Get Culture'd with Electronic Prescribing

An assessment of the appropriateness of oral fluoroquinolone prescribing for urinary tract infections (UTIs) and/or urosepsis in 2018 at the Royal Prince Alfred Hospital (RPAH).

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RPA Antimicrobial Stewardship

BACKGROUND

- Antimicrobial stewardship programs are widely advocated as an important strategy to preserve antimicrobial effectiveness into the future[1, 2].
- Installation of electronic medication prescribing (eMEDs) allows data extraction at a scale formerly unattainable.
- Prior to eMEDS, antimicrobial prescribing behaviour was determined retrospectively through data obtained via point prevalence audits such as the National Antimicrobial Prescribing Survey with limited ability to detect real-time prescribing patterns.
- Fluoroquinolones are not pre-approved for any urinary indications at RPAH.
- Fluoroquinolones should not be used for first-line treatment because their use may be associated with the development of resistance, and they are the only oral antimicrobials available for infections caused by *Pseudomonas aeruginosa* and some multidrug-resistant bacteria[3].
- Urine samples should be routinely collected prior to the commencement of a fluoroquinolone antibiotic as they are not empirical or first-line therapy.

AIM

- To describe oral fluoroquinolone usage at Royal Prince Alfred Hospital for urinary tract infections and/or urosepsis.
- To determine appropriateness and concordance with prescribing guidelines.

METHOD

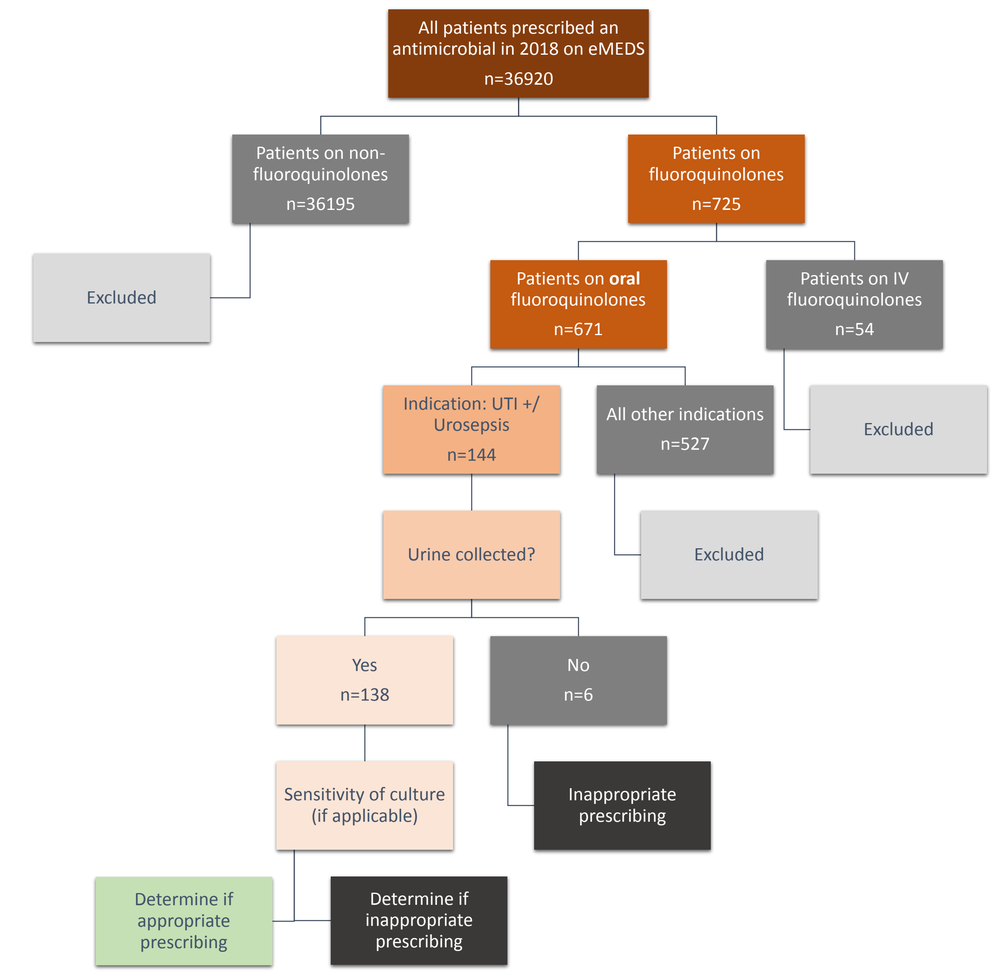

Figure 1. Recruitment flowchart

RESULTS (1)

