MODULE 2.1

PREPARING FOR AND CONDUCTING AN INVESTIGATION

RAPID RESPONSE CORP TRAINING
RRC Members will be able to:

- Identify responsibilities involved with planning the investigation
- Prepare for an epidemiological investigation with the help of the RRC Case Coordinator
- Conduct a case investigation interview using the Investigation Form
INVESTIGATION PROCESS
Overview

Case of Emerging Pathogen → SHIC Point of First Contact → Pre-Investigation Phase → Investigation Phase → Post-Investigation Phase

- Executive Summary (2 days)
- Summary Report (11 days)

- 2 days
- ~1 day
- 11 days
OVERVIEW
Introduction To Forms

Investigation Form

Executive Summary

Summary Report

Table 1. Describe diagnostic results performed after the outbreak

<table>
<thead>
<tr>
<th>Test Performed</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

3. Event rated as high likelihood of being responsible for PRRD introduction

Table 1. Describe diagnostic results performed after the outbreak

<table>
<thead>
<tr>
<th>Test Performed</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Description</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Who is the RRC Case Coordinator?

- Staff member, funded by SHIC, who is responsible for coordinating the efforts of RRC Investigators
- Responsible for pre-populating Investigation Form with weather data and maps
- Point person for questions you may have about case investigation
You will be provided with a Master Investigation Checklist in your Resources

Comprehensive list of steps per phase of the investigation process
PRE-INVESTIGATION PHASE
Timeline

Case of Emerging Pathogen

- SHIC Point of First Contact: 2 days
- Pre-Investigation Phase
- Investigation Phase
  - Investigation Form: ~1 day
- Post-Investigation Phase
  - Executive Summary (2 days)
  - Summary Report (11 days)

Timeline:
- Pre-Investigation Phase: 11 days
- Post-Investigation Phase: 11 days
- Executive Summary: 2 days
- Summary Report: 11 days

Swine Health Information Center
PRE-INVESTIGATION PHASE
Pre-Investigation Phase Checklist

- [ ] Review Data Sharing Agreement
- [ ] Arrange Investigation Meeting
  - Required attendees: farm manager and herd veterinarian
  - Communicate meeting plans to RRC coordinator
- [ ] Book travel arrangements
  - Lodging
  - Transportation
- [ ] Review Investigation Form
  - Print enough Investigation Forms for all participants
- [ ] Review pathogen
PRE-INVESTIGATION PHASE
Receive Pre-Investigation Form

- Data Sharing and Permissions and Permissions Agreement includes questions regarding:
  - Personnel RRC Investigators can interview
  - Facilities RRC Investigators can visit
  - Facilities RRC Investigators can photograph
  - Diagnostic samples RRC Investigators can take
  - Other approvals, conditions, or restrictions

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Photos Permitted</th>
<th>Notes (e.g. restrictions, conditions or other approvals required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm where case occurred, entryway</td>
<td>□Yes □No</td>
<td></td>
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<tr>
<td>Farm where case occurred, office</td>
<td>□Yes □No</td>
<td></td>
</tr>
<tr>
<td>Farm where case occurred, barns</td>
<td>□Yes □No</td>
<td></td>
</tr>
<tr>
<td>Other farms, entryway</td>
<td>□Yes □No</td>
<td></td>
</tr>
<tr>
<td>Other farms, office</td>
<td>□Yes □No</td>
<td></td>
</tr>
<tr>
<td>Other farms, barns</td>
<td>□Yes □No</td>
<td></td>
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<tr>
<td>Producer, production system or veterinary offices</td>
<td>□Yes □No</td>
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</tr>
<tr>
<td>Boar studs, office</td>
<td>□Yes □No</td>
<td></td>
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<tr>
<td>Boar studs, lab</td>
<td>□Yes □No</td>
<td></td>
</tr>
<tr>
<td>Boar studs, barns</td>
<td>□Yes □No</td>
<td></td>
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<tr>
<td>Gilt development, isolation or acclimation facilities</td>
<td>□Yes □No</td>
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<tr>
<td>Nursery or wean-to-finish facilities</td>
<td>□Yes □No</td>
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<tr>
<td>Truck washes</td>
<td>□Yes □No</td>
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<tr>
<td>Maintenance facilities</td>
<td>□Yes □No</td>
<td></td>
</tr>
</tbody>
</table>
PRE-INVESTIGATION PHASE
Pre-Investigation Phase Checklist

