Do specialist transport personnel improve hospital outcome in critically ill patients transferred to higher centers? A systematic review

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CRD summary
The authors concluded that there was insufficient data to determine the effect of specialist transport personnel on outcomes of critically-ill patients who were transferred to a more specialised centre; further research was warranted. This is a well-conducted review and the authors' conclusions are likely to be reliable.

Authors' objectives
To determine if specialist transport personnel improved outcomes at the receiving hospital for critically-ill patients who were transferred to a more specialised centre.

Searching
MEDLINE, EMBASE, CINAHL, HealthStar and Best Evidence were searched from inception to July 2003. Cochrane Database of Systematic Reviews, DARE and Cochrane Controlled Trials Register were searched to October 2004. All articles in 14 specified journals from 1992 to July 2003 were handsearched. Prehospital Emergency Care and Air Medical Journal were searched from inception to July 2003. Conference Papers Index and Nursing and Health Sciences Index were searched. Bibliographies of retrieved articles were scanned. Experts in the field were asked for information about other relevant published and unpublished research. Search terms were reported. No language restrictions were applied.

Study selection
Studies of critically-ill adults or paediatric patients who were transferred from one hospital to another for treatment not available at the referring hospital because of lack of beds, expertise or service were eligible. Studies needed to clearly described personnel who accompanied patients and needed to report mortality and length of hospital or intensive care unit stay at the receiving hospital. Studies of infants, neonates and pregnant women were excluded. The review defined specialist transport personnel as dedicated transport crews or the addition of critical care staff based at the receiving hospital; other personnel who accompanied patients (including house staff from the referring hospital) were defined as non-specialist personnel. Studies that did not have comparable control groups were excluded (details were reported).

Included studies compared tertiary-based transport teams (including at least one person with specialist training in transport medicine) with ordinary ambulance crews with or without staff from the referring hospital or compared different grades of specialist teams. Where reported, transport was by surface or by air. Studies included patients transported from the scene of the injury (primary transport). Most studies involved either adults only or patients of all ages; one study was of paediatric patients. All studies included patients with different conditions and illness severity.

One reviewer conducted the searches and identified potentially relevant studies. Two reviewers then independently selected studies that met inclusion criteria from the full reports. Disagreements were resolved by consensus with the help of a third reviewer.

Assessment of study quality
Validity was assessed by considering allocation concealment. Common methodological limitations were discussed. It was unclear how many reviewers assessed validity.

Data extraction
Where available, mortality rates and duration of hospital and/or intensive care unit stay were reported for each treatment group.

Two reviewers independently extracted results data. Disagreements were resolved by consensus with the help of a third reviewer.
Methods of synthesis
The studies were combined in a narrative synthesis.

Results of the review
Six cohort studies with a control group were included (n=2,456): three prospective cohort studies (n=1,408) and three retrospective cohort studies (n=1,048). Sample size ranged from 67 to 1,169. Methodological limitations included lack of matching of control groups, lack of control for illness-severity and inclusion of primary transport and non critically-ill patients. One study deliberately assigned patients of different severity to different treatment groups. Transport personnel and chart reviewers were blinded to the treatment group in only one study.

Only one study (n=259) matched patients in intervention and control groups. This study reported a significant decrease in early mortality (six hours) in the specialist personnel transport compared to the control group (one of 168 versus four of 91).

Authors' conclusions
There was insufficient data to determine the effect of specialist transport personnel on outcomes of critically-ill patients who were transferred to a more specialised centre. Further research was warranted.

CRD commentary
The review question was clearly stated. Inclusion criteria were appropriately defined. The search was comprehensive and included attempts to minimise publication and language biases. Although two reviewers independently selected studies from full papers and extracted data, only one reviewer conducted the searches and identified potentially relevant studies and this may have resulted in reviewer error and bias; the reviewers acknowledged this limitation. Some of the limitations of the included studies were discussed and taken into account when summarising the evidence. In view of the differences between studies, a narrative synthesis was appropriate.

Overall, this was a well-conducted review and the authors’ conclusions are likely to be reliable.

Implications of the review for practice and research

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

Research: The authors stated that further research was required to evaluate the effects of specialist transport personnel on outcomes of critically-ill patients who were transferred to more specialised centres. Future studies should be carefully designed and have a strictly defined and narrow population, exclude primary transport patients, have well-matched controls, use multivariate modelling to take account of covariates, include a clear definition of a specialist team and assess outcomes in addition to mortality and length of stay.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract 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.