severely ill patients. Prospective, randomized controlled trials are needed to establish the role of these agents in serious MSSA BSI.

Figure 1: Forest plot for treatment failure

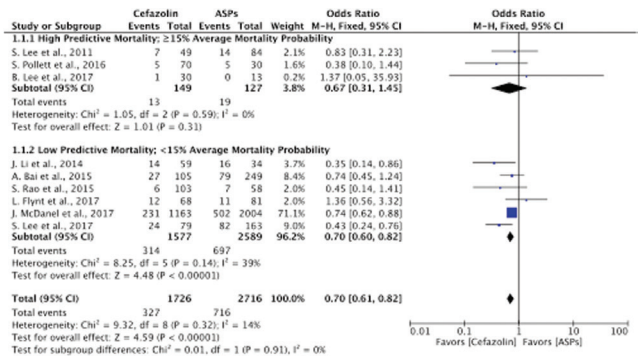
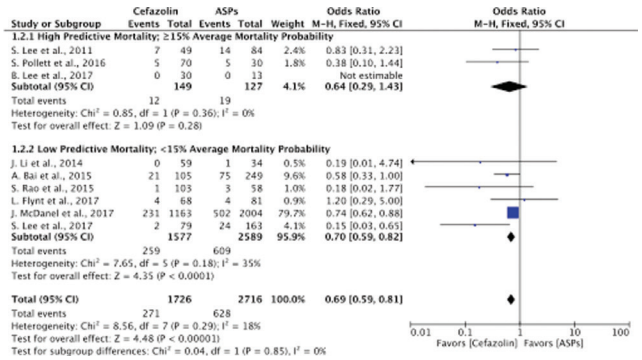


Figure 2: Forest plot for all-cause mortality



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1069. Predictive Factors for Metastatic Infection in Patients With Bacteremia Caused by *Staphylococcus aureus*

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Background. Metastatic infections, such as infective endocarditis and pyogenic spondylitis, are very serious complications of *Staphylococcus aureus* bacteremia (SAB), because failure to identify metastatic infections may cause poor prognosis. The aim of the present study is to determine the predictive factors for metastatic infections of SAB.

Methods. This retrospective cohort study was conducted among patients with bacteremia due to *S. aureus* (including both methicillin-sensitive *S. aureus* and methicillin-resistant *S. aureus*: MSSA and MRSA) in The Jikei University Kashiwa Hospital. The study population comprised 125 adult patients with SAB between January 2014 and December 2017. Patients, that died or transferred within 3 months after the initial positive blood culture, were excluded, because metastatic infection was defined as deep-seated infection detected within 3 months after the initial positive blood culture. We analyzed several factors, including demographics, comorbidities, community acquisition, primary site of infection, persistent fever and laboratory data such as c-reactive protein (CRP) levels after treatment.

Results. Seventy-four patients met inclusion criteria of this study. The most common primary site of bacteremia was catheter-related [24 (32.4%) of 74]. Metastatic infection occurred in 22 (29.7%) of 74 patients, and spondylitis was most common, following psoas abscess. Of these, 11 infections (50% of 22) were community acquired. We did not find any significant differences in demographics and comorbidities, except central venous catheter-associated bloodstream infection, which was associated with low rate of metastatic infection. By multivariate analysis, the predictive factors associated with the development of metastatic infection were community onset of infection (OR 11.6; 95% CI 2.98–45.1; $P < 0.001$), persistent fever over 72 hours (OR 6.7; 95% CI 2.12–21.8; $P = 0.001$), and higher CRP levels (>3 mg/dL) lasting 2 weeks after the administration of appropriate antibiotics (OR 7.47; 95% CI 2.39–23.3; $P < 0.001$).

Conclusion. This study demonstrated that additional diagnostic tests to identify metastatic infection should be performed, especially in the patients with community-acquired SAB, persistent fever or persistently high CRP levels after the administration of appropriate antibiotics.

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

1070. Epidemiological and Clinical Features of Panton–Valenton Leukocidin-Positive *Staphylococcus aureus* Bacteremia: A Case–Control Study

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Background. The presence of the binary Panton-Valentine Leukocidin (PVL) toxin in *Staphylococcus aureus* has been associated with both severe pneumonia and skin and soft-tissue infections. However, there is only limited data on how this virulence factor impacts *S. aureus* bacteremia and whether it might affect the clinical course or complications of bacteremic infections.

Methods. Between September 2016 and March 2018, a convenience sample of *S. aureus* isolates from clinical cultures obtained in inpatient units and the Emergency Departments of UMass Memorial Medical Center underwent comprehensive genomic sequencing. Four hundred sixty-nine (29%) of 1,681 *S. aureus* sequenced isolates were identified as containing the *LukF* and *LukSPV* genes that encode for PVL. Case patients with one or more positive blood cultures for *LukF/LukSPV* + strains were randomly matched with control patients having positive blood cultures for *LukF/LukSPV*– strains for a retrospective chart review.

