

National Animal Health Laboratory Network Strategic Plan

PREFACE

- The National Animal Health Laboratory Network (NAHLN) was developed in response to the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, and the Homeland Security Presidential Directive/HSPD-9 of 2004 to “develop nationwide laboratory networks for food, veterinary, plant health and water quality that integrate existing Federal and State laboratory resources, are interconnected, and utilize standardized diagnostic protocols and procedures”.
- The NAHLN enables Federal and State laboratories to test for economically devastating and potentially zoonotic diseases such as foot-and-mouth disease, influenza in avian and swine species, bovine spongiform encephalopathy (BSE), and most recently, swine enteric coronavirus diseases. It serves as our nation’s most vital early warning system for emerging and foreign animal diseases.
- Adequate funding of the NAHLN directly addresses our nation’s need for a safe, stable and nutritious food supply, and enables preparation, prevention, diagnosis, response, and recovery from economically important and potentially zoonotic diseases.
- A survey of 35 NAHLN laboratories across the nation in 2011 revealed that direct State support for State and university-based NAHLN Laboratories totaled nearly \$100,000M annually. This number reflects operational and infrastructure support for normal laboratory operations and support of some of the NAHLN activities in the laboratories. In addition, there is approximately \$10M annually in Federal funding dedicated to NAHLN operations and laboratory infrastructure enhancements, which has been substantially less funding than is required to maintain and enhance a national agricultural security resource of this importance. The accomplishment of the strategic priorities described in this plan is predicated on adequate and sustained Federal funding, as well as continued State support of the laboratories.
- In 2012, USDA Economic Research Service estimated the production value of the US animal industries at \$102.26B. As of FY14, appropriated USDA funding levels for NAHLN were approximately \$9.6M, or 0.009% federal investment for disease surveillance to protect essential agriculture animal food industries and public health.

VISION

The National Animal Health Laboratory Network (NAHLN): a network of animal disease diagnostic laboratories that works effectively as a team, provides ongoing disease surveillance, responds quickly to disease events, communicates diagnostic outcomes to decision makers in a timely manner, and has the capability and capacity to meet diagnostic needs during animal disease outbreaks.

MISSION

The NAHLN is a nationally coordinated network and partnership of Federal, State, and university-associated animal health laboratories. NAHLN laboratories provide animal health diagnostic testing, methods research and development, and expertise for education and extension to detect biological threats to the nation’s animal agriculture, thus protecting animal health, public health, and the nation's food supply.

KEY Principles

The NAHLN will:

- Maintain the capability and capacity to provide nationwide laboratory services in support of early detection and response to foreign animal disease outbreaks or other adverse animal health events;
- Operate within a quality management system that meets American Association of Veterinary Laboratory Diagnosticians (AAVLD), International Organization for Standardization (ISO) 17025, or equivalent standards;
- Provide national diagnostic laboratory quality management system training;
- Establish and maintain uniformly trained and competent animal disease diagnostic laboratory personnel;
- Provide national animal disease diagnostic technical proficiency testing;
- Use standardized protocols, reference materials, and equipment;
- Support the development, validation, and deployment of critical animal disease diagnostic testing methods through research and data exchange;
- Establish and implement secure, rapid electronic communications systems to optimize reporting, alert and epidemiological needs;
- Use facilities that maximize biosafety, biosecurity and physical security requisite for testing performed;
- Evaluate animal health emergency preparedness through scenario testing to identify and prioritize testing and communication gaps;
- Assess the health and well-being of the country's livestock population through active and passive diagnostic surveillance testing for exotic, emerging, and zoonotic diseases of animals;
- Support the development of a system of "first detectors" through training of private veterinarians, extension educators, producers, and state and federal animal health officials;
- Continually assess the need for optimized and flexible network capacity.

NAHLN Strategic Priorities for next 3 years

- **Implement the new NAHLN Structure**—develop and implement a transition plan for moving to the new structure and new processes as proposed in the NAHLN concept paper. This includes completing CFR codification and streamlining internal data, budget and communication processes.

Specific Activities:

- Transition to new structure:
 - Implement the transition process for new structure including: Labs self-assessment; external review; needs evaluation; outreach and budget planning.
 - Finalize and evaluate transition processes including: level of all; funding adjustments as needed; planning for recurring laboratory assessment/review timeline and details.
- Continuation of codification activities: complete information collection requirements; develop NAHLN program standards; develop 9CFR language; submit and complete codification process.
- **Emerging disease identification**—including: surveillance to identify emerging disease syndromes; training of "first detectors," development of critical diagnostic testing methods; procedures for gathering and disseminating syndromic surveillance data, and incorporation of advanced diagnostic technologies.

Specific Activities:

- Establish library of effective virus family/genus consensus primers (Microarray) for NAHLN labs.
 - Establish list of metagenomics facilities, Universities and NAHLN labs.
 - Foster sharing and establishment of background sequence library for background subtraction (e.g. bovine oral swab).
 - Share and discuss technical aspects within the Methods Technical Working Group for future purchase decision.
 - Start testing scenarios with known infectious disease agents to try-out the system.
 - Consider purchasing metagenomics instrumentation for NAHLN labs, establish plan for personnel, SOPs and check tests.
 - Continue improvement of library for background subtraction (determine 'normal' distribution of sequences for species).
 - Scenario and Proficiency testing using metagenomics.
- **Standardized data capture and electronic messaging**—continue to improve and expand the newly revised information management system for utility for all diseases, focusing on integration with other Federal systems, as well as key external systems; and work with NAHLN laboratories to fully implement electronic messaging by all laboratories.

