Workshop on using Quality CPR to improve teaching in neonatal resuscitation

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Introduction

- Recognition of the need for, and the delivery of effective cardiac compressions is traditionally taught using basic life support (BLS) manikins with no enhanced features.

- QCPR can enhance skills acquisition in delivering cardiac compressions during the NLS

Smart CPR to teach neonatal resuscitation? Use of QCPR mannequin for teaching CPR on the Neonatal life support course- analysis through questionnaire and observations
Madar J, Mason T – Resuscitation - September 2017 Volume 118, Suppl 1,
QCPR

- Enhanced Features.
- Sensors permit elements of breathing support and cardiac compressions to be recorded and analysed.
QCPR Feedback

Procedure - Cardiac

Procedure – Airway/Breathing

Numerical Summary

Process - Sequence
Candidates

- 78% rated feedback as easy to understand.
- 72% QCPR gave better feedback than instructor alone.
- 88% QCPR should be used in future courses

Attributes
  - Visual feedback
  - Real-time & retrospective
  - Allowed adjustment during procedure
Instructors

• 100% liked using QCPR.
• 85% rated feedback given by QCPR as clear.
• 100% thought should be used on NLS.

• Candidates able to test themselves.
• Able to “quickly target feedback.”
• Increased engagement.
• Reinforced verbal feedback visually
• Added “another dimension.”
# Results - Structured observations

<table>
<thead>
<tr>
<th>How often each key area highlighted during session (%)</th>
<th>QCPR</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression Rate</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td>Compression: Breath Ratio</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Depth of compression</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Recoil</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Hand position</td>
<td>100</td>
<td>38</td>
</tr>
<tr>
<td>Adequacy of breaths</td>
<td>100</td>
<td>63</td>
</tr>
<tr>
<td>Delay between breath &amp; compressions</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>
Summary

• QCPR systems
  • Have demonstrable benefits in NLS teaching.
  • Improve instructor feedback and candidate engagement
  • Are now incorporated into the NLS ECC guidance
  • Have the potential for self-directed learning outside the course itself.

In this sequence the candidate has undertaken 5 inflation breaths with an assessment followed by a series of ventilation breaths, an assessment and then ECC in a 3:1 ratio. Thus the sequencing is correct.

The upper left quadrant records a score of 80, which is within the acceptable range of NLS.

Below is an analysis of the compressions. This indicates that the quality of the compressions was good, with 80% of the compressions having the correct depth and 100% release. The rate was a little fast at 100/min.

The frame to the right provides an indication of the breaths provided. This is indicative of the breaths were of sufficient volume, 80% were overinflation and 8% underinflation. Over inflation is not a helpful variable if inflation breaths form part of the sequence. Under inflation and no inflation are helpful in indicating maintenance of the airway.

The time-sequence graph at the bottom can be expanded by touching, and provides in illustration of the whole sequence. This can be used to show where the sequence was followed, and where good and poor performance elements were. In this segment, the 3:1 ratio is followed, but there are delays between each set of compressions, and breaths, that whilst the majority of the compressions were green and of good quality, some yellow ones indicate lack of depth and that - importantly, airway control is variable with loss of the airway and no inflation on some of the cycles. The rate of compression is above 100/min throughout.

Touching specific domains expands the display – in this illustration of a different sequence, the boxes are expanded. Which provides an explanation of the numerals.
Workshop

- Opportunity to have a go
- Gain familiarity with systems in an NLS setting.
Questions
Summary

• A useful adjunct to permit improved feedback on ECC
• Additional information
• Facilitates real time improvement in demonstrable skills

• Cons
  • Expensive
  • Can be a distraction.
1. Wyckoff MH. Improving Neonatal Cardiopulmonary Resuscitation Hemodynamics Are Sustained Inflations During


