Intravenous literature: Self, W.H., Speroff, T., Grijalva, C.G., McNaughton, C.D., Ashburn, J., Liu, D., Arbogast, P.G., Russ, S., Storrow, A.B. and Talbot, T.R. (2013) Reducing blood culture contamination in the emergency department: an interrupted time series quality improvement study. Academic Emergency Medicine. 20(1), p.89-97.

Abstract:

OBJECTIVES: Blood culture contamination is a common problem in the emergency department (ED) that leads to unnecessary patient morbidity and health care costs. The study objective was to develop and evaluate the effectiveness of a quality improvement (QI) intervention for reducing blood culture contamination in an ED.

METHODS: The authors developed a QI intervention to reduce blood culture contamination in the ED and then evaluated its effectiveness in a prospective interrupted times series study. The QI intervention involved changing the technique of blood culture specimen collection from the traditional clean procedure to a new sterile procedure, with standardized use of sterile gloves and a new materials kit containing a 2% chlorhexidine skin antisepsis device, a sterile fenestrated drape, a sterile needle, and a procedural checklist. The intervention was implemented in a university-affiliated ED and its effect on blood culture contamination evaluated by comparing the biweekly percentages of blood cultures contaminated during a 48-week baseline period (clean technique) and 48-week intervention period (sterile technique), using segmented regression analysis with adjustment for secular trends and first-order autocorrelation. The goal was to achieve and maintain a contamination rate below 3%.

RESULTS: During the baseline period, 321 of 7,389 (4.3%) cultures were contaminated, compared to 111 of 6,590 (1.7%) during the intervention period (p < 0.001). In the segmented regression model, the intervention was associated with an immediate 2.9% (95% confidence interval [CI] = 2.2% to 3.2%) absolute reduction in contamination. The contamination rate was maintained below 3% during each biweekly interval throughout the intervention period.

CONCLUSIONS: A QI assessment of ED blood culture contamination led to development of a targeted intervention to convert the process of blood culture collection from a clean to a fully sterile procedure. Implementation of this intervention led to an immediate and sustained reduction of contamination in an ED with a high baseline contamination rate.