



Impact of Pharmacist-Physician Team on Antimicrobial Utilization at a Pediatric Hospital



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Background:

- “Handshake stewardship” is now considered a leading practice in antimicrobial stewardship (AMS) by The Joint Commission¹
- Although it is time intensive, advantages of this practice include fostering relations, effective interventions, as well as opportunities for education of the medical team^{2,3}
- This often incorporates an in-person, rounding-based feedback approach by the AMS team or pharmacist; however, optimal strategy and team composition remains to be elucidated^{2,4}
- With the absence of a pediatric infectious diseases (ID) pharmacist from June 2018 to July 2019, the antimicrobial stewardship program (ASP) did not have the resources to maintain handshake stewardship rounds
- After the ASP and handshake stewardship resumed, we retrospectively evaluated antimicrobial utilization during periods of time with and without an ASP (both pharmacist and pharmacist-physician team led)

Purpose:

- This study aims to evaluate the impact of a pharmacist-led and physician-pharmacist led handshake stewardship method on antimicrobial consumption at a pediatric hospital

7/2012-4/2015	• [A]: Pharmacist Led
5/2015-5/2018	• [B]: Pharmacist-Physician Team Led
6/2018-7/2019	• [C]: N/A
8/2019-5/2020	• [D]: Pharmacist-Physician Team Led

Study Design:

- Single-center, retrospective quality improvement study
- Teaching children's hospital in central Texas
- All pediatric and neonatal inpatients with active antimicrobial orders were included in the study
- Retrospectively measured hospital-wide antimicrobial (antibiotic, antiviral, antifungal) and specific antibiotic utilization from July 2012 to May 2020
- We compared the time periods with different ASP structure and team composition
- **Primary endpoint:** Days of Therapy per 1,000 Days Present (DOT/1000 DP)

Results:

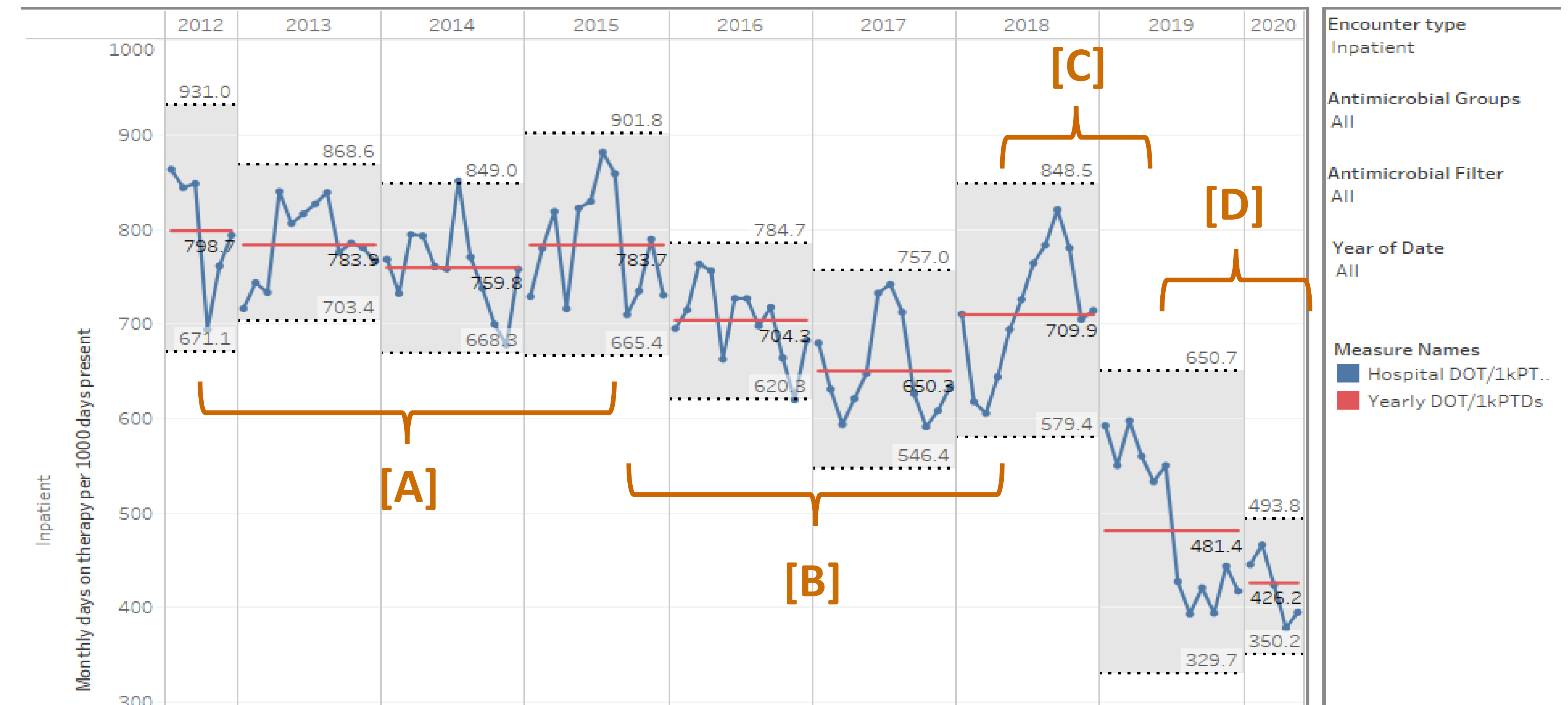
Time Period	Date Range	ASP structure	Mean DOT/1000 DP
[A]	7/2012-4/2015	Pharmacist-led	778.5 days
[B]	5/2015-5/2018	Pharmacist-Physician led	699.5 days
[C]	6/2018-7/2019	None	650.5 days*
[D]	8/2019-5/2020	Pharmacist-Physician led	472.3 days

