Implementing an ECLS Specialist Program
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Background
- Extracorporeal Life Support (ECLS) requires skilled multidisciplinary management.
- Since 2012, Perfusionists managed the ECLS pump.
- Recent program growth prompted transition to an ECLS Specialist management model.

Purpose
- To implement a course that would achieve confident and competent ECLS specialists through didactic, simulation and online learning tools.

Methods
- ECLS Educator collaborated with physician, perfusion, and nursing to develop a 40-hour course.
- 20 ICU nurses and 6 RTs were hired as Specialists.
- Course objectives:
  - ELSO guidelines
  - approved by MD experts
  - validated through course evaluations & patient outcomes
- The course incorporated:
  - online learning (4 hours)
  - didactic (16 hours)
  - simulation (16 hours)
  - competency testing(4 hours)
- Written exam
- Competency and confidence levels were evaluated at course end and at 6 months.

Results
- 40 Hour Course Competence Measures:
  - Course evaluation results: 95% of objectives met.
  - Written exam passing score >80%: 100% achieved.
  - Evaluation of skills: 100% of specialists able to Prime the pump & remove “large air”

6 Month Competence Measures (via simulation):
- Competency was defined by
  - priming the circuit in under 20 minutes (80% achieved)
  - removing large air in under 15 minutes (90% achieved)

Pre and Post 6 Month Confidence Measures:
- Confidence Scores:
  - self-reporting survey
  - scores on scale of 1 to 10
  - 1 = high confidence, 10 = low confidence

Confidence Measures (Baseline/6 months)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6-month Post</th>
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</thead>
<tbody>
<tr>
<td>Overall confidence</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Priming the pump</td>
<td>5.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Managing large air</td>
<td>6.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Hand cranking</td>
<td>5.4</td>
<td>3.5</td>
</tr>
</tbody>
</table>

6 Month Competence Measures

**Time to Respond to Emergency**

<table>
<thead>
<tr>
<th>Time (Minutes)</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>15.00</td>
<td>4</td>
</tr>
<tr>
<td>20.00</td>
<td>2</td>
</tr>
<tr>
<td>25.00</td>
<td>1</td>
</tr>
</tbody>
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**Prime in < 20 minutes**

**Remove large air in < 15 minutes**

**Switch to hand crank efficiently**

**Goal: < 20 minutes**

**Goal: < 15 minutes**

**Goal: < 5 min remove large air**

**Goal: < 15 min prime circuit**

**Implement bedside cannulation simulation and evaluate confidence scores and competence levels.**

Conclusions
- An ECLS Specialist model can be implemented with a multidisciplinary team approach.
- Participants validated that course objectives were met.
- A multimodal educational approach, including simulation, achieved improvements in confidence and competence.

Next Steps
- Through ongoing education:
  - Improve confidence (Goal 0-1).
  - Improve competence
    - Goal: < 15 min prime circuit
    - Goal: < 5 min remove large air
  - Implement bedside cannulation simulation and evaluate confidence scores and competence levels.