WORKSHEET for Evidence-Based Review of Science for Emergency Cardiac Care

Worksheet author(s)
Maaret Castrén  Date Submitted for review: 27.01.2010

Clinical question.
In adult and pediatric patients with OHCA (P), does the provision of dispatch CPR instructions (I) as opposed to no instructions (C) improve outcome (O)?

Is this question addressing an intervention/therapy, prognosis or diagnosis? Intervention/therapy

State if this is a proposed new topic or revision of existing worksheet: This worksheet is new

Conflict of interest specific to this question
Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? None

Search strategy (including electronic databases searched).

- the Cochrane Library N=0
- Pubmed:

#10 Search #3 and #1 and outcome Limits: Humans 36
#9 Search #3 and #1 Limits: Humans 77
#8 Search #3 and #1 and #2 Limits: Humans 9
#5 Search #4 and #1 5066
#4 Search cardiopulmonary resuscitation 11521
#3 Search dispatch 663
#2 Search telephone CPR and outcome 33
#1 Search heart arrest 36600

- EMBASE:
  #8 search #5 AND #6 AND #4 limitation humans 22
  #7 search #5 AND #6 limitation humans 120
  #6 outcome 917,814
  #5 dispatch 820
  #4 cardiopulmonary AND ('resuscitation'/exp OR resuscitation) 9,800
  - one that did not come up in pubmed

Hand picked from PubMed from Related articles N= 2

Very few articles found by the search were relevant, the most where related articles from the few good ones

State inclusion and exclusion criteria
Inclusion: only human, adult or pediatric cardiac arrest outside the hospital, reporting on T-CPR and effect on survival

Exclusion: animal studies, comments or letters or or editorials or only abstracts, manikin studies on T-CPR

Number of articles/sources meeting criteria for further review: 22 of which 5 has been used for the final analyses
## Summary of evidence

### Evidence Supporting Clinical Question

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<th>Level of evidence</th>
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<td>1</td>
<td></td>
<td>Rea TD (2001,2513)c</td>
<td>Culley L (1991,362)e</td>
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<td>2</td>
<td>Kuisma M (2005,89)c</td>
<td>Eisenberg, M (1985,47)c</td>
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### Evidence Neutral to Clinical question

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### Evidence Opposing Clinical Question

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### Level of evidence

- **A** = Return of spontaneous circulation
- **B** = Survival of event
- **C** = Survival to hospital discharge
- **D** = 30 day outcome
- **E** = Other endpoint
- **Italics** = Animal studies
There are no published randomized studies addressing the topic. There are two randomized studies presented at AHA Orlando 2009 congress (Rea T, Seattle, USA and Bohm K, Stockholm, Sweden), the results of these studies should be included later to the worksheet. They both showed that there was no statistical difference in survival of OHCA patients when telephone instructions for only compression CPR was given compared to instructions for standard CPR with mouth-to-mouth ventilation and compressions.

There are four studies, two observational, two with retrospective controls showing increased survival if telephone CPR instructions are given compared to no instructions (two LOE 2 Kuisma M 2005,89, Rea TD 2001,2513 and two LOE 3 Eisenberg, M 1985,47, Culley L 1991,362).

In Seattle the rate of bystander CPR increased from 32% to 54% after implementation of the dispatcher-assisted telephone CPR program, and survival increased (LOE 3 Culley L, 199, 362). In Helsinki (LOE 2 Kuisma M 2005,89) survival to discharge was 43.1% if T-CPR was given and 31.7% when it was not given (p=0.0453).

Only one study showed decreased survival when T-CPR was given (LOE 3 Vaillancourt C 2007, 877 ). In this study, not powered to measure outcome, a decrease in survival rate from 4.8% in the control period to 3.0% in the intervention period could be seen. The intervention was implementing a telephone-CPR program.

Acknowledgements:

**Citation List**


Comments: Did not address outcome in patients. Excluded.


Comments: Does not address T-CPR and survival. Excluded.


Comments: Does not address dispatcher instructions in the aims. Compares gasping with no gasping patients and concludes that bystander CPR in gasping patients gives a survival of 39% and in no gasping 9.4%. If the patient does not get bystander CPR the same numbers are 21.1% vs 6.7%. Excluded.

Comments: A retrospective registry study. Studies 16 years of out-of-hospital CA and 11 275 patients. Of these 73% received standard CPR and 10% compressions only CPR. Does not address if these were dispatcher instructed or not. There was no significant difference in 1-month survival between standard CPR or CPR with chest compressions only. LOE 5, good. Excluded because of lack of comparison with no CPR group.


Comments: Simulation, no patients. Excluded.


Comments: A study with historical controls. When help arrived in 4 minutes, the survival was 32% without T-CPR and 38% with T-CPR. This was not statistically significant. When help arrived after 4 minutes, the numbers were 24% vs 50% (p=0.3). LOE 3, fair.


Comments: Does not address patients, simulation. Excluded.


Comments: A letter, not a study. Excluded.


Comments: A before and after study. A T-CPR program was introduced in the system. Before the program dispatchers gave improvised T-CPR with no survivors. After the program with training and protocols the survival was 21% if T-CPR was given. The survivor in fire department initiated and bystander initiated CPR remained the same. With the program these numbers were 21% vs 13% vs 24%. These results show a benefit from bystander CPR and especially T-CPR. LOE 3, fair.


Comments: The study did not compare instructions given versus no instructions. The survival was similar when instructions with standard CPR were given compared to compression only instructions. Excluded.

Comments: Reviews the results of the former study of the same group. Excluded.


Comments: Does not address outcome. Excluded.


Comments: Does not address outcome of patients. Excluded.


Comments: Does not address outcome. Excluded.


Comments: An observational study with 4902 patients. 783 received standard CPR, 544 received compressions only and 3550 no CPR. The results show that standard CPR and compressions only CPR gave similar survival in witnessed CA, and both have better survival than no CPR. Excluded.


Comments: The study looked at 373 witnessed VF patients. Survival to discharge was 43.1% if T-CPR was given and 31.7% when it was not given (p=0.0453). LOE 2, fair.


Comments: Does not address outcome. Excluded.


Comments: Does not address outcome after T-CPR. Excluded.

Comments: Dispatcher-assisted CPR is associated with improved survival compared with those who received no CPR. Bystander CPR without dispatcher assistance had an even higher survival rate. LOE 2, fair.


Comments: An observational study with 4068 patients: 11% compression only CPR, 18% standard CPR and the rest 72% received no bystander CPR. Bystander CPR gave a better survival than no CPR, 5.0% vs 2.2%. OR for favourable neurological outcome was 2.2. No benefit could be seen from addition of mouth-to-mouth ventilation. Not included.


Comments: Not a study, only a study design. Excluded.


Comments: The study analysed a before and after situation. The intervention was a dispatcher assisted CPR program. The study was not powered to measure outcome. In the results a decreasing survival rate from 4.8% in the control period to 3.0% in the intervention period could be seen. LOE 3, fair.