

Antimicrobial Consumption, clinical pharmacy services, barriers & enablers to Outpatient parenteral antimicrobial therapy pharmacy services across IH: The ACT-OUT Study

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Background

Outpatient Parenteral Antimicrobial Therapy (OPAT)

- The practice of administering intravenous antimicrobials in the home and in alternate care settings
- Interior Health (IH) Pharmacy Services provides OPAT-related pharmacy services across 10 sites

OPAT Antimicrobial Consumption Surveillance

- Variability in antimicrobial consumption can reflect antimicrobial overuse, underuse, or misuse
- OPAT-related antimicrobial consumption at IH is unknown
- Understanding antimicrobial consumption variation helps Antimicrobial Stewardship Programs identify areas of potentially problematic antimicrobial use

OPAT Clinical Pharmacy Services

- Clinical pharmacy OPAT activities should include medication reconciliation, pharmaceutical care, DTP resolution, education, participation in patient care rounds, seamless care, IV to PO stepdown, and ADR/DDI monitoring
- OPAT-related clinical pharmacy services provided at IH is unknown
- Understanding OPAT-related clinical pharmacy services enables future efforts aimed at improving service delivery across IH

Interior Health OPAT Pharmacy Services - Pharmacists' Perceptions

- Pharmacist perceptions about optimal services and the barriers & enablers to achieving at IH are unknown
- The **Capability, Opportunity, Motivation (COM-B)** model describes interacting sources of behaviors
- The **Theoretical Domains Framework (TDF)** is a validated framework linked to COM-B to identify sources of behavior
- The COM-B and TDF are useful for systematically capturing pharmacist perceptions about OPAT service delivery
- Understanding barriers and enablers will inform OPAT pharmacy service quality improvement initiatives at IH

Objectives

- To describe the variability in OPAT antimicrobial consumption across IH
- To describe the variability in OPAT clinical pharmacy services delivered across IH
- To describe pharmacist perceptions of optimal pharmacy OPAT service delivery
- To describe pharmacist perceptions of the barriers & enablers to achieve an optimal OPAT service at IH

Methods

ANTIMICROBIAL CONSUMPTION

Design

- Retrospective health records review

Setting and Sampling

- 10 IH OPAT sites Jan 1 – Dec 31, 2017
- 2 tertiary, 4 regional, 4 community hospitals
- Random 12 week sample

Inclusion Criteria

- 19 years or older
- Outpatient dispense
- IV or IM antibacterial agent

Data Collection

- WinRx electronic dispensing records
- Meditech electronic dispensing records
- Paper-based dispensing records

Data Analysis

- Overall antibacterial Defined Daily Doses/1000 inhabitant-days (DIDs)
- DIDs for:
 - Daptomycin
 - Ertapenem
 - Vancomycin
 - Ceftriaxone
 - Piperacillin/Tazobactam
 - Cefazolin
- Welch's one-way ANOVA

OPAT CLINICAL PHARMACY SERVICES

Design

- Internet-based survey

Setting and Sampling

- Convenience sampling of 10 pharmacists from 10 IH OPAT sites

Data Collection

- Survey Monkey platform
- 8-item questionnaire with desired OPAT clinical pharmacy services
 - Medication Reconciliation
 - Pharmaceutical Care
 - DTP resolution
 - Patient education
 - Rounds participation
 - Seamless Care
 - IV to PO stepdown
 - Monitoring for ADR/DDI
- 4-point Likert scale responses
 - 1 – Never
 - 2 – Sometimes
 - 3 – Most times
 - 4 – Always

