In This Section

II. Building the Foundation to Prevent Hospital Acquired Infections in the NICU

Targeting Zero Hospital Acquired Infections and Building a Quality Improvement Team Mindset

Introduction

Reduction and elimination of hospital acquired infections and specifically, central line associated blood stream infections (CLABSI), is possible; however, the task is more complex than the quest for the perfect bundle and NICU leaders need to widen their lens to build a quality improvement framework through which to ground the important work of preventing harm.[1] As neonatal care becomes increasingly complex and NICU patients more vulnerable, achieving zero harm requires teams to think about the work differently and to build interdependent teams and safer systems.

There are several alternative approaches which have yielded significant improvement, all of which are rooted in the understanding of team dynamics and error reduction. These include:

- Comprehensive Unit-based Safety Program (CUSP) - Agency for Healthcare Research and Quality (AHRQ)
- Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) - Agency for Healthcare Research and Quality (AHRQ)
- High Reliability Methodologies - Institute for Healthcare Improvement (IHI)

High Reliability Organizations (HRO) are widely described as organizations that in performing complex tasks observe fewer than their expected share of unexpected outcomes. Although caring for neonates is not necessarily comparable to the work within the nuclear power or airline industries, humans functioning in complex systems tend to behave and succeed or fail in these systems in a similar manner. NICU leaders and work groups should standardize work whenever possible and create a team understanding of how human factors engineering impacts daily tasks. In doing so, teams should guide task-development by making it easy to do the right thing and hard to do the wrong thing. Examples of using human factors engineering in improving the daily work of NICU staff include avoiding the reliance on memory and developing and instituting visual aids, well designed checklists, and insertion and maintenance kits (which standardize supply utilization).

POTENTIALLY BETTER PRACTICE

Target Zero Hospital Acquired Infections

Background, Rationale, and Goals

- Although not all units have achieved zero hospital acquired infections, many units have demonstrated that zero is achievable
- Many adult and pediatric critical care units have achieved zero CLABSI, some for many years [2,3]
- An expectation of 'zero harm" leads to a change in mental model and a different level of accountability for each nosocomial event [4]
- Avoid common "group think" that HAIs are "unpreventable" as this perpetuates that given outcome
- Team's focus and goals should be zero HAI

Recommended Guidelines and Algorithms

- Post not only infection rates but "days since last infection."
- Share stories of units and institutions that have achieved zero with senior leaders and Board of Directors or other high-level leadership
- Ensure consistent Board/leadership messaging of zero as an achievable goal with sustained effort

Guidance on Quality and Process Improvement

- Monitor run charts with notation of significant interventions; examples of run chart measurements include hand hygiene compliance percentages and CLABSI rates over time. Consider a unit dashboard including all major HAI measures such as hand hygiene compliance, days between infection, and antibiotic utilization rate.
- Publish "days since last infection" in the unit

POTENTIALLY BETTER PRACTICE

Foster a Culture of Safety and Learning

Background, Rationale, and Goals

- The care provided in NICUs has become increasingly complex with significant potential for slips or lapses
- Teams increasingly are dependent on the expertise and awareness of other teammates
- Performance improvement efforts to reduce adverse outcomes necessitate an environment of trust and learning
- Creating a "just culture" is critical to drive safety reporting and crucial conversations; adopting a just culture approach to safety events may be foundational to reducing adverse events, improving communication of safety risks, and reducing patient harm. See the Just Culture Resources.
- Efforts to establish a culture of safety should form the foundation for all safety interventions [6]
- There is a strong correlation between a strong safety culture and reduced adverse events,[10] including CLABSI
- Units that execute plans to address Safety Attitude Questionnaire (SAQ) opportunities are more likely to decrease CLABSI [6]
- Staff working in an environment that does not feel safe are less likely to speak up, check one another or provide feedback, crippling efforts at standardization and compliance
- CLABSI reduction is highly correlated with improvements in "teamwork climate". A positive teamwork climate refers to the presence of open communication and cooperation between and among employees and is one piece of the context in which care is provided [5]
- Standardize expectations of team members to team check and to be checked; using staff as auditors of critical steps (such as central line tubing change) can offer both important compliance data along with promoting a team safety culture
- Foster a climate in which it is expected that assistance will be actively sought and offered

Recommended Guidelines and Algorithms

- Assess the status of safety culture in your unit with any of the available tools, paying particular attention to the elements of a teamwork climate
- If opportunities are identified, develop unit specific action plans to address concerns
- Ensure institutional commitment aligns to a culture of safety
- Consider using one of the following methodologies to teach team behaviors which have the potential to impact culture. Although there are differences with each, there are also great similarities, and it is important to consider which is most suitable to your unit and institution:
  - Team STEPPS
  - Healthcare Performance Improvement/High Reliability
  - Comprehensive Unit-based Safety Program

Guidance on Quality and Process Improvement

- Consider periodic assessment of unit specific questions to assess progress with addressing safety opportunities such as:
  - "In our unit we use error reporting as an opportunity for improvement"
  - "In the past week I have team checked/been team checked"

