Correspondence

Safety glasses only for boys?

SIR, We appreciate Tarkkanen and Tommila's reply¹ to our query² on their work. It appears that we did not, however, explain our intentions adequately.

Our concern is application of socioeconomic risk/benefit ratios in the prescription of glasses for safety reasons (we prescribe glasses with plastic lenses and plastic frames) for children and adults who have a permanent functional amblyopia in one eye. We agree with Tarkkanen and Tommila that this is a proper recommendation in principle because it protects the wearer from accidental trauma. And accidental trauma is the major single cause (61%),³ (45%)⁴ of loss of vision in the healthy eye in such patients.

On the other hand both adults and children and their parents innately and strongly resist the wearing of glasses even for this purpose. Peer pressure is a significant burden to the younger patient. Therefore we do not want to insist upon such safety glasses unless there is a real danger to the patient—i.e., a significant probability that such an accident may happen and cause the subject to be significantly visually handicapped per se. From the relatively greater risk of males to be traumatised it seemed possible that the probability of the loss of the better eye for a female patient in this situation might be so low that one would not be obliged to demand that they wear safety glasses.

Specifically, in Vereecken and Brabant's study⁴ of the 47 accidental traumatic loss cases 85% were male and 15% were female. (Our original query sought similar, additional data on this sex incidence.) Then from Tommila and Tarkkanen³ we obtain an overall (trauma and disease) incidence of loss of the healthy eye of 1.75/1000 (actually 1.59/1000) persons with permanent amblyopia in one eye.

Calculations then show that, if the cause is trauma in 47% (from combining the data from both studies, $(14+53)/(23+119)=67/142=47\%$) and the overall incidence of loss of the healthy eye is 1.59/1000, then the probability of loss from trauma is $47\% \times 1.59 = 0.75/1000$. If the male to female ratio is 85%/15%, respectively, for males this incidence is $85\% \times 0.75 = 0.635/1000$ and for females is $15\% \times 0.75 = 0.112/1000$.

In other words, when we prescribe safety glasses for such patients we are protecting the males from a 1 in 1575 chance of losing their good eye from trauma and the females from a 1 in 8929 chance.

We should also include in these calculations the likelihood of improvement of vision in the amblyopic eye spontaneously or with pleoptic treatment after loss of the better eye. Vereecken and Brabant⁴ found 28.5% improvement spontaneously or following pleoptic treatment. In fact 23% had a final visual acuity of 0.5 (20/40) or better; 21%, 0.6 (20/32); 17%, 0.7 (20/29) or better; and 7%, 0.8 (20/25) or better.

We usually consider 0.5 (20/40) not significantly handicapped because this vision in one eye qualifies for drivers licensing and almost all occupations. If we require one step better, 0.6 (20/32), to ensure that the individual is not permanently visually handicapped, then the 20% possibility of such recovery further reduces the odds of becoming

visually handicapped from trauma by 20%. Prescribing safety glasses then protects males from an approximately a 1 in 1900 chance and females from a 1 in 10 700 chance of becoming visually handicapped as a result of traumatic loss of their sole good eye.

Now since we cannot possibly protect everyone from everything, and even safety glasses do not protect the eye from trauma 100% of the time, what is our obligation in this regard?

One such benchmark in this regard was established several years ago when the principle of informed consent received so much attention. For complications which were not life threatening it was decided, admittedly quite arbitrarily, that if a complication occurred less frequently than 1:10 000 it could be considered such a chance occurrence that the physician was not obliged to inform the patient about it. If it is not necessary even to warn, then it should not be necessary to demand against such a chance occurrence. And the incidence of loss in this situation in females exceeds 1:10 000.

With regard to the economic cost/benefit ratio, a lifetime of wearing safety glasses is not an inconsiderable experience. If one purchases a new pair of glasses every five years for a reasonable cost of \$50.00 per pair, 10 pairs of glasses from age 5 to presbyopia at age 45 will cost \$500 per permanently amblyopic person. If only one in 10 000 are saved the loss of their good eye by constant wearing of such glasses, then it will cost $\$500 \times 10\,000 = \$5\,000\,000$ (5 million dollars) to save that one eye. Since such persons would probably not be totally blinded but only reduced to whatever vision they have in their permanently amblyopic eye, we may be talking about spending \$5 million to preserve only several lines on the eye chart for one patient.

In conclusion: there are three areas of consideration in recommending that persons with one permanently amblyopic eye wear safety type glasses to protect their remaining sound eye—namely (1) practical (patient acceptance), (2) social (as indicated by legal principles), and (3) economic. In all three areas there is significant support for a practice of *not* demanding safety glasses for females with one permanently amblyopic eye, rather for males only. Department of Ophthalmology, PAUL E ROMANO
University of Florida, College of Medicine,
Gainesville,
Florida 32610,
USA

References

- 1 Tarkkanen A, Tommila V. Safety glasses only for boys? *Br J Ophthalmol* 1985; **69**: 634.
- 2 Romano PE. Safety glasses only for boys? *Br J Ophthalmol* 1985; **69**: 634.
- 3 Tommila V, Tarkkanen A. Incidence of loss of vision in the healthy eye in amblyopia. *Br J Ophthalmol* 1981; **85**: 575–7.
- 4 Vereecken EP, Brabant P. Prognosis for vision in amblyopia after the loss of the good eye. *Arch Ophthalmol* 1984; **102**: 220–4.