epidemiology of adult patients hospitalized with iGAS in California and risk factors for in-hospital death.

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 ($P < 0.05$).

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 1). 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 multivariable 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 the race/ethnicity variable Asian/Pacific Islander patients had a higher odds of death compared with white patients.

Conclusion. Hospitalization and subsequent in-hospital death due to iGAS is substantial in California. Adults with iGAS who have specific comorbidities are at greater 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.

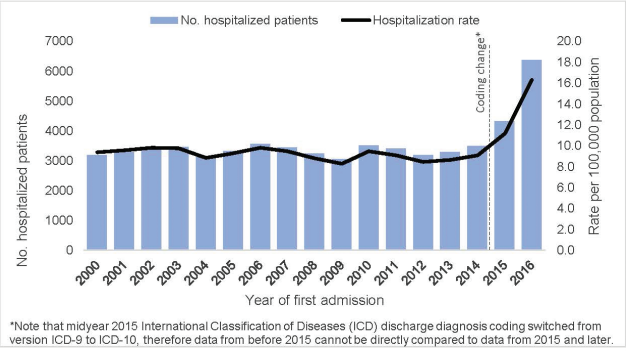
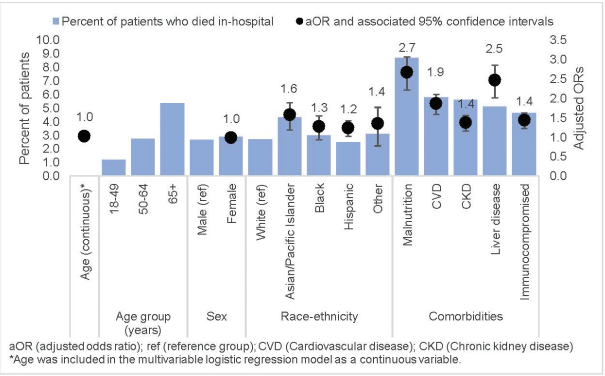


Figure 2: Percent of patients hospitalized with invasive group A *Streptococcus* infection who died in-hospital, and the adjusted odds of in-hospital death calculated using multivariable logistic regression, California, 2000–2016.



Disclosures. **All authors:** No reported disclosures.

216. Association Between Days to Initiate Appropriate Therapy and Hospital Length of Stay Among Adult Hospitalized Patients With Gram-negative Bloodstream Infections (GN-BSI)

Thomas Lodise, PharmD, PhD[1]; Hemanth Kanakamedala, BS[2]; Wei-Chun Hsu, MS[3] and Bin Cai, MD, PhD[4]; [1]Albany College of Pharmacy and Health Sciences, Albany, New York; [2]Genesis Research Inc., Hoboken, New Jersey; [3]Genesis Research Inc., Hoboken, New Jersey; [4]Shionogi Inc., Florham Park, New Jersey

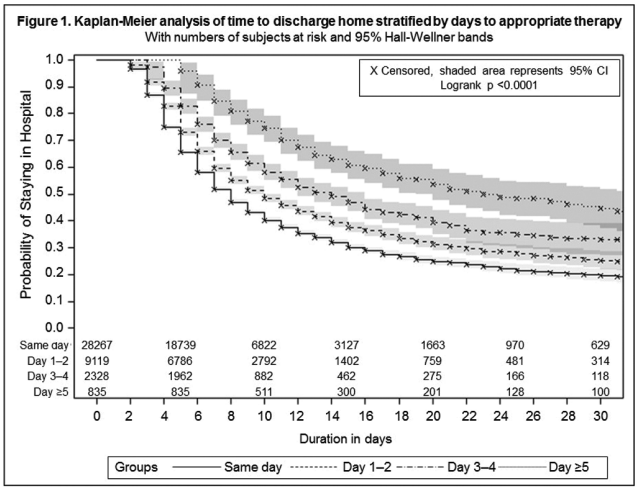
Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. The deleterious outcomes associated with delay receipt of appropriate therapy are well documented. However, scant data exists on the consequences of each day delay of appropriate therapy and subsequent outcomes among adult hospitalized patients with GN-BSIs.

