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- Common physiologic parameters that are used to identify infections, such as temperature, are controlled by ECMO circuit
- There are four commonly used sepsis prediction scores including systemic inflammatory response syndrome (SIRS), logistic organ dysfunction system score (LODS), sequential organ failure assessment (SOFA), and American Burn Association sepsis score (ABA)
- It is unknown how well these scores predict blood stream infections in patients undergoing ECMO

Methods

- Retrospective review of patients on ECMO between January 2012 and December 2020 at Brooke Army Medical Center
- Sepsis scores were calculated and compared between patients with blood stream infections with those without blood stream infections
- Definitions: Data points derived from same set of patients at different times of care when they were considered infectious vs non-infectious

Infection	Positive blood stream infection while on ECMO
Non-infection	First negative culture at least 72 hours after cannulation or 72 hours since last positive blood culture

Table 1

SOFA (24)	Platelets, GCS, mean arterial pressure, PaO2/FiO2, Tbili, Creatinine
LODS (17)	Platelets, GCS, PaO2/FiO2, Tbili, Creatinine, white blood cell, heart rate, blood urea nitrogen, prothrombin time, Systolic blood pressure, urine output
ABA (6)	Platelets, glucose, enteric feeds, insulin, temperature, heart rate, respiratory rate
SIRS (4)	White blood cells, bands, temperature, heart rate, respiratory rate, partial pressure of carbon dioxide

Physiologic parameters for individual sepsis criteria, with greater score associated worse outcomes and max points noted in parenthesis

Age, median (interquartile range)	39(29-47)
Female, n(%)	8 (26%)
Male, n (%)	23(74%)
Length of stay, days, median (IQR)	13(10-20)
Mortality, n (%)	10(32%)
Days on ECMO Until Infection, median (IQR)	11(4-26)
Hospital Days Until Infection, median (IQR)	23(9-39)
ECMO setting	
VV	30(97%)
Admission Diagnosis	
COVID	8(26%)
Burn	8(26%)
Medicine	8(26%)
Other Pulmonary Disease	5(16%)
Trauma	2(6%)

Demographic information for 31 patients with blood stream infections (same patients at different time of care used as non-infectious group)

Table 3

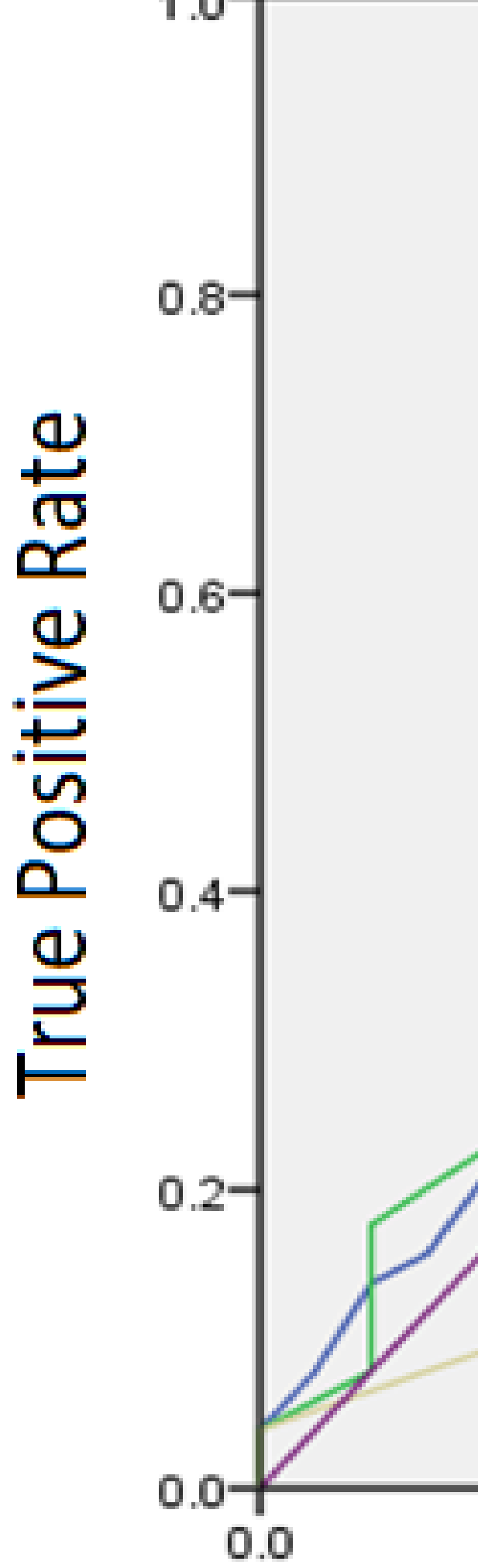
	Infection	Non-Infection	P-value
SOFA	7(5-9)	6(5-8)	0.217
LODS	12(10-12)	11(10-13)	0.572
ABA	2(1-3)	2(1-3)	0.458
SIRS	3(2-3)	3(2-3)	0.189

Sepsis scores are similar for patients with blood stream infections as compared to patients with no blood stream infections

Table 4

Candidemia	9 (17.6%)
Gram Positive Bacteremia	29 (56.7%)
Gram Negative Bacteremia	13 (25.6%)

Organisms isolated in patients with blood stream infections



ROC curve

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