- Contacted by SHIC
- Review Data Sharing Agreement

- Arrange Investigation Meeting
  - Required attendees: farm manager and herd veterinarian
  - Communicate meeting plans to RRC coordinator

- Book travel arrangements
  - Lodging
  - Transportation

- Review Investigation Form
  - Print enough Investigation Forms for all participants

- Review pathogen
PRE-INVESTIGATION PHASE
Arrange Investigation Meeting

- RRC Investigation Team
  - **RRC TEAM LEADER**
  - RRC Team Members
  - Assistant Facilitator
  - USDA or State Animal Health Official
  - Academics

- Interviewees:
  - **HERD VETERINARIAN**
  - **FARM MANAGER**
  - Other interested parties associated with production system

*REQUIRED AT INVESTIGATION MEETING
*Optional at investigation meeting
PRE-INVESTIGATION PHASE
Value of Assistant Facilitator

- What can Assistant Facilitator do?
  - Helps prepare for investigation interview
  - Takes Investigation notes
  - Contributes to **Summary Report**

- Who is the Assistant Facilitator?
  - Person with knowledge of swine industry
  - Vet tech, lab assistant, other RRC member, etc.
    - **Assistant Facilitator paid for by RRC Member**
Contact RRC coordinator with following information:
- Date of meeting
- Location of meeting
- Known attendees
- Role of attendees

RRC Coordinator Contact Information
- Email: rrc@iastate.edu
PRE-INVESTIGATION PHASE
Pre-Investigation Phase Checklist

- Contacted by SHIC
- Review Data Sharing Agreement
- Arrange Investigation Meeting
  - Required attendees: farm manager and herd veterinarian
  - Communicate meeting plans to RRC coordinator

- Book travel arrangements
  - Lodging
  - Transportation

- Review Investigation Form
  - Print enough Investigation Forms for all participants

- Review pathogen
PRE-INVESTIGATION PHASE
Book Transportation And Lodging

- Responsible for:
  - Coordinating transportation
    - By car
    - By airplane
  - Hotel arrangements
PRE-INVESTIGATION PHASE
Pre-Investigation Phase Checklist

PRE-INVESTIGATION PHASE

- Contacted by SHIC
- Review Data Sharing Agreement
- Arrange Investigation Meeting
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  - Communicate meeting plans to RRC coordinator
- Book travel arrangements
  - Lodging
  - Transportation
- Review Investigation Form
  - Print enough Investigation Forms for all participants
- Review pathogen
PRE-INVESTIGATION PHASE
Review Investigation Form

- Review Investigation Form
- Print enough copies for participants
PRE-INVESTIGATION PHASE

Pre-Investigation Phase Checklist

- Contacted by SHIC
- Review Data Sharing Agreement
- Arrange Investigation Meeting
  - Required attendees: farm manager and herd veterinarian
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- Book travel arrangements
  - Lodging
  - Transportation
- Review Investigation Form
  - Print enough Investigation Forms for all participants
- Review pathogen
PRE-INVESTIGATION PHASE

Review Pathogen

- Review information about pathogen
  - Consider modes of transportation, other species infected, etc.
  - Consider case definition
  - Consider previous case studies and/or outbreaks in other countries
PRE-INVESTIGATION PHASE
Pre-Investigation Phase Checklist

- Contacted by SHIC
- Review Data Sharing Agreement
- Arrange Investigation Meeting
  - Required attendees: farm manager and herd veterinarian
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INVESTIGATION PHASE
Timeline

Case of Emerging Pathogen

- SHIC Point of First Contact
- Pre-Investigation Phase
- Investigation Phase
- Post-Investigation Phase

- Investigation Form
- Executive Summary (2 days)
- Summary Report (11 days)

Timeline:
- 2 days
- ~1 day
- 11 days
INVESTIGATION PHASE
Who Is Involved?

