

Recommendations from the Senecavirus A Working Group To Reduce Disruptions to Commerce in the Pork Industry

October 12, 2017

As a response to the recent increase in foreign animal disease (FAD) investigations of swine at slaughter plants, the National Assembly of State Animal Health Officials (NASAHO) convened a 90-day Senecavirus A Working Group (WG) to address all facets of the Senecavirus issue, including current science, review of the US Department of Agriculture (USDA) guidance documents, use of the National Animal Health Laboratory Network (NAHLN) laboratories in FAD investigations, assessment of the swine marketing structure to determine ways to improve traceability and biosecurity, parallels with other vesicular disease, etc. (Appendix A). At the completion of the 90-day timeframe, this final report was created listing the recommendations of the working group.

This document offers a starting point to address the investigation of foreign animal diseases—SVA specifically—in a modern era where investigatory methods have not changed to meet the needs of commerce in a fast-paced and efficient pork industry. What used to be unusual (FAD investigations) has become routine, resulting in a greater drain on limited resources (staffing, laboratory, financial). The greatest challenge exists where the need to protect the industry from catastrophic disease events intersects with commerce.

Background

Senecavirus A (SVA), also known as Seneca Valley Virus (SVV), has been present in the United States for more than 10 years. Senecavirus A in swine is not reportable; trade and commerce are not restricted, and the virus has little to no impact on swine production. Prior to 2015, very little SVA research was conducted in swine.

In the last few years, clinical cases of SVA in swine have significantly increased, drawing industry and regulatory attention to the virus.

Research Investments: In 2015, the Swine Health Information Center (SHIC) and USDA's Agricultural Research Service (ARS) mobilized resources to address SVA. As of August 2017, SHIC and USDA ARS have spent \$1,085,480 and \$1,420,000, respectively, on SVA-related research.

SVA-related research funded by SHIC is addressing disease prevalence, epidemiology, duration of viral shedding, disease transmission, evaluation of disinfectants, reagent development and diagnostics, the use of oral fluids for surveillance in market lairage, detection and differentiation of SVA from foot-and-mouth disease virus, validation of methods to monitor pathogens in feed mills, assessing market traceability of sows, and characterization of cull sows and secondary market pig movements in harvest channels.

Research conducted by USDA ARS has addressed fulfilling Koch's postulates (criteria to link the disease with the causative organism), determining infectious dose, and is addressing viral characterization, pathogenesis, transmission, on-set of clinical signs, protective immunity, isolate comparisons, and vectored vaccine studies.

These research efforts have resulted in increased knowledge about SVA in swine, but the funded research may not be fully completed or published yet. Other studies in these areas may be needed based on the information gained from previous work. From an industry perspective, research is needed to expand science-based producer and veterinary knowledge for management of the disease and to continue safe marketing of animals. From a regulatory perspective, research should be conducted by USDA ARS to ensure that any changes to, or propagation of, new regulations to address the regulatory impacts of SVA are based on sound science.

Marketing Challenges: Modern pork production has become a highly efficient, just-in-time system that requires a constant flow of hogs on tight delivery schedules, grown to very specific standards, with little room for channel disruption. The high-volume processing plants accept only animals that fall into very specific weight and type specifications.

An estimated 1 million hogs are diverted—reshipped—after delivery to a slaughter facility because the animals do not meet the criteria of the plant. Those animals comprise the majority of supply to some processing facilities that thrive on sows, light-weight hogs, or other secondary market hogs, making preservation of the reshipment system essential to some industry sectors. Reshipment of swine provides significant economic value to pork producers, as well as marketers and some slaughter operations. The Working Group recommends that reshipment of swine be allowed to continue with modifications to the current processes.

In recent months, reshipping swine and the slaughter channels for cull sows and boars have come under fire because, based on the experience of some state animal health officials (SAHOs), some of these animals will be presented at final slaughter with active lesions that are clinically similar to foot-and-mouth disease (FMD). A foreign animal disease investigation must be conducted to confirm a negative diagnosis for FMD that would allow animals to proceed to processing. As a result, commerce at the slaughter plant and within marketing channels is interrupted, and/or valuable hogs are often destroyed, while laboratory results are pending.

This increasingly frequent scenario lies at the core of this Working Group members' efforts.

Top Priorities: The Working Group has identified three priorities that need to be addressed immediately by all sectors—regulatory, industry, research, diagnostics—in the pork harvest channel:

1. The number of pigs with lesions presented at slaughter must be reduced.
2. Rapid methods for ruling out foot-and-mouth disease must be devised.
3. Additional resources must be made available quickly to speed regulatory response to SVA/FMD investigations.

