

REPORT OF THE COMMITTEE ON FOREIGN AND EMERGING DISEASES

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The Committee met on October 26, 2004, from 8:00 am to 5:30 pm. There were 90 attendees. Chair Corrie Brown assisted by Vice Chair Alfonso Torres presided and conducted the meeting. The purpose statement of the Committee on Foreign and Emerging Diseases was reviewed by the Chair and Vice Chair. Responses to 2003 resolutions were reviewed. The next edition of the gray book was discussed. Volunteers were solicited to write and review various chapters.

Dr. Mo Salman, the FED committee's representative to the National Animal Health Emergency Management System Steering Committee (NAHEMSC), gave highlights of the recent discussions in this group. There have been some structural changes associated with the development of Department of Homeland Security (DHS), and there is a proposal that DHS will consider NAHEMS as an advisory group for agricultural threats. United States Department of Agriculture (USDA)-Food Safety Inspection Service (FSIS) and DHS have signed an agreement with National Association of State Departments of Agriculture (NASDA) to conduct a study to determine the inventory list of the current emergency plans across the states.

Panel on educational issues

Dr. Larry Miller, USDA-APHIS-Veterinary Services (VS), Director of Veterinary Accreditation, gave a review of the accreditation/foreign animal disease (FAD) curriculum assessment. Over the course of 12 months, every veterinary school in the U.S. was visited, and interviews were conducted with state veterinarians, federal veterinarians, faculty and students. Several conclusions emerged. Regulatory medicine and biosecurity are underrepresented in the curriculum, Twelve of 28 veterinary schools have a course dedicated to FAD's and of these, 7 were core and the remainder elective. At the time of graduation, 26 percent of new veterinarians had had a dedicated course on FAD's. Regarding accreditation, most reported that food animal medicine instruction time

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has been reduced and there is decreasing opportunity to present materials relevant to accreditation. The Executive Summary was sent to the Steering Committee and all Associate Deans, and will be disseminated to Area Veterinarians-in-Charge (AVIC) and State Veterinarians.

Dr. Miller also gave an update on the proposed revision of the accreditation process. There are two categories. Category I is for companion animals only, and does not include equine or food animals. Renewal is every 3 years. Category II is a more rigorous process and is designed for all species, including equine and food animals as well as companion animals. Renewal is every 3 years and requires completion of 9 supplemental training modules that will be available both on-line and in hard copy format. An information technology system, Veterinary Services Process Streamlining (VSPS) is in the early stages of testing and will be used to monitor and administer the program.

Dr. Kent Hoblet, Ohio State University, presented conclusions from a white paper that was published by the Association of American Veterinary Medical Colleges, "Veterinarians in Population Health and Public Practice: Meeting Critical National Needs." There is recognition that we are now at a critical decision point in the profession. Societal needs in population health and public practice are not being met by the nation's veterinary medical colleges. Recruitment and retention for these areas should be addressed. Experience in the professional curriculum and co-curriculum is essential to educate students about opportunities in population and public health.

Paula Cowen, Director of Technical Training for USDA-APHIS-VS, reviewed APHIS programs for FAD education. She described the Plum Island FAD courses, including the "classic" FAD course designed for state and federal Veterinary Medical Officer (VMO's), a course oriented for pathologists, the Smith-Kilborne program for veterinary students, and the introduction of species-specific courses (swine and poultry). An on-line FAD course was developed by a Cooperative State Research, Extension and Education Service (CSREES) grant to Iowa State is offered through Veterinary Information Network (VIN), which is now offered at 18 of the 28 US veterinary schools. A web-based course, developed by Iowa State University, is in the final stages of development for all APHIS employees. The University of Wisconsin, University of Tennessee, and University of Georgia each have week-long summer courses on FAD's, all supported by USDA. Plans for the near future include video conferencing ability to allow real-time transmission of images from animal and necropsy rooms at Plum Island to four locations in the U.S.

Dr. Ed Mallinson presented his proposal for an educational initiative for 4-H groups and Future Farmers of America. A program will be developed to sensitize young people about biosecurity and disease prevention.

