Cost-effectiveness of diabetes self-management programs in community primary care settings

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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 examined the long-term cost-effectiveness of a diabetes self-management programme, in comparison with no intervention, in disadvantaged areas with notable health disparities. The authors concluded that the self-management programme for patients with diabetes, in community primary care settings, was cost-effective from the perspective of the health system. The methods were valid, but caution is required when assessing the validity of the authors’ conclusions because the reporting of the data sources was limited and key assumptions were made.

Type of economic evaluation
Cost-utility analysis

Study objective
This study examined the long-term cost-effectiveness of a diabetes self-management programme in disadvantaged areas with notable health disparities.

Interventions
The intervention was the Diabetes Initiative, a national programme run by a foundation and directed at disadvantaged areas. The programme focused on improving support for self-management in primary care settings and included a variety of approaches, which depended on the participating site. The comparator was no programme, which was the usual care.

Location/setting
USA/primary care.

Methods
Analytical approach:
The analysis was based on a published Markov model, with a lifetime horizon, called the Centers for Disease Control and Prevention and Research Triangle Institute Diabetes Cost-Effectiveness Model. The authors stated that the perspective of the health system was adopted.

Effectiveness data:
The clinical evidence came from selected sources. Most of the epidemiological and clinical data were already incorporated in the decision model. For example, the inputs on disease progression were from the UK Prospective Diabetes Study (UKPDS). Programme-specific inputs came from the four sites participating in the Diabetes Initiative across the USA, where patients were followed-up for 30 months. Some key assumptions on the efficacy of the programme were required. The key endpoints were the changes in haemoglobin A\textsubscript{1c} level, blood pressure, and cholesterol level.

Monetary benefit and utility valuations:
The sources of the utility values were not explicitly reported.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the summary benefit measure and were discounted at an annual rate of 3%.
Cost data:
The economic analysis included the cost categories of personnel, contracted services, office services, equipment and computing, and overheads. Both the costs and the quantities were derived directly from the participating sites. Total category costs were reported in US dollars ($) and a 3% annual discount rate was applied. A price year was not reported; the costs were retrieved between 2003 and 2006.

Analysis of uncertainty:
A deterministic one-way sensitivity analysis was undertaken by varying the most uncertain model inputs, such as the change in haemoglobin and cholesterol levels (50% lower than baseline values), the effect of the programme only on haemoglobin or cholesterol, lower programme costs over time, and changes in the programme’s effects and costs over time.

Results
The lifetime costs were $49,474 with no intervention and $61,234 with the programme. The QALYs were 14.3569 with no intervention and 14.6541 with the programme. The incremental cost per QALY gained with the programme was $39,563.

The sensitivity analysis showed that the cost-effectiveness of the programme improved when lower intervention costs over time were assumed and it worsened dramatically when the programme efficacy was halved ($72,878 per QALY) or when the intervention had no effect on either haemoglobin or cholesterol ($229,364 per QALY).

Authors’ conclusions
The authors concluded that the self-management programme for patients with diabetes in community primary care settings was cost-effective from the perspective of the health system.

CRD commentary
Interventions:
The selection of the comparators was appropriate as the proposed programme was compared with no intervention. The specific content of usual care was not described.

Effectiveness/benefits:
Most of the clinical data were previously incorporated in the decision model and their methods of their sources were, therefore, not described, except for the UKPDS, which is commonly used for data on the long-term natural history of diabetes. Some key information on the programme was provided. The efficacy data were mainly from this programme, comparing values at baseline with those at follow-up. A randomised controlled trial would have provided more valid data. QALYs are an appropriate benefit measure, given the impact of the disease on both survival and quality of life, but limited details on the sources of the utility values used to calculate the QALYs were reported.

Costs:
The categories of costs were consistent with the viewpoint of the study. Little information on the cost items, quantities of resources used, price year, and data sources was provided, which limits the transparency of the economic analysis. The cost inputs were not statistically analysed and only variations in the cost categories were considered in the sensitivity analysis.

Analysis and results:
An incremental approach was appropriately used to synthesise the costs and benefits, which were clearly presented. The issue of uncertainty was only partially investigated as only a few model inputs were considered, individually. The authors stated that the use of data from multiple sites of the Diabetes Initiative, in real-world settings, enhanced the generalisability of the results. Some potential limitations of the analysis were noted and these related to the need for long-term assumptions and the use of mixed sources of data.

Concluding remarks:
The methods were valid, but caution is required when assessing the validity of the authors’ conclusions because the reporting of the data sources was limited and key assumptions were made.
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