Replacing lovastatin with pravastatin: effect on serum lipids and costs

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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
Pravastatin.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients being treated with lovastatin, with an average age of 66 years.

Setting
Primary care. The economic study was carried out in Connecticut, USA.

Dates to which data relate
Costs mainly related to 1993 and were expressed in 1995 prices. Effectiveness data were collected up until October 1993.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken on the same patient sample as that used in the effectiveness study. It was undertaken retrospectively.

Study sample
Power calculations were not explicitly mentioned as determinants of sample size, even though it does seem to have been the case. 168 male patients were changed from lovastatin to pravastatin. 27% of subjects were excluded from the initial sample because their alternative treatment used an agent in a different class from pravastatin.

Study design
Single centre, before-and-after study. There was at least one year of duration of follow-up after the change.
Analysis of effectiveness
It was based on intention to treat. The primary health outcome was mean serum lipid concentrations and the instrument of valuation was total cholesterol measures. Adjustment for confounding variables corresponded to: incorrectly prescribed dosage of pravastatin and mistaking of medication (not as directed). The confounding variables for different classes of cardiovascular diseases and dosage conversion ratio were taken into account just for the latter case.

Effectiveness results
Among all patients with usable serum-lipid data, there was no significant difference (for a critical value of p=0.05, for paired Student's t tests) between any of the mean serum lipid concentrations before and after the conversion.

Clinical conclusions
The replacement of lovastatin with pravastatin sodium (at half the daily dose in milligrams for most patients) was associated with no significant change in mean serum lipid concentrations.

Measure of benefits used in the economic analysis
Since the clinical study did not show any difference in clinical outcomes, the economic study was based on cost analysis only.

Direct costs
Costs were not discounted. Quantities and costs were reported separately. The costs and quantities measured related to operating costs, specifically to the drug acquisition cost per year of therapy subjects. Costs were those of health service and were based on actual data from the study. The prices reflected the standard prices up to the more recent date available. The quantities corresponded to those reported by clinicians. For lovastatin, the quantity of resources used was measured from October 1991 to April 1992 and from October 1992 to April 1993 for pravastatin. The date the prices referred to is March 1995. Marginal costs were treated differently from incremental costs.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The annual cost of lovastatin for the 148 patients with data would be $71,693 for the most recent dosages. The corresponding cost for pravastatin would be $56,875 (21% lower). Of the 168 patients changing regimen, 145 (86%) were prescribed an initial daily pravastatin sodium dose that was at least 50% lower in milligrams than that of lovastatin. During the year after the conversion the pravastatin dosage was increased for 16 (11%) of the 145 patients. It was concluded that the increase was inappropriate for seven patients. No adverse effects were examined.

Synthesis of costs and benefits
Not applicable.
Authors' conclusions
The replacement of lovastatin with pravastatin sodium (at half the daily dose in milligrams for most patients) was associated with a 21% cost reduction but with no significant change in mean serum lipid concentrations.

CRD Commentary
a) The paper lacked a clear description of the study population.

b) Side effects were not analysed.

c) There was no statement about the duration of benefits.

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