Integrating a Lean Six Sigma DMAIC approach to improve transitions of care in patients discharged on outpatient parenteral antimicrobial therapy

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INTRODUCTION

Background

Safe implementation of Outpatient Parenteral Antimicrobial Therapy (OPAT) is challenging.

Objective

Utilize a Six Sigma framework to evaluate our OPAT process and define opportunities for improvement

METHODS

- Retrospective 6-month analysis of OPAT discharges
- A define, measure, analyze, improve, control (DMAIC) approach was to evaluate errors and opportunities for improvement .

Figure 1. DMAIC Methodology and Process Tools used to analyze OPAT Transitions of Care

D Define
- OPAT Readmissions rates are high (15-25%)[1,2]
- Follow-up and monitoring is logistically challenging

M Measure

6-month single center analysis of 579 OPAT patients
- 30-day all-cause readmission rate: 19.7%
- ID Clinic visit within 28 days: 44%

A Analyze

Identify and validate causes of error
- Process map
- Ishikawa (fishbone) diagram
- Swiss Cheese Model

I Improve

Reduce process variability
- OPAT Note and discharge documentation
- Establishing skilled nursing centers of excellence

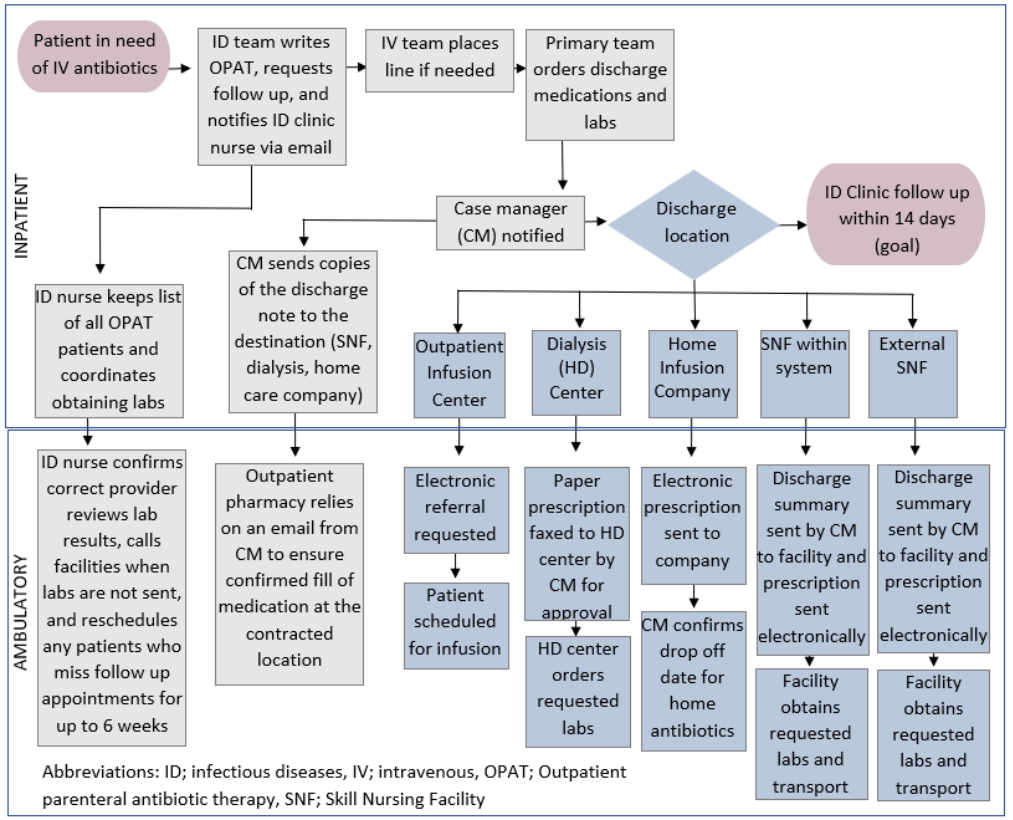
C Control

Track process performance to sustain change
- Addition of OPAT category for error reporting
- Expanding skilled centers of excellence

Abbreviations: OPAT; outpatient parenteral antimicrobial therapy

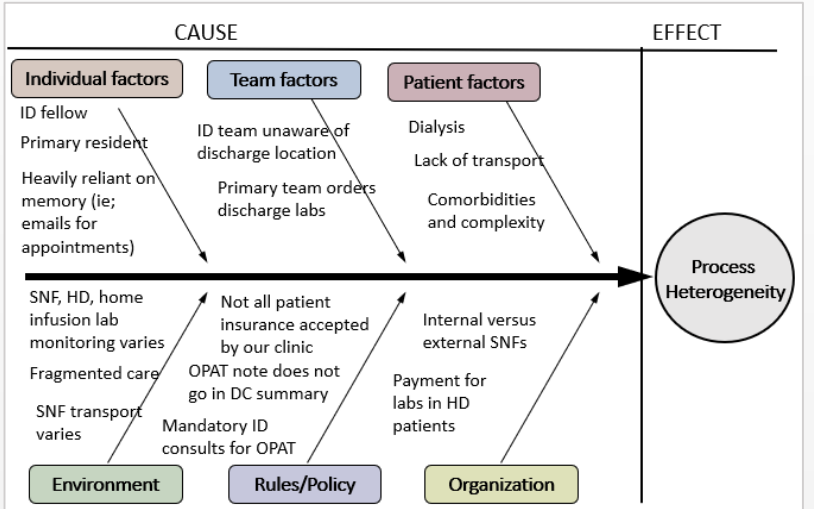
RESULTS

Figure 2. Process Map of OPAT Discharge Process



- Process heterogeneity depending heavily on discharge location (Fig 2)
- Causes of heterogeneity; fragmentation of care and reliance on human memory (Fig 3)
- Opportunities for improvement included:
  (1) Constructing a mandatory OPAT note with appointment date and time
  (2) Delegation of laboratory ordering for monitoring patient after discharge
  (3) Setting skilled nursing facility (SNF) communication and expectations.

Figure 3. Ishikawa Diagram of Factors Contributing to Heterogeneity in Process



CONCLUSIONS

- Almost 1 in 5 OPAT patients was readmitted within 30 days
- A DMAIC approach identified opportunities to improve transitions of care in patients discharged on OPAT and developing interventions for targeted process improvement.
- Other centers may use a similar strategy to analyze and improve the care of OPAT patients

REFERENCES

1. Sadler et al. Am J Health-Syst Pharm. 2021;78:1223-1232
2. Keller at al. Am J Med Qual. 2020 ; 35(2): 133–146.