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Dr. Robert Heckert, Animal Health Program Leader for USDA, Agriculture Research Service (ARS), presented the proposed changes to the upcoming 5th edition of *Biosafety in Microbiological and Biomedical Laboratories* (BMBL). A committee drafted guidelines for animal disease containment. A separate chapter on biosecurity is being written.

Panel on influenza viruses

Dr. Max Coats, Texas Animal Health Commission, reported on highly pathogenic avian influenza (HPAI) in Texas. Sick birds were noted on February 16, 2004 and diagnosis made on February 17, 2004. H5N2 was confirmed by the USDA-APHIS-VS National Veterinary Services Laboratories (NVSL). A pre-planned response existed and that was essential in effecting control. This response was created jointly by state, federal, academic, and industry partners. Public information began early and this was determined to be crucial in control efforts. A joint incident command center was initiated. Surveillance and movement regulations were undertaken and the outbreak was rapidly eradicated.

Dr. David Suarez, USDA-ARS Southeast Poultry Research Laboratory (SEPRL), gave an update on the avian influenza outbreak in Asia. Nine countries have reported having H5N1 in their country. Viruses are being examined at the SEPRL – all kill chickens rapidly. Viruses from Thailand and Vietnam are pathogenic for mice as well. Some viruses also cause disease in ducks, which is unusual for HPAI isolates. Each of the viruses has slightly different biological properties – there are a number of variants circulating. The factors associated with the size of the outbreak are thought to be related to lack of veterinary infrastructure and insufficient resources. Vaccination may be practicable in some situations.

Dr. Cynda Crawford, University of Florida, related the incident involving influenza virus in racing greyhounds. In late January 2004, there were a number of dogs with clinical signs of respiratory distress, with a few mortalities, at a racetrack in Jacksonville. Postmortem lesions included extensive hemorrhage in lungs and pleural cavity. Dr. Ed Dubovi at Cornell isolated influenza A subtype H3N8, with 96-99 percent homology in all 8 genes with recent equine influenza H3N8 strains in the US. The strain was named A/canine/Florida/43/04 (H3N8). The possibility of dogs serving as a mixing vessel for influenza virus was emphasized.

Dr. Dennis Senne, USDA-APHIS-VS-NVSL, reported on the appearance of avian influenza viruses in swine populations. Avian influenza has infected swine on a number of occasions. Between 1996 and 2003, there were four different incidents reported, on three continents. Events can happen but they appear to be rare. Pigs can be infected with avian influenza but pig-to-pig transmission is not thought

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to occur.

Panel on foot-and-mouth disease

Dr. Jack Rhyan, USDA-APHIS-VS, described the purported outbreak of foot-and-mouth disease (FMD) in deer and cattle in California in 1924/25. Recent focus on FMD prompted investigators to examine archival records. They concluded that the disease was, in fact, most probably FMD.

Dr. Rhyan also relayed the results of experimental infection of North American bison and elk at the Plum Island Animal Disease Center (PIADC). Bison became clinically ill subsequent to inoculation, with characteristic lesions of the disease and virus recovered. In elk, after experimental infection, clinical disease was mild. Noninfected elk placed in the same enclosure with infected elk seroconverted but did not develop clinical disease. Noninfected cattle placed with the infected elk did not develop clinical disease.

Dr. Alfonso Torres, Associate Dean for Public Policy, Cornell University, presented the committee's time-specific paper entitled, "Foot-and-Mouth Disease (FMD) Hemispheric Eradication Program," co-authored by Mr. Phil Bradshaw. The complete text of this paper are included in these proceedings.

Dr. Andres Perez, University of California at Davis, presented on a global FMD surveillance system. FMD outbreak data from Pakistan and Iran, were examined, with superimposition of livestock distribution zones, for predictive modeling of spread. Additional countries were then examined. The goal is to predict spread in countries where FMD is endemic as well as FMD-free areas.

Dr. Mark Schoenbaum, USDA-APHIS-VS, Center for Epidemiology and Animal Health, reviewed the SpreadModel of FMD, a program developed by United States, Canadian, and Mexican scientists. This is a spatial temporal disease-simulation model. The purpose of the model is to aid decisions by highlighting potential spread and examining mitigation strategies such as vaccination, destruction, and movement controls. Models have been compared to real outbreaks in various overseas locations. The model is being continually refined based on expanding informational input. The Canadian Food Inspection Agency and the University of Guelph are collaborating on a variation of SpreadModel, called SHARCspread.

