Using an Existing Clinical Practice Guideline to Develop and Implement an Adult ECMO Program During a Global Pandemic

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Using an Existing Clinical Practice Guideline to Develop and Implement an Adult ECMO Program During a Global Pandemic

Brandy Pitts DNP, RN, CCRN-K, Midge Vaughan, MSN, RN, CCRN & Jamie K. Roney, DNP, RN, NPD-BC, CCRN-K
Extracorporeal Membrane Oxygenation
- Rescue therapy
  - Severe respiratory failure and cardiogenic shock
- Indications for use in adults has increased
- Clinical outcomes vary depending on infrastructure of hospitals
Background

- Extracorporeal Life Support Organization (ELSO)
  - International organization
  - Provides guidelines for ECMO programs
  - Identifies members of an ideal interdisciplinary team
  - Registry to track outcomes

(ELSO, 2017)
<table>
<thead>
<tr>
<th>ELSO Recommendations</th>
<th>Pediatric Program</th>
<th>Adult “Program”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisciplinary Team</td>
<td>✔️</td>
<td>✖️</td>
</tr>
<tr>
<td>Collaboration</td>
<td>✔️</td>
<td>✖️</td>
</tr>
<tr>
<td>Guidelines</td>
<td>✔️</td>
<td>✖️</td>
</tr>
<tr>
<td>Inclusion &amp; Exclusion Criteria</td>
<td>✔️</td>
<td>✖️</td>
</tr>
<tr>
<td>ECMO Director</td>
<td>✔️</td>
<td>✖️</td>
</tr>
</tbody>
</table>

(ELSO, 2017)
Leading Change

(Kotter, n.d.)
Purpose

The purpose of the project was to lead an interprofessional team in establishing an adult ECMO program, utilizing evidence-based practice guidelines, at a large west Texas hospital.
Literature Synthesis

ELSO guidelines for ECMO centers (2017)

- Outline institutional requirements
- Roles & responsibilities
- Policies and procedures
Literature Synthesis

Four factors essential to the success of new program:

- At least 1 ECMO physician
- Designation & training of ECMO specialists
- Early identification of patient selection criteria
- Continuous training for programs with low volume

( Assy et al., 2019)
Literature Synthesis

Implementation of an interdisciplinary team:

- Clinical outcomes
- In-hospital and ICU mortality rates
- Successful weaning off ECMO
- Survival rates
- Communication and collaboration
- One-year mortality

(Dalia et al., 2019; Na et al., 2019)
Ethical Considerations

- Unclear perceptions of goals
- Treatment limitations
- Futility
- Withdrawal of care

(Guglin et al., 2019)

- Best practice guidelines
- ECMO specific consent
- No IRB approval needed
- Project site approval
- DNP Council approval
Design

Program Implementation
Framework

Logic model

• Visual roadmap
• Inputs
• Activities
• Outputs
• Outcomes

**Inputs**

People: Hospital Administration, Medical Director, Interdisciplinary team of: Nurses, ECMO, Specialists, Perfusionists, Physicians.

Resources: ECMO expert, ELSO guidelines.

**Activities**

- Train 17 new specialist with 35 hours of education by 10/8/2020
- Distribute Pre-CSACD-T survey by 9/15/2020. Distribute post-CSACD survey after program implementation by 2/6/2021
- Setup evaluation plan with quality measures & start tracking by 11/1/2020
- Meet with ECMO expert on monthly basis to review patient outcomes and make necessary changes to program

**Outputs**

- 17 ECMO specialists
- Interdisciplinary ECMO team
- ECMO Expert

**Participation**

- Improve collaboration and satisfaction among interprofessional team (CSACD-T results)
- Standardize patient care protocol
- Identify measurable clinical outcomes & report to ELSO

**Short**

- Keep 100% of ECMO patients at facility

**Intermediate**

- Improved patient outcomes: Survival to DC, Survival off ECMO
- Provide highest level of care for patients in the West Texas region

