

# Evaluation of a disease state stewardship intervention for urinary tract infections at an academic medical center

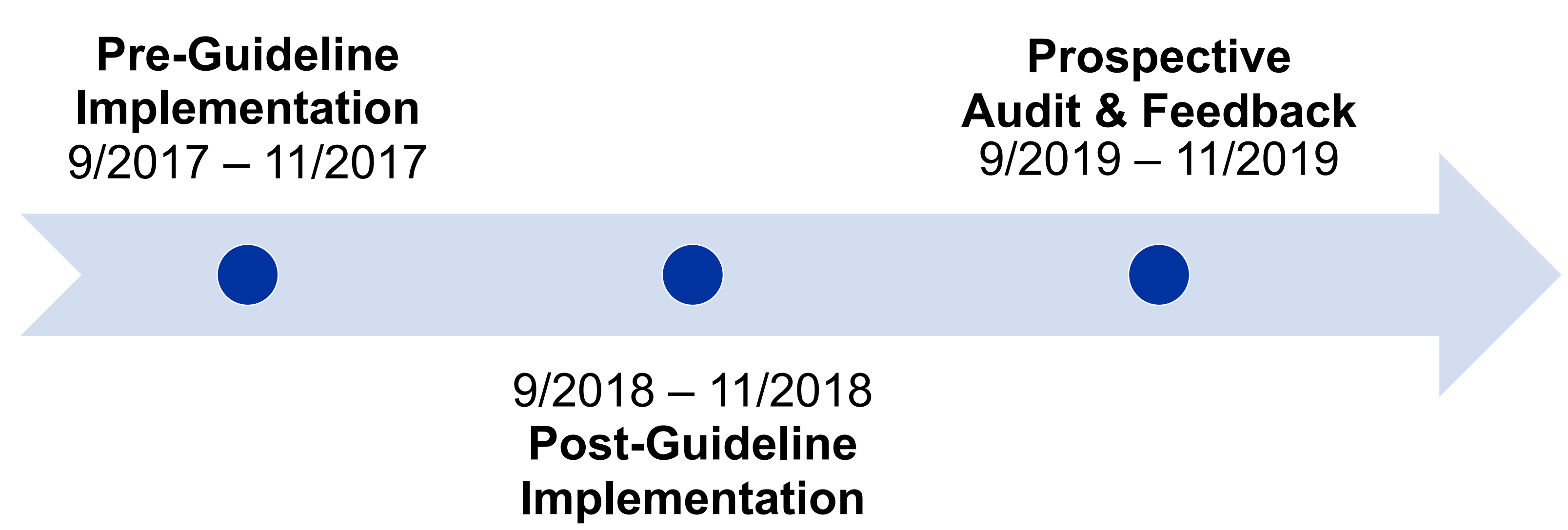
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## Introduction

- Disease state stewardship initiatives targeting urinary tract infections (UTIs) through the development of institutional guidelines and real time prospective audit and feedback (PAAF) on provider management may have a significant impact on the overuse of antimicrobials.
  - Purpose:** To evaluate the effectiveness of a UTI focused disease state stewardship intervention by assessing institutional guideline adherence before and after implementation.
- ## METHODS
- Design:** Retrospective, quasi-experimental study conducted at a tertiary care academic medical center
    - Inclusion:** Patients ≥18 years of age with a collected urinalysis (UA) and actively receiving antibiotics (ABX) for a UTI indication
    - Exclusion:** Pregnancy; undergoing any urologic procedure; outside hospital transfer on therapy for a UTI indication; left AMA or expired during UTI treatment; actively receiving ABX for UTI indication as prescribed by outside provider; receiving suppressive ABX therapy for UTI prevention
  - Primary Outcome:** Institutional guideline adherence before and after implementation

Figure 1: Study Timeline



- Statistical Analyses:** A Student's t-test was used to analyze continuous variables, and a Chi-square test or Fisher's exact test for nominal variables and categorical variables to evaluate significant baseline differences.



## A multifaceted UTI disease state intervention is associated with improvement in overall guideline adherence and a reduction in the treatment of asymptomatic presentations.

