

BOVINE RESPIRATORY DISEASE (BRD) PATHOGEN SUMMARY

ANTIMICROBIAL RESISTANCE (AMR) INFORMATION



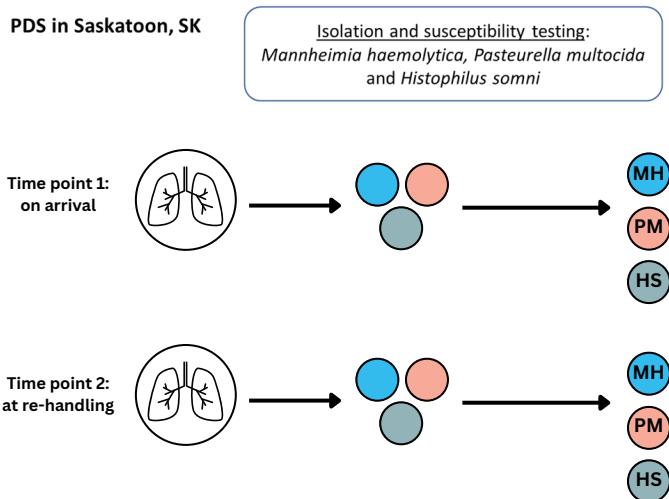
What are BRD pathogens?

- Many different types of bacteria can cause **bovine respiratory disease (BRD)** in cattle
- These include *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni*, and *Mycoplasma bovis/dispar*.

What is AMR?

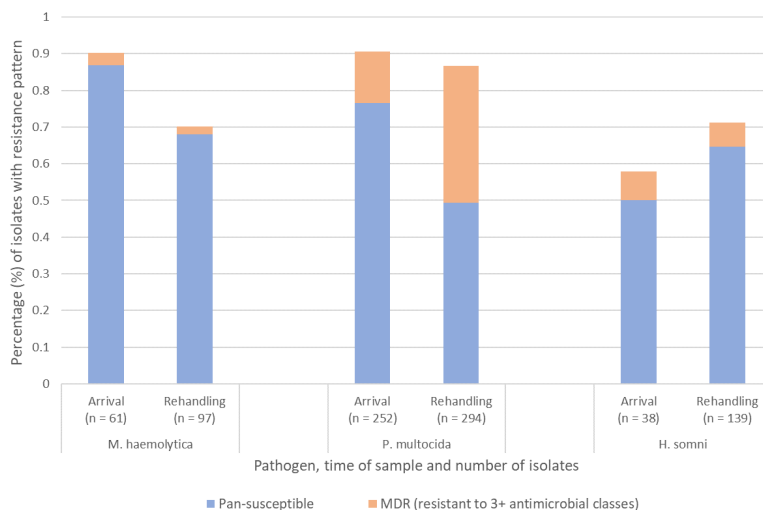
- **Antimicrobial resistance (AMR)** happens when microbes, such as bacteria, have evolved so that antimicrobials are not able to control or kill them
- Rising rates of AMR make it harder to treat infections and increase the risk of disease spread, illness, and death in people and animals

Processed samples (2019 - 2021)



Pathogens were isolated and antimicrobial susceptibility testing was performed at arrival and rehandling (average 60 DOF post arrival). Pathogens included **MH** (*Mannheimia hemolytica*), **PM** (*Pasteurella multocida*), and **HS** (*Histophilus somni*).

BRD pathogens with resistance pattern at arrival and rehandling



Pasteurella multocida has shown the most differences between arrival and rehandling, with significantly increased antimicrobial resistance to macrolides between arrival and rehandling (60 DOF).

THERE WERE NO SIGNIFICANT YEARLY DIFFERENCES IN ANTIMICROBIAL RESISTANCE (AMR) FROM 2019 TO 2021.

Information collected from 2019 to 2021 showed that pathogens that were multidrug resistant (MDR) were most resistant to these drug classes from arrival to rehandling (60 DOF):

Macrolides

Tetracyclines

Antimicrobials with the most resistance increase from arrival and rehandling (with trade name examples):

Macrolides

- Gamithromycin (Zactran®)
- Tildopirosin (Zuprevo®)
- Tilmicosin (Micotil™)
- Tulathromycin (Draxxin®)

Tetracyclines

- Tetracycline (Liquamycin LA-200®)

WHAT DOES THIS INFORMATION MEAN FOR YOU AS A PRODUCER?

- Each and every time antimicrobials are used, there is an increased risk for AMR development.
- The increase in AMR to macrolides and tetracyclines at 60 DOF emphasizes the need to use these antimicrobials in feedlot cattle only when necessary, based on disease risks.
- **Work with your veterinarian** to reduce the risk of infectious disease and thus, the need for antimicrobials, with **good animal husbandry and on farm practices**, including:
 - Housing for protection from inclement weather,
 - Appropriate stocking densities,
 - Well-balanced nutrition,
 - Effective vaccination protocols,
 - Low stress cattle handling including transportation,
 - Health and performance monitoring with reviews of vaccination and treatment protocols and records,
 - Improved disease diagnostics, and
 - Staff training



Antimicrobials need to be used in the right animal for the right reason, at the right time, dosage, route, frequency, and duration.

The Canadian beef industry and multiple other stakeholders are working with the **Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS)** to implement and maintain a national feedlot antimicrobial use (AMU) and resistance (AMR) surveillance program in Canada. Collection of high-quality data over time will allow the feedlot industry to document appropriate information that ensures both animal and public health and welfare.

This document contains a summary of important antimicrobial resistance (AMR) information on bovine respiratory disease (BRD) pathogens from 2019 to 2021.



**QUESTIONS?
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