Outcomes and costs after hip fracture and stroke: a comparison of rehabilitation settings

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
Rehabilitation for elderly patients after hip fracture and stroke, either in rehabilitation hospitals, or in subacute nursing homes or in traditional nursing homes.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
Elderly patients with hip fracture and stroke.

Setting
92 hospital-based units and free-standing facilities from 17 states. The economic study was conducted in the USA.

Dates to which data relate
Study patients were admitted between November 1991 and February 1994. Dates for resource data and price data were not clearly stated.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
518 randomly selected patients with hip fracture and 485 stroke patients admitted between November 1991 and February 1994. No power calculations determined the sample size.

Study design
Inception cohort stratified by provider type and followed prospectively for 6 months.

Analysis of effectiveness
Analysis was based on treatment completers only. The main health outcomes assessed in the review were the recovery to premorbid levels in 5 activities of daily living (ADLs)- bathing, dressing, toileting, transferring out of bed and walking 20ft, after 6 months of community residence, measured by the ADL index, and the probability of returning to the community after stroke and hip replacement.

**Effectiveness results**

Hip fracture patients admitted to rehabilitation hospitals did not differ from patients admitted to nursing homes in returning to the community (adjusted odds ratio (OR), 1.3, 95% CI: 0.6-2.6), or in the number of ADLs recovered to premorbid levels (difference 0.09 ADL, 95% CI: 0.27-0.44). However, stroke patients admitted to rehabilitation hospitals were more likely to return to the community (adjusted OR 3.3, 95% CI: 1.5-7.2) and recover ADLs (difference 0.63 ADL, 95% CI: 0.20-1.07). Subacute nursing home patients with stroke were more likely than traditional nursing home patients to return to the community (adjusted OR 6.8, 95% CI: 2.2-21.4); there was no difference in return to the community for patients with hip fracture (adjusted OR 1.6, 95% CI: 0.7-3.6), and there were no differences in recovery of ADLs for either condition.

**Clinical conclusions**

Treatment in rehabilitation hospitals produced enhanced health outcomes for elderly patients with stroke, but not for those with hip fracture.

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

The main health outcomes assessed in the review were the recovery to premorbid levels in 5 activities of daily living (ADLs)- bathing, dressing, toileting, transferring out of bed and walking 20ft, after 6 months of community residence, measured by the ADL index, and the probability of returning to the community after stroke and hip replacement.

**Direct costs**

Direct health service costs were considered such as Medicare-reimbursed costs between rehabilitation admission and six months after admission, obtained from Medicare forms. Quantities and costs were not reported separately. The date for price data was not specified.

**Statistical analysis of costs**

Statistical analysis was carried out to test the cost-per-day differences. P-values were reported.

**Indirect Costs**

Not considered.

**Currency**

US dollars ($).

**Sensitivity analysis**

No sensitivity analysis was carried out.

**Estimated benefits used in the economic analysis**

Hip fracture patients admitted to rehabilitation hospitals did not differ from patients admitted to nursing homes in returning to the community (adjusted odds ratio (OR), 1.3, 95% CI: 0.6-2.6), or in the number of ADLs recovered to premorbid levels (difference 0.09 ADL, 95% CI: 0.27-0.44), but stroke patients admitted to rehabilitation hospitals were more likely to return to the community (adjusted OR 3.3, 95% CI: 1.5-7.2) and recover ADLs (difference 0.63...
ADL, 95% CI: 0.20-1.07). Subacute nursing home patients with stroke were more likely than traditional nursing home patients to return to the community (adjusted OR 6.8, 95% CI: 2.2-21.4); there was no difference in return to the community for patients with hip fracture (adjusted OR 1.6, 95% CI: 0.7-3.6), and there were no differences in recovery of ADLs for either condition.

Cost results
Medicare costs were greater (p<.001) for rehabilitation hospital patients than for subacute nursing home patients, and the costs for subacute nursing home patients were greater (p=.03 for stroke and .009 for hip fracture) than for traditional nursing home patients.

Synthesis of costs and benefits
Enhanced health outcomes were obtained with higher costs.

Authors' conclusions
The study findings were consistent with enhanced outcomes for elderly patients with stroke treated in rehabilitation hospitals but not for patients with hip fracture. Subacute nursing homes were more effective than traditional nursing homes in returning patients with stroke to the community, despite comparable functional outcomes.

CRD Commentary
A good and comprehensive study, with extensive statistical analysis of variables and complex case-mixing. However, a more detailed analysis of costs could have been conducted.

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