To accomplish those goals, the WG offers the following recommendations.

Recommended action steps before the next Senecavirus A epizootic:

1. Education

- Continue to educate veterinarians, producers, market operators and packing plant operators on the recognition of vesicular lesions.
- Continue to educate all stakeholders to notify state and/or federal animal health officials if vesicular lesions are present.
- Continue to educate all stakeholders about the importance of animal and premises identification.

2. Traceability

Members of the Working Group acknowledge the work of the swine industry to adopt and use premises and animal identification to improve traceability in disease events.

- Enforce 9 CFR 71.19 (Identification of Swine in Interstate Commerce) and applicable sections of 9 CFR Part 86 animal disease traceability, including methods approved by the administrator for swine identification currently used by industry, recordkeeping, and premises identification for all sites associated with the production, sale/purchase, transport, and slaughter of hogs.
- Require premises registration for all swine-associated premises. This process requires a premises identification number be assigned to all physical sites associated with the housing/selling/holding/processing/exhibition of hogs. Validated premises will be recorded with geo coordinates for the physical location of the animals, along with contact information for the owner(s) and/or caretaker(s) for the site.
- Require animal identification and movements to be tied to a validated premises identification number for the sending and receiving premises.
- Require the use of USDA official PIN tags for the identification of all sows and boars originating from a breeding herd or boar stud prior to leaving their farm-of-origin and entering harvest channels. Support the use of group/lot ID or other systems to allow recordkeeping and traces of animals in a disease investigation.
- Secure agreement/approval from NASAHO and USDA APHIS VS for markets that receive and ship cull sows and boars to order official PIN tags (with sequential management numbers) for their premises (PIN is the PIN of the market location) that can be applied to sows and boars delivered without an official PIN tag. Continue to recognize backtags as official ID within slaughter channels.
- Require the use of electronic certificates of veterinary inspection when a certificate of veterinary inspection is required to allow SAHOs rapid access to accurate records during a disease investigation.
- Utilize traceability components to encode electronically the premises identification number into laboratory accession records, for example use of barcodes.
- Maintain data at the state level that allows compatible sharing of information among SAHOs to ensure quick and accurate traceability. Information would include electronic certificates of veterinary inspection, validated premises identification numbers, and other documentation to assist with tracing of animal movements.

3. Diagnostics

- Develop a rapid pen-side test for the diagnosis of FMD. A validated rapid test can be used in the presence of vesicular lesions in swine to exclude FMD and avoid disruption of commerce.
- Validate new test technologies with faster test results for FMD to allow reliable and acceptable preliminary screening. Among technologies to consider are oral fluids, lateral flow immunochromatography, and other quick-result or pen-side tests, particularly those already in use in other countries.
- Develop algorithms that specify sample size according to collection method and testing process to ensure viable, quality samples are used for diagnostics, either pen-side or laboratory-based. Algorithms must be scientifically based and communicated to ensure valid test results for FMD.
- Support continued funding for NAHLN laboratories across the country. Funding should ensure laboratory capacity to handle and process the necessary volumes of tests for the key industries they serve. Based on experience of this working group, the NAHLN laboratories play a key role in receiving prompt FMD results in the current FAD investigations.
- Utilize NAHLN laboratories whenever possible for initial diagnostics of suspected FADs.
- Adopt a NAHLN-based data-sharing system that allows test results and data trends to be accessed by state and federal authorities, as well as laboratories. Data sharing will allow SAHOs to make science-based decisions to control disease spread.
 - The absence of an electronic means to share veterinary diagnostic information continues to be recognized as a significant liability. Twenty-first Century US animal agriculture has evolved to be highly dependent on interstate commerce and export markets. A seamless, scalable and compatible system that allows SAHOs access to diagnostic results from federal and NAHLN laboratories in real time is essential to support this fast-paced industry.
 - While USDA's Laboratory Messaging Service (LMS) database has improved, SAHOs do not currently have a streamlined method for accessing and/or obtaining information. Development of a web-based application to allow SAHO access to NAHLN data must be a high priority, particularly given the commonness of permission-based web-service technologies in 2017.

