Effectiveness of Team Training on Fall Prevention

Margaret Michelle Kimrey, MSN, RN, PCCN-CMC
Beverly Green, MSN, RN
LeeAnna Spiva, PhD, RN, PLNC
Bethany Robertson, DNP, CNM
Marcia L. Delk, MD, MBA
Sara Patrick, MSN, RN
Erin Gallagher, BS
Disclosure

• This work was supported through the 2011 Prevention Above all Discovery Grant, Medline Industries

• The authors had full access to all of the study, take responsibility for data integrity, accuracy of the data analysis, and presentation
Background/Significance

Falls are the most frequently reported safety event among U.S. hospitalized patients 1-7.

Falls are associated with increased risk of mortality and morbidity and an estimated cost of $20 billion a year 8,9.

Annual direct and indirect costs of falls estimated to reach $54.9 billion 8.

Evidence exists on fall risk factors, interventions, and prevention guidelines, yet reducing falls in the acute care setting has been challenging 5,10-16.

Little evidence is available demonstrating interdisciplinary team efforts 17.
Purpose

• To evaluate the effect of a training curriculum based on TeamSTEPPS® with video vignettes focusing on fall prevention for debriefing and reinforcement on team members’ safety culture, teamwork attitude, teamwork perception, and communication as a mediator to reduce falls and injuries
Methods

• **Design**
  – A longitudinal, quasi-experimental, repeated measures, with intervention & comparison groups

• **Setting/Sample**
  – 2 community acute care hospitals; 4 medical-surgical acute care units
  – Intervention group: 16-bed orthopedic unit & 17-bed neurology unit (received training)
  – Control group: 22-bed orthopedic unit & 30-bed neurology unit (received no training & continued with usual practice)
  – registered nurses, pharmacists, physical therapists, & physicians
Measures

• Demographic
• Hospital Survey on Patient Safety (HSOPS) \(^{18}\)
• TeamSTEPPS \(^{\text{®}}\) Teamwork Attitudes Questionnaire (T-TAQ) \(^{19}\)
• TeamSTEPPS \(^{\text{®}}\) Teamwork Perceptions Questionnaire (T-TPQ) \(^{20}\)
• Trained observers recorded teamwork communications and behaviors
  – bedside shift report (patient handoff), safety huddle, interdisciplinary care meeting, & unit-level observer assessments
• Falls data
Training Intervention

• Based on TeamSTEPPS® curriculum, four domains: communication, situational monitoring, mutual support, and leadership$^{21}$

  – Three 30-minute training sessions; held on the units
  – Brief didactic lecture
  – Custom designed patient video scenarios
  – Facilitated debriefing of the content covered
Intervention: Training Content

- **Session I**
  - **Didactic:** purpose of team training
  - **Video:** lacking behaviors from the 4 domains
  - **Debriefing:** role team work plays in fall prevention

- **Session II**
  - **Didactic:** communication and situational monitoring
  - **Video:** demonstrated optimal bedside shift report, safety huddle, and SBAR
  - **Debriefing:** effectiveness of these team strategies
Intervention: Training Content Continued

- **Session III**
  - **Didactic:** mutual support and leadership utilizing
  - **Video:** vignette of team briefs, huddles and hand-offs
  - **Debrief:** information sharing fosters mutual support and task assistance; leadership for communication events; knitted all 4 domains from training together

Sample Video
# Study Time line

<table>
<thead>
<tr>
<th>Activity</th>
<th>April 2012</th>
<th>May 2012</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan 2013</th>
<th>Feb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Champion Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intervention)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveys</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: X indicates that the activity was conducted during the respective month.*
Data Analysis Plan

• SPSS 18.0: Statistical methods - descriptive, chi-square ($\chi^2$), repeated measures analysis of variance (ANOVA), and $t$ tests

• Chi-square ($\chi^2$) or $t$ tests were used to compare demographic variables of the 2 groups

• Post-hoc comparisons were performed to evaluate mean differences

• NVivo 10 used to identify patterns in observers’ hand written notes
  – Descriptive statistics were calculated for the patterns
  – Repeated measures conducted to evaluate the effects over time

