TeamSTEPPS™ in the Pediatric and Surgical ICUs: A Quality Improvement Project

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Background
Healthcare and Patient Safety

• Delivery of healthcare is a complex process
  – Many people
  – Many different systems
  – Stressful, high stakes settings
  – Many opportunities for error

• Processes are outdated and complex

• Heavy reliance on non-automated verbal and written communications

• Heavy workloads, leading to distractions, multitasking and poor communication
Background
IOM Report: To Err is Human

• Adverse event – injury caused by medical management
  – 3-4% hospital admissions
  – 53-58% preventable
• Preventable – attributable to error in either execution or planning
• Preventable AE’s may account for between 44,000 and 98,000 deaths in hospital/yr.
Health Care and Teamwork

"Currently, we can assure our patients that their care is always provided by a team of experts, but we cannot assure our patients that their care is always provided by expert teams."


“… patients whose surgical teams exhibited less teamwork behaviors were at a higher risk for death or complications, even after adjusting for ASA risk category.”

Mazzocco et al., 2008, Surgical team behaviors and patient outcomes, The American Journal of Surgery, in press
Purpose

• To evaluate a customized TeamSTEPPS implementation process and its effect on teamwork performance within 2 ICUs during high-stress healthcare team events
What is TeamSTEPPS™?

• Evidence based team work system
  Developed by the DOD and AHRQ, released 2007
• Designed to improve:
  – Quality
  – Safety
  – Efficiency of health care
• Practical and adaptable
• Publicly available
  – http://dodpatientsafety.usuhs.mil/teamstepps
Four Teachable – Learnable Skills

- Leadership;
  - Briefing, Debriefing, Huddle, Encouraging Teamwork
- Communication;
  - Call-Out, Check-Back, Critical Language
- Situation Monitoring;
  - Situation Awareness, Shared Mental Model
- Mutual Support;
  - Verbal and Task Related
Methods
Pre-Training Chart Review

• Randomly selected chart review using IHI Global Trigger tool
• 20 charts for each PICU and SICU
• Potential adverse events identified (PICU – 2, SICU – 3), need medical staff review
• Will repeat June ‘09
Methods

• 19 Master Trainer/Coaches trained (Feb-May ‘08)
• Baseline observations of team events (March-April ‘08)
• >300 Faculty and Staff Trained (May/June ‘08)
  – 1 hr video
  – 1 hr in-person class with role play
• Ongoing unit-based coaching
• Post-training observations of team events (July/Aug and Dec ‘08)
Reinforcement Tools

Go TeamSTEPPS

TeamSTEPPS
COACH

TeamSTEPPS
READY

TeamSTEPPS
COACH

TeamSTEPPS
READY

UNC HEALTH CARE

Pocket Guide

TeamSTEPPSTM
Strategies & Tools to Enhance Performance and Patient Safety

Agency for Healthcare Research and Quality
Advancing Excellence in Health Care - www.ahrq.gov
Types of Team Events Observed
<table>
<thead>
<tr>
<th>Element</th>
<th>Behavior</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>NA</th>
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<tbody>
<tr>
<td>1a</td>
<td><strong>Communication</strong> Sends and receives appropriate information</td>
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<tr>
<td>1b</td>
<td>Asks questions</td>
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<td>1c</td>
<td>Utilizes feedback between team members</td>
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<tr>
<td>1d</td>
<td>Sends and receives information to/from patient/family</td>
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<tr>
<td>1e</td>
<td>Uses appropriate critical language</td>
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<td>1f</td>
<td>Utilizes teamwork tools</td>
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<tr>
<td>1g</td>
<td>Debrief completed</td>
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<td>2a</td>
<td><strong>Leadership</strong> Establishes event leader</td>
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<td>2b</td>
<td>Verbalizes plan: States intentions, recommendations and timeframes</td>
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<td>2c</td>
<td>Delegates as appropriate</td>
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<td>2d</td>
<td>Instructs as appropriate</td>
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<td>3 a</td>
<td><strong>Situation Monitoring</strong></td>
<td>Visually scans environment</td>
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<td>3 b</td>
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<td>Cross monitors activities; Uses back-up behavior</td>
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<td>3 c</td>
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<td>Verbalizes adjustments in plan as changes occur</td>
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<td>4 a</td>
<td><strong>Mutual Support/ Assertion</strong></td>
<td>Secures additional resources</td>
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<td>4 b</td>
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<td>Supports others</td>
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<td>Prioritizes appropriately</td>
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<td>4 d</td>
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<td>Employs conflict resolution</td>
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<td>4 e</td>
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<td>Speaks up/persuades</td>
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<td>5</td>
<td><strong>Overall Teamwork</strong></td>
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<td>6</td>
<td><strong>Overall Leadership</strong></td>
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Results
Pre- and Post Training Observation

Pre-Training n=56

Post-Training n=38

TC - Communication, TL - Leadership, SM - Situation Monitoring, MS - Mutual Support, OT - Overall Teamwork and OL - Overall Leadership
## Results

### Internal Reliability of TENTS

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s alpha</th>
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<tbody>
<tr>
<td>Communication</td>
<td>0.8</td>
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<tr>
<td>Leadership</td>
<td>0.8</td>
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<tr>
<td>Situation Monitoring</td>
<td>0.7</td>
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<tr>
<td>Mutual Support</td>
<td>0.8</td>
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<tr>
<td><strong>Overall</strong></td>
<td><strong>0.9</strong></td>
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Conclusions

• We successfully implemented customized Team STEPPS training in 2 high stress environments in an academic medical center

• This early work suggests that this approach, with unit-based coaching can significantly improve teamwork performance
Next steps

- Process and Outcome Measures:
  - ECMO
    - time to team deployment/response time
    - time to ECHO-cardiogram
    - time to blood available
    - time to blood prime
    - time to incision
    - time to placement on pump
  - RRT
    - time to team deployment/response time
    - staff time away from unit
  - Inpatient Mortality
Next Steps

• ED staff training
• Observation of Trauma Resuscitation teamwork and outcomes
• Planned analysis of interval observation data over next 6 months
• Continued spread