The Effectiveness of a Virtual Interprofessional Teamwork Simulation Exercise for Interprofessional Students at the University of Hawaii

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ABSTRACT

INTRODUCTION

The University of Hawaii Health Sciences Schools have been conducting the Hawaii Inter-professional Team Collaboration Simulation (HIPTCS) exercise since 2014. Originally designed with medical students working at one site, collaborating with pharmacy students at a distant site due to the COVID-19 pandemic, this exercise was converted entirely virtual. The HIPTCS exercise is a validated tool (ICCAS) to assess interprofessional core competencies. The purpose of this study was to determine the impact of HIPTCS on interprofessional core competencies and to compare the efficacy of the entirely virtual format of HIPTCS to the original format.

METHODS

RESULTS

The University of Hawaii Health Sciences Schools have been conducting the Hawaii Inter-professional Team Collaboration Simulation (HIPTCS) exercise since 2014. Originally designed with medical students working at one site, collaborating with pharmacy students at a distant site due to the COVID-19 pandemic, this exercise was converted entirely virtual. The HIPTCS exercise is a validated tool (ICCAS) to assess interprofessional core competencies. The purpose of this study was to determine the impact of HIPTCS on interprofessional core competencies and to compare the efficacy of the entirely virtual format of HIPTCS to the original format. Students at the University of Hawaii 4.35 + 0.67 0.83

To compare the efficacy of the entirely virtual format of HIPTCS to the original format, and to determine its impact on interprofessional core competencies.

Study Population (Total Students, n=235)

- Pharmacy (3rd year, on a neighbor island)
- Nursing (3rd semester)
- Social Work (on clinical rotations)
- Dietetics (mostly 4th or 5th year)
- Pharmacy (3rd year, on a neighbor island)

Go to the corresponding article (or figure) for more details.

Performance Questions (Mean) Paired T-Tests (Mean) N=235

<table>
<thead>
<tr>
<th>Questions</th>
<th>Pre-Work Mean</th>
<th>Post-Work Mean</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Summary (Q6-8)</td>
<td>3.52</td>
<td>4.34</td>
<td>0.83</td>
</tr>
<tr>
<td>Collaboration (Q9-12)</td>
<td>3.61</td>
<td>4.38</td>
<td>0.76</td>
</tr>
<tr>
<td>Team Functioning (Q19-20)</td>
<td>3.60</td>
<td>4.34</td>
<td>0.50</td>
</tr>
<tr>
<td>Clinical Performance (Q13-18)</td>
<td>3.85</td>
<td>4.45</td>
<td>0.60</td>
</tr>
</tbody>
</table>

DISCUSSION

CONCLUSIONS

• At the University of Hawaii, we were able to successfully convert the HIPTCS simulation to a completely virtual format during the COVID-19 pandemic.
• We were still able to achieve significant improvements in IPE core competency categories for both the in-person and online cohorts.
• All disciplines experienced high levels of satisfaction.

• Innovative changes were made quickly to adapt to the COVID-19 pandemic

• We believe that the strength of the exercise that enabled both in-person and entirely virtual formats to be equally effective was the repeated opportunity for debriefing, feedback, and practice of IPE skills (i.e. break-breaker activity, team meeting and family meeting).

• Limitations
- Evaluation data only included self-evaluation from students.
- We were not able to collect objective data about quality of interprofessional team collaboration, as well as individual team members’ performance.

• Areas for improvement
- The question about whether participation in the activity would affect their future professional practice is unknown.
- While both cohorts stated that their ability to collaborate interprofessionally was somewhat better after the event, virtual learners expressed lower benefit.
- Reasons were unclear—perhaps they felt that virtual team meetings would not be relevant in the future after pandemic restrictions were lifted.
- Perhaps incorporating more time into the event, to allow for clearer instructions, and online communication (time to un mute, use of Google docs for real-time testing)
- Objectively measuring competency in interprofessional collaborative skills by facilitator observation

Opportunities
- The virtual format allows students to continue interprofessional education despite COVID-19 physical distancing requirements.
- This allowed interactions with other disciplines, giving students the opportunity to practice virtual teamwork skills, which may be required even after pandemic restrictions are lifted after they graduate.
- Virtual interactions with student actors enabled healthcare students to practice telemedicine skills, which may be utilized even after pandemic restrictions are lifted.

