Incorporating cardiopulmonary resuscitation training into a cardiac rehabilitation program: A feasibility study

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Why CPR training for cardiac patients and families?

- Cardiac patients are a high-risk population
  - Cardiac aetiology most common underlying cause of cardiac arrest
  - Cardiac patients are at 7 x higher risk of cardiac arrest
  - 76% of cardiac arrests occur in the home
Chain of Survival

1. Early recognition and call for help
   - to prevent cardiac arrest
   - to buy time

2. Early CPR
   - to restart the heart

3. Early Defibrillation
   - to restore quality of life

4. Post resuscitation care
Out of hospital cardiac arrest

Ambulance Victoria, 2017

- 72% chance
- 46% witnessed
- 76% house
- 7% discharge

Spouse unlikely to have CPR skills
Historically

- Targeted CPR training research pioneered by Dracup & Moser (USA) over 30 years ago
  - Patients accepting of CPR training
  - Capable and willing to use CPR skills
  - Does not increase anxiety

- Environments previously tested for targeted training:
  - Inpatients
  - Outpatients
  - Community

- No research OR targeted CPR training programs in Australia
Currently: CPR training in cardiac rehabilitation

- CPR training: 23.9% in Australia, 56.6% in New Zealand, with a p-value < 0.001.
- CPR training information: 40.2% in New Zealand, 73.2% in New Zealand, with a p-value < 0.001.
Aim & Methods

To determine if cardiac rehabilitation is a feasible environment for CPR training to patients and family members
- Uptake of training
- Confidence and willingness
- Skills
- Rate of secondary training

Methods
- Single centre, prospective pre-test, post-test study
- Data collected pre-training, post-training and one month
Self instructional video training
## Results: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Patients n = 56</th>
<th>Spouses n = 27</th>
<th>Total n = 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolment rate</td>
<td>56 (73%)</td>
<td>27</td>
<td>83</td>
</tr>
<tr>
<td>Male</td>
<td>45 (80%)</td>
<td>5 (19%)</td>
<td>50 (60%)</td>
</tr>
<tr>
<td>Age, years (mean,SD)</td>
<td>65 (10)</td>
<td>65 (12)</td>
<td>65 (11)</td>
</tr>
<tr>
<td>Previous CPR training</td>
<td>24 (43%)</td>
<td>14 (52%)</td>
<td>38 (46%)</td>
</tr>
<tr>
<td>Self rated CPR knowledge: Poor/Fair</td>
<td>36 (64%)</td>
<td>19 (70%)</td>
<td>55 (66%)</td>
</tr>
</tbody>
</table>
Results: Confidence

How **confident** do you feel to provide CPR in an emergency?

- Pre-training: 58% Confident / Very Confident, 18% Not confident / Somewhat confident, 13% Confident / Very Confident
- Post-training
- One month
How **willing** are you to use CPR skills?

Results: Willingness

- **Pre-training**
  - 41% Agree / Strongly Agree
  - 44% Agree
  - 11% Strongly disagree / Disagree

- **Post-training**

- **One month**
  - Strongly disagree / Disagree
  - Agree / Strongly Agree
## Results: Anxiety & Depression

<table>
<thead>
<tr>
<th>Kessler 10: Anxiety &amp; Depression scale</th>
<th>Total n = 80</th>
<th>Patients n = 54</th>
<th>Spouses n = 26</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre</strong>-training score (median, IQR)</td>
<td>14 (5)</td>
<td>14 (6)</td>
<td>12 (4)</td>
</tr>
<tr>
<td><strong>Post</strong> training score, one month follow up (median, IQR)</td>
<td>11 (3)*</td>
<td>12 (3)</td>
<td>11 (3)</td>
</tr>
</tbody>
</table>

**Scores <15 = low psychological distress**

* *p < 0.001*
Skill reporting

- 54% participants completed
- 1 minute, un-coached, compression only CPR

### Results: Skills

<table>
<thead>
<tr>
<th>1st attempt</th>
<th>Patients n = 27</th>
<th>Spouses n = 18</th>
<th>Total n = 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average mean rate</td>
<td>110bpm</td>
<td>116bpm</td>
<td>112bpm</td>
</tr>
<tr>
<td>Average mean depth</td>
<td>50mm</td>
<td>45mm</td>
<td>48mm</td>
</tr>
<tr>
<td>Correct hand position</td>
<td>84%</td>
<td>85%</td>
<td>84%</td>
</tr>
</tbody>
</table>
Feasibility study: results

1st attempt: no coaching
12%

2nd attempt: coached
99%
Secondary training

We trained 83

They trained 87

Total 170

Average: 3
Maximum: 15
Limitations

- Feasibility study- therefore no control comparator
- One site
- Private hospital

Future Directions:

- Multicentre, randomised controlled trial
- Victorian cardiac rehabilitation programs
- Test best method for coordinators to include CPR training
Conclusions

▪ First Australian perspective of targeted training
▪ First research of targeted training in cardiac rehabilitation
▪ Cardiac patients and their spouses are interested in CPR training
▪ Cardiac rehabilitation is feasible and an acceptable environment for targeted CPR training
  – Patients are interested
  – Environment is feasible
▪ Self-instructional video CPR training kits
  – Increases confidence and willingness
  – Skills are near guideline standard
  – Needs face to face support
Acknowledgements

- Co-authors & PhD Supervisors
  - Professor Judith Finn
  - Dr Janet Bray
  - Dr Dion Stub

- All patients and family members

- Cabrini Hospital
  - Diane Missen
  - Niamh Dormer

- Funding
  - PhD Scholarship
    - National Health and Medical Research Council
    - Aus-ROC PhD Scholarship
  - Laerdal Australia: in-kind support for training kits
Questions?

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## Results: Staff responses

<table>
<thead>
<tr>
<th>Topic</th>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate topic</td>
<td>✔️</td>
<td>100% strongly agree or agree</td>
</tr>
<tr>
<td>Suitable training length</td>
<td>✔️</td>
<td>100% strongly agree or agree</td>
</tr>
<tr>
<td>Suitable modality</td>
<td>✔️</td>
<td>100% strongly agree or agree</td>
</tr>
<tr>
<td>Running training:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel comfortable</td>
<td>✔️</td>
<td>75% agree</td>
</tr>
<tr>
<td>Feel confident</td>
<td>✔️</td>
<td>75% agree</td>
</tr>
</tbody>
</table>

*n = 5*
Determine current prevalence of CPR training in cardiac rehab

- Online national survey, cardiac rehabilitation coordinators
- 47% response rate (n = 253)
- 24% Australian programs provided some form of CPR training
- Barriers to providing CPR training:
  - Lack of resources
  - Lack of time
  - Lack of awareness

Q: CPR training should be offered as part of the rehab program

Agree 72%
Neutral 20%
Disagree 8%

Program of PhD research

1. Systematic review
2. Victorian CPR training rates
3. Qualitative interviews
4. Cardiac rehabilitation survey
5. Feasibility study
1. Systematic review
2. Victorian CPR training rates
3. Qualitative interviews
4. Cardiac rehabilitation survey
5. Feasibility study
Out of hospital cardiac arrest (OHCA)

~ 30,000 cardiac arrests in Australia
66% males
Median age 68 years
75% thought to be cardiac aetiology
Iceland!!!