Blood Culture Contamination in Inpatients and Dialysis Patients

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Background

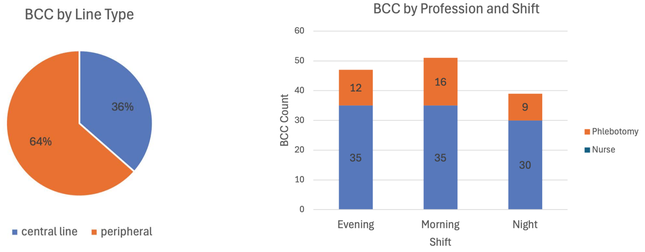
- Blood cultures are the gold standard for diagnosing bloodstream infections, yet blood culture contamination (BCC) remains a common error that leads to false-positive results and adverse patient outcomes.
- Reducing BCC decreases unnecessary antibiotic use, shortens length of stay, prevents unwarranted device removals, reduces readmissions and ED visits, and lowers healthcare costs.[1]
- Central-line draws pose a higher contamination risk than peripheral venipuncture; however, for certain patient populations (e.g., dialysis), central-line collection may be more appropriate.
- Optimizing collection technique and draw-site selection represents a high-value, low-cost opportunity to improve diagnostic accuracy, antimicrobial stewardship, and patient safety.

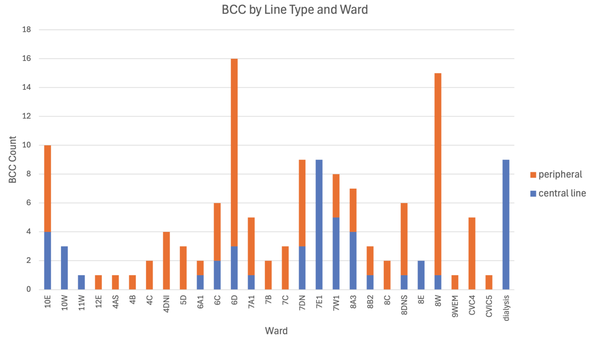
AIM: Provide insight into BCC data in the inpatient setting and identify strategies to minimize blood culture contamination.

Methods

- Analyze **inpatient** and **dialysis** patient data with BCC from July 2024 to March 2025.
- 137 contamination events, 124 unique patients.
- A culture was considered contaminated per the Clinical and Laboratory Standards Institute (CLSI): a positive blood culture is identified by the isolation of one of the common skin commensal organisms from one bottle out of a series of blood cultures collected within a 24-hour period.[2]

Results





- 64% of contamination events were drawn from peripheral lines and 36% were from central lines.
- Most contamination events were from samples drawn by nurses.
- Night shift had lower counts of BCC events.
- 6D and 8W have the highest event counts followed by other ICUs and Hematology/Oncology/Bone Marrow Transplant units.

Results (cont.)

Line Type	Rate
Central Line	1.0%
Peripheral	0.4%
Total	0.5%

- The contamination rate was 1.0% for central line draws and 0.4% for peripheral draws.

Conclusion

- Blood culture contamination (BCC) remains a preventable source of diagnostic error in the inpatient and dialysis setting.
- Peripheral venipuncture accounted for the most contamination events; however, central-line draws had a higher contamination rate (1.0% vs. 0.4%), particularly in critical care and specialty units.
- Most contaminated samples were nurse-drawn, indicating nursing as an essential stakeholder group for understanding and addressing factors that contribute to contamination.
- Continued monitoring and review of collection practices may help identify opportunities for improvement and support ongoing patient safety initiatives.

References

1. Dempsey C, Skoglund E, Muldrew KL, Garey KW. Economic health care costs of blood culture contamination: A systematic review. *Am J Infect Control*. 2019;47(8):963-967. doi:10.1016/j.ajic.2018.12.020
2. Centers for Disease Control and Prevention. *Blood Culture Contamination: An Overview for Infection Control and Antibiotic Stewardship Programs Working with the Clinical Laboratory.* Atlanta, GA: US Department of Health and Human Services, CDC; 2022. Accessed November 11, 2025. https://www.cdc.gov/antibiotic-use/core-elements/pdfs/fs-bloodculture-508.pdf

The authors have nothing to disclose