Evaluators
- The authors have no relevant financial disclosures to report.
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The authors have no relevant financial disclosures to report.
Introduction

• The University of Hawaii Health Sciences Schools have been conducting the Hawaii Inter-Professional Team Collaboration Simulation (HIPTCS) exercise since 2014

• Originally designed with most students working at one site, collaborating with pharmacy students at a distant site

• Due to the COVID-19 pandemic, this exercise was converted to an entirely virtual format
Objective

• To compare the efficacy of the entirely virtual format of HIPTCS to the original format, and to determine its impact on interprofessional core competencies
Methods

• **Study Population (Total Students, N=235):**
  - 78 pharmacy (3rd year, on a neighbor island)
  - 71 medicine (3rd year)
  - 21 nursing (3rd semester)
  - 4 social work (on clinical rotations)
  - 7 dietetics (mostly 4th or 5th year)

• **Case:** An elderly patient admitted to the hospital with falls and polypharmacy who needs a safe discharge plan

• **Pre-Work:** Students are asked to watch an interdisciplinary team rounds video, listen to an audio-clip of a monologue by the patient, review the patient chart
February 2020 (Pre-COVID), n=122

- Students participated mostly in person except for Pharmacy, who participated via videoconferencing from Hilo
- Some facilitators were in person, some remote
- 5 rooms running in the morning, and 5 in the afternoon

April 2020 (During COVID), n=113

- All students and facilitators participated via videoconferencing
- 5 rooms running in the morning, and 5 in the afternoon
Methods: Simulation Exercise Format

Part I (40 min) – Icebreaker:
• Introductions (10 min): name, profession, interesting fact about self
• Team online puzzle (10 min): determine team leader, designate one scribe to move puzzle pieces, and timer
• Debrief icebreaker (20 min): communication and teamwork strategies

Part II (30 min) – Interprofessional Team Meeting:
• Goal: to obtain consensus on a problem list, top 3 priorities, and develop a preliminary plan of care to be discussed with the family

Part III (30 min) – Family meeting:
• With actor as family member, 1 nursing, 1 pharmacy, 1 social work, 1 dietetics, & 1 medical student
• Goal: to determine the family’s priorities and negotiate a mutually agreeable patient/family centered plan of care for safe discharge

Part IV (40 min) - Debriefing:
• Each team of students debriefs with facilitators, represented by Medicine, Nursing, Pharmacy and Social Work faculty
Evaluation: Online Survey

- Interprofessional Collaborative Competency Attainment Survey (ICCAS)
- 20-question validated survey used as a self-assessment
- 1 additional question related to cultural diversity
- 5-point Likert scale
- Retrospective pre-post format
- The evaluation also asked questions about impact on their ability to collaborate interprofessionally and satisfaction with the workshop on a 5-point Likert scale
- Included open-ended questions about what was most helpful, and how the experience could be improved
Evaluation: Statistical Methods

- ICCAS scores were considered as continuous variables
- Each question was analyzed separately and by categories based on interprofessional practice competencies
- An overall average score was also generated
- Paired *t-tests* compared changes in scores before and after workshop
- Top themes were extracted from the open-ended questions
## Results: Overall Competency Scores

