Methods. Using 2000–2016 California hospital discharge data, we extracted records for adults (≥18 years) with ≥1 group A Streptococcus (GAS)-associated International Classification of Diseases, Ninth or Tenth Revision discharge diagnosis code (e.g., unspecified GAS: GAS-specific pharyngitis, pneumonia, and sepsis) or known GAS-associated syndromes (e.g., acute rheumatic fever, erysipelas, scarlet fever). To identify patients hospitalized with iGAS, we selected extracted records that also had codes consistent with invasive disease (e.g., sepsis, pneumonia, intubation, or central line placement). We calculated iGAS-associated hospitalization incidence rates per 100,000 population and described patient demographics and comorbidities.

We calculated the odds of in-hospital death using multivariable logistic regression (Table 1). We calculated iGAS hospitalization incidence rates per 100,000 population and described patient demographics and comorbidities. We defined the start of in-hospital death using multivariable logistic regression (HR < 0.05).

Results. During 2000–2016 in California, 37,532 adults were hospitalized with iGAS. 1,045 (3%) died in hospital. Mean annual hospitalization incidence was 9.4/100,000 population, and was highest (16.3/100,000) in 2016 (Figure 2). Most patients were male (56%), aged 40–65 (45%) or ≥65 (28%) years, and white (60%); 18% were immunocompromised. The percent of patients who died in hospital increased with age and was highest among those with comorbidities such as malnutrition, cardiovascular disease (CVD), and chronic kidney disease (CKD) (Figure 2). In a multi-variable model including age as a continuous variable, sex, and race/ethnicity, the odds of in-hospital death was significantly increased for patients with diagnosis codes for malnutrition, liver disease, CVD, immunosuppression, and CKD (Figure 2); within 5 days of in-hospital death was significantly increased for patients with diagnosis codes for malnutrition, liver disease, CVD, immunosuppression, and CKD (Figure 2); within 5 days of index hospitalization.

Conclusion. Hospitalization and subsequent in-hospital death due to iGAS is substantial in California. Adults with iGAS who have specific comorbidities are at greatest risk for death when hospitalized with iGAS.

Figure 1: Annual number of patients hospitalized with invasive group A Streptococcus and hospitalization rate (per 100,000 population), California, 2000–2016.

Figure 2: Percent of patients hospitalized with invasive group A Streptococcus infection who died in hospital, and the adjusted odds of in-hospital death calculated using multivariable logistic regression, California, 2000–2016.
Results. 11 consecutive patients with MSSA bacteremia (6 confirmed endocarditis) refractory to standard CZ or NAF rapidly cleared with CZ+ETP. 9 patients had daily positive blood cultures, and 8 cleared in ≤24 hr, including those with ≥2 cm vegetations. All 11 survived hospitalization. In MHB, 3/6 MSSA exhibited a CZ inoculum effect (CZ MIC = >3 log, in 10^-1 to 10^-2 CFU/mL), but only 1 showed a significant CZ in vitro effect in MRSA. CZ+ETP was significantly more efficacious than CZ in the primary model of MSSA endocarditis utilizing a strain displaying a CZ in vitro effect, despite only modest benefit observed in vitro for 6 MSSA isolates.

Conclusion. CZ+ETP combination therapy yielded profound clinical success in severe MSSA infections with high bacterial densities, as demonstrated by rapid bacteremia clearance. Enhanced efficacy was also observed in a rat endocarditis model. The anti-staphylococcal activity of CZ+ETP in vivo exceeded that observed in vitro, consistent with our prior observations of host innate immune cooperativity with the regimen. CZ+ETP warrants further study for the treatment of refractory MSSA bacteremia and endocarditis.

Disclosures. All authors: No reported disclosures.

