Cost of lipid lowering in patients with coronary artery disease by Case Method Learning

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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.

Health technology
The study examined a Case Method Learning (CML)-supported lipid-lowering strategy in the secondary prevention of coronary artery disease (CAD) in primary care. Physicians participated, together with a cardiologist, in recurrent interactive CML seminars at their own primary health care centre.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis and cost-utility analysis.

Study population
The study population comprised patients with CAD. The confirmed diagnosis of CAD was based on the following criteria:

a diagnosis of angina pectoris, either by objective criteria based on coronary angiography, or pathologic findings on exercise test or stress test, or a clinical assessment based on typical angina symptoms at exercise with or without electrocardiographic (ECG) evidence of possible or definite ischaemia;

a diagnosis of myocardial infarction based on either World Health Organization criteria or on unequivocal ECG findings.

Setting
The setting was primary care. The economic study was carried out in Sweden.

Dates to which data relate
Both the effectiveness and resource use data were derived from a study published in 2002. The price year was 2002.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

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

Study sample
Eligible patients were identified from the patient registry of Stockholm County Council. Of all acute and elective
cardiac patients covered by the Department of Medicine at Sodertalje Hospital in the Stockholm County, 429 patients with a diagnosis of CAD and aged younger than 70 years were identified and their medical records scrutinised. Overall, 323 patients had a confirmed diagnosis of CAD and were invited to participate. However, 68 patients refused to participate, thus 255 patients were included in the final study sample. Standard guidelines were mailed to all GPs (n=54) in the study area. Of these, 26 GPs participated in the CML seminars and their patients were included in the intervention group.

Participating patients were allocated to either the intervention group (GP participating in the CML seminars) or control group (GP working at a primary health care centre only receiving the local practice guidelines). A specialist group representing patients treated by a specialist in cardiology or internal medicine served as an external control group. There were 45 patients (18% female) in the intervention group, 43 patients (12% female) in the control group and 167 patients (26% female) in the specialist group. The mean age of the patients was 62.6 (+/- 6.1) years in the intervention group, 62.3 (+/ 7.4) years in the control group and 59.0 (+/ 7.6) years in the specialist group. Power calculations were not reported.

Study design
This was a prospective, randomised clinical trial that was carried out at different centres in Sweden. The patients were randomly assigned to two groups according to which group the physician responsible for their care belonged. The length of follow-up was 2 years. Two hundred and twenty patients completed the 2-year study. No blinding appears to have been used.

Analysis of effectiveness
The analysis of the clinical study was conducted on an intention to treat basis. The primary outcome measures used were changes in low-density lipoprotein (LDL) cholesterol, the defined daily dose (DDD) and quality of life. Change in quality of life was estimated using the EuroQol 5D Index (EQ-5D). The authors stated that the baseline characteristics of the study groups were comparable.

Effectiveness results
The mean change in LDL was -0.5 mmol/L (range: -0.8 - -0.2) in the intervention group, 0 mmol/L (range: -0.2 - 0.2) in the control group, and -0.6 mmol/L (range: -0.8 - -0.4) in the specialist group, (p=0.025).

The mean change in the DDD of statins was 0.2 (range: 0.1 - 0.3) in the intervention group, 0 (range: -0.1 - 0.1) in the control group, and 0.4 (range: 0.3 - 0.5) in the specialist group, (p=0.0081).

The mean change in the DDD of all lipid-lowering drugs was 0.2 (range: 0.0 - 0.3) in the intervention group, 0 (range: -0.1 - 0.1) in the control group, and 0.3 (range: 0.3 - 0.5) in the specialist group, (p=0.023).

The EQ-5D changed:
from 0.80 (range: 0.75 - 0.85) to 0.80 (range: 0.75 - 0.86) in the intervention group,
from 0.79 (range: 0.71 - 0.86) to 0.76 (range: 0.67 - 0.85) in the control group, and
from 0.72 (range: 0.69 - 0.76) to 0.76 (range: 0.73 - 0.80) in the specialist group.

