Emergency department observation unit versus hospital inpatient care for a chronic asthmatic population: a randomized trial of health status outcome and cost

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
A hospital emergency department observation unit (EDOU) or standard inpatient care in the management of acute asthmatic patients.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population was patients with acute asthma presenting to an urban hospital emergency department (ED) whose acute asthma exacerbation could not be stabilised after 3 hours of ED therapy (the study population satisfied a wide list of inclusion and exclusion criteria).

Setting
Hospital. The economic study was carried out in Chicago, USA.

Dates to which data relate
No dates were reported.

Source of effectiveness data
The evidence for the final outcomes was derived from a single study.

Link between effectiveness and cost data
The costing was retrospectively performed on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were used to determine the sample size. The study sample consisted of 113 eligible patients. Fifty-seven patients were randomly allocated to the EDOU group versus 56 to the inpatient group. The exclusion rate was 54.8%.

Study design
The study was a randomised controlled trial, carried out in a single centre. The duration of the follow up for all but two
of the outcome measures was 7 to 9 days after discharge, the exceptions being biomedical physiologic outcomes and relapse free survival, for which the follow up was 8 weeks. No loss to follow up was reported.

Analysis of effectiveness
The principal (intention to treat or treatment completers only) used in the effectiveness study was not explicitly reported. The health outcome measures adopted in the study were quality of life (QOL) gauged by the standardised Medical Outcomes Study (MOS) SF-36 instrument using research interviewers not involved in patient care, clinical status represented by peak flow rates, and relapse free survival. The groups were shown to be comparable in terms of demographic and clinical variables, and in terms of QOL measured at baseline. A multivariate analysis was performed to investigate the relationship between interventions and health outcomes, controlling for confounding variables.

Effectiveness results
According to MOS SF-36 domains, the EDOU group had better scores in:

- physical functioning, 72 (SD, 27.43) versus 58 (SD, 29.04), p= 0.011;
- role functioning-emotional, 78 (51.31) versus 45 (44.62), p=0.001;
- social functioning, 80 (27.95) versus 68 (29.27), p= 0.021;
- mental health, 78 (19.44) versus 67 (26), p= 0.008;
- and vitality, 59 (22.99) versus 47 (25.73), p= 0.016.

In terms of the remaining MOS SF-36 domains, there were no significant differences between the groups. The multivariate analysis established the predictive power of EDOU treatment on higher QOL in terms of six domains. The peak flow rate was 62% (9.7%) for the EDOU group against 59% (17.1%) for the inpatient group (p=0.189). The relapse free survival rate was 58% for both groups (p=0.74).

Clinical conclusions
The study revealed the efficacy of the treatment in the EDOU in improving the QOL of patients with acute asthma compared with standard inpatient care.

Measure of benefits used in the economic analysis
No summary measure was identified in the economic study and only separate clinical outcomes were reported.

Direct costs
Resource utilisation was not reported separately from costs. Cost items were not reported separately. The cost analysis included the fixed costs (personnel salaries, benefits, equipment, building costs, utilities, contracts, and malpractice) and variable costs (medications, reagents, supplies, paper, and food). The resource use associated with each patient was extracted from the medical charts. The unit costs of resource used were calculated. Cost data for all items except costs of labour, which were determined by work sampling, were obtained from hospital financial records. The perspective adopted in the cost analysis was not clearly reported. The cost calculations were based on intention to treat. The date of the price data was not specified.

Statistical analysis of costs
Student’s t test was used to compare the groups in terms of average total costs. A general linear regression on rank-ordered cost distributions with Tukey extended range tests was employed to investigate the differences in costs between the groups.
Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The average total cost for the patients in the EDOU group was $1,202 (SD, $1,343) versus $2,247 ($1,110) for the inpatient group (p= 0.001).

Synthesis of costs and benefits
A synthesis was not performed since the EDOU treatment was regarded as the dominant strategy.

Authors' conclusions
The study showed that the EDOU was a lower cost and more effective treatment alternative for a refractory asthmatic population presenting to the Emergency Department. Several baseline MOS SF-36 domains proved useful in predicting or validating post-treatment clinical status, relapse, and total costs of care. Outcome SF-36 domain scores were also useful in identifying patients with the most favourable clinical, cost, and relapse rate outcomes at the study endpoint.

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

Validity of estimate of measure of benefit
The estimates of benefit measures are likely to be internally valid given the randomised design adopted in the study.

Validity of estimate of costs
Resource quantities and cost items were not reported separately and few details of the methods of cost estimation were given. The date to which the price data referred was not specified. The main drawback in the cost estimation appears to be the retrospective design employed.

Other issues
The issue of generalisability to other settings or countries was not addressed.

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