The Urological Microbiome in Geelong: How do our resistances compare?

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Background and Aims

- 0.25% of Victorians are hospitalised with UTI each year
- Up to 25% of urological patients have asymptomatic bacteriuria (ABU)
- Treatment of ABU prior to urological surgery decreases post-op UTI and sepsis
- Resistance rates to antibiotics are increasing; antimicrobial stewardship matters
- To determine the ideal choice of empiric antibiotics in urosepsis and prophylactic antibiotics for urological surgery in Geelong with reference to our microbiome
- To compare our antimicrobiogram with local and international data

Antibiotic Resistance

Our resistance to a range of antibiotics was generally significantly less than international studies.
The current Australian therapeutic guidelines recommend gentamicin or cephazolin for routine prophylaxis - the resistance rate to cephazolin is relatively high in our population.

Methods

- n=3789 positive cultures between Dec 2018 and Sept 2019 collected
- Analysed for resistance patterns and organism profile
- Compared with published international and separately-collected local data


Resistance profile - all organisms
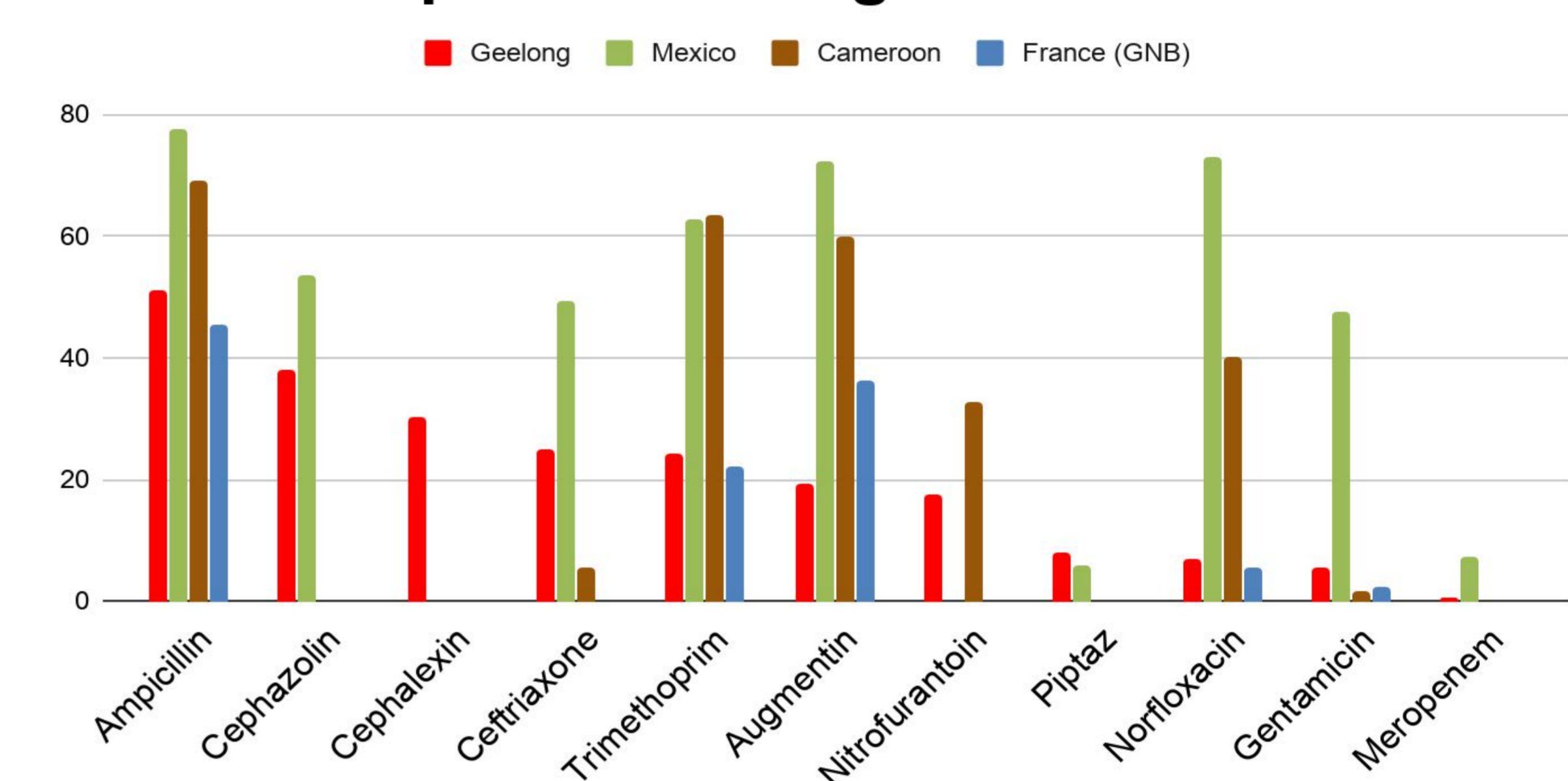
Local and International Comparison