OUTBREAK FACILITATORS

RRC Team Leader and other team members*
Assistant Facilitator*

INVESTIGATION INTERVIEWEE

Investigation Interview

Herd Veterinarian
Farm Manager and/or other on-farm personnel*

Academics*
USDA*/SAHO*

ACCESSORY ATTENDEES
INVESTIGATION PHASE
Before You Begin…

- Clearly state the investigation is not to find blame
- Understand the producer and herd veterinarian are under stress and may feel vulnerable
- Let the veterinarian know that the report will be communicated to him/her first
  - Herd veterinarian can include edits in final report
INVESTIGATION FORM
Purpose Of Investigation Form

- Set of closed-ended questions that will provide a consistent set of information for the database
- Guides interview questions
- Serves as template for final Summary Report
INVESTIGATION FORM
Review Investigation Form

- **Investigation Form** contains a standardized set of questions surrounding risk events that occur on a swine farm.

- Completed **Investigation Form** is due 5 days post-SHIC first contact (or 2 days post Investigation interview).

- Questions focus on **investigation period**.

1. **INTRODUCTION**
2. **DESCRIPTION OF CURRENT OUTBREAK**
3. **SITE SUMMARY**
4. **MAPS**
5. **RISK EVENTS THAT OCCURRED DURING INVESTIGATION PERIOD**
6. **DETAILED WEATHER SUMMARY DURING INVESTIGATION PERIOD**
7. **OPERATIONAL CONNECTIONS**
INVESTIGATION PHASE
Master Investigation Checklist

INVESTIGATION PHASE

- Fill in Section 1 (Introduction) and Section 2 (Description of Current Outbreak) of Investigation Form
- Fill in Section 3 (Site Summary)
  - Label Premises Map
  - Label 1-Mile Radius Map
  - Label 5-Mile Radius Map
- Fill in Section 4 (Risk Events that Occurred During the Investigation Period)
- Review Section 5 (Weather Summary) for relevant dates
- Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation
- Diagnostic Sampling
Basic information about investigated site

- Type of Herd: (Nucleus/Multiplier/Commercial)
- Stages of Production: (Farrow-to-wean, nursery, grower, etc.)
- Site Inventory:
- Production System Inventory:
- Parity Segregation:
- Average Parity:
INVESTIGATION FORM
2. Description of Current Outbreak

- Allows for characterization of outbreak
- Includes
  - Description of clinical presentation of infection
  - Location of first clinical signs
  - Diagnostic testing information

### 2. DESCRIPTION OF CURRENT OUTBREAK

1. Date that clinical signs were initially observed:

2. Describe clinical presentation of infection:

<table>
<thead>
<tr>
<th>Table 1. Describe diagnostic results performed after the outbreak.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test 1</strong></td>
</tr>
<tr>
<td>Test Performed</td>
</tr>
<tr>
<td>Date Submitted</td>
</tr>
<tr>
<td>Type of animal(s) tested</td>
</tr>
<tr>
<td>Specimen(s) collected</td>
</tr>
<tr>
<td>Number of samples</td>
</tr>
<tr>
<td>Pooling (Y or N; if yes, #samples/pool)</td>
</tr>
<tr>
<td>Result</td>
</tr>
<tr>
<td>Diagnostic Lab</td>
</tr>
<tr>
<td>Accession Number</td>
</tr>
</tbody>
</table>

3. Were the clinical signs observed?

- [ ] Yes (describe location and pattern of involvement)
- [ ] No

4. Date of diagnostic confirmation of outbreak:

5. Date that pathogen was sequenced:

6. Name out outbreak sequence:
**Investigation Period**: time period under focus during investigation (prior to first clinical signs)

