



Interventions that focused on improving venipuncture technique and limiting unnecessary blood cultures were associated with fewer contaminants and the achievement of the QI team’s project aims” Mullan et al (2018).

Abstract:

INTRODUCTION: High peripheral blood culture contamination rates (BCCR) in the emergency department (ED) contribute to overuse and harm. This study describes 2 years of quality improvement (QI) interventions that aimed to decrease a high BCCR in a pediatric ED.

METHODS: The QI team created a Key Driver Diagram with multiple Plan-Do-Study-Act (PDSA) cycles. PDSA interventions included a venipuncture sterility checklist (PDSA1), phlebotomist feedback system (PDSA2), and physician ordering guidelines (PDSA3). The specific aim was to decrease the BCCR by 50% within 24 months. The secondary aim was to decrease the peripheral blood culture ordering rate (BCOR) by 10% within 24 months. The balancing measure was the proportion of pathogenic bacteremia cases at ED return visits before and after PDSA3 implementation. A financial measure estimated the savings in charges between the observed and expected contaminants in PDSA3. An interrupted time series design applied statistical process control methodology to detect special cause variations.

RESULTS: The BCCR in the baseline, PDSA1, PDSA2, and PDSA3 periods were 3.02%, 2.30%, 1.58%, and 1.17%, respectively. The BCOR in the baseline, PDSA1, PDSA2, and PDSA3

periods was 4.80%, 4.26%, 3.82%, and 3.49%, respectively. Special cause variations occurred after PDSA cycle implementations for both BCCR and BCOR. There was no change in the balancing measure. The interventions were associated with an annual prevention of 95 contaminants and savings of \$300,070.

CONCLUSIONS: Interventions that focused on improving venipuncture technique and limiting unnecessary blood cultures were associated with fewer contaminants and the achievement of the QI team's project aims.

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Blood culture contamination quality improvement project
Reducing blood culture contamination rates
How to determine blood culture contamination?

Reference:

Mullan, P.C., Scott, S., Chamberlain, J.M., Pettinichi, J., Palacios, K., Weber, A., Payne, A.S., Badolato, G.M. and Brown, K. (2018) Decreasing Blood Culture Contaminants in a Pediatric Emergency Department: An Interrupted Time Series Analysis. *Pediatric Quality & Safety*. 3(5), p.e104.

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