Aquatic Pathogen Testing in NAHLN Laboratories Update

Christina M. Loiacono DVM, PhD, Dip. ACVP
NAHLN Associate Coordinator

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Veterinary Services
National Animal Health Laboratory Network
STAS
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National Animal Health Laboratory Network

• Formed in 2002

• Purpose
  • Early detection
  • Rapid response
  • Appropriate recovery

• Is a partnership between:
  – USDA (APHIS and NIFA)
  – AAVLD
  – NAHLN Laboratories
Founding Principles and Features of NAHLN

- Quality standards
- Competency of laboratory personnel
- Standardized protocols and equipment
- Adequate biosafety/biosecurity
- Secure electronic communications and reporting
- Assessment of preparedness through scenario testing
Approved Laboratories

- Newcastle Disease (ND)/Avian Influenza (AI)
- *Bovine Spongiform Encephalopathy (BSE)
- **Scrapie/Chronic Wasting Disease (CWD)
- *Classical Swine Fever (CSF)/Foot and Mouth Disease (FMD)
- *Pseudorabies Virus (PRV)
- Influenza A Virus in Swine (IAV)
- Vesicular Stomatitis (VS)
- African Swine Fever
- Viral hemorrhagic septicemia (VHS)
- Infectious salmon anemia (ISA)

*For specified agents, not all laboratories are currently participating in surveillance testing
**Multiple assays conducted for this agent, refer to specific disease map/list for assay options.

National Veterinary Services Laboratories

October 16, 2015
Laboratories Approved to Conduct ISAV or VHSV Surveillance Testing

October 16, 2015

ISA Approved Lab
VHS Approved Lab
NVSL Lab Site
NAHLN Restructure

• New Structure
  – NAHLN Coordinating Council published a concept paper in 2012
  – Several major changes
    • Lab designations: Level 1, Level 2, Level 3, Affiliate, Specialty
    • Reassessment
      – Annual reassessment for funding distribution and number of labs per level
      – Every 3 years full network assessment to update capacity and evaluate use of matrix

• Implementation
  – New structure will begin in 2016 with checklist process
  – Funding adjustments will be made with 2016 funding cycles – March 2016 (APHIS) and June 2016 (NIFA)
NAHLN restructure

• Level 1
  – Large testing capacity
  – Fully accredited
  – BSL3 facilitates
  – LIMS/messaging
  – Trainers
  – Test development and validation

• Level 2
  – Similar, but reduced capacity
  – Provisionally accredited
  – No BSL requirements

• Level 3
  – Surveillance testing

• Affiliate Labs
  – Publically funded that occasionally perform NAHLN related-testing

• Private Labs
  – Specific, needed capability to perform testing
  – Relationship with NAHLN lab and SAHO
  – Written, approved plan to avoid conflicts of interest

• Reference Labs provide
  – Oversight
  – Training
  – SOPs
  – Reference material
  – Proficiency testing
The plan

Phase 1
NAHLN Methods Technical Working Group (MTWG) will review and approve the SOPs for ISAV and VHSV testing. Existing NAHLN laboratories will be invited to participate in Phase 1 by including ISA and VHS in their NAHLN testing capabilities, taking part in proficiency testing and reporting results as indicated in the SOPs.

Phase 2
The APHIS Aquatic Animal Health Program along with NAHLN will invite other Federal and State non-NAHLN laboratories (e.g., U.S. FWS Fish Health Laboratories) and private aquatic animal health testing laboratories to consider applying for NAHLN approval and test for the approved aquatic diseases using standardized requirements.

Phase 3
Aquatic animal pathogens identified in the National Aquatic Animal Health Plan and the recently developed Commercial Aquaculture Program Standards will be considered for addition to the NAHLN disease testing list. The NAHLN Coordinating Council will evaluate and approve these prior to being added to the aquatic animal pathogen group within the NAHLN scope. The NAHLN MTWG will review the associated SOPs.
NAHLN Laboratory Qualification Checklist For Membership of a Veterinary Diagnostic Laboratory

