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

Worksheet author(s)

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Clinical question.

In patients with ROSC after cardiac arrest (prehospital or in-hospital) (P), does the use of comprehensive treatment protocol (I) as opposed to standard care ©, improve outcome (O)(eg. survival)?

Is this question addressing an intervention/therapy, prognosis or diagnosis? Intervention
State if this is a proposed new topic or revision of existing worksheet: New topic

Conflict of interest specific to this question

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? No

Search strategy (including electronic databases searched).

Cochrane, PubMed and Embase:
"Cardiopulmonary Resuscitation"[Mesh] AND "Heart Arrest"[Mesh] N=3183 and protocol N=79, postresuscitation N=598, "Outcome Assessment (Health Care)"[Mesh] N=377121, CA and outcome and postresusc together N=42 (only 4 ok), and + protocol N=4.

Three studies included for the final comments

- State inclusion and exclusion criteria

Inclusion:

- prospective or retrospective studies involving adult and pediatric patients successfully resuscitated from CA, prehospital or in-hospital
- patients have been treated with a comprehensive postresuscitation care protocol
- a outcome has been stated

Exclusion:

- non-human studies, editoreals
- studies where only one part of the postresuscitation care has been implemented as a protocol

- Number of articles/sources meeting criteria for further review:

Three articles, one LOE 2, two LOE 3

Summary of evidence

Evidence Supporting Clinical Question

Good			**Sunde K 2007, 29 D**		
Fair		**Kirves H 2007, 75 E**	**Gaieski DF 2009, 48 D**		
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

Evidence Neutral to Clinical question

Good					
Fair					
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

Evidence Opposing Clinical Question

Good					
Fair					
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

REVIEWER'S FINAL COMMENTS AND ASSESSMENT OF BENEFIT / RISK:

Very few articles were found, and only three stated clearly a comprehensive protocol, one protocol was for the treatment outside the hospital and the two others were for the treatment in the ICU. No protocol was meant for the whole chain of care after ROSC. There were no LOE 1 studies.

Study Gaieski et al, 2009, 48: Mortality decreased 28% for comatose survivors of OHCA after implementing a standardized protocol. LOE 3, FAIR, POSITIVE.
Study Kirves et al, 2007, 75: Markers of poor prognosis were associated with unsatisfactory care, which in turn was more frequent among the patients who did not survive to hospital discharge. LOE 2, FAIR, POSITIVE.
Study Sunde et al, 2007, 29: Survival to one year for admitted OHCA patients increased from 31% to 56% when using a standardized protocol. LOE 3, GOOD, POSITIVE.

Acknowledgements:
Nil

Citation List

Included in the final analysis:

Gaieski DF**,** Band RA**,** Abella BS**,** Neumar RW**,** Fuchs BD**,** Kolansky DM**,** Merchant RM**,** Carr BG**,** Becker LB**,** Maguire C**,** Klair A**,** Hylton J**,** Goyal M**.** Early goal-directed hemodynamic optimization combined with therapeutic hypothermia in comatose survivors of out-of-hospital cardiac arrest. Resuscitation. 2009 Apr;80(4):418-24. Epub 2009 Feb 12.

COMMENTS: A study with historical controls, implementation of a post arrest protocol. This protocol reduced the mortality with 28%. The article does not state clearly the target outcome, it states that the analysis is done as Utstein reporting. The result was not statistically significant because of the small amount of patients. LOE 3, FAIR; POSITIVE.

Kirves, H., M. B. Skrifvars, et al. (2007). "Adherence to resuscitation guidelines during prehospital care of cardiac arrest patients." Eur J Emerg Med **14**(2): 75-81.

COMMENTS: A retrospective study, only OHCA, prehospital postresuscitation care, has a protocol for the postresuscitation treatment outside the hospital, comparison between fully using or not using the protocol, a quite small sample size, the better the protocol was followed the stronger association there was to survival. LOE 2, FAIR, POSITIVE.

Sunde, K., M. Pytte, et al. (2007). "Implementation of a standardised treatment protocol for post resuscitation care after out-of-hospital cardiac arrest." Resuscitation **73**(1): 29-39.

COMMENTS: In-hospital care, comparison to historical controls without hypothermia, a small sample size, a clear protocol used, survival increased from 31% to 56% when using a standardized protocol. LOE 3, GOOD, POSITIVE.

Excluded from the final analysis:

Doherty, D. R., C. S. Parshuram, et al. (2009). "Hypothermia therapy after pediatric cardiac arrest." Circulation **119**(11): 1492-500.

Hammer, L., F. Vitrat, et al. (2009). "Immediate prehospital hypothermia protocol in comatose survivors of out-of-hospital cardiac arrest." Am J Emerg Med **27**(5): 570-3.

Koran, Z. (2009). "Therapeutic hypothermia in the postresuscitation patient: the development and implementation of an evidence-based protocol for the emergency department." J Trauma Nurs **16**(1): 48-57; quiz 58-9.

Kupchik, N. L. (2009). "Development and implementation of a therapeutic hypothermia protocol." Crit Care Med **37**(7 Suppl): S279-84.

Sagalyn, E., R. A. Band, et al. (2009). "Therapeutic hypothermia after cardiac arrest in clinical practice: review and compilation of recent experiences." Crit Care Med **37**(7 Suppl): S223-6.