Data Analysis

- Frequency distribution by Likert response

PHARMACIST PERCEPTIONS

Design

- Qualitative descriptive

Setting and Sampling

- Purposeful sampling of 13 IH pharmacists and pharmacy leaders

Data Collection

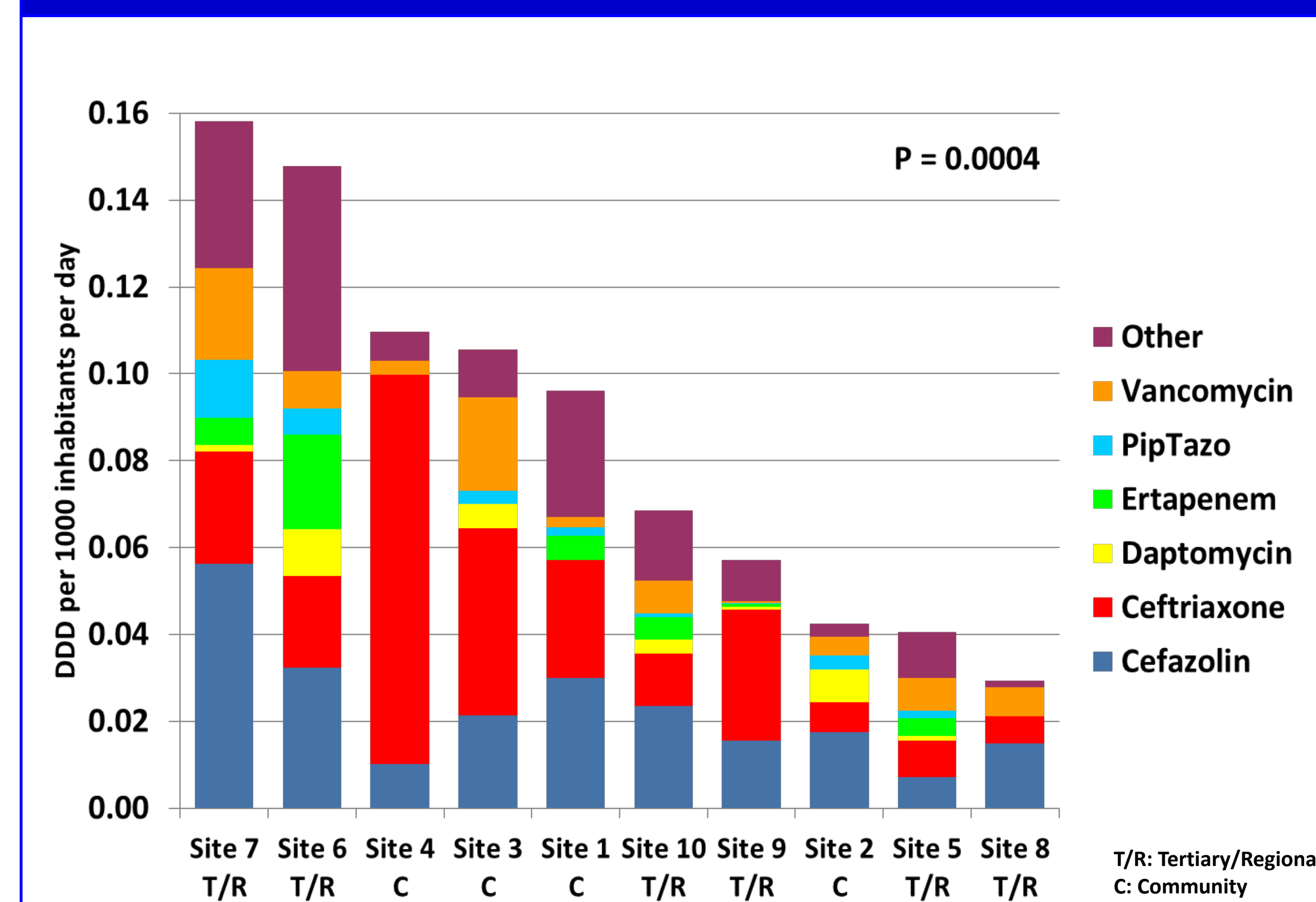
- Semi-structured, 1-1 audio-recorded telephone interview
- TDF-based interview guide

Data Analysis

- Directed content analysis using TDF-based coding guide
- 1 investigator performed coding of all data and 1 investigator independently coded 20% of data in duplicate
- Coding discrepancies were resolved by discussion
- Barrier & enabler themes identified using COM-B

