Antimicrobial resistance in *E. coli* isolated from horses

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BACKGROUND:

- Antimicrobial resistance (AMR) is a critical threat to human, animal and environmental health
- Resistant bacteria from horses can be shed into the environment or transmitted directly to humans
- Baseline information on AMR patterns of *E. coli* in horses is necessary to evaluate the risk posed by AMR

AIMS:

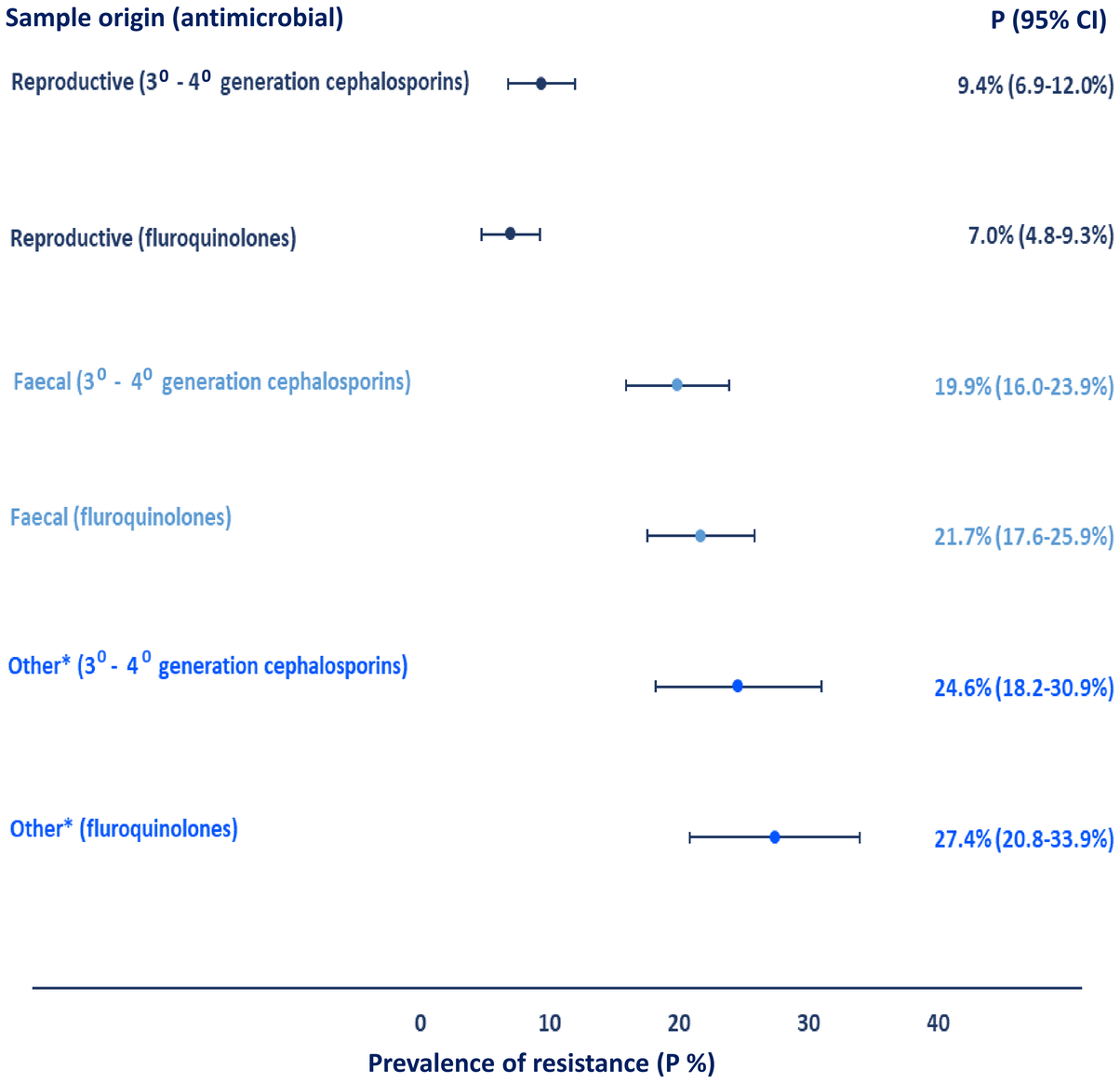
- To estimate and compare prevalence of resistance in *E. coli* from horses by sample origin to selected antimicrobials of critical importance.
- To estimate and compare prevalence of a) extensive drug-resistance (XDR) and b) multidrug-resistance (MDR) in *E. coli* from horses by sample origin.

