

Active Observational Surveillance (AOS) for FMD, CSF, and ASF: An Overview

May 2017



Purpose

This document describes Active Observational Surveillance (AOS), which is one potential surveillance option for pig production premises within a regulatory Control Area with the goal of the earliest possible detection of foot and mouth disease (FMD), classical swine fever (CSF), and African swine fever (ASF).

Introduction

The Secure Pork Supply (SPS) Plan recommends surveillance of all susceptible animals on a premises within a regulatory Control Area to demonstrate a lack of evidence of a foreign animal disease (FAD) infection in order to be designated as a Monitored Premises. Additional surveillance is recommended for issuing movement permits for animals and some animal products within or outside of a Control Area. The surveillance options required by Responsible Regulatory Officials in an outbreak will be determined by current capabilities and characteristics of the outbreak. These options are outlined in the document *Surveillance Guidance to Support the SPS Continuity of Business Plan during an FMD, CSF, or ASF Outbreak*, available at www.securepork.org.

Active Observational Surveillance (AOS) of Pigs

AOS is a systematic method for routinely monitoring livestock (cattle, pigs) for potential signs of early FMD, CSF, or ASF infection during an outbreak. AOS is possible for pigs in all production phases. AOS during an FAD outbreak does not replace the need for diagnostic testing or periodic inspections by Responsible Regulatory Officials (local, state, tribal, and federal officials, as appropriate) or their designees (Accredited Veterinarians). Rather, AOS conducted daily by trained on-farm observers (called Swine Health Monitors) employed by the production site could supplement this process.

The SPS Plan includes AOS materials for training Swine Health Monitors, including how to recognize abnormal production parameters and clinical signs that may indicate early FMD, CSF, or ASF virus infection. There are also materials that visually depict FMD, CSF, or ASF lesions in pigs and forms to complete that describe the site's communication plan, expected production parameters, and daily observations. These forms can be used alone or used as the framework to include the same information into an existing record-keeping system.

AOS includes:

- **Daily visual observation** of animals by trained Swine Health Monitors who are familiar with the health status of the livestock on the site and able to recognize abnormal findings (clinical and/or changes in production parameters) that may be an early indicator of FMD, CSF, or ASF virus infection;
- **Daily documentation** of normal or abnormal findings that could be the result of an early FMD, CSF, or ASF infection in the herd (referred to as AOS records) by Swine Health Monitors;
- **Prompt reporting** of abnormal findings to Responsible Regulatory Officials with a follow up examination of animals by them or their designee (Accredited Veterinarian). The Responsible Regulatory Officials may decide to conduct laboratory testing on any suspicious cases.

The USDA Surveillance Design and Analysis (SDA) Unit provides the following guidance on Active Observational Surveillance:

Active observational surveillance (AOS) is a purposeful effort to detect evidence of disease through observation of clinical signs following these criteria:

- Observations are ongoing, frequent (e.g., once or twice a day in confinement facilities or once every 2 to 3 days in large grazing operations), and follow a pre-planned schedule
- Observer is specifically tasked with monitoring for evidence of disease, toxicity, or other causes of mortality and decreased production
- The group of animals undergoing AOS is clearly defined
- A set of guidelines exist describing expected production parameters and corresponding investigation triggers
- A communication plan is created for a response to the investigation triggers, including when to contact regulatory animal health officials or their designees
- Observer is aware of and understands the production parameters, investigation triggers, and communication plan

Observation of clinical signs or other changes consistent with the disease of interest during AOS serves as the screening “test.” Confirmatory testing is laboratory-based.

Utility of AOS is highest for diseases that show overt clinical signs such as highly pathogenic avian influenza or foot-and-mouth disease (FMD). Vesicular diseases such as FMD in a naïve population are particularly amenable for AOS in many U.S. animal populations. Most confinement livestock, poultry, and aquaculture operations have standard management practices compatible with the above criteria and in fact, already conduct AOS.

Role of Swine Health Monitors

One or more individuals should be designated as the Swine Health Monitor(s), responsible for overseeing AOS on the production site. These designated individual(s) should have a history of consistent daily involvement with the animals on the site so they are familiar with the health status of the livestock they are assigned to monitor. The Swine Health Monitors are likely to be the same people who are responsible for monitoring animal health daily in the absence of an FAD outbreak for any health problems which may require diagnosis and treatment.

- On smaller sites, the Swine Health Monitor for all animals on the premises will likely be the owner.
- On larger sites, several individuals may be responsible for recording daily observations for different groups of animals on the same premises.

