respectively. Vancomycin-minimum inhibitory concentration (VRE) rates in the US, W-EU, E-U, and E-EU were 3.2%, 0.9%, and 2.7% among S. aureus, Enterococcus, and MRSA, respectively.

Table 1

| Rank | Frequency of organisms isolated from bloodstream infections |
|------|---------------------------------------------------------|
| 1    | S. aureus (23.5%)                                      |
| 2    | E. coli (30.4%)                                        |
| 3    | K. pneumoniae (9.1%)                                   |
| 4    | E. aerogenes (8.5%)                                    |
| 5    | P. aeruginosa (6.5%)                                   |
| 6    | S. maltophilia (5.4%)                                  |
| 7    | F. varium (4.0%)                                       |
| 8    | E. cloacae (3.1%)                                      |
| 9    | E. fae (2.9%)                                          |
| 10   | VGS (2.6%)                                             |
| 11   | Merck & Co, Inc. (Research Grant Support or Support)   |
| 12   | DepoHealthCare, Inc. (Research Grant or Support)       |
| 13   | GlaxoSmithKline (Research Grant or Support or Support) |
| 14   | Melinta Therapeutics, Inc. (Research Grant or Support) |
| 15   | Allergan, Inc. (Research Grant or Support)             |
| 16   | Pfizer (Research Grant or Support)                     |
| 17   | Cipla Ltd. (Research Grant or Support or Support)      |
| 18   | A. Menarini Industrie Farmaceutiche Riunite S.R.L.     |
| 19   | Merck (Research Grant or Support)                      |
| 20   | Paratek Pharma, LLC (Research Grant or Support)        |
| 21   | Cidara Therapeutics, Inc. (Research Grant or Support) |
| 22   | Cidara Therapeutics, Inc. (Research Grant or Support) |
| 23   | Allergan, Inc. (Research Grant or Support)             |
| 24   | Pfizer (Research Grant or Support)                     |
| 25   | Cipla Ltd. (Research Grant or Support)                 |
| 26   | Merck (Research Grant or Support)                      |

Conclusions.

The frequency of GNB was lower in the US compared to W-EU and E-U. Antimicrobial resistance rates among Gram-positive cocci were higher in the US compared to W-EU and W-EU but lower in E-U.

Disclosures.

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Title: O-8. Bacteremia and Endocarditis

Session: 39. Comparative One-Year Outcomes of Invasive Staphylococcus Aureus infections Among Persons with and Without Drug Use in an Urban West Coast Cohort

Background.

Persons who use drugs (PWUD) face substantial risk from invasive Staphylococcus aureus infections but have important demographic and clinical differences from persons without drug use (non-PWUD). Despite this, limited data exist comparing S. aureus infection outcomes in PWUD vs. non-PWUD; these data are needed to inform interventions to optimize care for this vulnerable population.

Methods.

We identified adults hospitalized from 2013-2018 at two academic hospitals in San Francisco with S. aureus bacteremia or ICD-coded diagnoses of endocarditis, epidural abscess, or vertebral osteomyelitis with compatible S. aureus culture. After structured chart review, we compared the following among PWUD vs. non-PWUD: patient demographics, substance use, discharge options, antimicrobial use, duration of hospitalization, and outcomes.

Results.

Of 963 hospitalizations for invasive S. aureus infections in 946 patients, 372 (39%) occurred in PWUD. Among PWUD (198/372, 53%) and methamphetamine use (185/372, 50%) were common (Table 1). Bacteremia occurred in 82% of hospitalizations. PWUD vs. non-PWUD had higher proportions of MRSA (48% vs. 31%) and invasive infections: 20% vs. 12% with endocarditis, 25% vs. 11% with epidural abscess, and 28% vs. 13% with vertebral osteomyelitis (all p<0.001). PWUD had more self-directed (“AMA”) discharges, and most using opioids did not receive methadone or buprenorphine (Table 2). PWUD completed antibiotic courses less often (70% vs. 87%; p<0.001) and had 2.9-fold higher adjusted odds of incomplete treatment (95% CI:1.7–5.0). One-year mortality was lower in PWUD (18% vs. 30%), but one-year readmission for ongoing/recurrent infection was far higher (28% vs. 14%; HR 1.9 [95% CI:1.3–2.9], Figure 1).