- Determined by incubation period of pathogen and estimated time taken to detect clinical signs
- You will be provided with the dates of the investigation period during the Pre-Investigation Phase
INVESTIGATION PHASE
Master Investigation Checklist

INVESTIGATION PHASE

- Fill in Section 1 (Introduction) and Section 2 (Description of Current Outbreak) of Investigation Form

- Fill in Section 3 (Site Summary)
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  - Label 5-Mile Radius Map

- Fill in Section 4 (Risk Events that Occurred During the Investigation Period)

- Review Section 5 (Weather Summary) for relevant dates

- Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation

- Diagnostic Sampling
INVESTIGATION FORM
3. Site Summary

- Site Summary section contains:
  - Characteristics of the Premises
  - Premises Map
  - Characteristics of Surrounding Area
  - 1-mile radius map
  - 5-mile radius map
  - Table: Farms within a 5-mile radius of investigated farm

### A. CHARACTERISTICS OF THE PREMISES

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the owner of the pigs and barns work more than half-time on the premises?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What is the business arrangement for this premises?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Producer or production system owns pigs but facilities are contracted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Producer or production system owns pigs and premises are contracted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Producer or production system owns pigs and facilities are contracted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are the buildings on the premises surrounded by a fence?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Is there a closed gate at all entrances to the premises?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes, closed and locked at all times</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes, closed and locked only after hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Yes, but never locked</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B. CHARACTERISTICS OF SURROUNDING AREA

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the topography of the surrounding area?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Steep hills or mountains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Flat or gentle rolling hills</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. How far is yards in the nearest public road from the premises?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Distance from barns:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Does the nearest public road carry the following swine related traffic, excluding traffic to and from this premises, more than 3 times per week?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Market pigs or bulls to markets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Growing pigs to other swine premises</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Vehicles traveling to or from a wash facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rendering trucks</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Feed trucks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Distance (miles) to the nearest major public road with intensive swine transportation?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Name of road:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Distance from farm:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Direction from farm (North, South, etc.):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Does the nearest major public road with intensive swine transportation carry the following swine related traffic, excluding traffic to and from this premises, more than 3 times per week?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Rendering trucks</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Site Summary - Premises Map

- Premises Map
- Label and discuss building layouts, entrances, and people/vehicle traffic
- Informs discussion and allows for clarity in Summary Report
INVESTIGATION PHASE
3. Site Summary - Premises Map

Example Building Map

Example Traffic Map
3. Site Summary - 1, 3, and 5-Mile Radius Map

- Map indicating 1, 3, and 5 mile radii
- Confirm identities and locations of swine sites on map at beginning of investigation interview
INVESTIGATION FORM
3. Site Summary - 1, 3, and 5-Mile Radius Map
3. Site Summary - Questions

### A. CHARACTERISTICS OF THE PREMISES

1. Does the owner of the pigs and barns work more than half-time on the premises?
   - [ ] Yes
   - [ ] No

2. What is the business arrangement for this premises?
   - [ ] Producer or production system owns pigs but facilities are contracted
   - [ ] Producer or production system owns pigs and production is contracted
   - [ ] Producer or production system owns pigs and facilities are contracted

### B. CHARACTERISTICS OF SURROUNDING AREA

1. What is the topography of the surrounding area?
   - [ ] Steep hills or mountains
   - [ ] Flat or gentle rolling hills

2. How far in yards in the nearest public road from the barns on the premises?
   - Name of road: __________________________
   - Distance from barns: ____________________ yards

3. Does the nearest public road carry the following swine related traffic, excluding traffic to and from this premises, more than 3 times per week?
   - a. Market pigs or culls to markets
      - [ ] Yes  [ ] No  [ ] Unknown
   - b. Growing pigs to other swine premises
      - [ ] Yes  [ ] No  [ ] Unknown
   - c. Vehicles traveling to or from a wash facility
      - [ ] Yes  [ ] No  [ ] Unknown
   - d. Rendering trucks
      - [ ] Yes  [ ] No  [ ] Unknown
   - e. Feed trucks
      - [ ] Yes  [ ] No  [ ] Unknown
### 3. Site Summary- Observations

