Goal-directed hemodynamic optimization in the post-cardiac arrest syndrome: a systematic review

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CRD summary
This review found that there were no clinical trials available that evaluated haemodynamic optimisation in post-cardiac arrest patients. The authors’ conclusions reflect the absence of evidence in relation to the review question.

Authors’ objectives
To evaluate the evidence for goal-directed haemodynamic support in post-cardiac arrest syndrome and determine the effect of this treatment on survival.

Searching
MEDLINE, CINAHL and the Cochrane Library were each searched from inception to July 2007 for relevant studies; search terms were reported. Websites that contained details for clinical trial registration were also searched. Experts in the field of cardiac arrest resuscitation were contacted. Conference proceedings and the published practice guidelines for post-resuscitation care were searched from 2000-2007 to identify additional studies.

Study selection
Randomised controlled trials and quasi-experimental trials of adults with return of spontaneous circulation after a cardiac arrest were eligible for inclusion. Eligible trials were required to compare a clearly defined intervention of a structured cardiovascular resuscitation protocol administered to achieve predefined haemodynamic endpoints compared with standard treatment. Studies of pre-hospital, surgical and critical care populations were included to attain data on sub-populations of post-cardiac arrest patients if clearly defined criteria for cardiac arrest were available.

The primary outcome of interest was in-hospital mortality

Two reviewers performed the study selection; any disagreements were resolved by consensus.

Assessment of study quality
Trial quality was to be assessed using criteria in terms of patient selection using appropriate definitions of cardiac arrest; and using the Jadad scale to evaluate randomisation, blinding and withdrawals.

The authors did not state how many reviewers would have undertaken the validity assessment.

Data extraction
Two reviewers would have independently extracted data on in-hospital mortality, and any disagreements would have been resolved by consensus.

Methods of synthesis
The raw data from randomised controlled trials was to be combined using a randomised effects model, only if there was a lack of statistical heterogeneity across the included trials. Statistical heterogeneity was to be assessed using the $\chi^2$ test. The Kappa test would have been used to assess inter-observer agreement.

Results of the review
There were no studies identified that fulfilled the inclusion criteria for the review.

Authors’ conclusions
There were no clinical trials that evaluated haemodynamic optimisation in post-cardiac arrest patients, so there was no evidence available to indicate the best strategy for goal-directed haemodynamic support.
CRD commentary

The review addressed a clear question. The criteria for the inclusion of studies were clearly stipulated. Appropriate databases were searched and attempts were made to identify unpublished studies. It was unclear if there were any language restrictions, so the risk of language bias was unknown. Steps were taken to minimise the potential for errors and bias in the selection of studies. The authors intended to undertake data extraction in duplicate, but it was unclear whether this applied to quality assessment.

The authors’ conclusions reflect the absence of evidence in relation to the review question.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that there is a need for future controlled clinical trials designed to determine the efficacy of haemodynamic optimisation in post-cardiac arrest patients, and the optimal endpoints of resuscitation that can improve survival, when used with current interventions for patients who have return of spontaneous circulation.

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contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.