

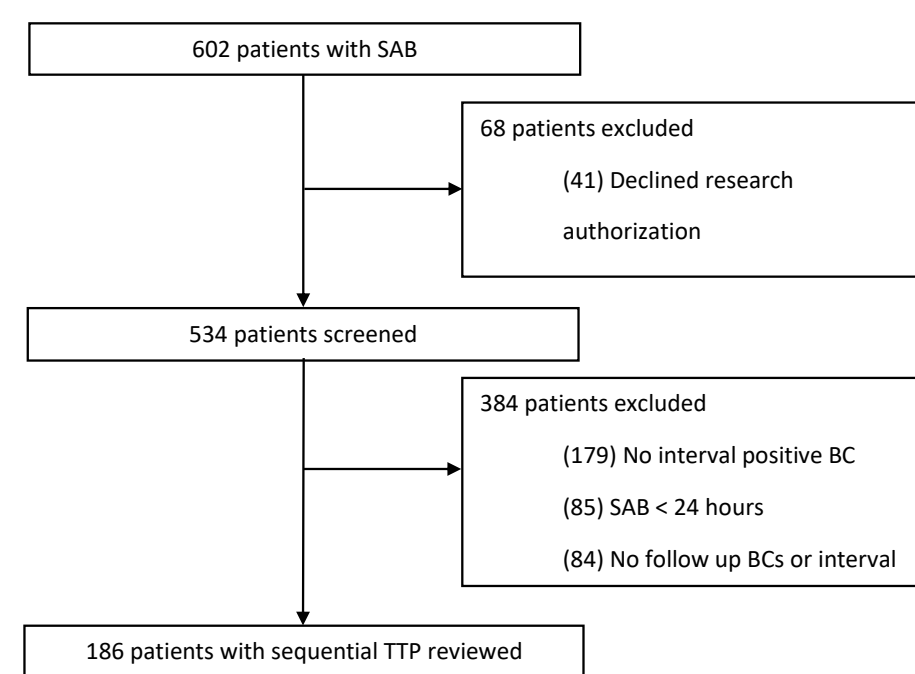
## INTRODUCTION

✓ The role of sequential blood culture time to positivity (TTP) as a surrogate marker for bacterial load and as a prognostic indicator in *S. aureus* bacteremia (SAB) is not well established in the literature.

## METHODS

- ✓ We performed a single healthcare system, multi-site, retrospective review of adult patients with positive blood culture for *S. aureus* between January 2019 and December 2019.
- ✓ Sequential TTP was defined as the TTP of the first subsequent blood cultures obtained from patients with SAB for at least 24 hours.
- ✓ *High-grade bacteremia* was defined as the growth of the organism in two or more sets of blood cultures, or growth in  $\geq 50\%$  of all bottles collected.

## RESULTS-1



✓ A total of 602 patients with SAB were identified, and 186 patients who met the study criteria were included.

