Reducing Central Line Infection Rate: Creating a Positive Patient Safety Culture in the NICU

St. John Providence Health System, as a Catholic health ministry, is committed to providing spiritually centered, holistic care which sustains and improves the health of individuals in the communities we serve, with special attention to the poor and vulnerable.

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Objectives

- ✓ To attain and sustain zero central line associated blood stream infections (CLABSI) in the neonatal population using an interdisciplinary approach
- ✓ Utilize evidence-based best practices related to prevention of CLABSI
- ✓ Coordinate a staff education plan
- ✓ Create a positive patient safety culture

Staff Education Plan

- ✓ Standardize IV line care & maintenance
  - Central line dressings
  - Scrub the hub
  - Line change protocol
- ✓ *Comprehensive Unit-based Safety Program* (CUSP)
  - Science of Safety education
- ✓ Safety Event Occurrence Reporting
- ✓ High Reliability training (*Healing without Harm*)
- ✓ 200% Accountability
- ✓ Ten Principles of Leadership

Tools and Techniques

- ✓ Competency checklist for PICC insertion training
- ✓ Line maintenance data collection audit
- ✓ Root Cause Analysis tool
- ✓ Daily central line patient census list
- ✓ Blind hand hygiene audits
- ✓ Infection control guidelines
- ✓ Interdisciplinary patient rounds

Line Maintenance Audit Tool

NCABSI DATA LINE MAINTENANCE COLLECTION FORM
PATIENT ID (MRN): _____ BABY'S LAST NAME: _____

DATE							
SHIFT? D (day) / N (night)							
CATHETER TYPE?							
BROVIAC							
PICC							
UAC							
UVC							
OTHER							
< 120 CC/KG/Day PO							
≥ 120 CC/KG/Day PO							
ON ROUNDS: DECISION MADE THAT BABY STILL NEEDS THE LINE? Y /N / DNK							
WAS CATHETER ACCESSED THIS SHIFT? Y / N							
IF CATHETER IS ACCESSED:							
DID STAFF GLOVE BEFORE ACCESS?							
W/O PROMPTING?							
W/ PROMPTING?							
NOT DONE?							
HAND HYGIENE PERFORMED BEFORE & AFTER GLOVING?							
W/O PROMPTING?							
W/ PROMPTING?							
NOT DONE?							
WAS HUB CONNECTOR CLEANED FOR AT LEAST 15 SECONDS?							
W/O PROMPTING?							
W/ PROMPTING?							
NOT DONE?							
WHAT KIND OF HUB PREP USED?							
CHLORHEXIDINE							
POVIDONE IODINE							
ALCOHOL							
STERILE WATER							
WAS SOLUTION ALLOWED TO AIR DRY?							
W/O PROMPTING?							
W/PROMPTING?							
NOT DONE?							
WAS INFUSION TUBING CHANGED DURING SHIFT? Y/N							
YES, DID STAFF AT A MINIMUM WEAR GLOVES?							
W/O PROMPTING?							
W/PROMPTING?							
NOT DONE?							

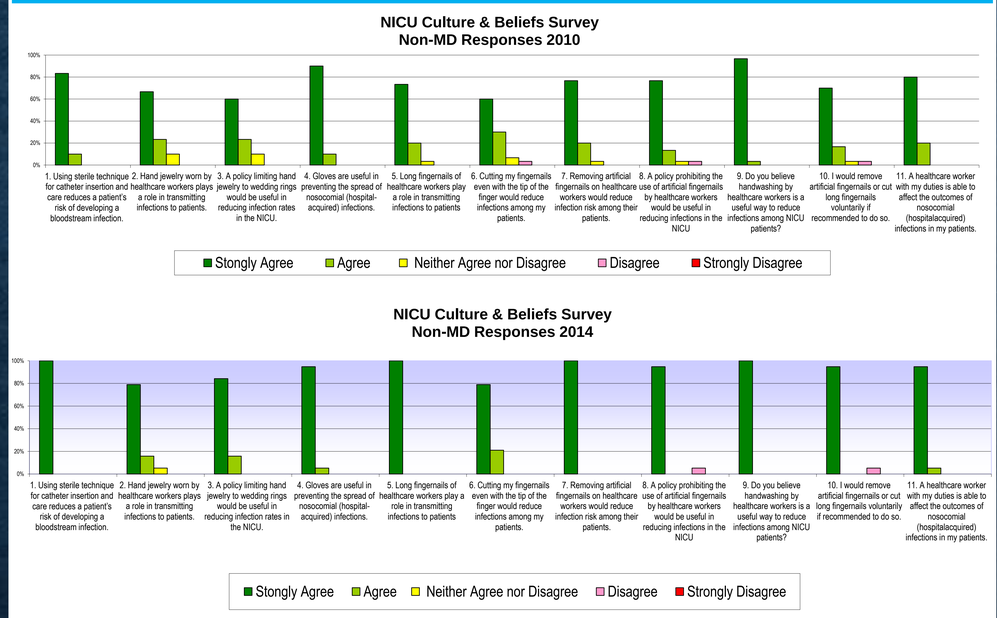
St. John Hospital & Medical Center (SJH&MC)

