

# Implementation and Post-implementation Analysis of a Pilot Program for Inpatient Review of Outpatient Parenteral Antimicrobial Therapy Prior to Discharge

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## ABSTRACT

- The IDSA OPAT (outpatient parenteral antimicrobial therapy) guidelines state that effective OPAT programs require a multidisciplinary team. Currently within Allina Health, there is no formal OPAT program in place; this project aimed to pilot a pharmacist-driven program.
- Adult inpatients with OPAT ordered and no formal ID consult were reviewed by the ID pharmacist team for appropriateness of ordered therapy and monitoring.
- Data was collected via retrospective chart review on 7 patients after program implementation and data was compared to 101 pre-implementation patients.
- Although the sample size was limited in the post-implementation phase, 49.5% of patients received appropriate care prior to this pilot and 71.4% of patients received appropriate care after pilot implementation, and 2 midline catheters were recommended by the OPAT team with an associated cost savings of up to \$6,796.
- This pilot showed a trend towards decreased inappropriate OPAT prescribing and cost avoidance of an ID pharmacist-driven review of OPAT prior to patient hospital discharge.

## BACKGROUND

- Outpatient parenteral antimicrobial therapy (OPAT) is often the standard of care for many infections across the world, and has been growing substantially since its introduction decades ago<sup>1,2</sup>
- A previous evaluation of OPAT prescribing by non-ID providers from hospitals within this health system found opportunity for improvement. Of the 101 patients prescribed OPAT, 67 unnecessarily received a PICC when the medication prescribed could have been infused via a midline. 51 of the 101 patients were determined to be inappropriate candidates for OPAT based on the IDSA OPAT guideline recommendations.
- Additionally, A potential cost avoidance of \$115,532-\$277,666 was calculated for 67 patients who were discharged with a PICC where a midline could have been utilized.

## METHODS

### Inclusion

- Adult inpatients with OPAT ordered between February 1, 2020 and May 1, 2020 across 5 hospitals
- Patients were identified via a best practice alert within the EHR if there was an order for an intravenous catheter line and concurrent IV antimicrobials

### Exclusion

- OPAT prescribed prior to admission
- OPAT prescribed by ID provider

### Primary Endpoint

- Appropriateness of OPAT prescribing

### Secondary Endpoints

- Complications related to OPAT
- 30-day readmission rate
- Potential cost avoidance

## RESULTS

Table 1: Baseline Characteristics

Diagnosis	Pre-implementation n=101	Post-implementation n=7
Bacteremia	26	3
Diabetic Foot Infection	9	0
Intraabdominal Infection	6	0
Osteomyelitis	6	0
Pneumonia	8	0
Aspiration	2	0
Community acquired	2	0
Nosocomial	4	0
Other*	6	0
Septic Joint	17	1
Ankle	1	0
Hip	2	0
Knee	14	1
SSTI	25	1
Surgical Site Infection	2	0
UTI	10	2
Total	115	7

Table 2: Primary outcomes: Appropriateness of OPAT

Inappropriate	Pre-implementation (n=51; 50.5%)	Post-implementation (n=2; 28.6%)
Lack of monitoring/follow up	30	2
Candidate for oral antibiotic	7	0
Incorrect dose, frequency, or duration	4	0
Inappropriate drug selection	7	0
Unclear discharge orders	2	0
Not a candidate for OPAT	1	0
Questionable Appropriateness	Pre-implementation (n=34)	Post-implementation (n=0)
Lack of monitoring/follow up	15	0
Candidate for oral antibiotic	14	0
Incorrect dose, frequency, or duration	6	0
Inappropriate drug selection	3	0
Not a candidate for OPAT	1	0

Table 3: Secondary Outcomes

Outcome	Pre-implementation	Post-implementation
<b>Complication related to OPAT</b>	<b>12 (12%)</b>	<b>0 (0%)</b>
Allergic reaction (n)	2	0
Cefazolin (n)	1	0
Vancomycin (n)	1	0
CLABSI (MRSA) (n)	1	0
<i>Clostridioides difficile</i> infection	2	0
Diarrhea (non- <i>C. difficile</i> -related)	1	0
Drainage/bleeding from PICC site	2	0
Lost to follow-up (IVDU)	1	0
Oral thrush	1	0
PICC not infusing after placement	1	0
Pulmonary embolism secondary to PICC	1	0
<b>30-day readmission rate (%)</b>	<b>17</b>	<b>1</b>

Table 4: Projected Cost Avoidance with Appropriate Access

Type of access	Cost*	Pre-implementation	Post-implementation
PICC ordered	\$3,931	90	6
Required PICC		23	1
Midline appropriate		67	5*
Midline rec'd		N/A	2
Cost avoidance		\$115,532 - \$277,666	\$3,398-\$6,796
Midline ordered	\$533	1	1
Peripheral ordered		10	0

## DISCUSSION

- There were a total of 50/101 (49.5%) patients and 5/7 (71.4%) (P=0.47) patients who received appropriate OPAT care pre- and post-implementation of this pilot study.
- 2 midline catheters were recommended by the OPAT team, leading to a cost savings of up to \$6,796.
- Limitations include this study being underpowered due to the limited time frame of the post-implementation period, and inability for follow up with patients discharge utilizing a home infusion service outside of Allina Health.
- This pilot showed a trend towards decreased inappropriate OPAT prescribing and cost avoidance of an ID pharmacist-driven review of OPAT prior to patient hospital discharge.

## REFERENCES

- Tice AD, Rehm SJ, Dalovisio JR, et al. Practice guidelines for outpatient parenteral antimicrobial therapy. IDSA guidelines. *Clin Infect Dis*. 2018;38(12):1651-1672.
- Chapman AL, Patel S, Horner C, et al. Outpatient parenteral antimicrobial therapy: updated recommendations from the UK. *J Antimicrob Chemother*. 2019. Doi:10.1093/jac/dkz343.

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