218. Evaluation of Clinical Outcomes with Shorter Vs. Longer Duration of Treatment for Common Inpatient Bacterial Infections Associated with Bacteremia
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Background. Pneumonia (PNA), urinary tract infection (UTI), and acute bacterial skin and skin structure infection (ABSSSI) are the most common infections treated in the inpatient setting and often are associated with bacteremia. Though short courses of treatment are advocated for these infections in general, no established guidelines exist for cases involving bacteremia. We evaluated the clinical outcomes of patients receiving short (5–9 days) vs. long (10–15 days) duration of antibiotic treatment.

Methods. A retrospective study was conducted at 3 area hospitals comprising a university-based tertiary care center, a public safety net hospital, and a Veterans’ Affairs hospital. We included hospitalized adult patients with transcortical bacteremia associated with uncomplicated cases of PNA, UTI, or ABSSSI. The primary outcome consisted of a composite of repulsatization or resumption of antibiotic treatment attributed to the original infection or death due to any cause within 30 days of the antibiotic start date. Secondary outcomes included the individual composite components, Clostridioides difficile infection, and antibiotic-related adverse effects leading to change in antibiotic therapy. A propensity score weighted logistic regression model was used to mitigate confounding factors which could bias a patient toward receiving a shorter or longer treatment duration.

Results. Of 411 patients included in the study, 123 (29.9%) received a short duration of therapy and 288 (70.1%) received a long duration of therapy. The median duration of treatment was 8 days in the short group and 13 days in the long group. In the propensity-score-weighted analysis, the probability of meeting the composite primary outcome was not statistically different between the short and long groups (Table 1). However, receiving a shorter course was associated with a higher probability of restarting antibiotics and Clostridioides difficile infection.

Conclusion. Shorter vs. longer courses of antibiotic treatment for bacteremia associated with PNA, UTI, and ABSSSI were not significantly different in a composite of readmission, restart of antibiotics, and mortality; however, further study is needed to evaluate the safety and effectiveness of short-course therapy.

Table 1

| Outcome | Patients (n) | Frequency | Predicted probability | Odds ratio | P-value |
|---------|-------------|-----------|-----------------------|------------|---------|
| Short (5–9 days) | 123 | 15.4% | 21.8 | 0.77 | 0.37 |
| Long (10–15 days) | 288 | 15.4% | 21.8 | 1.00 | 1.00 |

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220. Characteristics and Outcomes of Veterans with Invasive Group B Streptococcal Infection Vary with the Type of Syndrome
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Background. Surveillance from the US Center for Disease Control and Prevention (CDC) has detected an increase in the prevalence of invasive Group B streptococcus (GBS) infections between 2008 and 2016 among non-pregnant adults. Here, we use data from the US Veterans Health Administration (VHA) to assess the underlying clinical characteristics and outcomes associated with specific types of invasive GBS infection among veterans.

Methods. We used the VA Corporate Data Warehouse to identify patients with invasive GBS infection diagnosed between 2008–2017 using CDC’s surveillance definitions. Data on the microbiological source of infection (e.g., GBS in cultures from blood, bone or sterile fluids) and associated International Classification of Disease (ICD) codes were used to classify the type of invasive infection. We determined associated co-morbid conditions and 30-day all-cause mortality for incident cases. Results. Between 2008 and 2017, there were 4790 incident cases of invasive GBS infection in veterans with a mean age of 66.6 years (±11.7) and 30-day all-cause mortality of 8%. The most common syndrome was osteomyelitis (23%, N = 1078) with 30-day mortality of 1%. Other common infections, such as bacteremia (20%; N = 972), skin and soft-tissue infections (18%, 853), and pneumonia (14%, N = 664), had higher mortality (≥30%) in the same approximate order (Figure). In patients with GBS peritonitis, present in 3% (N = 138) incidence cases, 46% had chronic liver disease with a 30-day mortality of 17%, and 1% had chronic kidney disease with a 30-day mortality of 17%. Diabetes mellitus (DM) occurred in 66% of patients with any invasive GBS infection and in 86% of patients with GBS osteomyelitis. Chronic heart, kidney, or lung disease affected ≥25% of patients (Table).