

## REPORT OF THE USAHA/AAVLD COMMITTEE ON ANIMAL HEALTH INFORMATION SYSTEMS

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The Committee met on October 26, 2008 at the Sheraton Greensboro Hotel, Greensboro, North Carolina, from 12:30 p.m. to 5:30 p.m. Thirteen members signed in along with 21 non-members of which 8 requested membership on the Committee.

Dr. Stan Bruntz, National Surveillance Unit (NSU), Center for Epidemiology and Animal Health (CEAH), Veterinary Services (VS), Animal and Plant Health Inspection Service (APHIS), United States Department of Agriculture (USDA), presented the National Animal Health Reporting System (NAHRS) 2008 update. The NAHRS Steering Committee convened May 29, 2008 by teleconference and met August 25-26, 2008 in Fort Collins, Colorado. The following issues were discussed and were brought forward to the Committee: Participation. As of October 2008, forty-eight States (46 States in 2007) are currently reporting to NAHRS. Georgia and Rhode Island began participation in 2008. All 46 participant States reported to NAHRS every month in 2007. NAHRS information continues to be an important source of information used by Veterinary Services to complete U.S. animal disease status reports for the World Organization for Animal Health (OIE). The NAHRS, as a credible source of information to support trade negotiations also provides summary level information on 'program' diseases and foreign animal diseases (FADs) and is a national source of information on the confirmed occurrence of endemic OIE-listed diseases. In 2008 there have been requests for NAHRS information during audits by the European Union (EU) and Chile. In 2009 NAHRS will continue its recruitment activities but will increasingly focus on further raising national awareness of NAHRS with continued improvement and validation of NAHRS reporting.

The NAHRS Aquaculture Commodity Working Group recommended to the NAHRS Steering Committee that the current NAHRS list of five reportable diseases for aquaculture (viral hemorrhagic septicemia, spring viremia of carp, infectious hematopoietic necrosis, epizootic hematopoietic necrosis, and *O. masou* virus disease) be replaced by the list of fish, molluscan and crustacean diseases notifiable to the OIE (OIE Listed Diseases for these species is provided below), together with the associated OIE definitions and diagnostic criteria as published in the OIE Manual of Diagnostic Tests for Aquatic Animals. This brings NAHRS into harmony with OIE guidelines and allows NAHRS to accurately report OIE notifiable diseases. The request was approved by the Committee.

### Fish Diseases

- Epizootic hematopoietic necrosis
- Infectious hematopoietic necrosis
- Spring viremia of carp
- Viral hemorrhagic septicaemia
- Infectious salmon anemia
- Epizootic ulcerative syndrome
- Gyrodactylosis (*Gyrodactylus salaris*)
- Red sea bream iridoviral disease
- Koi herpesvirus disease

### Molluscan Diseases

- Infection with *Bonamia ostreae*
- Infection with *Bonamia exitiosa*

- Infection with *Marteilia refringens*
- Infection with *Perkinsus marinus*
- Infection with *Perkinsus olseni*
- Infection with *Xenohalotis californiensis*
- Abalone viral mortality (listed as emerging per Article 1.2.2.2).

Crustacean Diseases

- Taura syndrome
- White spot disease
- Yellowhead disease
- Tetrahedral baculovirus (*Baculovirus penaei*)
- Spherical baculovirus (*Penaeus monodon*-type baculovirus)
- Infectious hypodermal and hematopoietic necrosis
- Crayfish plague (*Aphanomyces astaci*)
- Infectious myonecrosis
- White tail disease (listed as emerging per Article 1.2.2.2)

The NAHRS Aquaculture Commodity Working Group also recommended to the NAHRS Steering Committee that the American Fisheries Society Fish Health Section (AFS-FHS) Blue Book be recognized as an alternate to the OIE Manual of Diagnostic Tests for Aquatic Animals for diagnostic criteria and test protocols for NAHRS reporting activities. The primary standard for laboratory testing is the OIE Manual of Standards for Diagnostic Tests and Vaccines, referred to as the OIE Manual. For Aquaculture diseases, the AFS-FHS Blue Book is also acceptable. This request was approved.

