TITLE: Cardiac Arrest Emergency Response in Hospitals: Clinical Effectiveness and Guidelines

DATE: 13 May 2015

RESEARCH QUESTIONS

1. What is the clinical effectiveness of performing cardiopulmonary resuscitation (CPR) on a patient post-cardiac arrest with no signs of life?
2. What are the evidence-based guidelines regarding the announcement of a cardiac arrest emergency (Code Blue) in a hospital setting?
3. What are the evidence-based guidelines regarding the use of mock codes in a hospital setting?

KEY FINDINGS

One non-randomized study was identified regarding the clinical effectiveness of performing cardiopulmonary resuscitation (CPR) on a patient post-cardiac arrest with no signs of life. In addition, one evidence-based guideline regarding the announcement of a cardiac arrest emergency (Code Blue) in a hospital setting was identified.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No methodological filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and May 1, 2015. Internet links were provided, where available.
The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

**SELECTION CRITERIA**

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

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<th>Table 1: Selection Criteria</th>
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<td><strong>Study Designs</strong></td>
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CPR = cardiopulmonary resuscitation.

**RESULTS**

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One non-randomized study was identified regarding the clinical effectiveness of performing CPR on a patient post-cardiac arrest with no signs of life. In addition, one evidence-based guideline regarding the announcement of a cardiac arrest emergency (Code Blue) in a hospital setting was identified; however, no evidence-based guidelines regarding the use of mock codes in a hospital setting were identified. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

**OVERALL SUMMARY OF FINDINGS**

A retrospective study\(^1\) of CPR performed on children found without a pulse following an in-hospital cardiac arrest examined the association between duration of CPR and cause of cardiac arrest with probability of survival. The results showed that the probability of survival in cardiac-induced cardiac arrest (CICA) patients remained fairly stable with increasing duration of CPR (from one to 60 minutes). In contrast, while the probability of survival in respiratory-induced cardiac arrest patients was initially higher than that of the CICA group after one minute of CPR, it decreased significantly by 60 minutes of CPR.
An evidence-based health care protocol developed by the Institute for Clinical Systems Improvement states that the Rapid Response Team should be activated for patients who are experiencing or are likely to imminently experience a cardiac arrest based on deterioration of clinical status. When responding to a code, Rapid Response Team members should quickly assess the patient’s condition, supported by information from the bedside nurse for in-patients, and initiate the appropriate interventions. Details related to the call, including interventions performed and outcomes should be documented and a plan for continuing care should be developed with the primary health care provider.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies


Guidelines and Recommendations

See: Rapid Response Team Algorithm, page 1
Algorithm Annotations – 4. Is the Individual Progressing Toward or Experiencing a Cardiopulmonary Arrest?, page 11
Algorithm Annotations – 9. Rapid Response Team Assesses and Initiates Appropriate Interventions, Consults with Appropriate Provider and Develops a Continuing Plan of Care, pages 14 to 16

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APPENDIX – FURTHER INFORMATION:

Non-Randomized Studies – Mock Codes


Guidelines and Recommendations – Unclear Methodology

7. Code blue policy and procedure for main hospital, heart and vascular center, hospital clinics, the George Isaac outpatient surgical center, the first floor medical pavilion, the basement and first floor of Bowling Hall (including outpatient OTYPT) and the ortho clinic and cardiac rehab [Internet]. [Toledo (OH)]: University of Toledo; 2014 Oct 1. Report No.: 3364-100-45-06. [cited 2015 May 11]. Available from: https://www.utoledo.edu/policies/utmc/administrative/pdfs/3364-100-45-06.pdf


See: 6. In-hospital resuscitation, pages 48 to 57

Review Articles


Additional References