Cost effectiveness of esomeprazole compared with omeprazole in the acute treatment of patients with reflux oesophagitis in the UK

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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
The health interventions examined in the study were esomeprazole (40 mg once daily) and omeprazole (20 mg once daily) for the acute treatment of reflux oesophagitis.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised a hypothetical cohort of patients with confirmed reflux oesophagitis.

Setting
The setting was primary and secondary care. The economic study was conducted in the UK.

Dates to which data relate
Data on effectiveness and resource use were derived from studies published between 2000 and 2001. The price year was not reported.

Source of effectiveness data
The effectiveness evidence came from a synthesis of completed studies.

Modelling
A simple decision model based on a deterministic decision tree was used to compare the cost-effectiveness of the two strategies under evaluation. The structure of the tree was depicted. The analysis was carried out in a hypothetical cohort of 100 patients. The typical patient had the following characteristics: history of heartburn, symptoms currently present for 1 to 4 hours for 4 days of the last week, no alarm symptoms, normal weight, no drug or alcohol abuse, and positive diagnosis of reflux oesophagitis.

Outcomes assessed in the review
The primary outcome assessed was the rate of endoscopic healing of oesophagitis after 8 weeks. Secondary outcome measures were healing rate of oesophagitis and heartburn resolution at 4 weeks. Healing rates at 4 and 8 weeks were estimated using Life Tables methods.
Study designs and other criteria for inclusion in the review
A formal review of the literature was not conducted. All of the studies used as sources of evidence were multicentre, randomised, double-blind, parallel group, clinical trials with comparable drug protocols.

Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
The validity of primary studies was ensured by the robust design. No strict inclusion criteria were considered.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
Three primary studies were considered.

Methods of combining primary studies
Primary estimates were combined by pooling the samples of patients as if the three studies were one large study, and included 2,446 patients in the esomeprazole arm and 2,431 patients in the omeprazole arm.

Investigation of differences between primary studies
Not stated.

Results of the review
The healing rates at 4 weeks were 77.7% (95% confidence interval (CI): 76% - 79.4%) in the esomeprazole group and 67.6% (95% CI: 65.7% - 69.5%) in the omeprazole group, (p<0.001).

The healing rates at 8 weeks were 93.4% (95% CI: 92.4% - 94.5%) in the esomeprazole group and 86.2% (95%CI: 84.8% - 87.6%) in the omeprazole group, (p<0.001).

And finally, the rates of complete resolution of heartburn at 4 weeks were 66.6% (95% CI: 64.7% - 68.5%) in the esomeprazole group and 59% (95%CI: 57% - 61%) in the omeprazole group.

Measure of benefits used in the economic analysis
The summary benefit measures used in the economic analysis were the rates of healing and resolution of heartburn, which had both been estimated previously.

Direct costs
Discounting was not relevant since costs were incurred over a short period of time. Unit costs were reported separately from quantities of resources used. The health services included in the economic evaluation were general practitioner (GP) visits, gastroenterologist visit, endoscopy, and study drugs. The cost/resource boundary of the NHS was adopted. The estimation of costs was based on typical NHS sources of economic data. Resource use was based on a survey of UK physicians, which was carried out in December 1999 and involved 10 gastroenterologists and 15 GPs. The price year was not reported.
Statistical analysis of costs
Costs were treated deterministically.

Indirect Costs
Indirect costs were not included in the economic evaluation.

Currency
UK pounds sterling ($).

Sensitivity analysis
One-way sensitivity analyses were carried out to assess the robustness of the cost analysis to variations in efficacy variables, which were varied within confidence intervals. Worst and best cases were considered. Threshold analyses were conducted on costs, to determine the critical values at which the two strategies became cost neutral.

Estimated benefits used in the economic analysis
Please refer to the effectiveness results reported above.

Cost results
The total direct costs in a cohort of 100 patients with reflux oesophagitis were 7,753 for esomeprazole and 9,043 for omeprazole. Therefore, esomeprazole led to cost savings of 1,290 in comparison with omeprazole.

If the cost savings of 774 per 100 patients, which were derived from the difference in treatment success at 8 weeks, were added to the previous cost difference, the final cost-savings associated with esomeprazole would be 2,064.

The results of the sensitivity analyses showed that the estimated cost savings were not sensitive to changes in effectiveness inputs.

With respect to variations in costs, the analysis suggested that the cost of esomeprazole needed to be reduced by 36% in order for the 2 strategies to become cost neutral.

Synthesis of costs and benefits
An incremental cost-effectiveness analysis was carried out to combine costs and benefits of the two interventions under evaluation. However, a cost-effectiveness ratio was not calculated because esomeprazole dominated omeprazole, which was both more costly and less effective.

Authors' conclusions
The authors concluded that esomeprazole was a cost-effective treatment for reflux oesophagitis in comparison with omeprazole. This conclusion was robust and held under several scenarios.

CRD COMMENTARY - Selection of comparators
The authors provided a justification for the choice of the comparator, namely omeprazole, which was the most widely prescribed PPI, had proven efficacy, and at the time of the study had more associated documentation than any other PPI prescribed in the UK. You should decide whether this is a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness evidence was estimated from a synthesis of published studies. However, a systematic review of the
literature was not undertaken and primary studies were identified selectively. The results from the selected studies were then pooled together. All primary studies had very high internal validity due to robust design. Furthermore, the authors stated that comparable protocols were used in each study, which enhanced the reliability of the pooling procedure. It was unclear whether some weighting was applied when studies were combined. In general, the methods used to estimate the effectiveness evidence appear valid.

**Validity of estimate of measure of benefit**
The summary benefit measures were specific to the disease considered in the study and may be difficult to compare with the benefits of other interventions. The authors assumed that the healing rate was a satisfactory surrogate measure for defining treatment success in clinical practice and was widely used in other studies.

**Validity of estimate of costs**
The authors explicitly stated the perspective adopted in the study and it appears that all relevant categories of costs were considered in the analysis. The possibility of replicating the study in other settings was enhanced by the fact that unit costs were presented separately from quantities of resources used. Furthermore, the source of data was reported and experts’ assumptions on resource consumption were explicitly reported. However, the price year was not reported, therefore limiting the possibility of carrying out deflation exercises. Statistical analyses of costs were not conducted but several sensitivity analyses were carried out on key economic inputs.

**Other issues**
The authors stated that their findings confirmed the results reported in previous studies in terms of superior efficacy of esomeprazole over omeprazole. However, the issue of the generalisability of the study results to other settings was not addressed, although sensitivity analyses were conducted. This enhanced the external validity of the study. The study referred to patients with reflux oesophagitis and this was reflected in the conclusions of the study.

**Implications of the study**
The study results suggest that esomeprazole is a cost-effective strategy for the management of patients with reflux oesophagitis. The authors note that the superior efficacy profile of esomeprazole over omeprazole could result in fewer productivity losses and better quality of life, as US and Swedish studies have also demonstrated.

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**Other publications of related interest**


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