Cost-effectiveness of primary and secondary prevention in cardiovascular diseases
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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
Prevention programmes for cardiovascular diseases.

Type of intervention
Primary prevention and secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population was a hypothetical population of 1,000 men aged 45-64 years with plasma cholesterol levels of 7+

Setting
Primary care. The study was carried out in Germany.

 dates to which data relate
Effectiveness data were collected from studies previously published between 1992 and 1995. Resource use was calculated for 1995. The price year was 1995.

Source of effectiveness data
Effectiveness data were derived from a review of previously published studies.

Modelling
A simulation model was set up to determine clinical outcomes and costs of a primary prevention programme for a treatment period of 10 years.

Outcomes assessed in the review
The outcomes assessed in the review included the change in total cholesterol, in LDL cholesterol, in triglycerides, and in HDL fraction. The risk of definite non-fatal myocardial infarction, the risk of death from CHD, the risk of death from all cardiovascular causes, and the rate of mortality were also examined.

Study designs and other criteria for inclusion in the review
The effectiveness data were based on a prospective randomised clinical trial (RCT).
Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
The evidence of one RCT was reported in three studies.

Methods of combining primary studies
Not applicable.

Investigation of differences between primary studies
Not applicable.

Results of the review
With pravastatin, there was a 20% decrease in total cholesterol, a 26% reduction in LDL cholesterol, a 13% decrease in triglycerides, and a 5% increase in the HDL fraction. Pravastatin reduced the risk of definite non-fatal myocardial infarction by 31%, death from CHD by 28% to 33%, and death from all cardiovascular causes by 32%. Overall, a 22% reduction of all cause mortality was observed. Interventions such as coronary angiography or PTCA could also be avoided in 31-37% more of the cases under pravastatin.

Measure of benefits used in the economic analysis
The measure of benefits used was life years saved (LYS). Benefit components were discounted at 5%.

Direct costs
Costs were discounted at 5%. Quantities and costs were not reported separately. Direct costs included the costs of treatment with pravastatin, including laboratory tests, and savings resulting from averted treatment. The quantity/cost boundary adopted was that of the health care system. The estimation of quantities and costs was based on actual data. The price year was 1995.

Statistical analysis of costs
Not reported.

Indirect Costs
Not included.

Currency
German marks (DM).
Sensitivity analysis
A sensitivity analysis was conducted on the main cost and benefit components and the discount rate.

Estimated benefits used in the economic analysis
Treatment with pravastatin saved 57 discounted life years. Compared with aspirin, treatment with pravastatin saved around 30 undiscounted life years.

Cost results
The prevention programme with pravastatin generated net costs of DM18.9 million. Compared with aspirin, treatment with pravastatin resulted in net costs of DM20 million.

Synthesis of costs and benefits
The cost-effectiveness of treatment with pravastatin was DM330,000/LYS. The incremental cost-effectiveness of treatment with pravastatin compared with aspirin was DM760,000/LYS. The results only varied slightly in the sensitivity analysis for a discount rate varied over the range 2-10%.

Authors' conclusions
Primary prevention for coronary heart disease with statins is not cost-effective. The lower the risk profile of the targeted population, the more unfavourable the cost-effectiveness ratio.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparator was clear.

Validity of estimate of measure of benefit
The relevant measures of benefit were examined. It should be stressed, however, that the benefit results are only valid for the specified risk groups. In particular, only one risk factor, cholesterol, was examined. No account was taken of other risk factors associated with coronary heart disease such as obesity or hypertension.

Validity of estimate of costs
Only direct costs were included.

Other issues
Adequate comparisons with other published studies were made. Although a wide literature is available, effectiveness results were based on only one randomised controlled trial. The authors did not examine the generalisability of the results to other settings or countries.

Implications of the study
The authors support the recommendations of the European Atherosclerosis Society which recommends pharmacological cholesterol reduction for those patients who have more than a 10% risk of CHD over the next five years which would like result in an improvement in cost-effectiveness by reducing costs and improving life years saved.

Source of funding
None stated.

Bibliographic details

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Other publications of related interest


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