Is it time for a change? A cost-effectiveness analysis comparing a Multidisciplinary Integrated Care model for residential homes to usual care

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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.

CRD summary
The objective was to evaluate the cost-effectiveness of a Multidisciplinary Integrated Care model, compared with usual care, in Dutch residential care homes. The analysis showed a benefit for quality of care, with a modest cost increase, but long-term follow-up of the costs and benefits was required to substantiate these findings. Other outcomes showed no significant change; most of the reporting was clear, the methods were appropriate, and the conclusion was reasonable.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to evaluate the cost-effectiveness of a Multidisciplinary Integrated Care model for Dutch residential care homes for the elderly.

Interventions
The Multidisciplinary Integrated Care model started with a quarterly in-home, systematic, computerised assessment of functional health status and care needs. The interRAI Long-Term Care Facilities Assessment System was used to assess function, mental and physical health, social support, medication, and service use. The identified problem areas were the basis for an individual care plan. The outcomes of the assessment were discussed by the multidisciplinary team, and a multidisciplinary consultation was offered to the frailest residents, who had complex health care problems.

This was compared with usual care, in which care providers were instructed to continue caring for patients as normal. A residential care home was defined as a retirement home for older people, who could no longer live independently.

Location/setting
Netherlands/residential care.

Methods
Analytical approach:
The evaluation was undertaken alongside a multicentre randomised clinical trial. The time horizon was six months. The authors stated that a societal perspective was taken.

Effectiveness data:
The primary outcome was the sum score (indicators present divided by possible indicators) for the 32 risk-adjusted quality-of care indicators. Functional health was measured by COOP-WONCA charts (six dimensions assessing physical fitness, feelings, daily activities, social activities, change in health and overall health), and general quality of life was measured using the SF-12 Health Survey. The effectiveness data were from a multicentre cluster randomised controlled trial (RCT), conducted in 10 residential care homes, with 340 residents. The homes were matched before randomisation, based on the percentage of cognitively impaired residents; the two facilities with the highest percentages were matched, and so on. Patients were recruited from December 2006 to December 2007. Exclusion criteria were reported. Patient outcomes were assessed at the start and at six months, by an allocation-blind interviewer.

Monetary benefit and utility valuations:
The utility scores were estimated using the SF-6D, which converted the SF-12 results to estimates of preferences for health, using general population values.

**Measure of benefit:**
The measure of benefit was quality-adjusted life-years (QALYs), derived using the SF-6D.

**Cost data:**
The costs included primary care (general practitioner, physical therapy and psychosocial therapy); secondary care (medical specialists, hospital admission and informal care); and Multidisciplinary Integrated Care (organisational, staff, performing the interRAI, and meetings). The resource data were collected at the start and at six months, by patient or proxy interviews or from medical records. Patients with no initial data or who died were excluded. Multiple imputation was used to predict any missing values. Medication was valued using prices from the Royal Dutch Society for Pharmacy. The cost of Multidisciplinary Integrated Care was calculated using a top-down approach. The price year was 2007, and all costs were adjusted accordingly. The costs were reported in Euros (EUR).

**Analysis of uncertainty:**
Bootstrapping was used to estimate the confidence intervals for skewed patient-level data (costs). Non-parametric bootstrapping was used to estimate the uncertainty around the incremental cost-effectiveness ratio. The results were presented on a cost-effectiveness plane, and in a cost-effectiveness acceptability curve. Sensitivity analyses were conducted to assess the impact of analysing cases with complete data only; including only license and subscription costs for interRAI; and including those with missing initial data or who died (using multiple imputation from the available initial data).

**Results**
The quality of care was significantly higher for the Multidisciplinary Integrated Care group, compared with usual care (MD -6.5; 95% CI -9.5 to -3.5); the COOP-WONCA outcomes were not significantly different between the two groups (0.2, 95% CI -1.1 to 1.5); and the QALY outcomes were not significantly different (0.00, 95% CI -0.01 to 0.01).

The total costs showed a trend towards being higher in the Multidisciplinary Integrated Care group, than in the usual care group (MD EUR 405, 95% CI -13 to 826). Secondary care costs, such as hospital admissions, were the greatest driver of the costs for both groups.

For Multidisciplinary Integrated Care, compared with usual care, the incremental cost-effectiveness ratio was EUR 62 per point improvement in the the quality of care sum score, or EUR 2,056 for a point improvement in the COOP-WONCA score. For QALYs, Multidisciplinary Integrated Care was dominated by usual care, as it was less effective and more costly.

The sensitivity analysis did not significantly change the cost-effectiveness conclusions of the main analysis.

**Authors’ conclusions**
The analysis showed a benefit in quality of care, with a modest cost increase. Long-term follow-up of costs and benefits was required to substantiate these findings.

**CRD commentary**

**Interventions:**
The intervention was well described, and appropriately compared with standard care. It was not clear if other multidisciplinary approaches to the delivery of residential care existed; no discussion of any alternatives was presented.

**Effectiveness/benefits:**
Full details of the clinical trial were presented in other publications; few details were given in this publication. Based on this information, the trial appears to have been well conducted; both the CONSORT checklist and trial protocol were included as supplements to the paper. It was not clear if the trial was powered to detect a statistical difference for just the primary outcome (quality of care), or for all of the outcomes. Analyses were conducted using intention-to-treat, and appropriate sensitivity analyses were undertaken, for missing data. The authors assumed that the positive outcome for quality of care captured the true effect of the intervention, and the lack of an effect for COOP-WONCA and QALY.
outcomes was due to the insensitivity of these measures. Further research is needed to determine if this is the case.

Costs:
The resource use was collected from patients included in the trial, but it was unclear which components were from their medical records and which were directly from the patients. As patients or proxies were interviewed at six months, their recall of services over the previous six months could be an issue. As the amount and types of resource use elicited directly from patients were unclear, it is uncertain what the impact of recall bias might be. The costs of medications were from an appropriate source, but the sources for the unit costs for other resources, such as GP visits, physiotherapist visits, and hospital admissions, were less clear; a reference to a Central Bureau of Statistics was given. Overall, the costing appears to have been valid, but the small elements that were not reported increase the uncertainty.

Analysis and results:
The results were comprehensively and appropriately reported. The incremental ratios were correctly calculated and robust methods to assess the uncertainty in some of the data were used. Alternative methods of data analysis were undertaken, and their impact on the economic results was assessed, which helped to demonstrate that the findings were robust. The authors acknowledged the limitations of their analysis. In particular, the time horizon may have been insufficient to capture all the differences in the costs and effects, and a high percentage of patients withdrew from the study.

Concluding remarks:
Most of the reporting was clear, the methods were appropriate, and the conclusion was reasonable.

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