### ICCAS Scores – Pre-Post Comparisons Paired T-Tests (Mean) N=235

<table>
<thead>
<tr>
<th>Questions - Please rate your ability for each of the following statements BEFORE &amp; AFTER: [1-5 Scale: 1=Much worse now; 2=Somewhat worse now; 3=About the same; 4=Somewhat better now; 5=Much better now]</th>
<th>Pre Score Mean</th>
<th>Post Score Mean</th>
<th>Change Score Mean</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Summary (Q1-5)</td>
<td>3.67</td>
<td>4.29</td>
<td>0.62</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Collaboration Summary (Q6-8)</td>
<td>3.52</td>
<td>4.34</td>
<td>0.83</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Roles and Responsibilities Summary (Q9-12)</td>
<td>3.61</td>
<td>4.38</td>
<td>0.76</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Collaborative Pt/Family-Centered Approach (Q13-15)</td>
<td>3.54</td>
<td>4.40</td>
<td>0.86</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Conflict Management/Resolution (Q16-18)</td>
<td>3.85</td>
<td>4.45</td>
<td>0.60</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Team Functioning (Q19-20)</td>
<td>3.57</td>
<td>4.33</td>
<td>0.76</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>MEAN TOTAL ICCAS SCORE (Q1-20)</strong></td>
<td><strong>3.63</strong></td>
<td><strong>4.36</strong></td>
<td><strong>0.73</strong></td>
<td><strong>&lt;0.0001</strong></td>
</tr>
<tr>
<td>Embrace cultural diversity/individual differences</td>
<td>3.79</td>
<td>4.34</td>
<td>0.55</td>
<td>&lt;0.0001</td>
</tr>
<tr>
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</tr>
<tr>
<td>Communication Summary (Q1-5)</td>
<td>In-Person</td>
<td>Online</td>
<td>P value</td>
<td>In-Person</td>
</tr>
<tr>
<td>3.68</td>
<td>3.65</td>
<td>0.76</td>
<td>4.32</td>
<td>4.26</td>
</tr>
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<td>Collaboration Summary (Q6-8)</td>
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<td>Roles and Responsibilities (Q9-12)</td>
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<td>3.63</td>
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<td>Pt/Family-Centered Approach (Q13-15)</td>
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<td>3.55</td>
<td>0.88</td>
<td>4.43</td>
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<tr>
<td>Conflict Management (Q16-18)</td>
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</table>
### Results: Impact and Satisfaction

#### Evaluation Questions After IPE Activity

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>All Students Mean ± SD (N=235)</th>
<th>Comparison of Evaluation Scores (T-Tests)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>In-Person (N=122)</td>
<td>Online (N=113)</td>
</tr>
<tr>
<td>Compared to the time before the learning activities, would you say your ability to collaborate interprofessionally is... [1-5 Scale: (Much worse now, somewhat worse now, about the same, somewhat better now, much better now)]</td>
<td>4.28 ± 0.67</td>
<td>4.35 ± 0.67</td>
</tr>
<tr>
<td>How much do you think your participation in this activity will affect your future practice? [1-5 Scale: (1=Not at all, 2=Slightly, 3=Moderately, 4=Very, 5=Extremely)]</td>
<td>3.99 ± 0.89</td>
<td>4.13 ± 0.83</td>
</tr>
<tr>
<td>How satisfied were you with your ability to work through the simulations? [1-5 Scale: (1=Not at all, 2=Fair, 3=Neutral, 4=Satisfied, 5=Extremely satisfied)]</td>
<td>4.15 ± 0.71</td>
<td>4.17 ± 0.76</td>
</tr>
</tbody>
</table>
Conclusions

• At the University of Hawaii, we were able to successfully convert the HIPTCS simulation to a completely virtual format during the COVID-19 pandemic

• We were still able to achieve significant improvements in all IPE core competency categories for both the in-person and online cohorts

• All disciplines experienced high levels of satisfaction
Discussion: Strengths

- Innovative changes were made quickly to adapt to the COVID-19 pandemic
- Validated tool (ICCAS) to assess interprofessional competencies
- We believe that the strength of the exercise that enabled both in-person and entirely virtual formats to be equally effective was the repeated opportunity for debriefing, feedback, and practice of IPE skills (ice-breaker activity, team meeting and family meeting)
Discussion: Limitations

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Discussion: Areas for Improvement

• The question about whether participation in the activity would affect their future practice should be explored

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Discussion: Opportunities

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