Table 1: Demographic, Clinical, and Substance Use Characteristics

| PWUD n=372 | No PWUD n=591 |
|-------------|---------------|
| Age (years) | 50 (45,57) | 60 (57,71) |
| Race/ethnicity | 59% (218) | 59% (218) |
| White | 50% (224) | 42% (257) |
| Hispanic/Latino | 31% (209) | 34% (213) |
| Asian/Pacific Islander | 23% (127) | 23% (127) |
| Black/African American | 23% (127) | 36% (222) |
| Drug use | 29% (127) | 40% (236) |
| Experiencing homelessness (%) | 17% (63) | 25% (127) |
| Charlson comorbidity score (median, IQR) | 3 (0,5) | 3 (0,5) |
| HIV positive (%) | 18% (60) | 18% (60) |
| Any mental health condition (%) | 19% (134) | 15% (92) |
| Substance use | 56% (213) | 56% (213) |
| Injection drug use rate (Drug use) | 56% (213) | 56% (213) |
| Recent treatment for opioid use disorder (Drug use) | 56% (213) | 56% (213) |
| Drug treatment for opioid use disorder prior to admission | 56% (213) | 56% (213) |
| Drug treatment for opioid use disorder prior to admission | 56% (213) | 56% (213) |

Table 2: Care Delivery, PWUD vs. non-PWUD

| PWUD n=372 | No PWUD n=591 |
|-------------|---------------|
| In hospital treatment of opioid withdrawal or use disorder | 25% (98/394) | N/A |
| New start methadone or buprenorphine | 25% (98/394) | N/A |
| New start methadone | 25% (98/394) | N/A |
| New start buprenorphine | 25% (98/394) | N/A |
| No new start treatment | 67% (79/118) | N/A |
| No new start treatment for opioid use disorder or buprenorphine continuation | 95% (63/66) | N/A |
| PCC placed* | 86% (320/372) | 79% (296/252) |
| Discharge Setting | 0.021 |
| Inpatient treatment or partial hospitalization | 0.021 |
| Residential | 0.021 |
| Outpatient | 0.021 |

*P<0.05.

S. aureus infection outcomes are needed to inform interventions to optimize care for this vulnerable population.
Conclusion. PWUD had higher proportions of *S. aureus* vertebral osteomyelitis, epidural abscess, and endocarditis than non-PWUD, lower odds of treatment completion, and greater risk of infection persistence/recurrence at one year. Among PWUD, opioid and stimulant use were common and undertreated. New patient centered models of care that deliver synchronized *S. aureus* infection and substance use disorder therapy are urgently needed.

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40. The Impact of Medically Assisted Therapy for Opiate Use Disorder in staphylococcus Aureus Bacteremia Patients Within a Large Hospital System - A Retrospective Cohort Study

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Session: O-8. Bacteremia and Endocarditis

Background. Intravenous drug use (IVDU) is a risk factor for development of *S. aureus* bacteremia (SAB) and prevalent in opiate use disorder (OUD). While the standard of care involves treating the underlying OUD with medically assisted therapy (MAT), it is unknown how much impact this has on clinical endpoints.

Methods. We conducted a retrospective cohort study of patients with IVDU with hospitalizations for SAB during a 28-month period from 9/2016 through 12/2018 in 10 urban and rural North Carolina hospitals in a single large health system. We compared outcomes for patients receiving prescription for MAT at discharge versus no MAT at discharge. MAT was defined as receiving methadone, buprenorphine, or naltrexone. Patients who expired inpatient were excluded from analysis. Clinical endpoints were 30- and 90-day mortality and 30-day SAB-related readmissions.