The NAHRS On-line Reporting Tool version 2 was released January 2008. The system improves the function and format of the on-line reporting tool. The NAHRS On-line Reporting Tool version 2 also includes requests for expanded equine infectious anemia (EIA) data. The EIA module is optional, but States that utilize it will not have to submit an annual EIA report to VS Equine Program staff. Summary of NAHRS EIA module State EIA reporting: Twenty-three States completed September 2007 – August 2008 EIA data and sixteen began use of NAHRS EIA module in 2008. Equine herpesvirus myeloencephalopathy (EHV1-EHM) was added for collection of qualitative information in addition to the combined EHV-1/EHV-4 information currently reported in NAHRS.

The NAHRS Steering Committee also discussed definitions of compartment/ environment and commercial for reporting in NAHRS. The current use of commercial does not fit well with current OIE reporting and the term, although defined in the NAHRS Manual, can be ambiguous. The OIE defines poultry as all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose. Kleven referred this issue to the USAHA Committee on Transmissible Diseases of Poultry and Other Avian Species.

The NAHRS Steering Committee also approved exploration and possible expansion of NAHRS to collect quantitative information on zoonotic diseases. The Committee recommended starting with anthrax and tularemia. The NAHRS Steering Committee also reconfirmed that reporting of disease can be, at the discretion of the State Animal Health Official, at a presumptive or definitive level. This is primarily related to endemic disease reporting.

Bruntz also followed up on the 2007 Resolution 9 which requested that USDA-APHIS-VS in cooperation with State animal health officials and industry develop a United States National List of Reportable Animal Diseases with appropriate reporting criteria, using the List of Diseases Notifiable to the OIE as a starting point. USDA-APHIS-VS-NSU is drafting a list of diseases that may be considered nationally reportable, using the list of diseases notifiable to OIE as a starting point. To date the NSU has conducted background research of required disease reporting in the Code of Federal Regulations (CFR) and in other pertinent rules, agreements, and memos and reached the conclusion that USDA can, under existing authority, only draft voluntary reporting guidelines and not a mandatory list and protocol.

Discussions following Bruntz's presentation concentrated on the last point, a national list of reportable diseases. Concerns were voiced that such a list needs to be harmonized with other disease lists as dictated by various international trade partners, as is the case for avian diseases. Bruntz was not aware of any resistance to date to such a national list. A working group for establishing such a list and defining diagnostic and reporting criteria, although proposed, has not yet been put in place and Committee members suggested to use the existing NAHRS Subcommittee to constitute such a workgroup.

Dr. Aaron Scott, CEAH-USDA-APHIS-VS, presented the 2008 update on a Comprehensive, Integrated National Animal Health Surveillance System (NAHSS). He first described the emergence of NAHSS from Principle 1A of the 2001 National Animal Health Safeguarding Review and the development to date of supporting tools, definition of surveillance streams and the integration of surveillance programs, supported by surveillance and data standards. Scott then referred to discussions of the NAHSS Steering Committee face-to-face meeting in August 2008 as to having or not having an ideal surveillance system. He discussed the factors that contribute to ideal surveillance, including awareness and alertness of federal, State and industry stakeholders, availability of state of the art technology, including diagnostic and information technology that allows for real-time data and information movement and assessment for action by decision makers, as well as translation of such information and evaluation to all stakeholders.

Scott introduced the topic of NAHSS in the context of the Veterinary Services 2015 Vision and laid out a framework for the forces of change on which the 2015 NAHSS will continue to develop. Challenges include tight Federal and State budgets that influence preparedness for response, the recognized need for activities at the human animal interface, and especially the requirement for flexibility in an ever changing environment.

