

Evaluation of Gram-positive Blood Culture Management in Patients Treated and Discharged from the Emergency Department: A Retrospective Analysis

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Background

- Conventional laboratory blood culture methods typically identify organisms and their antimicrobial susceptibilities in 48 to 72 hours.
- Patients who are treated in and discharged from the emergency department (ED) may have to return for positive blood cultures that resulted after discharge.
- Patients with contaminated blood cultures that are called back to the ED can be unnecessarily exposed to the healthcare setting.
- This study characterizes the frequency in which patients with contaminated blood cultures return to the ED, and quantifies unnecessary exposure to the healthcare setting that occurs with conventional methods.

Methods

- Retrospective review of patients with positive blood cultures following ED discharge between January 1st, 2019 and December 31st, 2019
- Inclusion Criteria: Patients aged 25 years or older with gram-positive cocci (GPCs) detected in at least one blood culture bottle after ED discharge
- Exclusion Criteria: Pregnant patients
- Primary outcome: ED readmissions due to blood cultures that were deemed contaminants upon final identification
- Secondary outcomes: Antimicrobial exposure and ED length of stay

Results

- Of the 51 patients included, 37 (71.2%) had GPCs in blood cultures that were considered contaminants per clinical chart review.
- Of the 37 patients with contaminated blood cultures, 30 (81%) were contacted to return to the ED.
- Of the 30 patients contacted, 20 (66.6%) returned to the ED.
- Patients that were brought back to the ED due to contaminated blood cultures stayed for an average of 57.6 hours (median = 48 hours).
- Of the 20 patients brought back to the ED, 13 (65%) were given unnecessary antibiotics.
- The average time of antibiotic exposure was 49.2 hours (SD = 33.6 hours).
- Vancomycin was the most common antibiotic given, either alone (n=8, 40%) or in combination with piperacillin/tazobactam (n=3, 15%).