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Is the premises located in a forested area (&gt;50% of the area within a 3 mile radius is trees)?</td>
<td>□ Yes  □ No</td>
</tr>
<tr>
<td>14. Are other livestock present on site?</td>
<td>□ Yes <em>(explain in observations)</em>  □ No</td>
</tr>
</tbody>
</table>

**OBSERVATIONS ON CHARACTERISTICS OF PREMISES:**

**EXAMPLE:** A feed mill that supplies feed for all of the Bear Grove production system is present on site
Table 2. Farms within a 5-mile radius of this farm.

<table>
<thead>
<tr>
<th>Farm Name</th>
<th>Stage of Production (<em>breeding herd, nursery, etc.</em>)</th>
<th>Number of Animals</th>
<th>Distance from farm (<em>miles</em>)</th>
<th>Direction from farm (<em>N, S, E, W, NE, SE, NW, SW</em>)</th>
<th>Pathogen Positive? (<em>Yes/No</em>)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
INVESTIGATION PHASE
Master Investigation Checklist

INVESTIGATION PHASE

☑ Fill in Section 1 (Introduction) and Section 2 (Description of Current Outbreak) of Investigation Form
☑ Fill in Section 3 (Site Summary)
  ☐ Label Premises Map
  ☐ Label 1-Mile Radius Map
  ☐ Label 5-Mile Radius Map
☐ Fill in Section 4 (Risk Events that Occurred During the Investigation Period)
☐ Review Section 5 (Weather Summary) for relevant dates
☐ Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation
☐ Diagnostic Sampling
INVESTIGATION FORM

4. Risk Events that Occurred During the Investigation Period

- Organized by risk event
- Each risk event covers the following information:
  - Frequency
  - Operational Connections
  - Investigation Questions
  - Observations
  - Likelihood that risk event was responsible for pathogen introduction
  - Follow-up and/or biosecurity recommendations
4. Risk Events - Consider the Following Carrying Agents

- Each risk event includes a list of carrying agents to consider when going through the investigation
- Not exclusive list

A. SEMEN DELIVERED TO FARM

Consider the following carrying agents:
- Semen
- Semen packaging and container(s)
- Semen delivery vehicle
- Semen delivery driver
# INVESTIGATION FORM

## 4. Risk Events - Frequency of Risk Event

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How many times during the investigation period was semen delivered to the farm?</td>
<td></td>
</tr>
<tr>
<td>Dates of delivery (if possible):</td>
<td></td>
</tr>
</tbody>
</table>

**FREQUENCY OF RISK EVENT**

- **Number of times that a risk event occurred on the farm during the investigation period**

   Number of times that a risk event occurred on the farm during the investigation period.
INVESTIGATION FORM
4. Risk Events- Operational Connections

OPERATIONAL CONNECTIONS

<table>
<thead>
<tr>
<th>Farm Name</th>
<th>Stages of Production</th>
<th>Number of Animals</th>
<th>Distance from Farm (miles)</th>
<th>Describe Operational Connection</th>
</tr>
</thead>
</table>

Example: A positive farm uses the same semen courier as the investigated farm

- Any direct or indirect relationship with another swine site
- Summarize operational connections with known positive farms
## INVESTIGATION FORM

### 4. Risk Events - Questions

<table>
<thead>
<tr>
<th>CHARACTERISTICS OF BOAR STUD AND SURROUNDING AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the name(s) of the semen source(s) used during the investigation period <em>(note health status of sources, if possible)?</em></td>
</tr>
<tr>
<td>2. Did the semen source(s) originate from an approved boar stud?</td>
</tr>
<tr>
<td>- [ ] Yes</td>
</tr>
<tr>
<td>- [ ] No</td>
</tr>
<tr>
<td>3. Are the semen source(s) harvested from approved donors?</td>
</tr>
<tr>
<td>- [ ] Yes</td>
</tr>
<tr>
<td>- [ ] No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BOAR STUD SAMPLING PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Which samples from boars are tested for pathogen by PCR?</td>
</tr>
<tr>
<td>a. Semen - [ ] Yes [ ] No [ ] Unknown</td>
</tr>
<tr>
<td>b. Serum - [ ] Yes [ ] No [ ] Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMEN DELIVERY PRACTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Approximately how many other swine premises is semen delivered to by the same driver and vehicle <em>(note names of premises, if possible)</em>?</td>
</tr>
<tr>
<td>______ number of premises</td>
</tr>
</tbody>
</table>

