Early home-supported discharge of stroke patients: a health technology assessment  
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**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**  
Early home-supported discharge (EHSD) was studied. EHSD was reported to involve a team of physiotherapists and occupational therapists supported by speech therapists, physicians, nurses and social workers. Often the EHSD begins with one or more pre-discharge home visits, continues the day of discharge, and goes on with more home sessions per week based on a patient-held recovery plan.

**Type of intervention**  
Rehabilitation.

**Economic study type**  
Cost-effectiveness analysis.

**Study population**  
The study population comprised patients using stroke unit rehabilitation. The inclusion or exclusion of patients was determined by criteria defining the literature search. The authors did not explicitly state their target population for their review of the literature.

**Setting**  
The setting was tertiary care. The economic study was carried out in Svendborg, Denmark.

**Dates to which data relate**  
The effectiveness evidence related to papers published between 1993 and 2005. The costing data related to papers published between 1998 and 2005, and referred to the trials used in the effectiveness study. A price year was not reported.

**Source of effectiveness data**  
The effectiveness data were derived from a review and synthesis of published studies.

**Outcomes assessed in the review**  
The authors designed a systematic review of the literature in which the primary outcomes were the odds ratio (OR) for poor outcomes and the number of patients needed-to-treat (NNT) to avoid one poor outcome. The authors also estimated specific ORs for referral to individual institutions. Length of stay and effects on the Barthel Index were compared between studies.

**Study designs and other criteria for inclusion in the review**  
The authors searched for randomised controlled trials (RCT) using the search terms "early supported discharge stroke"
and "home-based rehabilitation stroke". The authors noted that evidence from RCTs was supplemented by "qualitative studies of organization and patient conditions in a Danish implementation of EHSD". Studies were excluded if they were not published, did not meet the authors' definition of EHSD, or did not include sufficient information on outcomes. The authors searched for evidence published between 1 January 2000 and April 2005.

Sources searched to identify primary studies
The search was conducted using the Cochrane Library as its base, then PubMed.

Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
The validity of the primary studies does not appear to have been assessed.

Number of primary studies included
Thirteen primary studies informed the clinical review.

Methods of combining primary studies
Meta-analysis techniques were used to combine individual data into a single, aggregate, RCT.

Investigation of differences between primary studies
The authors tabulated key details of the main references included in the analysis. This report explored differences in inclusion criteria, the percentage of diagnosed patients included, demographics, organisation of the intervention, the nature of the control group and the duration of follow-up. Data were compared across trials as the average difference between the EHSD and control groups relative to their pooled standard deviation. The authors also gave a useful discussion on the differences in dropouts between their primary studies and the potential influence of this on the results.

Results of the review
The incidence of poor outcomes was reduced from 21.7% in the conventional stroke unit rehabilitation group to 14.5% in the EHSD group. The OR was 0.75 (95% confidence interval, CI: 0.46 to 0.95) and the NNT was 14.

Referrals to a nursing home or institution reduced from 11.3% to 6.3%. The OR was 0.45 (95% CI: 0.31 to 0.96) and the NNT was 20.

The OR for death was 0.78 and was not statistically significant.

The average length of stay was reduced by 10 days (95% CI: 2.6 to 18) to an average of 22 days.

Measure of benefits used in the economic analysis
The authors did not estimate a summary measure of health outcome. The study was, in effect, a cost-consequences analysis.

Direct costs
The authors aimed to explore the costs and cost-savings over the 12 months post-randomisation in order to ascertain whether the intervention was dominant in the sense that it led to a net saving. The unit costs and the quantities were analysed separately. The costing data were taken from independent economic analyses associated with the trials used in
the effectiveness analysis. The unit costs were taken from a published international cost standard. The authors estimated
the costs of EHSD as a function of the number of home sessions per patient (average number of visits used in the
clinical trials multiplied by an assumed time of 3 hours plus 1 hour of coordination and by the price of a therapist time).
Overheads were added as a percentage of the cost of therapists’ time. Transportation costs were also accounted for. The
costs were compared with cost-savings resulting from the reduced number of bed days used in an inpatient setting and
nursing home setting. Discounting was not required because of the short time horizon of the costing analysis. A price
year was not reported.

