

Reduction of Central line Associated Bloodstream Infections in an Urban 40 bed, Level III Neonatal Intensive Care Unit when new practices were implemented

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Background

- Central line-associated bloodstream infection (CLABSI) in the neonatal population is a major source of morbidity and mortality.
- The disruption of skin and mucus membranes by the use of invasive devices contributes to the susceptibility of this population.
- In our Neonatal Intensive Care Unit (NICU), the CLABSI rate was continually increasing.
- It became evident that new practice guidelines were necessary to reduce the CLABSI rate in this vulnerable population.

Objectives

- Describe the process through which the Thomas Jefferson University Hospital Neonatal Intensive Care Unit (NICU) lowered its combined CLABSI rate from 6.52 to 0.00.
- Demonstrate the result of team building efforts put forth by the staff.
- Show sustainability of the zero infection rate.

Methods

The NICU Evidence –Based Practice committee evaluated and improved the current practice of insertion and maintenance of Central Venous Lines (CVL) and Peripherally Inserted Central Catheters (PICC). Bundle implementation was supported by extensive education.

The Bundle elements:

- Daily evaluation of the necessity of the central line
- Chlorhexidine gluconate (CHG) scrub for all central line insertions in neonates ≥ 26 weeks of age. (Ages are age at birth or corrected gestational age).
- $\leq 25 \frac{6}{7}$ weeks – clean with betadine, wipe with alcohol, no CHG disc.
- 26 – 27 $\frac{6}{7}$ weeks- clean with CHG, wipe off with sterile water or saline, no CHG disc.
- ≥ 28 weeks - clean with CHG, wipe off with sterile water or saline, and place CHG disc. These babies must also be $>1,000$ grams, ≥ 28 weeks gestation and 2 weeks old.
- Dressing changes done by two staff members using aseptic technique
- Documentation and monitoring after every central line insertion and dressing change
- 2-person system to change IV tubing using sterile gloves and mask over a sterile field.
- Central line tubing changed every 96 hours
- Closed medication system
- Scrub the hub for 15 seconds, with a 15 second dry time whenever accessing a central line
- All unused injection ports covered with disinfecting port protectors.
- Hand hygiene before and after donning and removing gloves.

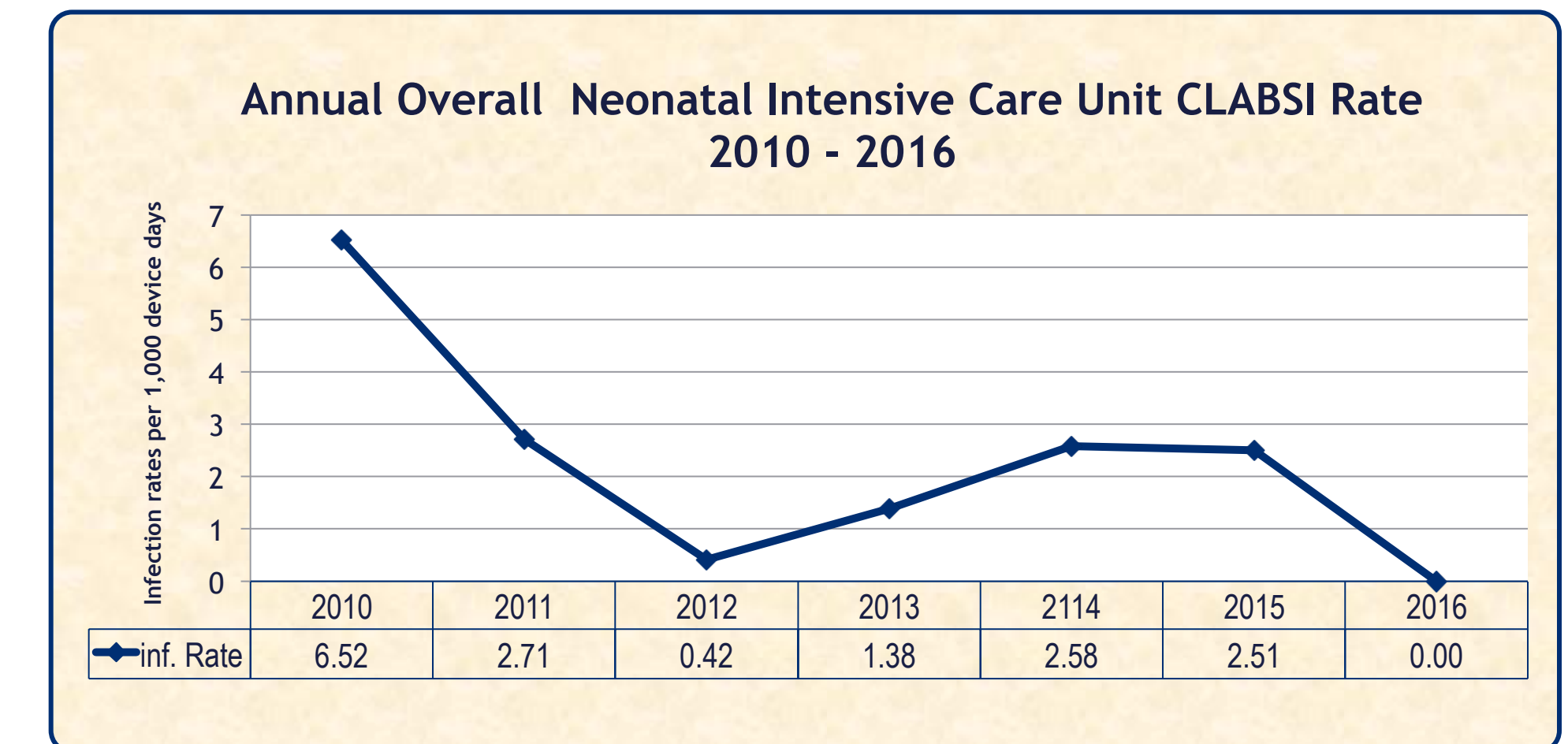
Results

In 2010 the overall combined CLABSI rate in the NICU was 6.52 (20 infections). In 2012 after initial interventions were implemented, the rate dropped to 0.42 (1 infection) which is statistically significant by Chi-square analysis (p-value=0.0001)

The infection rate began to rise again in 2013 and 2014 which prompted further initiatives:

- A root cause analysis (RCA) is to be done on every CLABSI
- A PICC team of neonatal nurses and nurse practitioners was formed
- The use of disinfecting port protectors was instituted.

This resulted in a zero CLABSI rate that was sustained for greater than 16 months.



Conclusion

Teamwork and vigilance in following the various practice initiatives has resulted in a sustained reduction of CLABSI in the NICU, contributing significantly to patient safety and good outcomes.

Disclosures: Nothing to Disclose