Assessment Of Interprofessional Training Methodology In Professional Education As A Potential Tool To Improve Patient Safety And Quality Of Care

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Why?

Errors in Healthcare

- Medical Errors kill 44,000-98,000 people yearly
- Errors result from a faulty system
- 8th Leading cause of death
- Annual cost $29billion

Complex issue
Communication in Healthcare:

Study Objectives:

Systematic current literature analysis:

- Does interprofessional training significantly improve the team communication?
  - Team member awareness (pre- and post-training survey scores)
  - Communication

- Does interprofessional training significantly improve healthcare safety?
  - Morbidity/mortality
  - Adverse events (nosocomial infections, serious safety events)
  - Hospital stay (in-patient setting)
What are interprofessional training methods currently available?

- Critical Resource Management (CRM)
- TeamSTEPPS
- Other
Communication in Healthcare:

Critical Resource Management

Crew Resource Management (CRM):
- Know your environment
- Anticipate, share, review the plan
- Ensure leadership and role clarity
- Communicate effectively
- Call for help early
- Allocate attention wisely
- Distribute work
- Monitor and support team members

Pratt SD, et al. Safety JMPEG 2008
Communication in Healthcare:

TeamSTEPPs

Leadership
  Brief
  Huddle
  Debrief

Situation Monitoring
  STEP (Status of patient, Team members, Environment, Progress toward goal)
  Cross-monitoring

Mutual Support
  Feedback
  Advocacy and assertion
  Two-challenge rule
  CUS (I'm Concerned, I'm Uncomfortable, this is a Safety issue)
  DESC script (Describe situation, Express concerns, Suggest alternatives, Consequences)
  Collaboration

Communication
  SBAR (Situation, Background, Assessment, Recommendation)
  Call-out
  Check-back
  Handoff


Methods:

Total 135 articles:
- 119 Titles/abstracts identified and reviewed from MEDLINE
- 16 references search

92 articles excluded:
- 90 based on title/abstract review
- 2 duplicate

41 articles for full-text review

26 articles excluded:
- 21 descriptive/not quantitative
- 4 specific to procedure/area of specialty
- 1 not original research

15 articles included in analysis
Study Characteristics

Location

- United States: 73%
- Australia: 7%
- Iraq: 7%
- UK: 13%

Setting

- Inpatient: 66%
- OR: 20%
- ED: 7%
- Academic: 7%

Participants

- Physicians: 40%
- Surgeons: 13%
- Fellows: 13%
- Residents: 7%
- Medical Students: 7%
- Respiratory: 13%
- Nurses: 7%
- Nursing students: 7%
- Other: 47%

Study Design

- Randomised two-group experiment: 13%
- Single group pre-post test: 33%
- Prospective cohort: 7%
- Single group cross-sectional: 47%
## Summary of Evidence: CRM

<table>
<thead>
<tr>
<th>Study</th>
<th>Education method</th>
<th>Participants (interdisciplinary team)</th>
<th>Communication</th>
<th>Patient Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young-Xu et al, 2011</td>
<td>1 day training</td>
<td></td>
<td>Morbidity: -17%; 0.83 (p-value=0.01; CL: 0.79-0.88)</td>
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<tr>
<td>Awad et al, 2005</td>
<td>Didactic</td>
<td>Anesthesiologists: 125% improvement (p-value&lt;0.0008) Surgeons: 24% improvement (p-value&lt;0.0004) Nurses: no change (p-value=0.7)</td>
<td>Patient outcomes improved (prophylactic antibiotic and DVT prophylaxis)</td>
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<tr>
<td>McCulloch et al, 2009</td>
<td>9 hours didactic training, followed by 3 months of coaching</td>
<td>Teamwork climate improved from 64.1 to 69.2 (p-value=0.007) (assessed by Safety Attitudes Questionnaire Score)</td>
<td>Operating technical errors: -43% from 1.73 to 0.98 (p-value=0.0009) non-operative procedure errors: -39.2%, from 1.73 to 0.98 (p=0.001) length of stay: -9.41% (p-value=0.086)</td>
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<tr>
<td>Morey et al, 2002</td>
<td>Group training setting</td>
<td>+22.7% improvement in teamwork and function (p-value=0.012)</td>
<td>Observed clinical errors errors: -26.5% (p-value 0.14) decrease form 30.9% to 4.4%</td>
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<tr>
<td>Nielsen et al, 2007</td>
<td>Didactic</td>
<td></td>
<td>Adverse outcomes score: -14.81% (adjusted mean for control 7.2 and intervention group 8.3; CL for the difference between the groups: -5.6 to 3.2)</td>
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</tbody>
</table>