Results. The 55 case and 56 control patients were comparable in age and gender; case patients were more likely to have a history of injection drug use, while controls more likely to undergo hemodialysis or have had indwelling IV catheters. Case patients more commonly had chest pain and more prolonged fever; but had the same incidence of sepsis and septic shock. Isolates from 42 (76%) of case patients were methicillin resistant as compared with 16 (29%) from control patients. Elevations in serum creatinine and alkaline phosphatase were more common in control patients. Case patients had a higher incidence of pneumonia, with no differences seen in the incidence of endocarditis, osteomyelitis, or septic arthritis. The percentage of patients who were clinically cured or expired were comparable.

Conclusion. These results are consistent with prior observations associating the PVL toxin with community-acquired MRSA strains as well as severe staphylococcal pneumonia. However, it does not appear to otherwise influence the natural history of bacteremic *S. aureus* disease other than in prolonging the duration of fever.

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

1071. Impact of Standard vs. Prolonged Courses of Antibiotics for the Treatment of Uncomplicated *Staphylococcus aureus* Bacteremia (SAB) in Patients With Hematologic Malignancies

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Background. The optimal treatment duration for uncomplicated SAB (U-SAB) is unknown in patients with hematologic malignancies. The goal of this study was to evaluate the impact of antibiotic duration on outcomes in patients with hematologic malignancies and U-SAB.

Methods. This was a multicenter, retrospective cohort study of adult patients with hematologic malignancies and U-SAB treated with standard (2 weeks) or prolonged (>2 weeks) antibiotic therapy. U-SAB was defined as defervescence and culture clearance within 96 hours of index culture and the absence of: endocarditis, implanted prostheses, metastatic sites of infection, and bone/joint involvement. Patients with SAB therapy <10 days and those with inadequate source control were excluded. The primary outcome was a composite global clinical cure: absence of relapse SAB, absence of SAB progression, and survival at 60 days following index SAB.

Results. Of 89 included patients, 51% received a standard antibiotic duration for U-SAB. The median age of the entire cohort was 56 and majority was male (60%). Neutropenia was present at index culture in 53% of patients, and acute leukemia (48%) and lymphoma (26%) were the most common underlying malignancies. Other baseline characteristics were similar between the two groups except more patients in the standard duration group had relapsed/refractory malignancy (51% vs. 25%, $P = 0.016$), central-line source (71% vs. 48%, $P = 0.032$), and antibiotic prophylaxis prior to index SAB (42% vs. 18%, $P = 0.021$). Median duration of treatment in the standard group was 15 days vs. 28 days in the prolonged duration group. No differences in global clinical cure and other clinical outcomes were seen between groups (Figure 1).

On multivariable logistic regression analysis, only relapsed/refractory malignancy was identified as an independent predictor of global clinical failure (odds ratio, OR, 9.43; 95% confidence interval, CI, 1.17–76.9; $P = 0.035$). Duration of treatment was not associated with global clinical cure (OR, 2.92; 95% CI, 0.51–16.7; $P = 0.23$).

Conclusion. No differences in clinical outcomes were seen in patients with active hematologic malignancies who received 2 weeks vs. >2 weeks of antibiotic therapy for the treatment of U-SAB, although confirmation of our findings in a larger study is warranted.

Figure 1: Clinical Outcomes in Patients with Hematologic Malignancies and Uncomplicated SAB Treated with Standard vs Prolonged Antibiotic Duration

	Standard course (n=45)	Prolonged course (n=44)	p-value
Global clinical cure	37 (82%)	42 (96%)	0.09
Relapse SAB	3 (7%)	2 (5%)	> 0.99
Hospital length of stay†	19 (7, 32)	25 (10, 38)	0.25
Unplanned hospital readmission	11 (24%)	14 (32%)	0.49
Vancomycin-induced nephrotoxicity	6 (29%)	1 (7%)	0.20

†Median (inter-quartile range); otherwise reported as number (%)

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1072. Streamlining to Oral β-Lactam vs. Fluoroquinolone as Definitive Therapy for Enterobacteriaceae Bacteremia

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Background. Oral treatment strategies for Enterobacteriaceae bacteremia (EB) are controversial, with both β-lactams (BL) and fluoroquinolones (FQ) used in clinical practice. FQ may be preferred for their high bioavailability, but other oral antibiotics are needed due to concerns of resistance and adverse effects. As an effort to facilitate antibiotic stewardship, BL should be explored as an additional oral option for EB treatment.

Methods. This retrospective study compared clinical characteristics and outcomes in patients with EB treated with BL vs. FQ as definitive oral therapy between January 2013 and July 2017. Adult patients diagnosed with their first incidence of EB and transitioned from IV antibiotics to either study antibiotic class were included. Primary and secondary outcomes assessed recurrence, collateral damage, readmission, and all-cause mortality.