4. Research

- Support continued industry investment in research to expand science-based knowledge for the management of Senecavirus A in the pork industry. High priority areas for research include:
 - Effect of co-factors (stress) on the timing for lesion development after infection
 - Potential for sub-clinical or recovered carriers of the virus and recrudescence of the disease
 - Standardization and validation of an ELISA diagnostic test for SVA
- Support government investment in research that informs state and federal animal health officials of the need for further regulations to address the impacts of SVA on regulators. High priority areas for research include:
 - National prevalence study
 - Evaluation of pen-side or point-of-care diagnostics to rule out FMD rapidly at points-of-concentration
 - Methods for biocontainment and biosecurity at first points-of-concentration

- Development of algorithms for FMD site status as a part of an active surveillance program
- Support continued research and expand science-based knowledge and management of Senecavirus A. Greater understanding of Senecavirus A must be obtained through more research on the epidemiology of the virus that will lead to specific protocols to prevent disease spread. Specific areas of interest include:
 - Transmission dynamics between and within herds and individual animals, including potential vectors of the virus (feed, fomites, etc.).
 - Timing of appearance of lesions after infection, specifically if the appearance of vesicles can occur in a matter of hours, as reported by several slaughter facilities. Investigate what factors contribute to (apparent) rapid on-set of lesions (exposure interval, genetics, external environment, etc.).
 - Effect of market dynamics on development of lesions: Does length of time of transit to slaughter facilities contribute to the development of vesicular lesions?
 - Immunology after natural exposure, such as: immune status, subclinical or recovered carriers, and when neutralizing antibodies are present after infection.
 - Biosecurity and disinfection, including: products most effective, especially in the presence of organic material, protocols in market channels to ensure virus is inactivated to avoid infection of new introductions, and protocols for cleaning and disinfection of transport vehicles/trucks.
 - Development of an effective and economical vaccine for SVA.

5. Current Policy

- Revise USDA-Veterinary Services (VS) policies within *Recommendations for Swine with Potential Vesicular Disease* (VSG 7406.3) to reflect the needs of the market/packing industry:
 - Allow collection by certified samplers under established procedures.
 - Expand the scope of this document to include standardized protocols for managing vesicular disease events in markets and at packing plants.
- Revise USDA-VS within *Reshipment of Swine from Slaughter Facilities* (VS 7400.1):
 - Allow visual inspection of swine prior to reshipment by FSIS or trained plant personnel. As part of the permitting process, specify standards and criteria for inspection to ensure continuity among inspectors.
 - Allow termination of the agreement for cause, if any party violates the agreement.
 - Designate a valid period for the VS 7400.1 permit, with listed start and expiration dates.
 - Recommend cleaning and disinfection of conveyances and holding pens throughout the reshipment process.
 - Require signatory agreement from all parties to the movement permit, including the operators of the markets/holding facilities, plants and state/federal animal health officials.
- Revise USDA Food Safety and Inspection Service (FSIS) policies within *Responsibilities Related to Foreign Animal Diseases (FADs) and Reportable Conditions* (FSIS Directive 6000.1) to ensure standardization of USDA-Food Safety Inspection Service (FSIS) inspection standards and practices nationwide. Experience of members of this working group reveals that inspectors are not always consistent in their response to lesioned pigs, including condemnation, FAD investigations, and/or retaining carcasses.

- Revise USDA-VS policies within *Policy for the Investigation of Potential Foreign Animal Disease/Emerging Disease Incidents* (VS guidance 12001.3) to:
 - Include the use of accredited veterinarians and/or employees supervised by an accredited veterinarian to collect and submit diagnostic samples from suspect swine to an approved NAHLN laboratory when surge capacity is needed to ensure laboratory submissions occur in a timely manner.
 - Modernize FAD investigation protocols for investigating and diagnosing clinically compatible cases of FMD to account for the increased incidence of vesicular lesions attributed to SVA in the U.S. swine herd.
- Develop and implement a Twenty-first Century approach toward FAD surveillance that encompasses FMD, classical swine fever (CSF), and African swine fever (ASF). All of these FADs affecting swine are clinically (visually) indistinguishable from other diseases endemic to U.S. swine.

Recommended action steps for suspect cases to reduce the risk of transmission:

1. Producers must continue to consult with their attending veterinarians to establish a biosecurity program that addresses the transmission of viruses like Senecavirus A.
2. Biosecurity protocols must be followed that address cleaning and disinfection of conveyances.
3. Swine with vesicular lesions at markets or packing plants must be reported immediately to state and/or federal animal health officials to rule out foot-and-mouth disease.
4. Before a negative FMD status is established, swine shall not either leave a market or be permitted to be reshipped from a packing plant without prior approval of the SAHO.
5. Comply with the current federal requirement that states: “No slaughter swine may remain in the livestock market for more than 120 hours.” 9 CFR 71.20. Market operators must strive to reduce the length of time in the marketing channels which will likely contribute to a reduced number of lesioned animals at the packing plant.

