

# Determining risk factors associated with cohort-level respiratory disease timing in feedyards

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## Introduction

Previous bovine respiratory disease (BRD) research has focused early in the feeding phase, but this study was to determine risk factors associated with morbidity in the middle and late portions of the feeding phase.

## Materials and methods

The analysis was performed on records from 13 U.S. commercial feedyards between 2017 and 2020. Cohorts ( $n = 2,598$ ) were analyzed over their first 100 days on feed. Hierarchical clustering created 20 temporal patterns of BRD which veterinary consultants categorized as early, middle or late. Cohorts were also categorized based on which portion feeding period (0-42 d, 43-71 d, or 72-100) had the greatest percentage of BRD treatments. Final cohort classifications combined both methods and yielded 2429 early, 108 middle and 61 late cohorts. Ordinal regression was utilized to determine associations between cohort characteristics and the BRD timing.

## Results

The only factor significantly ( $P < 0.05$ ) associated with cohort-level BRD morbidity timing was quarter of arrival. Cattle arriving in the second quarter were more likely to be middle or late (5.5%, 10.2%, respectively) compared to cattle arriving in the other quarters (Q1: 2.7%, 4.5%; Q3 1.4%, 2.2%, or Q4 1.4%, 2.3%).

## Significance

This study evaluated risk factors relationships with cohort-level BRD timing. No cattle characteristics were significantly associated with BRD timing; however, cattle arriving in Q2 were at higher risk for middle- or late-day BRD.

