Figure 1: Clinician comfort using oral antibiotic therapy to treat uncomplicated bacteremia due to specific syndromes

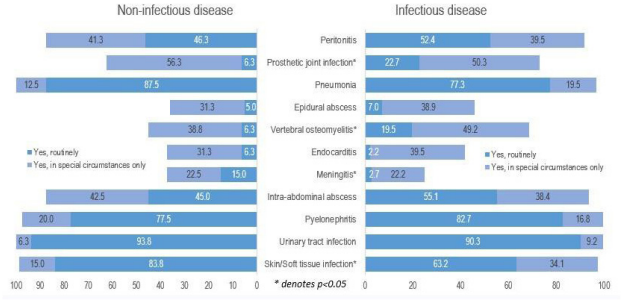
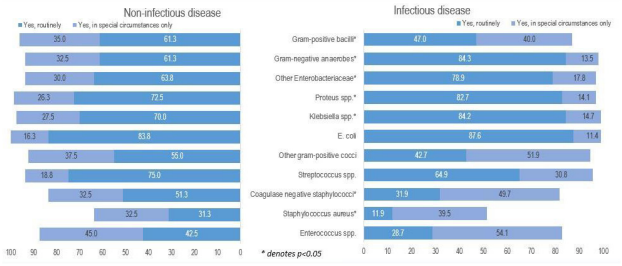


Figure 2: Clinician comfort using oral antibiotic therapy to treat uncomplicated bacteremia due to specific organisms



Conclusion: Considerable variation in comfort using OAT for uBSIs among IDC vs NIDC exists, highlighting opportunities for IDC to continue to demonstrate their value in clinical practice. Understanding the reasons for variability may be helpful in creating best practice guidelines to standardize decision making.

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290. Impact of follow up blood cultures on outcomes of patients with gram-negative bloodstream infections

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Session: P-9. Bacteremia

Background: Importance of follow up blood cultures (FUBC) for *Staphylococcus aureus* bloodstream infections (BSI) is well known, but the role of FUBC in gram-negative BSI remains controversial. This retrospective cohort study examined the association between obtaining FUBC and mortality in patients with gram-negative BSI.

Methods: Adults with first episodes of community-onset monomicrobial BSI due to gram-negative bacilli hospitalized at Prisma Health-Midlands hospitals in Columbia, South Carolina, USA from January 1, 2010 to June 30, 2015 were identified. Patients who died or were discharged from hospital within 72 hours of collection of index blood culture were excluded to minimize impact of survival and selection biases on results, respectively. FUBC were defined as repeat blood cultures obtained between 24 and 96 hours from initial positive blood culture. Cox proportional hazards regression model was used to examine association between obtaining FUBC and 28-day all-cause mortality.

Results: Among 766 patients with gram-negative BSI, 219 (28.6%) had FUBC obtained and 15 of 219 (6.8%) FUBC were persistently positive. Overall, median age was 67 years, 438 (57%) were women, 457 (60%) had urinary source of infection, and 426 (56%) had BSI due to *Escherichia coli*. Mortality was significantly lower in patients who had FUBC obtained than in those who did not have FUBC (6.3% vs. 11.7%, log-rank p=0.03). Obtaining FUBC was independently associated with reduced mortality (hazards ratio [HR] 0.49, 95%CI: 0.25–0.90) after adjustments for age (HR 1.35 per decade, 95% CI: 1.13–1.61), cancer (HR 5.90, 95% CI: 3.53–9.84), Pitt bacteremia score (HR 1.38 per point, 95% CI: 1.26–1.50), and inappropriate empirical antimicrobial therapy (HR 2.37, 95% CI: 1.17–4.39).

Conclusion: Obtaining FUBC was associated with improved survival in hospitalized patients with gram-negative BSI. These observations are consistent with the results of recent publications from Italy and North Carolina supporting utilization of FUBC in the management of gram-negative BSI.