Results. Of the 174 patients, 28% received a prescription for MAT at discharge. The majority of the patients were Caucasian (88%), female (57%), with mean age of 37 years. Factors that significantly increased likelihood of MAT at discharge were female gender (34% vs 20%, p<0.001), having a complicated SAB (33% vs 28%, p=0.01), presence of a spinal/epidural abscess (57% vs 43%, p=0.002), and increased length of stay (LOS) (37 days vs 24 days, p<0.001). No difference in 30- and 90-day mortality was observed; only one patient in each group died within 90 days. Prescription for any MAT at discharge was associated with a significant decrease in the risk of SAB-related 30-day readmission (0% vs 17%, p=0.002).

Table 1: Baseline Characteristics

| Characteristic            | No MAT at Discharge | MAT at Discharge | p Value |
|---------------------------|---------------------|------------------|---------|
| Age                        | 59 (29, 75)         | 55 (29, 73)      | 0.10    |
| Mean Age (years)           | 39 (26, 60)         | 35 (24, 60)      | 0.04    |
| Race                       | 0.13                |                  |         |
| White/Caucasian            | 0.51                |                  |         |
| Race                       | 0.33                |                  |         |
| Other Race                  | 0.20                |                  |         |
| Other Race                  | 0.20                |                  |         |
| Gender                     | 0.33                |                  |         |
| Female Gender              | 0.33                |                  |         |
| Male Gender                | 0.33                |                  |         |
| Drug Use                   | 0.15                |                  |         |
| Any drug use               | 0.32                |                  |         |
| No drug use                | 0.53                |                  |         |

Disclosures. All Authors: No reported disclosures

41. Impact of Gut Microbiome Changes on Hematopoietic Stem Cell Transplantation Outcomes in Children.

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Session: O-9. Basic and Translational Science

Background. In adults undergoing allogeneic hematopoietic cell transplantation (HCT), higher gut microbiome diversity is associated with reduced bloodstream infections (BSI) and improved overall survival (OS). Rifaximin prophylaxis in adult HCT helps to maintain microbiome diversity. We examine changes in microbiome in a cohort of pediatric patients undergoing HCT.

Methods. Patients were enrolled in an institutional biorepository (n=82) with a subset enrolled in an ongoing trial using rifaximin (n=21) between 2013–2020. All patients had HCT for a hematologic malignancy, using myeloablative conditioning. Patients in the rifaximin trial received rifaximin starting 7 days before HCT (D-7) through D+28, otherwise, no prophylactic antibiotics were used. Systemic antibiotic timing was categorized as none, early (≤ Day 0, day of HCT), and late (> D0). We performed 16s rRNA sequencing from stool for 73 subjects, at baseline (D-7), and weekly through D+28 (engraftment). Microbiome diversity was assessed by Shannon index.

Results. Median age was 9 years (range 1–20), 59% male, 41% Caucasian and 29% Black. There were no differences in BSI or mortality by age, sex, or race.

Microbiome diversity changed significantly over time (p=0.008). Drop in diversity was most notable in patients who had early antibiotics (Mean=1.4, CI –0.15, 2.94, p=0.077). Higher diversity was seen when patients received none or late versus early antibiotics, but this was not statistically significant (Figure 1, p=0.23). Piperacillin-tazobactam was used empirically in 91% of patients. OS at 1 year was 88.5% (CI 68.4%, 96.1%) for patients with high (≥ median) D+28 diversity compared to 60% (CI 38.4%, 76.1%) for patients with low diversity (Figure 2, p=0.018). Only 1 of 21 (4.8%) in the rifaximin group developed a BSI with a gut bacterium compared to 8 of 61 (13.1%) not on rifaximin within the first 30 days (trial enrollment ongoing).

Figure 1. Effect of systemic antibiotic timing on microbiome diversity over time.

Figure 2: Medically Assisted Therapy Prescribed at Discharge

Conclusion. Gender, more complicated infections, and prolonged LOS may increase the likelihood of receiving a prescription for MAT at discharge. MAT prescription at discharge may decrease the risk of 30-day SAB related readmission (NNT 5.9). The results suggest that provision of MAT to patients with SAB and history of IVDU should be incorporated into standardized treatment guidelines.

Disclosures. All Authors: No reported disclosures