Recommended action steps to respond rapidly to suspected cases of Senecavirus A on farms, in markets, and in packing plants:

1. Upon notification of swine with vesicular lesions, a state/federal animal health official will determine if a foreign animal disease diagnostician (FADD) will immediately be dispatched to the site or if samples may be collected by an accredited veterinarian. If an accredited veterinarian is utilized, SAHO/USDA will determine what disease control / biosecurity measures are appropriate until laboratory results are received. State/federal animal health officials must have a sufficient number of FADDs and accredited veterinarians available at all times. FADDs will follow the protocols established in USDA-VS guidance document VS 12000.1. Accredited veterinarians will follow protocols provided by the SAHO.
2. Duplicate samples shall be promptly collected and shipped to a NAHLN and USDA laboratory. A NAHLN laboratory must be used whenever possible, especially when a more rapid diagnosis is available.
3. FAD investigations, including transmittal and communication of the results of laboratory testing, must be completed in a timely manner so the loss of FMD-negative swine and finished product

at a packing plant is minimized. Rapid results would avoid similar losses in other areas of the marketing channel.

4. If the resource demands of continuing FAD investigations are greater than a state can provide, the state must submit a request for support to the USDA VS or FSIS.
 - o In the Wisconsin experience, more than 500 FAD investigations were conducted over 11 months. Due to the location of the slaughter plant, distance from the NAHLN laboratory, plant's hours of operation and product-shipping schedule, and workload at the state level, the Foreign Animal Disease Diagnostic Laboratory (FADDL) was utilized. This resulted in delayed diagnostic results that contributed to the packing plant owner's decision to render the carcasses of lesioned animals because of insufficient space at the plant to hold carcasses and processed product pending the laboratory results, and the need to fill customer product orders in a timely way.

Acknowledgements

The Senecavirus A Working Group met during seven teleconferences between July 19 and September 27, 2017. Although the members of the Working Group (Appendix B) may not have known each other prior to the calls, they willingly offered their candid, professional comments resulting in this very significant final report. The action items identified in the Report, which serve as a roadmap for improving the protocols for investigating foreign animal diseases in the U. S. pork industry, are now the responsibility of all pork industry stakeholders. Specifically, the United States Department of Agriculture must take a leadership role in addressing many of the action steps. Additionally, State Animal Health Officials and the pork industry must continue to collaborate at the state level to identify ways to accomplish many of the action steps.

A special thanks to Denise Derrer, Public Information Director at the Indiana State Board of Animal Health, for her role in preparing notes during each call and producing the final report. The Working Group report simply would not have been possible without her diligence and professionalism.



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June 23, 2017

To: Jack Shere, DVM, USDA-APHIS-Veterinary Services - Chief Veterinary Officer
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From: The National Assembly of State Animal Health Officials

Subject: Seneca A Virus Working Group

The National Assembly of State Animal Health Officials (NASAHO or the National Assembly) is an organization composed entirely of the state and territorial animal health officials of the United States. Our mission is to work collectively to safeguard public and animal health as well as the food supply. We accomplish this by working with federal, state, and industry partners to develop science based policies to address issues that affect public and animal health, public safety, and commerce. We strive to use the best available science to formulate our positions and to reach consensus among all members whenever possible.

The National Assembly is uniquely qualified to assess the impact of animal health threats in our individual states and territories, as well as how those threats will affect our nation. ***The National Assembly is extremely concerned with the current increase in Foreign Animal Disease (FAD) Investigations of swine at slaughter plants.*** These investigations have commonly resulted in diagnosis of Seneca A Virus which is indistinguishable from Foot and Mouth Disease (FMD) without laboratory testing. The National Assembly is concerned that current marketing practices of cull sows and boars and movement of shipper swine from slaughter plants may contribute to the increase of these FAD investigations.

Further, the National Assembly is concerned that if these FAD investigations resulting in Seneca A virus diagnosis continue at its current level, that the industry may become complacent and fail to contact state or federal animal health officials to investigate swine with vesicles. Failure to timely investigate a FAD could result in a devastating disease like FMD spreading throughout the livestock industry before it is detected.

Therefore, the National Assembly is convening a Seneca A Virus Working Group (WG) to address all facets of the Seneca issue, including current science, review of the VS Guidance documents, use of the NAHLN laboratories in FAD investigations, assessment of the swine marketing structure to determine ways to improve traceability and biosecurity, parallels with other vesicular disease, etc. The Working Group will convene for only 90 days, and a final report will be provided to all participating parties.

