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Implementing a simplified targeted feedback method to reduce fluoroquinolone prescriptions in emergency departments

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Background

• The CDC has proclaimed antibiotic resistance to be one of the biggest public health challenges of our time.
• 60% of antimicrobials are prescribed in the outpatient setting, and up to 30% are inappropriate.1
• Fluoroquinolones (FQ) are the third most commonly prescribed outpatient antibiotic class in the US.2
• In 2016, the FDA released a safety communication emphasizing the judicious use of FQs.
• The Joint Commission has recently extended their antimicrobial stewardship requirements to the ambulatory healthcare setting.
• Provider audit-and-feedback and education have been shown to be among the most effective interventions.
• Auditing requires significant healthcare resources and must be continuous to have durable efficacy.
• Best practices and optimized strategies have not yet been determined.

Purpose

• To evaluate the change in FQ prescribing within emergency departments before and after aggregate data, peer-comparison, and education material are distributed to individual prescribers.
• Preliminary data will evaluate the initial impact of the intervention.

Objectives

Primary Objective
• Decrease total number of FQ prescriptions Secondary Objectives
• Decrease FQ prescribing by individual study site and provider

Methodology

Study design
• Ongoing multicenter, pre-post study intervention across eight emergency departments of a large healthcare system

Population:
• All Providence emergency department prescribers in the Oregon region

Intervention Period
• Intervention created in accordance with Joint Commission standards
• Preliminary data includes pre-intervention period between October – December 2019, implementation period in January, and post-intervention data between February-March 2020

Intervention Material
• Data: total and monthly number of all encounters, encounters in which any antibiotic was prescribed, encounters in which a FQ was prescribed, FQ rate per 100 antibiotic encounters
• Education materials distributed to providers: updated guideline recommendations and relevant clinical pearls

Statistics
• Paired T-test
• McNemar Test

Preliminary Results

 intervention

Extract antimicrobial prescription data from EHR

Record monthly trend and statistics

Distribute de-identified aggregate data, peer comparison, and education materials

Synthesize FQ prescriptions and trends by site and provider

Preliminary Discussion

• There was a total decrease in both FQ and all antibiotic prescriptions in the post-intervention period.
• The numbers of total encounters and FQ encounters were significantly reduced after implementation (p-value <0.001).
• The Pearson correlation coefficient between FQ and all antibiotics was 0.25 (low, insignificant correlation, p-value=0.7516), indicating no observed trends between antibiotics and FQs.
• Using a McNemar test to account for relatively low FQ prescription volumes, wherein monthly FQs were counted in binary units (0 or ≥1 FQ prescription) for each provider, a statistically significant reduction in FQ rates was detected (p-value=0.0084).
• More data points are needed to perform a paired T-test on FQ rates, which would provide statistical analysis on individual prescriber trends.
• There was a decreasing trend in FQ prescriptions each month prior to implementation which cannot be explained with the current sample size.
• There was a decrease in total FQ rate for individual study sites, however more data is needed to perform statistical analysis.

Preliminary Conclusions

• Targeted provider feedback led to an overall decrease in FQ prescriptions.
• The preliminary results are encouraging, but more data is needed to detect the true impact of the intervention and analyze trends.
• Future steps to improve the antimicrobial stewardship intervention are to include provider feedback with trends and statistics, specific diseases where FQs are not recommended (ie. UTI) and provide more tools to guide decision making (ie. data regarding utility of urine analysis in specific populations).

Disclosure

• Minh Le: Nothing to disclose
• Alyssa Christensen: Nothing to disclose
• Brent Footer: Nothing to disclose

References