Disclosures: Julie Ann Justo, PharmD, MS, BCPS-AQ ID, bioMerieux (Speaker's Bureau)TRC Healthcare (Speaker's Bureau)

291. Impact of Surveillance and Offered Infectious Diseases Consults for Staphylococcus aureus Bacteremia on Quality of Care Indicators

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Session: P-9. Bacteremia

Background: *Staphylococcus aureus* bacteremia (SAB) remains the leading cause of bloodstream infections and is associated with 20–40% mortality. Past studies demonstrated that Infectious Diseases (ID) consultation is associated with better adherence to quality of care indicators (QCIs), including follow-up blood cultures, echocardiography, early source control, and appropriate choice and duration of antibiotics. A 2014 quality improvement project at Medstar Washington Hospital Center (MWHC) by Narsana et al. showed significantly better adherence to SAB QCIs among patients with ID consults and a non-significant trend towards lower mortality. In 2015, MWHC instituted a policy advocating ID consultation for all SAB patients, and active surveillance was performed by the ID Section to offer prompt consults prospectively. Our study aimed to assess the impact of this policy and the proactively offered ID consults on adherence to SAB QCIs and mortality rates amongst patients with SAB with and without ID consults.

Methods: We retrospectively reviewed 557 patients diagnosed with SAB between July 1st, 2015 - June 30th, 2018. Data included follow-up blood cultures, echocardiography, presence of a focal source of infection, use of appropriate antibiotics, measurement of vancomycin levels, duration of therapy, death during hospitalization, and presence of an ID consultation. Chi-Square and Fisher exact tests, and t-test and Wilcoxon rank sum test were used to analyze categorical and continuous variables, respectively.

Results: A total of 513 patients were included in the analysis, 88% (n=453) of whom had ID consultations. Patients with ID consultations were more likely to have a focal source of infection (84% vs. 50%, $p < 0.0001$), echocardiography (97% vs. 56%, $p < 0.0001$), use of a beta-lactam antibiotic for methicillin-susceptible S. aureus (90% vs 65%, $p < 0.0001$), and a longer duration of therapy (33 vs 9 days, $p< 0.0001$). Mortality was lower among patients with ID consults (16% vs. 23%, p=0.1495), but the difference was not statistically significant.

Table 1

Variables	Was an Infectious Diseases consultation obtained?		p-value
	Yes	No	
Were follow-up blood cultures done demonstrating clearance?			
Yes	423 (93.38%)	52 (88.14%)	0.1436
No	30 (6.62%)	7 (11.86%)	
Was a focal source of infection present?			
Yes	383 (84.55%)	30 (50%)	<0.0001
No	70 (15.45%)	30 (50%)	
If yes, was the focal source of infection removed?			
Yes	263 (78.04%)	16 (94.12%)	0.1375
No	74 (21.96%)	1 (5.88%)	
Was echocardiography performed?			
Yes	441 (97.35%)	34 (56.67%)	<0.0001
No	12 (2.65%)	26 (43.33%)	
Was a beta-lactam antibiotic used if MSSA?			
Yes	199 (90.45%)	27 (65.85%)	<0.0001
No	21 (9.55%)	14 (34.15%)	
If Vancomycin was used, was a trough of 15-20 documented during therapy?	192 (88.07%)	18 (78.26%)	
Yes	26 (11.93%)	5 (21.74%)	0.1813
No			
Did the patient die during hospitalization?			
Yes	72 (15.93%)	14 (23.33%)	0.1495
No	380 (84.07%)	46 (76.67%)	
Was the death attributable to this infection?			
Yes	49 (63.64%)	6 (42.86%)	
No	28 (36.36%)	8 (57.14%)	0.1436
Duration of therapy	32.91 (13.92)	9.25 (7.75)	<0.0001

Conclusion: Our study demonstrates that ID consultation is associated with better adherence to *SAB QCIs*, with a trend towards lower mortality. Hospital systems should support mandatory ID consultation for patients with *Staphylococcus aureus* bacteremia.

Disclosures: **All Authors**: No reported disclosures

292. Impact of the BACT/ALERT VIRTUO blood culture system in the management of *Staphylococcus aureus* bacteremia

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Session: P-9. Bacteremia

Background: *Staphylococcus aureus* bacteremia (SAB) is a major cause of mortality. Recovery of SA may be enhanced with new blood culture systems resulting in a longer observed duration of bacteremia.

Methods: We performed a 24-month retrospective study of adults hospitalized with SAB at a 1250-bed academic hospital. Between 1/2018-12/2018 the VersaTREK system was used and 1/2019-12/2019 the BACT/ALERT VIRTUO (VIRTUO) system was used. We excluded patients without an Infectious Diseases (ID) consult. We defined

SAB duration as short (1–2 days), intermediate (3–6 days), or prolonged (>7 days). We compared SAB detection and management pre- and post-implementation of VIRTUO.