Dr. Mark Thurmond, University of California at Davis, explained the BioPortal information system for FMD surveillance. BioPortal is a web-based dissemination system, originally developed through a National Science Foundation initiative to allow decision-makers ready access to real-time information for disease control. Early versions were constructed for West Nile virus in New York and botulism in California. Recent funding from the Department of Homeland Security and Armed Forces

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Medical Intelligence Center has allowed expansion to other diseases. Foot-and-mouth disease is the first global disease to be examined this way. Data from around the world is being entered through a secure portal, encrypted, analyzed and disseminated in an output. To date, information has been captured from the Food and Agriculture Organization (FAO) and some FMD reference laboratories.

Barbara Martin, USDA-APHIS-VS, Coordinator of the National Animal Health Laboratory Network, provided an update regarding the network. A Steering Committee was formed in March of 2003, and a strategic plan is being developed. Considerable progress was made this year in the development of an information technology system. The NAHLN v2.0 software release is scheduled for early 2005. Validation of assays is being done by both ARS and APHIS, in a cooperative effort. Four diseases, avian influenza, Newcastle disease, classical swine fever, and foot-and-mouth disease, are all in the final phases of validation and transfer to state laboratories.

Dr. Bruno Oesch, Prionics, Switzerland, explained the strain variation being seen in some cases of bovine spongiform encephalopathy (BSE) in Europe. A new Italian BSE strain was detected earlier this year using the Western blot test. Since then, other cases have surfaced which show distinct glycoform profiles in comparison to the "standard" BSE strains.

Panel on foreign animal disease research

Dr. Beth Lautner, Director of PIADC for DHS, reviewed the evolving administrative structure at the PIADC. Plum Island facilities operations and maintenance were transferred to DHS on June 1, 2003. The Foreign Animal Disease Diagnostic Laboratory (FADDL) remains under the purview of USDA-APHIS. The USDA-ARS maintains a core of scientific investigators. With these three agencies, an integrated program is being developed, with five main shared functions. First, "targeted advance development" will take products from ARS and move them through to approval and application. Second, "bioforensics" is a joint effort between DHS and APHIS to allow for attribution in the event of an intentional incursion. Third, a "disease threat assessment and epidemiology" unit will be created and to integrate Plum Island-based science with efforts occurring globally. "Core services," to include microscopy and sequencing, will be provided by DHS, as will the fifth area, "animal care."

Dr. Neville Clark, from the National Center for Foreign Animal and Zoonotic Disease Defense, Texas A&M University, described the plans for the Center. More detailed information can be found at: <http://fazd.tamu.edu>. Four representative animal diseases will be thoroughly studied—foot-and-mouth disease, Rift Valley fever, avian influenza, and brucellosis.

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Dr. Paul Kitching, Canadian Food Inspection Agency, Director, National Centre for Foreign Animal Diseases, Winnipeg, Manitoba, briefed the Committee on the Strategic Global Research Partnership for Foot and Mouth Disease Control. Investigators from five laboratories (Pirbright, Plum Island, Winnipeg, Geelong, and ILRI) gathered earlier this year to develop a plan to improve research on FMD with the aim of effective control. Research goals over a five year time period include: understanding the host immune response, development of inexpensive and thermostable vaccines, improved understanding of the carrier state, identification of antiviral compounds, and development of epidemiologic economic models. They are seeking a budget of \$70M.

Dr. Luis Rodriguez, Research Leader, USDA-ARS-PIADC, reviewed research progress at Plum Island. A multiplex real-time assay was developed for detecting vesicular stomatitis virus (both New Jersey and Indiana serotypes) from diverse geographical regions. Phylogenetic analysis was used to track and analyze the outbreak in the southwestern U.S. in 2004. A single lineage was responsible for the outbreak in 2004, with the closest relative being a virus from southern Mexico. In classical swine fever research, studies are underway for the development of an attenuated live marker vaccine. Adenovirus-vectored FMD vaccines provide good immunity in swine and cattle. Adding an interferon alpha gene as well provides earlier immunity. They have entered into agreement with a commercial entity and are seeking licensure.

