Aeromedical transfer of preterm labor patients

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Use of aeromedical transfer (two-way aeromedical evacuation) for singleton obstetric patients with the diagnosis of preterm labor.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Singleton obstetric patients with the diagnosis of preterm labour.

Setting
Tertiary referral centre. The economic analysis was carried out in Texas, USA.

Dates to which data relate
Effectiveness data on the use of aeromedical transfer corresponded to those patients transferred between June 1993 and June 1994. The dates of resource use data were not reported. The fiscal year was not explicitly specified.

Source of effectiveness data
Effectiveness data were derived from a single study and the authors’ opinions.

Link between effectiveness and cost data
Costing for the intervention (aeromedical transfer) was retrospectively performed on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 22 transfers. The delivered group (after transferring to the study site) comprised 8 patients with a mean (SD) gestational age of 26.5 (2.5) weeks, while the undelivered group consisted of 14 patients with a mean (SD) gestational age of 30.2 (2.5) weeks (the p-value for gestational age difference was 0.18).

Study design
This was a retrospective cohort study, carried out in a single centre. The duration of the follow-up was until delivery.
No loss to follow-up was reported.

**Analysis of effectiveness**

The principle used in the analysis of effectiveness was both intention to treat and treatment completers only (regarding cervical examination data). The patient outcome measures were cervical dilation upon arrival, transport time, and air distance. It was reported that the delivered and undelivered patients were comparable in terms of gravidity, parity, cervical dilation and effacement before transport.

**Effectiveness results**

The cervical dilation upon arrival was 4.2 cm (SD, 3.2) for the delivered group versus 1.2 cm (1.2) for the undelivered group (p<0.05). The effacement was 65.5% (28.2) for the delivered group versus 55% (22.5) for the undelivered group. The delivered group had a mean (SD) transport time of 167.1 minutes (41.9) versus 177.1 minutes (23.8) for the undelivered group. The corresponding values for the air distance were 122.9 miles (44.8) and 143.6 miles (23.8). The differences in terms of the two latter outcomes were not statistically significant.

**Clinical conclusions**

This study illustrates the need to consider dispatch time in decision making. In a 2-way transfer the time involved in the dispatch process usually doubles the total transfer time. The resulting aircraft speed of transport rivalled or was less than posted road speed limits.

**Methods used to derive estimates of effectiveness**

Estimates of effectiveness were also based on the authors’ opinion.

**Estimates of effectiveness and key assumptions**

Air transport takes longer, compared to road transport, given the speed of the aircraft and the posted road speed limits in the authors’ setting.

**Measure of benefits used in the economic analysis**

No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

**Direct costs**

Costs were not discounted due to the short follow-up period considered in the study. Quantities of resource use were not reported separately from the costs. Cost components were not reported separately. Cost analysis for the intervention covered fixed and variable flight costs, personnel costs, insurance, and supply costs; while the cost of the comparator (2-way ground transport) was based on distance and contracted rates charged for each patient. The perspective adopted in the cost analysis was not explicitly specified. The date of the price data was not explicitly specified.

**Statistical analysis of costs**

A statistical test was conducted to compare the intervention (2-way aeromedical transfer) and the comparator (two-way ground transfer) in terms of mean (SD) cost. However, it was not explicitly specified whether this was Student's t test, ANOVA, or nonparametric analysis.

**Indirect Costs**

Not considered.
Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was conducted.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The mean (SD) cost for the 2-way aeromedical transfer was $4,613.64 ($581.12) versus $604.02 ($306.38) for the two-way ground transfer (p<0.01).

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
Two-way air transfer of women in preterm labour over moderate distances is more costly than contracted ground transfer costs, takes longer and is dependent on weather conditions.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
The internal validity of the effectiveness results can not be guaranteed given the lack of a control group, the retrospective nature of the study, and the small sample size. The time of transport for the comparator group was not supported by real data, but was based on authors' opinion. The study should be considered a cost-consequences study.

Validity of estimate of costs
Quantities of resource use were not reported separately from the costs. Insufficient details of the methods of cost estimation were provided. Cost results may not be generalisable to other settings.

Other issues
In view of the lack of a prospective design with proper controls and sensitivity analysis, the results should be treated with some caution. Appropriate comparisons were made with other studies. The study findings refer to a rural area in Texas, USA and may not be generalisable to other settings or countries.

Implications of the study
Further research regarding outcomes, costs, and time of transfer needs to be undertaken for women in preterm labour.

Source of funding
None stated.
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