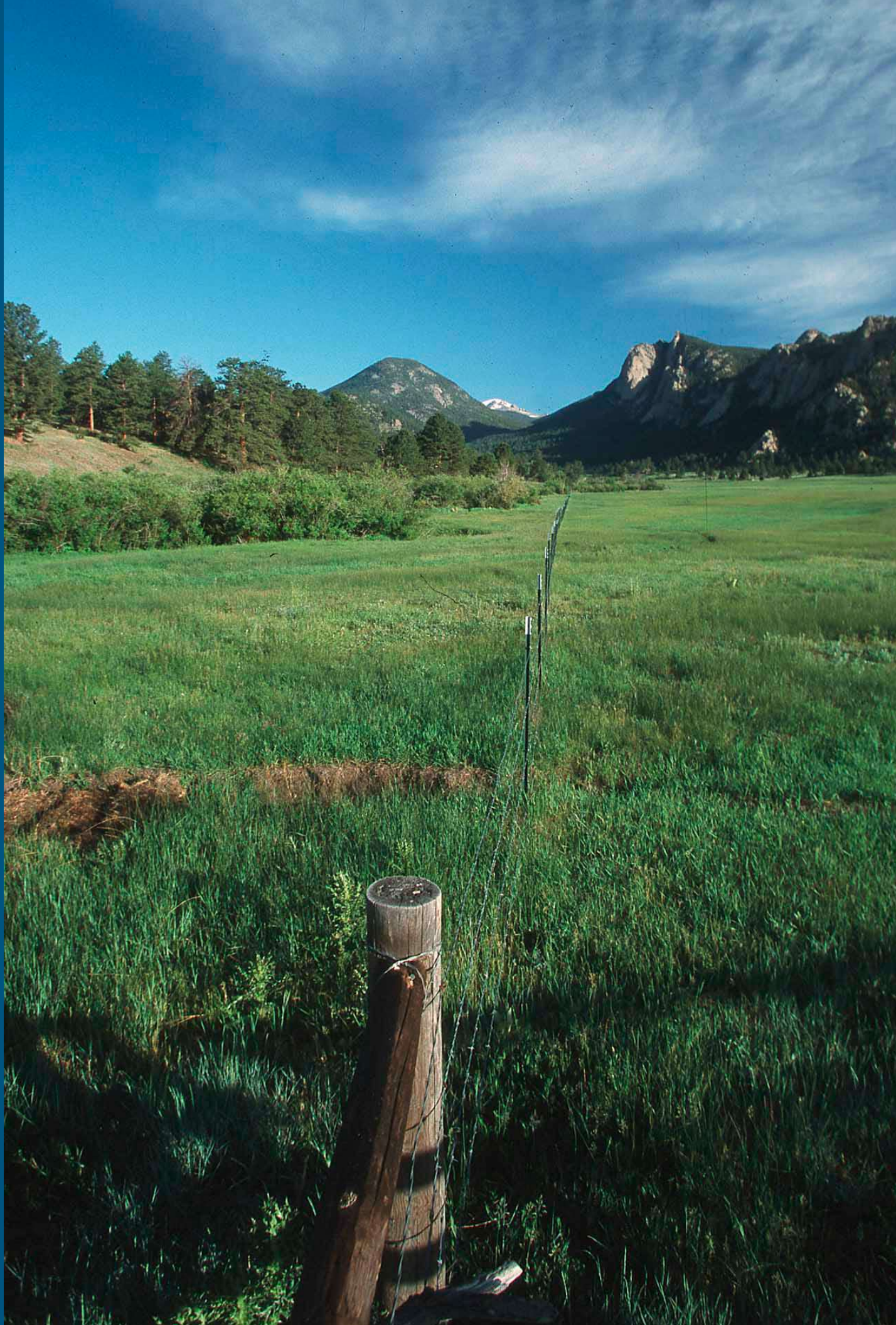




CHAPTER 8



Background Elements Essential to the Veterinary Services Mission

This chapter discusses several programs and tools that are essential to APHIS-VS mission of protecting animal health through regulatory and disease-control activities. Although these elements tend to function “behind the scenes,” they provide expertise and infrastructure critical to the VS mission.

These elements include the National Veterinary Accreditation Program (NVAP); VS information technology and data systems; and various VS surveillance methods and risk assessment tools, including the pathways assessment mapping tool (PAMT), targeted surveillance methodology, and the North American Animal Disease Spread Model (NAADSM).

National Veterinary Accreditation Program

Although most countries employ only government veterinarians for regulatory purposes, the United States uses a network that includes private practitioners to carry out these functions. The NVAP authorizes veterinarians to perform regulatory functions on behalf of VS in a manner consistent with international trade requirements and animal health safeguarding requirements. Approximately 80 percent of veterinarians in the United States are accredited through the voluntary program.

