Pharmaco-economic assessment of the HMG-CoA reductase inhibitors
Smart A J, Walters L

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
Use of two HMG-CoA reductase inhibitors, simvastatin and pravastatin in lowering lipid levels.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with hypercholesterolemia.

Setting
Clinical practice. The economic study was conducted in Cape Town, South Africa.

Dates to which data relate
Effectiveness data were compiled from studies published between 1988-1993. Resource data relate to 1993. 1994 prices were used.

Source of effectiveness data
Review of previously completed studies

Outcomes assessed in the review
Mean decrease in total and low-density lipoprotein (LDL) cholesterol on 10mg and 20mg daily dose for both drugs.

Study designs and other criteria for inclusion in the review
Randomised comparative studies of the two drugs were included in the review. The studies were screened to ensure that: a) the patients were on a lipid-lowering diet prior to the initiation of drug therapy; b) results were reported in a dose-specific way; c) efficacy was measured at least 4 weeks after initiation of therapy or change of dose.

Sources searched to identify primary studies
Criteria used to ensure the validity of primary studies
Only randomised comparative studies of the two drugs were included in the review.

Methods used to judge relevance and validity, and for extracting data
It was not stated whether the validity of primary studies was assessed by more than one independent reviewer.

Number of primary studies included
Twenty-four clinical studies.

Methods of combining primary studies
The studies were weighted by the number of patients studied. Therefore, results of primary studies were combined by a weighted mean.

Investigation of differences between primary studies
Not performed.

Results of the review
The average decreases in total cholesterol (TC) with daily doses were: 10mg simvastatin, 23.2%; 10mg pravastatin, 15.5%: 20 mg simvastatin, 31.0%; 20 mg pravastatin, 22.0%. The average decreases in LDL cholesterol were: 10 mg simvastatin, 31.0%; 10 mg pravastatin, 20.5%; 20 mg simvastatin, 40.0%; 20 mg pravastatin, 26.0%.

Measure of benefits used in the economic analysis
Total and LDL cholesterol levels and successfully treated patients, (defined as lowering a given patient’s LDL to a specific level).

Direct costs
Direct health service costs (drug costs, lipogram costs and doctor visits) were considered. The lowest available input costs for non-drug expenditure were used. The costs of screening for and treating adverse events caused by the drugs and potential differences in patient compliance were not included. Quantities and costs were not analysed separately. 1994 prices were used. Data on the drug acquisition costs were obtained from the South African Pharmaceutical Ethical Price List. Total treatment costs were devised from the literature (a large double-blind multicentre study).

Currency
South African rands (R).

Sensitivity analysis
A sensitivity analysis of the results was performed using the outer limits of efficacy data obtained from the non-comparative studies identified. In addition, the costs of adding varying doses of cholestyramine to the treatment regimen of patients who had not reached their target cholesterol level were calculated.

Estimated benefits used in the economic analysis
The average decrease in TC was 23.2% with simvastatin and 15.5% with pravastatin for a 10mg dose. The average decrease in LDL was 31.0% with simvastatin and 20.5 with pravastatin for the same dose. For 20mg daily of simvastatin and pravastatin, the average decrease in TC was 31% and 22% respectively; the average decrease in LDL was 40% and 26% respectively. 84% of simvastatin patients and 68% of pravastatin patients were successfully treated.
Cost results
The cost of drugs per month was R221.06 and R179.96 for simvastatin and pravastatin 10mg respectively; R332.57 and R301.51 for simvastatin and pravastatin 20 mg respectively. The average total treatment costs for simvastatin-treated patients were 3.5% less than for pravastatin-treated patients (R5699.13 vs R5898.36).

Synthesis of costs and benefits
The average drug cost per 1% decrease in TC was 21.9% higher on 10 mg pravastatin daily (R 11.61) than on 10 mg simvastatin daily (R 9.53). The average cost per 1% decrease in TC on 20 mg pravastatin (R 13.71) was 27.7% higher than on 20 mg simvastatin (R 10.73). The average cost per 1% decrease in LDL cholesterol was 23.1% higher on 10 mg pravastatin (R 8.78) than on 10 mg simvastatin daily (R 7.13), and 39.5% higher on 20 mg pravastatin (R 11.60) than on 20 mg simvastatin (R 8.31). Also, the average overall intervention cost per successfully treated patient was 27.9% higher for pravastatin (R 8674.06) compared to simvastatin (R 6784.68).

Authors' conclusions
Simvastatin, although currently more expensive than pravastatin, is more cost-effective in lowering lipid levels.

CRD Commentary
This is a good study based on extensive search of the literature. More attention should have been given to the investigation of differences between the primary studies. It is not stated whether the studies identified in the review were based on an 'intention to treat' analysis or 'treatment completers' only. The number of patients in each of the individual studies is not stated although the results of the studies were weighted according to this criteria; it would have been helpful to have included the patient numbers in the paper. Adverse effects were not considered. The generalisability of the economic analysis to other institutional settings should be considered carefully.

Source of funding
Logos Pharmaceuticals (Pty) Ltd.

Bibliographic details

PubMedID
7570232

Indexing Status
Subject indexing assigned by NLM

MeSH
Anticholesteremic Agents /economics; Cost Control; Cost-Benefit Analysis; Health Care Costs; Humans; Hydroxymethylglutaryl CoA Reductases /economics; Hydroxymethylglutaryl-CoA Reductase Inhibitors; Hypercholesterolemia /drug therapy; Lovastatin /analogs & derivatives /economics; Pravastatin /economics; Simvastatin

AccessionNumber
21995000085

Date bibliographic record published
11/04/1996

Date abstract record published