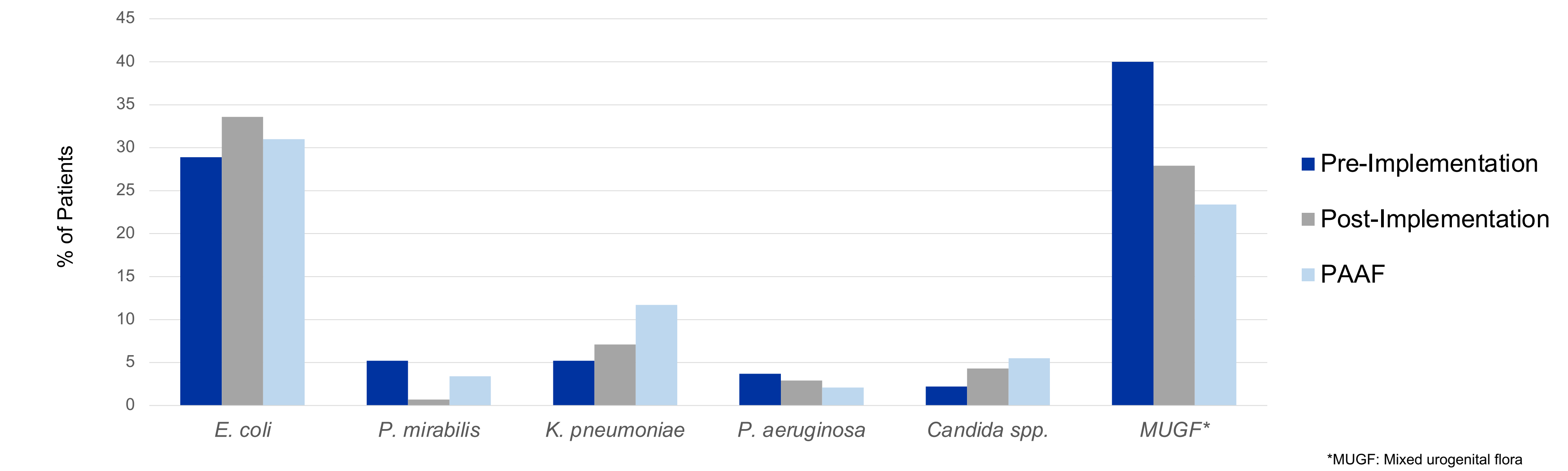
## RESULTS

Table 1: Baseline Characteristics

	Pre-Guideline Implementation N=200	Post-Guideline Implementation N=200	PAAF N=200	p-value
Age, median (IQR)	60.6 (18-95)	59.2 (20-97)	64.4 (18-104)	0.014
Female	144 (72.0%)	140 (70.0%)	138 (69.0%)	0.800
ICU admission	22 (11.1%)	8 (4.0%)	10 (5.0%)	0.009
UA WBC ≥10/HPF	150 (75.0%)	147 (73.5%)	172 (86.0%)	0.004

Abbreviations: ICU, intensive care unit; HPF, high power field

Figure 2: Culture Organisms



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## RESULTS, continued

Table 2: Indications for Testing

	Pre-Guideline Implementation N=200	Post-Guideline Implementation N=200	PAAF N=200	p-value
Dysuria	21 (10.5%)	53 (26.5%)	57 (28.5%)	<0.001
Urinary frequency	12 (6.0%)	19 (9.5%)	20 (10.0%)	0.295
Urinary urgency	8 (4.0%)	14 (7.0%)	5 (2.5%)	0.087
Unexplained suprapubic/flank pain	30 (15.0%)	37 (18.5%)	34 (17.0%)	0.644
Fever	23 (11.5%)	30 (15.0%)	41 (20.5%)	0.044
Altered mental status	38 (19.0%)	51 (25.5%)	61 (30.5%)	0.029
Explained	24 (12.0%)	19 (9.5%)	25 (12.5%)	0.598
Unexplained	14 (7.0%)	32 (16.0%)	36 (18.0%)	0.003

