

# Inter-observer agreement between veterinarians and dairy farm caretakers: a hierarchical survey of antimicrobial use decisions

**R. Portillo-Gonzalez**, DVM, MBA<sup>1</sup>; **J. A. Pempek**, PhD<sup>1</sup>; **S. Locke**, BS<sup>1</sup>; **A. M. Dietsch**, MS, PhD<sup>2</sup>; **R. V. Pereira**, BVSc, PhD<sup>3</sup>; **G. Habing**, DVM, MS, PhD<sup>1</sup>

<sup>1</sup>Department of Veterinary Preventive Medicine, The Ohio State University, Columbus, OH 43210

<sup>2</sup>School of Environment and Natural Resources, The Ohio State University, Columbus, OH 43210

<sup>3</sup>Department of Population Health & Reproduction, University of California-Davis, Davis, CA 95616

## Introduction

Antimicrobial use in food-producing animals may contribute to the development of drug-resistant bacterial infections in humans. Veterinarians prescribe and dispense antimicrobials, but farm caretakers are responsible for judging disease severity and initiating on-farm treatments. The objective of this study was to estimate the level of agreement on initiating on-farm antimicrobial treatment between farm caretakers and the respective farm veterinarians at different levels of disease severity

## Materials and Methods

This was a cross-sectional study that used hierarchical surveys and clinical case vignettes to collect information from farm caretakers and veterinarians on their dairy farm clients. The survey included vignettes of mild, moderate, and severe cases of metritis, lameness, and mastitis. In 2019, we received responses from 35 veterinarians and 66 farm-matched caretakers in Ohio. Cohen's Kappa coefficients ( $k$ ) were applied to the matching farm caretakers and farm veterinarian responses to evaluate the level of agreement for treating hypothetical but routine cases with antimicrobials.

## Results

The results suggested that little agreement was reached on cases that require local or systemic antimicrobial therapy for severe ( $k = -0.010$ ) and moderate ( $k = -0.053$ ) cases of metritis. Additionally, there was only slight agreement on antimicrobial use between veterinarians and farm caretakers on local ( $k = 0.016, 0.017$ ) and systemic ( $k = 0.019, 0.052$ ) moderate digital dermatitis and mild interdigital pododermatitis, respectively. Also, a slight agreement between veterinarians and farm caretakers was reached on intramammary antimicrobial on mild ( $k = 0.055$ ) and severe ( $k = 0.026$ ) cases of mastitis.

## Significance

This study demonstrates that the level of agreement on initiating on-farm antimicrobial treatment at different levels of disease severity between veterinarians and farm caretakers is weak. Therefore, attention should be paid to implement on-farm educational campaigns to improve the criteria for the initiation of on-farm antimicrobial treatment therapies.