FOOT-AND-MOUTH DISEASE (FMD) HEMISPHERIC ERADICATION PROGRAM

Alfonso Torres¹ and Philip Bradshaw²

Inter-American Group for the Eradication of Foot-and-mouth
Disease (GIEFA)

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Foot-and-mouth disease (FMD) has been present in the Western Hemisphere since 1870 with widespread dissemination, especially in South America during the first half of the 20th century. The disease has been eradicated from North America (USA 1929, Canada 1952 and Mexico 1954). Central America and the Caribbean have been historically free of FMD. Country-wide programs for the eradication of FMD from South America were initiated in the 1960's, leading to the creation of the South American Commission for the Eradication of FMD (COSALFA) in 1972, which continues to meet yearly. Progress on the eradication programs, especially with the active participation of the private sector, led to the promulgation and implementation of the Hemi-

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spheric Plan for the Eradication of FMD (PHEFA) in 1988. This plan is coordinated by the Pan American Health Organization (PAHO) through its Pan American Foot-and-Mouth Disease Center (PANAFTOSA) located in Rio de Janeiro, Brazil. The Hemispheric Commission for the Eradication of FMD (COHEFA) oversees the implementation of the PHEFA in conjunction with the Inter-American Meeting of Ministers of Agriculture and Health (RIMSA). The PHEFA divides the hemisphere into six zones: North America, Central America, Caribbean, Andean, Amazonian, and Southern Cone. The first three zones are free, while the latter are affected by FMD. FMD in South America is endemic in four areas: many parts of Venezuela and Ecuador, the Beni region of Bolivia and the Chaco region composed of areas in southern Bolivia, western Paraguay and Northern Argentina.

The hemispheric interest in the completion of the eradication of FMD led the United States Department of Agriculture (USDA) to collaborate with PAHO in organizing a Hemispheric FMD Conference in Houston, Texas, March 3-4, 2004. This conference gathered most Ministers and Vice-Ministers of Agriculture, Directors of Veterinary Services and Chief Veterinary Officers of the continent. They issued the "Houston Declaration" emphasizing their commitment to the eradication of FMD from the Americas by the year 2009, and the creation of an Inter-American Group for the Eradication of Foot-and-Mouth Disease (GIEFA) with the responsibility of elaborating, applying and supervising the PHEFA.

The GIEFA group is composed of two members from each one of the six regions stipulated in the PHEFA. For each region there is one representative of the Private Sector and one representative from the Public Sector. The GIEFA is led by an Executive Committee composed of three of its members. The PANAFTOSA was designated as *ex officio Secretariat* of the group. The representatives from North America are Mr. Phil Bradshaw from the Private Sector and Dr. Alfonso Torres from the Public Sector. The Executive Committee was formed by the representatives of the Public Sector for North America (Dr. Alfonso Torres, USA, who acts as the Chairman), the representative of the Private Sector of the Amazonian Region (Mr. Sebastiao Guedes, Brazil), and the representative from the Public Sector in the Southern Cone (Dr. Recaredo Ugarte, Uruguay). Since mid-March of 2004, the entire GIEFA and/or its Executive Committee has met in Montevideo, Uruguay; Santa Cruz, Bolivia; Washington D.C., the U.S., and Bogotá, Colombia. An Action Plan for 2005 -2009 will be presented to PAHO in November, 2004 for their endorsement and consequent distribution to all countries in the Americas. After discussion and approval at an extraordinary meeting of the COHEFA to be held in Brasilia in December 1st, 2004, the plan will be implemented across the continent.

The GIEFA Action Plan includes Technical Actions for the enhance-

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ment of the eradication program in the endemic areas of the continent (Venezuela, Ecuador, parts of Bolivia and border control points) as well as the establishment of the following progressive control and eradication levels:

- FMD-free without vaccination (following OIE guidelines)
- FMD-free with vaccination (following OIE guidelines)
- Level 1 (low risk)
- Level 2 (moderate risk)
- Level 3 (high or unknown risk)

The Action Plan will also include a Financial Plan for the coordination of present and future national and international fiscal resources needed to execute the plan. Additionally, the Action Plan includes evaluative procedures for Country Reviews and measures to prevent the introduction of FMD into the free areas of the hemisphere.