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Title **Air Ambulance Transportation with Capabilities to Provide Advanced Life Support**

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Aim

To assess the evidence on the efficacy/effectiveness and safety of air ambulance transportation with on-board advanced life support (ALS); to inform policy in Alberta on organizing, providing, and funding air ambulance services and their integration with ground ambulance transport.

Conclusions and results

No studies were found that compared airplane and helicopter transports. Of the 16 studies that compared helicopter with ground ambulance transport, only 1 was prospective. The studies varied in methodological details (eg, setting, sample size, patient demographics, severity of condition), making generalization of the results to a local context challenging.

Patients transported from the scene or between facilities by helicopter were more likely to survive. They reached the healthcare facility or received definitive treatment faster and had better results than patients transferred by ground ambulance. However, these benefits might be more attributable to the expertise, qualifications, and therapeutic options brought to the scene by the helicopter crew than to the mode of transport. Transportation safety was not detailed in the comparative studies.

Although this report did not cover economic analyses, the search identified 2 cost-effectiveness analyses, 1 cost-benefit analysis, 2 comparative studies, and 3 case series studies that provided some costing information.

Recommendations

Access to services and the mix of expertise aboard a transport, rather than the *type* of transport, seem to affect clinical outcomes for trauma and medical patients. Alberta has unique political, geographic, and medical characteristics to consider when planning and evaluating the transportation system. Since April 1995, Alberta has maintained a Trauma Registry on major trauma patients admitted to hospital via air or ground ambulance transport. Expanding this registry to include medical patients would provide more detail on ambulance services to inform provincial policies. Planning for evidence-informed ambulance services needs to be system based and should include input from trauma centers, hospital emergency departments, and emergency transport dispatch centers.

Methods

All relevant studies, published in English, were identified by systematically searching PubMed, EMBASE, HealthSTAR, the Cochrane Library, Science Citation Index, and websites of various HTA agencies, research registers, and guideline clearinghouses from January 2000 to July 2007. Studies with the best evidence were divided into 2 groups (scene and interfacility) and grouped, eg, by patient conditions, trauma, or injury. ALS capability was assumed when explicitly mentioned in the study, or when air and ground ambulances carried qualified staff, eg, paramedic, nurse, or physician. Relevant guidelines and policy papers were included. Methodological quality of the studies was not assessed. The report was externally reviewed.

Further research/reviews required

Controversies about the utility of on-scene aggressive interventions versus basic life support (BLS) focus on increased patient survival and safety outcomes. Definitions differ regarding specific times and intervals relevant to (air) transportation. The relationship between time to definitive care and clinical outcomes, including quality of care, is subject to controversy. It is necessary to establish Canadian training standards and clear definitions for ALS and BLS.

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