

Optimization of Blood Culture Collection Reduces Broad-Spectrum Antimicrobial Use In CICU

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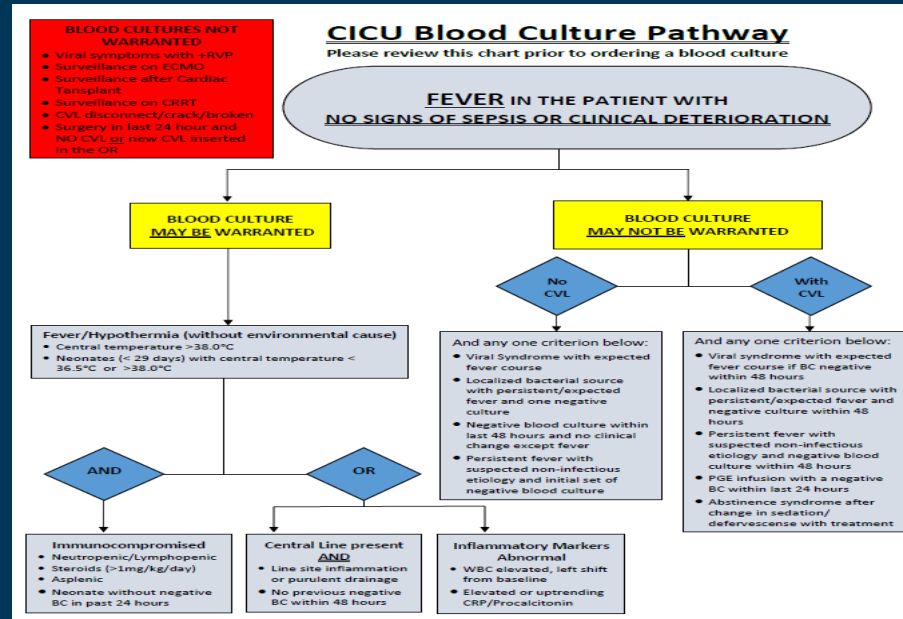
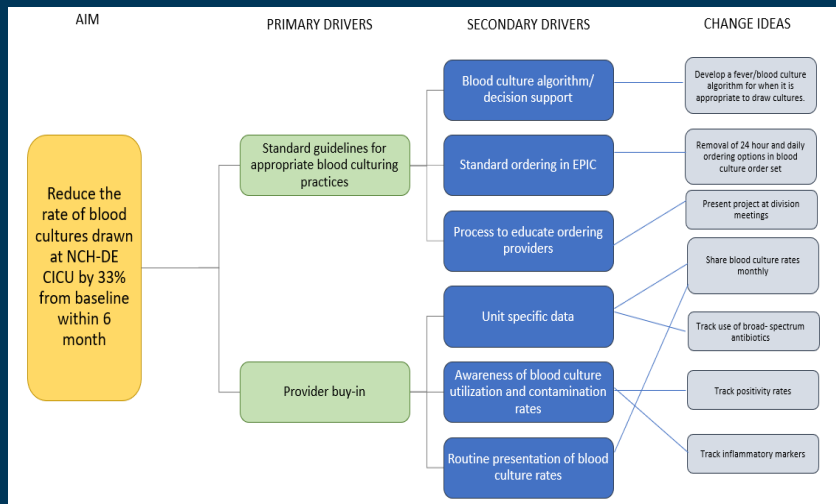
Introduction

- Blood cultures play a key role in sepsis evaluation.
- Excessive testing and false-positive results through contamination, however, may lead to unnecessary, painful procedures and broad-spectrum antibiotic exposure.
- Balance of the critical nature of quick sepsis diagnosis with low true-positive and high false-positive nature of blood cultures is crucial.
- The clinical decision-making process for obtaining a blood culture in the pediatric population is highly variable.
- Standardized approaches have been shown to reduce blood culture use without increase in missed sepsis events as well as reduced antibiotic exposure and CLABSI.

