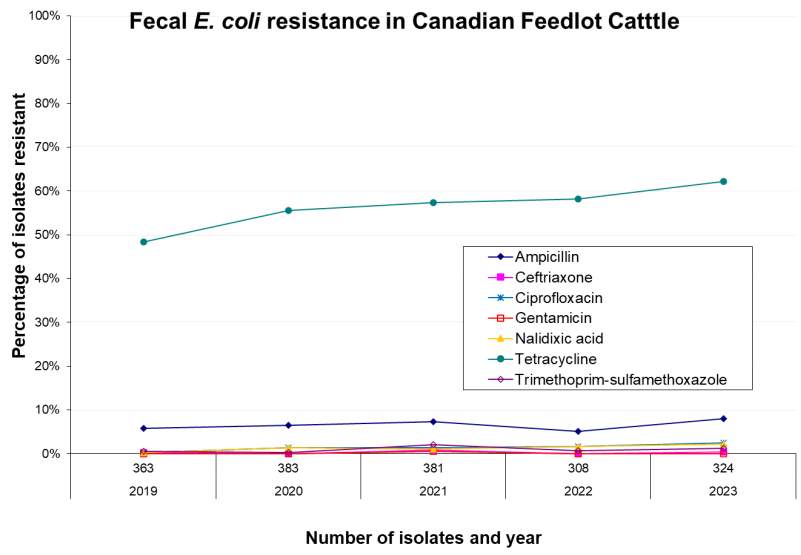
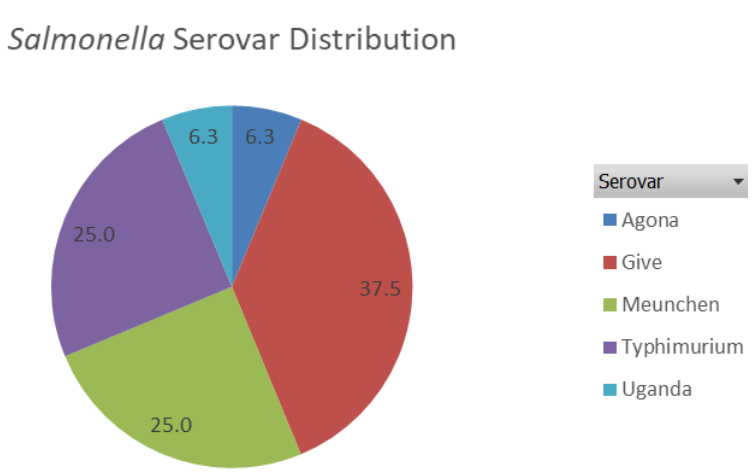
ENTERIC PATHOGEN ANTIMICROBIAL RESISTANCE (AMR) UPDATE - CFAASP 2023

- Fecal samples were collected from finished feedlot cattle within 30 days of slaughter from 25 feedlots in AB, SK, and ON.
- In 2023, 37% of the *E. coli* bacterial isolates were susceptible to all antimicrobials tested and 7% were resistant to ≥ 3 antimicrobial classes, similar to 2022.
- *E. coli* resistance was most common to tetracycline (62%), increasing by 48% since 2019. Resistance was not unexpected, as tetracycline was the most used antimicrobial in Canadian feedlot cattle in 2023.
- There was a rise in *E. coli* ciprofloxacin resistance (0.3% in 2019 to 2.5% in 2023), a Class 1* fluoroquinolone antimicrobial, like Baytril, A180, and Forcyl; however, use of this antimicrobial class in feedlot cattle was very low (0.2%).



