Veterinary Services

National Institute of Animal Agriculture
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Swine Health Update

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Veterinary Services
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Overview

• Programs
  – PRV
  – SB
  – SHPA

• CIS Activities
  – SECD
  – Influenza
  – CSF
  – ASF/FMD
  – PRV/SB

• Other Swine Activities
  – Seneca Valley Virus
  – NLRAD/Emerging Diseases
Comprehensive Surveillance

• What is Comprehensive Integrated Surveillance (CIS)?
  – CIS is a standardized data collection and information management approach that facilitates designed sample targeting in response to multiple and evolving swine health information needs.

• October, 2013 - USAHA resolution update of Comprehensive Integrated Surveillance in Swine (CISS) activities on implementing surveillance through appropriate surveillance streams and results.
CIS Principles

• Comprehensive Integrated Surveillance (CIS) is an approach to animal disease surveillance that focuses on or allows:
  – cost-efficiency
  – targeted surveillance in appropriate streams.
  – contains an ongoing evaluation and improvement process that allows VS to increase or decrease surveillance for new and emerging diseases as well as existing endemic diseases,
  – flexibility to expand or contract surveillance streams based on current surveillance needs.
Programs- CISS

• PRV
  – 2003 Program Standards still apply
  – Surveillance for PRV is very important for rapid detection and demonstration of freedom
    • Diagnostic Lab (NAHLN) submissions are KEY component (Practitioner submitted samples)
    • High Risk swine identification/testing for PRV
      – Testing on farms
      – Markets
      – Garbage Feeders,
    • Provide information on Feral swine to producers
      – Feral swine remain a risk for PRV-approx. 15-20% positive (varies on year)
Programs-CISS

• PRV
  – Demonstration of Freedom
    • Sow Boar Testing
      – Annual reports still rely on 5% of State’s breeding population
        » Testing at KY laboratory
        » Movement testing, high risk testing and other testing can count towards the 5%
        » Analyzing this stream for reduction opportunities.
  – Findings FY15
    • High Risk testing identified 1 transitional herd in TX in 2015-Depopulated
Programs-CISS

• PRV
  – Market Swine surveillance
    • Tested 7,228 animals in 2015
      – Represents 7 states with IA being 75%
    • Stream targets healthy animals
    • 5 plants one day a week
    • Not effective for rapid detection
    • Does not Impact CISS
    • VS plans to cease activity and will re-establish as when need emerges
### PRV FY15 testing data

<table>
<thead>
<tr>
<th>Surveillance Stream</th>
<th>Fiscal Year 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Laboratory Serologic Submissions</td>
<td>27679 swine from 3002 herds</td>
</tr>
<tr>
<td>Cull Sow-Boars at Slaughter</td>
<td>210643</td>
</tr>
<tr>
<td>Market Swine at Slaughter</td>
<td>7228</td>
</tr>
<tr>
<td>Feral Swine</td>
<td>3063</td>
</tr>
<tr>
<td>Swine Cases Highly Suspicious for PRV</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>248613</td>
</tr>
</tbody>
</table>
Programs-CISS

• **Swine Brucellosis**
  – SB UM & R still applies
    • Collecting on 5% of State’s breeding population
      – Testing at KY laboratory
      – Movement testing, high risk testing and other testing can count towards the 5%
  – Feral swine remain a reservoir
  – Future plans include:
    • Analyzing SB surveillance activities and needs.
• Swine Brucellosis Testing FY15
  – Cull sow/boar- 210,643
  – Feral- 3,051

• Continue to identify non-negatives needing trackback
  – two transitional herds identified in FY15 SB
Programs

• Swine Health Protection Act (9CFR 166)
  – Inspections
    • Work with States to determine primary enforcement/inspection activities (who is doing the work)
FY15 SHPA Activities

- 27,754 Searches for Non-licensed feeders
- 44 non-licensed feeders identified
- 10,369 licensed premises
- 531 licenses issued
- 4891 inspections of licensed premises
- 642 temperature checks
Surveillance

• CSF
  – Collection of high risk samples is necessary from designated states
  – Collection of tonsils/tonsil swabs from high risk swine
  – Garbage Feeder swine
    • When doing investigations:
      – If swine have symptoms of CSF, test per FAD guidelines
      – If there is a dead pig present, sample for CSF by taking tonsil and tissues and submit for surveillance
      – Swabs for PCR testing are also important
  – Remember CSF, ASF, FMD can all be spread by undercooked garbage
### CSF Data

#### A. Cumulative year-to-date totals by quarter

Table 1. Cumulative year-to-date number of animals tested by surveillance stream and quarter for FY 2015.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic laboratories</td>
<td>642</td>
<td>554</td>
<td>862</td>
<td>913</td>
<td>2,971</td>
</tr>
<tr>
<td>High-risk slaughter swine</td>
<td>625</td>
<td>439</td>
<td>639</td>
<td>842</td>
<td>2,545</td>
</tr>
<tr>
<td>Feral swine</td>
<td>635</td>
<td>1,303</td>
<td>774</td>
<td>333</td>
<td>3,045</td>
</tr>
<tr>
<td>Domestic swine in States with higher probability of CSF introduction</td>
<td>1,299</td>
<td>1,094</td>
<td>877</td>
<td>730</td>
<td>4,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,201</td>
<td>3,390</td>
<td>3,152</td>
<td>2,818</td>
<td>12,561</td>
</tr>
</tbody>
</table>