Methods. Study design: a retrospective cohort analysis. Study population: consecutive adult, hospitalized patients with a GN-BSI (11 most prevalent pathogens) in 1 of 181 institutions contributing microbiology data to the Premier Healthcare Database (October 2010–Sep 2015). Exclusion criteria: age < 18 years; diagnosis of pregnancy or cystic fibrosis, died or discharged within 2 days of index GN-BSI culture, lack of sufficient antibiotic susceptibility or treatment data to determine appropriateness. Day of initiating appropriate therapy was defined as the first day when the patient received an antibiotic with *in vitro* activity against the GN-BSI post index culture. Results were summarized by Kaplan–Meier estimates, and Cox Proportional-Hazards (CPH) analyses modeling discharge to home were conducted. Time to initiate appropriate therapy (0, 1–2 days, 3–4 days, ≥5 days) was included in the CPH model as an ordinal variable.

Results. A total of 40,549 patients met selection criteria. Mean (SD) age was 67.5 (16.1) years and 54% were female. *E. coli* and *K. pneumoniae* were the most common GN-BSI (58.0% and 18.3%, respectively). Approximately 30% of patients were in the ICU at index GN-BSI and in-hospital mortality was 6.8%. The mean (SD) time to receive appropriate therapy post index GN-BSI culture was 0.6 (2.7) days, and 69.7%, 22.5%, 5.7% and 2.1% received appropriate therapy in 0, 1–2, 3–4, and ≥5 days of index GN-BSI, respectively. The mean/median LOS post index GN-BSI by 0, 1–2, 3–4, and ≥5 days delays in appropriate treatment were 8.3/6, 9.8/7, 11.5/8, and 19.2/11 days respectively. Kaplan–Meier plots are shown in Figure 1. In the CPH model, each interval delay in appropriate therapy was associated with a 21% decrease in the likelihood of being discharged home for patients with GB-BSIs.

Conclusion. Hospital length of stay was found to increase when appropriate therapy was delayed. These findings highlight the critical need for early appropriate therapy among patients with GN-BSIs.



Disclosures. **All authors:** No reported disclosures.

217. Combination Salvage Therapy with Cefazolin Plus Ertapenem for Refractory Methicillin-Susceptible Staphylococcus aureus Bacteremia

Erlinda Rose Ulloa, MD;MSc[1]; Kavindra V. Singh, PhD[2]; Matthew Geriak, PharmD[3]; Fadi Haddad, MD[3]; Barbara E. Murray, MD[2]; Victor Nizet, MD[4] and George Sakoulas, MD[5]; [1]The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [2]Center for Antimicrobial Resistance and Microbial Genomics, UTHealth, Houston, Texas, Houston, Texas; [3]Sharp Hospital, San Diego, California; [4]University of California-San Diego, La Jolla, California; [5]University of California San Diego, San Diego, California

Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Suboptimal therapy against methicillin-sensitive *Staphylococcus aureus* (MSSA) may have catastrophic consequences in severe infections such as endocarditis or epidural abscess. High MSSA inocula have been associated with clinical failure in patients receiving cefazolin (CZ), particularly when used at low doses, associated with a CZ inoculum effect. We previously described that adding ertapenem (ETP) to CZ led to synergism against MSSA and sensitized the pathogen to host innate immune factors. Here we expand our experience with CZ plus ETP as salvage therapy for 11 cases of refractory MSSA bacteremia (lacking source control problems) and explore CZ+ETP combination *in vitro* and *in vivo.*

Methods. Six available MSSA strains from patients treated with CZ+ETP for refractory bacteremia were tested in Mueller–Hinton Broth or RPMI media at standard (10^5 CFU/mL) or high (10^7 CFU/mL) inocula by MIC, checkerboard, and time-kill assays using ETP, CZ or nafcillin (NAF) alone vs. ETP+NAF or ETP+CZ. Disk diffusion synergy assays between CZ and ETP were also performed. CZ, ETP and CZ+ETP were tested in a rat endocarditis model using well described MSSA, TX0117 and TX0117c.