

Optimization of an outpatient antimicrobial stewardship process for patients discharged from the emergency department at an academic medical center

Hannah Kafisheh, PharmD¹; Matthew S. Hinton PharmD, BCPS¹; Amanda Binkley PharmD, AAHIVP¹; Christo Cimino PharmD, BCPS, AAHIVP¹; Christopher W. Edwards MD, FACEP²
Departments of Pharmacy¹ and Emergency Medicine², Penn Presbyterian Medical Center, University of Pennsylvania Health System, Philadelphia, PA



Background

- Antimicrobial misuse or overuse has resulted in the emergence of multi-drug resistant organisms. Antimicrobial stewardship programs (ASPs) have been established to minimize the development of drug-resistant organisms.
- Majority of ASPs focus on decreasing unnecessary antimicrobial exposure in patients admitted to the hospital. Limited data exists for outpatient ASPs.
- A 2017 study found a 39% relative risk reduction of suboptimal antimicrobial therapy with a pharmacist-driven ASP initiative focused primarily on patients discharged from the hospital with pending microbiology cultures (Jones J, et al. *J Pharm Pract.* 2017).
- Our institution employs a process of Advanced Practice Provider (APP) driven manual culture review for patients discharged from the emergency department (ED) with pending cultures.
- This study evaluates an opportunity for process optimization through implementation of a pharmacist-driven antimicrobial stewardship initiative.

Objectives

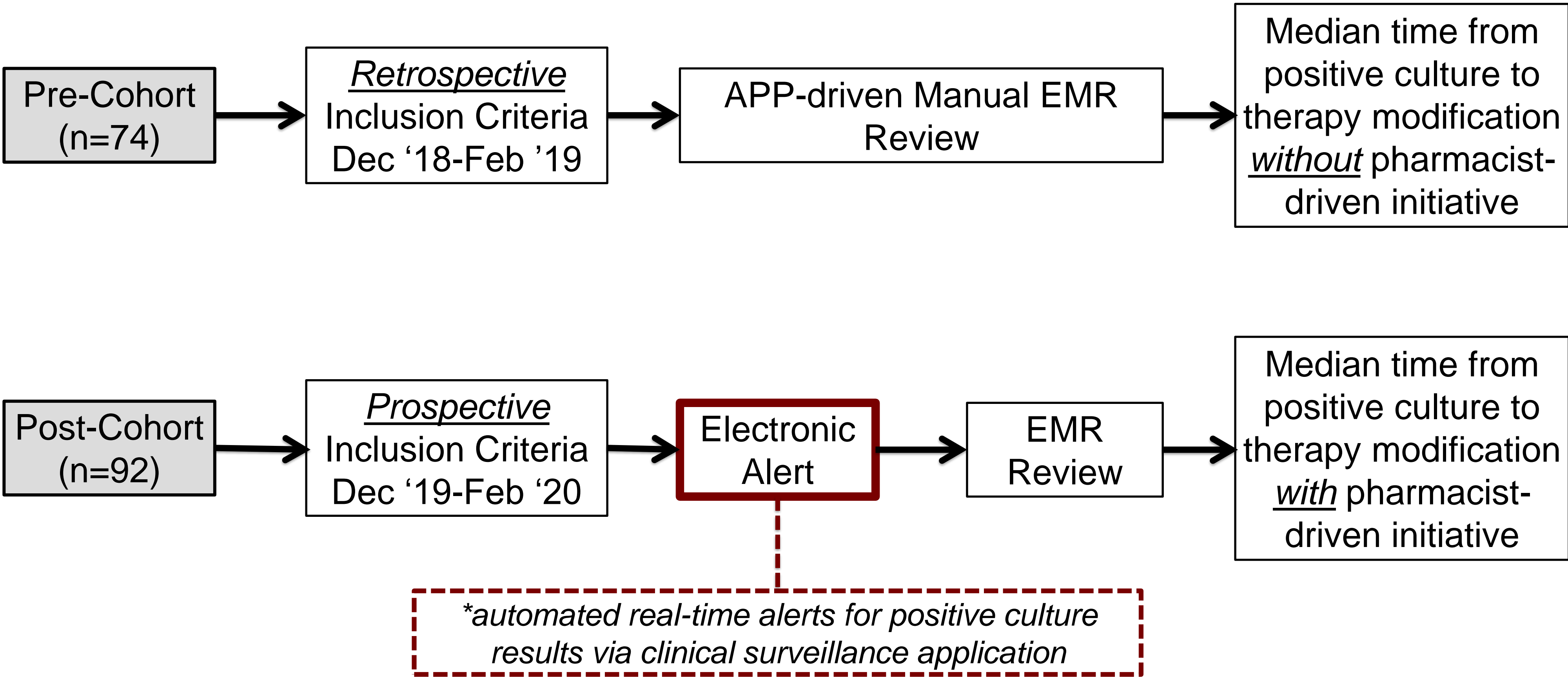
- Primary Objectives:**
- Evaluate the difference in time, in hours, from positive soft tissue or urine culture result to antimicrobial therapy optimization before and after implementation of a pharmacist-driven outpatient antimicrobial stewardship initiative.
- Secondary Objectives:**
- Evaluate the difference in time to positive culture review before and after implementation of a pharmacist-driven outpatient antimicrobial stewardship initiative
 - Time spent by the pharmacist reviewing the culture and antimicrobial data in the electronic medical record (EMR)
 - Number of antimicrobial interventions conducted each month

