Modeling cost of treatment with new topical treatments for glaucoma: results from France and the United Kingdom
Kobelt G, Jonsson 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
New topical treatments for glaucoma.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population consisted of patients with a recent diagnosis of primary open-angle glaucoma (POAG) or ocular hypertension (OH) and treated initially with standard beta-blocker therapy, in France and the UK.

Setting
The study setting was hospital. The economic study was conducted in France and the UK.

Dates to which data relate
Effectiveness data were collected from studies published between 1995 and 1999. Cost and resource use data were collected retrospectively over 2 years after the start of treatment in a representative sample of sites in each country. The price year was not reported.

Source of effectiveness data
Effectiveness data were derived from a review of the literature.

Modelling
A one-year Markov model was used to determine the cost-effectiveness of the new topical agents. The model was extrapolated covering the full two years as a sensitivity analysis.

Outcomes assessed in the review
The review assessed the proportion of patients whose IOP was controlled with a treatment during the three month periods between medical visits, the probability of remaining on the same treatment over each three month period and the probabilities of non-medical treatment.

Study designs and other criteria for inclusion in the review
The models were based on a large international observational study of patients newly diagnosed with POAG or OH between 1991 and 1994 (225 patients in France and 208 in the UK.). The effectiveness of dorzolamide was based on a double-blind randomised 1-year trial. The effectiveness of latanoprost was based on four double blind clinical trials. The effectiveness of brimonidine was based on a review article.

**Sources searched to identify primary studies**
Not stated.

**Criteria used to ensure the validity of primary studies**
Not stated.

**Methods used to judge relevance and validity, and for extracting data**
Summary statistics from individual studies were used.

**Number of primary studies included**
At least 11 studies were included in the review.

**Methods of combining primary studies**
The narrative method was used to combine studies.

**Investigation of differences between primary studies**
Not stated.

**Results of the review**
The probability of IOP control during three months was 0.80 with dorzolamide, 0.85 when dorzolamide is used in combination, 0.9 with latanoprost, 0.95 when latanoprost is used in combination, and 0.75 for the combination of timolol and pilocarpin.

Brimonidine had a similar efficacy profile to dorzolamide.

For the probabilities of non-medical treatments, it was assumed that 90% of the patients who underwent surgical interventions immediately after failure of first-line therapy would receive a second-line drug with the introduction of new agents providing an effective alternative to surgery.

**Measure of benefits used in the economic analysis**
The proportion of patients whose IOP was controlled with a treatment during the three month periods between medical visits was used as the measure of benefits.

**Direct costs**
Direct costs were not discounted although the Markov model had a two-year horizon. Quantities and costs were reported separately. Direct costs included drug costs, the cost of surgical treatment, trabeculectomy, ophthalmologist visits, and diagnostic tests. The quantity/cost boundary adopted was that of society. The estimation of quantities and costs was based on actual data. French costs were based on the tariffs set nation-wide by the Social Security and costs in the UK were obtained from accounting departments in the NHS and public prices for drugs. Patient co-payments and prescription charges were included in the costs. The price year was not reported.
Statistical analysis of costs
No statistical analysis was reported.

Indirect Costs
Indirect costs were not included.

Currency
French Francs (Ffr), UK pounds sterling (£) and US dollars ($).

Sensitivity analysis
Sensitivity analyses were performed for dorzolamide and latanoprost on the effectiveness of the drug.

Estimated benefits used in the economic analysis
See review results above.

Cost results
The average cost per patient over 12 months for the standard therapy was Ffr2,389 ($398) in France and 380 ($627) in the UK.

Average total costs with all of the new treatments were lower in both countries than with current therapy.

Latanoprost had the lowest cost at Ffr2,087 ($348) and 307 ($507).

These results were sensitive to changes in drug effectiveness.

Synthesis of costs and benefits
Cost and effectiveness measures were not combined into cost-effectiveness ratios.

Authors' conclusions
Average total costs with all of the new treatments were lower in both countries than with current therapy.

CRD COMMENTARY - Selection of comparators
A justification was given for the comparator used, namely current therapy, prior to the introduction of new topical agents. You, as a user of the database, should decide if these health technologies are relevant to your setting.

Validity of estimate of measure of benefit
This was a well-conducted study in general. Some weaknesses in the study were that the authors did not state that a systematic review of the literature had been undertaken and more details could have been provided about the design of the review and the method of combining primary effectiveness estimates. Estimation of benefits was obtained directly from the effectiveness analysis, which was appropriate given the aim of the study. The authors noted that, due to the conservative incidence of trabeculectomy and argon laser trabeculoplasty in the standard treatment arm, the model might underestimate the potential of the new topical agents to avoid surgical interventions.

Validity of estimate of costs
The estimation of costs was in general well reported. Positive aspects of the cost analysis were that all relevant cost
categories were included, quantities and costs were reported separately, and sensitivity analyses were conducted on costs (but not on quantities). However, French cost estimates were based on charges (the authors provided a justification for this approach), the price year was not reported and costs incurred in the second year appear not to have been discounted.

Other issues
The authors did not make appropriate comparisons of their findings with those from other studies and did not address the issue of generalisability to other settings. The authors did not present their results selectively. The results only apply to patients who have been newly diagnosed and treated initially with standard beta-blocker therapy. Thus, they do not apply to the entire glaucoma patient population. The basic model ran for 1 year, which may be considered a rather limited time frame in a chronic disease.

Implications of the study
Average total costs with all of the new treatments were lower in both countries than with current therapy.

Source of funding
Supported by the Division of Ophthalmology at Pharmacia & Upjohn, Uppsala, Sweden.

Bibliographic details

PubMedID
10407607

Indexing Status
Subject indexing assigned by NLM

MeSH
Administration, Topical; Adrenergic beta-Antagonists /administration & dosage /economics; Costs and Cost Analysis; Drug Therapy, Combination; France; Glaucoma /drug therapy /economics; Great Britain; Humans; Intraocular Pressure /drug effects; Markov Chains; Models, Econometric; Sensitivity and Specificity; Time Factors; Treatment Failure

AccessionNumber
21999008180

Date bibliographic record published
31/08/2001

Date abstract record published
31/08/2001