*Year-to-date totals are updated each time a new quarterly report is produced
SECD

• Federal Order was revised Jan 4, 2016
  • Revision-eliminated biosecurity payments
  • Eliminated payments for herd plan
  • Purpose- try to get funding to last longer
    – DRO verification continues and is necessary for reporting
    – Reporting will remain important to track disease trends
  – Data entered in EMRS
SECD

– Program funding for testing is expected to be exhausted this spring
– Discussions continue on how program will work after funding lapse
– Diagnostic funding to last through April 2016. After April, producers are responsible for testing fees
– Reporting responsibilities will continue until decisions on programs future are determined
DATA DISCLAIMER

- Surveillance is voluntary, passive, and for the most part anonymous
- No measure of disease prevalence by:
  - time
  - location
  - subtype
- State-level data summaries are not disclosed externally beyond internal state stakeholders
IAV-S Data FY10-16 YTD:

**Program totals since 2010**
- **Samples Tested**: 103,163
- **Accessions**: 28,759
- **Positive Accessions**: 10,329
- **VI Positives**: 3,449
- **Subtyped Accessions**: 6,619
National breakdown FY 2015:

Percentage of HA and NA combinations – Oct 2014 to Sept 2015

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>H1.alpha</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.52</td>
</tr>
<tr>
<td>H1.beta</td>
<td>0.12</td>
<td>0</td>
<td>0</td>
<td>0.23</td>
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<tr>
<td>H1.gamma</td>
<td>34.58</td>
<td>0.12</td>
<td>0.12</td>
<td>0.82</td>
</tr>
<tr>
<td>H1.delta1</td>
<td>0.12</td>
<td>0</td>
<td>0.23</td>
<td>22.16</td>
</tr>
<tr>
<td>H1.delta2</td>
<td>0.12</td>
<td>0</td>
<td>10.55</td>
<td>0.7</td>
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<tr>
<td>H3.Human_H3</td>
<td>0.35</td>
<td>0</td>
<td>0</td>
<td>2.11</td>
</tr>
<tr>
<td>H3.IV−A</td>
<td>0.12</td>
<td>0</td>
<td>0</td>
<td>17.35</td>
</tr>
<tr>
<td>H3.IV−B</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4.69</td>
</tr>
<tr>
<td>H3.IV−C</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.12</td>
</tr>
<tr>
<td>H3.IV−D</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.23</td>
</tr>
<tr>
<td>H3.IV−E</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.11</td>
</tr>
</tbody>
</table>

**Legend:**
- 0-10%: Light blue
- 10-20%: Medium blue
- 20-30%: Dark blue
- >30%: Very dark blue

**Note:** The table shows the percentage of HA and NA combinations for different HA and NA types from October 2014 to September 2015. The values are color-coded to indicate the percentage range.
Regional reports:

- Posted to website
## Regional Breakdown FY 2015 Data:

<table>
<thead>
<tr>
<th>FY 2015 Region</th>
<th>Samples</th>
<th>Access</th>
<th>Matrix PCR Positive Access</th>
<th>VI Positive Access</th>
<th>Subtyped Access</th>
<th>H1N1</th>
<th>H1N2</th>
<th>H3N2</th>
<th>H3N1</th>
<th>Mixed</th>
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<tbody>
<tr>
<td>1</td>
<td>2,285</td>
<td>860</td>
<td>338</td>
<td>172</td>
<td>275</td>
<td>105</td>
<td>82</td>
<td>80</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>14,893</td>
<td>4,717</td>
<td>1,593</td>
<td>469</td>
<td>1,009</td>
<td>298</td>
<td>317</td>
<td>332</td>
<td>3</td>
<td>55</td>
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<tr>
<td>3</td>
<td>3,152</td>
<td>485</td>
<td>181</td>
<td>72</td>
<td>140</td>
<td>29</td>
<td>78</td>
<td>32</td>
<td>1</td>
<td></td>
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<tr>
<td>4</td>
<td>5,547</td>
<td>1,612</td>
<td>737</td>
<td>92</td>
<td>364</td>
<td>108</td>
<td>90</td>
<td>131</td>
<td>1</td>
<td>33</td>
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<tr>
<td>5</td>
<td>124</td>
<td>82</td>
<td>16</td>
<td>3</td>
<td>12</td>
<td>9</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
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<tr>
<td>UNK</td>
<td>1,479</td>
<td>548</td>
<td>207</td>
<td>32</td>
<td>131</td>
<td>59</td>
<td>26</td>
<td>35</td>
<td>10</td>
<td></td>
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<tr>
<td>FY15 Totals</td>
<td>27,480</td>
<td>8,304</td>
<td>3,072</td>
<td>840</td>
<td>1,931</td>
<td>608</td>
<td>593</td>
<td>613</td>
<td>4</td>
<td>106</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FY15 Totals</td>
<td>36.99</td>
<td>27.34</td>
<td>62.86</td>
<td>19.79</td>
<td>19.30</td>
<td>19.95</td>
<td>0.13</td>
<td>3.45</td>
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</table>
Interesting Finding-H4N6