| 11. What procedures are in place to prevent pathogen from a contaminated semen delivery vehicle or driver from being transmitted to herd? |
| a. All semen is delivered by on-farm employees - [ ] Yes [ ] No [ ] Unknown |
| b. Driver not allowed past a clearly defined clean/dirty line - [ ] Yes [ ] No [ ] Unknown |
| c. Driver wears disposable boots when exiting the vehicle or changes boots between premises - [ ] Yes [ ] No [ ] Unknown |

### QUESTIONS

- Grouped according to subject
- Each subject has a section for observations
- **All** answers required in order to receive compensation
INVESTIGATION PHASE
4. Risk Events- How To Ask Questions

- Ask open-ended questions during the investigation
- Closed-ended questions embedded in the form will capture a consistent set of information for the database
INVESTIGATION PHASE
4. Risk Events- Why Ask Open Ended Questions?

- Key pieces of information come from letting herd veterinarian and farm manager talk openly
- Closed-ended questions are limiting, but they supply investigators with a standard set of information that will be collected in a database
  - Complete all closed-ended questions in order to receive compensation
INVESTIGATION PHASE
4. Risk Events - How To Ask Questions

- Broad question about risk event
- More information about the process
- Closed-ended question

General

Specific
INVESTIGATION PHASE
4. Risk Events - How To Ask Questions

- Broad question about risk event
- More information about the process
- Closed-ended question
INVESTIGATION PHASE
4. Risk Events- Notes

- Justification for risk assessment will be supplied by context of these notes
- Be as specific as possible by including identifiers:
  - Farm names
  - People names
  - Company names
- Identify possible areas of Follow-Up and Recommendations during the investigation
**SEmen Delivery Practices Observations:**

- Semen is delivered by semen courier who drives up to Bear Grove mailbox
  - On-farm employee meets semen courier by mailbox with a Bear Grove semen cooler and retrieves semen from courier’s cooler
  - Courier’s cooler has about 3 other semen packages inside it
  - On-farm employee removes outer packaging of semen in shop area
  - Semen is not disinfected
- Semen courier occasionally changes and did during the investigation period
INVESTIGATION FORM
4. Risk Events - Risk Assessments

**Likelihood that semen was responsible pathogen introduction** *(circle one):*

| LOW | MEDIUM | HIGH |

**Brief justification for risk assessment:**

**Considerations when assessing risk for semen entry:**
- Is there opportunity for the carrying agent to be contaminated or infected with an infectious pathogen?
  - Health status of swine sites to which carrying agent was exposed
  - Regional swine density
- Is the contamination or infection mitigated prior to entering the farm?
  - Entry of carrying agent delayed until test results received
  - Semen entry biosecurity procedures effective and complied with
- How frequently does risk event occur?

**RISK ASSESSMENT**
- Chance to assess risk while observations are fresh in mind
- Utilized Considerations section found below Risk Assessment box
- Covered extensively in Module 2.2
INVESTIGATION FORM
4. Risk Events- Follow-Up and/or Biosecurity Recommendations

FOLLOW-UP and BIOSECURITY RECOMMENDATIONS

- Follow up: the next steps a producer/investigator should take to clarify route of pathogen entry
- Biosecurity Recommendations: Realistic and implementable biosecurity improvements that may prevent future pathogen entry

Follow-up and/or biosecurity recommendations:
- Determine location and health status of sites courier delivered to before Bear Grove
- Determine whether semen packaging is disinfected before entering the facilities
INVESTIGATION PHASE

