

Research Summaries

Session I - General Beef Topics

Moderators: Jerry Mechor
Eddie Hamilton

Descriptive Epidemiology of Chronic Disease of Calves in a Western Canadian Feedlot

Pollock, C.M.¹; Campbell, J.R.¹; Janzen, E.D.¹; West, K.²

¹Dept of Herd Medicine and Theriogenology, ²Prairie Diagnostic Services, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, CANADA

Introduction

A pattern of chronic disease has been recognized in fall-placed, weaned beef calves in western Canadian feedlots. Affected calves become “non-responders” to antibiotic therapy, with weight loss, chronic pyrexia and/or lameness. These calves are moved to a chronic pen for a period of convalescence. This study describes this pattern of chronic disease in terms of morbidity, days on feed, weight change, and mortality. Its second objective is to determine the association between bovine virus diarrhea virus (BVDV) and *Mycoplasma bovis* infection and chronic pneumonia and/or polyarthritis in feedlot calves.

Materials and Methods

A large feedlot in central Saskatchewan was used as the site for this descriptive epidemiological study. Morbidity for all chronic calves was diagnosed weekly by the primary researcher. Weight and days on feed data was retrieved from the feedlot computer system. Necropsies of all dead calves in the feedlot were completed by a veterinarian. Serum samples were collected on chronic pen entry and two weeks later, and analyzed for antibodies to *Mycoplasma bovis* and BVDV, as well as for the presence of BVD virus.

Results and Conclusions

A total of 12,039 calves entered a central Saskatchewan feedlot in fall 1998. Of these calves 158 (1.3%) went on to become chronics. They were classified into three morbidity categories. Treatment failures for undifferentiated fever were 49%, lame with polyarthritis were 39%, and another 9.5% were lame with no evidence of polyarthritis. Of chronic calves 60% were returned to their home pen after an average convalescence period of 30 days, with an average daily weight gain of 2.4 lb. Some 40% of chronic calves either died or were euthanized after an average convalescence period of only 15 days, with an average daily weight loss of 3.2 lb.

Chronic calves contributed 40% (63/158) of calf mortality in the feedlot. Forty percent had evidence of both polyarthritis and chronic bronchopneumonia on necropsy, whereas 21% had evidence of polyarthritis only. Evidence of chronic bronchopneumonia was seen in 17.5%, and another 16% had evidence of either fibrinous pleuritis, pericarditis and/or myocarditis on necropsy. Mean fatal disease onset (FDO) for chronic calves was 15 days, compared with 21 days for non-chronic calves who died of infectious diseases. Although chronic calves became sick sooner than non-chronic calves, mean days of feed (DOF) at death for chronic calves was 51 days and only 29 days for non-chronic calves.

Three chronic calves were persistently infected with BVDV, yet they did not succumb to mucosal disease and eventually returned to their home pen. Some 72% of the calves entered the chronic pen with a medium-to-high reciprocal titer (36 - >324) for BVDV, indicating recent or ongoing exposure to the virus. Chronic calves with reciprocal titers to BVD of 36 or greater were 4.5 X more likely to have polyarthritis than calves with

reciprocal titers less than 36 ($p = 0.005$). Of calves entering the chronic pen, 78% had a high reciprocal titer (1280 - > 5120) for *Mycoplasma bovis*, indicating recent or ongoing exposure. Chronic calves with reciprocal titers of 1280 or more to *M. bovis* are 2.5X more likely to have polyarthritis than calves with a reciprocal titer less than 1280 to *M. bovis* ($p = 0.005$).

Beef Cow-calf Herd Biosecurity Practices

Michael W. Sanderson, DVM, MS^a; David A. Dargatz, DVM, PhD^b; Franklyn B. Garry, DVM, MS^c

^aDepartment of Clinical Sciences, Kansas State University, Manhattan, KS 66506.

^bCenters for Epidemiology and Animal Health, USDA-APHIS-VS, Ft Collins, CO 80521

^cDepartment of Clinical Sciences, Colorado State University, Ft. Collins, CO 80523

Introduction

The literature contains little information on current biosecurity practices of beef cow-calf producers. The cow-calf industry is experiencing an increasingly global marketplace and increasing pressure to minimize antibiotic use and maximize food safety. In this climate, economical biosecurity programs may be an important component of an integrated production management program. Biosecurity programs may be efficiently integrated with Hazard Analysis Critical Control Point (HACCP)-like programs to control food quality and safety, and minimize antibiotic use. This analysis is based on a recent survey on the management and biosecurity practices of U.S. beef cow-calf producers. This analysis identifies current biosecurity practices of beef cow-calf producers, management adjustments to biosecurity risks, and opportunities for veterinary intervention to decrease herd disease risk and risk of quality and safety defects.

Materials and Methods

This analysis was based on the National Animal Health Monitoring System Beef '97 administered questionnaire. The questionnaire was administered to approximately 1200 producers in two phases between December 30, 1996, and February 3, 1997 and between March 3 and April 30, 1997. Questions cov-

ered management practices, importation of cattle, use of vaccines, testing of imported cattle, and potential for feed contamination.

Data were weighted to account for the initial sampling probability and any survey non-response in order to obtain unbiased population estimates. The stratification and clustering in the sample design was accounted for in estimating the variance for the population parameters. The likelihood-ratio χ^2 test was used to evaluate differences between population estimates of cross classified data on management practices. Odds ratios and 95% confidence intervals were calculated on cross-classified variables using weighted estimates to measure the association between risks and management practices.

Results and Conclusions

Producers commonly engage in management practices that increase risk of introducing disease, such as importing cattle, failing to quarantine imported animals, and communal grazing. Producers inconsistently adjust for increased risk of their management practices by increasing vaccination, quarantine, or testing rates. Cow-calf herds are at risk for disease exposure from outside sources, and producers do not always adjust management practices appropriately to minimize risk. Veterinary involvement in education of producers about biosecurity risks and development of rational and economical biosecurity plans is needed.