Aim

- Reduce the rate of blood cultures in a pediatric CICU by 33% from of 17.56 blood cultures/100 patient days to 11.7 within 6 months.

Design / Methods



Results / Discussion

- The blood culture rate decreased from 17.56/100 patient days to 10.51/100 patient days, demonstrating a 41% decrease from baseline.
- No missed sepsis events were identified during the study period.
- A direct correlation between the decrease in blood cultures drawn and a decrease in broad-spectrum antibiotic usage was also noted.

Conclusion

- Standardizing the clinical decision-making process for obtaining blood cultures in the pediatric CICU represents a safe approach to reduce unnecessary blood culture testing and exposure to traumatic procedures in pediatric patients.

Measurement

- Outcome measure: number of blood cultures per 100 patient days
- Balancing measure: delay in treatment of sepsis. Chart review performed on all positive cultures to identify treatment delays and areas of opportunity.

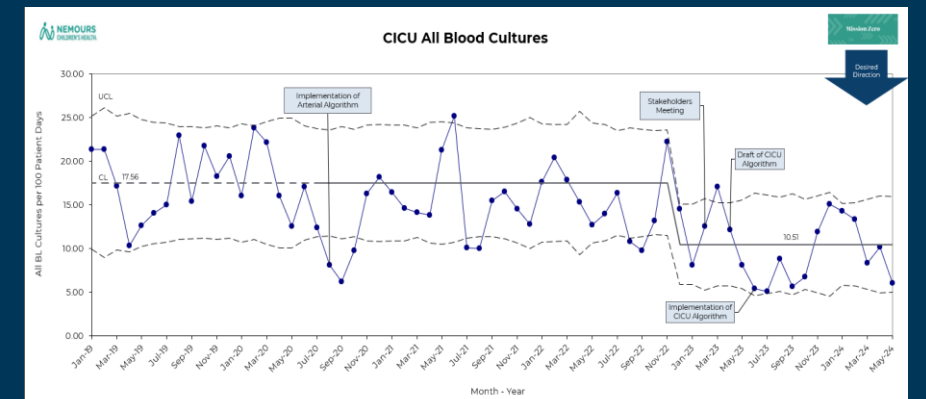


Figure 1: Control chart demonstrating monthly rate of blood cultures. Favorable special cause variation observed beginning January 2023 resulting in a shift in the centerline and improvement.

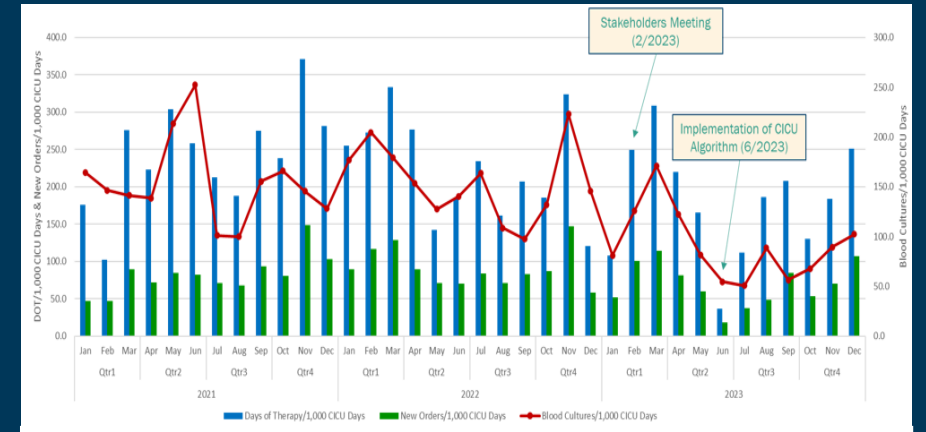


Figure 2. Blood culture rate, new orders for broad-spectrum antibiotics, and broad-spectrum antibiotic utilization on day 3 of admission or later. Reduction in monthly blood culture rate was correlated with reduction in new broad-spectrum antibiotics and total broad-spectrum antibiotic use.