infection including epidural abscess development, septic arthritis, and musculoskeletal abscesses. This case highlights the wide range of infectious possibilities associated with severe GBS infection.

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261. A Single-Center Case Series of Methicillin-Resistant *S. aureus* Bacteremia with Elevated Minimal Inhibitory Concentrations to Vancomycin

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Session: P-9. Bacteremia

Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a serious nosocomial pathogen, and is listed as a "High Priority Pathogen" by the WHO due to concerns of antimicrobial resistance and lack of novel therapeutics. Even in vancomycin-susceptible MRSA, increased rates of treatment failure occur in the setting of an increased minimum inhibitory concentration (MIC) to vancomycin, which is considered the gold-standard of therapy. We performed a case series of 25 patients infected with MRSA with an elevated MIC to vancomycin. Additionally, we describe the use of combination therapy with beta-lactams for the management of these highly complex cases.

Methods: We conducted a retrospective case series of 25 patients hospitalized at MSH between 8/2014–5/2019 who were treated for MRSA bacteremia where the isolate had an MIC ≥ 2. Data was centralized into the REDCap program. Clonal typing of bacteria and analysis of clinical features were performed in SAS and R.

Results: In total, 25 patients developed MRSA bacteremia with a vancomycin MIC ≥ 2. The majority of cases involved infection from vascular access, arteriovenous fistula/graft, and septic joint/osteomyelitis. All 25 patients were initially treated with vancomycin, with modification of therapy varying widely depending on clinician. The most common vancomycin-alternative was daptomycin (14/25 patients, alone and in combination). Combination therapy with vancomycin or daptomycin and a beta-lactam was used in 9 cases (36% of cases). Average number of days to clearance was 18.3 (range 1–69 days). Univariate and multivariate analyses revealed significant correlation MRSA bacteremia with vancomycin MIC ≥ 2 and admission from a nursing home or skilled nursing facility (p=0.02), history of MRSA colonization (p=0.006), and persistent bacteremia (bacteremia >7 days) (p< .0.001).

Conclusion: With few novel therapeutics under development, management of MRSA bacteremia with a rising MIC to vancomycin is a clinical challenge for practitioners. In our case series we found that treatment is largely patient and practitioner-dependent, and far from standardized. Further definition of the clinical risk factors for development and novel therapeutic strategies will enable understanding of how to best manage these challenging infections.

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262. A Systematic Review and Meta-Analysis of the Impact of Delayed Appropriate Antibiotic Therapy on Mortality in Patients with Gram-Positive Bacteremia

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Session: P-9. Bacteremia

Background: Antibiotic resistance is common and frequently leads to unintentional delays in appropriate antibiotic therapy. The detrimental impact of delayed therapy is well-accepted, but the majority of evidence focuses on gram-negative infections. A review and synthesis of the evidence evaluating the impact of delayed appropriate antibiotic therapy in serious gram-positive infections does not exist. Such data would define the scope of the problem in this important patient population where antibiotic resistance is common. The objective of this systematic review and meta-analysis was to assess the impact of delayed appropriate antibiotic therapy on mortality in patients with gram-positive bacteremia.

Methods: Pubmed and Embase were searched from inception to March 30, 2020 to identify clinical studies of patients with bacteremia due to staphylococci, enterococci, or streptococci that reported the association between delayed appropriate antibiotic therapy and mortality. Three independent reviewers screened search results. Study quality was assessed via Newcastle-Ottawa Assessment Scale. Meta-analyses evaluating association between delayed therapy and mortality were conducted via random effects models in Review Manager 5.3. The primary analysis included unadjusted effect estimates from studies reporting unadjusted data. Secondary analysis included adjusted effect estimates from studies adjusting for confounding.

Results: Of 3684 search results, 16 cohort studies encompassing 4173 bacteremias were included. Ten studies involved *S. aureus*, 5 enterococci, and 2 *S. pneumoniae*. One-third (33.7%) of the 3659 patients in the primary analysis received delayed appropriate antibiotic therapy. The primary meta-analysis of 15 studies reporting unadjusted data showed a statistically significant association between delayed therapy and mortality (figure 1). Results from secondary analysis using adjusted point estimates from 9 studies were similar (figure 2).

Figure 1. Forrest plot of meta-analysis of unadjusted association between delayed therapy and mortality

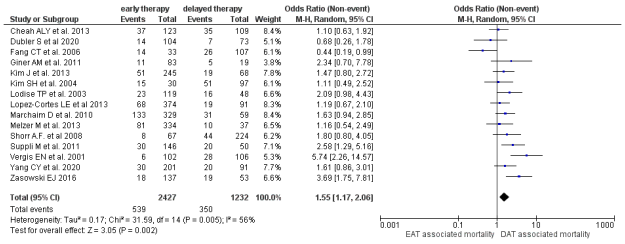
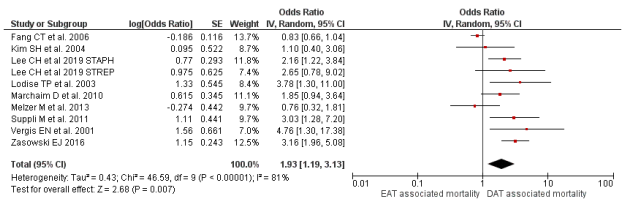


Figure 2. Forrest plot of meta-analysis of covariate adjusted association between delayed therapy and mortality



Conclusion: Delayed appropriate therapy was common and associated with increased mortality in patients with gram-positive bacteremia. These findings underscore the need for continued antimicrobial stewardship efforts to ensure expeditious appropriate antibiotic therapy for patients with gram-positive bacteremia.

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263. An Evaluation of Quality Indicators for the Management of *Staphylococcus aureus* Bacteremia: A Nested Case-Control Study

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Session: P-9. Bacteremia

Background: Community-acquired *Staphylococcus aureus* bacteremia (CA SAB) is a common infection with high mortality. Ten Oever *et al.* recently used expert consensus methods to develop a set of 25 quality indicators for SAB care in five domains (i.e., follow up blood cultures, echocardiography, non-antibiotic interventions including source control, antibiotic treatment, and other management aspects). Associations between these quality indicators and patient outcomes have not been evaluated. We assessed associations between proposed quality indicators and all-cause 30-day mortality among patients with CA SAB.

Methods: We conducted a nested case-control study within a described national multicenter cohort of patients with SAB in the Veterans Health Administration (VHA). The cohort included 2,093 patients who were: 1) admitted to acute care hospitals between 1/2012 and 12/2014 for CA SAB (the first positive blood culture before or within 48 hours of admission with no recent healthcare exposure); 2) survived at least 96 hours after the SAB onset. We identified paired cases (who died within 30 days) and controls (who survived an equal time), matched 1:1 for age (+/- 5 years), gender, admission year and month, and methicillin susceptibility of isolates. We reviewed charts to extract information for quality indicators. We estimated associations between quality indicators and mortality using logistic regression, adjusting for patient demographics and comorbidity.

Results: 164 patients (82 cases and 82 controls) were included. The median patient age was 68.5 (IQR: 62–80) years, and 74 (45.1%) had methicillin-resistant isolates. All patients received at least one domain of quality indicator (median: 3 [IQR: 2–4]). When analyzed individually, only two domains (follow-up blood cultures: OR 0.27 [95% CI: 0.11–0.68]; source control: OR: 0.13 [0.05–0.31]) were associated with mortality. There was a dose-response relationship in which more domains received was associated with decreased mortality (Figure).

Association Between the Number of Satisfied Quality Indicator Domains and All-Cause 30-day Mortality