

Bovine respiratory disease (BRD) in post-weaning calves with different prevention strategies and the impact on performance and health status

M. Ferreira,¹ DVM; B. Santos,¹ DVM; C. Cauchy,¹ BC; K. Heaton,¹ BC; L. Parrish,¹ BC; D. Prentice,² DVM, MS; C. McConnel,¹ DVM, PhD; F. Leal Yepes,¹ DVM, PhD

¹College of Veterinary Medicine, Washington State University, Pullman, WA 99164

²Elanco Animal Health Inc., Greenfield, IN 46140

Introduction

Bovine respiratory disease (BRD) is one of the most common causes of morbidity and mortality in bovine calves, especially around the weaning period, when the calves are usually moved from individual to group housing. BRD has negative performance and economic consequences that extend well beyond the actual event. Therefore, we aimed to compare BRD morbidity, mortality and growth in dairy and dairy beef cross-bred calves during the first commingle groups using 2 different BRD prevention strategies. We hypothesized that one or both prevention strategies would reduce BRD morbidity and mortality, resulting in better health status and performance in calves.

Materials and methods

This trial was conducted on a commercial calf ranch in central Washington. The ranch received calves from different dairies, which arrived at the facility within 3 days of age. All calves were placed in individual calf hutches and fed milk replacer on a step-up/step-down system 3.8 L/d milk from d 1 to 14, 5.6 L/d milk from d 15 to 50, 3.8 L/d milk from d 51 to 55 followed by feeding 0.9 L/d milk from d 56 to 60, at which time they were weaned. Grain and water were always offered ad libitum. Around 80 d of age, calves were commingled in groups of approximately 35 animals per pen and fed a corn-based total mixed ration. Dairy and dairy beef cross-bred calves (n = 1692) were included in the final analysis. Calves were randomly assigned into 3 groups, controlling for sex and breed using PROC SURVEYSELECT (SAS 9.4, NC, USA). Treatment groups were: 1) *M. haemolytica* vaccination (Nuplura[®] PH, Elanco Animal Health Inc., Greenfield, IN), a single dose of 2 ml SQ approximately 14 days before movement from hutches; 2) Tulathromycin (Increxxa[™], Elanco Animal Health Inc., Greenfield, IN), a single dose of 2.2 ml SQ on the day of moving to group housing; and 3) Control (received no vaccine or metaphylaxis). All calves were weighed at arrival, the day of movement from the hutches to the group housing, and 4 weeks after commingling to estimate average daily gain. A subset of calves in each treatment group were examined via thoracic ultrasonography prior

to and after interventions. Deep nasopharyngeal swabs were collected from a subset of calves at weaning and about 4 weeks later. Study personnel scored the calves 3 times weekly during the study period using a scoring system adapted from the Wisconsin Calf Health Chart. Ranch personnel were blinded to treatments and calf scoring and were allowed to treat calves following farm protocols. Mortality and treatment records were extracted from the electronic record system at the ranch (BoviSync, Fond du Lac, WI). BRD was analyzed using PROC LIFETEST, PROC GLIMMIX, and PROC LOGISTIC (SAS 9.4, NC, USA). Average daily gain (ADG) was analyzed with PROC ANOVA.

Results

The cumulative incidence and 95% CI of BRD during the first commingle (day 81-120) for Control, Increxxa and Nuplura were 0.42 (0.38 to 0.47), 0.36 (0.38 to 0.40), and 0.39 (0.35, 0.43), respectively ($P = 0.05$). The Increxxa calves have a lower cumulative BRD incidence than the Control group. Mortality was 5.7% among the 3 groups and was not different between the 3 groups ($P = 0.63$). The first and second deep nasopharyngeal swabs showed that 54% and 97% of the animals, respectively, had *M. haemolytica*, but it was not different among the treatments ($P = 0.48$). Ultrasound results were not different across treatments. The ADG LSM \pm SE (Kg) for Control, Increxxa and Nuplura were 0.18 \pm 0.04, 0.29 \pm 0.04, and 0.13 \pm 0.04, respectively ($P = 0.01$).

Significance

In this study, the tulathromycin metaphylactic treatment group had a lower cumulative BRD incidence in high-risk calves. Moreover, Increxxa performed better than the other groups as measured by ADG. However, management and environmental conditions were variable at this operation throughout the trial and likely negatively impacted the results. Earlier interventions may be needed when BRD incidence is high in young calves.

