

***Staphylococcus aureus* injection drug use-associated bloodstream infections are propagated by community outbreaks of diverse lineages**

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Supplementary Table 1: Demographics and Clinical Characteristics of all *S. aureus* Blood-stream Isolates at Barnes Jewish Hospital from 1/2016 – 12/2019 by Injection Drug Use Status

	Non-IDU BSI Cases	IDU-BSI Cases	FDR corrected p value
	<i>N</i> =1261 (%)	<i>N</i> = 173 (%)	
Demographics			
Age (mean years, SD)	55±15	39±10	<0.001
Female ^a	473 (37.5)	77 (44.5)	0.371
Discharge AMA	18 (1.4)	40 (23.1)	<0.001
Coinfections			
Hepatitis C Virus Infection	101 (8.0)	119 (68.7)	<0.001
HIV infection	20 (1.6)	10 (5.8)	0.055
Elixhauser comorbidities			
No. Elixhauser Comorbidities (Mean, SD)	8.9 (3.6)	8.8 (3.7)	0.499
AIDS and HIV	20 (1.6)	10 (5.8)	0.011
Alcohol Abuse	134 (10.6)	26 (15.0)	0.148
Rheumatoid Arthritis, Collagen Vascular Disease	119 (9.4)	15 (8.7)	0.772
Blood loss anemia	82 (6.5)	10 (5.8)	0.775
Congestive heart failure	536 (42.5)	51 (29.5)	0.002
Coagulopathy	605 (48)	81)	0.775
Chronic Pulmonary Disorder	451 (35.8)	64 (37.0)	0.771
Drug Abuse	169 (13.4)	149 (86.1)	0.415
Depression	506 (40.1)	72 (41.6)	0.768
Diabetes, uncomplicated	412 (32.7)	23 (13.3)	<0.001
Diabetes, complicated	538 (42.7)	18 (10.4)	<0.001
Fluid and electrolyte disorder	1061 (84.1)	143 (82.7)	0.751
Hypertension	995 (78.9)	86 (49.7)	<0.001
Hypothyroidism	227 (18.0)	10 (5.8)	<0.001
Liver disease	308 (24.4)	71 (41.0)	<0.001
Lymphoma	96 (7.6)	2 (1.2)	<0.001
Metastatic Cancer	162 (12.8)	6 (3.5)	<0.001
Other Neurologic Disorders	441 (35.0)	51 (29.5)	0.216
Obesity	447 (35.4)	21 (12.1)	<0.001
Paralysis	227 (18.0)	27 (15.6)	0.546
Peripheral Vascular Disorders	487 (38.6)	83 (48.0)	0.031
Pulmonary Circulation Disorders	204 (16.2)	92 (53.2)	<0.001
Psychoses	129 (10.2)	38 (22.0)	<0.001
Renal Failure	576 (45.7)	55 (31.8)	<0.001
Solid Tumor, without metastases	234 (18.6)	8 (4.6)	<0.001
Weight Loss	601 (47.7)	59 (34.1)	0.001
<i>S. aureus</i> Clinical Infection Characteristics and Outcomes			
Infective endocarditis	400 (32.8)	106 (58.4)	<0.001

Osteomyelitis	261 (20.7)	34 (19.6)	0.249
Septic Arthritis	86 (6.8)	27 (15.6)	<0.001
Necrotizing SSTI	36 (2.8)	24 (13.9)	<0.001
CLABSI	84 (6.7)	1 (0.6)	0.004
Duration of Bacteremia (mean days, SE)	2.5±0.3	3.8±0.4	<0.001
Prolonged Bacteremia (>5 days)	148 (11.7)	53 (30.6)	<0.001
Methicillin Resistance	743 (58.9)	97 (56.1)	0.728
1-year Mortality	409 (32.4)	27 (15.6)	<0.001

^aUnless otherwise specified, all values are n (%)

AMA, against medical advice; CLABSI, central line-associated bacteremia; HIV, human immunodeficiency virus; IDU, injection drug use; MRSA, methicillin resistant Staphylococcus aureus; PWID, person who injects drugs; SD standard deviation; SE, standard error; SSTI, Skin/soft tissue infection.

Supplementary Table 2: Factors Associated with 1-year Mortality for *S. aureus* Blood-stream Infections

