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. Intraoperative use of IVUD 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 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- and 90-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

| Baseline Characteristics | N=48 | N=128 | P Value |
|--------------------------|------|-------|---------|
| All participants          | 36   | 92    | 0.80    |
| Mean age (years)         | 39   | 37    | 0.62    |
| Patient gender            | 33   | 66    | 0.29    |
| White/Caucasian           | 27   | 76    | 0.37    |
| Other Race or Unknown     | 6    | 21    | 0.22    |
| Hospital with Available Addiction Nurse Consultant | 91 (19%) | 80 (17%) | 0.31 |
| Admission Site            | 37   | 100   | 0.03    |
| Hospital                   | 37   | 100   | 1.00    |
| Cerebral                   | 20   | 55    | 0.05    |
| Other                     | 27   | 58    | 0.34    |
| Blood culture with *S. aureus* | 24 (50%) | 27 (33%) | 0.23 |
| Endocarditis              | 20   | 50    | 0.05    |

Table 2. MAT & Clinical Outcomes in *S. aureus* Bacteremia

| MAT at Discharge | N=48 | N=128 | P Value |
|------------------|------|-------|---------|
| N=48             |      |       |         |
| 30-day mortality (inpatient deaths excluded) | 11 (23%) | 30 (23%) | 0.89 |
| 90-day mortality (inpatient deaths excluded) | 26 (54%) | 60 (31%) | 0.04 |

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 and continuing ongoing. 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.

Results. Of the 82 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

| Baseline Characteristics | N=48 | N=128 | P Value |
|--------------------------|------|-------|---------|
| All participants          | 36   | 92    | 0.80    |
| Mean age (years)         | 39   | 37    | 0.62    |
| Patient gender            | 33   | 66    | 0.29    |
| White/Caucasian           | 27   | 76    | 0.37    |
| Other Race or Unknown     | 6    | 21    | 0.22    |
| Hospital with Available Addiction Nurse Consultant | 91 (19%) | 80 (17%) | 0.31 |
| Admission Site            | 37   | 100   | 0.03    |
| Hospital                   | 37   | 100   | 1.00    |
| Cerebral                   | 20   | 55    | 0.05    |
| Other                     | 27   | 58    | 0.34    |
| Blood culture with *S. aureus* | 24 (50%) | 27 (33%) | 0.23 |
| Endocarditis              | 20   | 50    | 0.05    |

Table 2. MAT & Clinical Outcomes in *S. aureus* Bacteremia

| MAT at Discharge | N=48 | N=128 | P Value |
|------------------|------|-------|---------|
| N=48             |      |       |         |
| 30-day mortality (inpatient deaths excluded) | 11 (23%) | 30 (23%) | 0.89 |
| 90-day mortality (inpatient deaths excluded) | 26 (54%) | 60 (31%) | 0.04 |

Disclosures. All Authors: No reported disclosures

Figure 1: 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.

Medically Assisted Therapy Prescribed at Discharge

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

Microbiome diversity changed significantly over time (p=0.008). Drop in diversity was observed between 0 and 28 days after HCT (D-28) 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 (> D-7) and 88% (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 versus 8 of 61 (13.1%) not on rifaximin within the first 30 days (trial enrollment ongoing).

Figure 1. One-year Infection-free survival in persons who use drugs (PWUD) vs. non-PWUD