"A cross-sectional survey of cattle on entry to Alberta feedlots to measure prevalence and factors associated with antimicrobial resistance in respiratory isolates."

ANTIMICROBIAL RESISTANCE ON ARRIVAL

PROJECT NO.: ANH.09.16
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Background: Bovine respiratory disease (BRD) is a complex and multifactorial issue that is the leading cause of morbidity and mortality in the feedlot. Involving bacteria (Mannheimia haemolytica, Histophilus somni, Pasturella multocida and Mycoplasma bovis) as well as viruses, individual animal characteristics and environmental influences, treatment and prevention of BRD continues to rely heavily on antimicrobials. Given increasing public scrutiny on beef production, including antimicrobial use (AMU), and the documented emergence of multi drug resistant respiratory pathogens, more information on the patterns and associations of antimicrobial resistant (AMR) BRD pathogens in cattle on arrival to the feedlot is necessary.

While previous research has identified patterns of AMR in BRD pathogens, generally those bacteria are isolated from cattle with BRD symptoms that have likely been treated at least once. This increases the probability that AMR bacteria will be discovered. In addition, anecdotal reports have indicated that initial treatment protocols at the feedlot level are becoming less effective, but little published data on the subject exists. It is also unknown if these reports are due to cattle already carrying AMR pathogens prior to any antimicrobial treatment at the feedlot, what factors may play a role in the development of that resistance, or if there is another issue potentially reducing treatment efficacy.

Objectives: The objectives of this study are to:

- Describe trends, patterns and prevalence of BRD pathogens in cattle on entry to the feedlot prior to any antimicrobial treatment.

- Describe trends, patterns and prevalence of AMR in those pathogens.

- Investigate potential factors contributing to BRD and AMR in cattle on arrival (e.g. weight, source, geographic location, predicted BRD risk category, transport time, weather, etc.).

- Investigate associations between the characteristics of the BRD pathogens on arrival and the BRD status of the animal during the feeding period.

Implications of the Research: This project is a significant collaboration between four veterinary clinics whose feedlot clients represent the majority of cattle fed in Alberta. By identifying patterns and associations of AMR BRD pathogens in cattle on entry to the feedlot, appropriate management recommendations and treatment protocols can be developed.

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