

## REPORT OF THE COMMITTEE ON INFECTIOUS DISEASES OF CATTLE, BISON AND LAMA

Chair: Dr. James J. England, Caldwell, ID  
Vice Chair: Dr. Howard D. Lehmkuhl, Ames, IA

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The Committee met on October 25, 2004 from 12:30 pm to 4:30 pm. There were over 80 attendees. In the Chair's absence, Vice Chair Howard Lehmkuhl conducted the meeting assisted by Dr. Julie Ann Jarvinen. Vice Chair Lehmkuhl welcomed the Committee members and each were given an opportunity to introduce themselves. An attendance sheet was circulated among the attendees.

Mark Wilson, United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), National Veterinary Services Laboratories (NVSL), National Reference Center for Leptospirosis, Ames, IA presented a time specific paper entitled "Comparative Testing of Cattle Sera with Three Genotypes of Harjo."

The project concerned a serological study to determine which of three genotypes of hardjo was best when used in the *Leptospira* microscopic agglutination test (MAT). A total of 2,431 sera from cattle were comparatively tested against three genotypes of hardjo. Sera were obtained from laboratories in 16 states (New York, Ohio, Florida, Geor-

## REPORT OF THE COMMITTEE

gia, North Carolina, Wisconsin, Minnesota, Illinois, Missouri, Nebraska, Oklahoma, Texas, Arizona, California, Wyoming, and Washington). Samples were obtained from four geographic regions designated as: East (665 sera), upper Midwest (699 sera), lower Midwest (515 sera), and West (552 sera). Cattle sera were obtained regardless of herd status, vaccination history, breed, or age.

Of these, 1475 / 2431 (60.7%) cattle sera were negative at 1:100 for all three hardjo genotypes. Seroprevalence to one or more hardjo genotype(s) was 956 / 2431 (39.3%). Considering only the 956 positive sera, a Hardjo Prajitano (HP) titer was detected in 941 / 956 (98.4%). Fifteen sera (1.6%) had titers to Hardjo bovis A (HA), Hardjo bovis B (HB), or both, but not to HP. In contrast, HA and HB titers were not detected at 1:100 in 394 / 956 (41.2%) when an HP titer of 100 or greater was observed. If only HA or HB were used, more than 50% of all samples positive for HP would not have been detected at the 1:100 dilution. The conclusion from this study supports the use of Hardjo Prajitano as the reference strain to be used in evaluating cattle serum for hardjo antibody.

Mark Wilson then provided the Summary of Activities for the National Diagnostic Leptospiral Reference Center. During the period of September 1, 2003 through August 31, 2004, the NVSL received a total of 1,631 sera submitted for *Leptospira* microscopic agglutination test (MAT). Of these, 1081 were for diagnostic and 550 were for export purposes; total number of tests performed was 8,343. During this same period, clients requested and were provided 351,400 milliliters of polysorbate 80-bovine albumin medium, 240 *Leptospira* reference cultures, 188 vials of *Leptospira* reference antiserum, 242 vials of *Leptospira* multivalent fluorescent antibody conjugate, and 51 vials of flazo orange counterstain. Twelve people from 9 states (Wisconsin, Kentucky, Georgia, Nebraska, New York, Pennsylvania, Virginia, Minnesota, and Iowa) participated in a two-day *Leptospira* MAT training. *Leptospira* MAT training schools will also be offered in 2005 to meet incoming training requests.

Hong Li, Animal Disease Research Unit, USDA, Agriculture Research Service, Pullman, Washington presented information on A Devastating Outbreak of Malignant Catarrhal Fever (MCF) in a Bison Feedlot. MCF, a frequently fatal disease primarily of ruminant species, is caused by a group of herpesviruses. The disease is increasingly being recognized as the cause of significant economic losses in several major ruminant species, including cattle, bison and deer. Most cases in the U.S. are caused by the virus known as ovine herpesvirus 2 (OvHV-2), the sheep-associated MCF virus, which exists as a ubiquitous sub-clinical infection in domestic sheep. This virus, despite many attempts, has never been successfully propagated *in vitro*. Concerning the epidemiology of OvHV-2 within the sheep population, recent data from

