Retrospective analysis of the association of treating Bovine Respiratory Disease (BRD) on non-infectious heart disease deaths in U.S. fed cattle

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Introduction

Cattle treated for bovine respiratory disease (BRD) were previously described having greater odds of dying of congestive heart failure1. However, there remains a gap in knowledge on how BRD treatments are associated with non-infectious heart disease (NIHD) in fed cattle. The objective of this study was to determine associations between the number of BRD treatments and the probability of an NIHD death.

Materials and methods

Data was collected from 14 U.S. feedyards from 2017 to 2020. Cattle were classified by number of antibiotic treatments for BRD as 0, 1, 2, or 3+. A mixed-effects logistic regression model was used to evaluate the probability of an NIHD death when conditioning for BRD category and including cohort demographics as covariates. Random intercepts were included to account for the lack of independence of cohorts within a feedyard.

Results

The probability of an NIHD death increased with additional BRD treatments and was modified by placement weight, arrival quarter and sex ($P < 0.01$). Cattle placed at the 901-1000 lbs category had 0.02%, 0.4%, 1.4% and 2.5% probability of an NIHD death based on having 0,1,2 and 3+ BRD treatments, respectively. Cattle placed in quarter 3 had 0.002%, 0.3%, 0.8%, and 1.8% probability for an NIHD death based on the respective BRD treatment category. Steers placed in feedyards had 0.03%, 0.3%, 0.8%, 1.4% compared to heifers with 0.01%, 0.04%, 0.9%, 1.9% for an NIHD death based on respective BRD treatments.

Significance

Cattle requiring additional treatments for BRD had an increased probability of an NIHD death. The magnitude was modified by cohort placement weight, placement quarter and sex.