## RESULTS-2

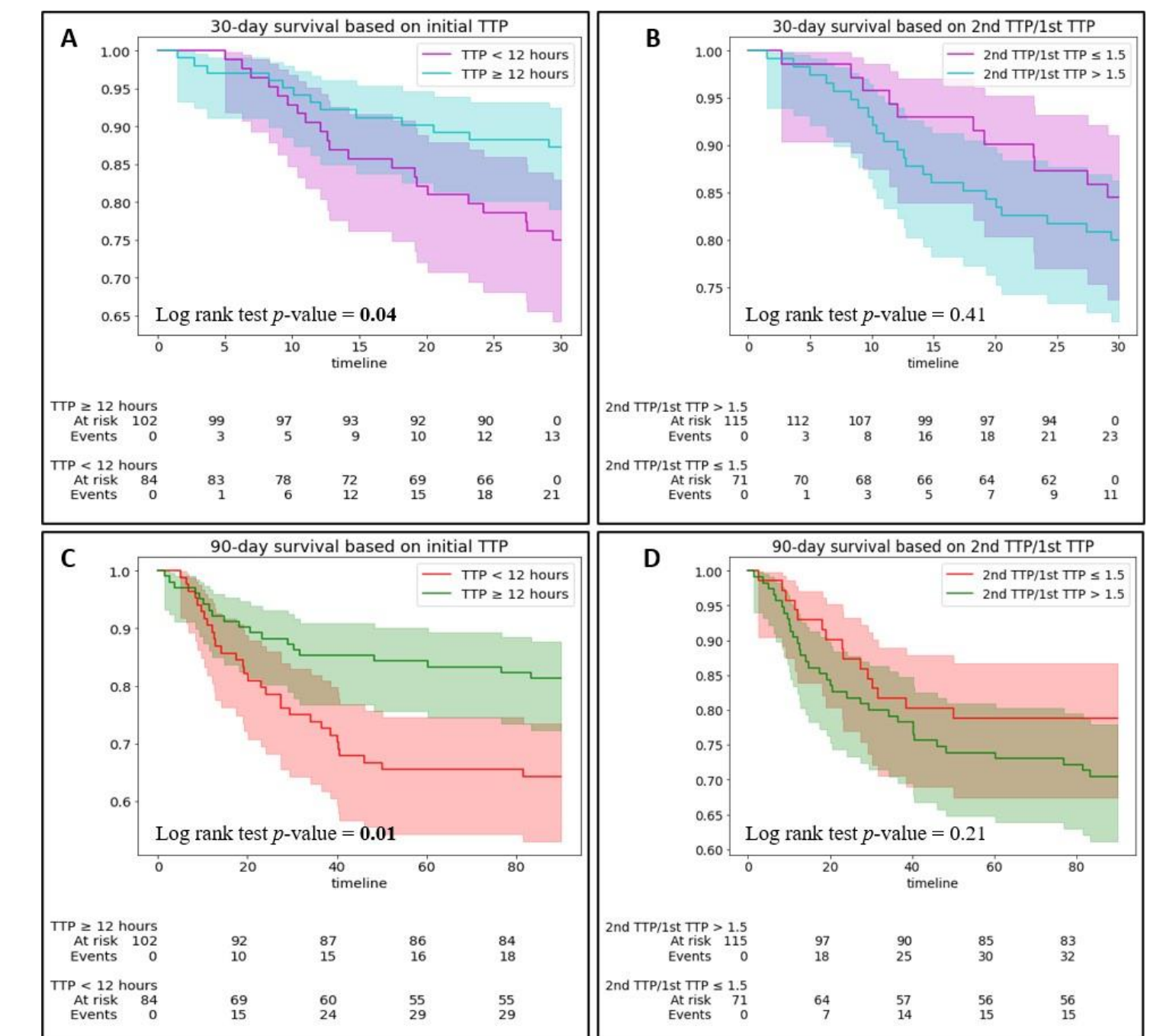
**Table 1.** Clinical characteristics of patients with sequential time to positivity/initial TTP ratio of  $\leq 1.5$  and  $> 1.5$

