

39. **REVIEW OF BLOOD CULTURES TAKEN FROM ARTERIAL LINES IN JAMES COOK UNIVERSITY HOSPITAL: CONTAMINATION ANALYSIS AND COMPARISON WITH VENOUS SAMPLES**

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<https://www.youtube.com/watch?v=vlsNiqV1-28&t=14230s>

of arterial blood culture samples. While efforts can be made to optimize the consistency of arterial samples and reduce contamination rates, their use should be approached with caution. Implementing the recommended measures is essential for accurate diagnosis, improved patient outcomes, and effective antibiotic management in clinical practice.

Key words: Blood Culture; Arterial Lines; Contamination (Source: MeSH-NLM).

BACKGROUND: Blood cultures are crucial diagnostic tools for identifying and treating bloodstream infections. Traditionally, venous blood is the preferred source for sample acquisition, but arterial lines offer an alternative. However, concerns regarding contamination and diagnostic accuracy have been raised, questioning the reliability of arterial line blood cultures. This study aimed to evaluate the contamination rates of arterial line blood cultures at James-Cook University Hospital (JCUH), UK and compare them with venous samples to understand their clinical utility better. **METHODS:** A comprehensive retrospective review analysed 17,643 blood culture samples collected between September 2022 and March 2023 at JCUH. Among these, 109 arterial line blood cultures and 785 venous peripheral adult samples were included for data analysis. Contamination rates were calculated as the number of positive blood cultures with contaminants per total positive samples (arterial or venous). The incidence of contamination was defined as the number of total blood cultures reported with contaminants per total samples (arterial or venous). No discrimination was made based on the number of contaminants found. Clinical information accompanying the blood cultures, such as the specification of arterial lines as 'new' samples, was also considered. **RESULTS:** The overall contamination rate at JCUH was found to be 4.99%. Specifically, the contamination rate for venous samples was 49.26%, while arterial samples had a higher contamination rate of 56.52%. The incidence of contamination from arterial samples was 11.92%, significantly higher than the incidence rate for venous samples at 3.18%. Most arterial samples were requested from intensive care units (ICUs) and highly dependent wards (HDUs), indicating potential areas for targeted interventions to improve blood culture collection practices. **CONCLUSION:** Arterial blood cultures demonstrated higher contamination rates compared to venous samples, raising concerns about their reliability. Contamination in arterial samples, particularly when collected from critically ill patients in ICUs and HDUs, can lead to inappropriate use of antibiotics, delayed, or missed diagnosis, and suboptimal patient outcomes. The study recommends targeted interventions to improve arterial blood culture collection practices and further training for healthcare workers involved in arterial line care. Encouraging the use of only 'new' arterial lines and implementing standardized protocols can help reduce contamination rates. Furthermore, the study identified certain limitations, such as potential human errors in data analysis and the need for a larger dataset of arterial line cultures. Extending the analysis to compare different sample sources like CVCs, Hickman lines, and central lines could provide a more comprehensive understanding of contamination rates across various culture collection methods. In conclusion, venous samples showed higher clinical favourability with a lower contamination rate, providing increased dependability for accurate diagnosis and management. Although some studies have not shown clear superiority of arterial samples over venous samples, this analysis highlights considerable differences in contamination rates, suggesting a potential inferiority