Lives saved by helicopter emergency medical services: an overview of literature

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CRD summary
This review concluded that there was a clear positive effect on survival associated with helicopter emergency medical services assistance. Possible language and publication bias, poor reporting and unclear reliability of the statistical methods used suggest the authors' conclusions may not be reliable.

Authors' objectives
To assess the survival benefits of helicopter emergency medical services (HEMS).

Searching
MEDLINE was searched from 1985 to April 2007 for English-language articles published in peer-reviewed journals. Search terms were reported. Reference lists were examined for additional studies.

Study selection
Studies that evaluated the effect of HEMS on survival (calculated with a model that included calculation of predicted mortality) were eligible for inclusion. Included studies were conducted mostly in USA; the rest were conducted in Germany, Australia, The Netherlands and Canada. Care was provided by paramedics, physicians and nurses or a combination. One study was of paediatric patients. Major trauma outcome study (MTOS) data was used as a comparator for most of the studies.

The authors did not state how studies were selected.

Assessment of study quality
Study quality was assessed by two reviewers. Quality assessment appeared to be based on statistical methods used to adjust for potential confounders plus other unspecified statistical criteria.

Data extraction
Mortality reduction per 100 assists (W-statistic) was calculated for each study.

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
Results were presented in a narrative synthesis. The mean W estimate was calculated.

Results of the review
Sixteen studies were included in the review (n=7,619). One study was a randomised controlled trial (RCT) (n=574) and 15 were cohort studies (n=7,045). Six of the 16 studies included all the components (not reported) that the authors defined a priori as constituting adequate statistical methodology.

Five studies compared HEMS with ground emergency medical services. Only one study used ground EMS as a control group and met all statistical criteria.

All 16 studies found that HEMS resulted in a reduction in mortality ranging from 1.1 to 12.1 additional lives saved per 100 dispatches. Four studies considered to be reliable showed an overall reduction in mortality of 2.7 additional lives saved per 100 HEMS deployments. The mean W estimate was 4.0 lives saved for every 100 uses.

Authors' conclusions
There was a clear positive effect on survival associated with HEMS assistance.
CRD commentary
The research question was supported by inclusion criteria for outcome, intervention and study design. The search was limited to one database and so other relevant studies may have been missed. Only published English-language studies were included; therefore, publication and language biases could not be ruled out. Study quality was assessed by two reviewers, which reduced risk of error and bias; no methods were reported for study selection and data extraction, so any similar precautions were unknown. The authors did not describe the components of study quality that were assessed, so it was impossible to assess whether quality assessment was appropriate and how rigorous this assessment was. Few individual study details were reported and most studies were considered to be of poor methodological quality, so the results of these studies may not have been reliable. The authors stated that some of the studies in the review were performed more than 15 years ago and may not have been relevant to practice at the time of the review. Methods used to calculate some of the statistics considered to constitute adequate methodology were not reported. Possible language and publication bias, poor reporting and unclear statistical methods suggest that the authors’ conclusions may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that the findings stressed the importance of dispatch triage criteria for pre-hospital providers that accurately differentiated the more severely injured from the less severely injured.

Research: The authors stated that uniform statistics and comparable outcome parameters should be used in future studies of the effects of HEMS on survival.

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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.