**Long**

- Receive Platinum ELSO Award of Excellence

Methods

• Guiding Coalition assembled
• SWOT analyzed
• Policies and Procedures established
• ECMO specialists & bedside nurses trained
• ELSO’s Quality Reporting System setup
### Table 1: ECMO Specialists Training Course Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900-0910</td>
<td>Welcome &amp; Introduction</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>0910-0945</td>
<td>History of ECMO</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>0945-1015</td>
<td>ECMO Program at CCH/CMC</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1015-1025</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>1025-1045</td>
<td>ECMO Specialists</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1045-1215</td>
<td>Disease Processes of the Newborn</td>
<td>Physician</td>
</tr>
<tr>
<td>1215-1315</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1315-1400</td>
<td>Cardiomyopathy/Myocarditis</td>
<td>Physician</td>
</tr>
<tr>
<td>1400-1500</td>
<td>Disease Processes of ECMO</td>
<td>Physician</td>
</tr>
<tr>
<td>1500-1545</td>
<td>Post Cardiotomy</td>
<td>Physician</td>
</tr>
<tr>
<td>1545-1600</td>
<td>Wrap Up</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td></td>
<td><strong>Week 2</strong></td>
<td></td>
</tr>
<tr>
<td>0900-0910</td>
<td>Welcome</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>0910-0945</td>
<td>Indications/Contraindications/Risks &amp; Benefits</td>
<td>Physician</td>
</tr>
<tr>
<td>0945-1045</td>
<td>Physiology of Circulation, Gas Exchange and the ECMO Circuit</td>
<td>Physician</td>
</tr>
<tr>
<td>1045-1055</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>1055-1140</td>
<td>Indications/Contraindications/Patient Selection</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1140-1230</td>
<td>Types of ECMO</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1230-1330</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1330-1415</td>
<td>Preparing for ECMO</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1415-1500</td>
<td>Cannulation and Initiation of ECMO</td>
<td>ECMO Coordinator</td>
</tr>
<tr>
<td>1500-1600</td>
<td>ECMO from Cannula to Cannula (Hands On)</td>
<td>Team</td>
</tr>
<tr>
<td>1600-1605</td>
<td>Wrap Up</td>
<td>ECMO Coordinator</td>
</tr>
</tbody>
</table>
Evaluation Plan (Generate Short-Term Wins)

- Develop standardized patient care protocols
  - Development of policies and procedures

- Develop measurable clinical outcomes
  - Survival off ECMO
  - Survival to discharge
  - Major & Minor complications

- Measure Collaboration and Satisfaction about Care Decisions in Teams (CSACD-T) (Aaberg et al., 2018; Baggs, 1994)
## CSACD-T Results

- **Participation**
- **Collaboration** (min=7 max=49)
- **Satisfaction** (min=2 max=14)
- **Visual inspection - increased**

<table>
<thead>
<tr>
<th>Role</th>
<th>Pre-Intervention N=29</th>
<th>Post-Intervention N=24</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECMO Specialist</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Physician</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Bedside Nurse</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Relief Charge Nurse</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Charge Nurse</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Coordinator/Perfusionist</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Collaboration Score</strong></td>
<td>(M = 38)</td>
<td>(M = 39.96)</td>
</tr>
<tr>
<td><strong>Satisfaction Score</strong></td>
<td>(M = 10.48)</td>
<td>(M = 10.83)</td>
</tr>
</tbody>
</table>
Discussion

- Improvements seen even though the results were not statistically significant
  - Collaboration scores
  - Satisfaction scores
  - Most improvement seen in the Agree/Strongly Agree

- Time constraints of project
- Suggest administer survey overtime
COVID-19

• The Good
  • Timing
  • Urgency created
  • Increase in ECMO
  • Rapid deployment

• The Bad
  • Staffing
  • Schedules
Limitations

• Timeframe
• Number of ECMO patients
• Number of responses
• Responses not paired
Recommendations

- Leverage urgency
- Build a team
- Utilize guidelines
- Set goals
- Celebrate wins
- Embed in culture
Conclusions

• Journey, not a race
• COVID-19-unusual opportunity
• Short-term outcomes met
• Committed to patients and staff
Questions


References