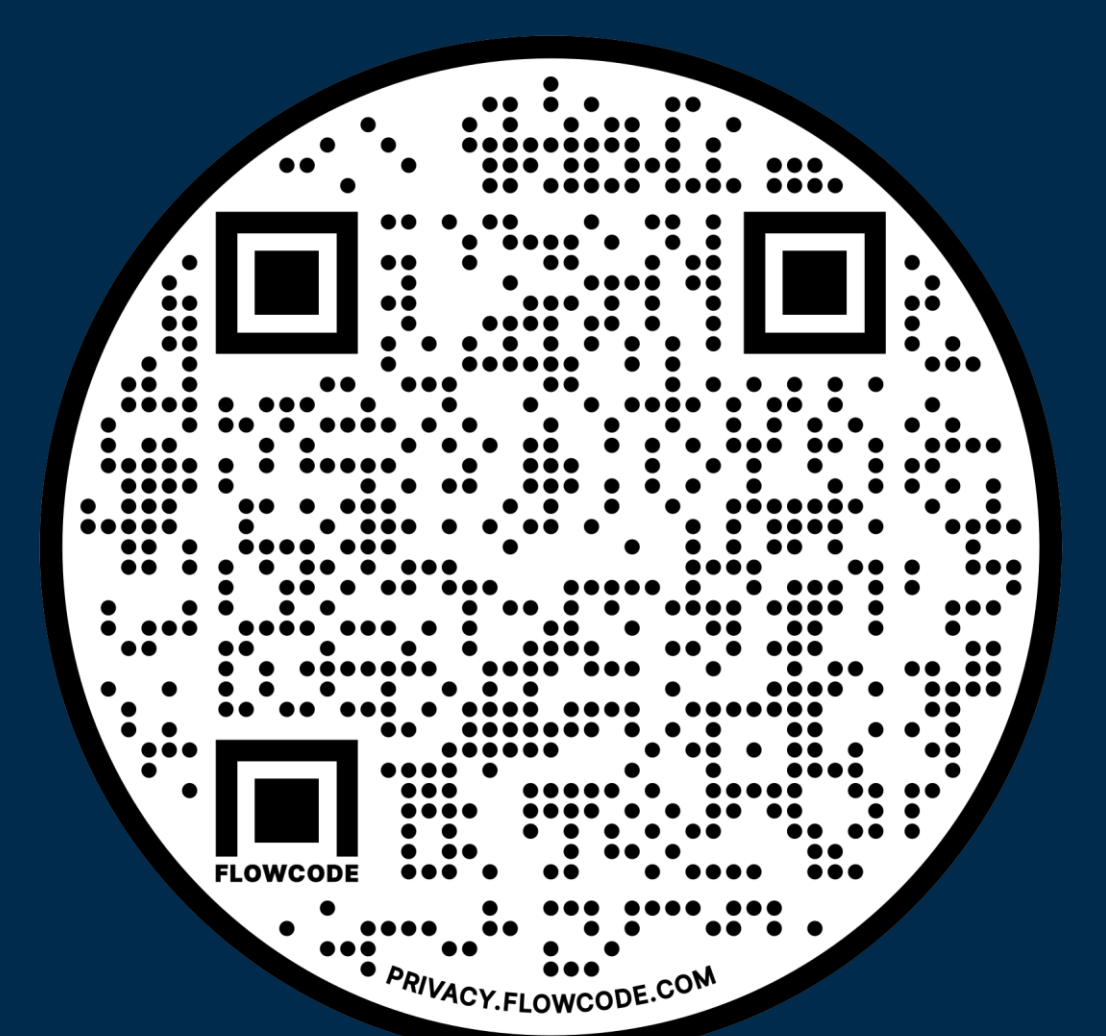
Discussion

- Providers commonly call patients back to the ED after discharge due to GPC bacteremia, regardless of their clinical presentation.
- Patients are exposed to the hospital setting and administered unnecessary antibiotics throughout the time it takes for blood cultures to identify likely contaminants.

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Patients with contaminated blood cultures that are treated and discharged from the emergency department are unnecessarily exposed to the hospital and antibiotics throughout the time it takes for organism identification.

Supplementary Data



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Table 1: Baseline Demographics

Demographics	Value (n = 51)
Age in years, mean (SD)	56 (17)
Female gender (%)	28 (55)
Most Common Chief Complaints	Value n(%)
Respiratory Distress	19 (37)
Fever/Chills	5 (10)
Altered Mental Status	4 (8)
Most Common Discharge Diagnoses	Value n(%)
Asthma/COPD Exacerbation	7 (14)
Community-Acquired Pneumonia	5 (10)
Skin and Soft Tissue Infection	5 (10)

