Background. *Gemella* is a genus of gram-positive bacteria that thrives best at a high partial pressure of CO2 and is an unusual cause of infective endocarditis (IE).

Methods. We identified cases of *Gemella* IE in patients aged >18 years old, hospitalized at Cleveland Clinic between July 1, 2007 and January 1, 2017, by screening the Cleveland Clinic IE Registry. *Gemella* IE was defined as meeting modified Duke Criteria and having *Gemella* identified as the pathogen (by culture and/or 16S RNA sequencing from explanted valve tissue). Clinical features were obtained by manual chart review.

Results. A total of 13 cases of *Gemella* IE (G. *haemolysans* [6], G. *morbillorum* [3], G. *sanguinis* [2], and 2 undifferentiated species) were identified within the study period and accounted for <1% of all cases of IE. 9 were native valve IE and 4 were prosthetic valve endocarditis. Age varied from 20 to 86 years and 77% were male. The most common predisposing factors were pre-existing valvular disease (54%) and congenital heart disease (46%). 3 cases had dental manipulation within the prior 3 months, 3 had bioprosthetic valves, 2 had mechanical heart valves, and 2 were actively using intravenous recreational drugs. All cases were left-sided: 38% involved the aortic valve, 23% the mitral valve and 38% involved both. 69% had positive blood cultures, 38% had positive blood cultures and positive valve PCR, and 31% were identified based on positive valve PCR results only. Not one patient had positive valve cultures. 85% had significant valvular regurgitation and locally invasive disease occurred in 4 patients. Central nervous system emboli occurred in 3 cases and metastatic infection, in the form of lumbar diskitis, in one. All patients were treated surgically and the most commonly used anti-microbials were parenteral ceftriaxone and vancomycin, administered for a median duration of 42 days. All cases survived to hospital discharge and none relapsed over a median follow-up of 2.2 years.

Conclusion. *Gemella* species account for less than 1% of cases of IE, with G. *haemolysans* being the most common species. In a third of cases valve PCR provided the only means of diagnosis. It is effectively treated with surgery and antibiotics.

Disclosures. **All authors:** No reported disclosures.

156. Clinical Characteristics and Acute-phase Cytokine Response of Solid-Organ Transplant Recipients with Bloodstream Infections Differs According to Bacterial Type and Transplant Status

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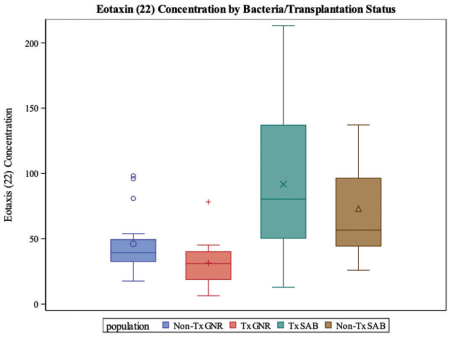
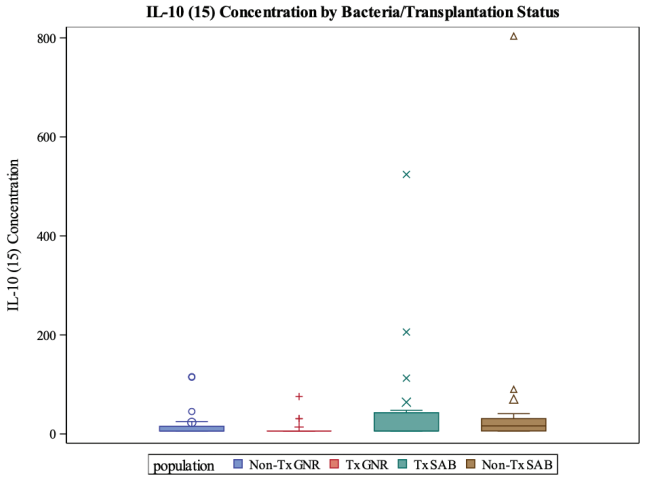
Background. Clinical outcomes and host immune response in solid-organ transplant recipients (Tx) with Staphylococcus aureus bacteremia (SAB) and Gram-negative bacteremia (GNB) are poorly understood. The aims of this study were to describe (1) clinical characteristics and outcomes and (2) acute-phase cytokine response in Tx recipients with SAB and GNB as compared with matched non-transplant subjects (Non-Tx).