Methods

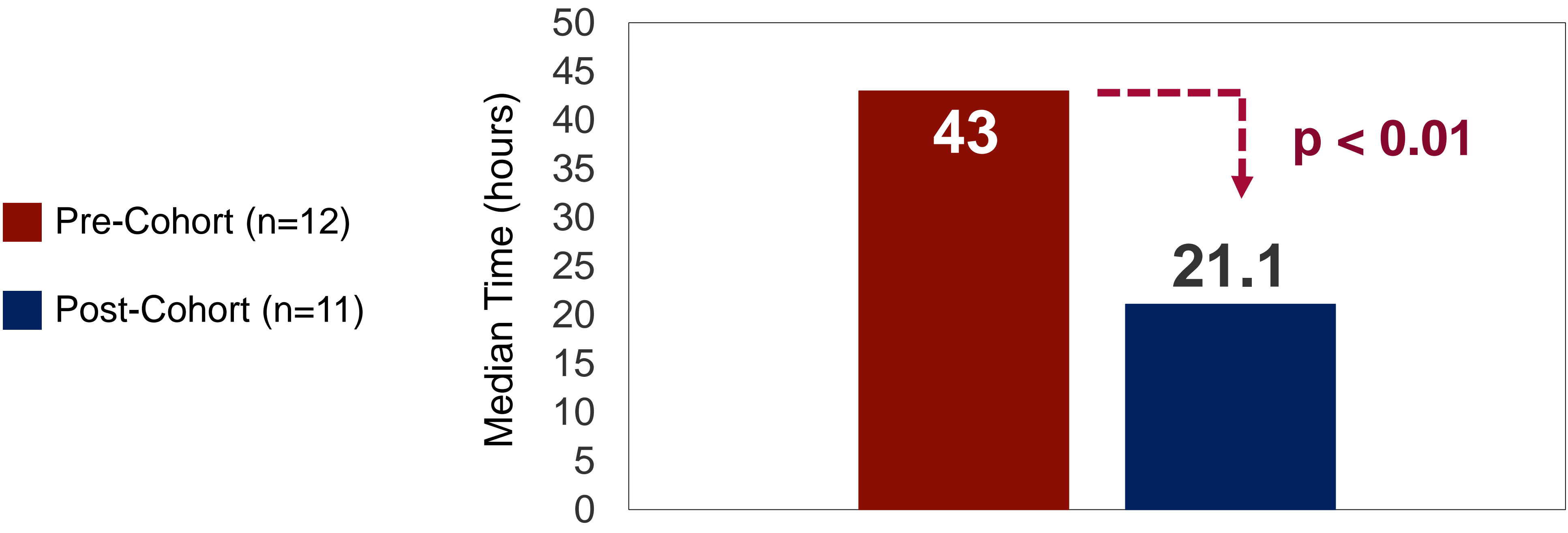
- Study Design:**
- Pre-post, quasi-experimental, quality improvement project
 - Data collected from PennChart, an electronic medical record
- Inclusion Criteria:**
- Discharged from the Penn Presbyterian Medical Center (PPMC) ED
 - Positive soft tissue and/or urine cultures that result post-discharge
 - 18 years or older
- Exclusion Criteria:**
- Followed by the Podiatry, Orthopedics, or Infectious Diseases Consult Services

Results

Baseline Characteristics	Pre-cohort (n = 74)	Post-cohort (n = 92)	p-value
Median age – years (range)	49 (21-88)	46 (20–98)	0.99
Median weight – kilograms (range)	79 (51-117)	81 (48-124)	0.79
Gender, Female – no. (%)	48 (64.9)	72 (78.3)	0.31
Median eGFR ^s – mL/min/1.73 m ² (range)	52.7 (7.1-103.4)	64.2 (11.7-116.9)	0.43
Allergies – no. (%)			
• Penicillin	3 (4.1)	8 (8.7)	0.67
• Sulfa	2 (2.7)	2 (2.2)	0.48
Distribution of cultures – no. (%)			
• Urine	19 (25.6)	88 (95)	<0.001
• Soft Tissue	55 (74.4)	4 (4.3)	<0.001

