The Pre-analysis of Customized TeamSTEPPSTM Training in the Pediatric & Surgical Intensive Care Units of an Academic Healthcare System

Wei-Ting Lin, MSN1 • Celeste Mayer, PhD2
The University of North Carolina at Chapel Hill, School of Nursing1 & UNC Healthcare System2
Supported in part by AHRQ contract HHSA290200600001 Task Order No. 4777

Purpose
Identify variables that affect teamwork:
- Event Type
- Unit Type
- Team Size

Background
- TeamSTEPPSTM, an evidence-based teamwork training system designed to improve interprofessionals’ communication and coordination skills, was implemented at University of North Carolina Hospitals in Surgical Intensive Care Unit (SICU) and Pediatric Intensive Care Unit (PICU). This study examined pre-intervention data to identify variables that may influence teamwork: event type, unit type, and team size.

Method
SAMPLE: SICU and PICU
MEASUREMENT TOOL
Team Events Assessment Non-Technical Skills (TENTS) was used to observe teamwork.
- There are six categories in the TENTS instrument: communication, leadership, situation monitoring, mutual support, overall teamwork, and overall leadership.
- TENTS is scored on a scale from 0-4 based upon behaviors in the TeamSTEPPSTM training.

- 0=expected but not observed
- 1=poor performance (endangered or potentially endangered patient safety)
- 2=marginal performance (cause for concern, considerable improvement is needed)
- 3=acceptable performance (satisfactory behaviors but could be improved)
- 4=good performance (consistently performed the behaviors, enhancing patient safety, and could be used as a positive example for others)
- NA= Not applicable

- The average score of all the ratings for each observation of teamwork was calculated.
- Reliability was calculated using Cronbach’s alphas: 0.9.

ANALYSIS
- General Linear Model (GLM)
- Dependent variable: Teamwork Score
- Independent variables: Unit type; event type, team size

Diagnositic Result
PREDICTION & MAIN EFFECT

Teamwork Results

Event Type
A significant difference among event types: $F(3,53)=7.051, P<0.01$ (power >0.9)

<table>
<thead>
<tr>
<th>(I) Event Type</th>
<th>(J) Event Type</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.*</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Admissions</td>
<td>OR Admissions</td>
<td>.014</td>
<td>.167</td>
<td>.934</td>
<td>.112</td>
</tr>
<tr>
<td>RRT</td>
<td>Am Rounds</td>
<td>-.126</td>
<td>.215</td>
<td>.561</td>
<td>.05</td>
</tr>
<tr>
<td>Or Admissions</td>
<td>Am Rounds</td>
<td>-.738*</td>
<td>.190</td>
<td>.000</td>
<td>&gt;.999</td>
</tr>
<tr>
<td>RRT</td>
<td>Am Rounds</td>
<td>-.752*</td>
<td>.176</td>
<td>.000</td>
<td>.997</td>
</tr>
</tbody>
</table>

Number of observations of each event type

Unit Type
No significant difference between unit type: $F(1, 55) =1.317, P=0.26$ (power=0.15)

<table>
<thead>
<tr>
<th>(I) Unit Type</th>
<th>(J) Unit Type</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.*</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>SICU</td>
<td>PICU</td>
<td>-.155</td>
<td>.135</td>
<td>.257</td>
<td>.147</td>
</tr>
</tbody>
</table>

Number of observations of each unit type

Team Size
A significant association between team size and teamwork: $F(1, 55) =2.392, P<0.01$ (power=0.9)
Every additional person added to the team size is associated with a 0.07 decrease in the teamwork score.

Two-way Interactions
Test for all two-way interactions among three variables
No significant interaction (power=0.01-0.5)

Conclusions & Implications
Team size and event type are the two factors that are significantly associated with teamwork. Therefore, team size and event types should be controlled in future analyses of teamwork performance. Specifically, these variables need to be taken into account in the evaluation of TeamSTEPPSTM to ensure that researchers are actually measuring the outcome of their intervention.

Produced by Department of Information & Instructional Technologies, School of Nursing, The University of North Carolina at Chapel Hill (HWH-2/09)