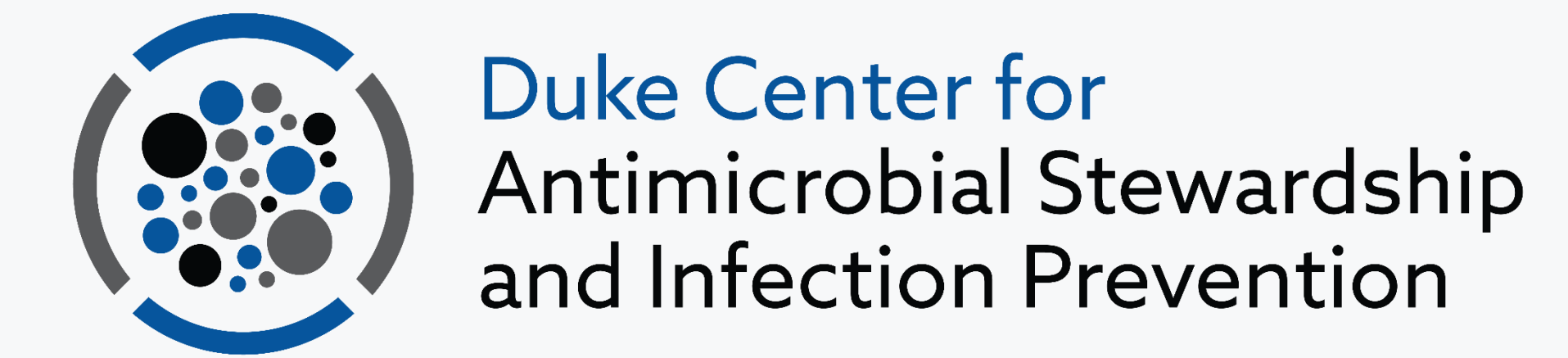


Antimicrobial Stewardship for Urinary Tract Infection in Three Emergency Departments Across a Health System



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Background

- Half of antibiotics prescribed from ambulatory clinics and emergency departments (ED) are ordered inappropriately
- Antimicrobial stewardship (AS) interventions in the ED have been successful at improving antibiotic prescribing for respiratory tract and skin and soft tissue infections
- Urinary tract infections (UTI) are a common indication for antibiotics in the ED and are another important AS target

Methods

- Prospective, quality improvement AS initiative conducted at three ED locations (one academic and two community hospitals)
- Study population:** adults seen and treated without admission for UTI at three ED locations
- Primary endpoint:** rate of guideline (GL) concordant antibiotic prescriptions (Table 1)
- Statistics:** interrupted time series (ITS) analysis used to assess phase and trend changes

Resource Development

- Site-specific, urine source antibiogram
- UTI diagnosis guidelines and treatment algorithm developed using local antibiogram

Education Sessions

- One hour in-person educational session
- Recorded educational session sent electronically
- Resources posted in ED and sent electronically

Data Feedback

- Routine emails sent to providers to highlight site-specific data trends (i.e. diagnosis rate, guideline-concordance, antibiotic use)

Table 1. Recommended treatment for UTI based on urinary antibiogram

Cystitis		
	Agent	Duration (uncomplicated / complicated)
1 st line	Nitrofurantoin	5 / 7 days
2 nd line	Cefuroxime	7 / 10-14 days
3 rd line	TMP-SMX	3 / 7 days
	Ciprofloxacin	3 / 7 days
	Fosfomycin	1 / 3 doses

"Guideline-Concordant" defined as 1st/2nd line for cystitis, 1st line for pyelonephritis

Pyelonephritis			
		Agent	Duration
Initial	1 st line	Ceftriaxone IM/IV	Once
	2 nd line	Gentamicin IM/IV	Once
Maintenance	1 st line	TMP-SMX	14 days
	2 nd line	Ciprofloxacin	7 days
	2 nd line	PO beta-lactams	10-14 days

Table 2. Example of email feedback delivered to ED prescribers

Areas of Success	Focus Areas for Improvement	Recommendations
<ul style="list-style-type: none"> Improved guideline concordance Decreased fluoroquinolone usage Utilization of cefuroxime over cephalixin for acute cystitis 	<ul style="list-style-type: none"> Minimize IV ceftriaxone for acute cystitis Increase utilization of nitrofurantoin in appropriate acute cystitis patients 	<ul style="list-style-type: none"> Avoid antibiotic prescribing for asymptomatic bacteriuria See attached guidelines for ED UTI "treat and release" Algorithm on CustomID

