Utilization of a student-created, simulation-based curriculum to enhance learning amongst preclinical medical students

Jennifer McMains¹, Michael C. Larkins¹, Alexandra Doherty¹, Julia Horiates¹, Kamel Alachraf¹, Julian Gordon¹, James C. Fletcher², Kori Brewer²

¹Brody School of Medicine, East Carolina University, Greenville, NC, USA ²Department of Emergency Medicine, Brody School of Medicine, East Carolina University, Greenville, NC, USA
Collaborative Team Members

- Michael C. Larkins, Alexandra Doherty, Julia Horiates, Kamel Alachraf, Julian Gordon
  - Creation of events, planning, question creation, data collection, data analysis, and writing

- James C. Fletcher, Kori Brewer
  - Question creation, data analysis, editing of manuscript

- Interprofessional Clinical Simulation Program
  - Hosting and setup of events

- Department of Emergency Medicine
  - Providing physicians to teach events

- Physician Assistant Studies Program
  - Partnership for ITEAM event

- Student Government Association
  - Provided funding for ITEAM event
Longitudinal Preceptorship:
Each student will be assigned a clinical home where they will precept with a physician. You will keep a patient log to record the conditions, complaints, and learning objectives you find during these sessions.

Class of 2020 and Beyond M4 Requirements

- 4 weeks – Acting Internship (AI) – BSOM or Away
- **4 weeks – Emergency Medicine – BSOM**
- 4 weeks – Intensive Care Unit (ICU) – BSOM
- 4 weeks – Neurology & Physical Medicine & Rehabilitation – BSOM
- 4 weeks – Primary Care (PC) – Ambulatory at BSOM or Away
- 22 weeks – Electives – BSOM or Away
- 1 week – Transition to M4 – BSOM
- 3 weeks – Transition to Residency Bootcamp/Foundational Science Capstone – BSOM
- 8 weeks – Flex (personal study/residency interviews)
- 3 weeks – Vacation (Fall Break and Winter Break)

Total: 57 weeks
Methods / Description
## Results

### Knowledge Assessment

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Pre Event</th>
<th>Post Event</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suture</td>
<td>34.5 ± 5.5%</td>
<td>73.6 ± 5.2%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>MedEvac</td>
<td>54.5 ± 6.6%</td>
<td>70.8 ± 5.4%</td>
<td>0.06</td>
</tr>
<tr>
<td>ITEAM</td>
<td>72.5 ± 5.7%</td>
<td>91.7 ± 2.4%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>31.3 ± 3.5%</td>
<td>56.1 ± 6.7%</td>
<td>0.004</td>
</tr>
</tbody>
</table>

*Note: The p-values indicate statistical significance.*
Results

Knowledge Retention – Suture Lab

<table>
<thead>
<tr>
<th></th>
<th>Pre Event</th>
<th>Post Event</th>
<th>One Month</th>
<th>Two Month</th>
<th>Three Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Retention</td>
<td>34.5 ± 5.5%</td>
<td>73.6 ± 5.2%</td>
<td>60.0 ± 9.7%</td>
<td>57.5 ± 11%</td>
<td>60.0 ± 7.1%</td>
</tr>
</tbody>
</table>

*p = 0.31*
Results

Knowledge Retention – MedEvac

<table>
<thead>
<tr>
<th></th>
<th>Average Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Event</td>
<td>54.5 ± 6.6%</td>
</tr>
<tr>
<td>Post Event</td>
<td>70.8 ± 5.4%</td>
</tr>
<tr>
<td>One Month</td>
<td>80.6 ± 9.4%</td>
</tr>
<tr>
<td>Two Month</td>
<td>58.3 ± 8.2%</td>
</tr>
</tbody>
</table>

Knowledge Retention – ITEAM

<table>
<thead>
<tr>
<th></th>
<th>Average Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Event</td>
<td>72.5 ± 5.7%</td>
</tr>
<tr>
<td>Post Event</td>
<td>91.7 ± 2.4%</td>
</tr>
<tr>
<td>One Month</td>
<td>75.0 ± 9.1%</td>
</tr>
</tbody>
</table>

p = 0.26

p = 0.21
Results

Enjoyment Assessment

Average Score on Likert Scale

- **enjoyed more vs lecture**
- **learned more vs lecture**
- **would attend again**
- **liked student leadership**

- **Ultrasound**
- **ITEAM**
- **MedEvac**
- **Suture**
Challenges Encountered

- Limited number of students allowed
- Scheduling
- High level of difficulty in assessment
Lessons Learned

• Simulation based learning is EFFECTIVE
  • COVID-19
  • Collaboration
  • Introduction to EM for students and general public

• Simulation based learning is ENJOYABLE

• Simulation based learned takes EFFORT
  • From faculty, support staff
  • From students
Next Steps

Future Studies

Do preclinical students retain clinical skills and/or knowledge learned in SBL into clinical years?

What is the impact of incorporating more SBL on medical school faculty?

Does increased SBL impact student performance in preclinical years?