Buying time II: an economic evaluation of a joint NHS/Social Services residential rehabilitation unit for older people on discharge from hospital

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 short-term residential rehabilitation unit for older people on discharge from community hospitals was examined. These units represent a form of intermediate care, where individuals discharged from hospital stay for approximately 6 weeks and receive a range of rehabilitative services. The rehabilitative services are delivered by therapists (e.g. occupational therapists and physiotherapists) and care or rehabilitation assistants, who implement intervention programmes devised by the therapy team.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised hospitalised patients who were likely to be discharged within 1 to 3 weeks. Eligible patients were aged 55 years or older, and were thought likely to benefit from a short (approximately 6 week) programme of rehabilitation. Patients likely to benefit from the programme were defined as having "potential to improve", "realistic and achievable goals" and "being motivated to participate". Criteria for exclusion were needs not manageable by a community nurse, medically unstable, severe mental health problem(s), advanced terminal condition, not orientated at most times, and simply in need of rest, respite or convalescence.

Setting
The setting was a rehabilitation institution and the community. The economic study was carried out in the UK.

Dates to which data relate
The effectiveness and resource use data were gathered from January 1999 to October 2000. The costs were expressed using 1999/2000 values.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that included in the clinical trial.

Study sample
Power calculations, if performed, were not reported. All potentially eligible individuals were recruited by occupational therapists. Intervention patients were identified at 4 community hospitals, while control patients were recruited from 6 community hospitals. There were 94 patients in the intervention group and 112 in the control group. The mean age of the patients was 83.1 (+/- 7.1) years in the intervention group and 80.7 (+/- 8.5) years in the control group.

**Study design**
This was a prospective, multi-centre, randomised clinical trial that was carried out in Devon, UK. The length of follow-up was 12 months. All participants were interviewed at baseline and then, as far as possible, 6 and 12 months later. Twelve patients were lost to follow-up because they left Devon during the study period. This left 88 participants in the intervention group and 106 patients in the control group. Blinding was not performed.

**Analysis of effectiveness**
The primary outcome measure was the "survival-at-home" time. This represented the number of days from baseline interview until the individuals went into residential or nursing care, died, or reached the point of their 12-month follow-up. Secondary outcome measures were not reported in the current economic evaluation. Details of the approach used to analyse the clinical outcomes (intention to treat or treatment completers only) were not reported. At baseline, the study groups were well matched in terms of their gender, identity of main carer, reason for being admitted to hospital, where they were admitted to hospital from, main rehabilitation needs and level of dependency, as measured by the Barthel Index. However, the intervention group was significantly older than the control group, (p=0.028).

**Effectiveness results**
The clinical outcome was not statistically different between the two groups, with an unadjusted mean of 1.28 (95% confidence interval: 0.81 to 2.03).

The mean survival-at-home time was 272 (+/- 129) days in the intervention group and 285 (+/- 128) days in the control group.

**Clinical conclusions**
The effectiveness analysis showed that the two interventions were equally effective.

**Measure of benefits used in the economic analysis**
The effectiveness analysis showed that the two interventions were equally effective (difference not statistically significant). However, the summary benefit measure was the number of days a patient was at home, which was derived from the effectiveness analysis.

**Direct costs**
The analysis of the costs was carried out from the perspective of the NHS and Social Services. NHS resources included staff time (general practitioner, practice nurse, occupational therapist, physiotherapist, community nurse, continence nurse, speech and language therapist), hospital stay in different wards and travel. Social Services resources were staff time (home, telephone and personal care assistant), stays (rehabilitation unit, residential care, nursing care, day care and respite care), aids and adaptations, community meals and travel. There was extensive information on the quantities of resources used, but the unit costs were not reported.

