Cost effectiveness of rimonabant use in patients at increased cardiometabolic risk: estimates from a Markov model

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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 cost-effectiveness of the addition of rimonabant to diet and exercise, for patients at increased risk of cardiovascular events. The authors concluded that the addition of rimonabant was very likely to be cost-effective for obese or overweight patients, with this increased risk. The methodology appears to have been appropriate and, on the whole, was clearly and transparently reported. The conclusions reached by the authors appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The aim was to evaluate the cost-effectiveness of the addition of rimonabant to diet and exercise for patients at increased risk of cardiovascular events.

Interventions
The addition of rimonabant at 20mg per day, for one year, to diet and exercise was compared with diet and exercise alone. The interventions were introduced to manage cardiovascular disease risk factors, such as being obese or overweight, in order to reduce co-morbidity, with for example diabetes or dyslipidaemia, and mortality.

Location/setting
UK/primary care.

Methods
Analytical approach:
A Markov model, with five health states, was used to predict the costs and effects of the interventions. The time horizon was a lifetime, with a cycle length of one month and the authors stated that the perspective of the National Health Service (NHS) was adopted.

Effectiveness data:
The effectiveness data appear to have been derived from selected studies. The main clinical parameter was survival.

Monetary benefit and utility valuations:
The utilities were derived from a published study, using the European Quality of life (EQ-5D) questionnaire.

Measure of benefit:
The quality-adjusted life-year (QALY) was used as the measure of benefit and QALYs were discounted at an annual rate of 3.5%.

Cost data:
The costs included those of hospitalisation for cardiovascular events, condition-specific long-term medications, doctor visits, and the management of adverse events. The resource quantities and cost data for the hospital stay were derived from the in-patient records in Cardiff and Vale NHS trust. The chronic and adverse event costs were obtained from NHS guidelines. All costs were adjusted to 2005 UK pounds sterling (£) and discounted at an annual rate of 3.5%.

Analysis of uncertainty:
One-way sensitivity analysis was conducted on all the model inputs and the results were presented using tornado graphs. In addition, a probabilistic sensitivity analysis was conducted. These results were presented using cost-effectiveness acceptability curves.

**Results**

For the hypothetical cohort of 1,000 patients, the incremental discounted QALYs, for diet and exercise with rimonabant versus diet and exercise alone, were 65 (14,108 without rimonabant versus 14,173 with rimonabant). The incremental discounted costs of diet and exercise with rimonabant versus diet and exercise alone were £557,795 (£3,053,533 with rimonabant versus £2,495,738 without). The incremental cost-effectiveness ratio (ICER) was £8,574 per QALY gained.

The one-way sensitivity analysis indicated that the results were sensitive mainly to compliance and the time horizon. Nevertheless, the ICERs remained below £15,000. The probabilistic sensitivity analysis showed that the intervention was below a threshold of £20,000 per QALY gained in 98.8% of cases.

**Authors’ conclusions**

The authors concluded that the addition of rimonabant to diet and exercise was very likely to be cost-effective for obese or overweight patients, who were at increased risk of cardiovascular events.

**CRD commentary**

**Interventions:**
The intervention was clearly reported including the dosage.

**Effectiveness/benefits:**
The effectiveness data appear to have been derived from selected studies. The method for the literature review was not reported, making it difficult to assess whether the best available evidence was used to inform the model. The primary outcomes were well reported.

**Costs:**
The costs appeared to reflect the perspective of the NHS as stated. The authors provided a detailed description of the method used to derive the cost information, the sources used, as well as the assumptions they made. As the costs could be incurred over a lifetime, discounting was appropriately performed.

**Analysis and results:**
The model structure was presented graphically along with all the relevant details and modelling assumptions. The authors conducted an incremental analysis and the results were presented. Sensitivity analyses were conducted on the modelling assumptions and parameters, enhancing the generalisability of the findings. The authors provided a thorough discussion on the limitations and weaknesses of their study.

**Concluding remarks:**
The methodology appears to have been appropriate and, on the whole, was clearly and transparently reported. The conclusions reached by the authors appear to be appropriate.

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**Bibliographic details**

**Other publications of related interest**
Clarke PM, Gray AM, Briggs A, et al. A model to estimate the lifetime health outcomes of patients with type 2


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Subject indexing assigned by CRD

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