Clinical conclusions
The effectiveness analysis showed that the intervention reduced LDL levels, compared with standard care, and increased the dosages of lipid-lowering drugs over the 2-year time period. Quality of life did not change in any of the study groups.

Measure of benefits used in the economic analysis
The summary benefit measure was the change in LDL. This was derived directly from the effectiveness study.

**Direct costs**
The perspective adopted in the study was unclear. The health services included in the economic evaluation were lipid-lowering drugs and resources associated with the educational intervention, which consisted of GP attendance, preparation, travel and seminar time. The unit costs were not presented separately from the quantities of resources used. The costs were estimated for Swedish prices. Labour costs, which included salaries and payroll taxes, were derived from the Stockholm County Council. Resource use was estimated from data that were prospectively gathered alongside the clinical trial. Discounting was not applied, but it was not relevant as the costs were incurred within a 2-year timeframe. The price year was 2002.

**Statistical analysis of costs**
The costs were treated deterministically.

**Indirect Costs**
The indirect costs were not considered.

**Currency**
The costs were estimated in Swedish kroner (SEK) and then converted into US dollars (S). The conversion rate was $1 = SEK 9.5.

**Sensitivity analysis**
Sensitivity analyses were not carried out.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The educational intervention cost $3.3 per patient over the 2-year time period.

The 2-year costs of the lipid-lowering drugs were $105.8 in the intervention group, $51.7 in the control group, and $202.1 in the specialist group.

The change in the cost of the lipid-lowering drugs from baseline was $59.2 in the intervention group, $12.7 in the control group, and $90.5 in the specialist group. Thus, the cost of lipid-lowering drugs was $47 higher per patient and year in the intervention group than in the control group.

**Synthesis of costs and benefits**
The incremental cost per mmol decrease in LDL with the intervention over standard care was $106.1.

The authors calculated the incremental cost per quality-adjusted life-year (QALY) on the basis of the results of both the current study and a clinical trial (the Scandinavian Simvastatin Survival Study, 4S, see 'Other Publications of Related Interest' below for bibliographic details).

The estimate of the cost per QALY of the intervention was $24,300, which is below what is generally accepted as the value of a gained QALY.
Authors' conclusions
Case Method Learning (CML) for physicians in primary care was a cost-effective educational method to implement new evidence in the local context and content of the target physicians in Sweden. The reduction in low-density lipoprotein (LDL) cholesterol due to CML should decrease mortality and morbidity, according to the results in the 4S-trial.

CRD COMMENTARY - Selection of comparators
The selection of the comparator was appropriate as it represented the standard care at the authors' institution. You should decide whether this is a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness evidence came from a published clinical trial. Thus, limited information on some aspects of the trial was reported. In general, the use of a clinical trial has a high internal validity due to the randomised design. Further strengths of the analysis were its intention to treat basis, the appropriate length of follow-up, and the inclusion of consecutive patients. It was not stated whether power calculations had been carried out to justify the sample size.

Validity of estimate of measure of benefit
The use of decrease in LDL limits the possibility of comparing the benefits of the current study with those from other studies. The use of QALYs, although not directly assessed, enhances the comparability of the current results.

Validity of estimate of costs
The perspective adopted in the analysis of the costs was unclear. The possibility of replicating the study in other settings was limited, as data on the unit costs and quantities of resources used were not presented in detail. The costs represented typical Swedish prices and were specific to the study setting. The impact of variations in both the costs and resource consumption was not investigated. Further, the costs were treated deterministically and no sensitivity analyses were carried out. The price year was reported, which makes reflation exercises in other settings possible.

Other issues
The authors did not compare their findings with those from other studies. Only the results of the 4S study were reported in detail since these data were used to calculate QALYs. The issue of the generalisability of the study results to other settings was not addressed and sensitivity analyses were not carried out. Thus, the external validity of the study was limited. The study referred to patients with CAD and this was reflected in the authors' conclusions.

Implications of the study
The study results supported the use of CML-supported lipid lowering in patients with CAD.

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Bibliographic details

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Other publications of related interest


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Subject indexing assigned by NLM

**MeSH**
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