## Presentation Type:

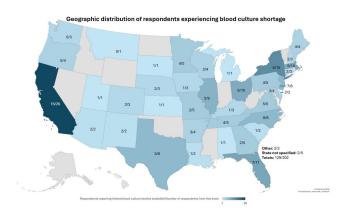
Poster Presentation

Subject Category: Diagnostic Stewardship

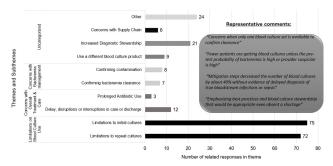
Turning Crisis into Opportunity: Blood Culture Stewardship and the National Impact of a Blood Culture Bottle Shortage on Clinical Care Evangeline Green<sup>1</sup>, Jonathan Ryder<sup>1</sup>, Harlan Sayles<sup>2</sup>, Susan E. Beekmann<sup>2</sup>, Philip Polgreen<sup>3</sup> and Jasmine Marcelin<sup>1</sup>

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Background: In 2024, US hospitals were affected by the Becton Dickinson (BD) BACTEC blood culture bottle shortage with little time to respond and conserve supply. The extent of the impact of this shortage on clinical practice has not been explored. Methods: We developed a 7-question online poll with the Emerging Infections Network (EIN) exploring the extent to which facilities were impacted by the shortage, geographic distribution and facility type of institutions affected, actions taken to mitigate the shortage, and the impact on clinical management of fever and Staphylococcus aureus bacteremia. The link was sent to >3100 EIN listserv members 3 times during September 2024. Descriptive and thematic analyses were performed on quantitative and qualitative responses. Results: Of 202 respondents from 39 states, 129(64%) responded their hospital had limited blood cultures available, 8(4%) were unsure how their hospitals were affected, and 65(32%) indicated their hospitals were not affected (Fig1). The most affected hospital facility types with >10 respondents were Community (27/ 39, 69%), University (48/72, 67%), Children's (7/11, 67%), Non-university teaching (33/52, 65%), and the VA/DOD was least affected facility type (3/ 11, 27%). Respondents not affected by the shortage most commonly used alternate blood culture media. Top mitigation strategies included publishing algorithms for best practice use (103/202, 51%), restricting follow-up blood cultures (88/202, 44%), using single blood culture sets (86/202, 43%), and implementing EMR-based alerts on blood culture orders (71/202, 36%). Important clinical themes identified by affected respondents included limitations on blood culture use (147 responses), concerns with overall treatment and care including delays and disruptions in discharges or prolonged antibiotic use (15 responses), concerns with bacteremia management (15 responses), and increased diagnostic stewardship opportunities (21 responses) (Fig2). The most prevalent theme in S. aureus bacteremia management was limitations in repeat blood cultures (61/ 163, 37%) with concerns about confirming bacteremia clearance, while the most common theme in inpatient/ER management of fever was limitations in initial blood cultures (64/159, 40%), with common comments about reducing inappropriate blood cultures. 61/202 respondents commented in the open-ended question with the most common theme highlighting increased diagnostic stewardship as a positive outcome of the shortage (19/61, 31%). Conclusion: The BD BACTEC blood culture bottle shortage caused widespread clinical impact. The themes identified highlight the challenges placed on healthcare systems during times of shortage as well as the effects on patient care. Mitigation strategies implemented during the shortage may create future opportunities for diagnostic stewardship.



## Respondent Experiences with 2024 BD Bactec Blood Culture Bottle Shortage



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Challenging the 'Culture' around Blood Culture Ordering for the Adult Bone Marrow Transplant Inpatient Population

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Background: The adult bone marrow transplant (BMT) unit at an urban academic medical center in the Midwest reported the highest number of central line-associated bloodstream infection cases across the health system in 2022 and 2023 and notably had the second-highest volume of blood culture specimens collected when compared with other patient care units. Statistical analysis comparing BMT patients to a sample group of oncology patients with the same length of stay and central line days demonstrated that BMT patients had a median of 17 blood cultures per admission compared to 7 in the sample group (p-value 0.000). Moreover, a review of 21 weeks of BMT patient blood culture specimen results suggested that patients were undergoing cultures who were unlikely to have bacteremia or sepsis. Method: An interdisciplinary team created a nurse-driven, clinical decision-making algorithm to refine the release of blood cultures from a conditional order set for BMT patients. The objective of the algorithm was to safely reduce the number of blood culture specimens. It includes an updated fever threshold to align with national neutropenic fever guidelines, consideration for new-onset clinical instability, source of specimen collection, and time from the most recent blood culture. Analysis was completed on 827 cultures over 102 patient admissions in the pre-intervention period and 527 cultures over 162 patient admissions in the post-period. Balancing measures based on escalation of care were assessed by chart review. **Results:** When comparing blood culture specimens among BMT patients, the median specimen count per admission in the pre-intervention period was 6.0 (IQR = 3.5, 10.0), compared to 2.5 (IQR = 0.0, 5.0) specimens in the post-intervention period (p-value = 0.000). 37.7% of patient admissions were not cultured in the post-intervention period whereby 100% of patient admissions were cultured in the pre-intervention period. Of the 48 rapid responses, 10 intensive care unit transfers, and 1 code blue events in the 23week post-intervention period, none were attributed to delayed detection of bacteremia or sepsis. Conclusions: Messaging that ordering providers should order fewer cultures is overly simplistic with consideration for the BMT patient population, yet diagnostic stewardship is essential to optimizing patient experience and outcomes. Attention to new clinical instability among BMT patients is important in detecting bacteremia. Stable symptoms in continuously observed BMT inpatients are unlikely to represent bacteremia.

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