A cost-effectiveness analysis of fixed-combination therapies in patients with open-angle glaucoma: a European perspective


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 examined the cost-effectiveness of three intraocular pressure-lowering prostaglandin analogues (bimatoprost, travoprost, and latanoprost) as fixed therapies in combination with timolol for the treatment of patients with primary open-angle glaucoma in five European countries. Bimatoprost was the preferred treatment from the perspective of the health care system in the UK, Sweden, Norway, Italy, and Spain. The study was based on valid methodology although some potential drawbacks of the analysis might limit the validity of the authors’ conclusions.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to examine the cost-effectiveness of three intraocular pressure-lowering prostaglandin analogues (bimatoprost, travoprost and latanoprost) as fixed-dose therapies in combination with timolol for the treatment of patients with primary open-angle glaucoma in five European countries.

Interventions
The three fixed-dosage combination strategies examined were bimatoprost 0.03% plus timolol 0.5% (BT), travoprost 0.004% plus timolol 0.5% (TT), and latanoprost 0.005% plus timolol 0.5% (LT).

Location/setting
Italy, Norway, Spain, Sweden, and UK/secondary care.

Methods
Analytical approach:
This economic evaluation was based on a decision model which simulated patient management for the three strategies. The time horizon of the analysis was three months. The authors stated that the analysis was carried out from the perspective of the health care system.

Effectiveness data:
The clinical data on efficacy and safety of the drugs were identified through a systematic review of the literature in the Medline database to identify randomised controlled trials (RCTs). The search criteria were reported as well as the key characteristics of the primary studies, such as the sample size, length of follow-up, and change in the endpoint of interest. Only those RCTs with similar patient population, and the same time-horizon and primary end-point were selected. When more than one study was found (for the case of TT), the clinical estimates were pooled by calculating the average, weighted according to the number of patients in each study.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The summary benefit measure was the percentage reduction of the intraocular pressure (IOP) level.

Cost data:
The costs were those of drugs and clinical visits to the ophthalmologist. The resource consumption was based on authors' opinions, which reflected recommended patterns of care in each country. The drug costs were calculated using the lowest market price per container from IMS Medical. The costs of clinical visits to the ophthalmologist were derived from national databases, making a distinction between the first visit and subsequent contacts with the specialist. All costs were presented in Euros (EUR) as well as in local currencies. The price year was 2007.

Analysis of uncertainty:
A deterministic univariate sensitivity analysis was carried out on the key model inputs, which were discontinuation rates, unit costs of medications, and number of clinical visits. The ranges of values were defined by the authors.

Results
The percentage reduction in the IOP level was 35.1% for BT, 35.0% for LT and ranged between 33.2% and 38.1% for TT, with a weighted average of 34.7%.

The three-month total costs per patient in the UK were EUR 266.97 with BT, EUR 267.02 with TT, and EUR 277.24 with LT.
In Sweden, they were EUR 319.47 with BT, EUR 319.47 with TT, and EUR 324.44 with LT.
In Norway, they were EUR 176.00 with BT, EUR 176.52 with TT, and EUR 181.56 with LT.
In Italy, they were EUR 116.66 with BT, EUR 116.66 with TT, and EUR 119.36 with LT.
In Spain, they were EUR 161.43 with BT, EUR 162.06 with TT, and EUR 163.44 with LT.

The incremental analysis showed that BT was the dominant treatment in all countries; it was more effective and equally or less expensive than TT and LT.

The sensitivity analysis confirmed that these base-case findings were robust.

Authors’ conclusions
The authors concluded that BT was the preferred treatment for patients with primary open-angle glaucoma from the perspective of the health care system in the UK, Sweden, Norway, Italy, and Spain.

CRD commentary
Interventions:
The authors did not provide a justification for their selection of the comparators. Nevertheless, they were commonly used for the treatment of primary open-angle glaucoma and are likely to be valid comparators.

Effectiveness/benefits:
The authors reported the key details of the literature search intended to identify the relevant sources of data. The inclusion of RCTs enhances the validity of the clinical inputs due to the strengths of the RCT design. Furthermore, the authors provided information on the main characteristics of these studies. Nevertheless, due to the lack of head-to-head RCTs, indirect comparisons between treatments were necessary and the authors acknowledged and discussed the weaknesses of this approach, despite the baseline comparability of patient samples, time horizons, and study designs. The benefit measure was taken directly from these RCTs. A limitation of using a disease-specific measure is its lack of comparability with the benefits of other health care interventions.

Costs:
The categories of costs were consistent with the study perspective in all countries. The details on unit costs, resource quantities, sources of data, and the price year were reported, which enhance the transparency of the economic analysis. The authors acknowledged that the patterns of resource consumption were assumed to be similar among the five countries, although variations might be expected. However, changes in the number of specialist visits did not alter the conclusions of the analysis. Appropriate currency conversions were made and were reported.

Analysis and results:
The use of an incremental analysis to combine the costs and benefits was appropriate. However, the expected benefits associated with each treatment were not reported. The issue of uncertainty focused on the individual model inputs and
was not addressed using a comprehensive approach such as a probabilistic analysis. The issue of generalisability was not specifically addressed, but the study was conducted in several countries. A short time-horizon was used and this was a limitation of the analysis, although this was based on the follow-up of the selected RCTs. It should be noted that both the efficacy and cost results were very similar between the three strategies. Thus, although BT turned out to be dominant, it is difficult to reach a definitive conclusion on the cost-effectiveness of these options.

Concluding remarks:
Overall, the study was based on valid methodology although some potential drawbacks of the analysis might limit the validity of the authors’ conclusions.

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