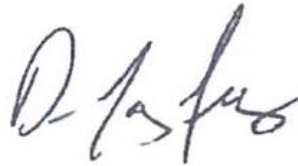
The National Assembly seeks your participation in the WG, and we need your help to identify key individuals in the pork industry to serve as WG members. We propose to have 3-5 State Veterinarians on the WG, and we need 3-5 individuals from each of the following industry sectors: packing plants, swine marketing companies (especially those that deal with sows, boars and outs), producers, swine transportation companies and private veterinary practitioners. We propose to have the WG members named by July 1, 2017. The WG will work primarily through electronic communication and teleconferences, although a face-to-face meeting may be necessary to finalize the WG's report.

Thank you for your consideration.

Submitted on behalf of the National Assembly,



Susan Keller DVM, ND State Veterinarian
President



Tony Frazier DVM, AL State Veterinarian
Secretary



Scott Marshall DVM, RI State Veterinarian
Vice President



Dustin Oedekoven DVM, SD State Veterinarian
Treasurer

APPENDIX B

Senecavirus A Working Group Members

- A. Pork Producers
 - a. Gene Noem, Reicks View Farms, Iowa; Member, National Pork Board (NPB) Board of Directors
 - b. Terry Wolters, Pipestone System (Big Stone Marketing), Minnesota; Member, National Pork Producers Council (NPPC) Board of Directors; Chair, NPPC Animal Health and Food Security Policy Committee
 - c. Howard Hill, DVM, Iowa Select, Iowa; NPPC Past President and Member, Swine Health Information Center (SHIC) Board of Directors
 - d. Emily Byers, DVM, Prestage Farms, North Carolina, Member of the NPB Swine Health Committee
 - e. Russ Nugent, Tyson Foods, Arkansas, Chair of the NPB Swine Health Committee
- B. Pork Industry Associations/Organizations
 - a. Paul Sundberg, DVM, SHIC, Executive Director
 - b. Patrick Webb, DVM, NPB, Director of Swine Health Programs
 - c. Liz Wagstrom, DVM, NPPC, Chief Veterinarian
 - d. Harry Snelson, DVM, American Association of Swine Veterinarians (AASV), Director of Communications
 - e. Dallas Hockman, NPPC, Vice President
- C. Veterinarians in Private Practice
 - a. Michelle Sprague, DVM, AMVC Veterinary Service, Iowa; AASV Past President
 - b. James Kober, DVM, Integrated Veterinary Network, Michigan
 - c. David Bomgaars, DVM, Orange City Veterinary Clinic, Iowa.
 - d. Bob Thompson, DVM, Pig Improvement Company (PIC), Veterinarian in Charge for Health Services
 - e. Ian Levis, DVM, Seaboard Foods, Operations and Health Assurance Manager
- D. Packing Plant Representatives
 - a. Steve Conner, Tyson Foods, Hog Procurement
 - b. Cory Bollum, Hormel Foods, Hog Procurement; Member, NPPC Board of Directors
 - c. Jay Schleis, Abbyland Pork Pack, Wisconsin
 - d. Brady Stewart, Pine Ridge Farms, Chief Operating Officer, Iowa
 - e. Jason Jones, Calihan Pork Processors, Illinois
 - f. Dan Sutherland, formerly with Johnsonville Foods, Wisconsin
- E. Market Operators
 - a. Mike Faga, Lynch Livestock, Director of Animal Well-Being
 - b. Lawrence Parks, Parks Companies, Chief Executive Officer and President
 - c. Steve Pederson, Heinold Hog Markets, Business Operations Manager
 - d. Leo Hanson, Steve Riley and Jeff Petree, Wiechman Pig Company, Nebraska
- F. Diagnostic Laboratory
 - a. Rodger Main, DVM, Director, Iowa State University Veterinary Diagnostic Laboratory
- G. State Animal Health Officials

- a. Paul McGraw, DVM, Wisconsin, Working Group Co-Chair
 - b. Bret D. Marsh, DVM, Indiana, Working Group Co-Chair
 - c. David Schmitt, DVM, Iowa
 - d. Linda Hickam, DVM, Missouri
 - e. Rod Hall, DVM, Oklahoma
 - f. Beth Thompson, DVM, Minnesota
 - g. David Wolfgang, DVM, Pennsylvania
 - h. Michael Neault, DVM, North Carolina
 - i. Dennis Hughes, DVM, Nebraska
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 - k. Kelli Werling, DVM, Indiana
- H. USDA-APHIS-VS Subject Matter Experts
- a. John Korslund, DVM, Veterinary Epidemiologist
 - b. Jon Zack, DVM, Director, Preparedness and Incident Coordination
 - c. Christina Loiacono, DVM, National Animal Health Laboratory Network (NAHLN),
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