• A $p$ value of $< .05$ was considered statistically significant
Findings

• Demographics
  – 39.36 (SD = 10.45) sample mean age
  – Most were registered nurses (29.4%), female (97.1%), white (64.7%), baccalaureate prepared (41.2%), & primarily worked day shift (79.4%)
  – Differences between the 2 groups for age, gender, & education ($P < .001$)
  – 72% of the intervention group sample attended all 3 training sessions
Questionnaire Findings - Intervention Group Only

- **HSOPS Subscales**
  - Feedback & communication about error ($F = 4.95$) & communication openness ($F = 5.46$) improved over time ($P < .01$)
  - Teamwork within hospital units ($F = 4.07$, $P = .03$) improved mid compared to post-intervention
  - Teamwork across hospital units' ($F = 4.81$, $P = .02$) improved from pre compared to post-intervention

- **Teamwork Attitude**
  - Improved ($P = .009$) mid ($M = 4.16$) compared to post-intervention ($M = 4.55$)

- **Teamwork Perception**
  - Decreased ($F = 3.92$, $P = .03$) pre ($M = 2.35$), mid ($M = 2.23$), & post-intervention ($M = 1.66$)
Questionnaire Findings Continued

- No statistical differences found within the control group—scores decreased over time on all measures except teamwork within hospital units & teamwork attitudes slightly increased
- No significant differences in the study variables between the 2 groups
- Subsequent analysis, the 2 groups were combined & analyzed as 1 group to compare the change of study variables over time
- HSOPS subscales differed for the entire sample significantly over time for 4 of the 5 subscales: feedback & communication about error ($F = 4.382, P = .017$); communication openness ($F = 21.535, P < .01$); teamwork within hospital units ($F = 6.037, P < .01$); & teamwork across hospital units ($F = 9.248, P < .01$)
- Teamwork attitudes improved over time ($F = 3.240, P = .04$) with a significant increase pre compared to post-intervention
- Teamwork perceptions decreased over time ($F = 5.207, P < .01$) with a significant decrease pre compared to post-intervention
Observation Findings

- Bedside shift report - Intervention group (n = 137) improved over time conducting report in patients’ room, discussing patients’ mobility status, & improving communication between caregivers regarding patients’ care plan compared to the control group
- Safety huddles (n =16) & interdisciplinary meetings (n = 25) - Intervention group improved over time expressing less uncertainty about patients’ care plan & frequently communicated patients’ fall risk status compared to control group
- Observer assessments (N = 54) - Over time intervention group improved communication related to patients’ fall risk status ($F = 7.480, P < .01$)
- Fall related observations included consistent implementation of fall preventative interventions such as signage & visual fall reminders (arm bracelet, yellow socks, & door sign), bed alarm usage, & ambulation assistance improved in the intervention group ($F = 6.67, P < .01$)
- The control group had no significant observation findings
Fall Data Findings

• The number of falls decreased by 13 (62% reduction) & fall-related injuries by 5 (71% reduction) in the intervention group

• Pre-fall rates were 2.69 (SD = .12) & 1.03 (SD = .43) post-fall rates ($t = 4.27, P = .15$)

• Pre-injury rates were .97 (SD = .55) & .24 (SD = .34) post-injury rates ($t = 5.05, P = .122$)

• Fall & injury rates increased in the control group
Limitations

• Training sessions were not always interdisciplinary
• Even though training sessions were short & unit based, staff had difficulty attending & managing care duties
• Local variations in patient volumes, staff turn over, etc impacted all aspects of the study
• Low statistical power may have limited ability to detect certain differences because of a small sample size
• Questionnaire length may have resulted in instrument fatigue
Conclusion

• Unique study: control group, self-report survey and observations all over time
• Team training was found to be an effective intervention to reduce falls and related injuries
• Steady improvements in perceptions of safety culture and teamwork attitude; clinical significance was achieved in a reduction of falls
• Observed improvements with caregivers implementing fall preventative interventions and improved communication between caregivers related to a patients’ fall risk status
References