

# Low Use of Outpatient Parenteral Antimicrobial Therapy for Drug Use-Associated Endocarditis in an Urban Hospital System

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## BACKGROUND

An estimated 800,000 Americans use heroin/synthetic opioids; 40-70% of heroin users report injecting in the past year.<sup>1,2</sup> Injection drug use is a well-known risk factor for infective endocarditis (IE), with hospitalizations notably increasing in the past decade.<sup>3,4</sup> Outpatient parenteral antimicrobial therapy (OPAT) is the preferred modality for long term IV antibiotics for infections such as IE.<sup>5</sup> Recent studies have reported that people with drug use-associated (DUA) infections achieve similar outcomes as those with non-DUA-infections when treated using OPAT.<sup>6,7</sup>

## OBJECTIVES

- To compare the use of OPAT among a cohort of patients with drug use-associated infective endocarditis vs non-drug use-associated infective endocarditis in a large urban hospital system

## METHODS

### STUDY DESIGN

- Retrospective cohort study

### PARTICIPANTS

- All patients ≥ 18yrs old admitted to 3 adult hospitals in the Bronx, NY between 1/1/2015-9/1/2019 with an admission diagnosis of IE by ICD-9 or ICD-10 codes

### DATA COLLECTION

- Extraction from electronic medical record and manual chart review

### ANALYSIS

- Exposure: DUA-IE defined by admission ICD-9 or -10 codes for IE AND admission, outpatient, or ED ICD-9 or ICD-10 codes for drug use within 6 months of admission<sup>8,9</sup>
- Outcome: OPAT defined as documented discharge home with plan to continue receipt of IV antibiotics
- Multivariable logistic regression, adjusting for clinically significant covariates that were decided a priori

## RESULTS

Patients ≥18yo with ICD-9-CM and ICD-10-CM for infective endocarditis for 1/1/2015 to 9/1/2019 (n=1014)

Excluded (n=496):  
Patients without documented treatment of IE on chart review (n=350)  
Patients admitted to children's hospital (n=2)  
Received CT Surgery during admission (n=144)

Patients with documented treatment or diagnosis of IE (n=518)

DUA-IE (n=126)

Non-DUA-IE (n=392)

### Select Patient Characteristics

	Non-DUA-IE (392, 75.7%)	DUA-IE (126, 24.3%)	p-value
<b>Mean age, years (SD)</b>	68.2 (15.6)	53.0 (15.7)	<0.001
<b>Sex, Male (%)</b>	224 (57.1)	76 (60.3)	0.53
<b>Race/Ethnicity (%)</b>			<b>0.02</b>
White, Non-Hispanic	127 (32.4)	33 (20.2)	0.19
Black, Non-Hispanic	109 (27.8)	27 (21.4)	0.16
Hispanic	105 (26.8)	52 (41.3)	<0.01
Other/Declined	51 (13.0)	14 (4.8)	0.31
<b>Insurance (%)</b>			0.62
Public	325 (82.9)	102 (81.0)	
Private	67 (17.1)	24 (19.1)	
<b>Median Charlson Comorbidity Index (IQR)</b>	6 (4, 8)	5 (3, 8)	0.11
<b>Admission to MICU (%)</b>	63 (16.1)	24 (19.1)	0.44
<b>Housing Status (%)</b>			<0.001
Domiciled	377 (96.2)	107 (84.9)	
Undomiciled	1 (0.3)	12 (9.5)	
Unknown	14 (3.6)	7 (5.6)	
<b>Length of stay (LOS)</b>			
≥14 days (%)	223 (56.9)	70 (55.6)	0.56
Median LOS (IQR)	15.5 (10, 26)	16 (8, 29)	0.65
<b>Year of admission (%)</b>			0.77
2015-2016	173 (44.1)	50 (39.7)	
2017-2019	219 (55.9)	76 (60.3)	

### PRIMARY MULTIVARIABLE REGRESSION ANALYSIS

	OPAT n=125, 24.1%	No OPAT n=393, 75.9%	Odds Ratio*, 95% CI	p-value
<b>DUA-IE (%)</b>	15 (12.0%)	111 (28.2%)	0.21 (0.11, 0.41)	<0.001
Non-DUA-IE (%)	110 (88.0)	282 (71.8)	Reference	
DUA-IE w/ medication for opioid use disorder (MOUD)	7 (7.6)	16 (4.1)	0.61 (0.22, 1.67)	0.34
DUA-IE w/o MOUD	8 (6.4)	95 (24.2)	0.12 (0.05, 0.29)	<0.001