Mr. John Picanso, VS-APHIS-USDA, presented Veterinary Services Software Development – Results and Direction. By creating the National Animal Health Information Technology Board, VS and the National Assembly of State Animal Health Officials (NASAHO) renewed their commitment in March of 2008 to work together on enhancing VS information technology systems and streamline the exchange of data flow between systems. Members of the Board include Paul Anderson, Minnesota; Steve Dedaro, Ohio; Steve Halstead, Michigan; Annette Whiteford and Victor Velez, California; Bob Hillman, Texas; Bruce Akey, New York; Paul Knepley, Pennsylvania; Kyle Forrester, North Dakota; Martin Zaluski, Montana; Barb Powers, Colorado; as well as five National Program and CEAH Staff. Through collaboration and more transparency surrounding information technology software development, both at the Federal and State levels, the Board is setting the direction for the future on how animal health surveillance and monitoring information can be more efficiently, effectively and securely shared. VS also has been assembling the Veterinary Services Roadmap Report – A New Direction or Paving the Way for the Future. VS-APHIS-USDA is undergoing an enterprise architecture review to identify processes and methods concerning collection and delivery of mission critical electronic data or information to VS systems. This report is to provide executives, industry partners, State cooperators, field personnel and information technology (IT) personnel the ability to learn what the current technical position is within VS and provide technology alternatives to move us into the future.

Dr. Raoul Gonzales, National Biosurveillance Integration Center (NBIC), Department of Homeland Security (DHS), presented a brief on the National Biosurveillance Integration System (NBIS) and the NBIC. Recognizing the need to create a new biological threat analysis capability across multiple sectors, the President of the United States issued two Presidential Directives: HSPD-9: Defense of U.S. Food and Agriculture (January 2004) and HSPD-10 (April 2004): Biodefense for the 21st Century. HSPD-9 directed that: The Secretaries of Interior, Agriculture, Health and Human Services, the Administrator of the Environmental Protection Agency, and the heads of other appropriate Federal departments and agencies are directed to build upon and expand current monitoring and surveillance programs to develop robust, comprehensive, and fully coordinated surveillance and monitoring systems, including international information, for animal disease, plant disease, wildlife disease, food, public health, and water quality that provides early detection and awareness of disease, pest, or poison agents. HSPD-10 further called for the creation of a national bio-awareness system that permits the earliest possible recognition of a biological attack. Based upon these directives, the NBIS program was developed and implemented within the DHS.

NBIS provides a homeland security-relevant biosurveillance common operating picture to senior leaders and partner agencies regarding natural disease outbreaks, accidental or intentional uses of biological agents, and emergent biohazards through the acquisition, integration, analysis and dissemination of information from existing human disease, food, agriculture, water, meteorological, and environmental surveillance systems and relevant threat and intelligence information.

The NBIC is physically located at the Nebraska Avenue Complex, Washington, DC and subordinate to DHS, Office of Health Affairs (OHA). It integrates data and fuses information to provide early cueing and increased situational awareness of natural or man-made biological incidents to senior leaders, NBIS Member Agencies and participating partner organizations. The capabilities of NBIC are to rapidly identify, characterize, localize and track a biological event of national concern by integrating existing public and private surveillance systems from across human health, animal, plant, food, water and environmental domains. The NBIC further leverages intelligence information to provide analysis that can decrease the impacts of biological events. The efforts are led by a team of analysts with multidisciplinary skills including veterinary medicine, human medicine, epidemiology, public health, environmental sciences, clinical and basic science research.

Dr. David Van Metre, Colorado State University, gave a presentation on Syndromic Surveillance in a Colorado Livestock Auction Market. A variety of livestock species originating from multiple sources are assembled at and distributed from auction markets which therefore could serve as useful locations for conducting local, State or national surveillance programs. Van Metre presented frequencies of clinical disease signs at an auction market, where a veterinarian inspected animals visually from outside of the pens and reported signs categorized into 12 syndromes. Respiratory syndrome was the most common disease syndrome observed, followed by thin syndrome and ambulation / posture syndrome, with the greatest numbers of observed clinical signs occurring on the days of greatest auction market activity. In the follow-up discussion he suggested that through real-time aggregation of such data compiled from multiple auction markets trends and emergence of diseases could be monitored.