The accreditation program was first established in 1907 by USDA’s Bureau of Animal Industry—now the Animal and Plant Health Inspection Service (APHIS)—in response to large numbers of horses being exported to Canada. It filled the need

for regulatory oversight at a time when there were inadequate numbers of federally employed veterinarians to meet the demand for export certification. The Canadian government agreed to accept health inspections and certificates by authorized private practitioners, and NVAP was formed.

Accredited veterinarians identify and inspect animals, collect specimens, vaccinate livestock, and prepare point-of-origin health certificates for interstate movement and export. APHIS–VS grants national accreditation to private veterinary practitioners only after they have met specific eligibility and training requirements.

In addition to working to ensure that exported animals do not introduce disease into other countries, accredited veterinarians also provide the first line of surveillance for reportable domestic and foreign animal diseases. These activities help prevent U.S. animal agriculture from becoming a bioterrorism target. When large-scale animal disease or other emergency events occur, accredited veterinarians are often enlisted to help with APHIS’ containment and eradication efforts.

While APHIS–VS supervises NVAP at the national level, the 41 VS area offices around the country oversee veterinarians’ authorized activities and process most NVAP documentation. To become accredited, a veterinarian must be licensed or otherwise legally able to practice (via reciprocity or other agreement with State licensing officials) in the State in which they wish to perform regulatory activities. When an accredited veterinarian wants to perform regulatory activities in additional States,



authorization to do so must be acquired through that State's area office.

2007 Highlights

NVAP is establishing two accreditation categories in place of the former single category to add requirements for supplemental training and accreditation renewal and to offer program certifications. The changes are intended to support VS' animal health safeguarding initiatives, to involve accredited veterinarians in integrated surveillance activities, and to make provisions governing NVAP more uniform and consistent. The changes will increase the level of training and skill of accredited veterinarians in the areas of disease prevention and preparedness for animal health emergencies in the United States. A proposed rule regarding these changes was published in the *Federal Register* in June 2006, and a supplemental rule was published in February 2007. An implementation plan to enact the amended regulation is being developed; implementation will depend on funding levels. VS and Iowa State University are developing several Web-based educational modules to satisfy the educational requirements for accreditation renewal.

VS Information Technology and Data Systems

VS information technology specialists are responsible for developing, deploying, and supporting automated information systems. These systems facilitate the collection, management, reporting, analysis, and dissemination of information that is critical to APHIS initiatives and VS programs. The information systems give VS field staff and managers access to the data they need for decisionmaking.

VS maintains five major information technology (IT) systems that support the data management requirements of national animal health program activities. These systems are the National Animal Health Laboratory Network (NAHLN) information system, the Animal Health and Surveillance Management (AHSM) information system, the Veterinary Services Process Streamlining (VSPS) information system, the Emergency Management Response System (EMRS), and the NAIS.

The VS information management systems are being transitioned to industry-standard, Web-based applications. VS has set several goals for its IT systems, including:

- Protecting confidential information, securing data, and controlling data access;
- Ensuring that the information systems' capacity and performance can support information needs during adverse animal health incidents;
- Collecting data at the source using intuitive, efficient, and mobile methods;
- Enforcing data standards and business rules; and,
- Providing for seamless exchange of relevant data with other certified VS, Federal, State, and private data systems.

2007 Highlights

- VS established steering committees for the AHSM, VSPS, and EMRS systems to guide development and implementation.
- The NAHLN Laboratory Registry module, which tracks, updates, and reports on NAHLN laboratory

capabilities and capacities for animal disease testing, was deployed. VS also enhanced the NAHLN Laboratory Reporting module, which standardizes reporting of NAHLN lab test results. The enhancements facilitate accurate processing and aggregating of data.

- EMRS was deployed to support animal-disease incident management in Texas, Louisiana, Wyoming, and New Mexico. EMRS is a Web-based system designed to automate many of the tasks routinely associated with disease outbreaks and animal emergencies. It is used for routine reporting of FAD investigations, State-specific disease outbreaks or control programs, national animal health emergency responses, or natural disasters involving animals.
- Three mobile information management (MIM) applications were developed and used in wildlife AI surveillance, bovine TB incident activities, and scrapie genotype tracking. These applications use personal digital assistants or tablet PC devices, along with Bluetooth and barcode or radio-frequency identification technologies, to facilitate fast and efficient data collection in the field and transmission of the data to participating laboratories and national databases.
- VSPS enhancements and architecture restructuring were completed. VSPS manages data important to animal and animal-product movement activities, providing a consistent and standard method of VS data capture at all levels, and disseminates data to the appropriate existing databases. Once data are captured, targeted information is shared with appropriate VS personnel, accredited veterinarians, State animal health officials, importers, exporters, or other members of the VS community for their particular data analysis needs.
- Web-based applications for the VS Laboratory Submission (VLS) systems were launched for CSF surveillance and scrapie specimen collection. The VLS enables electronic data submission and laboratory submission forms.
- The NAIS animal trace processing system was deployed. Four private animal tracking databases are currently in production. These NAIS data-

bases contain animal sighting records that can be accessed when an adverse animal health event occurs.