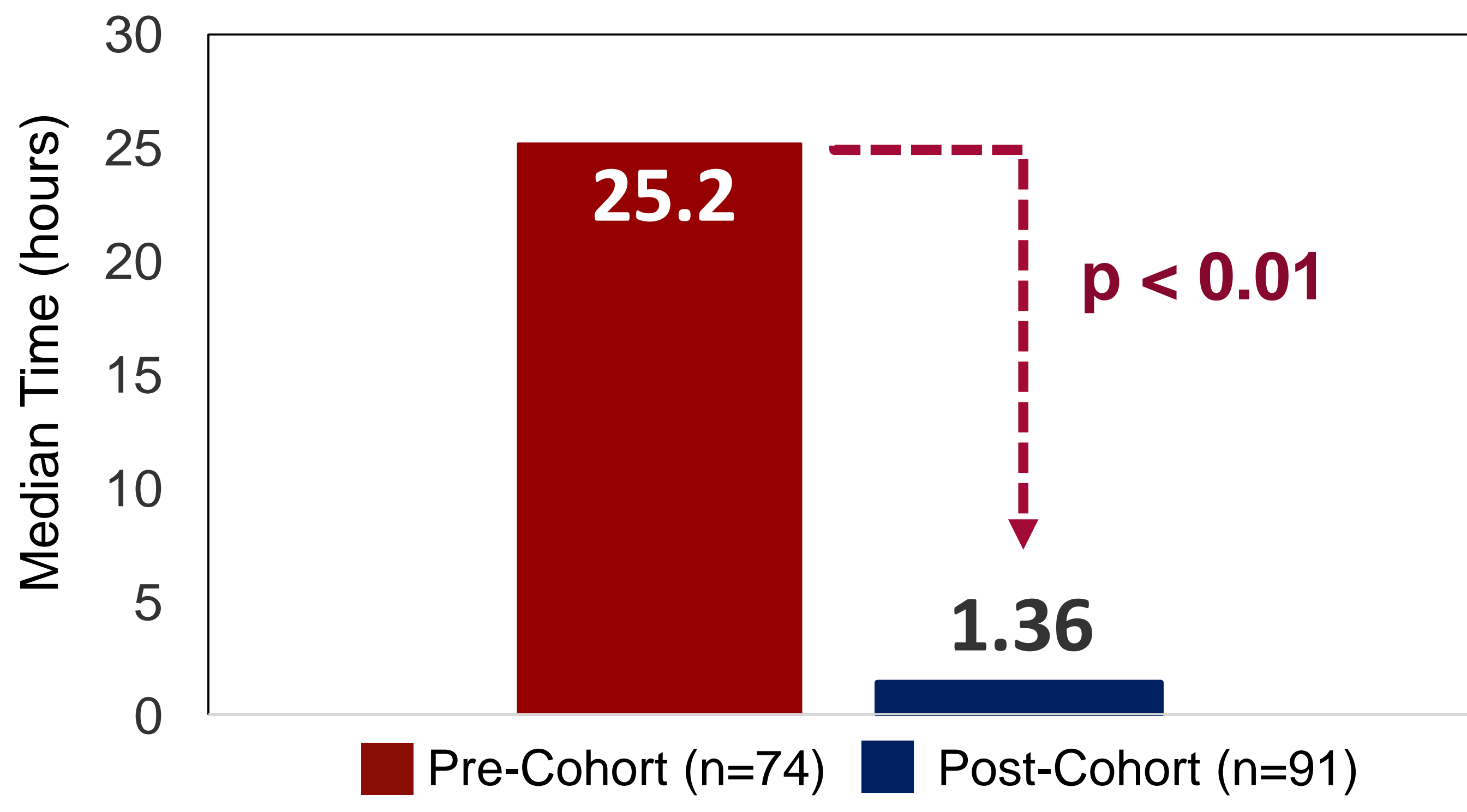


Median time from positive soft tissue or urine culture result to therapy modification



Results

Median time from positive culture result to manual review



- Median time spent by the pharmacy resident reviewing culture and antimicrobial
 - 2 minutes
- Number of antimicrobial interventions conducted each month
 - January: 47
 - February: 45

Therapy Modifications by Type

- January (n=3)**
 - Suboptimal antimicrobial dose or frequency: 1
 - Inappropriate therapy duration: 1
 - Unnecessary antimicrobial use: 1
- February (n=8)**
 - Bug/drug mismatch: 5
 - Suboptimal antimicrobial dose or frequency: 1
 - Inappropriate therapy duration: 1
 - Unnecessary antimicrobial use: 1

Conclusion

- Implementation of a pharmacist-driven outpatient antimicrobial stewardship initiative resulted in process optimization at PPMC
- Initiative led to a significant reduction in time from culture result to manual review for patients discharged from the ED
- Automated real-time alerts allowed for rapid notification of culture results, decreasing time to therapy modification by approximately 22 hours

Disclosures

Authors of this poster have nothing to disclose.