Travoprost versus latanoprost combinations in glaucoma: economic evaluation based on visual field deficit progression

Schmier J K, Halpern M T, Covert D W, Robin A L

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 study examined two treatments for patients with primary open-angle glaucoma or ocular hypertension. Treatment was a fixed combination of latanoprost 0.005%/timolol 0.5% (L/T) or a fixed combination of travoprost 0.004%/timolol 0.5% (T/T).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients who had open-angle glaucoma or ocular hypertension with IOP >=24 mmHg at 9 am and >=21 mmHg at 11 am and 4 pm. The analysis did not refer to patients who had undergone intraocular surgery in the last 6 months, or those who had undergone argon laser trabeculectomy or YAG iridotomy in the previous 3 months.

Setting
The setting was secondary care. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness data were derived from studies published between 1990 and 2005. Resource use was derived from sources published in 2003 and 2004. The price year was 2005.

Source of effectiveness data
The clinical outcomes derived from the literature were the VFDS and the likelihood of visual field deficit progression across treatment groups.

Sources searched to identify primary studies
VFDS and baseline characteristics of a typical patient population were derived from a multi-centre, double-blind, 12-month, randomised, clinical trial (RCT) that enrolled 408 patients. The relationship between IOP and the likelihood of visual field deficit progression across treatment groups was estimated using 9 algorithms obtained from published studies, which were extensively described.

Methods used to judge relevance and validity, and for extracting data
The approach used to identify the clinical data used in the study was not described. The authors justified the choice of the algorithms amongst all published ones. The studies were chosen on the basis of their similarity with the main RCT in terms of the follow-up period (1 year or more), glaucoma type (excluded patients with low-tension glaucoma) and prevalence of previous ophthalmic surgery.

**Measure of benefits used in the economic analysis**
The projected differences in visual field deficit between L/T and T/T were used to assess the benefit of the two treatments. However, this was not combined with the costs. In effect, a cost-consequences analysis was carried out.

**Direct costs**
The authors did not explicitly report the perspective of the analysis, but it appears to have been that of a third-party payer. Inpatient and outpatient costs were included. Specifically, outpatient care included eye examination and treatment, dilated optic nerve examination and visual field examination. These items were valued using Medicare reimbursement rates. The quantities of resources used were based on published practice pattern guidelines. The hospitalisation costs were based on Medicare rates and the number of days in hospital was obtained from the 2003 National Health Interview Survey. The unit costs were not presented separately from the resource quantities for all items. Discounting was not relevant since the costs were incurred during 1 year. The price year was 2005.

**Statistical analysis of costs**
The costs were presented as mean values with standard deviations.

**Indirect Costs**
The productivity costs were not included.

**Currency**
US dollars ($).

**Sensitivity analysis**
The issue of uncertainty was not explicitly addressed. However, the authors presented results in terms of visual field deficit progression and cost-differences, using 9 different algorithms that could be regarded as sensitivity analyses.

**Estimated benefits used in the economic analysis**
The visual field deficit progression of T/T patients was less than that for L/T patients. However, the difference was not statistically significant, except for one algorithm that showed a statistically significant improvement of 5.9%.

On average, there was a 4.1% lower visual field progression with T/T than with L/T.

**Cost results**
On average, the annual cost-savings per patient of T/T over L/T were $43 (+/- 34) (range: from $99 savings to $9 extra costs).

**Synthesis of costs and benefits**
The costs and benefits were not combined as a cost-consequences analysis was carried out.

**Authors’ conclusions**
The long-term visual field deficit progression between patients treated with latanoprost/timolol (L/T) and those treated with travoprost/timolol (T/T) was not statistically different, although there was a trend towards slower progression with T/T. The use of a fixed combination of T/T resulted in lower health care costs in comparison with L/T.

CRD COMMENTARY - Selection of comparators
The authors did not provide a clear justification for the choice of the comparators, which were based on the interventions examined in the recent RCT used as the main source of the clinical data. You should decide whether they are valid comparators in your own setting.

Validity of estimate of measure of effectiveness
It was unclear whether a review of the literature was undertaken to identify the primary studies. The recent RCT appears to have been identified selectively. The use of a well-conducted RCT ensures the validity of the primary data. In effect, the multi-centre design, the randomisation process, and the use of double-blinding enhance the robustness of the clinical estimates. Few details on the sources of the algorithms were provided. Multivariate linear regression and logistic regression were conducted to assess the impact of treatments on the outcomes, whilst controlling for age and gender. Data obtained from algorithms were pooled using simple averages. In addition, the results obtained at source in terms of disease progression projection and costs were presented. The authors noted that the baseline characteristics of patients enrolled in the RCT might be different from those of patients included in the other studies, but tried to select studies that matched the main RCT.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis because a cost-consequences analysis was conducted. Please refer to the comments in the 'Validity of estimate of measure of effectiveness' field (above).

Validity of estimate of costs
The analysis of the costs appears to have been restricted to the third-party payer since only inpatient and outpatient medical costs were included. The authors reported the sources of the costs and resource use information, which appear to have reflected treatment patterns in the authors' settings. The costs were estimated using typical Medicare sources. The unit costs were presented for some categories of costs, although a breakdown of cost items was not provided given the use of macro-categories. The price year was reported, which enhances the possibility of conducting reflation exercises in other time periods. The authors noted that the cost analysis relied on several assumptions about the link between IOP and resource use.

Other issues
The authors did not compare their findings with those from other studies. They also did not address the issue of the generalisability of the study results to other settings. Most estimates appear to have been specific to the study setting and the use of alternative data was not investigated in a sensitivity analysis. The study involved patients with glaucoma or ocular hypertension and this was reflected in the authors' conclusions. The authors discussed some issues relating to the validity of the analysis.

Implications of the study
The study results suggest that the use of T/T might result in less long-term visual deficits and lower costs in comparison with L/T. The authors suggested that future studies should evaluate specific aspects such as quality of life and indirect costs.

Source of funding
Funded by Alcon Research Ltd.
Bibliographic details
Schmier J K, Halpern M T, Covert D W, Robin A L. Travoprost versus latanoprost combinations in glaucoma: economic evaluation based on visual field deficit progression. Current Medical Research and Opinion 2006; 22(9): 1737-1743

PubMedID
16968577

DOI
10.1185/030079906X121011

Other publications of related interest
Because readers are likely to encounter and assess individual publications, NHS EED abstracts reflect the original publication as it is written, as a stand-alone paper. Where NHS EED abstractors are able to identify positively that a publication is significantly linked to or informed by other publications, these will be referenced in the text of the abstract and their bibliographic details recorded here for information.


Martinez de la Casa JM, Wieland H, Wells D, Sullivan K. Comparative efficacy and safety of fixed combinations of travoprost 0.004%/timolol 0.5% and latanoprost 0.005%/timolol 0.5% in patients with open-angle glaucoma or ocular hypertension: a 1-year study. World Glaucoma Congress; 2005 Jul 6-9; Vienna, Austria.

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Aged, 80 and over; Algorithms; Cloprostenol /analog & derivatives /economics /therapeutic use; Double-Blind Method; Drug Costs; Drug Therapy, Combination; Female; Glaucoma /drug therapy /economics /physiopathology; Humans; Intraocular Pressure /drug effects /physiology; Male; Middle Aged; Prostaglandins F, Synthetic /economics /therapeutic use; Randomized Controlled Trials as Topic; Timolol /economics /therapeutic use; Travoprost; Visual Fields /drug effects

AccessionNumber
22006001980

Date bibliographic record published
31/07/2007

Date abstract record published
31/07/2007