• Annual renewal
• Agree to meet requirements of the NAHLN
  – Quality Management
  – Foreign Animal Disease (FAD) Assays and Investigations
  – Sample Handling
  – Communication and Reporting
  – Administrative and Financial Requirements
• Request any changes to disease/agent approvals
• Signatures needed from State (SAHO, etc.) and Federal representative (DD or AD)
<table>
<thead>
<tr>
<th>State</th>
<th>Laboratory Name</th>
<th>Currently Approved testing</th>
<th>Specific request to add disease programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>California Animal Health &amp; Food Safety Laboratory</td>
<td>AI/END, BSE, CSF(pcr), FMD, PRV(gB/g1), Scrapie/CWD, SIV(pcr,VI)</td>
<td>ISA(rt-pcr), VHS(rt-pcr)</td>
</tr>
<tr>
<td>CO</td>
<td>Colorado State University Veterinary Diag. Laboratory - Fort Collins (Main)</td>
<td>AI/END, BSE, CSF(pcr), CWD(elisa), FMD, PRV, Scrapie/CWD, SIV(matrix), VSV</td>
<td>ISA(rt &amp; conv.pcr), VHS(rt-pcr)</td>
</tr>
<tr>
<td>CT</td>
<td>Connecticut Veterinary Medical Diagnostic Laboratory</td>
<td>AI/END, CSF(pcr), FMD, SIV(pcr,seq)</td>
<td>ISA(rt &amp; conv.pcr), VHS(rt-pcr)</td>
</tr>
<tr>
<td>IN</td>
<td>Purdue University Animal Disease Diagnostic Lab</td>
<td>AI/END, CSF(pcr), FMD, PRV, Scrapie/CWD, SIV(all)</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>KS</td>
<td>Kansas State Veterinary Diagnostic Laboratory</td>
<td>AI/END, CSF(pcr), FMD, PRV(gB/g1), Scrapie/CWD, SIV(all)</td>
<td>ISA(rt-pcr), VHS(rt-pcr)</td>
</tr>
<tr>
<td>MN</td>
<td>University of Minnesota Veterinary Diagnostic Lab</td>
<td>AI/END, CSF(pcr), CWD(elisa), FMD, PRV(gB/g1), Scrapie/CWD, SIV(all)</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>MS</td>
<td>Mississippi Veterinary Research &amp; Diagnostic Laboratory (Branch)</td>
<td>New lab - NO APPROVALS</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>NJ</td>
<td>New Jersey Dept of Agriculture</td>
<td>AI/END, CSF(pcr), FMD, Scrapie/CWD, SIV(matrix)</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>OH</td>
<td>Ohio Department of Agriculture</td>
<td>AI/END, CSF(pcr), FMD, PRV(gB/g1), Scrapie/CWD, SIV(all)</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>OR</td>
<td>Oregon State University Veterinary Diagnostic Lab</td>
<td>AI/END, CSF(pcr), FMD, SIV(pcr/vi)</td>
<td>ISA(rt-pcr), VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>SD</td>
<td>SD Animal Disease Research and Diagnostic Lab</td>
<td>AI/END, CSF(pcr), FMD, PRV(gB/g1), SIV(all)</td>
<td>VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>WA</td>
<td>Washington Animal Disease Diagnostic Laboratory - Pullman (Main)</td>
<td>AI/END, BSE, CSF(pcr), CWD(elisa), FMD, PRV, Scrapie/CWD, SIV(all)</td>
<td>ISA(rt &amp; conv.pcr), VHS(rt-pcr/vi)</td>
</tr>
<tr>
<td>WI</td>
<td>Wisconsin Veterinary Diagnostic Laboratory - Madison (Main)</td>
<td>AI/END, BSE, CSF(pcr), CWD(elisa), FMD, PRV, Scrapie/CWD, SIV(matrix)</td>
<td>ISA(rt &amp; conv.pcr), VHS(rt-pcr/vi)</td>
</tr>
</tbody>
</table>
Progress Update

Phase 1

- NAHLN Methods Technical Working Group and other aquatic subject matter experts reviewed and approved SOPs for ISAV and VHSV testing.

- Existing NAHLN laboratories were invited to participate in Phase 1 by including ISA and VHS in their NAHLN testing capabilities.

- Proficiency tests have been provided
  - Working with NAHLN for PT registration through the NAHLN Portal
  - Identified need for labs to hold permits for shipping VHSV virus isolation PTs.

- Data will be presented to the NAHLN Coordinating Council
PT Results

- ISAV PT (RT- real time PCR)
  - 8 labs have taken the PT
    - All 8 have now successfully passed

- VHSV PT (VI)
  - 8 labs have taken the PT
    - 5 have successfully passed
    - 3 working towards becoming PT’d

- VHSV PT (RT- real time PCR)
  - 11 labs have taken the PT
    - 8 have successfully passed
    - 3 working towards becoming PT’d
Progress Update

Phase 2

Pending implementation of NAHLN restructure:

- Federal and State non-NAHLN laboratories (e.g., U.S. FWS Fish Health Laboratories)
- Private aquatic animal health testing laboratories
Progress Update

Phase 3

- Including more aquatic pathogen assays
The Future of Aquatic Pathogen Testing in NAHLN Laboratories

- Expansion of membership
  - Includes private labs (2016)
- Quality management training
- Including more aquatic pathogen assays