Our rates of E. coli and other gram negatives in Geelong were generally lower than other sites, and our rates of gram positives such as staphylococcus and enterococcus were higher. Patients at Eastern Health, which is in metropolitan Melbourne, grew far more E. coli than the other Australian hospitals. International patterns of growth also varied.

Breakdown of species - Local Comparison
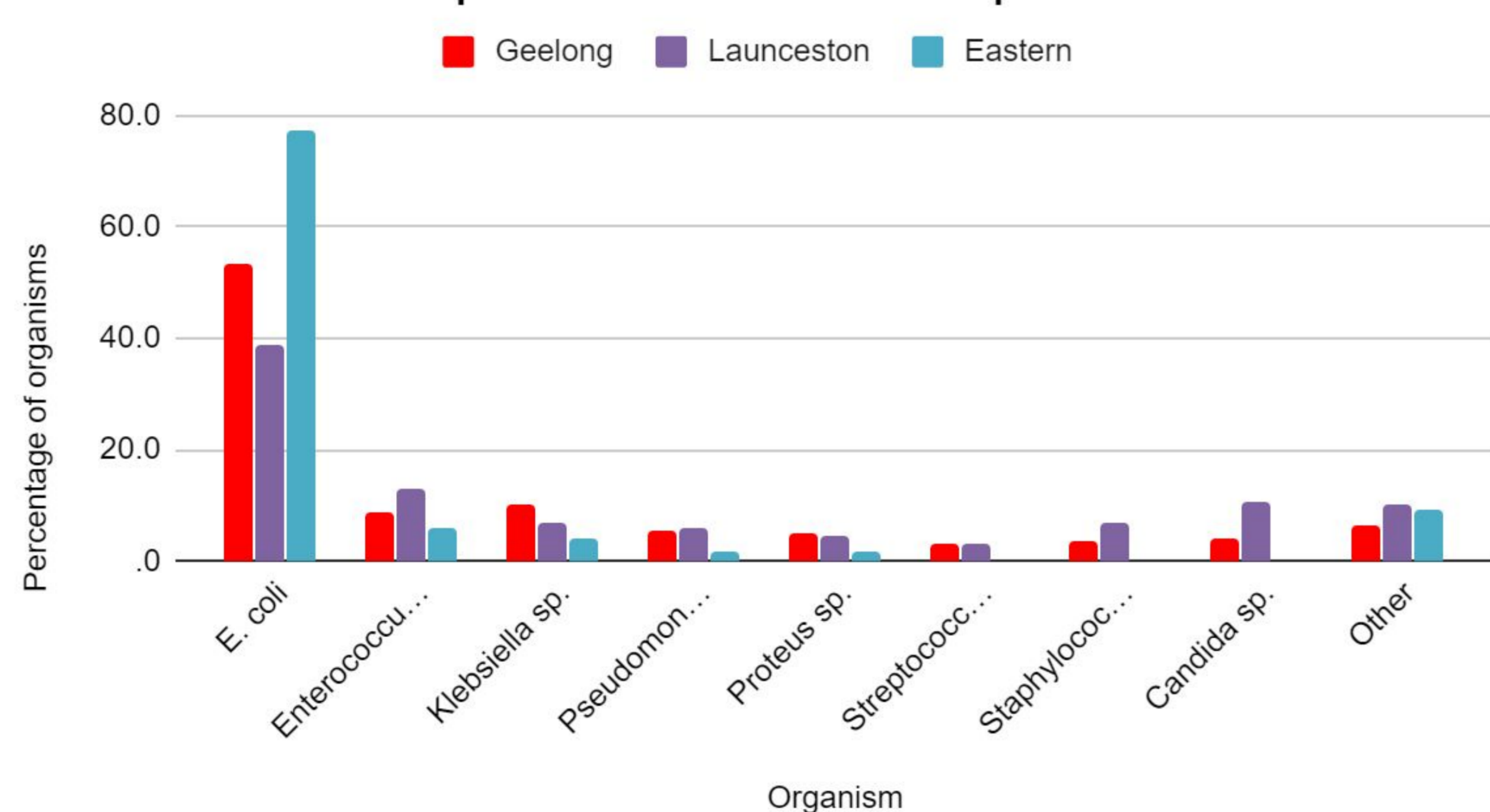
