

Effect of BRD Following First Movement to Group Housing on Survival to First Lactation, Dystocia Rates and Age at First Calving in Commercial Dairy Heifers

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Introduction

Bovine respiratory disease (BRD) is common following weaning and movement of calves from individual to group housing. The objective for this preliminary analysis was to evaluate the effect of BRD in the 60 days following grouping on the survival, dystocia rates, and age at first calving for replacement heifers.

Materials and Methods

The study was initiated as a clinical trial at a custom heifer-raising facility in New York state. A total of 1,395 weaned dairy calves were randomly assigned to receive a single dose of either tulathromycin (TUL) or oxytetracycline (TET), at first movement to group housing. The incidence of BRD was 8% and 13% in the TUL and TET groups, respectively, as previously reported. On average, heifers were 56 days of age at enrollment. Heifers returned to their source farms when pregnant. Data from six of the seven are included in these analyses. This includes 1,347 heifers with 239 heifers treated for BRD within 60 days of first movement to group housing and 193 heifers treated for BRD prior to movement to group housing and study enrollment. At the time of the last data collection six heifers had not calved and were removed from all analyses. Heifers that returned to their source farm and entered the milking herd were considered to have survived to first lactation. Calving ease was scored using a standardized 5-point scale, with a score of 1 indicating no problems and greater than 1 indicating difficulty in calving. The probabilities of entering a first lactation, having a difficult calving (score ≥ 2), and calving prior to 25 months was analyzed in SAS 9.1 using logistic regression, controlling for enrollment cohort and source farm.

Results

Overall, 81% (1,086/1,341) of the heifers enrolled on this project entered the milking herd on the source farm.

The proportion of heifers that entered the milking herd was 70% (136/193) and 66% (157/238) for calves with pre-enrollment BRD and BRD following movement to group housing, respectively. For heifers without BRD prior to enrollment or following movement to group housing, the percentage of calves that entered their first lactation was 83% (950/1,148) and 84% (929/1,103), respectively. Heifers with no pre-enrollment BRD were 2.0 (CI: 1.43-3.3) times more likely to enter their first lactation than heifers with pre-enrollment BRD, $P < 0.001$. Heifers without BRD following movement were 2.5 (2.0-3.3) times more likely to enter the milking herd than heifers with BRD following movement to group housing, $P < 0.001$. Calving ease scores were recorded for 98% (1069/1087) of the calves that entered their first lactation. The proportion of heifers with a calving ease score of 1 in their first lactation was 55% (85/155) and 47% (427/914) for heifers with and without BRD following movement to group housing, respectively. The odds of a heifer having difficulty calving were 1.6 (CI: 1.1-2.3) times greater for calves treated for BRD post-weaning than calves without post-weaning BRD, $P < 0.05$. The median age at first calving for this group of heifers was 703 days and 82% (885/1086) of heifers calved prior to 25 months (750 days). The proportion of heifers calving after 25 months of age was 27% (42/157) and 17% (159/929) for heifers with and without BRD following movement to group housing, respectively. The odds of a heifer calving prior to 25 months of age was 40% lower (Odds ratio=0.6-CI: 0.4-0.8) for calves treated for BRD post-movement, compared to calves without post-weaning BRD, $P < 0.01$.

Significance

In this group of replacement heifers, calves with BRD following movement to group housing were less likely to enter the milking herd, and if they calved, were more likely to calve after 25 months of age and to have problems during calving.