

Antimicrobial Stewardship Initiative: Decreasing Inappropriate Fluoroquinolone Use at a Federally Qualified Health Center

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BACKGROUND

El Rio Health started an ambulatory antimicrobial stewardship committee in 2021 to meet Joint Commission standards issued the prior year.¹ A goal was set to reduce inappropriate oral fluoroquinolone (FQ) prescribing due to local resistance patterns and safety concerns with these agents.

FQs include ciprofloxacin, levofloxacin and moxifloxacin and are the 3rd most prescribed antibiotic class in the outpatient setting due their broad coverage and ease of dosing.^{2,3} Growing resistance amid gram-negative organisms and a host of Boxed Warnings from the Food and Drug Administration (FDA) ranging from risk of tendinitis and tendon rupture, irreversible peripheral neuropathy, risk of mental health side effects, dysglycemias, and cardiovascular concerns have been identified as reasons to limit FQ use.^{4,5} The Infectious Disease Society of America suggests restricting FQs as a method to prevent *C. difficile* infection (CDI).⁶

The committee modeled their antimicrobial stewardship initiative from a study that used multi-modal interventions such as provider education and electronic health record (EHR) prompts to reduce inappropriate FQ prescribing from 53% to 34% over a 3-year period.⁷

PURPOSE

This study evaluates the impact of a multimodal antimicrobial stewardship initiative to reduce inappropriate prescribing of FQs at a federally qualified health center.

The overarching objective was to advance provider awareness of the risks associated with FQs and their place in therapy to improve patient care.

METHODS

A retrospective chart review on all visits at El Rio Health during the months of July 2021 (prior to interventions), July 2022 (amid interventions) and October 2023 (at completion of interventions) that resulted in a prescription for an oral FQ were reviewed. Inappropriate FQ use was defined as a FQ prescription for cystitis, bronchitis, or sinusitis in a patient without history of *P. aeruginosa*, history of multidrug resistant organism (MDRO) and/or drug allergies that preclude use of other oral antibiotics.

MULTIMODAL INTERVENTIONS

- 1

✓ Provider Education
 - Clinical pearls by the advanced practice pharmacy team on various infectious diseases such as acute cystitis, acute bronchitis, community acquired pneumonia, and traveler’s diarrhea
- 2

✓ EHR Warning Added to All Oral FQ Orders
 - “FDA recommends against the use of FQ as empiric regimens for uncomplicated sinusitis, bronchitis, & cystitis. Most acute sinusitis & bronchitis infections are of viral etiology. The preferred empiric regimen for uncomplicated cystitis is nitrofurantoin.”
- 3

✓ EHR Order Set Implementation
 - Assists providers in the selection of guideline-recommended antibiotics for urinary tract infections and community acquired pneumonia
- 4

✓ Direct Provider Feedback
 - 1:1 engagement from infectious disease physician to primary care providers on risks, benefits, and appropriateness of oral FQ in specific patient cases identified in retrospective chart review

RESULTS

Figure 1. Summary of key baseline characteristics in patient receiving oral FQ over different time periods
GU= genitourinary

