Implementation of best practice when collecting blood cultures in the emergency department (ED)

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BACKGROUND

- Blood culture contamination leads to pseudobacteremia on preliminary microbiology results and unnecessary antibiotic administration, particularly vancomycin.
- Current studies assess the efficacy of blood collection diversion devices in reducing rates of contamination.[1]
- Incorporation of best practice, particularly use of two different venipuncture sites coupled with proper hygiene, is a cost-effective way to minimize misdiagnosis and antibiotic overutilization.[2]
    - Improper technique may consist of same site, same time blood draws, inadequate hand hygiene, or suboptimal skin preparation.
- The purpose of this study is to compare blood culture contamination rates in the ED before and after educational in-services on best practice.

STUDY OBJECTIVES

- **Primary Outcome:**
    - Blood culture contamination rates in the ED before and after in-services
- **Secondary Outcomes:**
    - Vancomycin use in the ED before and after in-services
    - Potential cost savings from decreased vancomycin use
    - Potential decrease in adverse drug reactions (ADRs)
    - Contamination rates from nurses and phlebotomists

METHODS

- Single-center (Valley Hospital), retrospective analysis
- Educational in-services on best practice will be provided to nurses and phlebotomists over the course of 1-2 weeks in December 2023.
    - Data will be collected for the 3 months before and 3 months after education.
- The following reports will be run in the ED:
    - Drug inquiry reports of vancomycin orders prescribed
    - Microbiology report of all blood culture samples ordered
    - Microbiology reports of samples deemed to be contaminated
- Definition of a contaminant:
    - Considered “usual skin flora” per CDC/NHSN
    - Isolated from 1 site in the past 3 days
    - Collected from a peripheral draw (not a line)
    - Not a pediatric patient
- **Inclusion Criteria**
    - Blood cultures drawn in the ED
- **Exclusion criteria**
    - Blood cultures drawn outside of the ED
- The following data will be collected:
    - Personnel collecting samples (nursing/phlebotomy)
    - Number of vancomycin orders prescribed for contaminated blood cultures
    - Culture and susceptibility data
    - Contaminant type (same site, same time vs single site)

ANTICIPATED FINDINGS

- The research results will provide data on the impact of improper technique and blood culture contamination.
- If education is provided to nurses and phlebotomists, it is anticipated there will be less vancomycin overutilization, fewer ADRs, and more cost savings.

ANALYSIS

- Descriptive statistics will be utilized to evaluate primary and secondary outcomes.
- The research results will provide data and patient outcomes comparing contamination rates before and after education has been provided.

REFERENCES

1. Callado GY, Lin V, Thottacherry E, et al. Diagnostic stewardship: a systematic review and meta-analysis of blood collection diversion devices used to reduce blood culture contamination and improve the accuracy of diagnosis in clinical settings. *OFID*. August 2023.
2. Wilson ML, Mitchell M, Morris AJ, et al. Principles and procedures for blood cultures, approved guideline. *CLSI*. 2007;27(17):1-13.

DISCLOSURE

The authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.