



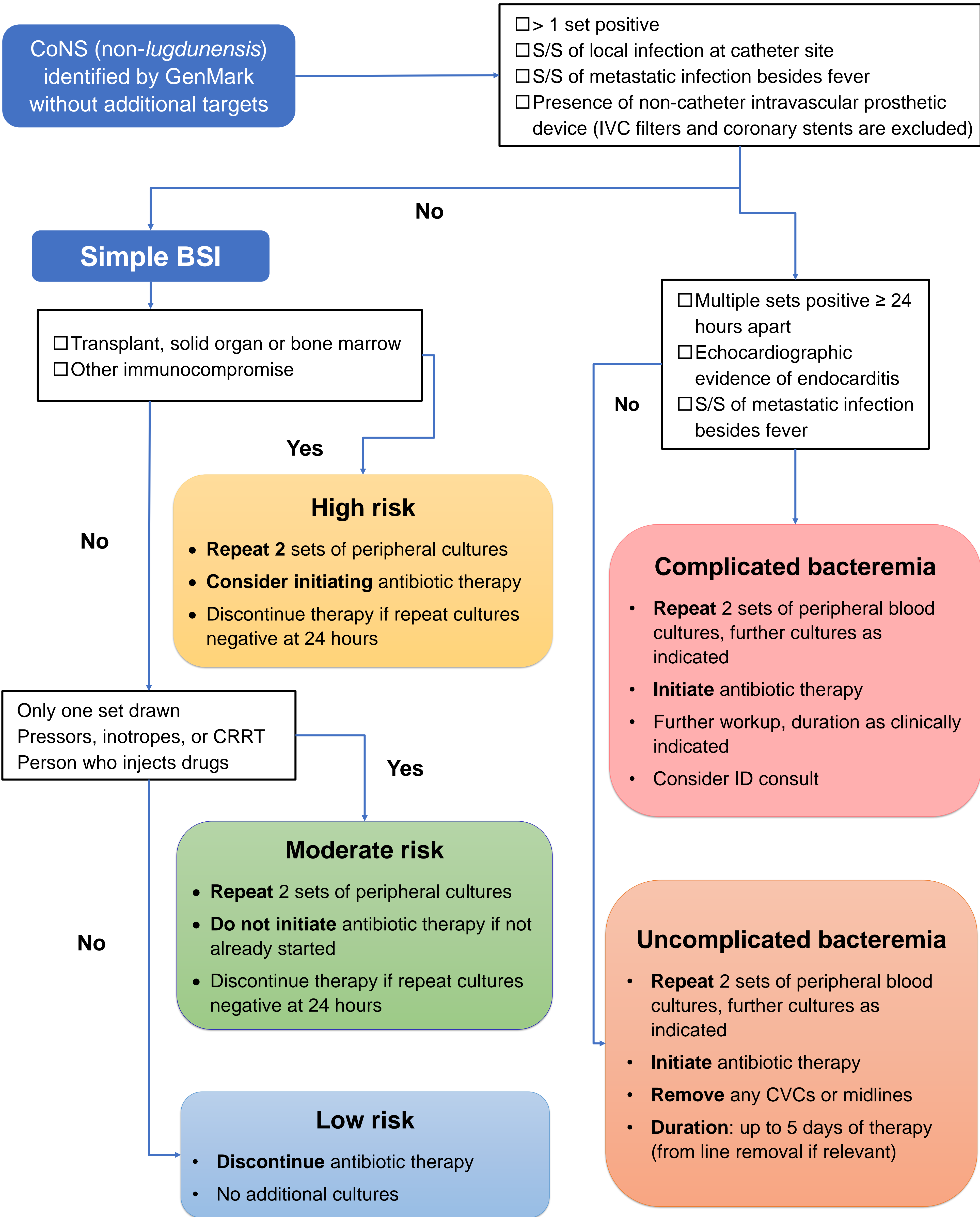
Impact of rapid identification and stewardship intervention on coagulase-negative *Staphylococcus* bloodstream infection

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Fig. 1: Algorithm Developed for Management of CoNS Blood Cultures



Definitions adopted from Holland et al., *JAMA*. 2018;320(12):1249-1258
CoNS: coagulase-negative Staphylococcus; S/S: signs or symptoms; BSI: bloodstream infection; ID: Infectious Disease; CVC: central venous catheter

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INTRODUCTION

- Coagulase-negative staphylococci (CoNS) are the most common organism isolated from blood cultures; most cases are considered contaminants and do not require treatment
- Treatment of CoNS blood culture contaminants consumes significant healthcare resources
- Management guidelines for CoNS bacteremia have not been developed which contributes to variable approaches by pharmacists and physicians
- Prior studies attempting to optimize treatment of CoNS BSI have been limited by conventional laboratory techniques, resulting in delayed organism identification and prolonged durations of empiric therapy
- In this study, we aimed to measure the impact of rapid diagnostic testing with the GenMark ePlex and implementation of early antimicrobial stewardship intervention on management of CoNS positive blood cultures

