1. Abstract: *Staphylococcus aureus* bacteremia (SAB) is associated with considerably high morbidity and mortality.[1-4] Antimicrobial stewardship programs (ASPs) have previously demonstrated improvements in SAB management through adherence to performance measures and ASP interventions.[5] Infectious disease (ID) physician consultation is also associated with a reduction in mortality and optimization of patient care for SAB.[6-9] However, mandatory ID physician consultation for SAB may not be logistically feasible for all health-systems, especially with the decrease in number of physicians interested in ID specialization and existing workload for ID consultations.[10] Pharmacists, particularly those with experience and/or training in ID, may offer skills and experience to lead and assist in timely and effective SAB management to maximize the efficiency of ASPs. Our proposed study will potentially increase the role of qualified pharmacists in the management of SAB in combination with the implementation of an evidence-based, institutional SAB management bundle package. Specifically, we will:

Aim 1: Develop an evidence-based, institutional *Staphylococcus aureus* bacteremia (SAB) management bundle package.

Aim 1.1: Evaluate provider compliance with an evidence-based, institutional SAB management bundle package during the pre-intervention and post-intervention periods.

Aim 2: Assess the impact of the pharmacist-driven collaborative initiative on SAB clinical outcomes including median time to initiation of appropriate antibiotic therapy, duration of bacteremia, hospital length of stay, 90-day readmission with a repeat positive blood culture for SAB, and in-hospital mortality.

This is a retrospective, single-center, pre-post quasi-experimental study of patients with SAB at Upstate Medical University Hospital located in Syracuse, NY, before and after implementation of an evidence-based SAB management bundle package through a pharmacist-driven collaboration. Patients ≥ 18 years of age will be included if at least one monomicrobial blood culture was positive for *S. aureus*. Patients will be excluded if < 18 years of age, blood cultures are polymicrobial, an ID consultation was placed prior to a blood culture positive for *S. aureus*, placed on palliative care or expired prior to *S. aureus* speciation, transferred to another institution, refused care against medical advice, pregnant, or incarcerated. The pre- and post-intervention periods will be one-year in duration each and will be the same time periods to mitigate confounding factors. The pre-intervention period is August 1, 2016 through July 31, 2017 and the post-intervention period will be August 1, 2018 through July 31, 2019. The intervention period where the SAB management bundle package will be developed and implemented will be May 1, 2018 through July 31, 2018. An institution-specific, evidence-based SAB bundle will be developed primarily by the ID pharmacist investigators with support from the ID physician investigator to provide consistent and effective SAB management through evidence-based recommendations including appropriate empiric and targeted antibiotic therapy, ID consultation recommendation, timely repeat blood cultures, removal of infectious foci, echocardiography, and appropriate antibiotic duration. This bundle package will be supported by the ASP subcommittee and approved by the pharmacy and therapeutics committee as a guidance document. The ID pharmacist investigator(s) will lead, provide oversight, and train clinical pharmacists to follow patients with SAB bacteremia to ensure bundle elements are addressed by the primary teams. Data will be collected from the electronic medical record retrospectively by the investigators and an undergraduate student trained by the investigators to meet the research aims. A biostatistician will be consulted to perform appropriate statistical analyses.

We hypothesize that this multi-disciplinary strategy will lead to improved compliance for SAB management standards, maximize the efficiency of ID physician consultation time, and improve

patient outcomes by decreasing time to appropriate antibiotic therapy, and reducing bacteremia duration, hospital length of stay, 90-day readmissions, and in-hospital mortality.