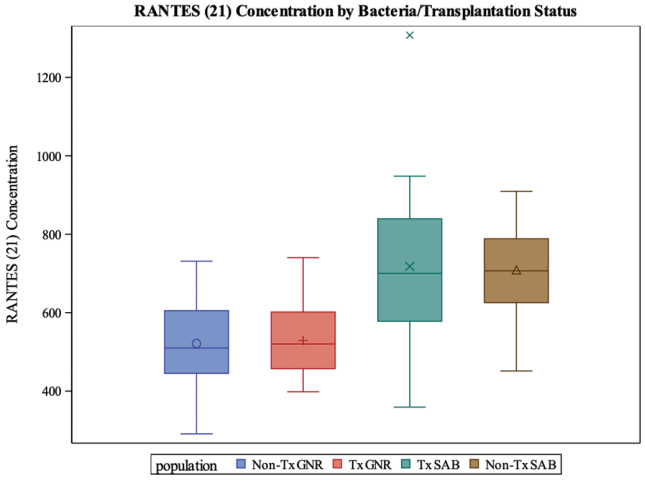
Methods. Thirty-two Tx recipients who were prospectively enrolled in the Blood Stream Infection Biorepository (BSIB) were matched 1:1 with Non-Tx patients on age, race, gender and bacteria using a perfect matching algorithm (Tx-SAB $n = 16$, Non-Tx SAB $n = 16$; Tx GNB $n = 16$, Non-Tx GNB $n = 16$). GNB included Escherichia coli ($n = 16$) and Klebsiella pneumoniae ($n = 16$). Multiplex cytokine testing was performed (Luminex) to evaluate acute-phase serum cytokines levels. Baseline characteristics were summarized using mean with standard deviation (SD), median with interquartile range (IQR), and ranges (min and max), or frequency with %. Differences between the Tx and Non-Tx SAB and GNB were compared using either the equal or unequal variance version of the Student's t-test or Wilcoxon rank-sum test for continuous variables. Fisher's exact test was used for categorical variables.

Results. An endovascular source was more common in Tx SAB vs. Non-Tx SAB (75.0% vs. 0.0%; $P = 0.0003$) and Tx-GNB (42.9% vs. 18.8%; $P = 0.006$). Fewer SAB cases were attributed to a skin/soft tissue/osteoarticular in Tx vs. Non-Tx (8.3% vs. 91.7%; $P = 0.0001$). APACHE II scores were higher in Tx SAB vs. Non-Tx SAB (14.0 [IQR: 11.0, 17.5] vs. 10.0 [IQR: 7.0, 12.5] $P = 0.02$), but not between Tx GNB vs. Non-Tx GNB (14 [IQR: 12.0, 15.5] vs. 13.5 [12.0, 15.0] $P = 0.54$). No significant difference length of stay, recurrent bacteremia or mortality were noted among or between groups. Patients with SAB had significantly higher levels of IL-10, CCL5, eotaxin vs. GNB in both Tx and Non-Tx. Conversely, IL-5, IL-13 and IL-17 levels were significantly lower in SAB compared with GNB in both Tx and Non-Tx. Within Tx alone, IL-8 and IL-15 were significantly higher in SAB as compared with GNB.

Conclusion. Significant differences exist in etiology and host immune response in Tx and Non-Tx with SAB and GNB. Further research is needed to understand the host immune response to BSI in these patients.







Disclosures. **All authors:** No reported disclosures.

157. Hospital-Onset Staphylococcus aureus Bacteremia Is Associated with More Than Twice the Mortality Compared with Community-Onset: Evaluation of 58 Hospitals

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Background. *Staphylococcus aureus* is a common pathogen that is implicated with both community and healthcare-associated infections. *S. aureus* infections lead to sepsis and bacteremia, and are associated with considerable morbidity and mortality despite available antimicrobial therapy.

Methods. Utilizing a clinical decision support system, patients with the presence of at least 1 positive blood culture for *S. aureus* were identified from April 2018 to March 2019, in 58 hospitals from a single health system. Patients were then matched in the outcomes measures database to obtain the following outcome measures: mortality, complications rate, length-of-stay (LOS), and cost. The S. aureus bacteremia (SAB) outcome measures were compared between community-onset (CO), and hospital-onset (HO).

Results. There were 2,700 SAB cases within the system identified during that time period. Baseline characteristics were similar between patients with CO-SAB and HO-SAB. CO-SAB accounted for 89.4% (2,413/2,700) of the overall cases, while 10.6% (287/2,700) of the cases were HO-SAB. For overall SAB, the observed mortality rate was 11.9% (321/2,700), complications rate was 35%, observed LOS was 11.97 days, and mean observed cost per admission was $29,114. There is a statistically significant higher observed absolute mortality rate (14.8%, 95% CI 9.61, 19.93), complications rate (53.3%), LOS (11.06 days), and cost per admission ($33,285) for HO-SAB, compared with CO-SAB.