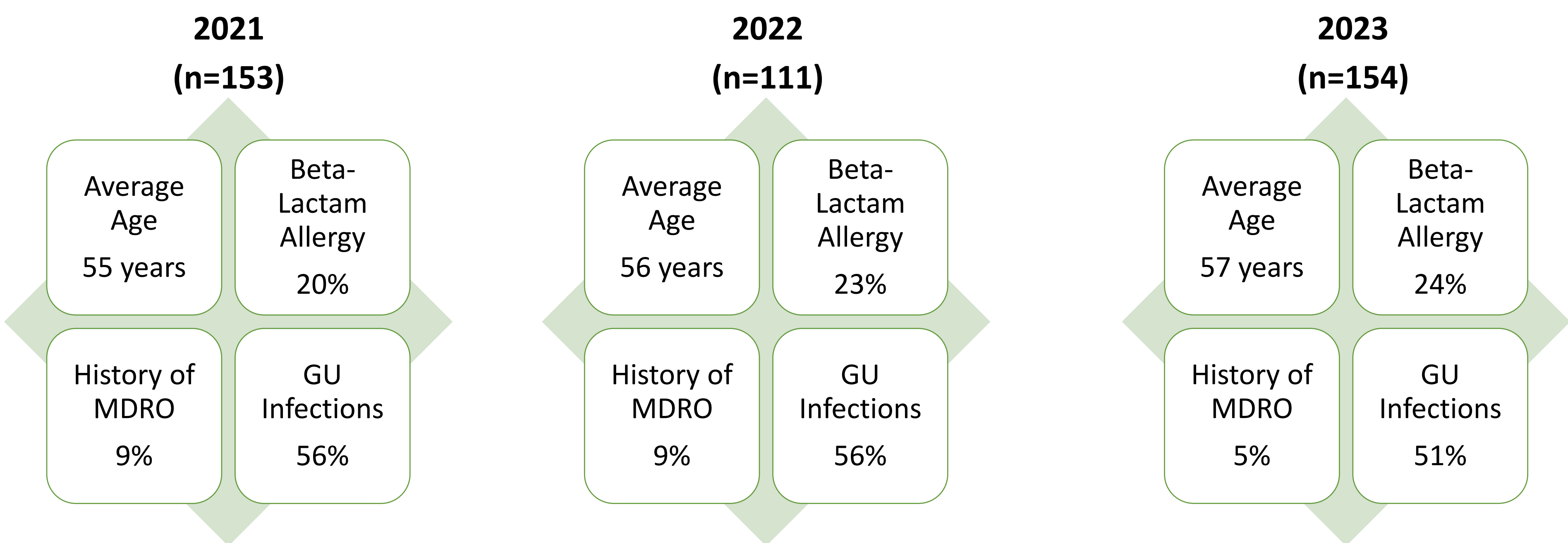
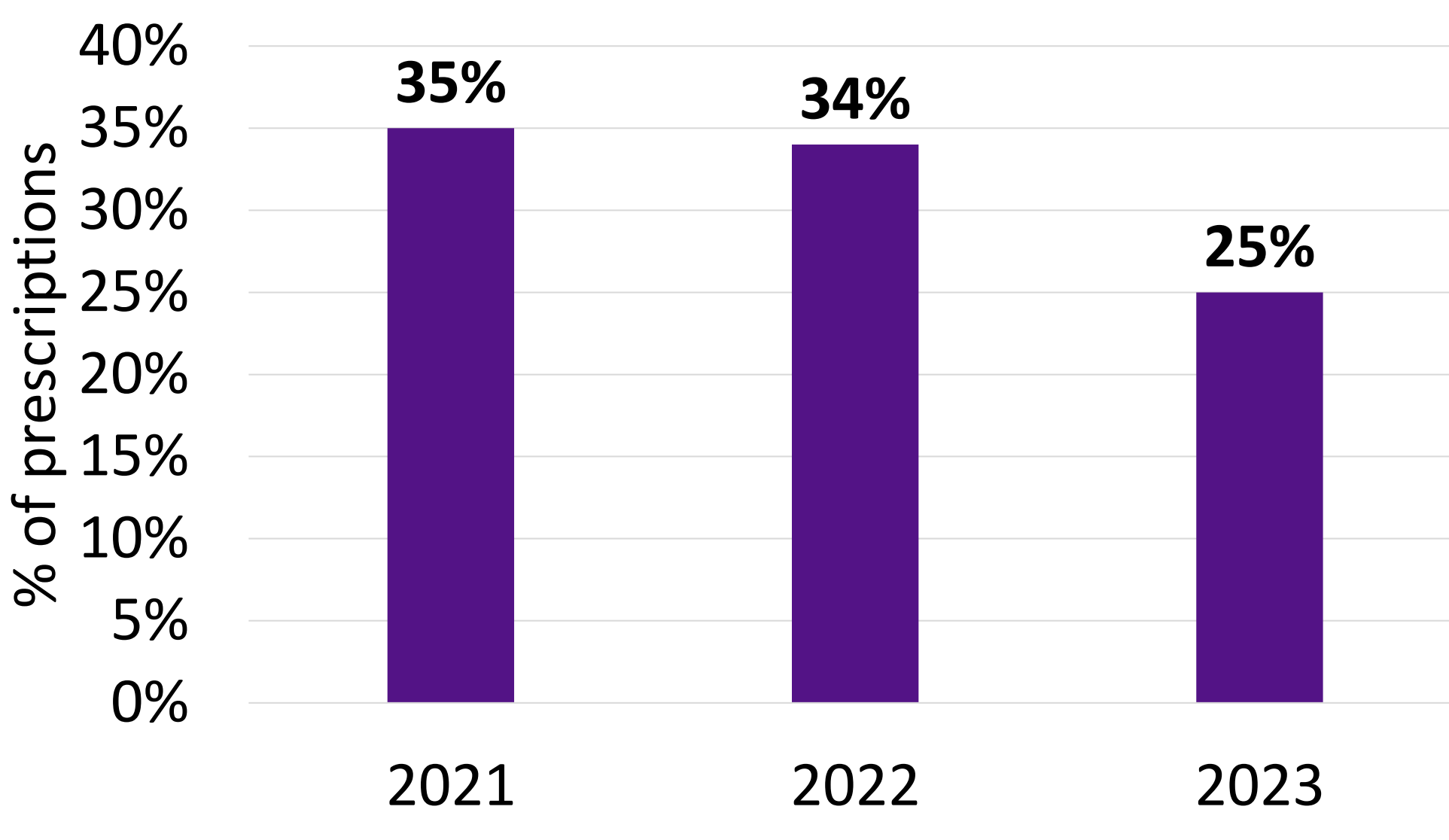


Figure 2. Summary of *E. coli* susceptibilities to FQ from the El Rio Health antibiogram

	Year (Number of <i>E. coli</i> isolates)		
	2021 (428)	2022 (456)	2023 (613)
Ciprofloxacin	80	85	74
Levofloxacin	80	85	64

E. coli is responsible for ~80% of GU infections.
Green shading indicates susceptibility ≥ 85%
Yellow indicates susceptibility ≥ 51% but < 85%.

Figure 3. Inappropriate fluoroquinolone prescriptions from 2021-2023



HIGHLIGHTED FACTS

- Oral FQs are commonly prescribed antibiotics in the outpatient setting that are associated with rare but serious side effects and growing resistance amid gram-negative organisms which limits their use.
- Antimicrobial stewardship efforts by an infectious disease physician and advance practice pharmacists reduced inappropriate FQ prescribing at a federally qualified health center by ~10% over three years.

CONCLUSION

Antimicrobial stewardship initiatives can decrease the number of inappropriate FQ prescriptions at a federally qualified health center. Further interventions may be warranted given the worsening *E. coli* susceptibility to oral FQs within our local antibiogram.

DISCUSSION

- Acute cystitis remained the most common infection for which a FQ was inappropriately prescribed.
- There was higher than expected rate of beta-lactam allergies within the data pull which could lead to further antimicrobial stewardship efforts to de-label inappropriate penicillin allergies.
- A considered intervention to suppress FQ susceptibility in the C&S microbiology reports was not implemented at El Rio Health.
- Limitations to this study include its retrospective design, new providers starting after implementation of efforts, and small sample size.

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