Outcome, Balancing and Process Measures

- At a minimum, conduct an annual survey of all staff about the safety culture, such as the SAQ or a similar tool, or ask questions on a standard survey specifically addressing safety culture
- Monitor error reporting as a proxy measure for staff "speaking up"

POTENTIALLY BETTER PRACTICE

Become a Highly Reliable Organization

Background, Rationale, and Goals

- High reliability organizations (HRO) are those organizations that operate in hazardous conditions and yet observe fewer than expected adverse outcomes, and in studies have been shown to share similarities in how they achieve reduced adverse events
- Application of high-reliability principles and practices can drive culture change [9]
- Integration of high-reliability principles strengthens evidence-based practice and reduces clinical variation [9,10]
- Institutional efforts toward high reliability integrates QI work into healthcare providers' everyday activities which

promotes standardized expectations and a singular focus on error prevention, resulting in sustainable improvement [11,12]

- A comprehensive approach to achieving high reliability (such as The Joint Commission's High Reliability Health Care Maturity Model and the Institute for Healthcare Improvement's Framework for Safe, Reliable, and Effective Care) has the potential to significantly reduce preventable harm [15]

Recommended Guidelines and Algorithms

- Share transformational testimonials of healthcare organizations that have undergone high-reliability transformation with unit and institutional leadership
- Review high reliability resources provided by the Institute for Healthcare Improvement (IHI), the Joint Commission, and AHRQ
- Review and share information from safety surveys with staff
- Evaluate unit preparation and readiness for cultural shift and transformation by conducting small focus groups consisting of all healthcare providers (e.g., RNs, MDs, Respiratory Therapists)

Guidance on Quality and Process Improvement

- Measure compliance with particularly relevant care bundle elements to assess reliability
- Monitor days since last preventable adverse event (i.e., serious safety event)
- Implement leadership rounding to assess reliability behaviors/challenges
- Develop and use tools to assess degree to which behaviors are hardwired which assists to build sustainability of the QI outcomes. Examples include sharing QI outcome data (such as CLABSI rates) openly with staff and creating a sense of awareness.

Outcome, Balancing and Process Measures

- Monitor serious safety event rate (per patient day) and days between events

POTENTIALLY BETTER PRACTICE

Understand the Impact of Human Factors Engineering and Make it Easier for Healthcare Providers to Do the Right Thing

Background, Rationale, and Goals

- Simplifying workflow can lead to a better understanding of potential failures and may improve efficiency
- Embedding human factors principles in work has the potential to increase compliance and decrease CLABSI [16, 17, 18]
- Establishment and reinforcement of standard work including formal line rounding has been shown to significantly reduce CLABSI [19]
- Human factors engineering can be utilized to significantly increase hand hygiene rates [20]
- Intervention strategies such as simulation and standardized kits have also been shown to significantly increase compliance and reduce CLABSI [21]

Recommended Guidelines and Algorithms

- Standardize processes (as well as when to deviate from standard processes) whenever possible
- Align policies to actual practice, which improves training and hard-wires rule-based behavior
- Prepare procedure/maintenance packs, kits, and carts, or locate supplies for line management in proximity
- Provide visual aids illustrative of expected workflow, supplies, and steps
- Design and implement electronic workflows that encourage the right decisions
- Consider adoption of peer audits performed in real time
- Survey front line staff as to barriers that reduce compliance

Guidance on Quality and Process Improvement

- Involve frontline staff in workflow development as well as in structure of audits
- Conduct "random audits" of care process bundle elements (central line care bundle, environmental cleaning) and provide feedback in real time
- Monitor compliance with measures such as hand hygiene, central line dressing change, and central line

entry
- Monitor if staff are using tools to reduce missing important elements of care processes
- Consider use of simulation to evaluate effectiveness of interventions

Resources and Tools

Resources

Resources

IHI Resources
- Just Culture Resources

Tools

The following tools are included in this section:

1. “Days Between Infections" Signage Example
2. Leadership Walkrounds Tool

DAYS BETWEEN INFECTIONS SIGNAGE EXAMPLE

SOURCE: University of California, Irvine (UCI) Health

We are 349 Days CLABSI Free!!

LEADERSHIP WALKROUNDS TOOL

SOURCE: Adapted Baker, S. (2010). Rounding for outcomes: An evidence-based tool to improve nurse retention, patient safety, and quality of care. Journal of Emergency Nursing, 36(2), 162-164.

PURPOSE: To gather information directly from staff about actionable information. Topics are focused on patient safety issues, what is working well and what is not, building relationships to enhance communication

HOW TO USE: Choose a few of the following questions to focus the rounds; be consistent in both time of rounding and how questions are asked.

QUESTION EXAMPLES	AREA OF FOCUS
What is your biggest safety concern on your unit?	Safety
What is one thing that could happen today to improve safety on your unit?	Safety
What are the barriers to reporting a safety concern?	Safety
What is going well in this unit?	Staff Retention/Satisfaction
Who should I recognize for doing great work?	Staff Retention/Satisfaction
Do you have what you need to provide safe care?	Safety
What can I do to help?	Safety/Staff Retention/Satisfaction

ROUNDING LOG:

DATE/TIME AREA OF FOCUS	STAFF MEMBER	FEEDBACK ON AREA OF FOCUS	ACTIONS	NOTES

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