Table 2a and 2b: Blood Culture Results

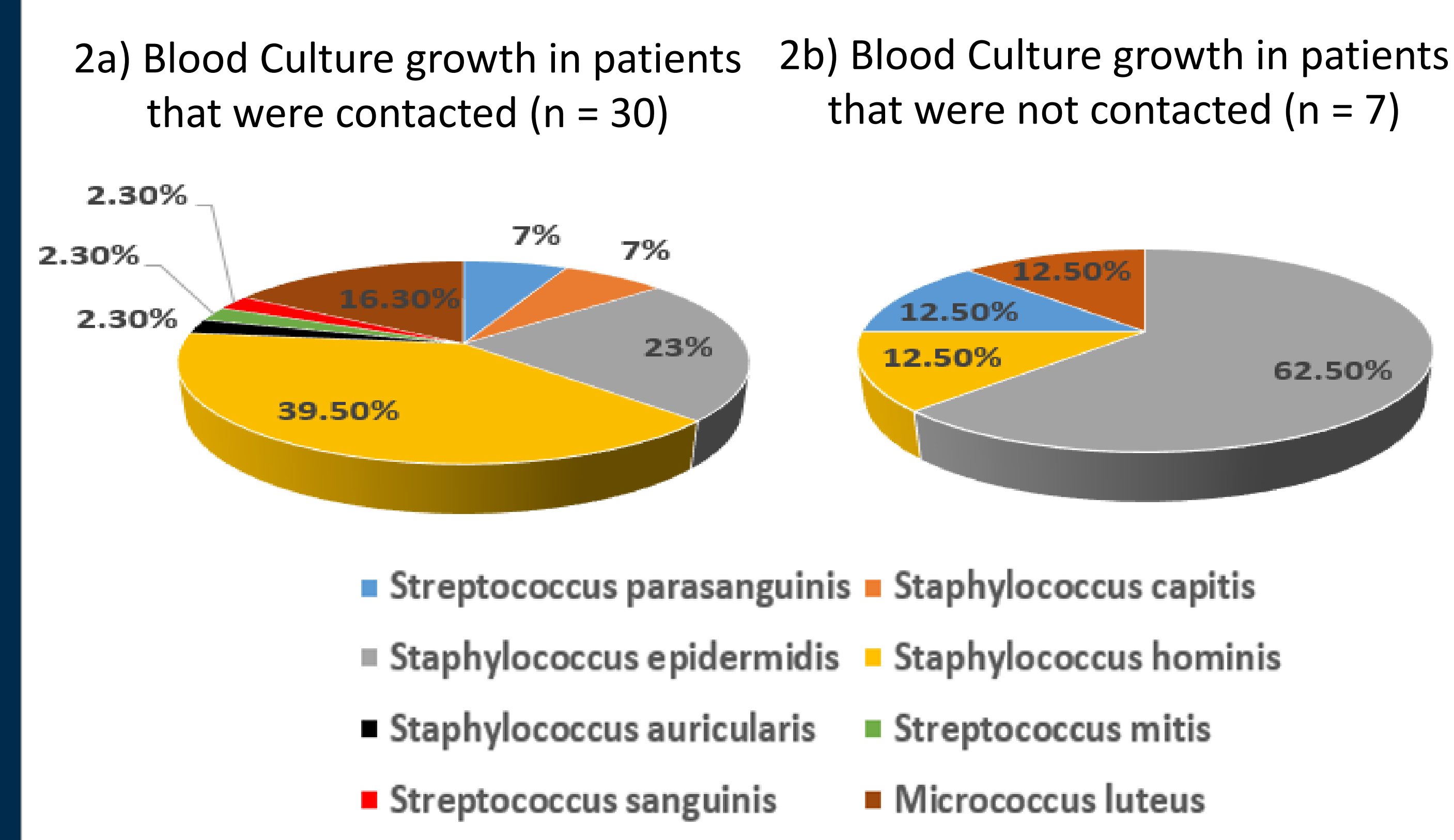


Table 3: Blood Culture Timing compared to Average Length of Stay

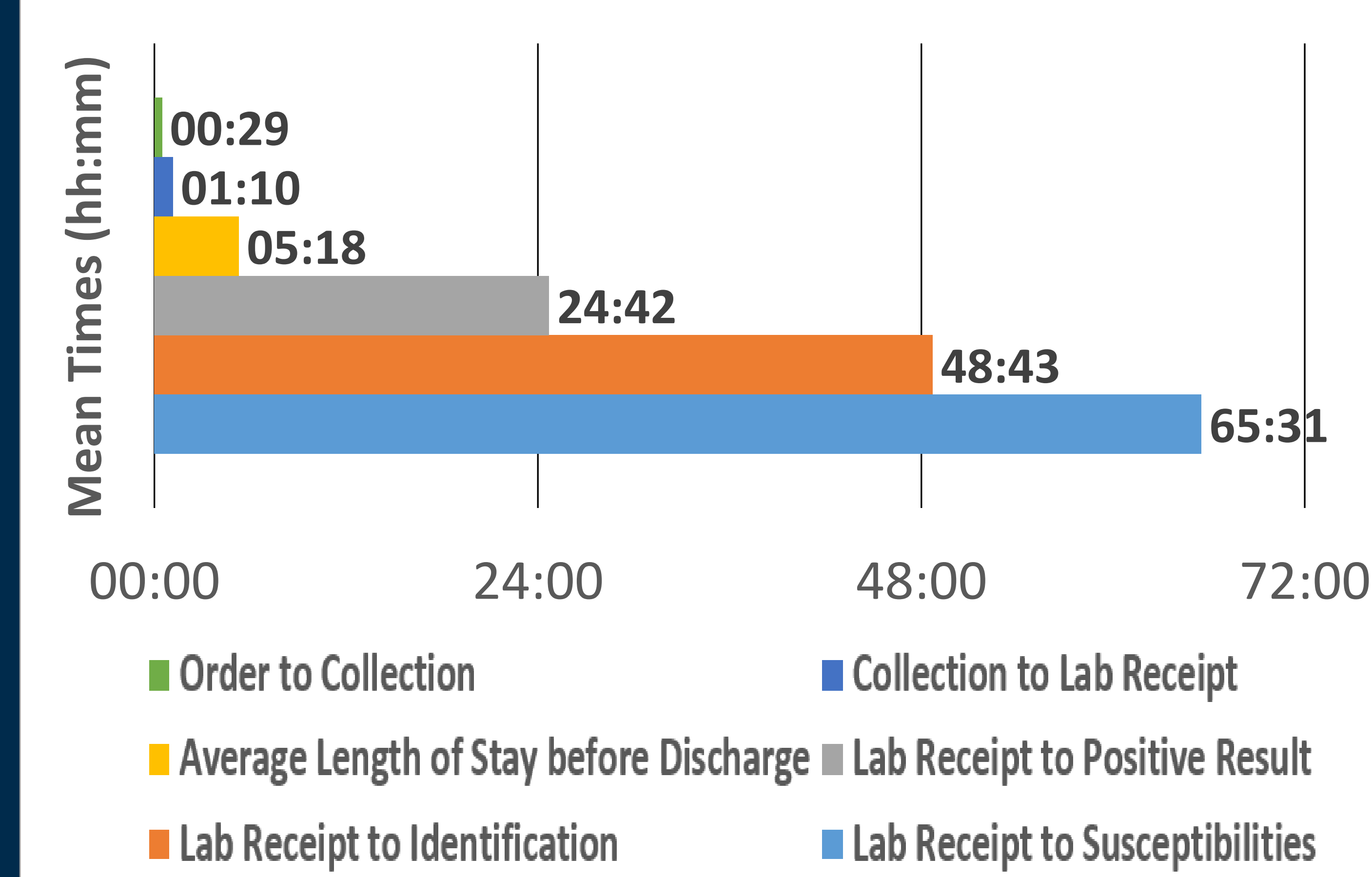


Table 4: Management of Contaminated Blood Cultures

Patients Contacted to Return to the Emergency Department	Value (n=30)
Returned after Discharge (%)	20 (66)
Length of Stay after Return in hours, mean (median)	57.6 (48)
Patients Exposed to Antibiotics after Readmission	Value (n=13)
Duration of Antibiotic Exposure in hours, mean (SD)	49.7 (33.6)