Cost-effectiveness of rosuvastatin in comparison with generic atorvastatin and simvastatin in a Swedish population at high risk of cardiovascular events

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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 evaluated the long-term cost-effectiveness of alternative statin therapies in Swedish patients with a high risk of cardiovascular events. The authors concluded that rosuvastatin was cost-effective, over a lifetime, compared with generic simvastatin or atorvastatin. The lack of detailed reporting and the highlighted limitations to this study mean that the authors’ conclusions should be considered with caution.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
This study evaluated the long-term cost-effectiveness of alternative statin therapies in Swedish patients with a high risk of cardiovascular events.

Interventions
Rosuvastatin 20mg daily was compared with generic simvastatin or atorvastatin at doses of 40mg per day.

Location/setting
Sweden/primary care.

Methods
Analytical approach:
A state-transition model was used to extrapolate the results from a published clinical trial to a lifetime horizon. The authors stated that the perspective of the Swedish health system payer was taken.

Effectiveness data:
The effectiveness estimates were based on the results of one clinical trial, which defined the dosages for the interventions. The main clinical effectiveness estimates were the fatal and non-fatal cardiovascular events, which were myocardial infarction, stroke, and death.

Monetary benefit and utility valuations:
The utility estimates were based on a selection of studies from the published literature.

Measure of benefit:
The primary measure of benefit was the quality-adjusted life-year (QALY), and these were discounted at a rate of 3% per year.

Cost data:
The costs included those associated with purchasing and administering statin treatment, and those of treating cardiovascular events. The costs of treatment were from Swedish public health services and published literature that reported Swedish costs. Prices were reported in Swedish kronor (SEK). Future costs were discounted at a rate of 3% per year.

Analysis of uncertainty:
The authors conducted one-way and probabilistic sensitivity analyses and reported the results using in graphs and cost-
effectiveness acceptability curves.

**Results**

Treatment with rosuvastatin, for patients with a Framingham risk of 20% or more, was estimated to cost an additional SEK 14,398,515 compared with simvastatin and SEK 20,348,033 compared with atorvastatin. For patients with a Framingham risk of 30% or more, it cost an additional SEK 11,411,059 compared with simvastatin and SEK 19,286,798 compared with atorvastatin.

The total QALYs gained with rosuvastatin, for patients with a Framingham risk of 20% or more, were estimated to be 95.15 compared with simvastatin and 40.90 compared with atorvastatin. For patients with a Framingham risk of 30% or more, the QALYs gained were 129.50 compared with simvastatin and 56.33 compared with atorvastatin.

The incremental cost per QALY gained with rosuvastatin, for patients with a Framingham risk of 20% or more, was SEK 151,323 compared with simvastatin and SEK 497,542 compared with atorvastatin. For patients with a Framingham risk of 30% or more, it was SEK 88,113 compared with simvastatin and SEK 342,403 compared with atorvastatin.

**Authors’ conclusions**

The authors concluded that rosuvastatin was cost-effective, over a lifetime, compared with generic simvastatin or atorvastatin, for patients at a high risk of cardiovascular events or death, in Sweden.

**CRD commentary**

**Interventions:**

The intervention and comparators were described, but it was not clear if any other relevant comparators were omitted.

**Effectiveness/benefits:**

The effectiveness data were from one clinical study, described as a trial, which is likely to have been well designed, but the exact design, methods and inclusion and exclusion criteria were not fully described; so its validity cannot be assessed. It was not clear whether the authors had searched the literature for other relevant sources of data, for the main analysis or for sensitivity analyses. The effectiveness of rosuvastatin was a clear driver of the model, and the estimate for this could have been better informed, using the literature. Methods used to elicit the utility values were not reported, and neither were the methods used to identify these estimates; it is unclear whether these estimates were from an appropriate population and elicited using appropriate methods.

**Costs:**

The cost categories were consistent with the stated perspective, but the cost of treating adverse events related to treatment was not considered. The sources for the costs appear to have been relevant to the study settings and the authors discounted the costs appropriately. The price year was not provided, which will hinder future reflation exercises. The long-term cost of rosuvastatin was estimated assuming a 95% reduction in its price within one year of generic products becoming available.

**Analysis and results:**

A full description of the model, with a diagram, was presented. Only the incremental results for the main analysis were presented, for rosuvastatin versus each comparator. Probabilistic sensitivity analysis was undertaken and the results were fully presented. The reporting was generally insufficient to allow a full assessment of validity to be undertaken, and this makes it difficult to assess how appropriate the conclusions were and the generalisability of the results. The authors discussed some of the key limitations of their study, which should be carefully considered.

**Concluding remarks:**

The lack of detailed reporting and the highlighted limitations mean that the authors’ conclusions should be considered with caution.

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