

Risk Factors for 30-Day Unplanned Readmissions in Patients Discharged with Outpatient Parenteral Antimicrobial Therapy

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INTRODUCTION

- Outpatient parenteral antimicrobial therapy (OPAT) programs are helpful in reducing hospital readmissions; however, nearly 15-25% of OPAT patients are readmitted.¹
- As 30-day readmission rate is a healthcare quality measure, it is important to recognize predictors for readmission in OPAT patients in an effort to minimize risk factors.
- Prior studies have identified higher Charlson Comorbidity score, prior hospitalizations, infection due to Enterococcus species or multi-drug resistant organism (MDRO), endovascular infection, aminoglycoside use, and longer planned duration of OPAT as risk factors for readmission.²⁻⁶
- While outpatient follow up and established primary care physician (PCP) are associated with lower risk of readmission, much less is known about other modifiable factors, such as source control and therapeutic drug levels prior to discharge.⁵⁻⁶
- The aim of this study was to identify risk factors for 30-day unplanned readmission in patients discharged with OPAT.

METHODS

- Retrospective cohort study of 334 patients enrolled in the OPAT program at University of Virginia (UVA) Health between March 2019 and December 2019
- Inclusion criteria:**
 - Adult patients evaluated by an Infectious Diseases (ID) consult service or ID attending
 - Discharged home
 - IV antimicrobials provided by a UVA-partnered infusion pharmacy
- Outcome:** 30-day unplanned hospital readmission
- Statistical analysis:**
 - Chi-Square, Fisher's Exact, and Mann-Whitney U were utilized for the univariate analysis
 - Variables with p<0.20 in the univariate analysis and age were included in the multivariable logistic regression to identify predictors of 30-day unplanned readmission