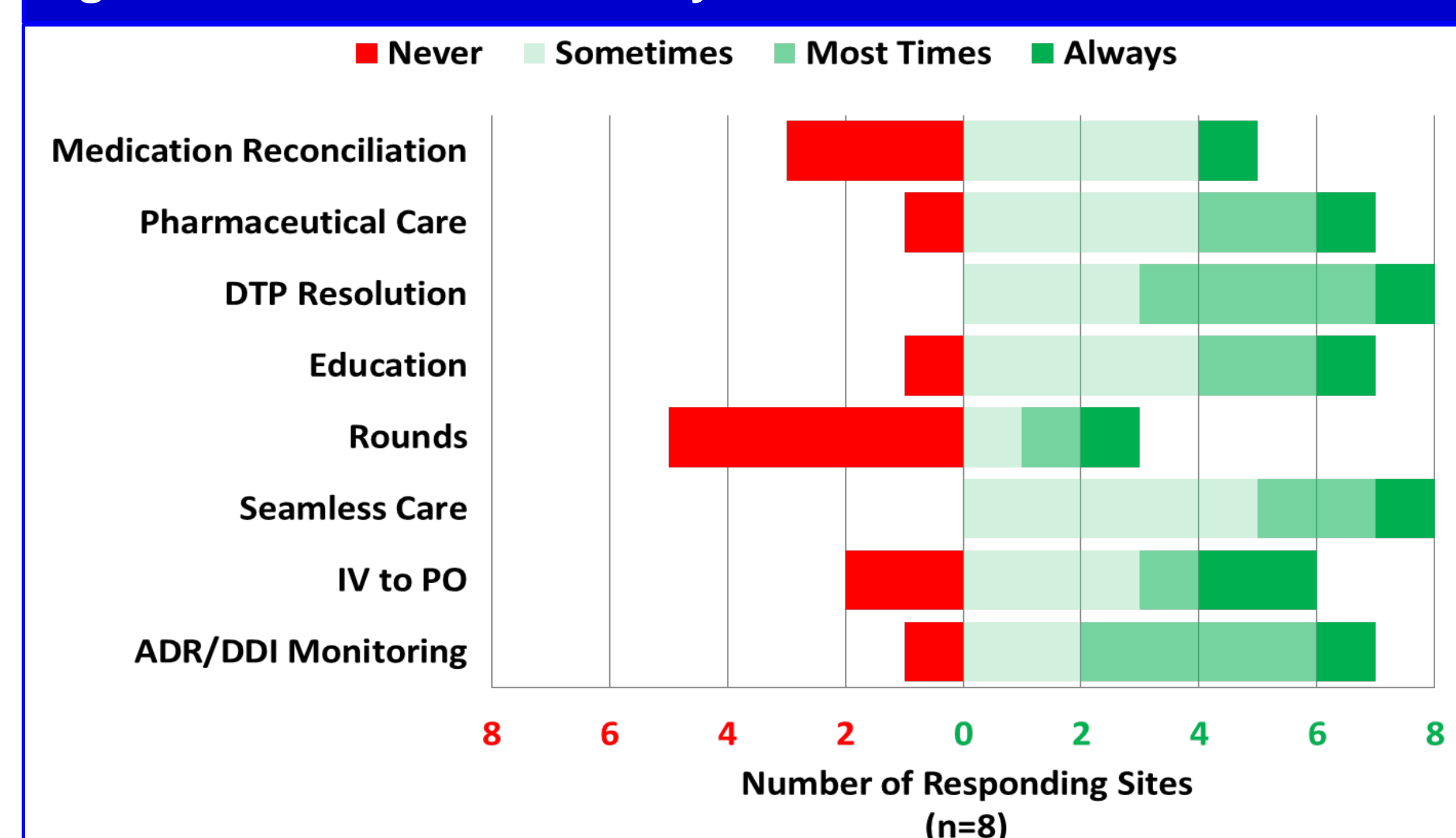
Results – OPAT Antimicrobial Consumption

Figure 1. IH OPAT Antibacterial Consumption



Results – OPAT Clinical Pharmacy Services

Figure 2. IH Clinical Pharmacy Service Distribution



Results – Pharmacist Perceptions

Table 1. Participant Characteristics

Characteristic	n (%)
Hospital Type	
Tertiary	5 (39)
Regional	6 (46)
Community	2 (15)
Professional Role	
Pharmacist	7 (54)
Pharmacy Leader	6 (46)
Hospital Pharmacy Experience	
< 5 years	0 (0)
5-10 years	2 (15)
11-15 years	2 (15)
> 15 years	9 (69)
OPAT Experience	
< 5 years	3 (23)
5-10 years	7 (54)
11-15 years	1 (8)
> 15 years	2 (15)

Table 2. Optimal OPAT Pharmacy Service Themes

- Inter-professional
- Dedicated leadership & staff with clear roles
- Consistent service 7 days/week
- Standardized processes and incorporation of clinical pharmacy services

Figure 3. Barriers & Enablers to Optimal OPAT Pharmacy Services (TDF)

