

# Epidemiology of antimicrobial resistance in domestic animal species in South Africa

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## Introduction

The problem of antimicrobial resistance (AMR) in veterinary medicine is increasing globally. Unfortunately, little is known regarding the patterns of AMR in dairy farms in South Africa and how farming practices may be contributing to the problem. For instance, infection with mastitis-causing pathogens is an important problem in the dairy industry in South Africa and injudicious use of antimicrobials against these pathogens might contribute to development of AMR. Understanding non-therapeutic management practices used in mastitis control, as well as how farmers use antimicrobials both prophylactically and therapeutically due to these infections, is important in providing information to curb or slow down the development of AMR. Therefore, the objectives of this study were to assess: 1) management practices used by farmers to control mastitis in dairy farms in Gauteng Province, South Africa; 2) knowledge and antibiotic use practices among dairy farmers; and 3) antimicrobial resistance patterns among selected mastitis-causing pathogens.

## Materials and Methods

This cross-sectional study will use a survey questionnaire that will be administered to dairy farmers in Gauteng Province of South Africa from mid-May to end of June 2019. The survey will have questions addressing farmers' knowledge of mastitis pathogens, farm management practices, procedures for treating clinical mastitis, and characteristics

of their herd. The proportion of responses and their 95% confidence intervals will be computed. Patterns of AMR levels across mastitis pathogens will be assessed by computing pathogen-specific AMR levels. All data analyses will be conducted in July 2019 using SAS.

## Results

The study will be conducted during the months of May-July 2019 and results will be ready by beginning of August. Therefore, results will be ready by the time of the conference.

## Significance

We expect study results to provide useful information regarding farm management practices that increase risk for mastitis and hence the need to use antimicrobials to treat the infections. We will also learn the farmers' level of knowledge related to infection control, injudicious antimicrobial use practices, and how improper antimicrobial use impacts development of AMR. The information gathered will be useful for designing education/extension programs to improve management, decrease dependence on antimicrobials, and hence help curb the threat of AMR in dairy farms.