



Swine Health Information Center

## 2022 Plan of Work

### Improve Swine Health Information

- Make industry swine health information available to help identify, communicate, and mitigate regional and national risks to herd health.
  - The Swine Disease Reporting System (SDRS) takes advantage of the willingness of the major veterinary diagnostic laboratories to share information and the SHIC-supported infrastructure to enable it. The SDRS will explore ways to become more helpful and informative.
    - Advisory member feedback regarding possible improvements or enhancements to SDRS will be gathered through periodic meetings and/or conference calls. The objective will be to make the SDRS a source of more timely and actionable information for the industry.
    - Continue to add to the scope of analysis and reporting by including more diagnostic signal information for diseases. The 2013 PED outbreak experience showed that negative diagnostic tests associated with syndromic information could be an early indication of an emerging disease. Further compilation and analysis of negative diagnostic tests results and associated syndromic information may be a useful technique to identify emerging diseases more quickly.
    - Mine SDRS data for emerging disease signals. Some examples could include reporting of emerging syndromic conditions, investigating co-infection diagnostic results as an indicator of future PRRS outbreak, connecting Grow-Finish diagnostics with sow farm disease status to use Grow-Finish results can be used as a predictor of sow farm disease outbreaks and using diagnostic and production data analysis to measure the economic impact of controlling emerging or endemic disease.
  - Pork industry press provides information about swine health advancements and technologies. For example, novel approaches to ASF vaccine development will continue to be of high interest in 2022. A panel, or other method to review popular press articles, will evaluate the content and make comments will help to provide context and analysis to the industry.
  - Veterinarians are challenged with new technologies identifying agents either causing or associated with disease for which information about management or control might be limited. Sharing experiences and management options will foster communication and inform discussion about management. Four to six current topic webinars, using the model of the 2021 management webinars, will be offered. The objective is to “keep pace with industry chatter” about health challenges with the topics selected.
- Develop the industry capacity for detection of emerging disease, rapid response, and continuity of business.
  - The Morrison Swine Health Monitoring Project (MSHMP) will help to identify industry needs through the input from the project’s participants and other sources. New efforts will be made

to make the shared information more actionable by gathering input from participants to help them quickly meet health challenges. Specific analysis projects using MSHMP data and modeling endemic diseases in preparation for response to emerging diseases will be supported to return value to the participants and encourage more producers to cooperate with the project. That value to participants will also translate to value for all pork producers.

- Update the SHIC Swine Disease Fact Sheets.
  - The 34 Swine Disease Fact Sheets that are currently available are the second most accessed information on the SHIC website. The content will continue to be monitored to ensure that the latest information remains available.

### **Monitor and Mitigate Risks to Swine Health**

- In coordination with other industry organizations, help to fill in the gaps of research and information needed to prevent, prepare, and respond to foreign animal or emerging diseases.
  - African Swine Fever will continue to be a monitoring priority in 2022 with the objective of using the information to protect the US industry from its introduction. In conjunction with the other pork industry associations, SHIC will continue to research to inform effective national biosecurity direction and programs.
  - During 2020, SHIC partnered with the other industry organizations for a comprehensive review of the diverse but interdependent components of national biosecurity. Border protection, pig and sow movements, first points of concentration for pigs and sows, feed safety, vaccine and other common inputs, state and federal movement and health regulations and others are all pieces of US national pork industry biosecurity. Results will focus on ensuring effectiveness of the highest priorities first but identified gaps need to be closed.
  - SHIC will coordinate with other industry associations to effectively communicate consumer messaging and producer actionables in the event of a transboundary, foreign animal disease.
  - In 2019 SHIC received USDA Foreign Ag Service support for “Building capacity to support the control of African Swine Fever (ASF) in Vietnam”, a project to inform Vietnamese producers and veterinarians about ASF control and to learn the on-farm lessons about ASF epidemiology and control that would be needed if ASF enters the US. Some projects have been delayed by the COVID-19 pandemic so 2022 results will continue to be analyzed for any need to supplement and enhance the information gained.
- Identify swine disease risks by international monitoring.
  - Enhance the Global Disease Monitoring Report to improve understanding of disease status in countries around the world.
    - Currently, the Global Disease Monitoring Report relies primarily on official sources of information about country-specific disease status. A pilot project will explore an expanded international veterinary diagnostic lab network that will provide standardized disease reporting from other countries.
    - There are multiple organizations and companies monitoring diseases around the world and their information will be compiled into one, informative format.
    - Individuals with international disease experience will be asked for their input and analysis of unofficial perspectives about disease reports from other countries. There will be a focus on Asia/SE Asia for disease status and movement information as that region seeks to rebuild their herd.