Breakdown of species - International Comparison
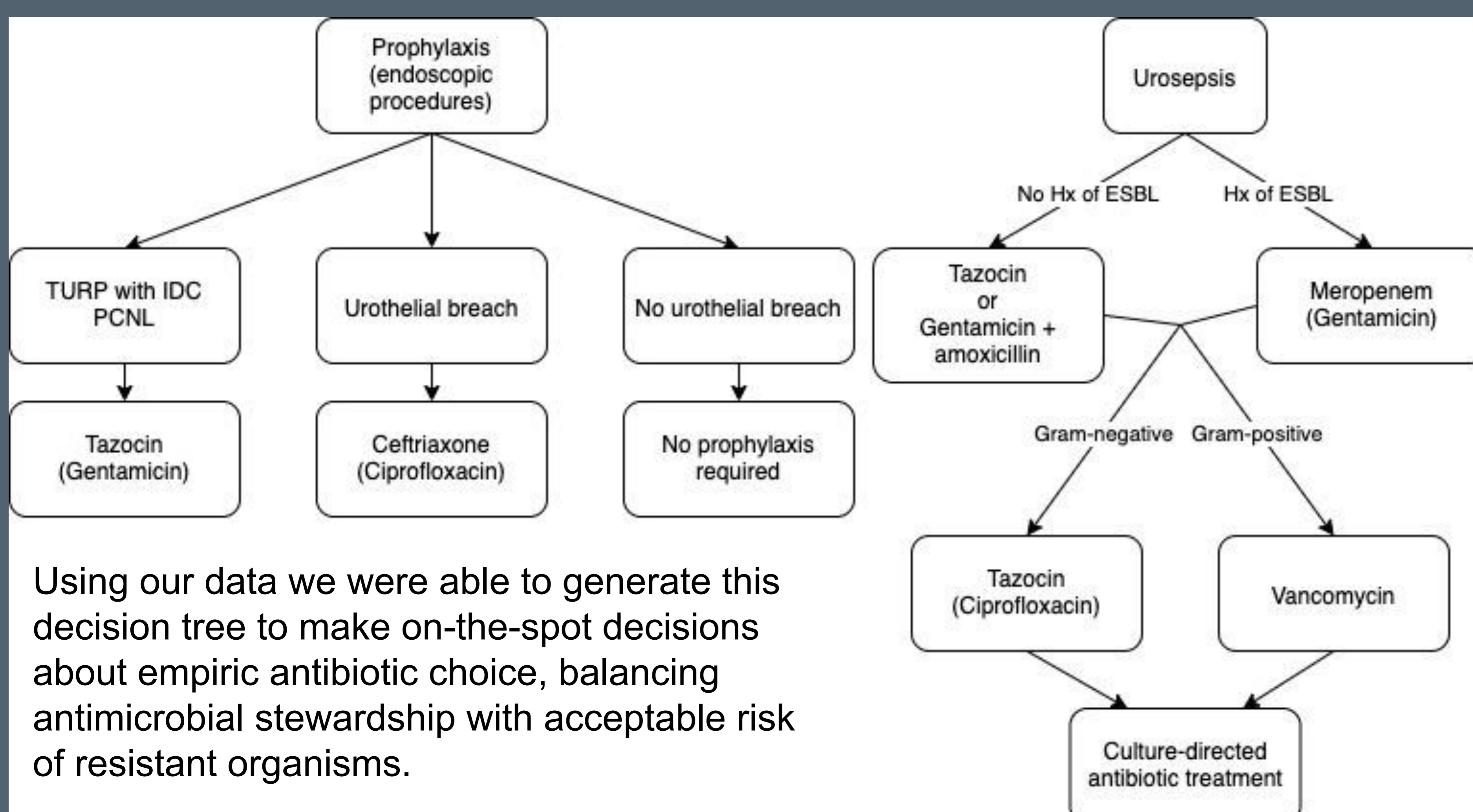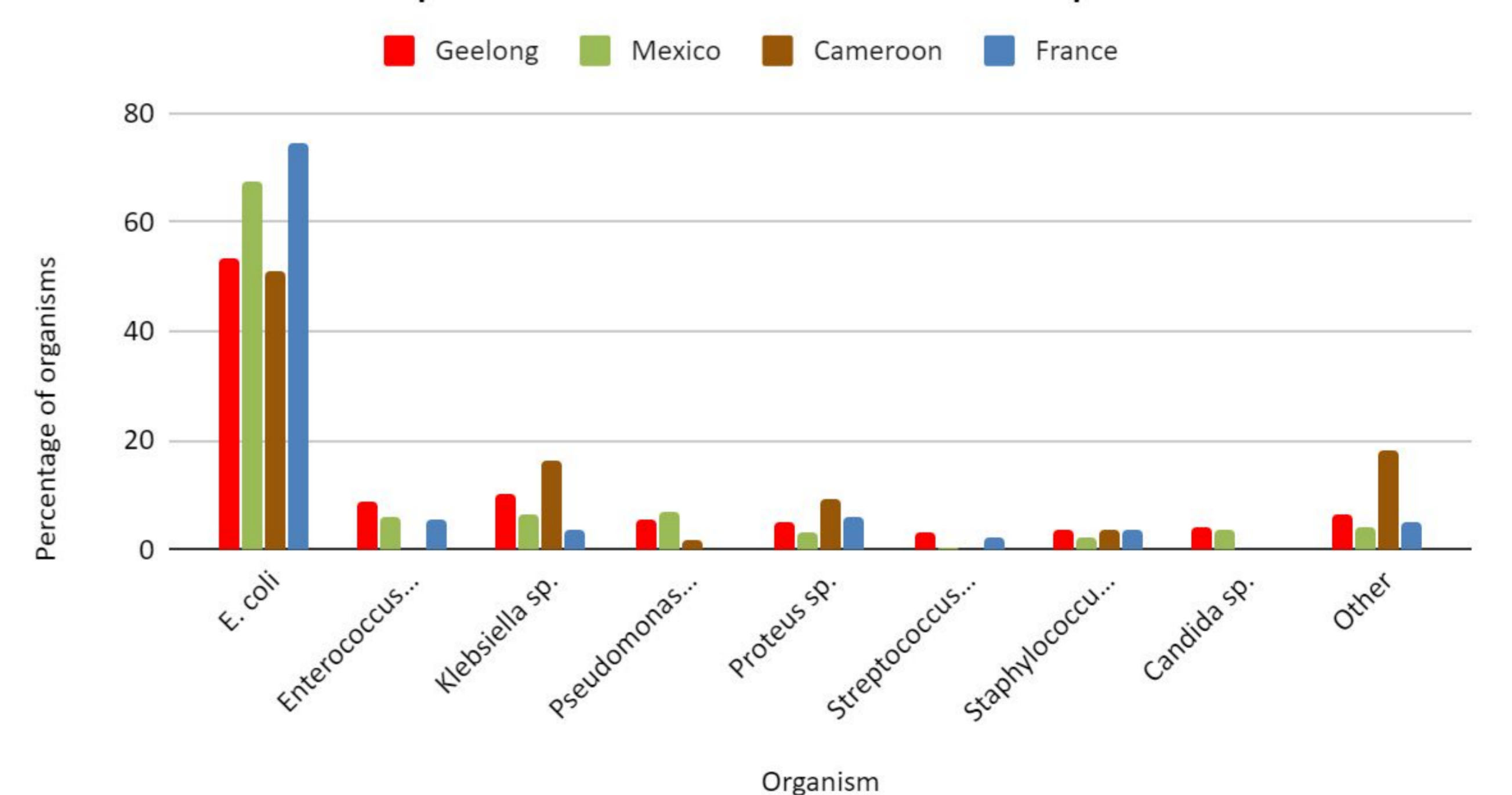
Using our data we were able to generate this decision tree to make on-the-spot decisions about empiric antibiotic choice, balancing antimicrobial stewardship with acceptable risk of resistant organisms.

Conclusion

Since doing this project, at Barwon Health we have been able to make more considered decisions about antibiotic choice in our population. We have the decision tree in our urology office and in the urology theatre. It's changed our practice, and with the knowledge of the organism and the resistance of those organisms, it's a project that can easily be implemented at other hospitals, to reduce sepsis in the present, and antimicrobial resistance in the future.

References
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