Table 2. Primary Source and Outcome of Patients with Methicillin-Susceptible Staphylococcus aureus Infections Complicated by Bacteremia Who Received Nafcillin or Cefazolin (N = 82)

	Nafcillin (n=70)	Cefazolin (n=12)	*P* value
Primary source			
Skin and Soft Tissue Infection	15	4	
Osteomyelitis	18	3	
Endocarditis	14	1	
Urinary Tract Infection	1	0	
Pneumonia	1	0	
Meningitis/Epidural abscess	5	1	
Unknown	16	3	
Outcome			
Duration of bacteremia in day, mean +/- SD	4.2 +/- 2.9	2.9 +/- 1.8	0.151
Blood culture clear within 72 hours	33 (47%)	7 (58%)	0.542
Bacteremia persistent ≥ 7 days	15 (21%)	1 (8%)	0.444
Admit to ICU	27 (39%)	3 (25%)	0.520
Clostridium difficile Infection	3 (4%)	1 (8%)	0.475
30 days mortality	15 (21%)	2 (17%)	1
Recurrence within 30 days	1 (1%)	0 (0%)	1

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206. Variations in the frequency and impact of polymicrobial cultures in adults with invasive Group B Streptococcal (GBS) infection at the US Veterans Health Administration

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Background. GBS, a colonizer of human skin, genitourinary and gastrointestinal tracts, is responsible for increasing rates of invasive infection among non-pregnant adults in the United States. GBS is often isolated with other bacteria; however, the clinical significance of polymicrobial cultures in patients with invasive GBS infection is unknown. Our aim was to characterize polymicrobial cultures in patients with invasive GBS infection and explore their impact on mortality at 30 days.

Methods. Within the VHA Corporate Data Warehouse, we identified veterans active in VHA between 2008–2017 with invasive GBS infection according to CDC's surveillance definitions. Reports of cultures from blood, bone and sterile fluid with GBS were assessed for the presence of other bacteria.We used International Classification of Disease (ICD) codes to define the type of invasive GBS infection. We compared 30-day all-cause mortality between patients with cultures that identified only GBS (monomicrobial cases) and patients with cultures that identified GBS and other bacteria (polymicrobial cases).

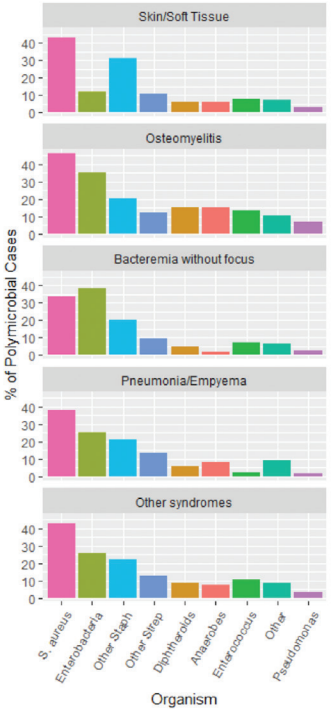
Results. Of 4780 incident cases of invasive GBS infection identified between 2008–2017, 1204 (25%) were polymicrobial. The proportion of polymicrobial cases varied by type of invasive GBS infection, ranging from 58% in osteomyelitis to 10–15%in meningitis, endocarditis, skin and soft-tissue infections, and septic arthritis (table). *Staphylococcus aureus*was found in 516 (43%) of polymicrobial cases;there were variations in the bacteria isolated by type of infection (figure). Overall, there was no difference in 30-day mortality between polymicrobial and monomicrobial cases of invasive GBS infection (both 8%). However, when compared with monomicrobial cases, 30-day mortality was doubled in polymicrobial cases of pneumonia and bacteremia (15% vs. 31% and 11% vs. 22%, respectively).

Conclusion. The frequency, composition and mortality of polymicrobial cases vary according to the type of invasive GBS infection. Polymicrobial infection could be an important determinant of outcome in certain invasive GBS infections. The effect of polymicrobial infection involving GBS, relative to age, severity of illness and underlying comorbidities, needs further exploration.

