Patients with severe stroke benefit most by interdisciplinary rehabilitation team approach

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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
The study examined an interdisciplinary rehabilitation team approach for stroke patients. A stroke rehabilitation unit (SRU) with regular interdisciplinary stroke team conferences was compared with a general rehabilitation ward (GRW). In the SRU conferences each patient was evaluated for impairment and disabilities, complications, social factors, goals achieved, goals to be achieved and discharge disposition. Patients in the GRW were not offered such conferences, but received the same daily rehabilitative interventions (e.g. rehabilitation, nursing care and physical therapy) as those in the SRU. In the GRW, irregular team conferences were held as needed for those patients who were severely disabled.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised male and female patients who were admitted to the hospital after experiencing initial stroke within 3 months. Patients who required any physical assistance prior to stroke were not included.

Setting
The setting was secondary care. The economic study was carried out at the Neurorehabilitation Research Institute, Bobath Memorial Hospital and Osaka Neurological Research Institute, Osaka, Japan.

Dates to which data relate
The effectiveness data and resource data both referred to a period after July 2000, although the exact dates were not stated. The price year was not stated.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The cost data were collected prospectively from the same sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. The study sample comprised 178 hospitalised patients. Among these, 91 were randomly assigned to the SRU and 87 to the GRW. The mean age of the patients was 60.7 years (standard deviation, SD=11.3) in the SRU group and 59.1 years (SD=11.6) in the GRW group. The gender ratio
(male:female) was 61:30 for the SRU group and 55:32 for the GRW group.

**Study design**
Although medical social workers randomly allocated patients to the two groups depending on bed availability, the study was not strictly a randomised controlled study. The study was carried out at a single centre. The period of follow-up was unclear, but it appears to have been until the end of the study.

**Analysis of effectiveness**
The basis for the analysis of effectiveness was not stated, but it appears to have been intention to treat. The outcomes assessed were improvements in the Functional Independence Measure (FIM) for disability and the motor sub-score of the Stroke Impairment Assessment Set (SIAS) for neurological impairment, the length of hospital stay and discharge disposition. In terms of the baseline characteristics, no significant differences were observed between the SRU and GRW groups for age, gender, type of stroke, affected side of stroke, complications, or initial functional status based on FIM and SIAS scores. However, the two groups differed significantly in mean interval between onset of stroke and hospital admission (60.4 days for the SRU group versus 53.8 days for the GRW group; p<0.005).

**Effectiveness results**
There were no significant differences in functional improvements for the two groups in terms of FIM and SIAS scores.

The mean length of hospital stay was 97.7 days (SD=18.0) for the SRU group and 95.2 days (SD=17.0) for the GRW group.

The rate of patients who were discharged home was 74.7% for the SRU group and 71.3% for the GRW group.

The above differences were all non significant.

When the patients were divided into three sub-groups according to the level of initial disability, a significant group difference was observed among patients with severe disability (FIM \( \leq 53 \)).

The rate of patients who were discharged home was 47.4% for the SRU group and 0% for the GRW group, (p<0.001) (all the patients were transferred to other chronic hospitals or nursing homes).

No significant group differences were observed in the other outcome measures between sub-groups of the SRU and GRW.

**Clinical conclusions**
Patients with severe stroke seem to have benefited the most from the new rehabilitation programme in the SRU.

**Measure of benefits used in the economic analysis**
The authors did not develop a summary benefit measure in the economic analysis. As such, a cost-consequences study was undertaken.

**Direct costs**
The direct costs included were the daily costs of hospitalisation. The costs and the quantities were not reported separately. Discounting was not relevant given the short period of analysis (less than one year). The source of the resource use and cost data was not reported, but it was likely to have been actual data derived from the hospital itself. The price year was not stated.

**Statistical analysis of costs**
The cost data were treated stochastically. A two factorial analysis of variance was used to examine differences in costs between the SRU and GRW groups.

**Indirect Costs**
The indirect costs were not included.

**Currency**
US dollars ($). The rate used was 120 Japanese yen per US dollar.

**Sensitivity analysis**
No sensitivity analysis was undertaken.

**Estimated benefits used in the economic analysis**
Due to the cost-consequences approach, the reader is referred to the effectiveness results (see 'Effectiveness Results' section).

**Cost results**
The hospitalisation costs per day were $248 (SD=101) for the SRU group and $228 (SD=14) for the GRW group. The difference was not significant.

The costs were also not significantly different among the three different sub-groups for SRU and GRW.

**Synthesis of costs and benefits**
The costs and benefits were not combined because of the cost-consequences approach taken.

**Authors' conclusions**
"Patients with severe stroke appeared to benefit most from regular interdisciplinary stroke team conferences in the SRU (stroke rehabilitation unit) and had an improved discharge disposition."

**CRD COMMENTARY - Selection of comparators**
The authors described clearly the rationale behind their choice of the comparator (a new rehabilitation programme in the SRU). The study was carried out to evaluate this in comparison with traditional methods within a GRW.

**Validity of estimate of measure of effectiveness**
The validity of the effectiveness data is likely to be high given the randomised design although, as the authors acknowledged, it was not possible to achieve strict randomisation. Valid and well-recognised instruments were used to evaluate the clinical outcomes. The sample size was quite large but it was not reported to have been determined by a power calculation. Some features of the study were difficult to interpret, such as the length of follow-up and method of analysis. Baseline characteristics between the two groups were similar but the time between stroke and admission was significantly different, which might have had a confounding impact on the results. Appropriate statistical analyses were conducted and p-values were reported. The effectiveness data were reported in a disaggregated form so that a cost-consequences analysis was undertaken.

**Validity of estimate of measure of benefit**
Due to the cost-consequences approach, the reader is referred to the comments in the 'Validity of estimate of measure
of effectiveness’ field (above). This study might have benefited from the use of a utility measure, such as the quality-adjusted life-year, in the economic analysis.

**Validity of estimate of costs**
The costing was reported rather briefly and only included hospital costs per day. The lack of data on the costs and quantities, price year and sources would make it difficult to replicate the results in another setting.

**Other issues**
The authors, where possible, made appropriate comparisons with previous studies. The study showed that patients with mild to moderate disabilities did not benefit as much from the SRU. Patients with severe disability after stroke were discharged earlier in the SRU group, suggesting that these patients needed more customised preparation for discharge. This is consistent with the results of other studies. The authors did not discuss the generalisability of their results. In view of the limited cost and resource data presented, it would be difficult to evaluate these results for the UK National Health Service or other settings.

**Implications of the study**
Given the caveats highlighted, the study showed that severe stroke patients benefited the most from regular interdisciplinary stroke team conferences in the SRU alternative and had an improved discharge disposition. As there were no statistically significant differences in the costs, the study supports the SRU approach. However, the authors stated "further follow-up studies are needed to investigate the impact of interdisciplinary rehabilitation on the long-term outcome and cost of care of patients with stroke".

**Source of funding**
Supported by Funds for Comprehensive Research of Aging and Health and Funds for Research on Dementia and Fracture from the Ministry of Health, Labor and Welfare of Japan, and Takeda Science Foundation.

**Bibliographic details**

**PubMedID**
16123546

**DOI**
10.1159/000087708

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Activities of Daily Living; Adult; Aged; Disability Evaluation; Female; Hospital Units; Humans; Male; Middle Aged; Outcome Assessment (Health Care); Patient Care Team; Patient Discharge; Recurrence; Rehabilitation Centers; Severity of Illness Index; Stroke /rehabilitation

**AccessionNumber**
22005001513

**Date bibliographic record published**
31/10/2006
Date abstract record published
31/10/2006