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VS Guidance 7407.2

Procedures for Handling Swine Herds with Brucellosis or Pseudorabies

1. Purpose and Background

Swine pseudorabies virus (PRV) and swine brucellosis (SB) are serious swine diseases. Their spread through the U.S. commercial herd (all swine that move in commerce) -- and particularly their spread through commercial production swine-- could significantly harm the U.S. swine industry. Federal, State, Tribal, and industry partners have successfully eliminated these diseases from larger commercial production swine herds, but the existence of these diseases in feral swine and, to a lesser extent, smaller scale pasture-raised production and backyard swine, presents a continued risk of disease spread throughout the U.S. commercial swine herd.

PRV is a viral disease (herpes virus) causing neurological clinical signs, such as tremors, paddling, nystagmus (involuntary eye movement), and convulsions in piglets and reproductive problems and respiratory disease in older pigs. There are no known public health risks due to PRV. SB is a bacterial disease, causing abortions, sterility, orchitis (inflammation of the testicles), lameness, metritis (inflammation of the uterus), and possibly abscesses in swine. It has public health implications.

This document provides guidance on the procedures and responsibilities associated with the diagnosis, tracing, indemnification, and handling of herds of swine with PRV and SB as set out and supported by the authority and references listed below.

This guidance document represents the Agency's position on this topic and is intended solely as guidance. It does not have the force and effect of law, does not create or confer any rights for or on any person, and does not bind the U.S. Department of Agriculture (USDA) or the public. Language suggesting that this guidance is mandatory (e.g., "shall," "must," "required", or "requirement") should not be construed as binding unless the terms quote from a statutory or regulatory requirement. The information this document contains may be made available to the public. While this document provides guidance for users outside VS, VS employees may not deviate from the directions provided herein without appropriate justification and supervisory concurrence.

2. Document Status

A. Review date: 05/31/2023.

B. This document replaces Veterinary Services Guidance 7407.1.

VS Guidance 7407.2

3. Reason for Reissuance

VS is updating this guidance to reflect changes in procedure and structure.

4. Authority and References

A. Authorities (*Code of Federal Regulations* (CFR)):

7 CFR 371.4
9 CFR part 51
9 CFR part 52
9 CFR 71.19
9 CFR 78.1
9 CFR part 85

B. References:

- Swine Brucellosis Control/Eradication Uniform Methods and Rules (APHIS 91-51- 042)
- Pseudorabies Eradication Program Standards (APHIS 91-55-071)
- VS Memorandum 551.12, "Submission of Specimens from Suspected Brucellosis Cases to National Veterinary Services Laboratories for Bacteriologic Culturing"

5. Audience

VS employees, other Federal and State agencies, and members of the public.

6. Guidance

A. Surveillance

Surveillance objectives for PRV and SB include rapid detection of new infection, demonstrating proof of freedom, and monitoring international or domestic sources of disease.

B. Laboratory Testing

1) Pseudorabies

a. Only laboratories approved by the Animal and Plant Health Inspection Service may test for PRV per title 9, *Code of Federal Regulations* (9 CFR) 85.1. PRV surveillance testing may occur in specified National Animal Health Laboratory Network laboratories using an official PRV screening test. If the official screening test is non-negative, laboratory personnel may use the glycoprotein

I (gpI) enzyme-linked immunosorbent assay (ELISA) as a follow-up test, if the laboratory is approved to conduct the gpI ELISA. Laboratories seeking more information regarding PRV testing should contact NVSL. If laboratories are using unofficial screening tests such as real-time polymerase chain reaction (PCR) for PRV and obtain any non-negative result, they must forward those samples to NVSL for confirmatory testing. The samples cannot be further tested to confirm herd status.

b. Laboratories must forward all samples with non-negative results, regardless of testing reason or test performed, to NVSL for confirmatory testing. The only exceptions are samples testing non-negative on an official PRV screening test which have subsequently tested negative on the gpI ELISA test. Do not release reports on non-negative samples as determined by APHIS-approved laboratory testing without final testing results from NVSL.

    1. The VS 10-4 submission forms for samples forwarded to NVSL for confirmatory testing must include the PRV test results for the forwarded samples and, if available, the national premises identification number of the herd of origin. If this premises ID is not available, record the operation name and location on the 10-4, or attach a copy of the submission form originally submitted to the approved lab.