METHODS

- Blood cultures with non-*lugdunensis* CoNS were identified during 3 independent time periods:
 - Pre-RDT implementation (Nov. 2019 – Feb. 2020)
 - Post-RDT implementation (Nov. 2020 – Feb. 2021)
 - Post-RDT w/ ASP algorithm (Dec. 2021 – Mar. 2022)
- In both post-RDT time periods, results were called directly to the antimicrobial stewardship (ASP) team; results were available in real-time from 6a – 10p
- Results from 10p – 6a were called in to the ASP the following morning
- During the prospective implementation phase cases were classified in real-time by ASP personnel as outlined in the algorithm (Figure 1)
- Categorical and continuous variables were compared by chi-squared and Mann-Whitney U tests, respectively. A *P*-value <0.05 was considered significant (two-tailed)

Fig 2: Patient Demographics and Clinical Characteristics

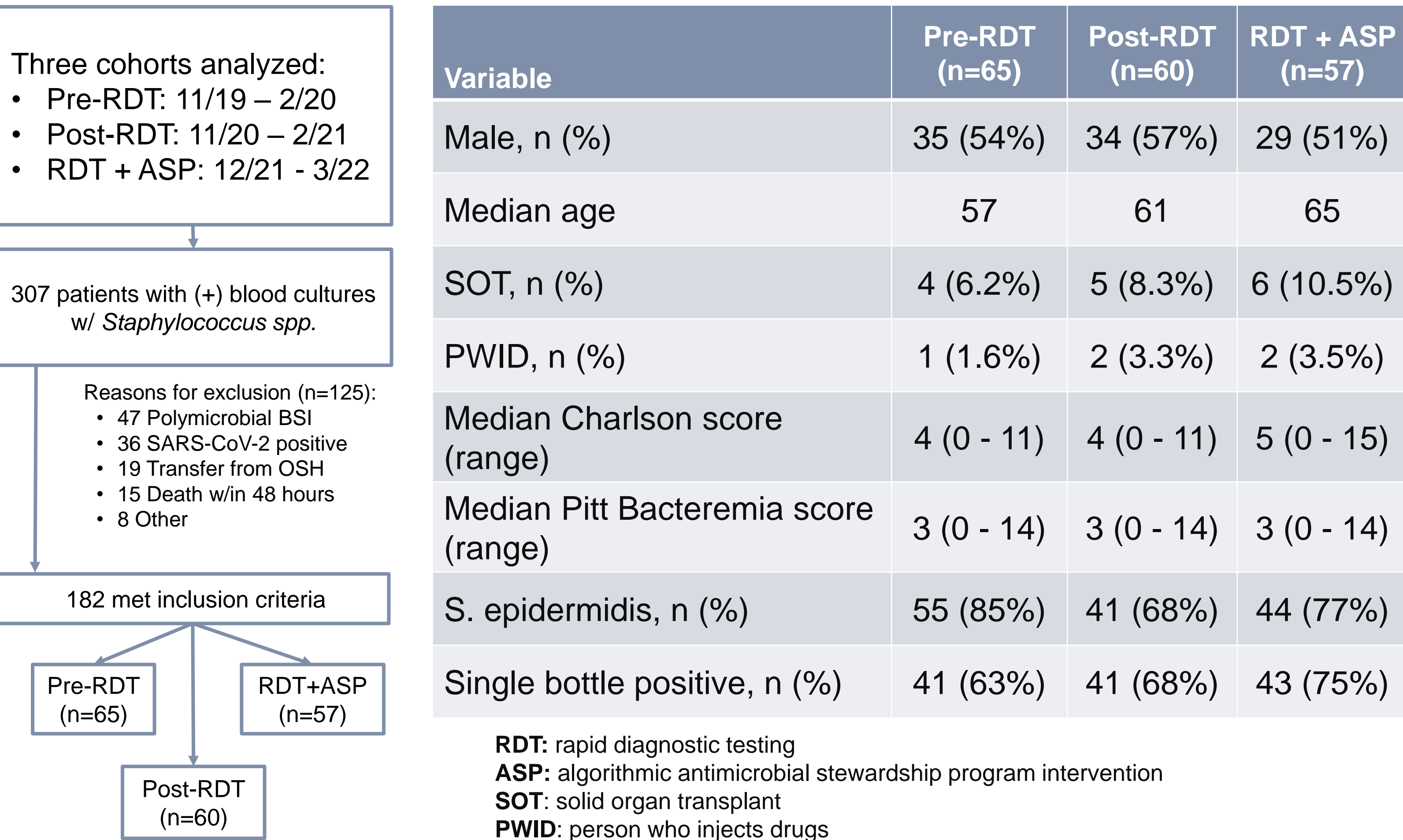
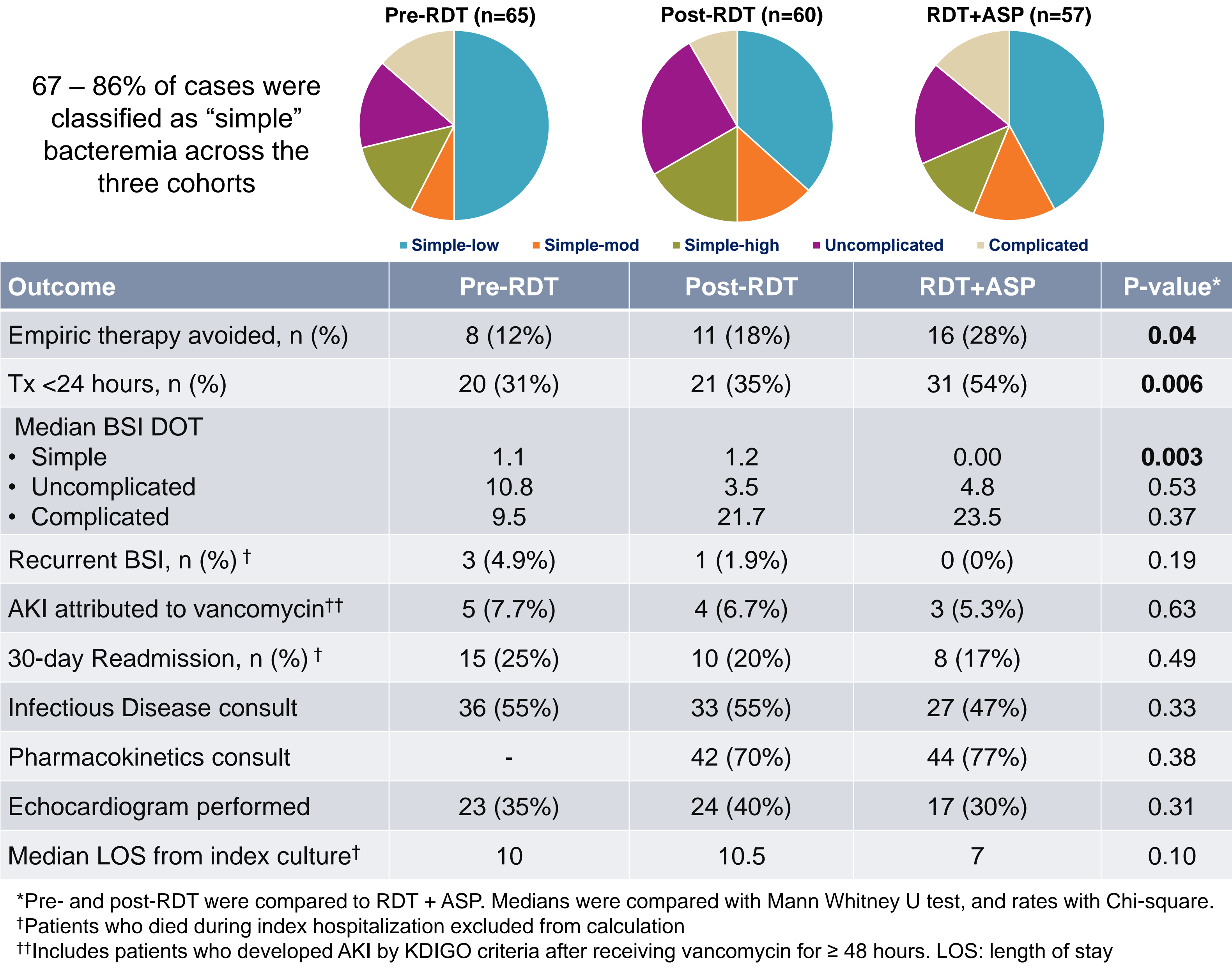


Fig. 3: Outcomes



RESULTS

- During pre- and post-RDT periods, median days of antibiotic therapy did not vary significantly for patients with simple BSI (1.1 vs 1.2)
- Median days of therapy were significantly reduced (*P*=0.003) for simple CoNS BSI in the prospective RDT + ASP period
- 54% of patients with CoNS BSI received <24 hours of therapy in the RDT+ASP time period compared to 33% (*P*=0.006) in the combined pre-RDT and post-RDT periods
- Treatment was entirely avoided in 28% of CoNS BSI cases in the RDT+ASP period compared to 15.5% in other periods (*P*=0.04)
- 7 cases classified as simple were reclassified as uncomplicated or complicated after further workup
- Rates of recurrent BSI and 30-day readmission were comparable across time periods

CONCLUSIONS

- We developed an innovative protocol to guide and standardize the management of CoNS BSI using both RDT and ASP intervention
- RDT without standardized ASP recommendations did not reduce rates of antibiotic use
- Our results demonstrate that the combination of RDT and algorithm-based ASP intervention significantly reduces overall antibiotic therapy and increases antibiotic avoidance for CoNS BSI
- These data attest to the safety and efficacy of early ASP intervention for patients with CoNS BSI identified through RDT at the time of positive blood cultures