Cost-effectiveness of outpatient geriatric assessment with an intervention to increase adherence

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 health intervention under study was outpatient comprehensive geriatric assessment (CGA) with an intervention to improve adherence to recommendations among elderly subjects. The intervention involved a team comprising a geriatrician, a geriatric nurse practitioner (NP), a social worker, and a physical therapist (PT). Patients were evaluated using an in-depth, standardised, comprehensive geriatric assessment and then received an adherence intervention, aimed both at patients and at their physicians. The CGA aimed to improve perceived health, to prevent mortality, and to reduce consumption of healthcare resources among the elderly.

Type of intervention
Secondary prevention.

Economic study type
Cost-utility analysis.

Study population
The study population comprised subjects aged over 65 years and with at least one of the following geriatric conditions: depressive symptoms, urinary incontinence, falls, or functional impairment. Subjects were excluded if they did not speak English, did not have a telephone, did not have a primary care physician, or were demented or had other mental, emotional, or physical disorders reducing the ability to adhere to the study protocol.

Setting
The setting was community. The economic study was conducted in the USA.

Dates to which data relate
The period of collection for effectiveness and resource use data was not reported. The price year was not reported although most costs were estimated in 1997.

Source of effectiveness data
The effectiveness evidence came from a single study, which was published elsewhere (see "Other Publications of Related Interest" below).

Link between effectiveness and cost data
The costing was conducted prospectively on the same sample of patients as that used in the effectiveness study.

Study sample
Power calculations were conducted and suggested that the sample size chosen in the study had a statistical power of 0.83 to detect a statistically significant difference of 15% (8.9 points) between the groups in the main outcome measure (SF-36 physical functioning scale). The method of sample selection was not reported. The authors stated that, of an initial group of 1,304 subjects screened, 801 were eligible, but 238 were not allocated to the study groups with refusal to participate (n=200) being the main reason. Thus the final sample comprised 363 cases (60%): 180 (mean age: 75.8 years; 83.3% women) were allocated to the treatment group and 183 (mean age: 75.9 years; 80.3% women) received usual care.

Study design
This was a prospective, blind, single-centre, randomised, controlled trial. The unit of randomisation was the individual patient, except for married couples who were randomised in pairs if both were eligible and agreed to participate. Randomisation was performed in blocks of 8 and was stratified on the basis of the type of health care insurance coverage and 'couple status'. Randomisation was obtained from a computer-generated random group assignment using a set seed. Participants were aware of their assignment group but the clinical team was unaware of baseline and outcome measures, while research members were unaware of group assignment and outcome measures. The length of follow-up was 15 months (64 weeks) and, at the end of the study period, there were 177 persons in the treatment group and 176 in the control group. A number of patients in both groups were lost to follow-up because of refusal to participate, death, or incomplete data.

Analysis of effectiveness
The analysis of effectiveness was based on treatment completers only although the authors stated that the basis for the main analysis was intention to treat. Among the health outcomes estimated in the primary study, only the health measure relevant to the present economic evaluation will be reported: improvement in physical functioning, estimated using the 10-item physical functioning scale from the RAND 36 item short form (SF-36). At baseline, study groups were comparable with respect to sociodemographic characteristics but the control group had higher scores in the SF-36 scale, while a higher percentage of patients in the treatment group had any restricted activity days.

Effectiveness results
At baseline, the average SF-36 score was 52.4 in the treatment group and 62.5 in the control group. After 15 months, the corresponding values were 52.7 and 58.5. Therefore, the difference in change score was 4.69 (range: 0.63 - 8.75; p=0.021), favouring the treatment group.

Clinical conclusions
The effectiveness analysis showed that the study intervention reduced the decline in the physical functioning scale by 4.69 units in comparison with usual care. It is worth noting that, in the primary study, there was no statistically significant difference in most of the remaining outcome measures used in the analysis and, when differences were reported, they all favoured the treatment group. There were no deaths in the treatment group while 5 patients died in the control group. (p=0.061).

Measure of benefits used in the economic analysis
The summary benefit measure used in the economic analysis was quality-adjusted life-years (QALYs), which were calculated by converting the SF-36 score into health utility values (measured through the Quality of Well-Being (QWB) scale using the relationship found in the Beaver Dam study (see "Other Publications of Related Interest" below)). The health gains observed in the first 15 months (trial frame) were assumed to continue over a period of 5 years. No discounting was applied to future benefits.