Variable	Univariate Analysis		Multivariable Analysis	
	Hazard Ratio (95% CI)	P value	Hazard Ratio (95% CI)	P value
Demographics				
Age	1.020 (1.01 - 1.03)	<0.001	1.029 (1.02 - 1.04)	<0.001
Female	1.21 (0.99 - 1.47)	0.051	1.32 (1.02 - 1.68)	0.021
S. aureus Clinical Infection Characteristics and Outcomes				
Methicillin Resistant Staphylococcus aureus	1.197 (0.97 - 1.43)	0.105		
Bacteremia 5+ Days	0.99 (0.73 - 1.34)	0.951		
Endocarditis	1.27 (0.89 - 1.79)	0.176		
Injection Drug Use Associated	0.63 (0.40 - 0.98)	0.047	0.78 (0.62 - 0.98)	0.04
Elixhauser comorbidities				
AIDS and HIV	0.83 (0.32 - 2.17)	0.706		
Alcohol Abuse	1.16 (0.78 - 1.74)	0.465		
Blood loss anemia	1.25 (0.88 - 1.78)	0.221		
Coagulopathy	1.53 (1.23 - 1.91)	<0.001	1.63 (1.24 - 2.15)	<0.001
Congestive heart failure	1.21 (0.97 - 1.49)	0.086	1.03 (0.77 - 1.35)	0.011
Chronic Pulmonary Disorder	1.15 (0.088 - 1.49)	0.309		
Depression	0.78 (0.59 - 1.01)	0.057	0.80 (0.63 - 1.03)	0.085
Diabetes, uncomplicated	1.01 (0.73 - 1.39)	0.942		
Diabetes, complicated	0.94 (0.68 - 1.29)	0.700		
Drug Abuse	0.68 (0.56 - 0.88)	0.002	*not included, duplicates PWID data-point	
Hypertension	1.08 (0.77 - 1.50)	0.677		
Hypothyroidism	1.45 (1.05 - 1.98)	0.023	1.25 (0.88 - 1.74)	0.204
Fluid and electrolyte disorder	3.02 (1.94 - 4.73)	<0.001	2.50 (1.65 - 3.79)	<0.001
Lymphoma	0.90 (0.62 - 1.30)	0.578		
Liver disease	1.14 (0.85 - 1.52)	0.390		
Metastatic Cancer	1.32 (0.93 - 1.88)	0.126		
Other Neurologic Disorders	1.32 (0.93 - 1.88)	0.126		
Obesity	0.84 (0.64 - 1.10)	0.209		
Paralysis	1.21 (0.88 - 1.65)	0.244		
Peripheral Vascular Disorders	1.10 (0.85 - 1.43)	0.471		
Pulmonary Circulation Disorders	0.831 (0.60 - 1.15)	0.264		
Psychoses	0.62 (0.48 - 0.93)	0.021	0.45 (0.29 - 0.69)	<0.001
Renal Failure	1.03 (0.83 - 1.28)	0.786		
Solid Tumor, without metastases	1.33 (1.01 - 1.71)	0.061	1.78 (1.31 - 2.39)	<0.001
Weight Loss	1.22 (0.98 - 1.50)	0.069	1.37 (1.08 - 1.75)	0.010

Supplementary Table 3: *S. aureus* multilocus Sequence type group composition according to Blood-stream Infection subtypes

	IDU-BSI	non-IDU BSI		Total	OR [CI95%]			
		CLABSI	cBSI		IDU-BSI vs other	CLABSI vs other	cBSI vs other	IDU-BSI vs cBSI
ST8/1181	69	9	18	96	1.86 [1.03-3.38]	0.46 [0.18-1.07]	0.74 [0.37-1.45]	1.57 [0.79-3.23]
ST5/840	19	4	13	36	0.60 [0.27-1.31]	0.68 [0.16-2.13]	2.35 [1.00-5.34]	0.44 [0.18-1.05]
ST398/4163	14	5	1	20	1.38 [0.48-4.56]	2.06 [0.55-6.52]	0.14 [0.003-0.91]	5.17 [0.75-223.83]
ST15/582	12	1	2	15	2.41 [0.63-13.71]	0.39 [0.01-2.76]	0.54 [0.06-2.48]	2.15 [0.45-20.42]
ST72	5	2	6	13	0.34 [0.08-1.23]	1.05 [0.11-5.13]	3.32 [0.88-3.32]	0.27 [0.06-1.09]
ST45/256/536	7	3	1	11	1.01 [0.25-4.85]	2.25 [0.37-10.01]	0.35 [0.01-2.45]	2.47 [0.31-113.66]
ST87/59	6	2	2	10	0.86 [0.20-4.27]	1.46 [0.15-7.77]	0.71 [0.07-3.47]	1.03 [0.18-10.79]
ST30/39	3	3	3	9	0.28 [0.04-1.33]	3.03 [0.47-15.01]	1.83 [0.29--8.96]	0.33 [0.04-2.57]
ST97	6	2	1	9	1.16 [0.24-7.36]	1.68 [0.16-9.32]	0.91 [0.02-7.29]	2.10 [0.25-98.77]
ST188	4	1	0	5	2.34 [0.23-116.80]	1.45 [0.03-15.19]	N/A	N/A
OTHER¹	9	4	6	19	0.49 [0.17-1.41]	1.59 [0.36-5.45]	1.73 [0.51-5.21]	0.49 [0.15-1.76]
TOTAL	154	36	53	243				

¹Includes singleton isolates and STs 672, 6, 20, 27, 1 and 1159

CLABSI, central line-associated bacteremia; cBSI, conventional blood-stream infection; IDU-BSI, injection drug use associated blood-stream infection;