**Crew Resource Management (CRM):**
- Know your environment
- Anticipate, share, review the plan
- Ensure leadership and role clarity
- Communicate effectively
- Call for help early
- Allocate attention wisely
- Distribute work
- Monitor and support team members
## Summary of Evidence: TeamSTEPPS

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<tr>
<td>Mahoney et al, 2012</td>
<td>1hr training session</td>
<td>+5.6% from 3.88±0.81 to 4.16±0.66 (pertaining mean, range 1-5)</td>
<td>28% (p-value&lt;0.001) The rate of challenging teammate (physician, fellow, attending, or nurse) in case of suspicion of erroneous medication dose also improved (for attending’s from 0% to 75% and for fellows from 55% to 77%)</td>
<td>Decrease in adverse incidents (medication/transfusion errors): -83%</td>
</tr>
<tr>
<td>Sawyer et al, 2013</td>
<td>2 hours of simulation and 4 hours of didactic</td>
<td>33.5% (p-value&lt;0.001) Improvement in team performance in structure, leadership, situation monitoring, mutual support, and communication significantly improved.</td>
<td>Improved communication (p-value=0.0026)</td>
<td>Decline in nosocomial infections</td>
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<td>Mayer et al, 2011</td>
<td>2.5 hour customized program</td>
<td>+27.4% Team performance improved (p-value&lt;0.0001-0.0026)</td>
<td>-10%</td>
<td>Control: +42.7%; didactic only: -1%; didactic and simulation: -37% No significant difference of didactic vs control in number of adverse outcomes (perinatal morbidity). Full program (didactic and simulation) resulted in significant decrease of adverse outcomes.</td>
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<tr>
<td>Riley et al, 2011</td>
<td>Didactic and simulation</td>
<td>+7% improvement in team knowledge, skills, and attitudes (p-value=0.11)</td>
<td>Improvement in patient care as evidenced by decreased patient seclusion rates (p-value&lt;0.001)</td>
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<td>Stead et al, 2009</td>
<td>2.5-day workshop and 4 hours course</td>
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<tr>
<td>Deering et al, 2011</td>
<td>Web-based and 2.5-day training sessions</td>
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<td>Decrease in adverse incidents (medication/transfusion errors): -83%</td>
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## Summary of Evidence: Unnamed

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<th>Patient Outcomes</th>
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<tr>
<td>Muething et al, 2012</td>
<td>didactic training and simulation</td>
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<td>Serious safety events (SSEs): -66%, from 0.9 to 0.3 SSEs/10000 adjusted patient-days (p-value&lt;0.001); days between SSEs: 184.5%, from 19.4 to 55.2 (p-value&lt;0.0001)</td>
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<td>Plan-Smith et al, 2009</td>
<td>Simulation and training in two-challenge rule</td>
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<td>Increased use of advocacy</td>
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<td>Attending anesthesiologist: from 2.3 to 3.6 mean score</td>
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<td>Attending surgeon: from 3.1 to 3.9 mean score</td>
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<td>Circulating nurse: from 2.7 to 2.8 mean score</td>
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<tr>
<td>Stewart et al, 2010</td>
<td>Didactic and simulation</td>
<td>Knowledge and awareness improved (mean difference 15.9 and CL: 10.4-21.4) (p-value &lt;0.0001); shared learning increased (mean difference 8.7 CL: 4.3-13.1)</td>
<td>Communication and teamwork improvement from 81.4 to 82.5 mean score (mean difference 1.1, CL -2.6 -4.9)</td>
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Conclusions

- Interprofessional training methods improve interprofessional team function
  - Communication is one of the strongest and consistent factors in safety in current literature
- Training of interprofessional teams reduces morbidity/mortality and adverse outcomes
- Didactic training has a positive impact on interprofessional teamwork
- Combination of didactic and simulation training provides the strongest improvement in collaborations
Study limitations and Future Perspectives

- Study limitations:
  - Survey restricted to studies pertaining patient safety
  - Meta-analysis not possible, Publication bias

- Future perspectives include:
  - Expanding the number of studies of the interprofessional training, especially in academic/classroom setting
  - Determining sensitive measurement of success of programs in academic/classroom setting
References


Thank you!

USF Tampa Campus, Florida