Specific Activities:

- Completion of phase 3 of Laboratory Messaging Services development project, integration of LMS with other VS and state systems.
 - Expand messaging capability and increased number of laboratories messaging.
 - Continue to collaborate with NVSL to increase their messaging capabilities and integration with LMS and other systems.
 - Expand capability for all USDA-APHIS Veterinary Services diseases to be messaged.
 - Target 100% messaging among Level 1 and Level 2 laboratories.
- **Integrate with and support animal health community long-term initiatives**—including, but not limited to: business continuity plans; comprehensive and integrated surveillance initiatives; the DHS-funded Enhanced Passive Surveillance (EPS) project; participation in the Integrated Consortium of Laboratory Networks; and development and validation of new assays to support these initiatives.

Specific Activities:

- Complete pilot project with Secure Pork Supply which includes EPS in swine initiative.
- Participate in Secure Milk Supply planning, including integration of FMD Milk RT-PCR for use in FMD outbreak.
- Support NAHLN laboratory component of pilot comprehensive swine surveillance for FMD and ASF.
- Support further validation and integration of pooled sample types, identified as a priority by animal industries.
- Participate in the International Institute of Animal Diseases (IIAD) laboratory EPS initiative;
- Complete integration into the Integrated Consortium of Laboratory Networks (ICLN) data exchange utility.

- **Ensure a coordinated effort to meet resource needs for NAHLN--** – among APHIS-VS, National Institute for Food and Agriculture (NIFA) and AAVLD partners through stakeholder input and communication.

Specific Activities:

- Continue interagency coordination of funding for NAHLN laboratory infrastructure support.
- Identify NAHLN resource needs and develop plan for future years of support (funding, personnel, facilities, etc.), especially with regard to the new NAHLN structure and other NAHLN strategic priorities.
- Develop a communication plan for animal health stakeholders describing the scope, function, priorities, challenges, and budget needs of the NAHLN, especially with regard to the new NAHLN structure.

APPENDIX A-- Strengths, Weaknesses, Opportunities and Threats

Strengths

- Demonstrated success as a State/Federal partnership for over ten years
- Nationally coordinated network of almost all publicly-funded animal disease diagnostic laboratories
- Coordinating Council made up of Federal and State partners
- Standardized and regularly audited quality system requirements in NAHLN laboratories
- Laboratory facilities with significant BSL-2 and BSL-3 capabilities and capacities
- Secure communications for data reporting and alert notifications
- Developed and implemented NAHLN IT system for HL7 messaging of several diseases
- Unmatched national resource of expertise in animal disease diagnostics and facilities
- Standardized, practical assays deployed for ten important infectious animal diseases
- Staff that is proficiency trained and tested for use of deployed assays
- Demonstrated competence in national animal disease surveillance efforts
- Productive alliances established with other national laboratory networks
- Name recognition in important parts of the Executive Branch, Congress, and industry
- Partnering with AAVLD accreditation program to provide maximum effectiveness, economy and efficiency
- NAHLN Methods Technical Working Group provides essential and effective network-wide input into test development and validation
- Network laboratories have diagnostic expertise and testing capabilities to diagnose known infectious and non-infectious diseases.
- Network laboratories have diagnostic expertise and testing capabilities to identify emerging diseases.

Weaknesses

- Lack of updated/current strategic and operational plans for the near future
- Potentially inadequate surge capacity due to insufficient numbers of trained personnel, lack of equipment, and/or lack of assay supplies
- Lack of standardized assays for several important infectious animal diseases
- Efficient and timely data collection and electronic messaging limited and not fully developed decreased on-going surveillance programs due to reduced Federal funding
- Inability to secure adequate funding in spite of significant lobbying efforts
- No organized passive surveillance program.

Opportunities

- Potential for increased Federal funding for laboratory infrastructure and all NAHLN activities through Federal appropriations and other Federal and non-Federal sources
- Potential for increased infrastructure enhancement and diagnostic capabilities through competitive grant programs
- Potential for enhanced communications and alliances with other State and Federal partners and industry
- Partner with Federal and non-federal partners for utilizing NAHLN infrastructure and data with the integration into on-going national scale efforts such as swine comprehensive surveillance development, business continuity planning, enhanced passive surveillance, etc.
- Enhance functionality and partnering with the Integrated Consortium of Laboratory Networks
- Implementation of NAHLN Concept Paper network re-organization to improve effectiveness and efficiency

Threats

- Level or decreased Federal funding of surveillance programs, directed testing, and laboratory infrastructure enhancements
- Continued decreased level of State funding for support of laboratories and infrastructure
- Outbreak of significant disease for which the NAHLN is not prepared, either through lack of capability (i.e., lack of diagnostics for known diseases) or lack of capacity (i.e., surge)
- Emergence of significant disease for which there are not developed or validated assays
- Potential lack of cooperation between states, and between states and the federal government in the face of a significant disease event