Conclusion. HO-SAB is associated with more than twice the mortality, complication rate, LOS, and cost compared with CO-SAB. Structured efforts to reduce the risk for HO SAB and optimizing management of SAB are essential to improve patient outcomes.

Table 1. Baseline Characteristics and Outcomes Data (N=2,700)

Characteristic	Community-Onset SAB	Hospital-Onset SAB	Overall SAB	Rate Difference (HO-CO)
Number of patients	2,413 (89.4%)	287 (10.6%)	2,700	
Age (Mean, SD)	59.8	59.7	59.8	
Male Gender (%)	62%	57.8%	61.6%	
Mortality	10.3% (249)	25.1% (72)	11.9% (321)	14.8% (95% CI 9.6%, 19.9%)
Complications Rate	29.3% (707)	82.6% (237)	35% (944)	53.3% (95% CI 48.5%, 58.0%)
Mean Length-of-Stay	10.81 (95% CI 10.42, 11.19)	21.87 (95% CI 19.46, 24.57)	11.97	
Cost (per admission)	$25,564 (95% CI $24,391, 26,737)	$58,849 (95% CI $51,406, $66,292)	$29,114	

Disclosures. **All authors:** No reported disclosures.

158. Invasive Group B Streptococcal Diseases in Adults: A Retrospective Study in Thailand (2013–2017)

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Background. Group B *Streptococcus* (GBS) has been increasingly associated with invasive diseases in nonpregnant adults. This study aims to describe the epidemiology of invasive GBS (iGBS) diseases in adult patients.

Methods. A retrospective cohort study was conducted at Siriraj Hospital between January 1, 2013 and December 31, 2017. We included adult patients with a positive culture of GBS isolated from sterile sites.

Results. Among 224 patients recruited to the study, 170 patients (75.9%) had bacteremia. The median age of all patients was 63 years (IQR 53–73 years) and 52.7% were female. Approximately 80% of all patients had comorbid diseases. Diabetes mellitus (38.8%), cancer (18.8%) and heart disease (12.5%) were the three most common comorbidities. Skin and soft-tissue infection (30.8%), septic arthritis (21.4%), primary bacteremia (21%), and meningitis (7.1%) were the four most common presenting syndrome of iGBS diseases. Overall mortality within 30 days of infection was 12%. Non-survived patients were older, had chronic kidney disease, bacteremia, pneumonia and had at least one comorbidity than survived patients. However, only pneumonia was found independently associated with the 30-day overall mortality, with adjusted odd ratio (aOR) of 24.96 (95% confidence interval [CI]: 5.95–104.75). Antimicrobial susceptibility testing of 69 isolates demonstrated that 7 (10%) and 9 (13%) were resistant to erythromycin and clindamycin, respectively. All isolates remain susceptible to penicillin.

Conclusion. Invasive GBS is an emerging disease in non-pregnant adults particularly in elderly and diabetes mellitus patients. Two-thirds of iGBS patients have concomittant bacteremia. Even though the overall mortality was 12% but a significant morbidity was observed.

Disclosures. **All authors:** No reported disclosures.

159. Comparing Clinical Cure and Patient Outcomes Between Intravenous Therapy and Intravenous (IV)-to-Oral (PO) Step-down Therapy for Treatment of Gram-Negative Bloodstream Infections

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Background. There is a paucity of evidence surrounding optimal prescribing practices for the treatment of Gram-negative bloodstream infections (GNBSI). This study aimed to assess the appropriateness of IV-to-PO step-down therapy in the treatment of GNBSI.

Methods. A retrospective cohort study was conducted at the University of Cincinnati Medical Center and West Chest Hospital and included subject's ≥18 years of age with GNBSI caused by *Enterobacteriaceae* spp. or *Pseudomonas aeruginosa*. The primary objective was to compare clinical cure rates between IV-only and IV-to-PO therapy, and to further assess differences in clinical cure rates amongst oral antibiotics of high, moderate, and low bioavailability. The study also aimed to identify factors associated with clinical cure, hospital length of stay, and emergence of multi-drug-resistant organisms (MDRO).

