Implementation and Evaluation of a Comprehensive Proficiency-Based Upper GI Curriculum: A Multi-Institutional Canadian Experience

Zevin, B1; Sheahan, G1; Ashamalla, S2; Dedy, NJ2; Jalink, D1; Grantcharov, TP2

1Department of Surgery, Queen’s University; 2Department of Surgery, University of Toronto
Faculty: Boris Zevin MD, PhD, FRCSC

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– Consulting Fees: Ethicon Canada
– Research Funding: Medtronic Canada

Potential for conflict(s) of interest:
– None
Background

• Introduction of CBME in general surgery has prompted a search for more effective training strategies in advanced minimally invasive surgery

• Comprehensive proficiency-based Upper GI curriculum was developed and shown to be more educationally effective than conventional surgery training

• Upper GI curriculum was implemented at Queen’s University and the University of Toronto.

Objective

To evaluate the proficiency-based Upper GI curriculum and to identify facilitators and barriers to its implementation.
Curriculum Outline

Lap. enteroenterostomy

Simulated OR crisis scenario
Methods

Participants:
• PGY 2-5 general surgery residents.
• Queen’s University and University of Toronto

Implementation:
• July – Sept 2017 (Queen’s University).
• Nov 2012 – Feb 2013 (University of Toronto)
Methods

Evaluation:

• **Objective assessment of pre- and post-curriculum knowledge** (25-item MCQ) and technical skills (BOSATS scale\(^1\))

• **Objective assessment of post-curriculum non-technical skills** (NOTSS scale\(^2\))

• **Residents’ perceptions** about the curriculum (Likert-type (1-5) questionnaire)

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Results

• 27 residents PGY (2-5) participated

<table>
<thead>
<tr>
<th>Gender</th>
<th>Queen’s University (n = 12)</th>
<th>University of Toronto (n = 15)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>8</td>
<td>0.48</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of laparoscopic procedures:</th>
<th>Queen’s University (n = 12)</th>
<th>University of Toronto (n = 15)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>100 (15-165)</td>
<td>38 (20-200)</td>
<td>0.83</td>
</tr>
<tr>
<td>Intermediate</td>
<td>5 (0-10)</td>
<td>2 (0-40)</td>
<td>0.95</td>
</tr>
<tr>
<td>Advanced</td>
<td>0 (0-1)</td>
<td>0 (0-3)</td>
<td>0.09</td>
</tr>
</tbody>
</table>

*Table 1. Demographics (median; range)*
Results

Knowledge Assessment:

*P < 0.02
Results

Technical Skills Assessment:

*B < 0.001

BOSATS score (%)

Pre-test
Post-test
Non-Technical Skills Assessment:

<table>
<thead>
<tr>
<th>Non-technical skill</th>
<th>NOTSS score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situation awareness</td>
<td>Good: 4 (3 - 4)</td>
</tr>
<tr>
<td>Decision making</td>
<td>Good: 4 (3 - 4)</td>
</tr>
<tr>
<td>Communication and teamwork</td>
<td>Good: 4 (3 - 4)</td>
</tr>
<tr>
<td>Leadership</td>
<td>Acceptable: 3 (3 - 4)</td>
</tr>
</tbody>
</table>

*Table 2: Non-technical skills post curriculum completion (median; range)*
## Results

### Perceived Educational Value of Curriculum Components:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Educational value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-directed reading material</td>
<td>4 (3 - 4)</td>
</tr>
<tr>
<td>Simulated OR crisis scenario</td>
<td>4 (3.5 – 4)</td>
</tr>
<tr>
<td>Laparoscopic box trainer (suturing)</td>
<td>5 (4 – 5)</td>
</tr>
<tr>
<td>Laparoscopic box trainer (bowel anastomosis)</td>
<td>4.5 (4 – 5)</td>
</tr>
<tr>
<td>Faculty-led seminar (upper GI surgery)</td>
<td>4 (4 – 5)</td>
</tr>
<tr>
<td>Faculty-led seminar (non-technical skills)</td>
<td>4 (3 – 4)</td>
</tr>
<tr>
<td>Faculty-led small group seminar sessions</td>
<td>5 (4 – 5)</td>
</tr>
</tbody>
</table>

*Table 3: Educational value of activity within the Upper GI Curriculum (scale 1 to 5)*
Results:

- 96% of participants “agreed” and/or “strongly agreed” that Upper GI curriculum was a useful experience and should continue to be a part of academic curriculum.

Barriers to implementation:

- Lack of faculty supervision was the main barrier to implementation.
- Only 65% of participants “agreed” and/or “strongly agreed” that quality of faculty supervision was optimal.
- Cost - $4,200 for Queen’s University
Discussion / Limitations:

• Example of a knowledge translation study

• Only 30% of residents completed required readings
  – Consider changing medium by which material is delivered

• Ongoing faculty buy-in and commitment is essential for widespread implementation.

• Will be assessing transfer of acquired skills from the lab to the OR
Questions?