Results

- GL-concordant antibiotic use increased at all EDs following the AS intervention, but did not reach a level of statistical significance (Figure 1):
 - Academic ED: 48.2% to 59.6%
 - Community ED #1: 30.9% to 38.8%
 - Community ED #2: 48.1% to 49.1%

Results

- In all three EDs, cefuroxime prescribing increased as a proportion of antibiotics prescribed for acute cystitis, while prescriptions for fluoroquinolones and TMP-SMX decreased (Figure 2)
- No changes were noted in the rates of treatment failure or adverse effects due to this intervention, including rates of return to the ED or hospital admission

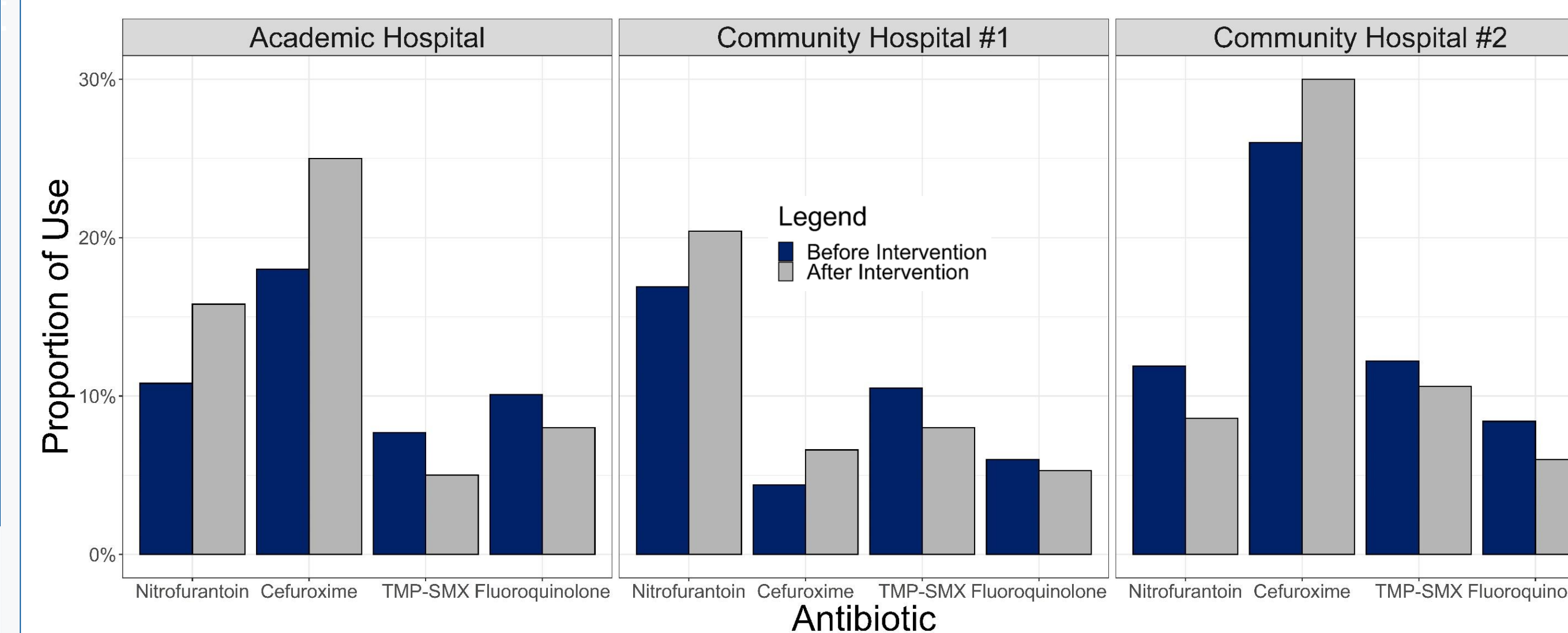


Figure 2. Antibiotic utilization for UTI at three ED locations

Conclusions

- The development of UTI treatment guidelines and delivery of routine site-specific data feedback and education increased guideline-concordant antibiotic prescribing, though this was not found to be statistically significant using ITS analysis
- Future studies are warranted to determine if additional AS interventions, such as provider-specific data feedback, will have a profound impact on ED prescribing habits

Figure 1. ITS of GL-concordant prescribing for UTI in 3 EDs