    2. VS encourages approved laboratories to provide lab reports containing any non-negative PRV results, including screening test non-negatives that tested negative on the gpI ELISA, to State animal health officials in the animal location State.

c. The State or VS District epidemiologist determines herd classification, disposition, and eligibility for indemnity based on NVSL laboratory results combined with the results of an epidemiological investigation and assessment. The national swine staff reviews the determination.

2) Swine Brucellosis

a. Only APHIS-approved laboratories can conduct SB testing. Laboratory personnel should screen swine samples using the buffered acidified plate antigen (BAPA) test. If the BAPA test is non-negative, laboratory personnel should use the fluorescence polarization assay (FPA), if the laboratory has it, as a secondary test. The regulations at 9 CFR 78.1 list SB diagnostic tests and associated cutoff values. Samples testing negative on FPA are classified as negative and do not require further testing. Samples testing non-negative on FPA must be forwarded to NVSL for confirmatory testing. If the APHIS-approved laboratory cannot perform FPA, the laboratory must forward samples testing non-negative on BAPA to NVSL for further testing.

b. Do not release final reports on non-negative samples as determined by APHIS-approved laboratory testing without final testing results from NVSL. Laboratories seeking more information on SB testing should contact NVSL.

1. The VS 10-4 submission forms for samples forwarded to NVSL for confirmatory testing will include, if available, the national premises ID of the herd of origin. If this premises ID is not available, record the operation name and location on the 10-4, or attach a copy of the submission form originally submitted to the approved lab to the VS 10-4.

2. VS encourages approved laboratories to provide lab reports containing any non-negative FPA results to State animal health officials in the animal location State.

c. On occasion, VS purchases positive animals for diagnostic purposes to confirm the absence or presence of disease. Animal health personnel must collect tissues submitted for SB diagnosis in accordance with VS Memorandum 551.12. Please contact NVSL to coordinate tissue collection and shipment protocols.

C. Notification of Non-Negative Results

Upon NVSL reporting of concordant confirmatory tests for SB and/or PRV, national swine staff creates a Laboratory Messaging System (LMS) Accession Record in the Emergency Management Response System (EMRS) and notifies the epidemiologist in the State of origin (where the herd, livestock market, or slaughter plant is located).

1) The epidemiologist assigned to the case should open the LMS Accession immediately upon notification and complete the following tasks to move it to "Verified" status within two (2) weeks when practical:

a. Verify the herd of origin at the time of sample collection and create EMRS premises and business records if needed, and an investigation record.

b. Link the premises, business, and investigation records to the LMS Accession record.

c. Enter an overall interpretation and enter the verified date when completing the activities listed above.

2) The State or VS District epidemiologist determines herd classification, disposition, and eligibility for indemnity based on NVSL laboratory results combined with the results of an epidemiological investigation and assessment. The national swine staff reviews the determination.

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D. Epidemiological Investigations and Classifying Herds

Any non-negative test based on preliminary diagnostic results from an APHIS-approved laboratory and confirmed by NVSL initiates a VS or State epidemiological investigation. The State or VS District epidemiologist should not determine herd status solely on individual animal serological tests for PRV and SB. Herd status should be determined as follows:

1) Swine Brucellosis

   a. If VS or State animal health personnel suspect a herd is infected with SB, the herd should have a whole herd test, or a partial herd test of each epidemiologically unique group of swine within the herd, to determine the presence of disease.

   b. An epidemiologically unique group of swine is based on age, purpose (e.g., breeders, feeders), associations, and comingling.

   c. If a whole herd test is not practical, swine staff should be consulted to determine the appropriate sample size for testing. For sample size calculations, see the Animal Sample Size Calculator.

   d. Tissues collected for diagnostic purchases can be used to confirm the presence or absence of SB in a herd through bacteriological culture or PCR testing. Submitters may also culture tissues collected at slaughter as samples for further testing. Consult with swine staff when determining whether diagnostic purchase is appropriate.

2) Pseudorabies

   a. If VS or State animal health personnel suspect PRV infection in a herd, the herd should have serological samples collected from all epidemiologically unique groups of swine associated with the initial non-negative sample.

   b. An epidemiologically unique group of swine is based on age, purpose (e.g., breeders, feeders), associations, and comingling.

      Epidemiologically unique groups should have blood collected at a sample size such that if the disease exists at a ten (10) percent prevalence rate within the herd or group, there would be a ninety-five (95) percent probability of

detecting the infection (95/10 rate). For sample size calculations, see the Animal Sample Size Calculator.