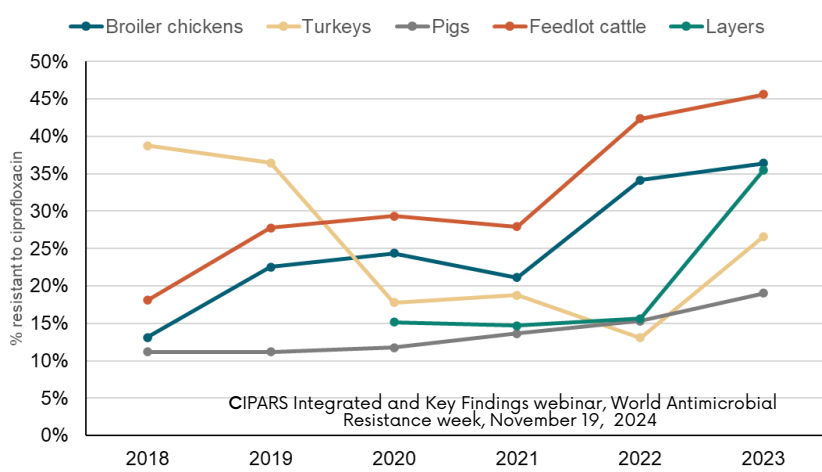
E. COLI RESISTANCE TO ANTIMICROBIALS OF VERY HIGH IMPORTANCE* TO PUBLIC HEALTH WAS LOW.



- From 2019 to 2023, *Salmonella* prevalence varied from 0% to 4%, as did the number of serovars per year. In 2023, *Salmonella* prevalence was 3%.
- *Salmonella give* was the most common serovar in 2023, and 67% of its isolates were susceptible to all antimicrobials tested; 2 isolates from 1 feedlot were resistant to ≥ 9 antimicrobials .
- Four *S. typhimurium* isolates isolated from 2 feedlots were resistant to 7 antimicrobials tested.
- Five of the 16 *Salmonella* isolates were susceptible to all antimicrobials tested.

SALMONELLA AMR DID NOT CHANGE SIGNFICANTLY FROM 2019 TO 2023.

- *Campylobacter* were isolated in 45% of fecal samples in 2023, lower than 2022; 22% of the isolates were *C. jejuni* and 78% were *C. coli*.
- There was a significant reduction in azithromycin resistance from 2019 (20%) to 2023 (9%), which is a macrolide antimicrobial of high importance* in human medicine.
- Gentamicin resistance was found in 4 isolates from 3 feedlots in 2023 (1 isolate in 2019). Gentamicin is not used in feedlot cattle.
- *Campylobacter* resistance to ciprofloxacin, a fluoroquinolone antimicrobial of very high importance* in human medicine, was 46% in 2023. Resistance to ciprofloxacin is increasing in all domestic livestock.



ADDITIONAL RESEARCH IS NEEDED TO UNDERSTAND CIPROFLOXACIN RESISTANCE IN *CAMPYLOBACTER* BECAUSE THIS CLASS OF ANTIMICROBIAL WAS NOT COMMONLY USED (0.2%) IN CANADIAN FEEDLOT CATTLE.

- None of the enterococci bacteria isolated in feces in 2023 were resistant to vancomycin, a drug of very high importance* in human medicine.
- Resistance to QDA (quinupristin-dalfopristin) increased from 2019 to 2023 (13% vs 35%). While not conclusive, QDA resistance was higher in feedlots using virginiamycin (streptogramin) to control liver abscesses.
- Enterococci resistance was most common to lincomycin, followed by tetracycline, tylosin, erythromycin, QDA, and streptomycin.
- Lincomycin, erythromycin, and streptomycin were not used in cattle.

LEARN MORE ABOUT AMU/AMR IN CANADIAN FEEDLOT CATTLE ON OUR WEBSITE.

QUESTIONS? EMAIL US! INFO@CFAASP.CA

* For more information on Health Canada Veterinary Drug Directorate's classes of antimicrobials of importance in human medicine, click **here** to view the **Antimicrobial and Antibiotic Backgrounder for Feedlot Cattle**.

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CANADIAN FEEDLOT ANTIMICROBIAL USE AND ANTIMICROBIAL RESISTANCE SURVEILLANCE PROGRAM (CFAASP)