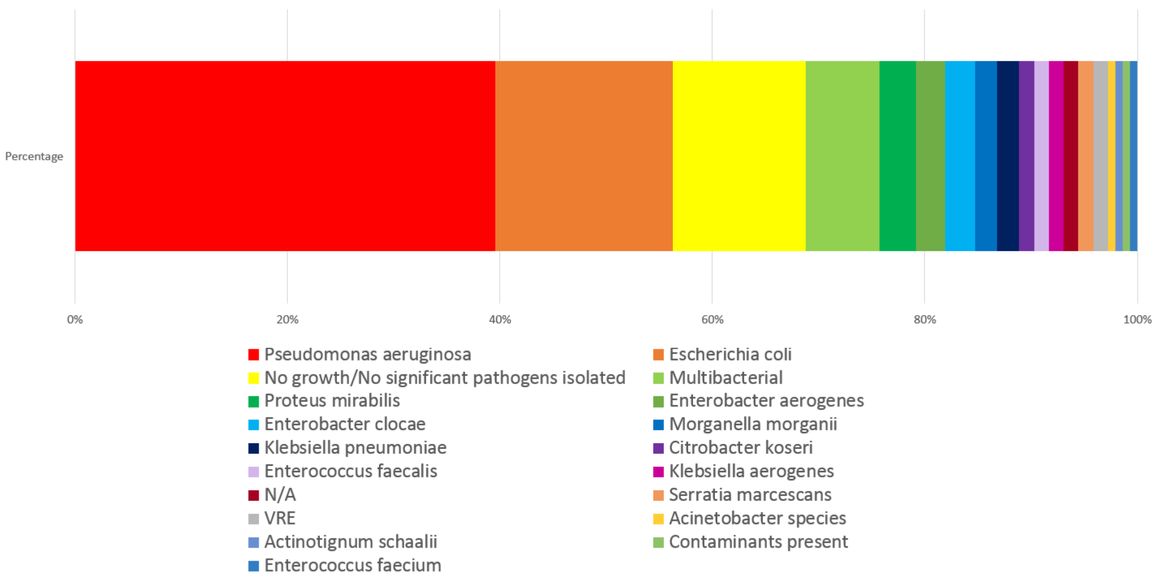

Figure 2. Bacteria isolated from urinary culture

Of the *Escherichia coli* cultured, 80.8% was sensitive to an alternative antibiotic, e.g. trimethoprim, amoxicillin/clavulanate, and nitrofurantoin. Overall, 65.4% of fluoroquinolone prescriptions for *E. coli* had approval from Infectious Diseases (ID).

RESULTS (2)

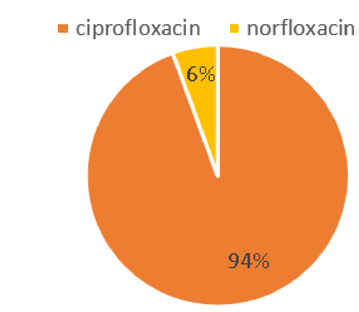

Figure 3. Fluoroquinolones prescribed

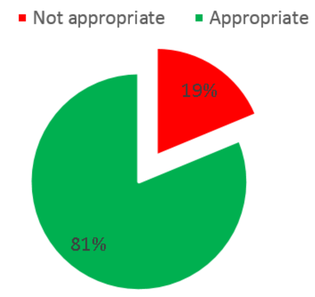

Figure 5. Appropriateness of therapy

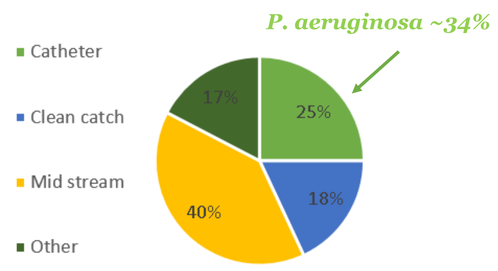

Figure 4. Type of urine sample

Table 1: Days of therapy

	Days of therapy		
	Average	Maximum	Minimum
Ciprofloxacin	2.86	14.74	0.02
Norfloxacin	1.07	2.61	0.56

DISCUSSION

- Reasons for not prescribing alternate therapy may include prescriber preferences to fluoroquinolones, allergies or unfamiliarity.
- There was poor ID approval obtainment overall (44%). This could be attributed to the fact that ciprofloxacin, the most commonly prescribed fluoroquinolone in this setting is an imprest item on the high usage wards.
- Reason for inappropriate use:
  - Commencement of fluoroquinolone prior to taking urine samples.
  - Commencement of ciprofloxacin where alternatives were available and there was no contraindication for patient to have the alternative.
  - Failure to de-escalate following return of cultures.
- Limitations:
  - eMEDs does not capture those discharged on private prescriptions, prescriptions that are not on eMEDs, ICU, STAT doses or outpatient prescriptions.
  - Incomplete documentation may result in an inability to justify deviations from guidelines.
  - Positive culture from catheter specimens may indicate colonisation rather than infection.