- Foster information sharing with government and allied industry international contacts through international animal health organizations and meetings.
  - Understanding the origin and progression of emerging, re-emerging, and novel infectious diseases is critically important to preventing epidemic and pandemic outbreaks. The International Organization for Animal Health (OIE) and Food and Agricultural Organization of the United Nations (FAO) facilitate international health information sharing and build and maintain databases of emerging diseases of member countries. Interacting with these entities and other swine disease centered programs could provide lessons for the U.S. pork industry about monitoring, analysis, preparedness, and response for emerging diseases.
- Investigate the ability of common inputs to production to act as biologic or mechanical vectors for disease introduction onto farms.
  - Decrease the potential for pathogen transmission via feed.
    - USDA and FDA consider pathogen transport via imported feed products to be an unlikely risk because of limited objective information. Data and information will be gathered to support an objective risk assessment and evaluate cost-effective mitigation techniques and strategies.
    - If contaminated feed component products are imported, those pathogens are likely to be spread within the country during feed processing. Understanding how pathogens are distributed in the mill and cost-effective procedures to prevent distribution or disinfect the facilities will be investigated.
    - A Feed Risk Task Force has been created, with participants representing pork producers and veterinarians, the US and Canadian feed industries, pork and other ag commodity associations. USDA, FDA and the Canadian CFIA are invited and attend. The Feed Safety Task Force objective: “There is agreement that there is risk of introduction of pathogens into and within the U.S. via imported feed products. The Task Force will evaluate the risk and help decide what actions need to be taken to protect the U.S. pork industry from that risk. Actions should be achievable, based on science and minimize trade disruptions.” Meetings and other activities will need coordination and facilitation.
  - Investigate common inputs other than feed for potential roles of pathogen introduction.
    - Common inputs such as vaccines, breeding supplies and others could be a source of pathogen introduction to farms. Selected inputs will be investigated to identify if they could be biosecurity risks.
- Improve farm biosecurity.
  - Better understand transmission pathways to improve transport biosecurity related to markets and first points of concentration.
    - Transport biosecurity is directly dependent on the facility capacity and technologies to effectively decontaminate conveyances. Investigating the availability of facilities, their capacity for disinfection, alternative technologies that may offer cost-effective solutions and the economic commitment needed to meet capacity needs will help to inform long-term improvement in transport biosecurity.
    - Pathogen transfer back to the farm from first points of concentration continues to challenge producer opportunity for profit and will risk emerging or foreign animal disease control. Innovative, cost-effective solutions to minimize this transfer will be studied.



- emerging disease outbreaks they will need to continue to be trained and exercised and innovative tools need to be explored. Rapid Response Team investigations will be supported, if requested by producers.
- An industry standard for an outbreak investigation instrument will give the industry an opportunity to analyze data for proactive risk identification instead of having wide disparity in individual retroactive responses to disease introduction. An advisory group has been formed to define the need and content of a standardized outbreak investigation instrument and will continue work to develop needs, draft an outbreak instrument, gain industry review, and revise the instrument as needed.
- Help producers and veterinarians respond to and manage newly emerging diseases.
    - Learning lessons from emerging PRRS strains will provide tools to better respond to emerging diseases.
      - Effective characterization of PRRS strains will add to the epidemiological information necessary to be able to respond and contain new outbreaks. Sequencing data beyond ORF5 will enable identification and tracking of most prevalent regional strains and help better inform PRRS biosecurity.
      - Multiple different PRRS sequence databases are being used in the industry. Exploring ways to coordinate and consolidate PRRS databases will add to the strength of epidemiological analysis in a manner similar to the advantages enjoyed by coordinating the veterinary diagnostic lab testing results in the Swine Disease Reporting System.
      - Traceability is an important tool to help understand the epidemiology of emerging diseases. Exploring how traceability of pigs and PRRS strains can support control and elimination programs will strengthen the industry's ability to respond and recover from emerging disease.
    - Early warning offers the opportunity for early response leading to containment and recovery.
      - Disease events on a farm may lag behind early warning events like changes in sound patterns in the barn, decreases in feed or water intake, or abortions or death loss that may be perceived as individual events that are 'within bounds' but continue as a single, larger one. Assessing available technologies and evaluating their sensitivity might give producers cost-effective tools to more quickly identify and respond to health events.
    - Quickly research pathogens causing emerging disease outbreaks.
      - Senecavirus A (Seneca Valley Virus) was the first opportunity for SHIC to rapidly respond to an emerging disease with research according to high priority industry needs. There is no predicting when or where the next emerging disease will appear. SHIC needs to be prepared with funds in place that can be quickly mobilized to support filling the immediate research gaps following introduction. This research will provide producers and their veterinarians with critical information that they will need to effectively respond to the disease outbreak.
    - Support a rapid, unified industry response to emerging disease outbreaks.
      - Working with the National Pork Board, National Pork Producers Council and American Association of Swine Veterinarians, continue to facilitate a potential, coordinated, industry-wide emerging disease response through a centralized response structure.
  - Assess the effectiveness sanitation and decontamination protocols.