Table: Prevalence and associated mortality of monomicrobial and polymicrobial incident cases of invasive GBS infections at US VHA, 2008-2017

Type of invasive GBS infection	Incident Cases			30-day all-cause mortality	
	Total	Monomicrobial	Polymicrobial	Monomicrobial	Polymicrobial
All infections	4780	3576 (75%)	1204 (25%)	8%	8%
Osteomyelitis	1078	454 (42%)	624 (58%)	2%	1%
Bacteremia	972	805 (83%)	167 (17%)	11%	22%
Skin/Soft Tissue Infection	853	751 (88%)	102 (12%)	3%	7%
Pneumonia	664	546 (82%)	118 (18%)	15%	31%
Joint Infection	501	433 (86%)	68 (14%)	4%	1%
Endocarditis	393	343 (87%)	50 (13%)	5%	12%
Peritonitis	138	112 (81%)	26 (19%)	29%	19%
Necrotizing Fasciitis	103	62 (60%)	41 (40%)	6%	2%
Meningitis	78	70 (90%)	8 (10%)	13%	13%

Figure: Bacteria isolated in polymicrobial cases of different types of invasive GBS infection



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207. High Severity and Mortality Due to Methicillin-Susceptible Staphylococcus aureus Infections in a Colombian Hospital

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Background. Methicillin-susceptible *Staphylococcus aureus* (MSSA) infections are considered less severe than those caused by methicillin-resistant *S. aureus.* However, we have observed an important increase in severe cases of invasive MSSA infections in a hospital in Pereira, Colombia. Here, we characterize the clinical outcomes and epidemiology of these infections.

Methods. We included adult and pediatric patients hospitalized between February 2018 and April 2019 presenting with invasive infections caused by MSSA. All isolates were sent to a central laboratory to confirm identification. We determined cefazolin MICs at standard (10^5 CFU/mL) and high inoculum (10^7 CFU/mL) by broth microdilution and a rapid test to detect cefazolin inoculum effect (CIE). The CIE was defined as an increase of MIC to ≥16 µg/mL when tested at high inoculum. Clinical data (demographics, intensive care unit (ICU) admission, therapy and mortality) were obtained from medical records.

Results. A total of 60 patients were included in the study and 41.6% were women. Most (63.3%) infections were hospital-associated. Bacteremia was the most frequent type of infection (71.6%). The mean duration of hospital stay was 24.5 days (IQR, 14–44). 61.6% of patients were admitted to the ICU with a mean length of stay of 14 days (IQR, 7–30). Mortality at 30 days was 28.3% (17 out of 60 patients) and was slightly higher (30.2%) in patients with bacteremia. Early mortality (48 h) was 10% (n = 6). Most patients (75%) received β-lactams (28.8% cefazolin and 84% oxacillin). 18 patients (33%) had isolates that exhibited the CIE but most (n = 11) received oxacillin. Among 17 patients who died, 35% had received antibiotics other than β-lactams

(5 vancomycin, 1 ampicillin-sulbactam) and two did not received any therapy due to rapid death. The mean duration of antibiotic therapy was 11 days. Source control was deemed appropriate in 65% of the cases.

Conclusion. An increase in severe invasive infections caused by MSSA was observed in our hospital with a high proportion of patients requiring ICU care. A significant proportion of patients received inappropriate treatment. Due to the aggressive nature of invasive MSSA infections, efforts to optimize appropriate therapy for these infections are urgently needed in Colombia.

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208. Early Infectious Disease Consultation is Associated with Lower Mortality in Patients with Severe Sepsis or Septic Shock who Complete the 3-hour Sepsis Bundle

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Background. Severe sepsis and septic shock bundles have been shown to reduce mortality. Infectious Diseases (ID) consultation, particularly early in a hospital course, is associated with improved patient outcomes. Antibiotic Stewardship Program (ASP) decision support in the ED has also shown clinical benefit. We aim to examine the addition of early ID consultation to existing ASP decision support in the Emergency Department (ED) in patients with sepsis with organ dysfunction and/or shock (SODS) who completed the 3-hour bundle.