**Statistical analysis of costs**
The costs were treated deterministically.

**Indirect Costs**
The indirect costs were not considered in the analysis.

**Currency**
US dollars ($). The conversion rate to euros (EUR) was Euro 1 = $1.5.

**Sensitivity analysis**
There was no report that sensitivity analyses were carried out.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The costs for an average home rehabilitation patient were $1,340.

The cost-savings, in terms of the inpatient days and nursing home days, were valued at $1,480. This led to net cost-
savings of $140.

**Synthesis of costs and benefits**
The costs and benefits were not combined as the study was a cost-consequences analysis.

**Authors’ conclusions**
"Early home-supported discharge (EHSD) reduces both inpatient days and poor outcomes... The calculated savings on
nursing homes and hospital beds more than outbalance the costs, making EHSD a dominant intervention."

**CRD COMMENTARY - Selection of comparators**
The authors compared EHSD with the current practice of conventional stroke unit rehabilitation in their own setting.
This alternative may be an appropriate comparator within other settings.

**Validity of estimate of measure of effectiveness**
The authors carried out a systematic review of the literature and reported details of the process followed. For instance,
details of the sources searched and the search terms used were given. Extensive comparisons were drawn with another
review of the literature (Langhorne et al. 2005, see 'Other Publications of Related Interest' below for bibliographic
details). However, further details of the criteria used to ensure the validity of extracting data and the methods used to
judge the validity of the extracted data would have been beneficial to the reader. Nevertheless, the authors provided a useful comparison of the included papers and summarised aspects such as the number of patients, basic demographic details, and the organisation of the intervention. These comparisons reassure the reader that the data combined were indeed comparable and increase the internal validity of the results.

Validity of estimate of measure of benefit
The authors did not estimate a summary measure of health benefit. The study was, in effect, a cost-consequences analysis. A summary measure was not necessary as clinical measures showed an improvement in outcome and the costing analysis showed a cost-saving; therefore, the authors gave evidence that EHSD was the dominant intervention.

Validity of estimate of costs
The authors did not report the perspective adopted in their cost analysis. It is therefore not possible to assess whether all relevant elements were included. The authors appear to have adopted a health care provider perspective as they were interested in the costs and savings to the hospital and nursing home. The issue of the perspective was further complicated by the costing being derived from economic analyses associated with clinical trials, the perspectives of which were not reported. Nevertheless, the authors carried out a basic estimate of the costs: this incorporated the estimated cost of ESHD based on unit costs and sessions used, as well as overheads associated with therapists’ time. The economic analysis could have been extended by considering the costs to the individual.

The costs and the quantities were reported separately, which will aid the generalisability of the authors' results. One issue the authors highlighted was the lack of transferability between budgets for those incurring the costs and the resulting benefits; this conflict might ultimately create a barrier to implementing EHSD. A price year was not clearly reported, which will hinder any future inflation exercises. Discounting was not relevant, as the costs were incurred during less than 2 years, and was appropriately not performed.

Other issues
The authors were able to draw comparisons with other work, both in the process of carrying out the review and in terms of the results obtained. For example, Langhorne et al. 2005 was reported to show results "close to" those of the current study, and the results of dominance were reported to be in line with a previous economic review. The authors did not explicitly discuss the generalisability of the study, but it is likely to be fairly generalisable given that a range of papers contributed and that national standard unit costs were used. Readers would need to draw their own assessment about comparability with their own setting. The authors did not present their results selectively although they could have incorporated statistical analysis and sensitivity analysis around the costs, both to increase the generalisability of the results and to provide an indication of key cost-drivers. The authors did not discuss any limitations of the study.

Implications of the study
The authors did not make any recommendations for policy or practice following on from their study. They did, however, recommend future qualitative work exploring utilisation and developing the motivation of all parties involved in EHSD.

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Bibliographic details

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16984059
Other publications of related interest
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Indexing Status
Subject indexing assigned by NLM

MeSH
Home Care Services /economics /organization & administration; Humans; Length of Stay; Outcome and Process Assessment (Health Care); Patient Care Team /economics /organization & administration; Patient Discharge /economics; Randomized Controlled Trials as Topic; Stroke /economics /mortality /rehabilitation; Technology Assessment, Biomedical /economics /organization & administration

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