The Relationship Between Dystocia and Dairy Calf Morbidity and Mortality

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Introduction and Objectives

Traditionally, the dairy industry has placed little emphasis on the calf, their delivery and aftercare; producer efforts have been concentrated on milk production-their primary source of income. Consequently, difficult calving (dystocia) rates have become higher than in the beef industry and very little has been done to address this issue. In fact, still births and calf deaths within the first 24 hours of life, all of which are most often a result of dystocia, are usually not recorded at all. Therefore, these significant losses were not represented in past calf mortality statistics.

The first objective of this year-long observational study was to obtain actual dystocia occurrence rates on three Colorado dairies. The second objective was to identify the relationship between dystocia and calf morbidity and mortality.

Materials and Methods

Each fresh cow received a dystocia score based on her calving ease. Dystocia scores ranged from 1 to 5 (1=no assistance, 2=one person assistance required, 3=two or more people required to assist, 4=mechanical assistance, 5=surgical delivery). Lactation number, calf sex and viability data were recorded for each dam. Subsequent health events, including death, were documented for all calves from the time of birth through the end of the study period. Dairies 1 and 2 used Dairy Comp 305 and Dairy 3 used DHI-Plus for management of records. All calf data was extracted from each dairy's' records into an Access Database for initial analysis. Data was collected over a one year period.

Results

Data was collected on 6684 calvings. Overall, 62.3% of the cows required no assistance in calving (dystocia score 1), 35.5% of the deliveries were assisted by either one or two people (scores 2 and 3), and 2.3% of the births required mechanical assistance or surgical delivery (scores 4 and 5). A total of 97.5% of the fresh cows were between their 1st and 5th lactations. First lactation heifers had the greatest incidence of dystocia with 48.4% requiring assistance and 4.4% of deliveries resulting in mechanical extraction or surgical delivery. The percentage for calvings that required some amount of assistance for the second through eighth lactations was similar, averaging 30.4%. For lactations greater than nine, however, these rates were higher- 33.3%, 100% and 100% for the ninth, tenth and eleventh lactations. Unassisted calvings for dairies 1, 2, and 3 were 61.5%, 70.0% and 56.2%, respectively. Mild dystocia rates (scores 2 and 3) were 37.9%, 26.0% and 34.2%; severe dystocia rates (scores 4 and 5) were 0.6%, 4.4% and 9.6% for dairies 1, 2 and 3, respectively.

Overall, the average early calf loss, either born dead or died within the first 24 hours, was 8.4%. Individual dairy losses were 6.1%, 10.5% and 8.5% for dairies 1, 2 and 3, respectively. Early calf morbidity increased dramatically in relation to calving difficulty. A total of 3.0% of the deliveries requiring no assistance (score 1) resulted in dead calves. In the deliveries requiring the assistance of one person (score 2), 6.5% of the calves died at birth or very soon after. When the assistance of two or more people (score 3) was required, 33.8% of the deliveries resulted in calf loss. The use of mechanical force during a delivery (score 4) resulted in a 50.5% calf loss rate. Finally, the calf mortality as

a result of surgical delivery (score 5) was 66.7%.
Calf morbidity associated with calving ease score statistics was analyzed. For morbidity analysis, the ease scores were grouped as follows: Group1 included the calves that required no delivery assistance; Group 2 included the calves whose delivery was assisted by 1 person; Group 3 included the calves with a difficult delivery (2 or more person assistance, mechanical or surgical extraction). Death at an age greater than 24 hours, associated with calf morbidity, was analyzed. Among the calves in groups 1, 2 and 3, 8.6%, 8.8% and 14.5%, respectively, died later in life. Overall morbidity was recorded. Calves with health events totaled 33.6%, 35.6% and 45.2% in groups 1, 2 and 3, respectively. Morbidity events were then divided into three categories: digestive upset (including bloat, diarrhea and scours), respiratory infections (including pneumonia, cough and nasal discharge), and other (including fever, injuries and other miscellaneous illness). Digestive upset occurred in 14.5%, 17.9% and 16.9% of calves in groups 1, 2 and 3, respectively. Respiratory infection occurred in 24.3%, 27.8% and 37.9% of calves in groups 1, 2 and 3, respectively. Other health events occurred in 2.9%, 2.2% and 2.0% of calves in groups 1, 2 and 3, respectively.

Discussion
Dystocia incidence varied by dairy, most likely attributed to calving management differences. For example, the number of mechanical assisted deliveries was greater on dairy 3, because fewer personnel were assigned to the calving area; thus, mechanical extraction may have been used rather than the force of two people in difficult calvings. Overall, 7.2% of calvings resulted in early calf death. First calf heifers were at greatest risk for dystocia, as were the oldest cows-- eighth lactation and up. Perhaps the most important finding of this study was the significant increase in calf mortality with increased calving difficulty. Greater than one-third (37.7%) of calves were lost if more assistance than one person was required, compared to 9.5% of calves lost if none or one person assisted. This statistic alone could be useful in producer education concerning the importance of decreasing dystocia rates. Nearly one and a half times more calves were died due to illness if they had a difficult delivery. Although calving ease did not seem to impact digestive upset or other illness occurrence rates, respiratory disease was approximately 1.5 times more common in calves that were born in a difficult delivery. Therefore, dystocia does have an impact on calf morbidity as well as calf mortality both early and later in life. Concentrated efforts by the producer to decrease dystocia rates would result in an increased number of calves as well as improved surviving calf viability. This may be accomplished with calving ease-selective breeding, similar to the beef industry standards, as well as successful calving training and management.