A Program of Interprofessional Simulation-based Research

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Learning Objectives

1. Discuss the results of four quasi-experimental studies utilizing interprofessional simulation-based education of pre-licensure health care students.
2. Describe the process of building a program of research on interprofessional simulation.
3. Delineate an approach for identifying and overcoming barriers to implementation of simulation-based research.

Research Initiatives

• Student OR Team Training (SORTT)
• Interdisciplinary Teamwork & Communication in a High-Fidelity Simulated Code (ITACC)
• Teamwork & Communication in a Critical Care Code Scenario (TC3)
• Teamwork Training of Interprofessional Undergraduate Students (TTIPS)

Research Methods

• Quasi-Experimental
• Instruments
  — ORTAS & Modified ORTAS
  — Mayo High Performance Teamwork Scale (MAYO)
  — Communication & Teamwork Skills (CATS)
  — Readiness for Interprofessional Learning (RIPL)

Subscales

<table>
<thead>
<tr>
<th>Modified ORTAS</th>
<th>CATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Based Behaviors</td>
<td>Coordination</td>
</tr>
<tr>
<td>Shared Mental Model</td>
<td>Situational Awareness</td>
</tr>
<tr>
<td>Adaptive Communication &amp; Response</td>
<td>Cooperation</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
</tr>
</tbody>
</table>

Research Procedures
Data Analysis

- SPSS 17.0
- Paired Samples t-test
- Simulation 1 to 2
- Participant & Observer Scores
- $p < .05$

SORTT Participants 2008-2014

<table>
<thead>
<tr>
<th>OR Simulations</th>
<th>Spring '08</th>
<th>Fall '08</th>
<th>Spring '09</th>
<th>Spring '10</th>
<th>Spring '11</th>
<th>Spring '12</th>
<th>Spring '13</th>
<th>Spring '14</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Students</td>
<td>2</td>
<td>4</td>
<td>28</td>
<td>16</td>
<td>14</td>
<td>16</td>
<td>38</td>
<td>30</td>
<td>148</td>
</tr>
<tr>
<td>Nurse Anesthesia Students</td>
<td>2</td>
<td>4</td>
<td>21</td>
<td>9</td>
<td>8</td>
<td>16</td>
<td>20</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Undergraduate Nursing Students</td>
<td>2</td>
<td>4</td>
<td>17</td>
<td>6</td>
<td>4</td>
<td>16</td>
<td>16</td>
<td>11</td>
<td>76</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>12</td>
<td>66</td>
<td>31</td>
<td>26</td>
<td>48</td>
<td>74</td>
<td>61</td>
<td>324</td>
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</tbody>
</table>

SORT Results 2009

- Statistically significant gains pre-post on 11 of 15 self-efficacy items
- Significant improvement in TBB, SMM, & ACR for participant and observer scores
- Inter-professional OR student team training improves attitudes toward team-based competencies.
- Inter-professional OR student team training leads to improvement in both individual and overall team-based behaviors

ITACC Participants

<table>
<thead>
<tr>
<th>ER Simulations</th>
<th>Fall 2009</th>
<th>%</th>
<th>Spring 2010</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Medical Students</td>
<td>11</td>
<td>21.2</td>
<td>7</td>
<td>17.5</td>
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<tr>
<td>Nurse Anesthesia Students</td>
<td>14</td>
<td>26.9</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Undergraduate Nursing Students</td>
<td>14</td>
<td>26.9</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>Respiratory Therapy Students</td>
<td>13</td>
<td>25.0</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

ITACC Results – Fall 2009

- Significant Increases Simulation 1 to 2
- TBB
- SMM
- ACR
- MAYO
- CATS – All Subscales

ITACC Results – Spring 2010

- Significant Increases Simulation 1 to 2
- TBB
- SMM
- ACR
- MAYO
- CATS – Situational Awareness & Cooperation


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ITACC Results – Fall 2009 to Spring 2010

• Participants – Small Losses in mean scores from fall to spring in TBB, SMM, ACR, & MAYO, but only TBB had significant decreases, p < .05

• Losses were regained with Further Training

• Observers – Significant decrease in mean scores TBB, SMM & ACR, p < .05

• CATS mean scores NS difference fall - spring

TC3 Participants

<table>
<thead>
<tr>
<th>ICU Simulations</th>
<th>Fall 2009</th>
<th>%</th>
<th>Spring 2010</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Students</td>
<td>8</td>
<td>22.8</td>
<td>4</td>
<td>16.0</td>
</tr>
<tr>
<td>Nurse Anesthesia Students</td>
<td>10</td>
<td>28.6</td>
<td>8</td>
<td>32.0</td>
</tr>
<tr>
<td>Undergraduate Nursing Students</td>
<td>10</td>
<td>28.6</td>
<td>10</td>
<td>40.0</td>
</tr>
<tr>
<td>Physical Therapy Students</td>
<td>7</td>
<td>20.0</td>
<td>3</td>
<td>12.0</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

TTIPS Participants

<table>
<thead>
<tr>
<th>Trauma &amp; Burn Simulations</th>
<th>Fall 2011</th>
<th>Spring 2012</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Students</td>
<td>57</td>
<td>66</td>
<td>123</td>
</tr>
<tr>
<td>Undergraduate Nursing Students</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>106</td>
<td>203</td>
</tr>
</tbody>
</table>

TTIPS Results

• Self-, peer-, and observer-based assessments demonstrated statistically significant improvements on SMM & ACR subscale from scenario 1 to scenario 2; peer ratings of TBB were not significant.

• Mean scores were higher on self- and peer-based ratings compared to observer-based scores.

Current Initiatives

• Continued SORTT sessions (7th consecutive year)

• Continued inter-professional team training in the 3rd year general surgery clerkship and senior nursing students (3rd consecutive year)
Building a Program of Research

- Know your passion
- Ensure high public health significance
- Know the literature
- Understand clinical practice
- Use an outcomes model
- Nurture interprofessional colleagues
- Publish — Build from study to study
- Have Fun along the journey!


Avoiding Roadblocks

- Preparation — Planning is essential!
  - Curriculum; Assessment
- Implementation — Be prepared to troubleshoot!
  - What can go wrong will; Pilot test
- Debriefing — Where learning happens!
  - Make it safe, make it stick, make it last; No entropy
- Evaluation — Measure it!
  - Kirkpatrick; Debrief yourself

Overcoming Barriers: The “5 Ps” Approach

- Planning
- Preparation
- Practice
- Performance
- Progress

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- ITACC
  D. Garbee PHD, APRN, ACNS-BC, K. Barrier MSN, RN, L. Bonanno DNP, CRNA, J. Cefalu MSN, RN, J. Paige M.D., V. Kozmenko M.D., L. Kozmenko BSN, J. Zamjahn MRT, PhD, K. Keller CRNA, C. Fabre CRNA
- TC3
  D. Garbee PHD, APRN, BC, J. Paige M.D., K. Barrier MSN, RN, V. Rusnak M.D., L. Bonanno DNP, CRNA, K. Nelson PhD, L. Kozmenko BSN, J. Cefalu MSN, RN, B. Madden CRNA, L. Gonsoulin CRNA
- TIPPS
  J. Paige, MD, D. Garbee PHD, APRN, ACNS-BC, V. Rusnak MD, R. Di Carlo MD, A. Marr MD

References

References