The Changing Veterinary Health Mission

The national animal health landscape has changed significantly in recent years. As these changes continue, APHIS' mission and role is also evolving so that the agency can confront the new challenges they pose. This chapter describes some of the programs and activities APHIS has already undertaken to meet these challenges. One such activity is VS 2015, a strategic vision developed by VS management to guide the organization in making changes that will better position it to meet animal health needs in 2015. Because of the increasing need for an international focus on animal disease control efforts, we highlight some of APHIS' international collaborations and activities. This chapter also highlights the expanding animal health–public health interface and some of the ongoing APHIS activities in this area.

VS 2015: The Vision for VS

The VS 2015 vision outlines some of the ways the animal agriculture industry is changing, and why USDA's programs must keep pace with those changes. Many diseases have been effectively controlled or nearly eradicated in the United States, emphasizing the need for new surveillance and monitoring strategies for these programs. Also, changes in industry structure—with an increase in the number of large-scale, production-intensive farm operations—have altered the type of government services needed.

Other changes in the animal health environment include:

- Advances in technology. New diagnostics, vaccines, and novel treatment technologies are changing veterinary medicine and management of animal disease events. Emerging treatment

possibilities may reduce the need for traditional eradication programs that rely on large-scale depopulation activities.

- Public awareness of animal diseases that affect human health. This increased awareness of highly pathogenic avian influenza, bovine spongiform encephalopathy, West Nile virus, and other diseases has escalated consumer/public demand for leadership at the intersection of animal and public health concerns.

- Increasing demand for animals and animal products, especially in developing countries.

- Tightening budgets. With Federal funding resources strained and Federal budgets stretched, there is an increased awareness of the need to utilize available resources and work within existing financial constraints.

VS management has identified three essential areas of focus for the future. These areas are disease prevention, preparedness, detection, and early response; expanded interstate and international certification services; and the public health–animal health interface.

Increased Focus on Disease Prevention, Preparedness, Detection, and Early Response

VS' goal is to lessen the frequency of animal health events by emphasizing prevention and preparedness. VS leads the effort in coordinating effective incident management and responses and deploying critical veterinary supplies and equipment. VS investigates potential emerging animal health threats and applies decision criteria to determine appropriate early responses. The National Animal Health Laboratory

Network (NAHLN) enhances the early detection of, response to, and recovery from animal health emergencies, including emerging diseases and foreign animal diseases that threaten the Nation's food supply and public health. VS is designing and directing comprehensive national animal health surveillance systems capable of (1) finding foreign and emerging diseases as well as domestic diseases for which control or eradication programs exist, and (2) supporting international reporting and trade verification requirements. A description of VS emergency planning functions, the NAHLN, and major surveillance and disease control or eradication programs is included in Chapters 2, 3, and 4.

International Collaboration—When needed, APHIS extends prevention and early response efforts to address animal health issues occurring outside the United States. VS works with other APHIS units to identify, prioritize, plan, and direct APHIS-funded animal health surveillance and disease control or eradication programs overseas. APHIS assists other countries as they develop their animal health capacities and provides leadership in the development of global animal health standards and methods.

As part of these international efforts to address animal health issues, APHIS collaborates with the World Organization for Animal Health (OIE), which has a global network of 160 reference laboratories that are disease-specific and 20 collaborating centers that deal with specific spheres of competence, such as epidemiology or risk analysis. VS' National Veterinary Services Laboratories (NVSL) and Center for Veterinary Biologics (CVB) serve as OIE Collaborating Centers for the Diagnosis of Animal Diseases and Vaccine Evaluation in the Americas. VS' Centers for Epidemiology and Animal Health is a Collaborating Center for Animal Disease Surveillance Systems and Risk Analysis.

APHIS also assists the OIE in other areas. During 2008, those efforts included:

- Collaborating with various OIE ad hoc groups focused on epidemiology, disease modeling, implementation of compensation mechanisms, and wildlife disease information;

- Participating in the steering committee for the OIE–Food and Agriculture Organization's network on avian influenza (AI);

- Conducting training courses relating to spatial analysis, epidemiology, and risk assessment, and disease modeling for international participants; and

- Establishing cooperative efforts with the Interamerican Institute for Cooperation on Agriculture, the Regional International Organization for Animal and Plant Health, the European Food Safety Authority, and the International Livestock Research Institute.

Expanded Interstate and International Certification Services

Certifying animals, animal products, and veterinary biologics for interstate and international movement continues to be VS' most intensive interface with the public. APHIS is committed to upgrading its processes to meet the speed of business that today's environment demands. APHIS is increasingly aligning its trade protocols with international standardization efforts. APHIS will also expand VS' services to include certifying that animals and animal products meet standards established by industries and by other organizations or agencies. APHIS will partner with other agencies to provide integrated government certification approaches to meet the demand for "farm-to-fork" verification of animal-derived products and foods.

The Public Health–Animal Health Interface

While animal health remains a cornerstone of APHIS' work, the agency also engages in health issues impacting public health when those issues are connected to animal populations of any kind. APHIS provides national leadership on the animal health component associated with food safety and public health issues. This leadership includes identifying science-based interventions along the animal production chain to protect public health. In addition, APHIS' VS and Wildlife Services units work with wildlife entities to address health issues that impact production agriculture and wildlife health.

