Sir,

Cost effectiveness of latanoprost and timolol maleate for the treatment of glaucoma in Scandinavia and the United Kingdom using a decision-analytic health economic model

We read this paper with interest. The study is an economic evaluation of topical antagonists and prostaglandin analogues for the treatment of glaucoma. It uses a Markov model to explore costs, and mentions risk of blindness, glaucoma subtypes and makes the assumption that health status will remain the same. Outcome measures also discuss visual field progression. The study suggests that topical antagonists are the cost-effective model in the United Kingdom.

This may or may not be the case, but the study does not provide adequate evidence to address this question. Specifically, there is no consideration of systemic side effects. There are compelling data that topical antagonists are associated with an increased risk of airways obstruction, necessitating drug treatment and further evidence that more serious side effects occur.[1–3] In an earlier study, the number needed to harm with topical antagonists was calculated to be one in 23 patients.[2] Without considering costs incurred by the health-care economy as a whole, such studies have very limited application.

References

1 Diggory P, Cassels-Brown A, Vail A, Abbey LM, Hillman JS. Avoiding unsuspected respiratory side-effects of topical timolol with cardioselective or sympathomimetic agents. *Lancet* 1995; **345**(8965): 1604–1606.
2 Kirwan JF, Nightingale JA, Bunce C, Wormald R. Beta blockers for glaucoma and excess risk of airways obstruction: population based cohort study. *BMJ* 2002; **325**(7377): 1396–1397.
3 Mitchell P, Wang JJ, Cumming RG, House P, England JD. Long-term topical timolol and blood lipids: the Blue Mountains Eye Study. *J Glaucoma* 2000; **9**(2): 174–178.

L Anderson[1], AJ Lockwood[1], S Goverdhan[1], R Wormald[2] and JF Kirwan[1]

[1]Portsmouth Hospitals NHS Trust, Hanpshire, UK
[2]Moorfields Eye Hospital, London, UK
E-mail: jfkirwan@mac.com

Eye (2009) **23,** 2264; doi:10.1038/eye.2009.70; published online 17 April 2009

Sir,

Response to Anderson *et al*.

We would like to thank Dr Anderson and colleagues for the time and effort they made to respond to our article.[1] We are in hearty agreement with them that systemic side effects are an important consideration in β blocker therapy.[2–3] This issue was considered extensively in our model and is noted in the 4th paragraph under 'Markov model: medical aspects' on the 2nd page of the article. To account for persistency rates, we used numerous published studies that included discontinuations for reasons of systemic side effects. The additional costs of these side effects were accounted for by the inclusion of the extra visit to change medications. We did not include costs for the primary care physician because of lack of evidence in the literature that such visits occur, even occasionally, because of the acute systemic side effects from β blockers. We believe this happens probably because ophthalmologists are generally adept at avoiding patients who might have acute, serious, systemic problems with topical β blockers.

Dr Anderson and colleagues' letter, however, does raise an important point in that there are few data regarding the general costs of chronic β blocker therapy. This is why we developed our Markov model, to begin to address this issue. In addition, there are few data specifically over the costs of systemic side effects for which they wrote their letter. This is the reason that we had to use persistency figures. Consequently, many questions remain about β blockers and systemic side effects:

(1) With the greater use of systemic β blockers in primary therapy in heart failure and prevention of heart attack, how does this change how ophthalmologists view this class of medicine? Otherwise, in the long term, do topical β blockers protect or hurt patients systemically from a cardiopulmonary standpoint?
(2) From a CNS standpoint, how do β blockers affect the patient's mentation and mobility? Otherwise, is there a cost to society from topical β blockers in lessening the patient's independence and their activities of daily living?
(3) Can we develop better prescribing guidelines to assist physicians in knowing in which patients to avoid this class of medicine to better prevent adverse CNS and cardiopulmonary effects?
(4) Is there yet a β blocker that could be developed that would better avoid systemic side effects?

Again, we would like to thank Dr Anderson and his associates for their interest in our article. We congratulate them on their commitment, as we all should have, to understanding the effect of this important class of medicine in our patients' lives.

References

1 Stewart WC, Stewart JA, Mychaskiw M. Cost-effectiveness of latanoprost and timolol maleate for the treatment of glaucoma in Scandinavia and the United Kingdom, using a decision-analytic health economic model. *Eye* 2009; **23**: 132–140.
2 Stewart WC, Castelli WP. Systemic side effects of topical β-adrenergic blockers. *Clin Cardiol* 1996; **19**: 691–697.
3 Stewart WC. Towards a new blood flow product. *Rev Ophthalmol* 1998; **5**: 137–140.

WC Stewart, JA Stewart and MA Mychaskiw

PRN Pharmaceutical Research Network, LLC,
Dallas, Texas, USA
E-mail: info@prnorb.com

Eye (2009) **23,** 2264; doi:10.1038/eye.2009.71; published online 17 April 2009