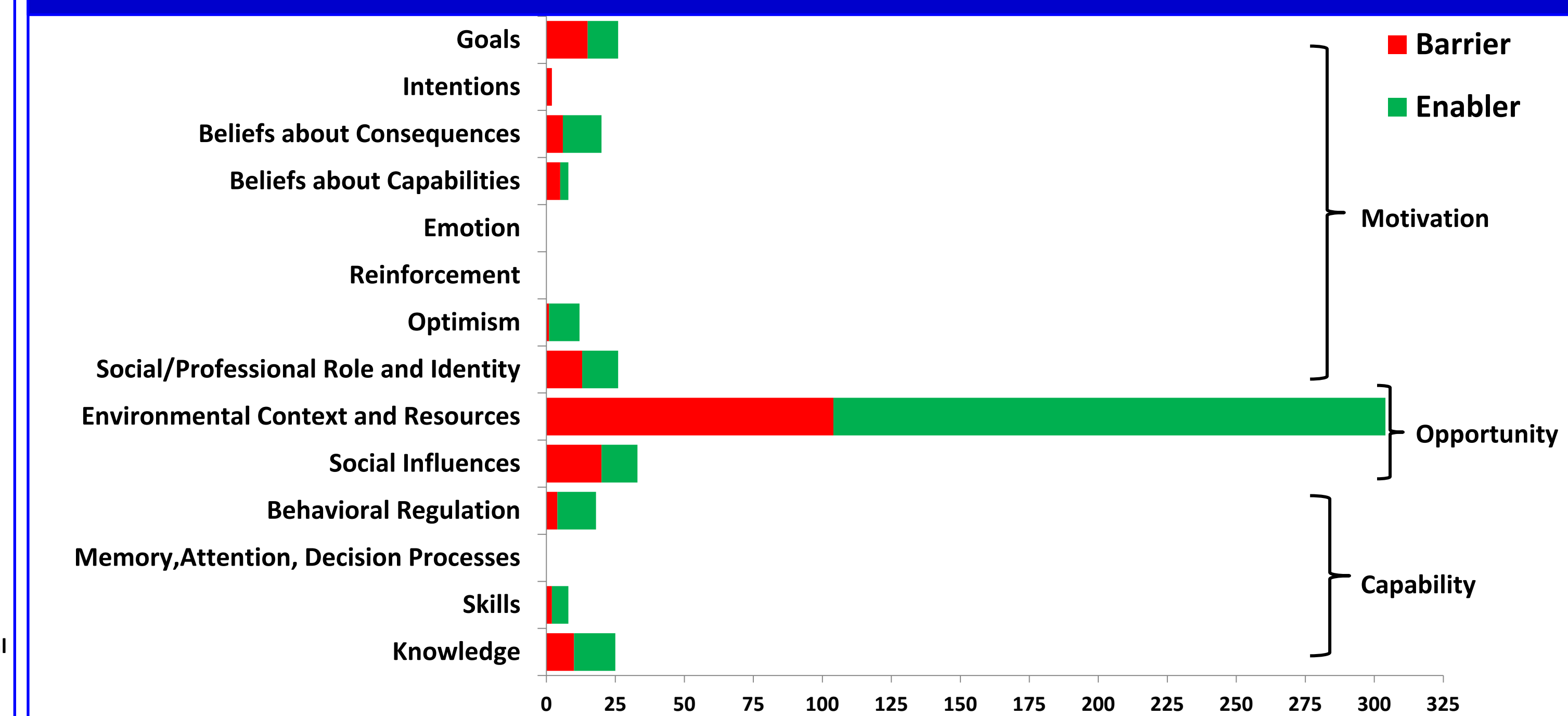


Table 3. Barriers & Enablers to Optimal OPAT Pharmacy Services (Themes)

COM	Barrier Themes	Enabler Themes
Capability	Nil	Improved OPAT knowledge & skills will enhance OPAT pharmacy service quality Capturing and communicating OPAT performance indicators will help improve OPAT pharmacy service quality
Opportunity	Significant pressure exists from hospital administrators and MDs to discharge patients to OPAT with short notice, impeding optimal delivery of pharmaceutical care	Standardization of OPAT structure and processes across IH will enable delivery of optimal OPAT pharmaceutical care Pharmacists perceive that more funding and staffing dedicated to OPAT will enhance their ability to provide optimal pharmaceutical care Interprofessional team composed of MD, nurse, pharmacist, and unit clerk will enhance OPAT service delivery Clear, dedicated operational leadership for OPAT will enhance OPAT service delivery
Motivation	It is perceived that IH decision makers listen to frontline staff regarding OPAT concerns but they do not implement desired changes Pharmacists perceive that pharmacy leadership places a lower priority on outpatient services compared to other pharmacy services	Establishing a clear OPAT pharmacist role definition enables pharmacists to deliver optimal OPAT pharmaceutical care Patients are motivated to learn about their OPAT from pharmacists and are satisfied with the care they receive

Conclusions

- Significant variability in OPAT antimicrobial consumption across IH sites
- Heterogeneous mix and intensity of OPAT clinical pharmacy service delivery across IH sites
- IH pharmacists perceive that optimal OPAT is inter-professional, dedicated, consistent, and standardized
- Barriers to optimal OPAT pharmacy services reflect opportunity & motivation; enablers reflect opportunity
- IH Antimicrobial Stewardship Program will use OPAT antimicrobial consumption data to guide targets of future improvement efforts
- IH Pharmacy and Hospital leadership will use OPAT clinical pharmacy service data, perceptions of optimal OPAT service, and barriers & enablers to guide future OPAT program improvements

