

# Understanding stewardship: Associations with treatment thresholds for antimicrobial use among dairy calf producers

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## Introduction

Calf-raising operations provide a unique microbial niche where immature intestinal flora, dense animal populations, and frequent application of antimicrobials may facilitate the emergence of antimicrobial resistant pathogens. In the US, producers report that 18% of calves receive an antimicrobial for diarrhea prior to weaning, often with antimicrobials designated as “critically important” to human medicine. The overall objective for this research was to understand the decision criteria for antimicrobial use for calf diarrhea. We hypothesized that selective antimicrobial use is associated with herd-level predictors, including the presence of veterinarian-written treatment protocols and producer attitudes about the impact of antimicrobial use in livestock.

## Materials and Methods

Surveys were mailed to 1,100 randomly selected Grade A dairy producers in Ohio and Michigan. Producers were asked to indicate current treatment practices for a series of case descriptions with increasing severity. Based on the responses, producers were categorized as applying

antimicrobials for all, select, or none of the described cases. The survey included potential predictors, including herd size, age, education, veterinarian-written protocols, and attitudes about the public health impact of antimicrobial use in livestock.

## Results

In total, 481 (44%) producers returned the survey, and 10%, 55%, and 30% of producers reported applying antimicrobials to all, select, or none of the cases described in the survey, respectively. Based on ordinal univariable logistic regression, more selective therapy was significantly ( $P < 0.05$ ) associated with a higher level of concern about the public health impact of antimicrobial use. Selective therapy did not have an association with herd size, age, education level, or the presence of a veterinarian-written protocol.

## Significance

The reported antimicrobial use practices of dairy calf producers were significantly associated with producer attitudes about the impact of antimicrobial use on public health.

# A case-control study of herd-level risk factors for nursing calf bovine respiratory disease on cow-calf operations

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## Introduction

Bovine respiratory disease (BRD) is the leading cause of death for feedlot cattle, weaned dairy heifers, and nursing (preweaning) beef calves 3 weeks of age and older. Bovine

respiratory disease results from interaction of respiratory infection, inadequate host immunity, and certain management practices. Management practices related to feedlot or dairy calf BRD have been reported, but little information is available regarding management practices that increase BRD risk