Traditional Role of Veterinary Diagnostic Labs

- Expedient, high caliber diagnostics
  - Surveillance, disease diagnosis and outbreak control
- Disease prevention
  - Global marketability of animal agriculture
- Food Safety/Public Health

Traditional Roles of Veterinary Diagnostic Labs

- Emerging Disease Detection
  - Zoonotic Diseases
    - West Nile Virus, 1999
    - Equine diagnostics
    - Anthrax Scare, 2001
  - Veterinary labs provided staff, facilities and expertise

New Roles of Veterinary Diagnostic Labs

- Foreign Animal Disease Outbreaks
  - Exotic Newcastle Disease, California, 2002
  - BSE, Washington State, 2003
  - High Pathogenic Avian Influenza, Texas, 2004

Foot and Mouth Disease in the United Kingdom

- UK labs unable to provide needed test capacity
- FMD outbreak could cost US farmers $2 billion

Price of failure

Major outbreak of Exotic Newcastle Disease could cost $2 billion in U.S. poultry exports
National Animal Health Laboratory Network (NAHLN)

A state and federal partnership to safeguard animal health

Key Elements

- National strategy to coordinate the Nation’s federal, state and university lab resources
- System for disease surveillance and maximum emergency response diagnostic capabilities

NAHLN

- Networks federal lab capacity with infrastructure of state and university labs to allow a better response to animal health emergencies
  - Bioterrorist events
  - Emergence of new domestic diseases
  - Foreign animal diseases

Key elements

- National training, proficiency testing and quality assurance
- Upgraded facilities to meet biocontainment and security requirements
- Support of regional and national animal health emergency training exercises that test and evaluate the communication and reporting protocols of the network
NAHLN

- National Veterinary Services Laboratory (NVSL)
  - Central reference laboratory
  - Coordinates activities
  - Participates in methods validation
  - Provides assistance, materials and prototypes for many of the NAHLN elements

NAHLN

- State and University Labs
  - Perform non-emergency surveillance testing
  - Provide additional capacity during a disease outbreak
  - Identify infected animals
  - Assist in epidemiologic investigations
  - Conduct follow-up surveillance to achieve “free status” at the end of the outbreak

NAHLN

- 2002 established - USDA/APHIS
- Initially, 12 State and University Labs
- Currently, 44 labs in 37 states
- Funded by Department of Homeland Security
- Initially focused on rapid assays for FADs
  - ASF, AI, CSF, CBPP, END, PMD, LSD and rinderpest

NAHLN

- 2002 - scrapie and CWD testing
- 2004 - national END surveillance testing
- 2004 – BSE surveillance

NAHLN Future Goals

- Increase # and geographic dispersion of labs
- Expand number of pathogens and toxins assayed
- Add testing technologies
- Increase test volume capacity per laboratory

NAHLN Roles for Veterinary Diagnostic Labs

- Critical capacity to respond to emerging or foreign animal diseases
- Professional Staff trained to detect FMD, CSF, High Path Avian Influenza, BSE
- Local support to USDA NVSL FAD Labs
- Partner with Veterinary Practitioners to provide enhanced surveillance
- Partner with other agencies and lab networks
Emerging Disease Preparedness

- USDA/CSREES
  - National Animal Health Lab Network
- USDA/FSIS and FDA
  - Food Emergency Response Network
- CDC
  - Laboratory Response Network

Mission

To provide expedient high caliber veterinary diagnostic service and credible, reliable surveillance information to Ohio’s veterinary practitioners and animal agriculture producers in support of Ohio’s livestock and poultry industries and food safety initiatives.

ADDL and NAHLN

- 2004 – NAHLN member
- 2005 - $30,000 allocated by USDA
- Trained professionals
  - NVSL “Train the trainer” courses
  - FAD trained laboratory diagnosticians
- Completion of proficiency testing
- Participation in tabletop simulations

ADDL NAHLN Tests

- Currently performed tests
  - Avian Influenza - PCR
  - Exotic Newcastle Disease - PCR
  - CWD - IHC, ELISA
  - Scrapie - IHC
- Tests trained to perform
  - Foot and Mouth Disease
  - Classical Swine Fever

NAHLN member

- American Association of Veterinary Laboratory Diagnosticians accreditation
- Full service diagnostic laboratory
  - Pathology, Bacteriology, Virology, Serology, Toxicology
- Food, companion and exotic animals

Professional expertise

- Rapid results
- Electronic reporting – web based
- Reasonable costs
NAHLN Requirements

- Shipping, receiving, sample handling, worker training and facility requirements
- SOPS
- Relationship with FBI/WMD Coordinator
- IT requirements for FADs and Bioterrorism events

New Roles of Veterinary Diagnostic Labs

- Bioterrorism Preparedness
- Select Agent Registration
- Biosafety Level 3 Facilities
- Enhanced Biosafety and Biosecurity
Success doesn't just happen, it's planned

Emergency Disease Preparedness Plans for ADDL
- Finance
- Management of routine caseload
- Maintenance and ordering of supplies
- Sample collection and transport
- Sample receiving and triage at lab
- Facility biosecurity
- Personnel management
- Result reporting
- Cleaning and disinfection
- Incident command system for laboratory

Avian Influenza Outbreak Ohio Response
- FADD to farm
- Submission of samples to ADDL
- Presumptive identification of H5 AI positive virus by PCR
- Farm quarantine
- Initial confirmation by NVSL
- Remaining testing performed at ADDL

Avian Influenza Outbreak Ohio Response
- PCR testing capabilities
  - Previously 180 samples in 8 hours
  - Currently, 1000 samples in 8 hours
    - High throughput equipment
      - Automated 96 well DNA/RNA extractor
      - Robotic automatic diluter (liquid handling system)
      - Real-time PCR capabilities of 384 samples in 1 ½ hour
Avian Influenza Outbreak
ADDL Response

- Testing Priority
  - 1st Priority: AI testing
    - Molecular and serological testing, sample collection (pathology)
  - 2nd Priority
    - Regulatory (animal movement, export)
  - 3rd Priority
    - Routine diagnostics

Outsource testing to AAVLD accredited labs if necessary

Rapid Response is Critical

- First line of defense:
  - Veterinary Practitioners and Animal Health Professionals
  - Communication essential