METHODS:

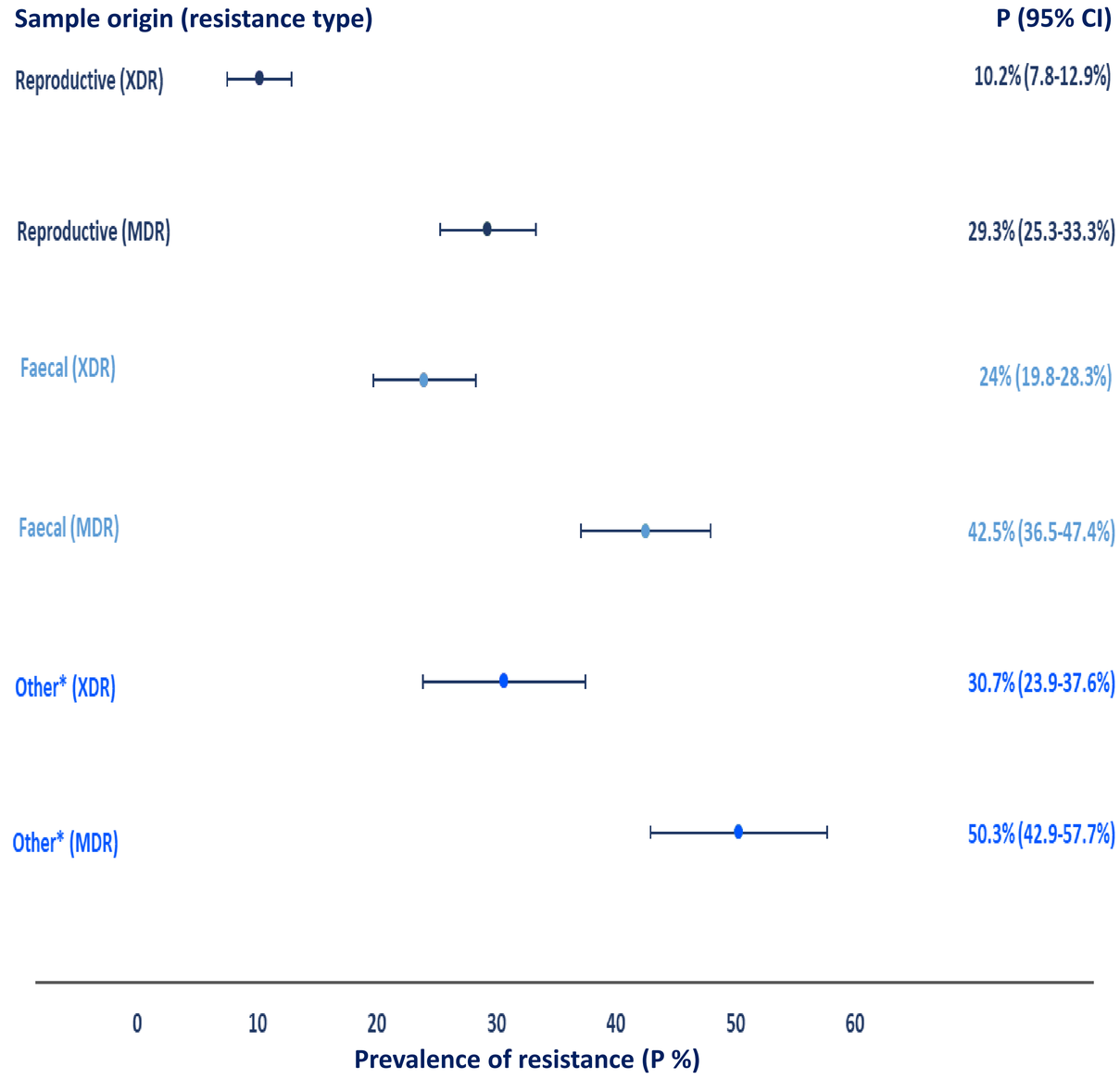
- **Data:** 1068 *E. coli* isolated from clinical samples submitted to the Irish Equine Centre (2017-2018)
- Sample origin distribution: 498- reproductive, 391-faecal, 179-other*
- **Cross sectional study:** Antimicrobial susceptibility testing was performed against 11 individual antimicrobials representing 6 antimicrobial classes
- **Data management:** De-duplication (SPSS) using the Clinical and Laboratory Standards Institute guidelines which exclude samples of the same animal, year, origin and bacterium
- Intermediate level of resistance was classified as resistant
- XDR – resistance to members of 5-6 antimicrobial classes
- MDR – resistance to members of 3 or more antimicrobial classes

Antimicrobial resistance in *E. coli* isolated from horses (2017-2018)

Resistance to 3^0 – 4^0 generation cephalosporins and fluoroquinolones by sample origin



Extensive drug-resistance (XDR) and multidrug-resistance (MDR) by sample origin



*Other - samples of integumentary, urinary, musculoskeletal and respiratory origin

DISCUSSION AND CONCLUSIONS:

Higher levels of multidrug-resistance and resistance to critically important antimicrobials were observed in *E. coli* from samples of integumentary, urinary, musculoskeletal and respiratory origin. This may be the result of:

- Distinct populations of *E.coli* present at each body site with resistance patterns particular to each population
- Increased likelihood of antimicrobial treatment prior to sampling compared to samples of faecal or reproductive origin
- Greater likelihood of veterinary hospital origin where resistance is observed more frequently

This study provides baseline data which may inform clinicians and aid in the development of future antimicrobial stewardship programmes.

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