3) The appropriate VS and/or State epidemiologist, in consultation with the Area Veterinarian in Charge (AVIC) and State Veterinarian, may classify herds as positive or negative for PRV and/or SB. The epidemiologist should use the clinical presentation, herd history (e.g., exposure to feral swine) and diagnostic test results, which may or may not include a diagnostic purchase (SB only), to determine official herd status.

4) In some cases, herds classified as positive may need to be tested to determine the estimated within-herd prevalence level. Decisions on appropriate disease mitigation activities, including indemnification options, may consider disease prevalence levels.

5) Following an initial positive herd classification, the epidemiologist should perform trace-back and -forward investigations and necessary testing. Document traces in EMRS.

6) All swine in a positive classified herd must have permanent, official, individual animal identification, as defined by 9 CFR 71.19, applied at the time VS or State animal health personnel establish official herd inventory.

E. Notification of Infected Herd

1) When a herd has been determined to be infected with PRV or SB, the assigned epidemiologist obtains and provides the following information to national swine staff:

   a. Herd inventory, including the number, classes, and approximate weights of animals.

   b. Reason for testing that identified the infected animal or animals.

   c. Estimated within-herd prevalence of disease.

   d. Information regarding whether the herd is under State-issued quarantine, including date, if applicable.

   e. Location of the herd (county and State).

   f. Disease control plan, if known or applicable.

   g. Dates of NVSL confirmation and Accession Number.

   h. Status of trace in and trace out investigations and accompanying information.

i. Production type (total confinement commercial, transitional, pasture, backyard).

j. History of possible exposure to feral swine.

k. Presence of commercial swine herds within a five- (5-)mile or other radius as recommended by swine staff.

l. Other possible risk factors and/or applicable information (e.g., recent movements in/out of herd).

2) VS Field Operations and national swine program staff collaborate to draft a memo based on the information provided by the assigned epidemiologist to notify:

a. Deputy Administrator and others in VS.

b. Industry stakeholders.

3) National swine program staff informs NVSL of any positive-classified herd before disposal so that NVSL can collect blood and tissue for proficiency testing or research purposes.

4) When VS or State animal health personnel send animals to slaughter as part of the control and eradication measures for SB, they should establish the availability of a Food Safety and Inspection Service (FSIS) slaughter facility and its willingness to take the animals. A completed VS Form 1-27 must accompany animals shipped under these conditions. Complete communication to FSIS, where practical, five (5) calendar days (minimum of three (3) calendar days) before sending animals to the slaughter facility to allow plant and FSIS personnel to acquire necessary personal protective equipment.

F. Quarantine of Suspect, Exposed, or Infected Premises

State animal health officials (SAHOs) are responsible for quarantining or placing a hold order on premises where swine are infected, exposed, or suspected of infection with PRV or SB.

G. Disease Control, Mitigation, and Elimination Methods

1) Disease control methods should consider:

a. The disease.

b. The disease prevalence.

c. Herd use.

d. Herd type.

e. Facilities.

f. Risk of disease spread to neighboring herds.

g. Risk of disease exposure to commercial sectors of the swine industry.

h. The premises-specific herd management practices.

i. Risk of disease reintroduction after disease removal (such as from feral swine).

2) The herd owner, SAHO, and VS should discuss methods for controlling disease on premises. Methods for controlling SB and PRV may include:

a. Removing the whole herd to slaughter.

b. Depopulating the whole herd.

c. Permanent herd quarantine (may not be practical).

d. A test-and-remove plan for swine in brucellosis-positive classified herds:

1. Test and remove test-positive animals by euthanasia.

2. Test and remove test-positive animals to slaughter.

3. Three negative complete herd tests (CHT) are required for quarantine release with the first conducted at least thirty (30) days following removal of all SB reactors, the second CHT sixty (60) to ninety (90) days after the first negative CHT, and a third CHT required sixty (60) to (90) days following the second negative CHT.

4. VS requires all swine in infected herds to remain on the premises under State quarantine until officials release the herd from its test and remove plan.

e. A test-and-remove plan for animals in PRV-positive classified herds:

1. All swine in infected herds must be confined to the premises under State quarantine until the herd has been released from its test-and-remove plan and meets one of the following conditions, following removal of all swine positive to an official PRV serological test:

i. All remaining swine, except suckling pigs, undergo an official PRV serological test with negative results thirty (30) days or more after removal of all positive swine; or

ii. All breeding swine that remain in the herd and an official random sample (95/10) of grower-finishing swine over two (2) months of age undergo an official PRV serological test with negative results thirty (30) days or more after removal of all positive swine. A second test of grower-finishing swine at least 30 days after the first is required; or

iii. Nurseries or finishing herds without any breeding swine and where no pigs are received from quarantined premises must undergo:

- A negative official random sample test (95/10), conducted at least thirty (30) days following removal of all positive swine with cleaning and disinfection of the premises and seven (7) days downtime, and determined by the investigating epidemiologist to reveal no infection; or
- A negative official random sample test (95/5), conducted at least thirty (30) days following a negative official random sample test (95/10), and determined by the investigating epidemiologist to reveal no infection.