*Not significant decrease from [B] to [C]

Change [B] to [C]	Antimicrobial
Significant INCREASE in Use	Ceftriaxone (95% CI, 6.3-23.9; P=0.001) Vancomycin (95% CI, 1.2-18.1; P=0.03)
No change	Piperacillin-tazobactam, Cefepime, and Meropenem
Change [C] to [D]	Antimicrobial
Significant DECLINE in Use	Cefepime (95% CI, 11.4-36.4; P<0.0007) Ceftriaxone (95% CI, 5.0-24.8; P=0.005) Vancomycin (95% CI, 6.1-23.1; P=0.002)
No change	Piperacillin-tazobactam and Meropenem

Results:

Figure 1: Hospital Antimicrobial Use (DOTs/1,000 DPs) by Year



- No significant difference was observed for mean hospital-wide antimicrobial, meropenem, piperacillin-tazobactam, or cefepime DOT/1000 DP from period B to C. However, the increase in mean DOT/1000 DP during these time periods was statistically significant for ceftriaxone and vancomycin.
- For time period C to D, there was a statistically significant reduction in mean DOT/1000 DP seen in overall antimicrobial use, ceftriaxone, and vancomycin. However, no difference was seen for piperacillin-tazobactam or meropenem DOT.
- Of note, at our institution, meropenem utilization is restricted to Infectious Diseases and cefepime is the preferred anti-pseudomonal beta-lactam which may explain the lack of variability in utilization of meropenem and piperacillin-tazobactam over time periods

Conclusions & Future Directions:

- Active engagement with frontline providers via handshake stewardship offers a more successful approach to decreasing antimicrobial utilization
- A greater reduction in antimicrobial utilization was seen when the ASP was led by a pharmacist-physician team compared to when it was pharmacist-led without a physician champion
- Future directions include further analysis into antimicrobial utilization by specific indications and service lines most impacted by ASP team composition and method

References:

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