled. To regain free status, the *surveillance* approach should provide at least the same level of confidence as the original application for recognition of freedom.

Article 15.2.33.

Surveillance for CSFV in wild and feral pigs

1) The objective of a *surveillance* programme is either to demonstrate that *infection* with CSFV is not present in *wild* and *feral* pigs or, if it is known to be present, to estimate the distribution and prevalence of the *infection*. While the same principles apply, *surveillance* in *wild* and *feral* pigs presents additional challenges including:
   a) determination of the distribution, size and movement patterns associated with the *wild* and *feral* pig population;
   b) relevance and practicality of assessing the possible presence of *infection* with CSFV within the population;
   c) determination of the practicability of establishing a *zone* taking into account the degree of interaction with domestic and *captive wild* pigs within the proposed *zone*.

   The geographical distribution and estimated size of *wild* and *feral* pig populations need to be assessed as a prerequisite for designing a monitoring system. Sources of information to aid in the design of a monitoring system may include governmental and non-governmental *wildlife* organisations such as hunting associations.
2) For implementation of the *surveillance* programme, the limits of the area over which *wild* and *feral* pigs range should be defined. *Subpopulations* of *wild* and *feral* pigs may be separated from each other by natural or artificial barriers.
3) The *surveillance* programme should involve serological and virological testing, including pigs hunted or found dead, road kills, and pigs showing abnormal behaviour or exhibiting gross lesions during dressing.
4) There may be situations in which a more targeted *surveillance* programme can provide additional assurance. The criteria to define high risk areas for targeted *surveillance* include:
   a) areas with past history of CSF;
   b) subregions with large populations of *wild* and *feral* pigs;
   c) regions bordering countries or *zones* infected with CSFV;
   d) interface between *wild* and *feral* pig populations, and domestic and *captive wild* pig populations;
   e) areas with farms with free-ranging and outdoor pigs;
   f) *establishments* that feed swill;
   g) areas with a high level of hunting activity, where animal dispersion and feeding as well as inappropriate disposal of waste can occur;
   h) other *risk* areas determined by the *Veterinary Authority* such as ports, airports, garbage dumps and picnic and camping areas.

NB: FIRST ADOPTED IN 1968; MOST RECENT UPDATE ADOPTED IN 2021.