Direct costs
Discounting was relevant due to the long time horizon of the study but it was not conducted in the base case. Unit costs were analysed separately from quantities of resources used. The categories of costs included in the analysis were
screening (to identify eligible patients), CGA (nurse practitioner, geriatrician, social worker, and physical therapist), and adherence intervention (secretary, health educator, physician, mail and materials, and patient time). The cost/resource boundary adopted in the study was not stated. The estimation of resource use was based mainly on data originating from the randomised trial used to estimate effectiveness. Some authors’ assumptions were also made. Unit costs were estimated from Medicare Fee Schedule, including relative value unit (RVU) components, and authors’ assumptions. The price year was not reported and the period of data collection on resource use was not provided, but most costs were estimated in 1997.

**Statistical analysis of costs**
Due to the highly skewed distribution of the resource use data, regression analyses were conducted to estimate the marginal effect of CGA on the quantities of each type of use and that differential was then multiplied by an estimated price for one unit of that type.

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

**Currency**
US dollars ($).

**Sensitivity analysis**
One-way sensitivity analyses were conducted to address the issue of uncertainty in the following values: effect of the CGA, inclusion of mortality in QALYs, inclusion of restricted activity and bed days in QALYs, inclusion of tests and drugs obtained following recommendations, assumption of no effects on emergency room use and hospitalisation, and costs of visits.

**Estimated benefits used in the economic analysis**
Over the five-year period, the QALYs gained with the study intervention were 0.07 in comparison with no-intervention.

**Cost results**
The additional cost of CGA was $137 for the first 32 weeks, $47 for the second 32 weeks, and $473 for the five years after the intervention.

**Synthesis of costs and benefits**
A cost-effectiveness ratio was calculated to combine costs and benefits of the study intervention.

An incremental analysis was conducted.

The base case cost (undiscounted) per QALY was $10,600, which would be $26,500 using a 15-month time horizon.

If costs and benefits were discounted at 5%, the incremental cost per QALY was $11,600.

Under the variations conducted in the sensitivity analysis, the cost per QALY ranged from $3,200 to $19,000.

**Authors’ conclusions**
The authors concluded that the cost-effectiveness of CGA compared favourably with other health care interventions. Since CGA improved physical functioning in elderly people, society has to decide whether it is worthwhile to fund this intervention.
CRD COMMENTARY - Selection of comparators
The authors justified the choice of the comparator. No CGA was selected as it represented the standard approach for the management of geriatric patients in the authors setting. You should decide whether it represents a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness estimates were derived from a randomised control study, which was appropriate for the study question. Power calculations were conducted. Further, the method of randomisation was reported and some blinding took place, although the study was only single blind. Additionally, it was conducted in a single centre and only treatment completers were included in the final analysis. Study groups were not completely balanced at baseline, although the authors also conducted adjusted analyses to take into account any potential biases. The overall internal validity of the analysis is likely to be quite high.

Validity of estimate of measure of benefit
The use of QALYs as summary benefit measure appears appropriate because the CGA intervention had a relevant impact on patient health. Less important was the impact of CGA on mortality, but this issue was addressed in the sensitivity analysis. In the base case, no discounting was applied, but a 5% annual rate was used in the sensitivity analysis. The use of QALYs ensures the comparability of the benefits of CGA with those of other health care interventions. The authors noted that quality of life values came from younger people and that they may underestimate the value of health in a geriatric population.

Validity of estimate of costs
The perspective adopted in the study was not explicitly stated although it appears to have been that of the health service payer. Given the lack of reporting it is difficult to ascertain if all relevant costs were included in the analysis. Additionally, the price year was not provided. Regression analyses were conducted to estimate the marginal costs of the CGA intervention because the distribution of resource use data was highly skewed. Cost estimates were specific to the study setting. Resource use data were analysed separately from unit costs. The source of cost data was reported. The authors made some assumptions to support the data used in the analysis.

Other issues
The authors made limited comparisons of their findings with those from other studies. With respect to the generalisability of the study results to other settings, the authors noted that their findings were based on data coming from a single centre, thus some caution is required when interpreting the study results.

Implications of the study
The study results suggest that a CGA intervention for elderly patients improves patient health at a low cost. Thus CGA may be a cost-effective option if society is willing to incur the extra costs of this service.

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Other publications of related interest


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