Cost-effectiveness of prasugrel in a US managed care population

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
The aim was to compare the cost-effectiveness of two antiplatelet drugs (prasugrel and clopidogrel) in patients with acute coronary syndromes who underwent percutaneous coronary intervention. The authors concluded that prasugrel-based therapy in this population was cost-saving at current prices and potentially cost-effective in the future assuming low generic prices for clopidogrel-based therapy. Limited reporting of clinical data and some methods mean that the conclusions should not be considered robust.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
To compare the cost-effectiveness of two antiplatelet drugs in patients with acute coronary syndromes (ACS) who underwent percutaneous coronary intervention (PCI).

Interventions
The two comparators were daily prasugrel plus aspirin and daily clopidogrel plus aspirin.

Location/setting
USA/secondary prevention.

Methods
Analytical approach:
A disease-progression model was constructed to extend the clinical data from a pharmaceutical company database (i3 InVision database) with follow-up period of 15 months to a lifetime horizon. The authors stated the perspective of a payer (managed care organisation) was adopted.

Effectiveness data:
The data were based on analysis of the i3 InVision database. The time horizon of these data was limited (15 months) and the effectiveness over a lifetime was estimated based on authors’ assumptions. The effectiveness was measured by the cardiovascular and bleeding events, heart disease-related hospitalisations and emergency room visits.

Monetary benefit and utility valuations:
Not applicable.

Measure of benefit:
The measure of benefit was life-years saved, which was discounted at a 3% annual rate.

Cost data:
The costs were of thienopyridine drug, emergency room visits and in-patient stays (including hospital charges and physician fees). Data were from the sample of patients in the i3 InVision database and a cohort study (TRITON-TIMI 38) conducted in eight countries. Hospitalisation costs were estimated according to associated diagnosis-related groups. All costs were expressed in 2009 US dollars ($).

Analysis of uncertainty:
One-way sensitivity analysis and scenario analysis were conducted to assess the impact of variations in the key model.
inputs. The impact of uncertainty around all model inputs was assessed using probabilistic sensitivity analysis and results were presented in cost-effectiveness acceptability curves.

Results
Over the 15 months after an ACS diagnosis followed by PCI, costs per 100 patients were $3,714,513 with prasugrel-based therapy and $3,811,603 with clopidogrel-based therapy ($97,090 savings for prasugrel). Prasugrel-based therapy was associated with fewer clinical events. These included 3.7 fewer cardiovascular and bleeding events, 2.8 fewer rehospitalisations and one fewer emergency room visits.

Over the lifetime, when the price of clopidogrel was $3 per day less than prasugrel, the cost per life-year gained with prasugrel was $6,643 and when the price was $4 per day less than prasugrel, the cost per life-year gained with prasugrel was $13,906.

The sensitivity analysis indicated that results were most sensitive to the relative costs of the two treatments and the cost of hospital stays.

Authors' conclusions
The authors concluded that prasugrel-based therapy in ACS patients having a PCI was cost-saving at current prices and cost-effective in the future assuming low generic prices for clopidogrel-based therapy.

CRD commentary
Interventions:
The interventions appeared to be appropriate comparators. Their effects in reducing risk of death and cardiovascular events following an ACS episode had been shown in studies. The comparators appeared applicable to other settings.

Effectiveness/benefits:
Clinical data were from a database from a pharmaceutical company and a multicentre cohort trial by the same company. Limited details of the database and cohort trial were reported. It was impossible to judge the validity of the clinical data based on the information provided. Due to the short follow-up, the authors made assumptions in the lifetime projection of effectiveness. The robustness of the results was tested in extensive sensitivity analyses but some uncertainty remained.

Costs:
The costs were consistent with the stated perspective. Data sources were fully reported; some were from real-world consumption patterns of patients on the company database. Unit costs and resource use were not fully presented and this made it difficult to unpick the elements of the costing and generalise to other settings. Lifetime horizon discounting appeared to be needed but the authors did not report whether discounting was conducted.

Analysis and results:
An appropriate cost-effectiveness analysis was performed but reporting on model structure was insufficient. This lack of reporting limited the validity of the methods used to project lifetime costs and effectiveness. Results in the short term were fully reported but the key components of the cost-effectiveness analysis (costs and life-years) over a lifetime were not reported. Extensive sensitivity analyses were conducted and the results were clearly presented. Limitations of the study were outlined clearly.

Concluding remarks:
Limited reporting of clinical data and some methods mean that the conclusions should not be considered robust.

Bibliographic details

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