

Evaluating the Effect of an Urgent Care Antibiotic Stewardship Intervention: A Multi-Network Collaborative Effort

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Introduction

- Urgent care centers (UCCs) have been reported as having the highest rates of inappropriate antibiotic prescribing.
- Prior urgent care antibiotic stewardship efforts have generally been limited to pediatric clinics and diagnoses, or conducted within single urgent care networks.
- This study aims to examine the effectiveness of an antibiotic stewardship intervention on reducing inappropriate prescribing for bronchitis and viral illness diagnoses in UCCs as part of a multi-network national collaborative.

Methods

- The GWU IRB determined this quality improvement study was exempt (NCR224504).
- This quality improvement study compared inappropriate antibiotic prescribing rates in UCCs after introduction of an antibiotic stewardship intervention, with a 3-month baseline and a 9-month intervention period.
- The intervention was implemented at 49 UCCs from a national collaborative in 27 different networks across 18 states within the United States.
- Stewardship interventions included signing of a commitment statement, and a choice of 5 different intervention options to implement during two plan-do-study-act (PDSA) cycles
- The primary outcome was the percent of urgent care encounters (from randomly selected patient charts) for viral illness or bronchitis diagnoses with inappropriate antibiotic prescribing, stratified by whether the provider was a direct participant in the quality improvement study and secondarily, by diagnosis.
- Baseline and intervention periods were compared using an interrupted time series with a generalized estimating equation model.

Table 1. Urgent care center encounter patient characteristics.

Characteristic	Baseline Period	Intervention Period	Overall
Total visits	3,477	12,111	15,588
Race/Ethnicity			
Black	330 (9.5%)	1,274 (10.5%)	1,604 (10.3%)
White	2246 (64.6%)	7,697 (63.6%)	9,943 (63.8%)
Hispanic	308 (8.9%)	1,004 (8.3%)	1,312 (8.4%)
Other	593 (17.1%)	2,136 (17.6%)	2,729 (17.5%)
Insurance			
Commercial	2,168 (62.4%)	7,458 (61.6%)	9,626 (61.8%)
Military	53 (1.5%)	169 (1.4%)	222 (1.4%)
Public	1,028 (29.6%)	3,503 (28.9%)	4,531 (29.1%)
None	101 (2.9%)	419 (3.5%)	520 (3.3%)
Unsure	127 (3.7%)	561 (4.6%)	688 (4.4%)
Missing	0	1	1
Age			
0-11m	112 (3.2%)	295 (2.4%)	407 (2.6%)
1-20y	1,592 (45.8%)	5,653 (46.8%)	7,245 (46.5%)
21-40y	885 (25.5%)	2,939 (24.3%)	3,824 (24.5%)
41-60y	511 (14.7%)	1,848 (15.3%)	2,359 (15.1%)
61-80y	344 (9.9%)	1,230 (10.2%)	1,574 (10.1%)
81 and over	30 (0.9%)	124 (1.0%)	154 (1%)
Missing	3	22	25

Results

	Inappropriate antibiotic prescribed / number of encounters (%)		Odds of inappropriate prescribing, intervention vs. baseline	
	Baseline	Intervention	aOR ^a	p-value
Bronchitis Diagnoses Overall	293/559 (52.4)	632/1338 (47.2)	0.63 (0.46-0.87)	0.005
Participating provider	92/230 (40.0)	129/448 (28.8)	0.52 (0.33-0.83)	0.006
Non-participating provider	201/329 (61.1)	503/890 (56.5)	0.66 (0.42-1.01)	0.057
Viral Illness Diagnoses Overall	490/3851 (12.7)	1055/8560 (12.3)	0.92 (0.77-1.10)	0.369
Participating provider	241/1870 (12.9)	390/5024 (7.8)	0.67 (0.55-0.82)	<0.001
Non-participating provider	249/1981 (12.6)	665/4591 (14.5)	1.17 (0.86-1.58)	0.317
Bronchitis and Viral Illness	783/4410 (17.8)	1687/10953 (15.4)	0.86 (0.72-1.03)	0.099
Participating provider	333/2100 (15.9)	519/5472 (9.5)	0.61 (0.48-0.77)	<0.001
Non-participating provider	450/2310 (19.5)	1168/5481 (21.3)	1.08 (0.85-1.38)	0.540

a. Generalized estimating equation, adjusted for age and race/ethnicity, accounting for clustering by clinic

Table 2. Antibiotic prescribing by diagnosis during the baseline and intervention periods, stratified by whether the provider was participating in the quality improvement project.