The convergence of people, animals, and the environment has created a new dynamic that interconnects the health of all. In the last three decades, approximately 75 percent of emerging human infectious diseases have been zoonotic. In 2007, the American Veterinary Medical Association (AVMA), with support from the American Medical Association, adopted a vision supporting a "One Medicine" concept and formed a One Health Initiative Task Force. The AVMA defines "One Health" as the collaborative efforts of multiple disciplines working locally, nationally, and globally to attain optimal health of people, animals, and the environment.

Consumer Protection—APHIS is involved in many collaborative efforts involving zoonotic diseases, public health, and food safety. These include increased monitoring of salmonellosis and other agents presenting either food safety or zoonotic concerns.

To better understand the ecology of *Salmonella* in humans and animals, a number of monitoring systems exist to track changing patterns of disease (serotype distribution, host species affected, distribution on food items, antimicrobial resistance patterns, etc.). VS' NVSL carries out one such effort to monitor the distribution of *Salmonella* serotypes among animals.

NVSL receives and serotypes *Salmonella* isolates submitted by animal disease diagnostic laboratories throughout the United States. The *Salmonella* are isolated from cases of clinical disease and from herd and flock monitoring. NVSL also includes data on *Salmonella* that USDA's Food Safety and Inspection Service has isolated through its Hazard Analysis and Critical Control Points testing. From December 1, 2007, through November 30, 2008, NVSL reported serotyping results for 16,331 *Salmonella* isolates from animals and epidemiologically related sources. The most frequently identified serotypes were *Salmonella typhimurium*, *S. kentucky*, *S. heidelberg*, *S. cerro*, and *S. enteriditis*. Of the 16,331 isolates, 33 percent were from clinical disease cases and 36 percent were from monitoring samples. The remaining isolates were from research, or did not list a clinical role. A total of 262 serotypes were identified from isolates recovered from animals, their environment, or feed in 40 States and the District of Columbia. The 10 most common serotypes accounted for 58 percent of the total isolates reported.

NVSL collaborates with the Centers for Disease Control and Prevention (CDC) on PulseNET, a national network of public health and food regulatory agency laboratories. Using pulsed-field gel electrophoresis (PFGE), PulseNET participants perform standardized molecular subtyping of foodborne disease-causing bacteria. PFGE can be used to distinguish strains of organisms such as *Escherichia coli O157:H7*, *Salmonella*, *Shigella*, *Listeria*, or *Campylobacter* at the DNA level. PFGE patterns for *Salmonella* are posted to either CDC's PulseNet for comparison with patterns from human isolates, or to USDA's VetNet for comparison with other animal isolates. USDA established VetNet to subtype zoonotic pathogens submitted to the animal arm of the National Antimicrobial Resistance Monitoring System (NARMS). NARMS is a collaborative effort between the Food and Drug Administration's (FDA) Center for Veterinary Medicine, USDA, and CDC. The NARMS program monitors changes in selected enteric bacterial organisms'[15] antimicrobial drug susceptibilities to several antimicrobial drugs important in human and animal medicine.

The CDC-coordinated PulseNET consists of State health departments, local health departments, and Federal agencies including CDC, USDA, and FDA. PulseNET also works closely with similar networks in Canada, Latin America, Europe, and the Asia Pacific region.

Other Public Health and Food Safety Efforts—Other APHIS efforts and initiatives involving public health, food safety, and zoonotic diseases include:

- Ongoing AI activities, as well as increased collaboration and coordination with the public health community concerning pandemic AI.

- Collaboration with CDC on ArboNET, an Internet-based arbovirus surveillance and reporting system managed by State health departments and the CDC. (Reports of equine cases of arboviral disease are reported to ArboNET. For more information, see Chapter 3.)

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[15] In humans, animals, and retail meats.

- Participation on the Interagency Consortium of Laboratory Networks (ICLN). ICLN was established in 2005 to promote collaboration, communication, and technical acuity throughout the government's overall response strategy. This group, led by the U.S. Department of Homeland Security, includes CDC, USDA, the U.S. Environmental Protection Agency, and the U.S. Departments of Defense, Energy, Commerce, Interior, Justice, and State.

- APHIS and USDA's Agricultural Research Service (ARS) participate in a working group with CDC and other partners to evaluate Rift Valley fever's (RVF) potential as a bioterrorism agent and as a vector-related emerging zoonotic disease in the United States. The group is developing a risk analysis and hazard categorization for RVF as well as an RVF surveillance plan.

- APHIS has established a collaboration with CDC and ARS for swine influenza surveillance. (See Chapter 3.)

- As a member laboratory of CDC's Laboratory Response Network, NVSL produces zoonotic-agent test reagents for the Network and for other laboratories. With other labs NVSL also participates in proficiency testing and training for these agents.

- The CVB licenses a wide variety of veterinary biological products for the prevention, diagnosis, treatment, or control of 208 different animal diseases, many of which are zoonoses.

- VS maintains a liaison position to the CDC, based in Atlanta, Georgia.