• Virus isolate forwarded to NVSL for confirmation and sequencing
• Originated from the traceable side of the Influenza A Virus in swine (IAV-S) surveillance program.
• Samples collected 12/16/ 2015 and submitted to a NAHLN lab for Influenza testing / surveillance
  – Unusual subtype identified through the established algorithm:
    • Matrix PCR (+) = influenza A virus identified
    • Subtyping PCRs (-) = not an H1 or H3 virus = unusual finding
    • VI – isolate acquired
    • three gene sequence…. suspicious for H4 and N6, all avian genes
Interesting Finding-H4N6

• 1200 sow, farrow to wean herd in Missouri
  – 5 Gilts: “sick” / aborted; other pigs coughing
  – Tested PRRS negative

• Confirmation at NVSL by whole genomic sequencing
  – H4N6 and composed of avian genes; NOT HPAI or LPAI.
  – H4N6 common subtype in wild bird influenza (#3)
  – Sequence deposited in GenBank.

• Follow-up- additional samples collected from herd
  – ~ 65 serum / nasal swabs submitted to the NAHLN lab for testing
  – Evidence is lacking the virus is persisting.
Program assessment / review:

• Internal Review: program assessment looked at achieved results / stakeholder input / analyze changes needed for transition into CIS

• Results:
  – Strong stakeholder support for the program
  – Met or partially met 8 of the 9 goals/objectives
  – Relevant to continue some level of program support
  – 4 main areas for continuation / enhancement
    • Build on existing stakeholder networks
    • Enhance communication and transparency
    • Focus on resource efficiency
    • Improve data management
Program assessment / review:

- External review: looked at technical and scientific merit of the program / make recommendations for future program efficiencies

- Results:
  - Applauded the non-regulatory approach for an endemic disease that has swine industry support and engagement
  - Twenty-six (26) recommendations made for either the program as it currently exists or a revised program due to budget limitations
  - Nine priorities for action identified
Summaries of assessments posted to website

Influenza A virus in Swine (IAV-S)

• Current Influenza funding is projected to last through FY 2016. Funding beyond FY2016 is uncertain.

• Working to identifying budgetary resources within programs funds to continue surveillance activities into the future

• Collaboration meetings with industry are being planned to re-assess program goals and future activities
Surveillance

- ASF/FMD Pilot
  - Pilot in FY14-15
  - Samples submitted to various NAHLN labs
  - Sample numbers hampered by HPAI deployments
  - Pilot was successful in identifying issues
    - DATA, DATA, DATA, issues were identified and are being addressed.
  - Full implementation on hold until issues identified are addressed
  - Passive surveillance is effective in demonstrating freedom for trade.
Other

• Senecavirus A (SVA)
  – Formally referred to as Seneca Valley Virus
  – *LOOKS* Like FMD, *ACTS* Like FMD
  – Cannot be differentiated from FMD without laboratory testing
  – USDA role is to rule out FMD
  – Many FAD investigations, especially in the Midwest
  – Still seeing, although lower number
VS observations
Bilateral necrosis and ulceration with sloughing of hoof wall
Other

• Senecavirus A (SVA)
  – Guidance document issued in October 2015
    • Remains in effect until replaced
    • A revised version is in finalization process.
      – Clarifies
      – Streamlines
      – Expected to be released soon.
SVA

– Guidance Document Overview

• Treat as FAD investigation following current procedures
• Report all vesicular lesion cases!!
• If SVA is confirmed in the area- Submit samples at lower priority (no need to send air plane if SVA)
• Remember to send duplicate samples to NAHLN and FADDL
• Testing priority can always be elevated depending on results of NAHLN Lab
• We are not paying for SVA testing in NAHLN labs ---- our concern is FMD
National List of Reportable Animal Diseases (NLRAD)

What is it?
• A single uniform, science- and policy-based, nationally supported standardized list of animal diseases/agents

What will it do?
• Provide the basis for consistent reporting with uniform case findings and reporting criteria
• Facilitate commerce and meeting international reporting obligations
• Support export certifications
• Contribute to the assessment, response and reporting of listed zoonotic and endemic animal diseases
• Facilitate response to an emerging disease or issue in the United States
National List of Reportable Animal Diseases (NLRAD)

- VS, in collaboration with SAHO, laboratories, and industry, continues to move forward with NLRAD

- Concept papers are being drafted by working groups:
  - Laboratory implementation
  - Confidentiality
  - Reporting and data management
  - Roll-out and communication
  - Updates to the NLRAD
  - Development of an implementation plan

- Implementation Plan to be released for public review before USAHA 2016 Annual Meeting
Emerging Diseases Framework

- Internal working group working on implementation plan. Draft will be shared with stakeholders for input.
- Generic approach that addresses all commodities
- Collaboration with Swine Health Information Center (SHIC), NPB and others on epidemiological investigations for SVA
- VS representatives sitting on SHIC working groups
Questions?