Results: 456 patients had SAB during study period; 420 (92%) had ID consultation: 178 (42%) pre- and 242 (58%) post-implementation. Similar proportion of methicillin-resistant SAB was seen (44.9% pre- vs. 36.8% post-implementation, p=0.09). Post-implementation, patients were more likely to have intermediate (22.4% pre- vs. 40.1% post-implementation; p< 0.001) and prolonged SAB duration (3.9% pre- vs. 13.6% post-implementation; p< 0.001). Median time to positivity for the index blood culture was shorter (19.9 pre- vs. 15.0 hours post-implementation, p< 0.001). Dual anti-staphylococcal therapy was used more frequently in the post-implementation period (6.2% pre- vs. 15.7% post-implementation, p=0.003). No difference was noted in frequency of diagnostic studies (transesophageal echocardiography, magnetic resonance imaging, and computed tomography). Source control was similar (46.1% pre- vs. 45.0% post-implementation; p=0.84) but the median time to source-control was shorter post-implementation (4 pre- vs. 2 days post-implementation; p=0.02). Median planned duration of intravenous antibiotics did not vary between pre- and post-implementation periods (6 vs. 6 weeks, p=0.31). There was no difference in 90-day readmissions (38.2% pre- vs. 34.3% post-implementation; p=0.41).

Conclusion: VIRTUO blood culture system decreased time to positivity and increased frequency of prolonged SAB compared to the VersaTREK system. This resulted in increased use of dual anti-staphylococcal therapy and shorter time to source-control, but no difference in interventions, planned duration of antibiotics, or readmissions.

Disclosures: **All Authors**: No reported disclosures

293. Influence of a Pharmacist Led Treatment Algorithm for the Management of Staphylococcus Bacteremia

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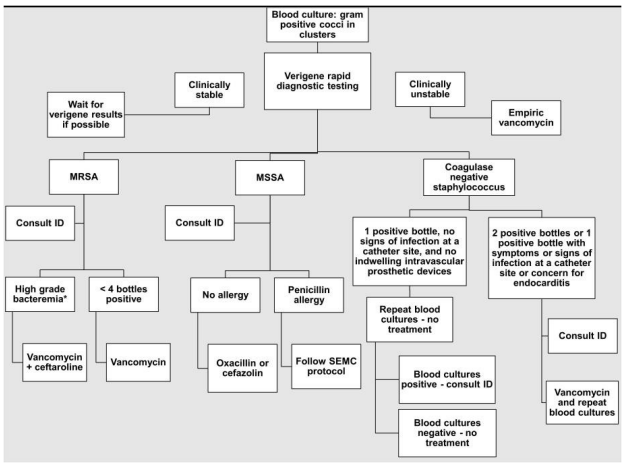
Session: P-9. Bacteremia

Background: Staphylococcus bacteremia is a major healthcare burden and currently there is no widely recommended treatment algorithm. Our institution adopts all elements of antimicrobial stewardship including rapid diagnostic testing. Despite these efforts, management of staphylococcus bacteremia continues to be problematic. The objective of this project is to evaluate implementation of a pharmacist-driven algorithm to guide treatment selection for staphylococcus bacteremia.

Methods: This is a single center, IRB-approved cohort study with a retrospective and prospective phase. The algorithm was designed in collaboration with the infectious disease (ID) service. Retrospective data was collected from June 2019 through September 2019. The algorithm was implemented on October 1, 2019 and prospective data was collected through January 2020. Prospectively a pharmacy resident identified positive blood cultures and recommended treatment based on the algorithm. Patients 18 years of age or older with a positive blood culture for staphylococcus were included. Patients were excluded if treatment was initiated at an outside hospital. The primary outcome is algorithm adherence. Secondary outcomes include days to negative blood culture, days to de-escalation, length of hospital stay and whether ID was consulted.

Treatment Algorithm



Results: A total of 64 patients were identified in the retrospective cohort and 46 in the intervention group. There were no significant differences in baseline characteristics. Algorithm adherence increased from 45% to 72% upon implementation (p=0.006). The algorithm resulted in a shorter time to de-escalation from 2.1 to 1.3 days (p=0.04). There were no statistically significant differences in days to negative blood culture, 2.3 vs. 2.2 days, or in average length of stay, 12.1 vs. 10.6 days in the retrospective and intervention groups, respectively. ID was consulted on 50% of patients in the retrospective cohort and 48% in the intervention group.

Conclusion: Implementation of a staphylococcus bacteremia treatment algorithm optimizes management. Additional layers of pharmacy involvement also result in a shorter time to de-escalation. These results highlight the importance of continuity of antimicrobial stewardship efforts.