Detroit, Michigan

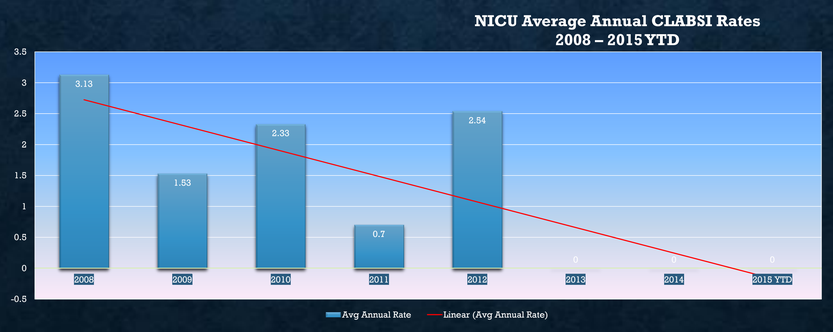
Neonatal Intensive Care Unit

SJH&MC is part of the Michigan Ministry Market of Ascension, the largest non-profit health system in the United States and the world's largest Catholic health system. Our 35 bed Level III NICU has been a leader in providing life-saving care for critically ill and premature infants for 45 years. The NICU's survival rate is one of the highest in the world, caring for approximately 450 babies annually, including many transferred from regional referral centers in southeast Michigan. Our NICU participates in the National Catheter Associated Bloodstream Infection Collaborative - a multi-state network committed to cultural change, the Vermont Oxford Network Database and a Michigan statewide collaborative focused on Quality and Safety Improvements (MICQI). Peripherally inserted central catheters (PICC) are placed by certified NNP/RN team; umbilical catheters are placed by NNP/Physician team.

Staff Safety Assessment



Outcomes Measurement



Methods to Reduce CLABSI Risk

- ✓ Neonatal Infection Prevention Team (NIPT)
- ✓ Root Cause Analysis (RCA) performed on all CLABSIs & lessons learned shared with team
- ✓ Daily rounds: evaluation for PICC removal & transition from IV to oral medications
- ✓ Prophylactic IV Fluconazole initiated (VLBW infants)
- ✓ Number of days since last CLABSI in staff breakroom & NIPT Tip of the Month
- ✓ Pre and post *NICU Culture & Beliefs Survey*
- ✓ The Joint Commission *Speak Up*™ brochures for families
- ✓ Infection Control key messages discussed in shift change NICU safety huddles
- ✓ RN completes bedside disinfection every shift (surfaces, equipment, phones, etc.)
- ✓ Revised *NICU Infection Control Guidelines*
- ✓ NICU Quality Improvement Interdisciplinary Team

Conclusion

- ✓ By using an interdisciplinary team approach and applying elements of the CUSP program, a framework of evidence based best practices was established, standardized and implemented e.g. catheter insertion and line maintenance.
- ✓ Progress related to the changes was measured and shared.
- ✓ The *NICU Culture and Beliefs Survey* reflects a shift to an environment supportive of patient safety.
- ✓ Staff engagement, teamwork, communication are key.
- ✓ Therefore with the conscientious effort of the nursing team and embracing a positive culture of patient safety in the NICU setting, CLABSIs can be reduced and eliminated.
- ✓ On 12/18/2015 we celebrated over three years without a Central Line Associated Blood Stream Infection!

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