Figure 3: Classification of UTIs

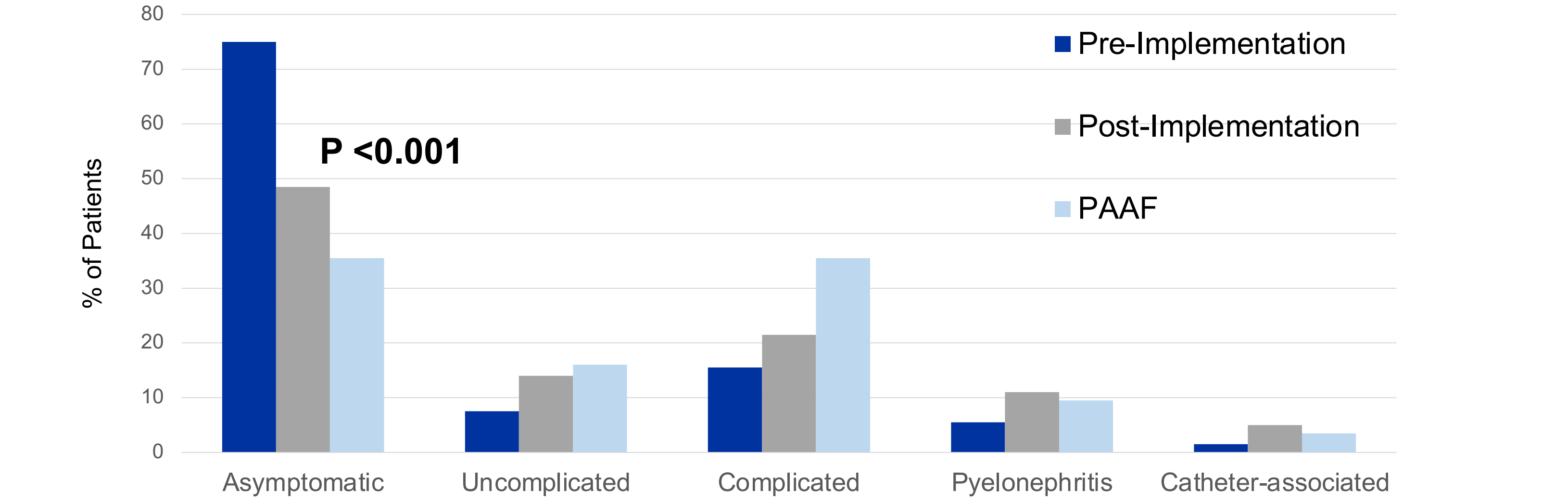


Table 3: UTI Guideline Adherence

	Pre-Guideline Implementation N=200	Post-Guideline Implementation N=200	PAAF N=200	p-value
UA indicated	67 (33.5%)	110 (55.0%)	137 (68.5%)	<0.001
ABX indicated empirically	58 (29.0%)	106 (53.0%)	133 (66.5%)	<0.001
UCx indicated	58 (29.0%)	106 (53.0%)	131 (65.5%)	<0.001
ABX indicated definitively	33 (16.5%)	72 (36.4%)	105 (52.8%)	<0.001
Empiric ABX selection	33 (16.5%)	91 (45.5%)	100 (50.0%)	<0.001
Definitive ABX selection	25 (12.5%)	57 (28.5%)	79 (39.5%)	<0.001
ABX duration	28 (14.0%)	65 (32.5%)	101 (50.5%)	<0.001

UTIs Managed Appropriately	26 (13.0%)	54 (27.0%)	74 (37.0%)	<0.001
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Table 4: Outcomes

	Pre-Guideline Implementation N=200	Post-Guideline Implementation N=200	PAAF N=200	p-value
LOS, median ± SD	5.0 ± 6.49	6.0 ± 11.39	7.0 ± 9.82	0.073
ICU LOS, median ± SD	7.0 ± 4.66	6.0 ± 10.97	13.0 ± 7.52	0.079
Inpatient ABX side effect	6 (3.0%)	6 (3.0%)	8 (4.0%)	0.813
90-day mortality	8 (4.0%)	15 (7.5%)	13 (6.5%)	0.316
90-day readmission	50 (25.0%)	60 (30.6%)	50 (25.8%)	0.398
90-day resistant organism cultured	0	10 (5.1%)	5 (2.6%)	-

Abbreviations: SD, standard deviation; LOS, length of stay; ICU, intensive care unit

Figure 4: Prospective Audit and Feedback Interventions