ROLE OF HOSPITAL PHARMACIST – Utilising LiveAMS®

LiveAMS® allows for fast review and assessment of antimicrobial prescribing in a real-time manner. This assists with:

- Supply and access
- Counselling for patients
- Advice to prescribers
- Monitoring
- Feedback

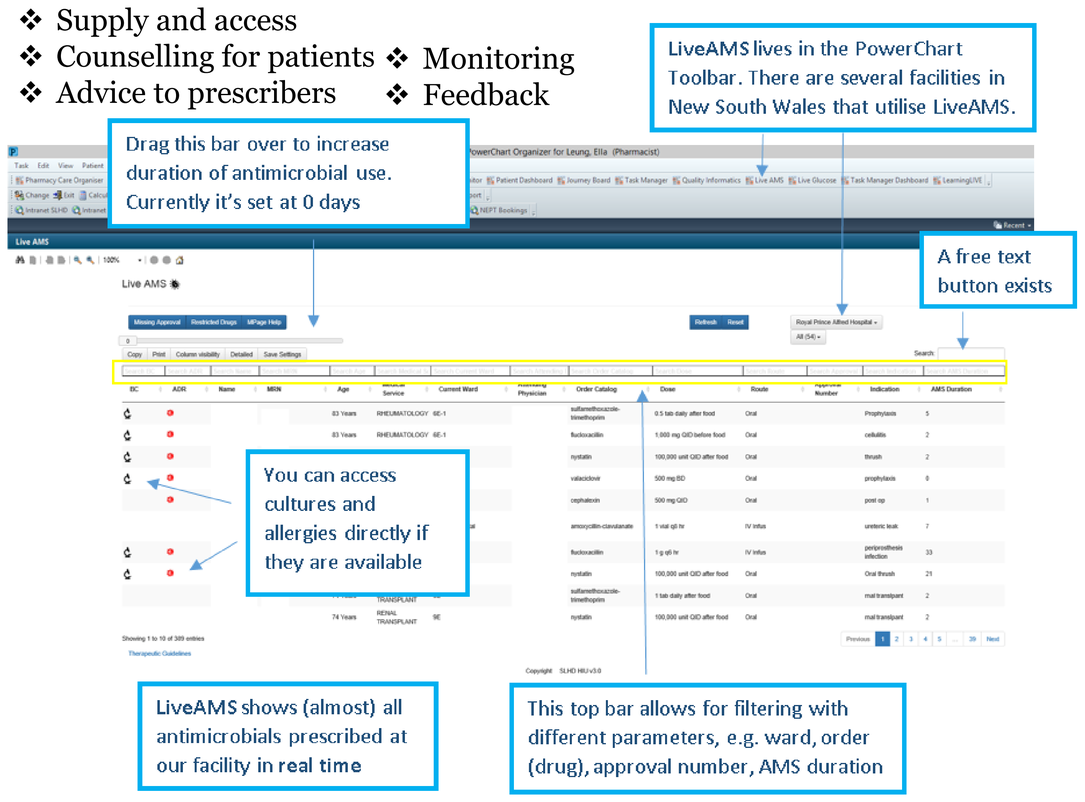

Figure 6. Screenshot of LiveAMS® functions

CONCLUSION

These results warrant further discussion of ciprofloxacin use and its role as a ward imprest item. The LiveAMS® function built into eMEDS should be utilised by pharmacists as they are ideally placed to optimize antimicrobial prescribing within the hospital setting.

References:
1. Australian Commission on Safety and Quality in Health Care. National Alert System for Critical Antimicrobial Resistances: CARAlert 2017 [Report]. Available from: https://www.safetyandquality.gov.au/antimicrobial-use-and-resistance-in-australia/what-is-aura/national-alert-system-for-critical-antimicrobial-resistances-caralert/.
2. Care AACoSaQiH. First Australian report on antimicrobial use and resistance in human health. 2016.
3. Australian Therapeutic Guidelines. 2019. Acute Cystitis in Adults. [ONLINE] Available at: https://tgldcdp.tg.org.au.acs.hcn.com.au/viewTopic?topicfile=acute-cystitis-adults#toc_d1e143.

Ethics approval: X19-0362
The antimicrobial stewardship team has been systematically reviewing and collecting this data as part of routine quality activities (Standard 3, NSQHS)

NSW GOVERNMENT Health Sydney Local Health District