Results. Amongst 215 subjects screened, 99 subjects were included and 64 subjects met criteria for clinical cure. In the univariate analysis, the IV-to-PO group had a higher percentage of clinical cure than IV only therapy (82% vs. 48%, $P = 0.001$). Of note, the two study groups were significantly different in regards to intensive care status, Pitt bacteremia score, and primary site of infection. Upon further analysis, data from the multivariate logistic regression revealed that critical illness was the only significant factor that negatively impacted clinical cure (OR = 0.208; 95% CI 0.04–0.99; $P = 0.049$). A total of 49 subjects received oral antibiotics. Majority of patients (82%) in the IV-to-PO group received a moderately bioavailable oral antibiotic. No difference in respect to clinical cure rate was found between the three PO antibiotic bioavailability groups ($P = 0.346$). The median duration of hospital stay was shorter in the IV-to-PO compared with IV alone group (4 days vs. 9.5 days, respectively, $P \leq 0.001$). There was a trend in emergence of MDROs with IV therapy compared with IV-to-PO therapy (10% vs. 2%, $P = 0.204$).

Conclusion. IV-to-PO stepdown therapy compared with IV therapy alone was noninferior in clinical cure rates in the treatment of GNBSI and may result in fewer hospital days and less emergence of multidrug-resistant organisms. These conclusions are limited by significant differences in severity of illness between groups in this study.

Disclosures. **All authors:** No reported disclosures.

160. Could Reducing Time to Bacterial Identification From Positive Blood Cultures Improve Outcomes in Bacteremic Patients?

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Background. Survival of patients with septic shock is dependent on the timing of effective antibiotic administration. The initial notification by the microbiology lab of a positive blood culture is a key factor in improving patient outcomes. It can take >24 hours to definitively identify bacteria from positive blood cultures. Accordingly, we employed rapid organism identification and studied the impact of this on patient management from a quality improvement perspective.

Methods. Rapid organism identification was performed for bacteremic patients admitted to an ICU at St. Michael's Hospital in Toronto, ON, by creating a pellet from positive blood culture bottles using a lysis centrifugation technique. MALDI-TOF was then used to obtain an organism identification. The microbiology lab verbally notified the ward clerk of the identification and surveys were conducted with treating physicians within 24–48 hours to evaluate the downstream impact of the rapid identification including changes to antibiotics, diagnostic testing, central line management and requests for specialty consultations.

Results. Between January 28 and April 28, 2019, 17 rapid blood culture results were included for study. When asked how physicians received the result, in 7 cases the physician did not remember; other responses included microbiology report (2), nurse (2), pharmacist (1), antimicrobial stewardship or lab (1), on-call team (1) and residents (1). Antibiotics were adjusted in 13 patients; 3 of which may have changed antibiotics for reasons other than the organism identification. Reasons for not changing therapy include: appropriate empiric treatment, likely contaminants, or physician not being notified of the result. In 5 cases, all antibiotics were discontinued, in another 2 cases the antibiotics were broadened and a further 5 narrowed to cover the organism; the remaining 5 continued the same empiric therapy. Repeat blood cultures were obtained for 5 cases, follow-up imaging in 5 cases and lines were changed/removed in 5 cases. Consultation was requested for 7 cases.

Conclusion. Based on preliminary data, rapid organism identification shows promise of improved patient management with line removal and antibiotics adjustments occurring 1 day sooner with rapid results.

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161. Evaluating the Predictive Value of Blood Culture Bottle Reporting for Coagulase Negative Staphylococci-Positive Cultures: Assessing Contamination vs. True Bacteremia

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Background. Coagulase-negative staphylococci (CoNS) are common blood culture (BCx) contaminants, but can also be causes of true blood stream infection (BSI). As a result, the clinical interpretation of CoNS positive BCx poses a significant challenge for providers and drives unnecessary antibiotic use, extended lengths of stay, and increased hospital costs. Despite these challenges, little is known about whether the number of positive BCx bottles within a set can be used to predict contamination vs. true BSI.

Methods. This study was conducted in an 865-bed tertiary care academic medical center in Richmond, VA. A retrospective chart review of CoNS-positive BCx from October to December 2018 was performed. Data collection included patient demographics, number of positive bottles within a set (i.e., were 1 or 2 bottles positive), care setting, antibiotic use, clinical judgement of contamination, and additional workup following the positive BCx result. Polymicrobic BCx were excluded.

Results. 50 patients (mean age 58.2 years, 60% male) with CoNS-positive BCx were included in this study. Forty (80%) of the cultures had only 1 of 2 BCx bottles positive within a set. 10 (20%) were positive from both bottles in the set. All patients were drawn in the Emergency Department and 90% were subsequently admitted to the hospital. Upon chart review, 47 (94%) and 3 (6%) of cultures were considered to be contaminants and