Characteristic	2 <sup>nd</sup> TTP/1 <sup>st</sup>		Unadjusted model			Adjusted model		
	TTP $\leq 1.5$ (n = 71)	TTP $> 1.5$ (n = 115)	OR	95% CI	P	OR	95% CI	P
Age, y, mean $\pm$ SD	62.0 $\pm$ 17.0	64.6 $\pm$ 15.8	0.99	0.97-1.01	0.28			
Male, n (%)	42 (59.2)	75 (65.2)	1.29	0.70-2.38	0.41			
BMI, kg/m <sup>2</sup> , mean $\pm$ SD	28.4 $\pm$ 7.8	29.9 $\pm$ 7.2	0.97	0.93-1.01	0.20			
CCI, mean $\pm$ SD	4.6 $\pm$ 3.0	5.5 $\pm$ 2.9	0.91	0.82-1.01	0.07			
Injection drug use, n (%)	7 (9.9)	7 (6.1)	0.59	0.20-1.77	0.35			
MI, n (%)	14 (19.7)	41 (35.7)	0.44	0.22-0.89	<b>0.02</b>	1.85	0.85-4.02	0.12
DM, n (%)	20 (28.2)	32 (36.5)	0.68	0.36-1.29	0.24			
Cardiac prosthetic device, n (%)	9 (12.7)	30 (26.1)	0.41	0.18-0.93	<b>0.03</b>	1.51	0.61-3.71	0.37
Prosthetic valve, n (%)	5 (7.0)	10 (8.7)	0.80	0.26-2.43	0.69			
Permanent pacemaker, n (%)	4 (5.6)	14 (12.2)	0.43	0.14-1.36	0.15			
MRSA, n (%)	22 (31.0)	29 (25.2)	1.33	0.69-2.57	0.39			
Vancomycin MIC $\geq 2$ mcg/ml	18 (25.4)	17 (14.8)	1.96	0.93-4.11	0.08			
Acquisition, n (%)								
Community	32 (45.1)	46 (40.0)	3.13	0.63-15.46	0.16			
Healthcare-associated	37 (52.1)	60 (52.2)	2.77	0.57-13.55	0.21			
Nosocomial	2 (2.8)	9 (7.8)	1	Reference				
ICU admission, n (%)	25 (35.2)	43 (37.4)	0.91	0.49-1.69	0.76			
Duration of symptoms $> 7$ days, n (%)	33 (46.5)	57 (49.6)	0.88	0.49-1.60	0.68			
Duration of hospital stay, d, mean $\pm$ SD	16.4 $\pm$ 10.3	15.4 $\pm$ 13.5	1.00	0.98-1.03	0.58			
Duration of BSI, days, mean (SD)*	4.4 $\pm$ 2.5	4.0 $\pm$ 2.5	1.07	0.95-1.20	0.29			
High-grade bacteremia, n (%)	56 (78.9)	106 (92.2)	0.32	0.13-0.77	<b>0.01</b>	3.32	1.32-8.37	<b>0.01</b>
PREDICT score day 1, mean $\pm$ SD	1.6 $\pm$ 0.9	1.9 $\pm$ 1.1	0.78	0.58-1.05	0.10			
PREDICT score day 5, mean $\pm$ SD	2.8 $\pm$ 1.2	3.0 $\pm$ 1.5	0.88	0.71-1.09	0.24			
Complicated bacteremia, n (%)								
Infective endocarditis	20 (28.2)	25 (21.7)	1.41	0.71-2.79	0.32			
Osteomyelitis	18 (25.4)	22 (19.1)	1.44	0.71-2.92	0.32			
Total antibiotic duration, mean $\pm$ SD	42.0 $\pm$ 25.2	39.8 $\pm$ 32.1	1.00	0.99-1.01	0.63			

BMI, body mass index; CCI, Charlson's comorbidity index; SD, standard deviation; OR, Odds ratio; CI, confidence interval; MI, myocardial infarction; DM, diabetes mellitus; MRSA, methicillin-resistant *Staphylococcus aureus*; BSI, bloodstream infection  
 \*one patient is missing

- ✓ Patients with TTP ratio of  $> 1.5$  had higher rates of cardiac prosthetic device (30 [26.1%] vs. 9 [12.7%],  $p = .03$ ) and high-grade bacteremia (106 [92.2%] vs. 56 [78.9%],  $p = .01$ ).
- ✓ In univariate analysis, history of myocardial infarction, cardiac prosthetic device, and findings of high-grade bacteremia and native valve vegetation in echocardiogram were significant predictors for a TTP ratio of  $\leq 1.5$ .
- ✓ In multivariate analysis, native valve vegetation (OR 2.4; 95% CI 1.2-4.84), and high-grade bacteremia (OR, 0.3; 95% CI, 0.13 - 0.77) were independent predictors.

## RESULTS-3



**Figure 2.** Kaplan-Meier (KM) curves and log rank test results based on time to positivity (TTP) of initial blood cultures and TTP ratio of sequential to initial blood cultures.

## CONCLUSION

1. In patients with SAB, a second TTP to first TTP ratio of  $> 1.5$  was associated with higher rates of presence of cardiac prosthetic device and high-grade bacteremia.
2. Initial TTP  $< 12$  hours was associated with lower survival; however sequential TTP ratio did not predict mortality.