Most of the costs came from typical NHS sources, as well as from Devon Social Services. Resource use was based on data derived retrospectively from paper NHS/Social Services records. In some cases, to avoid time-consuming searches of paper records, the data were based on computerised records or questionnaires sent to practitioners. Travel times for home visits were estimated from Personal Social Service sources. Discounting was not relevant since the costs were incurred during a 1-year time horizon. The costs were expressed using 1999/2000 values.
Statistical analysis of costs
No statistical analyses of the costs were carried out.

Indirect Costs
The indirect costs were not relevant given the perspective of the study.

Currency
UK pounds sterling (£).

Sensitivity analysis
Univariate sensitivity analyses were performed to assess the impact of changes in some cost categories:
- hospital, rehabilitation unit and residential care (these costs were increased or decreased by 25%);
- Social Services staff home visit (the length of a home visit was increased from 30 to 60 minutes);
- the inclusion of travel costs of personal care assistants; and
- variations in the cost of aids and adaptations.

A specific analysis was run to assess the impact of missing data, which were substituted with mean values, on the total costs.

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

Cost results
The mean costs per patient to the NHS were 3,530.93 in the intervention group and 5,146.74 in the control group.

The mean costs per patient to Social Services were 5,011.56 in the intervention group and 3,363.94 in the control group.

The total mean costs per patient were 8,542.28 in the intervention group and 8,510.68 in the control group.

Thus, the two strategies were very similar in terms of their total costs. However, the cost of the intervention fell more heavily on Social Services, while the cost of UC fell more strongly on the NHS.

UC remained the cheapest strategy in most scenarios considered in the sensitivity analysis.

The intervention was the least expensive option when the rehabilitation unit costs were reduced by 25%, when the cost of residential care was reduced by 25%, and when the hospital costs were increased by 25%.

Missing data had a modest impact on the results of the cost analysis.

Synthesis of costs and benefits
Average cost-effectiveness ratios were calculated to combine the costs and benefits of the intervention and UC. The average cost per day living at home was 31.36 with the intervention and 29.85 with UC.

Authors' conclusions
The two strategies for the management of older patients discharged from community hospitals were equally effective
and efficient. The analysis revealed that the cost of the residential rehabilitation option lies mainly with Social Services, while the cost of the usual care (UC) strategy lies with the National Health Service (NHS).

**CRD COMMENTARY - Selection of comparators**
The rationale for the choice of the comparators was clear since the new intervention was compared with the standard of care offered to older patients discharged from community hospitals. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The effectiveness analysis was derived from a published clinical trial. The use of a randomised study, the baseline comparability of the study groups, and the multi-centre design increase the internal validity of the clinical evidence. However, more details on the robustness of the effectiveness data might be found in the primary publication, where all details on the methods and management of the patient sample were reported. The clinical results were not varied in the sensitivity analysis.

**Validity of estimate of measure of benefit**
The summary benefit measure was specific to the intervention considered in the study. It is not comparable with the benefits of other health care interventions. The impact of the rehabilitation unit on quality of life was assessed in the primary clinical trial.

**Validity of estimate of costs**
The conduct of the cost analysis was consistent with the perspective chosen for the analysis. There was extensive information on resource consumption, but the unit costs were not reported. The costs used in the study reflected typical NHS sources, which were appropriately selected given the objective of the study. The cost estimates were specific to the study setting, but variations in cost categories were investigated in the sensitivity analysis. The price year was reported, which aids reflation exercises in other settings. The issue of missing data was dealt with in the sensitivity analysis. The authors pointed out the limitations of resource use information, which was routinely collected from NHS and Social Services sources. However, resource consumption reflected actual patterns of care for older patients.

**Other issues**
The authors did not compare their findings with those from other studies. They also did not explicitly address the issue of the generalisability of the study results to other settings. However, some sensitivity analyses were carried on the cost items, which enhance the external validity of the analysis. The study referred to older patients discharged from community hospitals and this was reflected in the authors’ conclusions.

**Implications of the study**
The main implication of the analysis was that, given the equal effectiveness and efficiency of the two models of care for older patients discharged from community hospitals, the choice of the optimal strategy might depend on other factors, such as patient preferences.

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