Methods. This is a retrospective study of 248 adult patients with clinical SODS who met inclusion criteria per Center for Medicare and Medicaid Services SEP-1 core measure in the ED and completed the recommended 3-hour sepsis bundle using ASP decision support tools. Patients who received ID consultation in the first 12 hours after ED triage ($n = 111$) were compared with patients who received standard care ($n = 137$). Pearson's chi-square test was used to compare groups for all-cause 30-day readmissions and in-hospital mortality. Logistic regression was used to adjust for covariates (age, race/ethnicity, Charlson score, lactate level ≥4, hypotension, recent hospital admission, recent IV antibiotics, history of MDR organisms, intra-abdominal source of infection). Time from ED triage to death and time to hospital discharge alive were analyzed using Fine and Gray models for competing risks.

Results. In-hospital mortality was lower among patients who received early ID consultation (24.3% vs. 38.0%, P = 0.0220). This association persisted after adjustment for covariates (odds ratio 0.49, 95% CI 0.26–0.91, P = 0.0236). There was no significant difference in 30-day readmissions between groups (22.6% vs. 23.5%, $P = 0.8883$). Early ID consultation was predictive of time to death (adjusted hazard ratio 0.58, 95% CI 0.35–0.98, P = 0.0406) and time to hospital discharge alive (adjusted hazard ratio 1.51, 95% CI 1.07–2.12, P-value 0.0174) after adjustment.

Conclusion. Early ID consultation was associated with lower mortality and time to hospital discharge among patients receiving the 3-hour severe sepsis/septic shock bundle. Further investigation is needed to explore specific interventions by ID consultants that might reduce the risk of mortality in this population.

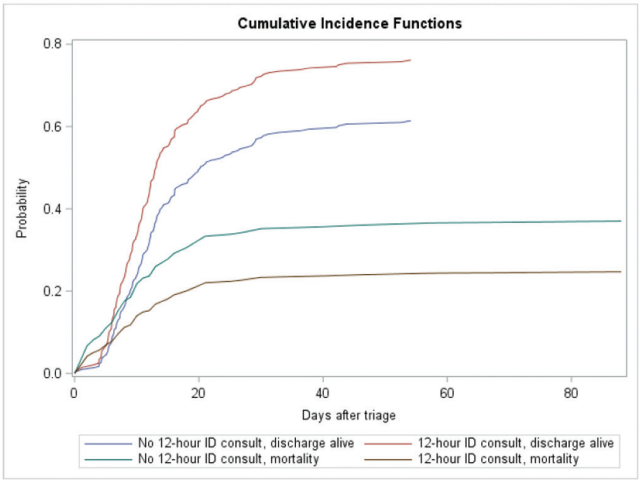
Table 1: Baseline Demographic and Clinical Characteristics in Early ID Consult and Standard Care Groups