### SENSITIVITY ANALYSES

#### Removing Undomiciled Patients (n=505)

	n=125 (24.8%)	n=380 (75.3%)	Odds Ratio*, 95% CI	p-value
<b>DUA-IE (%)</b>	15 (12.0%)	99 (26.1)	0.24 (0.12, 0.46)	<0.001

#### Removing AMA/eloped patients (n=489)

	n=125 (21.3%)	n=364 (78.7%)	Odds Ratio*, 95% CI	p-value
<b>DUA-IE (%)</b>	15 (12.0%)	89 (24.5%)	0.29 (0.15, 0.57)	<0.001

#### Removing Undomiciled Patients and AMA/Eloped (n=480)

	n=125 (26.0%)	n=355 (74.0%)	Odds Ratio*, 95% CI	p-value
<b>DUA-IE (%)</b>	15 (12%)	81 (22.8%)	0.30 (0.15, 0.59)	<0.01

\*Adjusted for age in years, sex, race, insurance, year of admission, length of stay, Charlson Comorbidity Index, MICU admission

## CONCLUSIONS

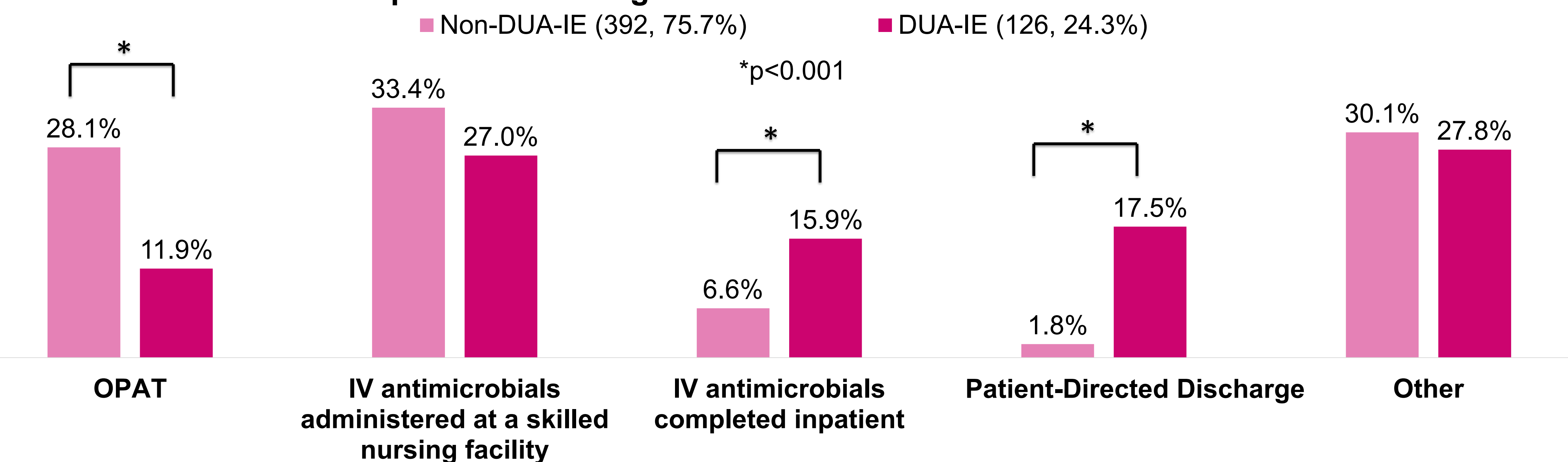
### SUMMARY

Utilization of OPAT was lower among patients with DUA-IE compared to patients with non-DUA-IE admitted to an urban medical center. Unstable housing or unplanned discharges were unlikely to account for the significant difference between groups. Results suggested that DUA-IE, if offered MOUD, had increased odds of OPAT than if not offered MOUD (vs. non-DUA-IE). Emerging evidence also supports combining MOUD with OPAT, demonstrating promising outcomes for OPAT use in DUA-IE. Efforts to increase OPAT could have broad benefits for patients and the healthcare system.

### NEXT STEPS

- Understanding addressable system and provider reasons for not recommending OPAT
- Understanding patient attitudes and preferences for OPAT
- Multidisciplinary program development to address barriers to care

### Dispositions Among Patients with Non-DUA-IE vs. DUA-IE



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