Results. A total of 173 patients were included (BL $n = 59$, FQ $n = 114$). Median age was 70 years, Pitt bacteremia score was 2 (range 0–7), and Charlson Comorbidity Index was 5 (0–12); all were comparable between groups. Urinary source of infection was most common (57%). The majority of oral BL courses used cefpodoxime (63%). More patients in FQ vs. BL had a prior transplant (9% vs. 0%, $P = 0.05$), presence of abscess (11% vs. 0%, $P = 0.01$), and Infectious Diseases consultation (63% vs. 34%, $P = 0.0001$). Onset of EB in an intensive care unit was more common in BL vs. FQ (24% vs. 10%, $P = 0.01$). Median duration of IV and oral therapy was 5 vs. 4 days, $P = 0.22$ and 11 vs. 12 days, $P = 0.17$ in BL and FQ, respectively. Recurrence within 90 days was 7% in BL and 4% in FQ, $P = 0.49$ (adjusted OR 1.44, 95% CI 0.31–6.66; $P = 0.64$). Multivariate analysis identified liver cirrhosis (OR 16.89, 95% CI 1.06–268.32; $P = 0.05$) as an independent predictor of recurrence within 90 days. All secondary outcomes were similar between BL vs. FQ: superinfection within 90 days (10% vs. 9%, $P = 0.76$), *C. difficile* infection within 90 days (3% vs. 1%, $P = 0.27$), 30-day readmission (15% vs. 20%, $P = 0.43$), all-cause 30-day mortality (0% vs. 3%, $P = 0.55$).

Conclusion. In our cohort of patients with EB, clinical outcomes were similar between those treated with oral BL compared with FQ. Oral BL may be considered for definitive treatment of EB, although further investigation in larger studies is needed.

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1073. Predictors of Vancomycin Switch or Escalation in Patients With Methicillin-Resistant *Staphylococcus aureus* Bloodstream Infection

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Background. Vancomycin (VAN) is the primary agent for the treatment methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections (BSI). VAN is frequently combined with or switched to a second anti-MRSA agent for the treatment of serious BSI because VAN monotherapy has been linked to treatment failures. We aimed to determine the potential risk factors for patients with MRSA BSI who switched or had therapy escalated.

Methods. This was a multicenter, retrospective cohort study of adults (≥18 years) initially treated with VAN (>24 hours) for MRSA BSI between 2006 and 2018. Patients with a respiratory source were excluded. Baseline clinical and infection characteristics were compared between patients who received VAN as the sole anti-MRSA agent and continued on VAN until discharge and patients who switched or had a second anti-MRSA agent added during their admission (switch/escalate group). Multivariable logistic regression was performed to identify independent predictors of therapy switch or escalation.

Results. A total of 195 patients were included (66 VAN and 129 switch/escalate). The mean (SD) age of the study population was 56 (15.5) years, 68.2% were male, and 81.0% were African-American. Most (80%) of patient had community-onset BSI. The median (IQR) Charlson Comorbidity index and Acute Physiology and Chronic Health Evaluation (APACHE) II scores were 3 (1–5) and 14 (8–20), respectively. The major sources of BSI were skin/soft tissue (24.6%), infective endocarditis (24.1%), and bone/joint (23.1%). Median (IQR) time to switch/escalation was 67 (44–97) hours. In multivariable logistic regression analysis, infective endocarditis (aOR 6.2, 95% CI 2.2–16), hospitalization in the past 90 days (aOR 2.0, 95% CI 1.0–4.0), and APACHE II (aOR 1.07, 95% CI 1.01–1.12) were independently associated with switch/escalation.

Conclusion. We have identified a number of baseline clinical and infection characteristics that should be taken into account for clinicians to predict the likelihood of switch or escalation in vancomycin treated patients with MRSA BSI. Further studies evaluating the impact of up front alternative therapies in these higher risk patients are needed.

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1074. Management and Outcomes of Infective Endocarditis Due to Nutritionally Variant Streptococci

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Background. Nutritionally variant streptococci (NVS) are an infrequent cause of infective endocarditis (IE) and management recommendations are based on weak levels of evidence largely derived from case reports, small case series, and animal models of experimental endocarditis. Moreover, taxonomic changes have led to some confusion in designation of these organisms.

Methods. We retrospectively collected and analyzed data from 33 patients with NVS IE from 1970 to 2017. Only patients who met modified Duke Criteria for IE were included.

Results. Mean patient age was 55 years and 61% were males. The most common comorbidities included diabetes mellitus (12%), malignancy (3%), heart failure (16%), coronary artery disease (25%), and chronic liver disease (9%). Predisposing valve abnormalities included rheumatic heart disease (11%), bicuspid aortic valve (22%), transplant valvulopathy (3%), mitral valve prolapse (3%), and congenital heart disease (11%). Cultures were reported as NVS (70%), *Granulicatella* species (18%) and *Abiotrophia* species (12%). Echocardiogram findings included vegetations (67%), new regurgitation (55%), perivalvular abscess (3%), mitral valve prolapse (3%), and ruptured mitral valve chordae (3%). Both prosthetic (26%) and native valve IE (74%) was seen, and the valves involved were aortic (37%), mitral (50%) and both aortic and mitral (13%). Complications were seen in 27% of patients, including heart failure (17%), splenic infarct (11%), stroke (8%), mycotic aneurysm (3%), and glomerulonephritis (2%). In vitro susceptibility to penicillin, ceftriaxone, and vancomycin was 88%, 80%, and 100%, respectively. The majority (77%) of patients were treated with a combination of β-lactam and aminoglycoside. Median duration of treatment was 33 days.