The National Animal Health Laboratory Network in the USA

9th OIE/WAVLD Seminar
Veterinary Laboratory Networks and Networking

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NAHLN- A State and Federal Partnership to Safeguard Animal Health
• History and Background
• Current Activities
• Surveillance Activities
• Future Activities

NAHLN - A State and Federal Partnership to Safeguard Animal Health

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The National Animal Health Laboratory Network

- Formed in 2002
- Is a group of State funded veterinary diagnostic labs that deal with diseases of animals including endemic, exotic, zoonotic, and emerging diseases
- Is a partnership between:
  - USDA (APHIS and CSREES)
  - AAVLD
  - NAHLN Laboratories

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The Purposes of NAHLN

• Early detection
  (targeted surveillance based on population density & risk)

• Rapid response
  (surge capacity to test outbreak samples)

• Appropriate recovery
  (large numbers of samples tested to show freedom)
Founding Principles and Features of NAHLN

- Quality Management System
- Standardized, rapid diagnostic techniques
- Secure communication, alert, reporting system
- Trained personnel, modern equipment
- Quality standards, proficiency testing
- Adequate facility biosafety/biosecurity levels
- Scenario testing
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May 2009

National Animal Health Laboratory Network (NAHLNN)

Approved Laboratories

- Newcastle Disease (ND)/Avian Influenza (AI)
- Scrapie/Chronic Wasting Disease (CWD)
- *Bovine Spongiform Encephalopathy (BSE)
- *Classical Swine Fever (CSF)/Foot and Mouth Disease (FMD)
- Vesicular Stomatitis (VG)
- National Veterinary Services Laboratories

*For specified agents, not all laboratories are currently participating in surveillance testing.

May 1, 2009
Current Activities
NAHLN Quality Policy

• All NAHLN laboratories must be fully accredited
  – AAVLD Essential Requirements
  – OIE or ISO 17025 Standard

• If not accredited
  – Quality System consistent with AAVLD/OIE/ISO 17025 standards
  – Participate in regular site visits
  – Special approval by USDA/APHIS, VS

• Must agree to NAHLN compliance audits and/or site visits upon request.
NAHLN Information Technology System

• Established a system with data and messaging standards to ensure accurate and consistent diagnostic information is quickly and securely transmitted.

• Increased emphasis on electronic results messaging
  – CSF and AI messaging in process
Train the Trainer

- 2009
  - Formalize processes
  - ICLN training working group
- 2008
  - High Throughput System Training
- 2007
  - Increase personnel trained and PT’d to ≈200
- 2006
  - Cross training for PCR accepted across diseases
  - Interlaboratory Training
- 2005
  - Increased the number of trained labs from 12 to 28 and personnel from 24 to ≈100
NAHLN Methods Technical Working Group

• **Purpose** - to provide input on various aspects of methods validation and approval including:
  
  - Review of available methods and associated gaps
  - Identification of potential new technologies
  - Validation criteria, dossier review and assay approval process
  - Equivalency of modified methods or for adaptation to new platforms
  - Continual performance assessment of assays
  - Development of performance characteristic summary documents for NAHLN assays

• **Quarterly meetings and / or conference calls**
HPAI Tabletop Exercises

- 38 Regional presentations
- Participants
  - NAHLN laboratory personnel
  - State Animal Health Officials
  - VS Field Staff and AVICS
  - Industry
  - Public Health
  - Other interested groups
- Individual after action reports
- Meta analysis
  - Finalized report
  - Prioritized actions to address gaps
  - Working groups

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Surveillance Activities

AI
BSE
ND
VSV
SIV
CWD
Scrapie
CSF

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Classical Swine Fever

- Plan developed by National Surveillance Unit with stakeholder input
  - Target clinical signs, feral swine, slaughter condemned
  - All high risk states involved
- Implemented – January 2006
  - >27,000 samples tested
  - 36 laboratories participating
- Data submission
  - Web based and electronic messaging
- Improved ability to respond to an adverse animal health event
Swine Influenza Virus

-Surveillance Goals

• Determine if Novel H1N1 exists in commercial swine
• Timely detection of new influenza virus strains
• If present, determine virus distribution
• Determine genetic characteristics for vaccine and diagnostic development

-36 Laboratories

-Testing Algorithm

• Matrix and N1 PCR
• VI
• Sequencing
National Animal Health Laboratory Network (NAHLN)
Swine Influenza Virus Surveillance Testing Algorithm

**Appropriate Sample**

**Matrix PCR**

- **(+)**
- **(-)**

**N1^2 PCR**

- **(+)**
- **(-)**

**Virus Isolation**

- **(+)**
- **(-)**

**Sequence hemagglutinin, neuraminidase, and matrix genes**

**Bank samples if negative N1**
Selected samples (subset) based on general SIV surveillance plan → VI

**Notify NVSL immediately and ship samples**

**Bank all isolates for future shipment to the NVSL**

May 2009
Upcoming Activities
Upcoming Efforts

• FMD Negative Cohort
  – Laboratory based submissions
  – Real-time PCR

• Pseudorabies Surveillance
  – Laboratory based submissions
  – Serology

• FMD Tabletop Exercise
  – Planning meeting to determine objectives
  – Establishing timelines and delivery dates
Successes of the NAHLPN

- Strategically combines the infrastructure and expertise in the state veterinary diagnostic laboratories and the National Veterinary Services Laboratories.
- Established the animal health laboratory backbone of the United States emergency response and recovery program.
- Implemented national, standardized surveillance for high priority diseases.
Conclusions

• Increased levels of coordination and collaboration
• Tremendous progress in the ability to respond
• Much remains to be accomplished
  – Use data generated to prioritize actions
• Partnerships are key to the success of NAHLN!
NAHLN Information

• Website:
  http://www.aphis.usda.gov/animal_health/nahln
  – Brochure and information cards
  – NAHLN Quarterly Newsletter

• Contact information:
  E-mail nahln@aphis.usda.gov or phone 515-663-7731