A cost effectiveness study of integrated care in health services delivery: a diabetes program in Australia

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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
This study assessed the cost-effectiveness of an integrated approach mainly based on a centralised database to assist the general practitioner (GP) with diabetes management. The authors concluded that integrated health care delivery provided by a network of GPs was a cost-effective strategy in comparison with usual care for the management of patients with type 2 diabetes. The study was based on valid methodology, which should have ensured the validity of the authors' conclusions.

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

Study objective
This study assessed the cost-effectiveness of an integrated approach, mainly based on a centralised database, to assist the general practitioner (GP) with diabetes management.

Interventions
The diabetes programme was implemented in the Southern Highlands Division of General Practice (SHDGP) in New South Wales in 1995. The core of the programme was a centralised database of diabetic patients, which was used to send recall reminders to GPs, to provide regular audit reports to GPs on their adherence to guidelines, and to provide regular and ad hoc clinical alerts, especially for patients at risk of developing complications. This programme was compared with the usual care.

Location/setting
Australia/primary care.

Methods
Analytical approach:
The analysis used the published United Kingdom Prospective Diabetes Study (UKPDS) Outcome Model, a discrete-event simulation, to determine the clinical and economic outcomes of the interventions over a 40-year time horizon. The authors stated that the perspective of the health system as a whole was adopted.

Effectiveness data:
The clinical data came mainly from two sources, which were the SHDGP and the UKPDS model, and these were only partially described. The SHDGP data included only 74 patients as the full data were not available for the whole sample of patients in the database. The characteristics of all the patients on enrolment were similar to those of this sample. The SHDGP dataset was used for the patient characteristics at baseline and the treatment effect, while the UKPDS was used to project disease progression. The technical adjustments required to mix the data derived from these two sources were reported. The key clinical endpoint was the efficacy of the programme.

Monetary benefit and utility valuations:
The utility values were derived from a sample of UKPDS participants in 1997. No other information was provided.

Measure of benefit:
Life-years (LYs) and quality-adjusted life-years (QALYs) were the summary benefit measures and were discounted at
an annual rate of 5%.

Cost data:
The economic analysis included four main cost categories: the cost of the SHDGP programme, the primary care costs arising from adherence to the guidelines for the management of diabetes, the costs of pharmaceuticals, and the cost of in-patient hospital services. These costs and quantities were derived from reports on the programme implementation, official Australian sources, such as the Service Incentives Payments scheme and the Pharmaceutical Benefits Scheme, and data from the UKPDS. Future costs were discounted at 5% per annum. The price year was 2005 and all costs were in Australian dollars (AUD).

Analysis of uncertainty:
Three aspects of uncertainty were investigated: the discount rate, the cost estimates, and the gain in LYS or QALYs. These were varied using published or arbitrary ranges of values. Cost-effectiveness acceptability curves were presented, but no details of the methods used to produce these curves were reported.

Results
Over 40 years, the discounted net cost per patient for the five-year programme in comparison with usual care was AUD 2,919 (range 540 to 4,360). The discounted LYS saved were 0.36 and the discounted QALYs gained were 0.30. The incremental cost per LY saved was AUD 8,108 (range 1,502 to 12,111) and the incremental cost per QALY gained was AUD 9,730 (range 1,802 to 14,533). These figures were well below the generally accepted limits for health care interventions in Australia.

The sensitivity analysis confirmed that the base-case results were robust. The acceptability curves showed that, at a threshold of AUD 42,000 per LY saved or QALY gained, the probability of the programme being cost-effective was 85%.

Authors' conclusions
The authors concluded that integrated health care delivery provided by a network of GPs was a cost-effective strategy for the management of patients with type 2 diabetes.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear in that the proposed intervention was compared with the usual care in the authors' setting.

Effectiveness/benefits:
The clinical data were derived from two sources, details of which were published in separate papers. Little information on the methodology of these two sources was provided in this paper, but some key details on the procedure used to combine these two datasets were reported. The SHDGP dataset was representative of the study population and the authors' setting, but only a small sample was included. The UKPDS was a validated and widely used model for diabetic patients. As a result, the clinical evidence appears to have been robust. The benefit measures were appropriate as they captured the impact of the interventions on patients' health. LYS and QALYs can also be compared with the benefits of other health care interventions.

Costs:
The perspective was that of the health care system and the cost categories reflected this viewpoint. The authors justified the exclusion of some cost categories, such as insulin costs and patient co-payments. The details of the economic analysis were presented in an appendix, with limited information on the unit costs and resource quantities in the paper itself. Other details of the analysis, such as the price year and use of discounting, were reported. Variability in the costs was investigated in the sensitivity analysis.

Analysis and results:
The analytical approach used to synthesise the costs and benefits was appropriate. The study results were clearly presented. The issue of uncertainty was satisfactorily investigated using both a deterministic and a stochastic approach,
but more details on the probabilistic analysis would have been useful. The results of this study should be considered to be specific to the Australian context and it is not clear whether the authors’ conclusions can be generalised to other locations.

Concluding remarks:
The study was based on valid methodology, which should have ensured the validity of the authors’ conclusions.

Funding
Supported by funding from the Australian Department of Health and Ageing.

Bibliographic details
McRae IS, Butler JR, Sibthorpe BM, Ruscoe W, Snow J, Rubiano D, Gardner KL. A cost effectiveness study of integrated care in health services delivery: a diabetes program in Australia. BMC Health Services Research 2008; 8:205

PubMedID
18834551

DOI
10.1186/1472-6963-8-205

Original Paper URL
http://www.biomedcentral.com/1472-6963/8/205/abstract/

Other publications of related interest
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Indexing Status
Subject indexing assigned by NLM

MeSH
Aged; Case Management /economics; Cost-Benefit Analysis; Delivery of Health Care, Integrated; Diabetes Mellitus /diagnosis /economics /therapy; Disease Management; Empirical Research; Family Practice /economics /organization & administration; Female; Health Care Costs /statistics & numerical data; Hemoglobin A, Glycosylated /analysis; Humans; Male; Middle Aged; Models, Econometric; Models, Organizational; New South Wales; Outcome Assessment (Health Care) /economics; Program Evaluation; Quality-Adjusted Life Years

AccessionNumber
22008102349

Date bibliographic record published
02/03/2009
Date abstract record published
17/02/2010