- Sanitation and decontamination protocols are designed to prevent pathogen transmission through contact with contaminated surfaces. Monitoring and assessing the protocols will offer a way to validate effectiveness and compliance. This could be important for containing an emerging production disease and it will be an important question to answer in preparation for effective response to a foreign animal disease. Also, new cost-effective models for environmental sampling have the potential for validating decontamination and may help enable the opportunity for safe, timely return to production.

## **Surveillance and Discovery of Emerging Disease**

- Enhance detection of emerging disease to facilitate rapid response.
  - Offer diagnostic fee support to help detect emerging diseases.
    - There continues to be incidents of high morbidity/high mortality where an etiology is either not identified or there is a strong supposition that the identified pathogen is not the likely cause of the outbreak. In these cases, there is a need for further diagnostic workup. Support for these follow up diagnostic workups will come after producers have funded the initial diagnostics. This work will help ensure that an emerging disease is quickly and accurately identified for action by the industry's emerging disease response plan.
    - Diagnosticians will be asked for their views of barriers to broader use of the diagnostic fee support program and if there are ways that it can be enhanced.
- Find improvements that can be made toward a nationally coordinated swine health surveillance system to prepare, detect, and rapidly respond to emerging and regulatory foreign animal diseases.
  - Veterinary diagnostic laboratories submissions need to be characterized to understand the messaging and incentive needed for accurate information to accompany tissues. For example, identifying the reason for inaccurate premises identification numbers will facilitate quick and effective response to an emerging or transboundary, foreign animal disease outbreak.
  - Building on previous SHIC support for investigating spatially balanced surveillance models, the next step is to evaluate the application of spatially balanced surveillance using contemporary or the next generation of surveillance sampling.
- Investigate newly identified agents associated with disease.
  - Understand the clinical relevance and epidemiology of novel bacteria and viruses in the swine bacterial and viral disease matrices.
    - The veterinary diagnostic labs find novel bacteria and viruses in the swine bacterial and viral disease matrices being associated with clinical disease syndromes. Better understanding these agents' epidemiology and pathogenicity are important to identifying if they have a role in clinical disease.
    - Porcine circovirus (PCV) strains continue to present a challenge. A standardized case definition for PCV3 needs to be agreed upon, pathogenicity needs to be further analyzed and processing fluids or other ways to monitor associations with clinical disease need to be studied. In addition, identification of a novel PCV4 may call for adequate diagnostics to ensure the ability to detect and evaluate the potential introduction into the US.

## **Swine Disease Matrices**

- Review and, when necessary, revise the Swine Viral Disease Matrix and the Swine Bacterial Disease Matrix.
  - The Monitoring and Analysis Working Group will review and revise the viral and bacterial matrices as needed.
  - The Swine Bacterial Disease Matrix will be assessed to try to identify risks to animal and human health, pork industry vulnerabilities to these pathogens and possible actions that will mitigate risk will be explored.
- Use the swine bacterial and viral disease matrices as guidelines for research to enhance swine disease diagnostic capabilities.
  - As new information or emerging bacterial or viral pathogens are discovered, through SHIC's surveillance and discovery plans or other means, there may be a need to continue to support improving diagnostic capabilities.
  - Consider diagnostic sensitivity and specificity validation for prioritized viruses in the Swine Viral Disease Matrix.
    - Matrix research thus far has been with a goal of validation to "fit for purpose", which ensured performance under laboratory conditions. For these tests to be operational in the face of an outbreak, they may also need to be validated for sensitivity and specificity using clinical samples and tissues. Diagnostic sensitivity and specificity validation could be considered and may need to be funded for specific tests in 2022.