2. Between sixty (60) and ninety (90) days following quarantine release, State or VS personnel must conduct an official random sample test (95/10).

3. Animal destruction and disposal methods must be consistent with local, State, and Federal laws.

H. Indemnity

Prior to seeking Federal indemnity funding, the AVIC, or his or her designee, should contact the SAHO to determine if there are State indemnity funds available. The AVIC, or his or her designee, should consider a State-Federal cost share, when possible, to extend the availability of limited Federal indemnity funds. If there are no State funds available, VS field staff should communicate with national swine staff to determine if funds are available for Federal indemnity. When depopulating a herd, VS or State personnel should try to identify a slaughter option that allows for salvage.

1) Pseudorabies

a. A VS employee or State representative must appraise animals (9 CFR 52.3).

b. The VS employee or State representative appraises swine based on the fair market value as determined by the meat or breeding value of the animal to determine the indemnity amount. The following methods determine the fair market value:

1. Fair market value can be determined by the swine commodity valuation tool.

2. The VS employee or State representative can use local information to determine what a specific type of hog would sell for on the open market (if different from the valuation tool). For example, locations such as Hawaii might have higher market values for some types of swine, and feral swine might not sell for the same amount as in the valuation tool.

c. The indemnity amount can include up to one hundred (100) percent of the expenses of the purchase, destruction, and disposition of swine destroyed from herds known to be infected with PRV (9 CFR 52.2).

2) Swine Brucellosis

a. Indemnity is allowed for breeding swine (sows and boars) but limited to the following:

1. Indemnification for a herd of breeding swine means removing only the breeding swine, while feeding out or keeping other swine on the premises under quarantine. When a whole herd of breeding swine are to be indemnified, payment rates are limited to fair market value not to exceed $150 per head for registered breeding swine and $65 for all other breeding swine.

2. When VS allows whole-herd indemnification (including breeding animals and nursery animals), VS pays indemnity at fair market values as described above.

b. Indemnity for barrows or gilts maintained for feeding purposes is not allowed (per 9 CFR 51.9).

c. VS does not compensate owners for transporting animals with brucellosis for depopulation or marketing. However, VS can directly compensate a contracted hauler.

3) Procedures for Indemnity Request and Approval

a. The AVIC submits a swine programs indemnity request to swine staff through the VS SharePoint indemnity site. The AVIC also submits supporting documentation, including the indemnity valuation tool output, test charts, and a draft herd management plan, if required. If the appraisal is based on local sales, an appraisal report and supporting sales documentation are required.

b. Swine staff reviews the request and if approved, obtains a budget code and returns the approved swine programs indemnity request, with the assigned budget code, to the AVIC.

c. The VS 1-23 (Appraisal and Indemnity Claim Form) and herd management plan are completed and signed by the producer prior to destruction or slaughter of the indemnified animals.

d. VS District administrative personnel process the indemnity request.

e. The epidemiologist attaches the final VS 1-23 form in EMRS and sends copies of the completed VS 1-23 and other documents to Swine staff.

f. Swine staff updates the SharePoint record with actual indemnity and other costs.

I. Cleaning and Disinfection

The owner must perform cleaning and disinfection (C&D) according to the standards determined by the SAHO and VS. These standards depend on the geographic location of the premises, ambient temperatures, and other seasonal and environmental factors.

1) C&D requirements should be detailed in the herd management plan and include the following, as appropriate:

   a. Personnel must remove manure and organic debris from pens that housed infected animals.

   b. Personnel must remove aborted fetuses and fetal tissues/placenta promptly and safely, and must dispose of the items by burial, burning, composting, or other methods approved by the SAHO.

   c. Pens and other structures must be cleaned and disinfected where possible.

   d. For outdoor facilities without impervious surfaces, sunlight, high ambient temperatures, and fallow time may be sufficient to prevent subsequent disease spread once personnel remove all diseased animals.