In 2008, VS will continue to support the EMRS, NAHLN, VSPS, AHSM, and NAIS information systems. Development projects include enhancements to an animal reservation system for USDA animal import centers; modernization of a legacy import tracking system; a brucellosis MIM application; enhancements to the CSF, scrapie, and CWD modules; a data messaging application for the LBMS; and, an improved EMRS mapping module.

Pathways Assessment Mapping Tool

In 2007, the APHIS–VS’ CEAH developed PAMT, a tool that helps VS analysts identify various pathways through which an FAD agent can enter the United States and cause an outbreak. Such pathways include imports of live animals or of legal/illegal commodities.

The pathways tool allows analysts to query various internal APHIS databases as well as other government databases and external public data sets, including import tracking systems, foreign agricultural statistics databases, and air travel records. Analysts can collect and process various data elements relating to animals and commodities that represent a potential disease threat. The tool has a mapping interface to perform basic spatial and statistical calculations for pathways risk assessments and then, based on demographic information, map the target risk zones for a potential outbreak or focus of an FAD. In preparation for an animal disease outbreak, PAMT would help analysts rapidly collect data to identify pathways of release of the disease-causing agent into the United States, evaluate the risk for each path of entry, and identify the State/county with the highest potential for an outbreak.

Targeted Surveillance Methodology

Collaborators from the CEAH's National Surveillance Unit (NSU) and the University of Minnesota recently developed methodology to define the concept of targeted sampling, draw valid population inference from targeted sampling data, and evaluate the methodology's use in surveillance applications.

Targeting subpopulations of animals for sampling has long been used as a surveillance strategy to find diseases in a cost-effective manner. This strategy is generally based on expert opinion or subjective conclusions about the relative risk of disease in subpopulations and even individual animals in each group. Targeted surveillance assumes that specified high-risk subpopulations will have higher prevalence, which can be more readily detected during surveillance efforts compared to surveillance in the whole population where the overall disease prevalence is low. One commonly used type of targeted surveillance has been the visual observation of individual animals within herds that show specific clinical signs of disease. This form of targeted surveillance has proven critical for detecting and eradicating important diseases, such as FMD, contagious pleuropneumonia, and others.

Although targeted surveillance has traditionally been used for disease detection, the NSU and University of Minnesota work demonstrated that, in combination with epidemiological information such as relative risk and the number of animals in specific subpopulations, targeted surveillance results can also be used to estimate disease prevalence in the population as a whole. The researchers demonstrated the application of the methodology for estimating population disease prevalence in three animal disease scenarios.

North American Animal Disease Spread Model

The NAADSM is designed to simulate the spread and control of highly contagious diseases in a population of susceptible animals. The model has been developed through a continuing international collaboration among researchers from the United States and Canada, along with support, involvement, and advice from a broad international pool of subject matter experts. The NAADSM Development Team includes representatives from USDA; Colorado State University; Department of Computing and Information Science at the University of Guelph; Canadian Food Inspection Agency; and, the Ontario Ministry of Agriculture, Food and Rural Affairs.

While the model has been developed for use in North America, the project has also been employed in several training courses offered largely to international audiences. The NAADSM has also been used to assist with emergency disease preparedness. On three occasions, the model was used to simulate outbreaks of HPAI under different conditions. The resulting scenarios were then used during tabletop exercises to illustrate the potential scope and impact of an HPAI outbreak. Most recently, the model was used to estimate the number of vaccine doses needed in the event of a PRV outbreak in Iowa and North Carolina.

The NAADSM can be used to:

- Evaluate the effectiveness of various surveillance strategies;
- Compare the consequences associated with different probabilities of detection and reporting;
- Provide realistic exercise scenarios;
- Evaluate proposed disease control strategies, plans, and policies and develop animal disease emergency preparedness and response plans;
- Assess the potential economic impacts of disease and associated control measures; and,
- Support researchers who incorporate disease modeling in their work.

The NAADSM application is available via the Internet at <http://www.naadsm.org>.

