Poster # 1107

Impact of Routine Education and Data Feedback on the Durability of an Antimicrobial Stewardship Intervention for Outpatient Urinary Tract Infections

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Abstract

Background: Achieving lasting, sustainable effects in outpatient antimicrobial stewardship (AS) interventions has been a challenge for many programs. Our group observed an initial benefit of an outpatient AS intervention focused on diagnosis and management of urinary tract infections (UTIs). However, prescribing habits trended back towards baseline over time. This study aimed to evaluate the impact of routine education and comparative data feedback on the durability of an outpatient AS intervention for UTIs.

Methods: We conducted a prospective quasi-experimental study at one primary care (PC) and one urgent care (UC) clinic to evaluate the durability of an outpatient AS intervention implemented in August 2017 and November 2017, respectively. Clinicians who treated adult patients with a diagnosis of acute UTI at either clinic participated in the study. The initial intervention (phase 1) included development of clinic-specific antibiograms and UTI diagnosis and treatment guidelines. Approximately 12 months after the initial intervention, routine education along with clinic- and comparative provider-specific feedback reports were emailed to clinicians at regular intervals (phase 2). The primary outcome was percent of encounters in which first- or second-line antibiotics were prescribed. Pre- and post-intervention phase and trend changes were assessed using an interrupted time series approach.

Results: Data were collected on 792 and 3,720 UTI encounters at PC and UC, respectively. In the 12 months after the initial intervention, rates of guideline concordance were 73% at PC and 57% at UC (Figures 1 & 2). After routine data feedback was provided for approximately 7 months at PC and 5 months at UC, rates of guideline concordance remained relatively stable at 75% for PC and 61% at UC. An initial 37% relative reduction in fluoroquinolone (FQ) use was observed during phase 1 and was further reduced by an additional 18% during phase 2.

Conclusion: Routine provision of clinic-specific feedback and peer comparisons sustained rates of guideline-concordant prescribing at two outpatient clinics. This intervention required significant resources for data analysis and delivery, but it was successful in decreasing rates of FQ prescribing and maintaining clinician engagement.

Background

- Up to 30% of outpatient antibiotics are unnecessary; half of those that are necessary are prescribed inappropriately
- While antimicrobial stewardship (AS) is effective at enhancing guideline-directed outpatient antibiotic use, the effect wanes with time without ongoing reinforcement
- There are limited data to suggest the optimal approach to maintain the durability of response to outpatient AS

Methods

- A prospective, quality improvement AS initiative was conducted at one primary care (PC) and one urgent care (UC) clinic in Durham, NC
- **Study population**: adults seen for acute UTI
- **Primary endpoint**: rate of guideline (GL) concordant antibiotic prescriptions (see Table 1)
- **Statistics:** interrupted time series analysis used to assess phase and trend changes

Phase 0 Baseline
- Development of clinic-specific urinary antibiograms
- Creation of UTI diagnosis and quinolone-sparing treatment guidelines based on resistance trends

Phase 1 Educate
- A one time, hour-long educational session delivered
- One data feedback email sent to each clinic
- Posted Duke "Commitment to Patients" posters

Phase 2 Feedback
- Re-education given ~12 months after initial education
- Clinic-level data feedback emailed monthly
- Quarterly peer comparison reports emailed to PC

Table 1. Antibiogram-based, clinic-specific UTI guidelines

"Guideline-concordant" antibiotic	Recommended Agent	
Cystitis	**Primary Care**	**Urgent Care**
1st line	Nitrofurantoin TMP-SMX	Nitrofurantoin
2nd line	Cephalexin	Cephalexin
3rd line	Ciprofloxacin Fosfomycin	TMP-SMX Ciprofloxacin Fosfomycin
Pyelonephritis	**Primary Care**	**Urgent Care**
1st line	Ciprofloxacin	Ceftriaxone AND TMP-SMX OR ciprofloxacin
2nd line	Ceftriaxone AND either TMP-SMX OR PO beta-lactam	Ceftriaxone AND PO beta-lactam

Results

- After the initial education, GL-concordant antibiotic use increased by 28.1% (95% CI: 16.9% to 39.3%) (p<0.001); prescribing habits trended back towards baseline after only one data feedback was provided to reinforce the education (Figure 1, Phase 1)
- During the routine data feedback period, trending towards baseline halted and there was no significant change over time (p=0.8908) (Figure 1, Phase 2)
- A significant reduction in the number of treated UTIs was observed during the Phase 1 period (Figure 2)
- Throughout the study, there was a 51% reduction in fluoroquinolone (FQ) use and a 71% increase in nitrofurantoin (Figure 3) compared to baseline
- There was no change in rates of treatment failure or adverse effects as a result of this AS intervention

Figure 3. Antibiotic use for UTI at PC and UC

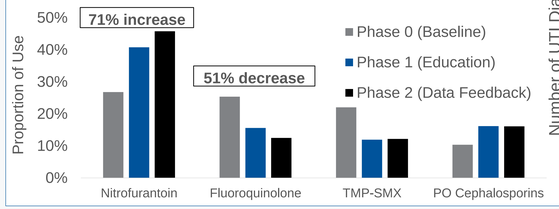


Figure 1. Time-series analysis of the percentage of UTI visits with prescriptions for guideline (GL)-concordant antibiotics

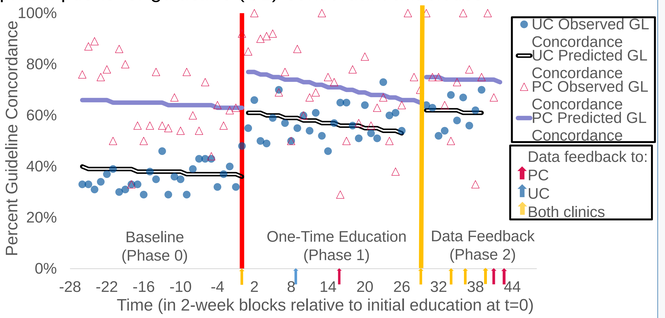
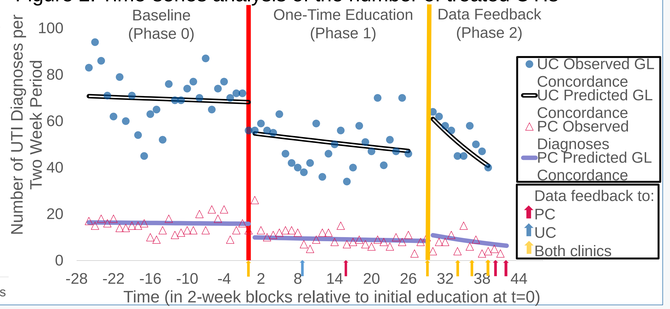


Figure 2. Time-series analysis of the number of treated UTIs



Conclusions

- Routine provision of clinic-specific data feedback and peer comparison reports was effective at sustaining rate of GL-concordant prescribing and reducing FQ use for UTI
- The development of routine data feedback was time- and resource-intensive, future studies are warranted to provide guidance on the optimal interval for data feedback

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