Recognizing Early Signs of FMD

The classical signs of FMD in pigs include painful vesicles and blisters on the feet, snout and chin, and occasionally on the teats of animals which break open and form ulcers. The goal is for the Swine Health Monitor to perform daily observations during an FMD outbreak and recognize some early signs, which may look like other diseases that occur on a production site. Abnormal production parameters or clinical signs associated with early stages of FMD infection may include fever, off-feed, dullness, huddling, lameness, reluctance to move, redness and/or blanching of coronary bands, and sudden death in young piglets due to myocarditis.

Swine Health Monitors should NOT wait for the occurrence of vesicles/blisters or ulcers before reporting as this means that FMD virus may have been present in the herd for a few days. This could result in the spread of FMD virus within the site and between premises. However, if a vesicle/blister or ulcer is seen, it is urgent to report it promptly. The **Foot and Mouth Disease Pocket Guide** and the **Foot and Mouth Disease in Pigs: Progression of Lesions** poster provide visual examples of the progression of vesicles/blisters and ulcers.

Recognizing Early Signs of CSF

The signs of CSF are similar to those of many diseases endemic to the U.S. including high fever, off-feed, huddling, and weakness. Purple discoloration of the ears, abdomen and inner thighs may also occur. Diarrhea, unsteady gait, and reddened eyes have also been reported. Examples of these clinical signs can be seen on the **Classical Swine Fever (CSF)-A Threat to the U.S. Pork Industry** poster or viewed online in the video. The occurrence of any of these signs during a CSF outbreak should be reported immediately. If a combination of these clinical signs is present, CSF may have been present in the herd for a few days and it is urgent to report it promptly. There are low virulence strains of CSF virus which may only cause mild, non-specific clinical signs. In order to control CSF virus spread within and between herds, it is very important that infection be detected as early as possible.

Recognizing Early Signs of ASF

As with CSF, the signs of ASF are similar to those of many diseases endemic to the U.S. including high death loss, high fever, off-feed, piling and weakness. Skin discoloration and blotching on the ears, tail and legs may also occur, along with hemorrhages in the skin. Diarrhea, vomiting, difficulty breathing, and nasal and eye discharges have also been reported. Abortion may occur in pregnant sows. Examples of these clinical signs can be seen on the **African Swine Fever (ASF)-A Threat to the U.S. Pork Industry** poster. If a combination of these clinical signs is present, ASF may have been present in the herd for a few days and it is urgent to report it promptly. In order to control ASF virus spread within and between herds, it is very important that infection be detected as early as possible.

Signs Associated with FAD versus Endemic Diseases

Some of these clinical signs are expected to occur with a certain frequency on a production site due to a variety of causes other than FMD, CSF, and ASF (off-feed, lameness, huddling, reluctance to move, diarrhea, etc.). The Swine Health Monitor must be capable of deciding when the clinical signs occur more than expected or production parameters are outside of their normal range and promptly report their observations.

Conducting Daily Observations

The Swine Health Monitor should follow the guidelines below for proper implementation of AOS:

- Monitor animals and document AOS observations at least once daily.
- Animals are best observed when they are active. Suggested observation times include
 - In the morning;
 - At feeding;
 - When treating sick animals;
 - At breeding;
 - During herd checks; and
 - When moving animals between pens.
- The best observation will occur upon close interaction with the animals when individual animal observation is possible. In addition, observation in uncrowded areas will result in better monitoring.
- The Swine Health Monitor should be prepared to restrain the animal in a safe and humane manner if further examination is necessary.
- Be familiar with the AOS recordkeeping guidelines and properly document observation.

Keeping AOS Records

Prior to, or on the first day of an FMD, CSF, and ASF outbreak, the Swine Health Monitor should complete the “Site-Specific Expected Production Parameters and Investigation Triggers” document. This involves reviewing herd records for the previous 14 days and defining the expected range for specific parameters for the herd or group. The Swine Health Monitor should also define the “investigation trigger” for each value- a

change in percent (%) - that may indicate animal health is affected or something changed on the site; either needs further investigation. This establishes the site-specific “normals” so that when animals are monitored for FMD, CSF, and ASF, “abnormals” can be identified early.

Daily documentation of normal or abnormal findings that could be the result of an early FMD, CSF, or ASF infection in a herd, (referred to as AOS records) by Swine Health Monitors is an important component of AOS. Findings may include clinical signs (e.g., fever, lameness, death loss) or lack thereof, more animals being treated for various conditions, and production parameters (e.g., no changes, decreased feed or water intake). All AOS records must be available upon request for inspection by Responsible Regulatory Officials managing the FAD outbreak.