Master Investigation Checklist

INVESTIGATION PHASE

- Fill in Section 1 (Introduction) and Section 2 (Description of Current Outbreak) of Investigation Form
- Fill in Section 3 (Site Summary)
  - Label Premises Map
  - Label 1-Mile Radius Map
  - Label 5-Mile Radius Map
- Fill in Section 4 (Risk Events that Occurred During the Investigation Period)
- Review Section 5 (Weather Summary) for relevant dates
- Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation
- Diagnostic Sampling
INVESTIGATION FORM
5. Detailed Weather Summary

WEATHER

- Pre-Populated by RRC Case Coordinator
- Review prior to investigation interview
- Importance dependent upon pathogen

Weather during the investigation period had the following general characteristics:

- **Daily Temperatures**
  - Maximum: 52.7°F
  - Average: 44°F
  - Minimum: 35°F

- **Daily Wind Speed**
  - Maximum: 25.2 mph
  - Average: 11 mph
  - Minimum: 3.1 mph

- **Daily Cloud Cover**
  - Maximum: 60.7%
  - Average: 36%
  - Minimum: 0%

- **Daily Relative Humidity**
  - Maximum: 91.7%
  - Average: 73.5%

Hourly weather averages for the 42 days preceding first clinical signs, obtained from the Municipal Airport (11.8 miles from Bear Grove). Dates labeled with a red true cell indicate appropriate conditions for PRRSV spread via aerosol.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Cloud cover</th>
<th>Temperature</th>
<th>Wind direction</th>
<th>Wind speed</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/6/2016</td>
<td>12 AM</td>
<td>NA</td>
<td>48.2°F</td>
<td>South</td>
<td>9.2°F</td>
<td>81</td>
</tr>
<tr>
<td>11/13/2016</td>
<td>12 AM</td>
<td>NA</td>
<td>35.6°F</td>
<td>SSW</td>
<td>10.36°F</td>
<td>80</td>
</tr>
<tr>
<td>11/16/2016</td>
<td>12 AM</td>
<td>NA</td>
<td>42.8°F</td>
<td>North</td>
<td>4.6°F</td>
<td>81</td>
</tr>
</tbody>
</table>
INVESTIGATION PHASE
Master Investigation Checklist

INVESTIGATION PHASE

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☐ Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation
☐ Diagnostic Sampling
## OPERATIONAL CONNECTIONS

- Summary of connections found earlier in the report
- Organized per risk event

<table>
<thead>
<tr>
<th>Risk Event</th>
<th>Farm Name(s)</th>
<th>Observations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semen Delivered to Farm</td>
<td>Hoth Sow</td>
<td></td>
</tr>
<tr>
<td>Gilts Entered into Herd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cull Sows Hauled from Farm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Example observation:** Semen courier delivers to both Hoth Sow and investigation farm. Hoth Sow is pathogen positive.
INVESTIGATION PHASE
Master Investigation Checklist

INVESTIGATION PHASE

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☐ Review Section 5 (Weather Summary) for relevant dates
☐ Fill in Section 6 (Operational Connections Summary Table) with information discovered during investigation
☐ Diagnostic Sampling
In the event that diagnostic samples are necessary:

- Remember the pathogen is of known etiology
- Diagnostic tools will be present at the time of the investigation
- The farm will have a prior positive test for the pathogen in question
INVESTIGATION PHASE
Diagnostic Sampling

- SHIC will provide $500 budget for diagnostic sampling
- The most informative samples will be from carrying agents that you expect to be negative, including:
  - Gilts and boars
  - Transport, stored feed samples, and vaccines
INVESTIGATION PHASE
Master Investigation Checklist

Fill in Section 1 (Introduction) and Section 2 (Description of Current Outbreak) of Investigation Form

Fill in Section 3 (Site Summary)
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Fill in Section 4 (Risk Events that Occurred During the Investigation Period)

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Diagnostic Sampling