

Staphylococcus aureus Bacteremia: **Does Intravenous Drug Use Impact Quality of Care and Clinical Outcomes?**

Background

- People who inject drugs (PWID) have higher risk for Staphylococcus aureus bacteremia (SAB) and increas management complexity.¹
- SAB is associated with high healthcare costs, long hospital stays, and a 20% 30-day mortality rate.²

Objectives

- Describe demographics and IV drug use (IDU) characteristics in patients with SAB at our institution
- Compare differences in adherence to standard of ca metrics and clinical outcomes in PWID.

Methods

Design: Single center retrospective cohort

Subjects:

- Inclusion criteria (n=248):
 - Adults (age \geq 18 years) with \geq 1 positive blood culture for *Staphylococcus aureus*
 - Admitted 1/1/2016-12/31/2017 to Oregon Health & Science University (OHSU)
- Exclusion criteria:
 - Death, withdrawal of care, or transfer to anot facility within 48 hours of first positive blood culture
 - Infection associated with a cardiac ventricular assist device
 - Missing 90-day mortality data
- Procedure: Electronic medical records were reviewed for patient characteristics, substance use, SAB characteristics, adherence to SAB quality of care metrics, and clinical outcomes
- Statistical analysis: Continuous data was analyzed using independent samples t-tests; categorical data was analyzed by the Pearson Chi-square or Fisher's exact test. All tests with *P* values < 0.05 were considered statistically significant.

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								Resu	
or	Patient Demographics								
ased	248 SAB Patients		Types of IDU						
			Heroin Use					83.8%	
	IDU 28%		Opio	oid Use D	isorde	r	75.7%		
	Non-IDU		Methamphetamine Use				84.3%		
	72%		Stimulant Use Disorder Polysubstance Use				78.9%		
				.,		50% 60%	70%	80% 90%	
	Median Age (in years Homelessness					Non-	Non-IDU		
							57		
on.	Sex	sness	41.4% 61.4% M			3.9% 68.5% M		*p<0.001	
JII.		JEX		38.6% F			31.5% F		
care	Race		87.1% White 85.4% Wh 12.9% Non-white 14.6% Non-						
				-		•			
	Staphyloc	occus	aure	eus Ba	actei	remia	Cna	racteris	
		IDL (n=70, 23		Non (n=178)	-IDU 71.8%) P-valu	е		
		N (%	•	•	(%)	/			
_	Duration of BactererMedian	าเล 4.3		2.	.7	0.001		Definite 8	
	(in days)	(IQR 2.4			7-4.9)		_	Dennite o	
	Organism		4.3) 121 (68.0)		0.001		5		
	 MSSA 31 (4 MRSA 39 (5 		-			0.001	_	,	
d	 Polymicrobial 	7 (10	20 (11.4) ^a		0.641	0.641 Skin			
MSSA= Methicillin-sensitive <i>Staphylococcus aureus</i> / MRSA=Methicillin-resistant <i>Staphylococcus aureus</i> DVT= Deep vein thrombosis/ SVT= Superficial vein thrombosis Definite and possible endocarditis based on modified Duke criteria (excluding fever and injection drug use as minor criteria) ^a Two cases with unknown data.									
other	Adherence	e to SA	AB St	tanda	rds	of Car	е		
	Repeat Bloo	d Cultu	res un	til				1	
ar		nce Prov						9	
	Appropriate Antibiotic Choice and Duration							89.9	
								81.9%	
							68	.1%	
/ed	Completed Therapy							84.3%	
						92.			
		lts –				91.0			
						94			
		TTE pe	rform	ed				82.0%	
a S		rform	ed —	.1.4% .0%					
			Ρ	o% ercenta		of Popula		50% 80%	

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lts **SAB Outcomes** IDU Comorbidities Non-IDU Length of 53.1%]. Hepatitis C Left AMA Inpatient 6.3% 3.4% 90-day mo HIV SAB recuri 100% Readmitte Diabetes 31.5% * p <0.05 Hemodialysis Discussion 9.0% Malignancy 23.0% IDU was associated with: Percentage of Population Higher rates of MRSA, endocarditis, spinal stics infections, and leaving AMA Longer lengths of stay IDU SAB Complications Non-IDU Non-IDU was associated with: 47.1% & Possible Endocarditis 20.9% Higher 90-day mortality Spinal Epidural 25.7% No difference between groups in: 14.1% Abscess/Osteomyelitis 27.5% & Soft Tissue Infection 14.8% 17.1% DVT/SVT * p <0.05 16.9% Percentage of Population Conclusions 100.0% 98.9% Non-IDU 9% 7.0 6.0 6.0 5.0 4.0 2.9% ..0% 4.0 3.0 2.5 (IQR (IQR 2.0 4.0-6.0) 2.0-6.0) 2.0 94.3% 7+ 1.0 (IQR (IQR 0.8-8.3) 1.0-4.0) References 0.0 Treatment duration in Days to first source control procedure weeks (median) * p <0.05 (median) _____ *Dis*. 2019;6(7):ofz289. Published 2019 Jun 18. doi:10.1093/ofid/ofz289 100%

Holland TL, Arnold C, Fowler VG Jr. Clinical management of Staphylococcus aureus bacteremia: a review. JAMA. 2014;312(13):1330-1341. doi:10.1001/jama.2014.9743

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Results (cont.)

b outcomes								
	IDU	Non-IDU	P-value	1				
	(n=70, 28.2%)	(n=178, 71.8%)		^c Ex				
	N (%)	N (%)		pat die				
f stay in days (median)	21.5	14	0.001	hos				
	(IQR 13.0-36.8)	(IQR 8.0-22.3)		and				
	18 (25.7)	2 (1.1)	<0.001	unl rec				
mortality	3 (4.3)	17 (9.6)	0.17	d Ex				
ortality	4 (5.7)	33 (18.6)	0.010	pat				
rrence within 90 days ^c	8/66 (12.1)	10/156 (6.4)	0.154	die hos and				
ed within 90 days d	31/67 (46.3)	64/161 (39.8)	0.363	unk rea				

atients who ed during ind spitalizatio cases with known 90-da currence data

Excluding atients who ed during inde spitalization d cases with known 90-da admission dat

- Younger age, hepatitis C, and homelessness

- Diabetes, hemodialysis, and cancer
- Polymicrobial infections or DVT
- Adherence to SAB Standards of Care (repeat blood) cultures, antibiotic management, ID consultation)
- 90-Day recurrence or readmission rates

There was no difference in adherence to SAB standards of care metrics between groups with and without IDU.

Despite the PWID group being younger with fewer comorbidities, 90-day readmissions and recurrence were not different between the groups.

May represent influence of lower therapy completion, increased AMA discharges, and unmeasured social determinants of health.

Serota DP, Niehaus ED, Schechter MC, et al. Disparity in Quality of Infectious Disease vs Addiction Care Among Patients With Injection Drug Use-Associated *Staphylococcus aureus* Bacteremia. *Open Forum Infect*