Dr. Dustin Pendell, Department of Agriculture and Resource Economics, Colorado State University, presented Control Strategies for a FMD Outbreak: Probability Distributions of Economic Impacts. The objective of this study was to determine the probability distributions of expected economic impacts associated with various emergency management strategies in the event of an FMD outbreak in the U.S. Such impacts are influenced by the region beyond which 95 percent of centrally-originating outbreaks would not spread, the type and location of the introduction herd, the regulatory requirements of quarantine time and scope, and the variety of potential depopulation and vaccination measures and strategies. Pendell described the various models that are used for the work including the North American Animal Disease Spread Model ([www.naadsm.org](http://www.naadsm.org)), which is a stochastic temporal and spatial spread model that simulates FMD with its input parameters from published studies and experts' opinions; an equilibrium displacement model which estimates welfare changes due to exogenous shock estimated from epidemiological models and market parameters obtained from previous literature and estimation; and a system of supply and demand equations on consumer substitutability, farm-retail marketing chain and import and export markets where appropriate. Estimations from such models provide insight to policy makers, government regulatory and research agencies, academic extension and research scientists and the livestock and meat industry.

Dr. Jim Case, University of California, Davis, provided a NAHLN information systems update, in which he described the goals and standards of the NAHLN IT and the current status of messaging, terminology services, and support of documentation. In particular he described the application of NAHLN concepts to the current activities in California related to bovine tuberculosis, first identified in December 2007, and in which more than 5,400 cattle specimens have been submitted to date for gamma interferon testing. All specimens were submitted with unique, centrally generated barcode identifiers, and barcodes are linked to the NAIS RFID in the field. Producer IDs are also captured and linkage data are transmitted electronically to USDA and the California Department of Food and Agriculture (CDFA), with laboratory results transmitted to CDFA via NAHLN defined message structures. Barcoding reduces time for initial data entry with time savings up to 90 percent, eliminates transcription errors, allows for automated linkage of specimen identification (ID) to the specimen source (NAIS RFID), automates identification of labeling errors by not allowing duplicate specimen IDs, reduces the amount of data collected and provides the ability to automate results reporting.

From this and other events Case explained that initial concepts of the NAHLN architecture have now been applied in a wide variety of scenarios. The robust nature of the NAHLN messaging and vocabulary infrastructure supports maximal reuse with minimal retooling, increases data quality through the unique specimen identifiers and field data collection tools, and allows for immediate data analysis through the use of standardized results terminology. Further work is needed with existing and future APHIS programs to adopt NAHLN-based standards. Participation of NAHLN laboratories in messaging through training and support needs to be increased and NAHLN standards should be extended to additional diseases. He concluded that a long-range plan for a surveillance architecture needs to be developed that embraces the successes of the pilot projects.

#### Committee Business:

During the Business Section of the meeting the Committee proposed, discussed and approved one Resolution, which was submitted to the Committee on Nominations and Resolutions.

The Committee discussed transition of committee co-chairs, Dr. Akey stepping down after 10 years of chairmanship, with the proposal of being replaced by Dr. Jim Case, to be co-chair with Dr. Elvinger, pending approval of USAHA and AAVLD presidents.

The final discussion was related to the name and mission of the committee. The committee name does not currently reflect the increased focus on surveillance, and Dr. Akey proposed to add surveillance to the name of the committee. Therefore Committee members suggested to rename the Committee to Committee on Animal Health Surveillance and Information Systems.

A mission statement for discussion reads as follows:

Animal Health Surveillance and Information Systems are designed and implemented to solicit, obtain, compile and manage data on animal health and disease and on factors that influence the health status of animals and animal population. Animal Health Surveillance and Information Systems are to provide information to stakeholders with a need, right and obligation to know in order to take action for the maintenance of animal and public health, control and eradication of disease, well-being of animals, profitability of animal industries and animal owners, and for the National and global good. The Committee on Animal Health Surveillance and Information Systems encourages, stimulates and aids the design, development and implementation of such systems; the committee provides a forum for discussion of new developments and facilitates review and oversight of existing systems.