

Evidence-Based Practice (EBP) - E183

Poster

Abstract Title:

Pulling the Line on Central Line Blood Stream Infections (CLABSIs) in a NeuroTrauma Intensive Care Unit (NTICU)

Authors:

Ellen M. Harvey DNP, RN, CCRN; Kelli Loftus BSN, RN, CCRN; Jason Hoffman PharmD, BCPS; Terry Tilley MSN, RN

Background & Purpose:

Central venous catheters play an important role in the treatment of the severely injured trauma patient; however, CLABSIs are a potentially serious complication. The estimated mortality rate associated with CLABSI is 23.8% at a non-reimbursable cost of \$29,156 per case. In May and September of 2011 the CLABSI rate in our NTICU was 18.7 and 14.7, respectively, exceeding the National Healthcare Safety Network (NHSN) pooled mean of 1.6 for like units. The project objective was to reduce the rate of CLABSI's in the NTICU to below the NHSN benchmark.

Study/Project Design:

This continuous quality improvement study utilized a pre/post intervention design.

Setting:

A 12-bed NTICU located in a 767-bed, Level 1 Trauma academic medical center.

Sample:

Patients with a central line catheter in the NTICU at risk for development of a CLABSI, admitted May 2011 through June 2013.

Procedures:

The Define-Measure-Analyze-Improve-Control model for quality improvement was utilized. The monthly CLABSI rate/1000 line days and central line device utilization ratio were used for baseline and trend data. The NTICU nursing staff convened a multidisciplinary team to review evidence, incorporate innovative strategies to reduce the unit CLABSI rate and sustain improvements. Strategies incorporated included joining a national CLABSI Comprehensive Unit-based Safety Program cohort, new resident and nursing staff orientation, insertion and line maintenance bundles, guidelines for antibiotic stewardship, use of daily goal boards, reinforcement of "pulling the line" in daily team rounds, deep dive documentation reviews and "Stop CLABSI" popcorn movie nights.

Findings/Results:

Following a 12-month zero CLABSI rate, a single NTICU CLABSI rate spike of 15.5 in October 2012 was followed by an additional 8 consecutive CLABSI free months, remaining below the NHSN pooled mean of 1.6 for like units. The NTICU central line device utilization ratio trend is significantly lower than NHSN pooled mean of 0.55 for national benchmark units ($p < 0.0001$). Results highlight the tremendous efforts of a dedicated trauma nurse led team to sustain a remarkable 20 out of 21 months CLABSI free culture in high risk NTICU. A projected fiscal year cost avoidance of \$204,092 was achieved, with an estimated two lives saved. The project success culminated in the integrated health systems' annual MVP award in 2012 and Hold the Gains award in 2013.

Discussion/Conclusions/Implications:

Trauma nurses play an essential leadership role in implementation of evidence to improve outcomes of care for patients. Reducing central line device utilization is a cornerstone to prevention of CLABSIs. Quality improvement is a dynamic process dependent upon a multidisciplinary system's approach to identify and implement evidence-based solutions to complex factors affecting practice in high risk settings. Future study should focus on replication of this quality improvement approach to improve outcomes unique to trauma patients in diverse settings.