Training providers in hypertension guidelines: cost-effectiveness evaluation of a continuing medical education program in South Carolina

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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 a continuing medical education (CME) programme, for primary care providers, to improve hypertension prevention and control for their patients. The authors concluded that CME was likely to be cost-effective in reducing blood pressure to reduce cardiovascular disease, in a real-world setting. The methods were clear and key areas of uncertainty were investigated. The authors’ conclusions appear to be robust.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study assessed the cost-effectiveness of a continuing medical education (CME) programme, for primary care providers, to improve hypertension prevention and control for their patients.

Interventions
The intervention provided training to primary care providers, in evidence-based guidelines for hypertension prevention and control. Training was led by hypertension specialists and this was compared with the usual care, which was no intervention.

Location/setting
USA/primary care.

Methods
Analytical approach:
The analysis was based on a simple, static, cost-effectiveness model, with a two-year and a 10-year time horizon. The authors stated that it was carried out from the perspective of the payer.

Effectiveness data:
The clinical data were mainly from the Hypertension Initiative Database (HID), which collected data on the implementation of the CME programme by some US medical universities and divisions. The HID included patient demographics, vital signs, diagnoses, medications, and laboratory values, for participating primary care providers, who were all members of the American Society of Hypertension (ASH). There were 110 providers, each of whom attended one of 21 CME programmes between November 2003 and October 2007. Their patients were matched on their baseline characteristics, using propensity score matching, to control patients of providers who did not attend the CME programme. The key input was the efficacy of CME, defined by the effect of the programme on the patients’ systolic blood pressure (SBP), which reduced their cardiovascular events and renal disease. Other data were from published literature, including clinical trials. The long-term reduction in cardiovascular events and renal disease, with improvements in SBP, was based on Framingham equations.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
Life-years were the summary benefit measure and were discounted at an annual rate of 3%.
Cost data:
The economic analysis included the costs of the CME programme (development of materials, recruitment of participants, training sessions, and administration), hypertensive drugs, effects of hypertension (cardiovascular events and renal failure), and long-term medical care for those aged 65 years or older. These costs were from various sources, including published cost-effectiveness studies, average wholesale prices, Medicare reimbursements, and the Agency for Healthcare Research and Quality. The price for hypertension medication was assumed to be the average of the full branded price and the estimated generic price. All costs were in US dollars ($) and the price year was 2007. A 3% annual discount rate was applied.

Analysis of uncertainty:
Three scenarios were considered varying the hypothetical number of patients affected by the training programme (pessimistic, midpoint, and optimistic). In a probabilistic sensitivity analysis, the model inputs were assigned conventional probability distributions to calculate confidence intervals around the outputs; cost-effectiveness acceptability curves were generated. One- and two-way sensitivity analyses were performed on the model inputs.

Results
Compared with usual care, the two-year incremental cost of CME was $110 midpoint, $142 pessimistic, and $103 optimistic scenario. The incremental life-years were 0.003. The incremental cost per life-year gained was $42,429 midpoint, $54,755 pessimistic, and $39,494 optimistic scenario.

The 10-year incremental cost of CME was $405 midpoint, $437 pessimistic, and $397 optimistic scenario. The incremental life-years were 0.015 and the incremental cost per life-year gained was $26,377 midpoint, $28,465 pessimistic, and $25,880 optimistic scenario.

In the pessimistic scenario over two years, 37% of simulations had an incremental cost-effectiveness ratio below $50,000 per life-year gained, and 98% were below $100,000. The two-year model was sensitive to the effect of the intervention on SBP, change in prescriptions, and the number of visits by the patient to the provider.

Authors' conclusions
The authors concluded that CME was likely to be cost-effective in reducing blood pressure to reduce cardiovascular disease, in a real-world setting.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear as CME was compared against no intervention, which was the usual practice in several settings. Other interventions were beyond the scope of this analysis.

Effectiveness/benefits:
Most of the clinical inputs were from the HID for the intervention, and a matched control group of patients. This approach cannot rule out selection bias, as acknowledged by the authors, but different scenarios (pessimistic, midpoint, and optimistic) were constructed to assess the uncertainty in these values. Other data were from valid sources, including clinical trials. Framingham equations are commonly used to assess the long-term changes in cardiovascular disease events, with changes in SBP. Life-years were an appropriate benefit measure because the disease affects patients’ survival. The authors stated that quality adjustments would have been useful, but did not state their reason for not using them.

Costs:
The economic analysis was restricted to the inclusion of the direct medical costs, consistent with the perspective of the health care payer. Each cost category for the intervention was described in detail, but other costs were presented as category totals. The impact of varying individual costs on the model outcomes was tested in the sensitivity analyses. Appropriate discounting was performed on the long-term costs. The exclusion of some long-term care costs might have underestimated the benefit of the intervention. The data sources were reported and most of the costs were from the implementation of the programme. The price year was reported, facilitating reflation exercises.

Analysis and results:
The results were appropriately presented and an incremental approach was used to combine the costs and benefits of the two strategies. The uncertainty was satisfactorily investigated using valid approaches, and the methods and results were clearly reported. The authors acknowledged some limitations to their analysis, and these mainly related to the design of the clinical study. They stated that since the CME programme was specific to the authors’ setting, replicating it might be a problem.

Concluding remarks:
The methods were clear and key areas of uncertainty were investigated. The authors’ conclusions appear to be robust.

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