RESULTS

- 64 (19.2%) patients had a 30-day unplanned readmission

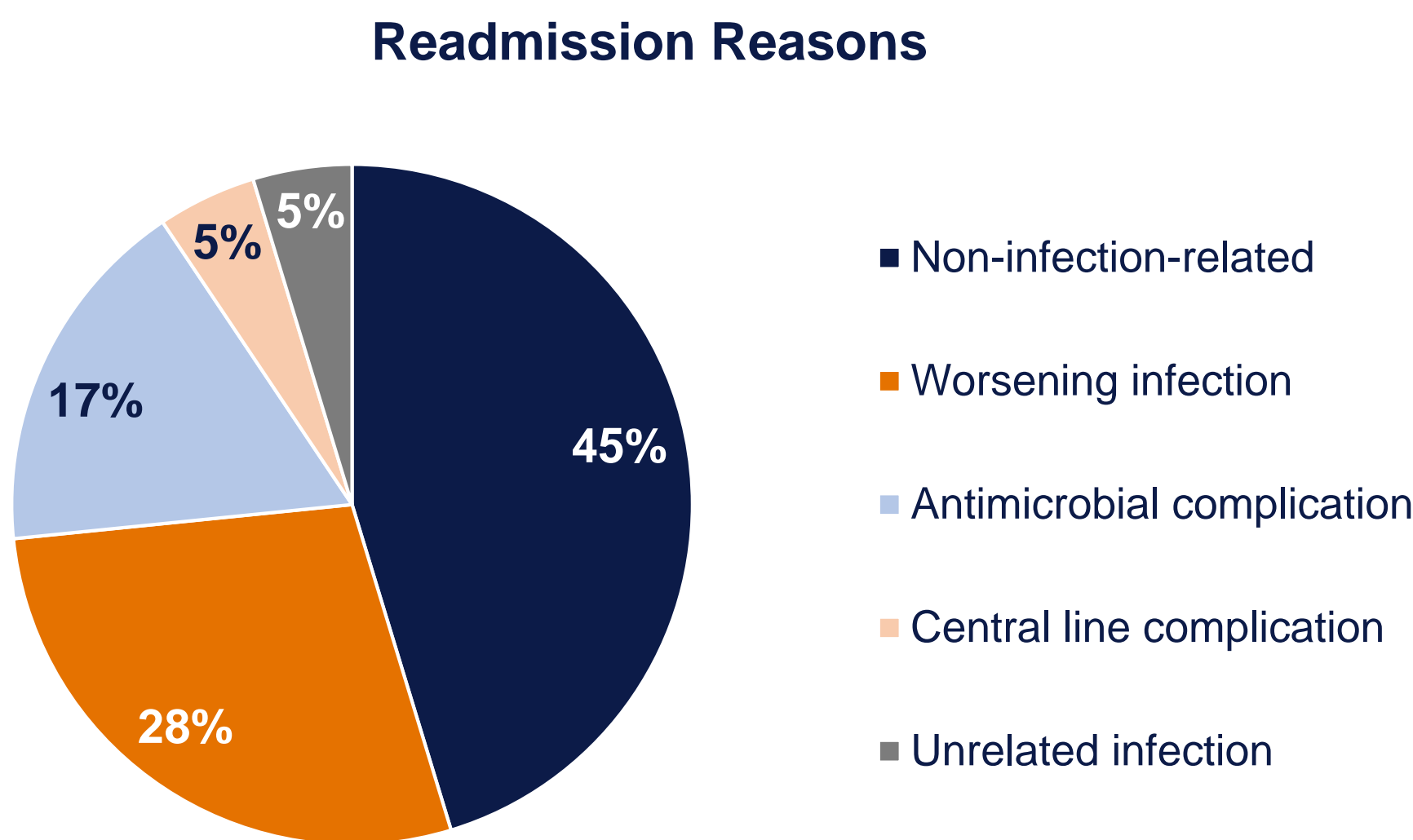


Table 1. Baseline Characteristics

Characteristic	Not Readmitted (n=270)	Readmitted (n=64)	P-value
Age	58 [49-65]	59 [46-66]	0.73
Male	153 (57)	41 (64)	0.33
Charlson Comorbidity Index	3 [2-5]	4 [2-7]	0.01
Immunocompromised	42 (16)	14 (22)	0.26
Solid tumor	6 (14)	3 (21)	0.68
Hematologic	10 (24)	6 (43)	0.19
Solid organ transplant	26 (62)	5 (36)	0.12
Injection drug use	8 (3)	1 (2)	1.00
Number of prior admissions within 12 months	1 [0-2]	1 [0-3]	0.13
Established PCP	254 (94)	62 (97)	0.54
Hospital length of stay	6 [4-9]	8 [6-12]	0.01
ID follow up recommended	236 (87)	53 (83)	0.32
ID follow up attended	215 (91)	48 (91)	1.00

RESULTS

Table 2. Infection and Antimicrobial Characteristics

Characteristic	Not Readmitted (n=270)	Readmitted (n=64)	P-value
Infection diagnosis			
Bone/joint	142 (53)	23 (36)	0.02
Bloodstream	52 (19)	20 (31)	0.04
CNS	11 (4)	4 (6)	0.50
Endovascular	28 (10)	16 (25)	0.01
Genitourinary	17 (6)	3 (5)	0.79
Intra-abdominal	21 (8)	5 (8)	1.00
Pulmonary	9 (3)	7 (11)	0.02
Skin/skin structure	27 (10)	4 (6)	0.48
Viral	8 (3)	0 (0)	0.36
MDRO	56 (21)	19 (30)	0.14
Source control (n=260)	n=210	n=50	
No	21 (10)	10 (20)	0.09
Partial	67 (32)	13 (26)	0.86
Full	122 (58)	27 (54)	0.59
Number of outpatient antimicrobials	2 [1-2]	1.5 [1-2]	0.93
Antifungals	19 (7)	6 (9)	0.60
Antivirals	8 (3)	0 (0)	0.36
Carbapenems	19 (7)	7 (11)	0.30
Cephalosporins	127 (47)	28 (44)	0.68
Vancomycin	88 (33)	22 (34)	0.77
Therapeutic	49 (56)	14 (64)	0.63
Sub-therapeutic	19 (21)	1 (4)	0.07
Supra-therapeutic	20 (23)	7 (32)	0.41
Daptomycin	8 (3)	3 (5)	0.45
Penicillins	76 (28)	22 (34)	0.36
Aminoglycosides	5 (2)	1 (2)	1.00
Fluoroquinolones	10 (4)	3 (5)	0.72
Metronidazole (oral)	64 (24)	12 (19)	0.51

RESULTS

- Age, Charlson Comorbidity Index, number of prior admissions within 12 months, endovascular, MDRO, and source control were included in the multivariable logistic regression

Table 3. Predictors of 30-Day Unplanned Readmission

Covariate	Adjusted OR (95% CI)	P-value
Age	0.97 (0.94-0.99)	0.02
Charlson Comorbidity Index	1.17 (1.05-1.32)	0.01
Endovascular	2.70 (1.21-6.07)	0.02
MDRO	2.34 (1.15-4.79)	0.02

CONCLUSIONS

- Nearly 20% of patients discharged with OPAT had a 30-day unplanned readmission, which is consistent with prior literature.
- Risk factors for 30-day unplanned readmission in patients discharged with OPAT included a higher Charlson Comorbidity Index, endovascular infection, and infection caused by an MDRO.
- Identifying risk factors for readmission may help determine strategies to optimize care and further reduce readmissions.

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