	Total (N=248)	Early ID Consult (N=111)	Standard Care (N=137)	p-value[a]
Age, mean (SD)	71.4 (14.7)	69.9 (15.3)	72.6 (14.1)	0.1470
Gender, n (%)				0.9409
Female	128 (51.6)	57 (51.4)	71 (51.8)	
Male	120 (48.4)	54 (48.6)	66 (48.2)	
Race/ethnicity, n (%)				0.0798
Hispanic	85 (34.3)	45 (40.5)	40 (29.2)	
Non-Hispanic Black	70 (28.2)	34 (30.6)	36 (26.3)	
Non-Hispanic White	63 (25.4)	22 (19.8)	41 (29.9)	
Other/Unknown	30 (12.1)	10 (9.0)	20 (14.6)	
Charlson comorbidity score, mean (SD)	4.6 (3.1)	4.8 (3.1)	4.4 (3.1)	0.2225
Individual comorbidity n (%)				
Myocardial infarction, n (%)	33 (13.3)	18 (16.2)	15 (10.9)	0.2246
Congestive heart failure, n (%)	91 (36.7)	45 (40.5)	46 (33.6)	0.2579
Peripheral vascular disease, n (%)	36 (14.5)	17 (15.3)	19 (13.9)	0.7478
Cerebrovascular disease, n (%)	42 (16.9)	20 (18.0)	22 (16.1)	0.6824
Dementia, n (%)	82 (33.1)	32 (28.8)	50 (36.5)	0.2019
Chronic pulmonary disease, n (%)	102 (41.1)	45 (40.5)	57 (41.6)	0.8654
Rheumatic disease, n (%)	7 (2.8)	4 (3.6)	3 (2.2)	0.7036
Peptic ulcer disease, n (%)	10 (4.0)	3 (2.7)	7 (5.1)	0.5188
Mild liver disease, n (%)	25 (10.1)	14 (12.6)	11 (8.0)	0.2332
Diabetes without chronic complications	39 (15.7)	20 (18.0)	19 (13.9)	0.3721
Diabetes with chronic complications	82 (33.1)	39 (35.1)	43 (31.4)	0.5327
Hemiplegia or paraplegia	10 (4.0)	8 (7.2)	2 (1.5)	0.0460
Renal disease	108 (43.5)	50 (45.0)	58 (42.3)	0.6687
Any malignancy	43 (17.3)	18 (16.2)	25 (18.2)	0.6743
Moderate or severe liver disease	6 (2.4)	3 (2.7)	3 (2.2)	1.0000
Metastatic solid tumor	26 (10.5)	12 (10.8)	14 (10.2)	0.8798
AIDS/HIV	4 (1.6)	3 (2.7)	1 (0.7)	0.3278
Hypotension, n (%)	73 (29.4)	30 (27.0)	43 (31.4)	0.4538
Lactate >4, n (%)	75 (30.2)	28 (25.2)	47 (34.3)	0.1216
ICU within 72 hours, n (%)	79 (31.9)	34 (30.6)	45 (32.8)	0.7096
Sepsis orderset utilized, n (%)	62 (25.0)	32 (28.8)	30 (21.9)	0.2101
Recent hospital admission, n (%)	116 (46.8)	64 (57.7)	52 (38.0)	0.0020
Recent IV antibiotics, n (%)	77 (31.3)	45 (40.9)	32 (23.5)	0.0035
History of MDRO, n (%)	39 (15.9)	30 (27.3)	9 (6.6)	<.0001
Suspected source of infection, n (%)				
Pneumonia (CAP/HCAP)	145 (58.5)	60 (54.1)	85 (62.0)	0.2042
Meningitis/Encephalitis	3 (1.2)	1 (0.9)	2 (1.5)	1.0000
Bloodstream infection	5 (2.0)	2 (1.8)	3 (2.2)	1.0000
Skin/soft tissue infection	22 (8.9)	12 (10.8)	10 (7.3)	0.3335
Urinary tract infection	56 (22.6)	27 (24.3)	29 (21.2)	0.5544
Intra-abdominal	32 (12.9)	18 (16.2)	14 (10.2)	0.1613
Unknown	21 (8.5)	9 (8.1)	12 (8.8)	0.8547
Optimal antibiotics, n (%)	202 (81.5)	91 (82.0)	111 (81.0)	0.8466
Positive blood culture, n (%)	91 (36.7)	43 (38.7)	48 (35.0)	0.5475
Any positive non-blood culture, n (%)	120 (48.4)	55 (49.5)	65 (47.4)	0.7416

Infectious Diseases, ID; standard deviation, SD; intensive care unit, ICU; intravenous, IV; multidrug resistant organism, MDRO; Community acquired pneumonia, CAP; Healthcare associated pneumonia, HCAP
[a]t-test, Chi-squared test, or Fisher's exact test

Figure 1. Unadjusted cumulative incidence curves for in-hospital mortality and discharge alive

Legend: Early infectious diseases (ID) consult was statistically significantly associated with a lower risk of in-hospital death (subdistribution hazard ratio (sHR) 0.61, 95% confidence interval 0.39-0.98, p-value = 0.04) and a higher likelihood of hospital discharge alive (sHR 1.50, 95% confidence interval 1.11-2.03, p-value = 0.008).



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209. What's So Complicated About Complicated Staphylococcus aureus Bacteremia: Does Day 5 Matter?

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Background. Prolonged *Staphylococcus aureus* bacteremia (SAB) poses challenges in clinical practice, particularly when a source is not readily identified. While SAB greater than 3 days has been identified as a risk factor for complications, little is known about risk for specific complications with each successive day of bacteremia. We sought to determine the risk for specific complications with the duration of bacteremia.

Methods. We retrospectively reviewed all cases of SAB between 1 January 2017 and 31 December 2017 at a 500-bed academic hospital. Adult patients (≥18 years) with at least one blood culture positive for *S. aureus* were identified. Patients were excluded