414 to 12 to 152 Days Between NICU CLABSIs: The Value of Root Cause Analysis

The Problem

Following a series of improvement efforts beginning in 2010-2011, our NICU enjoyed 414 days without a central-line associated bloodstream infection (CLABSI). However, beginning in June 2012, we experienced 3 CLABSIs within a 3 month period. There were 12 days between the most recent two incidents.

We were concerned about the ramifications for the safety of our patients. Had we become lax in our initial improvement? Or was there a new special cause explanation for the increase in CLABSIs?

Aim/Goal

Using an existing working group, the NICU Central Line Infection Prevention Task Force (NICLIP), we desired to critically examine our data and practices surrounding the recent infections, and determine causes and barriers to our ability to sustain our previous improvement in the reduction of CLABSIs in our NICU, with the goal remaining ZERO.

The Team – NICLIP Task Force

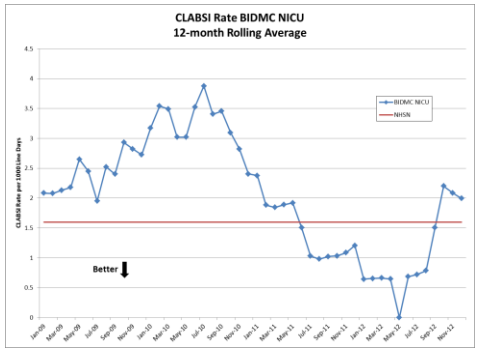
Chairs: Rosanne Buck NP and Brenda Sheridan RN
NICU Leadership: Jane Smallcomb RN and Susan Young RN
RNs: Radka Arnold, Melissa Chang, Sarah Farrell, Jen Harris
NPs: Rachel Copertino, Mary Quinn, June Rivers, Laura Tannenbaum
MDs: Dmitry Dukhovny, Munish Gupta
Infection Control: , Fatima Muriel MT(ASCP), David Yassa MD
Central Line Service: Blanche Murphy RN VA-BC PEVA/CVL RN Coordinator
Pharmacy: Greg Dumas RPh

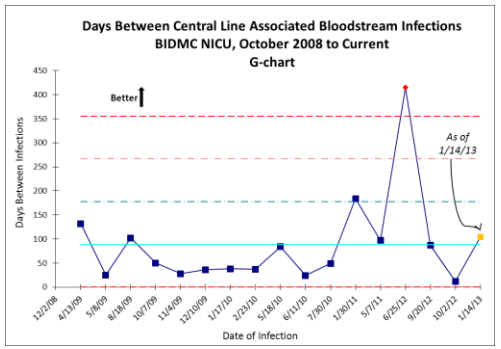
Interventions

- The Online Root Cause Analysis (RCA) Tool, formulated as one of the NICLIP measures, was utilized for each of the 3 episodes. The RCA was sent via email link to MDs, NPs, and RNs caring for each patient within 48 hours of CLABSI event.
- CLABSIs were reviewed by department at M&M, and a special CLABSI review meeting was called to review the root cause data and identify possible causes, develop or identify potential solutions, and determine if further interventions were warranted.

The Results/Progress to Date

- RCAs revealed all infections were in the lowest gestational age infants, with high numbers of line access events.
- Nursing input in the review meetings identified a potential special cause as a recent change in IV tubing for central lines that required greater tubing manipulations to prevent air bubble formation.
- Group discussion at review meetings suggested decreasing compliance with elements of the insertion and maintenance bundles, particularly around use of 2nd observer during line placement.
- Renewed educational efforts were undertaken with staff addressing these issues.
- As of 1/18/13, 108 days have passed since the last NICU CLABSI (see graphs).





Lessons Learned / Next Steps

- Sustainment of improvements requires continued attention and commitment to standard practices.
- Implementation of new processes, such as the IV tubing system, need appropriate communication to insure best practices are possible.
- We continue to explore new opportunities for improvement, including a new central line tubing configuration with closed medication administration system; this configuration should greatly reduce impact of line access events on integrity of system. Widespread staff communication and education will be crucial prior to this next tubing change.
- We will continue to aggressively use the on-line RCA tool and group discussions to review new CLABSI events.

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