## INFECTIOUS DISEASES OF CATTLE, BISON AND LAMA

our lab indicate that transmission of the sheep virus differs from the wildebeest-associated MCF virus in some significant aspects. Whereas intense viral shedding from the wildebeest reportedly occurs largely during the first 90 days of life, lambs do not begin to shed significantly until they are more than 5 months of age. The vast majority of lambs are not infected until after 2 to 3 months of age. Although colostrum and milk do contain virus-infected cells, these routes do not transmit the infection. If lambs are removed from contact with infected sheep prior to 2 to 3 months of age, lambs remain uninfected and can be raised free of the virus. This can be used as a management tool to for the production of MCF-virus free sheep. Both lambs and adult sheep are susceptible to infection through horizontal transmission by close contact. Passively acquired immunity appears not to affect the rate of infection, which seems to be simply dose-dependent. Recently we demonstrated that nasal secretions are the predominant vehicle by which OvHV-2 is shed from sheep and 6 to 9 months old adolescent sheep are the highest risk group for viral shedding. We found high levels of intact virus in sheep nasal secretions during short, intense shedding episodes and accomplished consistent transmission of MCF virus from sheep to sheep by experimental aerosolization of these nasal secretions. Recently we also established animal models, namely sheep and bison, for experimental transmission of MCF virus using a standard pool of nasal secretions obtained from sheep experiencing intensive shedding episodes, which has positioned us to pursue the development of vaccines for control of the transmission and the disease.

Dale Grotelueschen, Pfizer Animal Health, Gering, NE, made a presentation entitled, "Current Thoughts on BVD: Vaccination, Eradication and Control." The cattle industry has recognized the need for increased levels of control for bovine viral diarrhea virus (BVDV). Organizations including the Academy of Veterinary Consultants, American Association of Bovine Practitioners, and the National Cattlemen's Beef Association (Cattle Health and Well-Being Committee) have endorsed the need for effective BVDV control. Discussions have involved various aspects of control as well as eradication, with some resistance to targeting BVDV eradication. BVDV control can be defined as the implementation of planned strategies to maintain negative status, reduce incidence or eliminate BVDV from a unit of interest, including documentation and/or monitoring of progress. BVDV eradication can be defined as the implementation of planned strategies to eliminate BVDV from a unit of interest, including documentation of that status.

A control strategy that is embraced by all interests, including scientific disciplines, veterinary practitioners, and cattle producers is needed. Education at all levels is critical as the strategy is conceptualized and implemented. Surveillance, biosecurity and biocontainment are critical

## REPORT OF THE COMMITTEE

components that require input and adoption across multiple scientific disciplines as well as by those implementing the plan. Diagnostic laboratory leadership, innovation and participation is a key component for success. Use of scientifically valid, cost effective surveillance is needed for better detection of BVDV-infected herds. Biosecurity plans include methods to prevent entry of BVDV into herds, monitoring for BVDV and persistently infected (PI) reservoirs, and vaccination to control losses if exposure occurs. Biocontainment plans focus first on elimination of PI BVDV animals and include biosecurity, monitoring and vaccination to control losses incurred by exposure.

Setting goals and objectives is critical to successful BVD control within individual herds or larger subsets of the cattle population. Goals may or may not include elimination of BVDV from a particular herd or unit of interest. There is great diversity among beef operations that are exploring and/or implementing BVD control strategies. Control plans must be effective and economically beneficial within that diversity.

Clearly, more effective strategies are needed if the cattle industry expects to achieve better control of BVDV. A comprehensive strategy for BVDV biocontainment and biosecurity is proposed.

Michael Kutzler, Oregon State University College of Veterinary Medicine, Corvallis, Oregon presented information on West Nile Virus (WNV) in Camelids. WNV is a flavivirus that was first introduced into the United States in 1999. The natural transmission cycle of WNV is between birds and mosquitoes, but occasionally other non-avian species become infected. In 2000, the first case of WNV infection was identified in camelids and since then dozens have succumbed to a deadly encephalitis. Clinical signs of WNV encephalitis in camelids are variable and include facial and body tremors, "swan neck" appearance, hyper-excitability/depression, paresis/ataxia, colic/anorexia and fever. In fatal cases, clinical signs progress to recumbence, seizures and death, if not euthanized first. However, camelids are considered by many to be at "low risk" of developing clinical disease. Based on serosurveillance studies from 197 camelids in twelve states, the overall prevalence of WNV was 36% with a range of 0-90% seropositivity between farms. Determining the case fatality has been challenging, as few owners and veterinarians are familiar with the clinical signs of WNV in camelids and routine postmortem diagnoses do not include WNV testing. The Alpaca Research Foundation has established a central data base for suspected and confirmed WNV cases in camelids, which is strictly confidential and provides funding for postmortem WNV diagnostic testing, both reverse transcriptase polymerase chain reaction (RT-PCR) and immunohistochemistry. It is critical that this information is properly gathered and analyzed before the susceptibility towards WNV infection in camelids can be concluded.

The Purpose Statement for the Committee was discussed. The Committee recommended that the word "lama" be replaced with "camelids" to be more inclusive.