A budget impact model for a drug in heart failure: eplerenone

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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
The objective was to examine the budget impact of the addition of eplerenone to standard care in patients with left ventricular dysfunction and heart failure resulting from myocardial infarction. The addition of eplerenone was cost-effective and reduced the number and duration of re-hospitalisations. The study was based on robust methodology, although the issue of uncertainty was not extensively addressed. The authors’ conclusions appear to be valid, but need to be corroborated by other studies.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to examine the budget impact and the clinical effectiveness of adding eplerenone to standard care in patients with left ventricular dysfunction and heart failure resulting from myocardial infarction (MI).

Interventions
Eplerenone was added to standard care and was compared with standard care alone. The standard care included angiotensin-converting enzyme inhibitors, beta blockers and statins.

Location/setting
UK/primary care.

Methods
Analytical approach:
This economic evaluation was based on a decision modelling approach with a three-year time horizon. The authors stated that the perspective of the National Health Service (NHS) was adopted.

Effectiveness data:
The clinical and epidemiological data appear to have been derived from a selection of known, relevant studies. The key clinical parameter was the treatment effectiveness, which was based on the Eplerenone Post-Acute Myocardial Infarction Study (EPHESUS), a multinational, randomised controlled trial with an average follow-up of 16 months. Other data came from national registries or studies such as the Office of National Statistics, the National Institute for Health and Clinical Excellence, and the Global Registry of Acute Coronary Events. Survival curves were used to extrapolate the short-term data to a three-year time-horizon.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
Life-years (LYs) were used as the summary benefit measure, and were discounted at an annual rate of 3.5%.

Cost data:
The economic analysis considered the incremental changes due to the additional use of eplerenone. Thus, the health services were the eplerenone acquisition and reduced hospitalisations. These items were based on resource consumption in the EPHESUS study. The costs came from national official sources such as UK drug acquisition costs and NHS hospital in-patient costs. The budget impact analysis calculated the incremental cost per bed-day avoided, with the use...
of eplerenone. All costs were in UK pounds sterling (£) and were discounted at an annual rate of 3.5%.

Analysis of uncertainty:
A sensitivity analysis was undertaken considering higher mortalities.

Results
Assuming a total of 87 patients, out of a population of 250,000, entered the model each year, over three years, eplerenone gained 12.11 LYs and cost £79,581, with an incremental cost per LY gained of £6,730 over standard care.

In the population of 250,000, the use of eplerenone led to a reduction of 47 bed-days for re-hospitalisations due to heart failure, at a cost per bed-day avoided of £1,492.

The sensitivity analysis indicated that an increased mortality was associated with a small increase in incremental cost-effectiveness ratio and a small reduction in the cost per bed-day avoided.

Authors’ conclusions
The authors concluded that the addition of eplerenone to standard therapy in patients with clinical heart failure after MI was cost-effective, and reduced the number and duration of re-hospitalisations.

CRD commentary
Interventions:
The selection of the comparators was appropriate because eplerenone was added to usual care, which covered a variety of possible treatments.

Effectiveness/benefits:
The sources of evidence were selected. Most of them were national administrative databases, which are commonly used to provide epidemiological inputs, which reflect the real-world experience of large samples of patients. The treatment efficacy came from a randomised controlled trial, in which the key assumptions on survival beyond the trial follow-up period were justified. The use of this study should ensure the internal validity of the efficacy estimates. However, the authors pointed out the risks of applying multinational data to the UK context. Except for the mortality estimates, no clinical input was investigated in the sensitivity analysis.

Costs:
The analysis of costs was consistent with the perspective, which was also reflected in the sources used to value the health services. The unit costs and quantities of resources were not presented separately. Other details of the analysis such as the price year and use of discounting were reported. The economic data were not varied in the sensitivity analysis.

Analysis and results:
The synthesis of costs and benefits was appropriately performed by means of an incremental analysis. This analysis focused on the additional impact of the treatment and, thus, only the incremental expenses and gain in life expectancy were included. The issue of uncertainty was restricted to changes in the mortalities.

Concluding remarks:
The study was based on robust methodology, although the issue of uncertainty was not extensively addressed. The authors’ conclusions appear to be valid, but will need to be corroborated by other studies.

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Bibliographic details
Other publications of related interest


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