



“Surveillance of antimicrobial use and antimicrobial resistance in Canadian feedlot cattle: expansion of bovine respiratory disease pathogen susceptibility testing”

FEEDLOT ANTIBIOTIC USE AND RESISTANCE SURVEILLANCE

PROJECT NO.: ANH.11.19

LEAD RESEARCHER: Sheryl Gow (Canadian Integrated Program for Antimicrobial Resistance Surveillance)

COLLABORATORS: Joyce van Donkersgoed (Alberta Beef Health Solutions); Steve Hendrick (Coaldale Veterinary Clinic); Calvin Booker, Sherry Hannon (Feedlot Health Management Services); Craig Dorin (Veterinary Agri-Health Services); Nathan Erickson (Western College of Veterinary Medicine), Grace Kuiper (independent epidemiologist)

Background: The Public Health Agency of Canada’s (PHAC) Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) has conducted antibiotic resistance surveillance in cattle entering packing plants and retail beef since the mid 2000’s and began surveillance for antibiotic use and resistance in feedlot cattle in 2019. Because PHAC is focused on human health, it concentrates on antibiotic resistance in bacteria that are found in the intestinal tract of both livestock and humans (e.g. *E. coli*, *Campylobacter*, *Enterococcus*). But feedlots use antibiotics to combat pathogens like the respiratory bacteria involved in bovine respiratory disease (BRD). Understanding the prevalence of and trends in antibiotic resistance in BRD bacteria is critical to informing responsible antibiotic stewardship in feedlot animal health programs.

The overall project will combine antimicrobial use data and resistance patterns in bacteria of concern for both human and animal health from sentinel feedlots in Alberta, Saskatchewan and Ontario. This particular funding adds antimicrobial resistance testing for *Pasteurella multocida* and *Histophilus somni*.

Objectives: The objectives of this study are to:

1. Provide representative estimates of antibiotic use and resistance in Canada’s feedlot sector

2. Provide a unified approach to monitor trends in antibiotic use and resistance over time
3. Investigate associations between antibiotic use and resistance on a targeted basis based on emerging resistance trends
4. Provide collated industry data for the assessment of the potential public and animal health risk of antibiotic use in the feedlot sector

Implications of the Research: Potential antibiotic resistance trends in BRD pathogens will help refine antibiotic use recommendations and practices at the veterinary and feedlot level. In addition, consumer groups, foodservice companies and international trade partners are increasingly interested in antibiotic use practices in livestock production. Solid, internationally reputable data are needed to independently verify antibiotic use practices in Canadian beef production.

This project is also supported by the Beef Cattle Research Council, Alberta Cattle Feeders Association, Beef Farmers of Ontario, Saskatchewan Cattle Feeders, Saskatchewan Ministry of Agriculture, Alberta Canadian Agricultural Partnership Surveillance Program, Ontario Canadian Agricultural Partnership, the Public Health Agency of Canada, Bayer, Vetoquinol, and McDonald’s.



www.albertabeef.org