A Swine Health Monitor will be expected to document observations daily for each group of animals on the production site, either using the forms provided or as a component of an existing on-farm recordkeeping system. The information listed below will need to be readily accessible as a component of AOS records.

- Appropriate group description to include the building(s), pen(s), or group ID(s). The description listed should be easily identified by other Swine Health Monitors, managers, veterinarians, workers, etc. on the premises.
- Daily, the records for each group need to indicate one of the following options:
 1. No abnormal incidence of early clinical signs and/or abnormal production parameters associated with an FAD were observed for this group;
 2. *Early clinical signs and/or abnormal production parameters associated with an FAD were observed for this group.
*If observed, the Swine Health Monitor should be prepared to provide details of the clinical signs that were observed, especially if the following clinical signs were noted:
 - a. **FMD:** Vesicles/blisters or ulcers were noted on the feet, snout, chin or teats.
 - b. **CSF:** A combination of the following clinical signs are observed: off-feed, high fever, huddling, weakness, purple discoloration of the ears, abdomen and inner thighs, unsteady gait, diarrhea and reddened eyes.
 - c. **ASF:** High death loss, high fever, off-feed, and piling are observed. Skin discoloration of the ears, tail and legs may be noted. Diarrhea, difficulty breathing, vomiting, and nasal and eye discharges may be reported. Abortion may be seen in pregnant sows.
- Initials (digital or handwritten) by the Swine Health Monitor responsible for that group of animals on that day.
- A series of daily observation forms that meet the above criteria are available on the SPS website at www.securepork.org
 - Herd/Group Daily Observation Form
 - Abnormal Findings Explanation Form
 - Individual Animal Examination Form

Communicating Observations

Prompt reporting of suspicious clinical signs or unexplained changes in production parameters is critical. Each site should determine a communication plan that works best for them and their management structure. Take into account communication between Swine Health Monitors for the site and who should notify Responsible Regulatory Officials.

Describe your operation’s communication plan in your AOS Records (example document provided).

Things to include in your AOS Communication Plan:

- Name and contact information for:
 - Swine Health Monitors

- Responsible Regulatory Officials (State and Federal Animal Health Officials)
- Supervisors, herd veterinarians, and/or owners (as applicable)
- When one Swine Health Monitor goes off duty, they must communicate with the Monitor coming on duty to brief them on the herd health situation, particularly observation of any clinical signs of concern.
- Who will communicate with the Responsible Regulatory Officials
 - Swine Health Monitor directly
 - The Swine Health Monitor first notifies their supervisor, herd veterinarian, or owner who then evaluates the situation and contacts the Responsible Regulatory Official

Once contacted, the Responsible Regulatory Officials or their designee (Accredited Veterinarian) may follow up with an examination of the animals and collect samples for laboratory testing on any suspicious cases.

Educating the Swine Health Monitor(s)

- In the event State Animal Health Officials require documentation of Swine Health Monitor(s) education prior to issuing a movement permit during an FAD outbreak, there are educational materials and forms, available in English and Spanish on the SPS website: www.securepork.org. It is also in the producers' best interest to ensure their designated Swine Health Monitor(s) know what to look for during an FAD outbreak to identify disease early and decrease the chance of disease spread to other premises. The information can be reviewed individually online or delivered by the herd veterinarian to a group of individuals on the site. Reviewing the information described below is expected to take about one hour.
- Handouts:
 1. Foot and Mouth Disease (1 page)
 2. Classical Swine Fever (1 page)
 3. African Swine Fever (1 page)
- Posters
 1. Foot and Mouth Disease in Pigs: Progression of Lesions
 2. Classical Swine Fever (CSF)-A Threat to the U.S. Pork Industry
 3. African Swine Fever (ASF)-A Threat to the U.S. Pork Industry
- Narrated PowerPoint lessons
 1. Recognizing Foot and Mouth Disease
 2. Recognizing Classical Swine Fever
 3. Recognizing African Swine Fever
 4. Using Active Observational Surveillance on the Production Site
 5. Using AOS Records on the Production Site
- AOS recordkeeping forms
 - Swine Health Monitor Training Documentation Form
 - Herd/Group Daily Observation Form
 - Abnormal Findings Explanation Form
 - Individual Animal Examination Form
- FMD Pocket Guide for Domestic and Feral Swine

Comments

Please send comments or suggested edits to:
 Center for Food Security and Public Health, Iowa State University
 Jim Roth, DVM, PhD--jaroth@iastate.edu
 Or
 Pam Zaabel, DVM- zaabelp@iastate.edu