2) The premises must maintain a fallow period of at least thirty (30) days before any reintroduction of swine. The fallow period begins with the removal of all swine and approval of the C&D plan by the SAHO and VS and incorporates the timeframe necessary to complete C&D operations.

3) The owner should complete cleaning activities within fifteen (15) days from the removal of reactor animals, but VS may extend this period for up to thirty (30) days.

4) Only in situations where unforeseen circumstances prevent disinfections of the premises, conveyances, etc. should cleaning activities take longer than thirty (30) days. The SAHO and VS must approve the longer period.

J. Herd Management Plans

Herd management plans document activities required to prevent disease reintroduction or spread. The epidemiologist responsible for conducting the investigation, in consultation with the SAHO, AVIC, and national swine staff, develops a herd management plan to best control disease and limit producer hardship.

Herd management plans must:

1) Be agreed to and signed by the producer, the SAHO, and VS before initiating depopulation or salvage activities or processing a VS 1-23 form.

2) Include language describing:

   a. Biosecurity plans addressing issues that decrease disease risks, such as facilities necessary to prevent exposure to feral swine (e.g., double fencing).

   b. Restocking methods, which describe methods for repopulation (if applicable) with test-negative swine.

   c. C&D procedures, requirements for a fallow period, and other conditions necessary for quarantine release.

   d. Identification requirements for all swine, including replacements, on the premises.

   e. Testing procedures to verify continued negative status following restocking.

3) Indicate that if the owner does not follow the terms of the herd plan, indemnification may not be available for subsequent infections.

4) State or VS personnel may modify herd plans with appropriate documentation and approval.

K. Epidemiology Reports

1) The VS or State epidemiologist must submit a completed epidemiological report to his or her AVIC and national swine staff when VS expends indemnity funds. The VS or State epidemiologist must complete one herd-specific report for each infected herd.

2) The epidemiological investigation report for the infected herd, uploaded into EMRS, is acceptable documentation. Alternative forms or State-derived epidemiology reports are also acceptable. Regardless of the form, the VS or State epidemiologist must upload all forms into EMRS. At a minimum, the epidemiology report should contain:

   a. Name, premises number, physical address, GPS coordinates, mailing address, telephone number, and other contact information of the premises owner.

   b. Name, mailing address, telephone number and other contact information of the animals' owner, if different from the premises owner. Add the owner's premises number, if available.

   c. Herd testing summary, which includes the name of the laboratory, Accession Number, dates of sample collection and test completion, types of tests run, and official test results by individual animal.

   d. A census of the swine on the premises, with permanent, official individual identification, and categorized by age/production class.

   e. Clinical signs in the herd, if any, including date of onset.

   f. Information on movements into and out of the herd as well as any dangerous contacts.

   g. Survey of the number of commercial swine premises within a five (5) mile radius, or other radius as recommended by swine staff, of the infected premises.

   i. Description of facility type and environment in which the swine are raised (e.g., outdoor, etc.).

   j. Documentation of feral swine observations in the area and any history of possible feral swine exposure.

   k. Summary discussion, based on the epidemiological investigation, on possible/likely sources and routes of herd infection.

L. Emergency Management Response System (EMRS)

   1) PRV and SB activity is recorded under the Swine PRV/BR Tracing incident. If an outbreak requires a separate EMRS incident, national swine program staff contact the EMRS National Coordinator, or his or her designee, to request the setup of a new incident in EMRS.

2) When NVSL confirms any non-negative results, national swine staff opens an LMS Accession and notifies an epidemiologist from the State of origin. The epidemiologist verifies the LMS Accession as previously described.

3) EMRS is the official system of record for tracking and documenting PRV- and SB-infected herds. Include the following items in EMRS and link them to the infected premises investigation record when appropriate:

   a. Premises Diagnosis Status

   b. Premises Quarantine Status

   c. Laboratory/diagnostic results.

   d. Epidemiology report.

   e. Signed herd management plan.

   f. Trace information.

   g. Appraisal Record with attached signed VS 1-23.

   h. State, Federal, and owner correspondence.

4) Prompt EMRS documentation of the investigation is an important factor in case and disease management.

5) Information and detailed standard operating procedures on how to use EMRS can be found by accessing EMRS and selecting: **EMRS2 Home** >> **Knowledge Management** >> **Training** >> Training Materials >> **ALL Current Training Materials** >> PRV/SBR Non-Negatives.

7. Inquiries

If you have questions please contact the Strategy & Policy Swine Health Program via e-mail at VS.SP.ASEP.Swine@usda.gov .