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294. Interim Analysis of an Evidence-Based Bundle Intervention for Uncomplicated Enterobacterales Bacteremia

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Session: P-9. Bacteremia

Background: Use of evidence-based process bundles for *Staphylococcus aureus* bacteremia benefit patient outcomes. No studies exist assessing the value of an evidence-based bundle (EBB) in Enterobacterales bacteremia. Recent studies show shorter durations of therapy (DOT) (~ 7 days) result in similar outcomes as longer DOT when treating uncomplicated gram-negative bacteremia. An internal study showed 87% of treatment course durations were > 7 days. This study seeks to determine the impact of an education-based EBB for uncomplicated Enterobacterales bacteremia on patient length of stay (LOS) and DOT.

Methods: This is a quasi-experimental pre- post- analysis conducted across six medical centers. The pre-intervention cohort (n=546) consisted of patients treated for uncomplicated Enterobacterales bacteremia between Jan 1 2016 and Dec 31 2017. The post-EBB education cohort (n=49) consisted of patients treated with the bundle from Jan 1 2020 through Apr 4 2020. Exclusion criteria included immunocompromised state, multiple infection sites, lack of source control, polymicrobial bacteremia, death within 48 hours of treatment, receiving end of life care, < 6 days or > 16 days of therapy, and failure to receive at least one antibiotic with in vitro activity against the organism. The primary outcome was the proportion of patients receiving 6–10 days of therapy. Secondary outcomes included LOS, 30-day readmission rate, 30-day all-cause mortality, time to intravenous to oral conversion, and EBB adherence. Descriptive statistics were used for the baseline characteristics and primary and secondary outcomes. Multiple regression analysis was performed to assess patient covariates.

Results: There was no difference in the proportion of patients receiving 6–10 days of therapy between the pre- and the post-EBB groups (43.4% vs 53.1%; $p = 0.19$). There was no association between DOT and covariates. The pre- and post-intervention group had average total DOT of 11.7 ± 2.6 days and 10.6 ± 2.7 days ($p = 0.0047$), respectively.

Conclusion: This interim analysis suggests an education-based EBB for Enterobacterales does not increase the proportion of patients receiving DOT of 6–10 days. Education alone may be insufficient.

Disclosures: **All Authors**: No reported disclosures

295. Is Herd Immunity from Pneumococcal Conjugate Vaccines Changing the Clinical Features of Invasive Pneumococcal Disease in Adults?

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Toronto Invasive Bacterial Diseases Network (TIBDN)

Session: P-9. Bacteremia

Background: Numerous factors that affect the presentation and severity of pneumococcal disease. Several studies in the pre-PCV era demonstrated that organism characteristics, including serotype, are associated with variability in disease presentation and severity. We undertook an analysis of population based surveillance for invasive pneumococcal disease (IPD) to assess whether herd immunity from PCVs will change the presentation and severity of IPD in adults

Methods: TIBDN has performed population-based surveillance for IPD in Toronto and Peel region (pop'n 4.5M) since 1995. All sterile site isolates of *S. pneumoniae* are reported to a central study laboratory, isolates are serotyped, and clinical and vaccination data are collected via patient and physician interview and chart review. Population data are obtained from Statistics Canada. Backwards stepwise logistic regression assessed patient characteristics, illness features, and isolate factors associated with clinical presentation and case fatality.

Results: Between 1995 and 2018, 8815 episodes of IPD were identified in adults. Patients infected with PCV10not7 serotypes were younger, more likely male and without underlying illness. Patients with infections due to non-vaccine types were more likely to be immunocompromised. Case fatality in IPD declined from 177/754 in 1995/6 to 113/554 in 2017/8; OR 0.67, 95%CI0.51-0.86, P< .0001) and in all serotype groups (Figure). In multivariable models adjusted for host factors, relative to infections caused PCV7 serotypes, those caused by PCV10not7 were less likely to be fatal (OR 0.65, 95%CI 0.46–0.91); those caused by PCV13not10 were more likely to be fatal (OR 1.6, 95%CI 1.3–1.9). Bacteremic pneumonia as a proportion of presentations is highest in IPD due to PCV10not7 and PCV13not10 serotypes (85% and 83%, respectively), and lowest in IPD due to non-vaccine serotypes and PCV20not15 (59% and 68%, P< .0001). Meningitis is least common in IPD due to PCV10not7 serotypes (2.6%), and highest in cases due to non-vaccine types and PCV20not15 (9.0% and 8.0%, respectively, P< .0001).