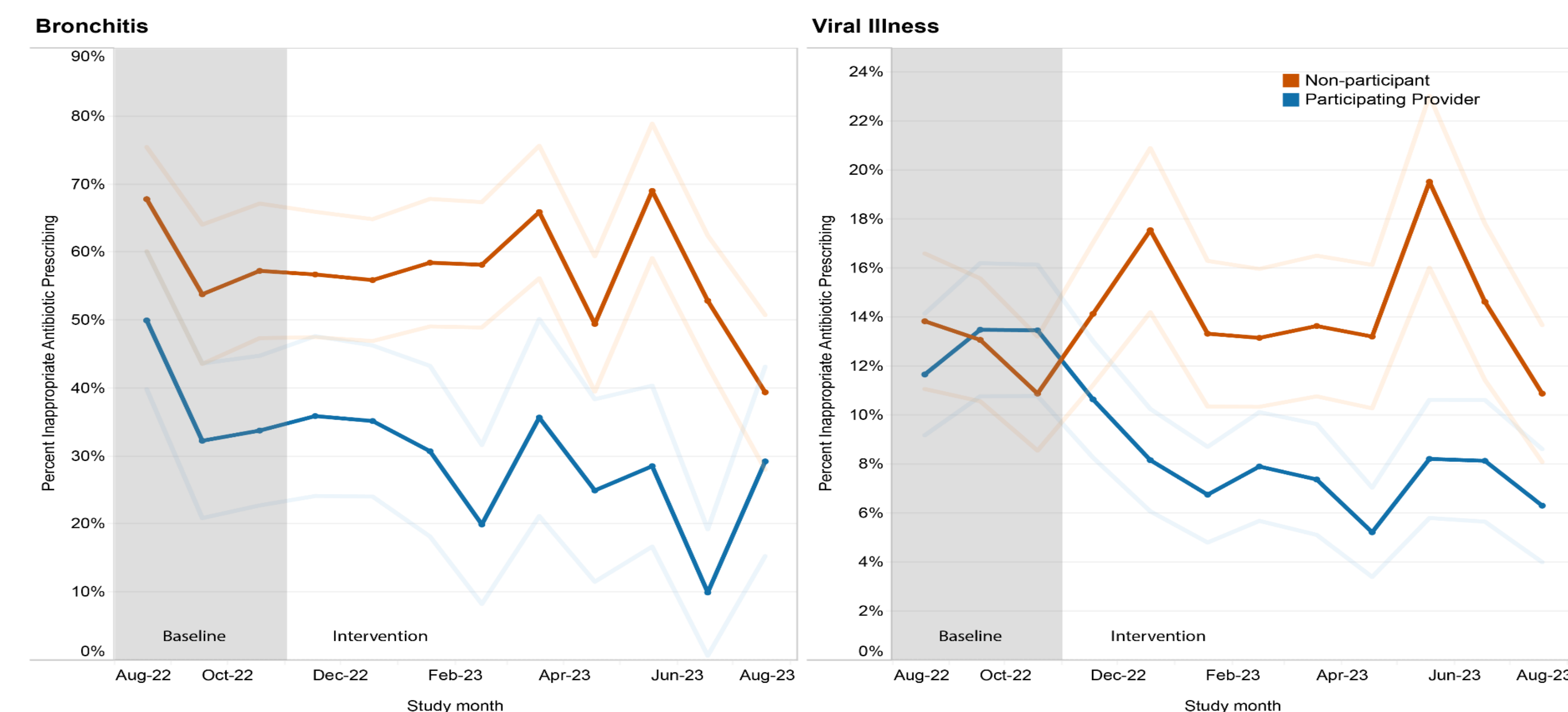


Figure 1. Percent of urgent care encounters with an inappropriate antibiotic prescription by month, diagnosis, and whether the provider for the chart was a direct participant (blue line) or was not directly participating in the QI project (red line). Faded lines represent the 95% confidence intervals for the inappropriate antibiotic prescribing rate.

Discussion

- For participating providers, inappropriate prescribing for bronchitis diagnoses decreased by 48% in the intervention period and decreased by 33% for viral illness diagnoses.
- When stratifying encounters by whether the provider was a direct participant in the quality improvement study, reductions in inappropriate antibiotic prescribing were seen for participating providers but not for providers who did not directly participate.
- The rates of inappropriate antibiotic prescribing were relatively low at baseline compared with previously published estimates, particularly for viral illness (12.7%); nonetheless there was a large and significant reduction (33%) among providers directly participating in the study.
- White patients were nearly twice as likely to receive an inappropriate antibiotic prescription during the baseline period compared with Black patients. Prescribing differences between races were reduced but persisted during the intervention period.
- Provider turnover at UCCs may be higher compared with many other clinical settings, highlighting the importance of regular engagement in stewardship interventions.

Conclusion

This antibiotic stewardship intervention was associated with large reductions in inappropriate prescribing among providers who participated. Implementing stewardship interventions in UCCs may reduce inappropriate antibiotic prescriptions for common diagnoses; however, direct provider participation may be necessary, especially in settings with high rates of provider turnover.

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