Background: We investigated the association between location of acquisition (LOA) of gram-positive (GP) bloodstream infections (BSI) in community hospitals with known infectious risk factors and outcomes.

Methods: We performed a retrospective cohort study of adults with GP BSI admitted to community hospitals from 2003-2006 in the Southeastern U.S. LOA was defined by CDC criteria: 1) community-acquired (CA), 2) healthcare-associated (HCA) as BSI >48 hours after admission plus ≥2 of the following healthcare risk factors: hospitalization, surgery, dialysis, invasive device, or residence in long-term care facility in the prior 12 months, and 3) hospital-acquired (HA) as BSI >48 hours after admission. Categorical variables were reported as proportions and compared by χ² test. Continuous variables were summarized by median and interquartile range (IQR) and compared by ANOVA. Multivariable modeling was performed to further characterize association between LOA and selected outcomes. P-value <0.05 was significant, and R Studio v.0.98.1056 was used for statistical analyses.

Results: 748 patients were included (Table 1). Patients with HCA or HA GP BSI were significantly more likely to be older, dependent on at least one activity of daily living, have higher Charlson scores, urinary catheter present on admission, and urinary sources of infection. Those with CA BSI were more likely to have lower respiratory tract source, methicillin-susceptible S. aureus (MSSA) BSI, and be discharged home. Patients with HCA BSI were more likely to have dementia, methicillin-resistant S. aureus (MRSA) BSI, and be discharged to a nursing home (NH). Patients with HA BSI were more likely to have coagulase-negative staphylococcal BSI, be admitted to the ICU within one week of BSI, and have a longer length of stay (LOS). In multivariable models, LOA remained significantly associated with ICU admission, LOS, and discharge to NH (Table 2).

Conclusions: LOA was associated with multiple distinct infectious risk factors for patients with GP BSI in community hospitals and potentially impacts severity of infection with pathogens with HA BSI having more ICU admissions and longer LOS. Distinguishing LOA in a patient presenting with suspected GP BSI is a critical assessment that should influence empiric treatment patterns.