A randomized trial of comprehensive geriatric assessment and home intervention in the care of hospitalized patients

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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
This paper compared three approaches to the management of elderly hospitalised patients: 1. Intervention, i.e. comprehensive geriatric assessment with additional in-hospital and post-discharge follow-up by an interdisciplinary home intervention team. 2. Assessment, i.e. comprehensive geriatric assessment alone with recommendations, followed by usual care at home. 3. Control, i.e. the assessment of activities of daily living and cognition, followed by usual care in hospital.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients over 65 years of age with acute disease, who were usually referred to the geriatric centre by their general practitioner (GP) or admitted from emergency departments of internal medicine, neurology and surgery. The inclusion criteria were: elderly patients who lived at home before admission, who had multiple chronic conditions or functional deterioration after convalescence, or who were at risk for nursing home placement. Patients with terminal illness, severe dementia, or who lived too far away (more than 15 km) for the home intervention team to make regular visits, were excluded from the study. The authors reported that the study patients were older, more dependent and had a higher length of stay than hospital patients overall.

Setting
The setting was secondary care. The study was conducted in Ulm, Germany.

Dates to which data relate
It was unclear over what dates the effectiveness and resource use data were gathered. The price year was also not reported.

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

Link between effectiveness and cost data
The costing was carried out prospectively using the same patient sample as that used in the effectiveness analysis.
Study sample
Power calculations were not reported. The authors stated that the required sample size was calculated using data derived from similar trials, which were referenced. Patients had to be in a stable medical condition before any assessment was carried out. Six percent (n=31) of the eligible patients refused to participate. A total of 545 patients were recruited into the study: 181 home intervention, 179 assessment and 185 control.

Study design
The study was a single-centre, randomised controlled trial. The patients gave informed consent and were then randomised to one of the three options under investigation. The members of the assessment team were blinded as to which group a patient had been assigned, until the assessment was completed. The randomisation was carried out using a sealed envelope with a random number sequence. The patients were followed-up at 12 months by a telephone or postal questionnaire. The data were confirmed by home visits and information collected from GPs. A total of 420 patients were followed-up at 12 months: 140 (77%) home intervention, 139 (78%) assessment and 141 (76%) control. Thirty patients were lost to follow-up. In addition, there were no data available for 9 patients who had moved house, 5 patients who refused to answer, and 16 patients who had incomplete or inconsistent data.

Analysis of effectiveness
The clinical study was analysed using an intention to treat approach, although drop-outs were not accounted for in the analysis. The primary outcome variables were: survival; functional status, as established by Barthel index, Lawton-Brody questionnaire and Mini-Mental-State Examination; hospital readmission; and Long-term-care placement. The baseline characteristics of the patients in the intervention, assessment and control groups were supposedly similar, although there were no details of any statistical comparison. It was stated that the results were adjusted to allow for differences in baseline characteristics. In a two-sided test, a p-value of less than 0.05 was considered statistically significant.

Effectiveness results
The survival rates were similar with no apparent difference in the survival curves between groups, although the statistical test results were not reported. The numbers of deaths were 33 (18%), 30 (17%) and 32 (17%) in the intervention, assessment and control groups, respectively.

Of the survivors at 12 months, the intervention group had a better score for activities of daily living. The mean basic activity scores were: for intervention, 81.2 (range: 77.8 - 84.6); for assessment, 82.3 (range: 80.0 - 84.7); and for control, 80.9 (range: 78.1 - 83.8). The mean instrumental activity scores were: for intervention, 5.6 (range: 5.4 - 5.8); for assessment, 4.1 (range: 3.9 - 4.3); and for control, 4.3 (range: 4.1 - 4.5). The p-value was less than 0.05.

The participants in the intervention group had a significantly higher score of self-perceived health (p<0.05) and life satisfaction (p<0.05) at the 12-month follow-up. However, it was unclear how these results related to the outcome measures, which are reported in the analysis of effectiveness field. The rate of hospital readmissions did not differ significantly between the groups: 30.7% for intervention, 30.9% for assessment, and 31.9% for control. There was no significant difference in the rate of new admissions to long-term-care institutions in any of the groups: 15.7% for intervention, 14.4% for assessment, and 19.1% for control.

Clinical conclusions
The authors concluded that there was no difference in survival between the groups and the rate of rehospitalisation at one year, although the length of the initial hospital stay could be considerably shortened by the home intervention team. They went on to report that the comprehensive geriatric assessment alone was not effective in terms of improving outcome.

Measure of benefits used in the economic analysis
No summary measure of benefits was reported, and this was therefore classed as a cost-consequences analysis.
Direct costs
The perspective of the study was unclear. The costs were not discounted due to the short timescale of the evaluation. The annual direct costs of the home intervention programme were calculated from the staff costs, i.e. nurses, a physiotherapist, an occupational therapist and a social worker; the use of community services, i.e. the frequency and duration of health care visits, and the type of health care services; the number of hospital and physician visits; and the number of days in a nursing home. The resource use quantities were estimated from data for length of stay. The unit cost (prices) data were not reported. The dates over which the resource quantities were measured were not reported, and neither was the price year. The average costs were reported.

Indirect Costs
The indirect costs were not reported.

Currency
German marks (DM). The conversion rate was DM1.00 = US$0.572 at an unspecified date.

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See effectiveness results reported previously.

Cost results
The total direct costs per 100 people per year were: DM3,365,000 (US$1,922,400) for the intervention group, DM3,983,000 (US$2,276,600) for the assessment group, and DM4,145,000 (US$2,368,300) for the control group.

Synthesis of costs and benefits
The costs and benefits were not combined.

Authors' conclusions
The authors concluded that comprehensive geriatric assessment, in combination with a hospital-based post-discharge intervention, does not improve survival but does improve functional status and can reduce the length of the initial hospital stay and of subsequent hospital readmissions. It may also reduce the direct costs of hospitalised patients. However, comprehensive geriatric assessment alone did not show any positive effects.

CRD COMMENTARY - Selection of comparators
This is an interesting paper that compared three approaches to provide a service to manage elderly hospitalised patients. However, the selection of the comparators was not supported by published information and the authors did not provide evidence to suggest that they reflect current practice.

Validity of estimate of effectiveness:
This was a well-designed study with a clear method of randomisation. An allowance was made for confounding, although the authors provided no details apart from a reference to another paper. No power calculations were reported. It was also confusing that the authors listed several outcome measures including the Barthel index, yet failed to refer to these measures by name in the results.
Validity of estimate of costs
The authors did report quantities in terms of length of stay. However, it is unclear how the use of other resources, such as physiotherapy, were related to this since many quantities were not reported, for example the number of or length of sessions. The lack of study dates made reflation exercises impossible, whilst the lack of a sensitivity analysis limited the generalisability of the studies findings to other hospitals and NHS practices.

Other issues
The issue of generalisability was not discussed even though references were made to other published work. The authors referred to some limitations of their study. In particular, they cautioned that clinicians may have learned the principles of geriatric assessment because the same doctors were caring for patients in all study groups; improved care of control patients could, therefore, have contaminated the in-hospital data. Furthermore, the impracticality of blinding interviewers to the treatment assignments may have biased the reports of outcomes. The study was, however, designed to try to minimise these problems by using trained interviewers, and valid and reliable test instruments for the assessment of outcome.

Implications of the study
The authors’ conclusions suggest that they would recommend using comprehensive geriatric assessment, in combination with a hospital-based post-discharge intervention, to help improve the health and function of older patients by using continuous treatment and care. This should be viewed in the context of the methodological problems discussed. There were no recommendations for future research.

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Other publications of related interest

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