Cost effectiveness of screening for primary open angle glaucoma

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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
Primary open glaucoma screening.

Type of intervention
Primary prevention; screening.

Economic study type
Cost-effectiveness analysis.

Study population
The study population modelled included all people in age ranges 40-79 years and 65-79 years.

Setting
The setting was a hypothetical community-wide screening of people in Quebec, Canada.

Dates to which data relate
Effectiveness data were obtained between 1988-1993. Resource and cost data were obtained from 1994 (approximately).

Source of effectiveness data
Opinion based estimates of effectiveness of glaucoma treatment were used.

Modelling
Modelling was used to project effectiveness and costs for the screening procedure over 12 different scenarios.

Methods used to derive estimates of effectiveness
Authors’ assumptions and expert opinion were both used to estimate effectiveness.

Estimates of effectiveness and key assumptions
As there is no direct evidence of the effectiveness of glaucoma treatment, it was estimated that treatment is 50% effective in the prevention of blindness. This was varied by +/- 20% in a sensitivity analysis.

Measure of benefits used in the economic analysis
Years of blindness avoided were predicted using a decision type model.
Direct costs
Discounting was not undertaken for costs or benefits. Some quantities and costs were reported separately. The cost boundary adopted was that of the Canadian Health Care System. Costs included professional fees (from a 1994 fee schedule), diagnostic, initial and follow-up tests (costs from the literature, administrative databases and experts). Cost of tonometry was based on a guess, as there is presently no fee associated with this test.

Indirect Costs
Not included.

Currency
Canadian dollars (Can$).

Sensitivity analysis
Twelve different scenarios, as described above, were analysed with variations in patient age range, frequency of screening, tests used, and participation rate. The rate of effectiveness was also varied. Multi-way simple sensitivity analysis was used.

Estimated benefits used in the economic analysis
A scenario in which screening was restricted to subjects aged 65-79 years (with 75% treatment compliance and 50% treatment efficacy estimated) was expected to prevent 354 cases of blindness (scenario 1). The authors estimate that (depending on which of the 12 scenarios were considered) the glaucoma screening might lead to a decrease in cases of blindness in Quebec ranging from 209 to 496 case per year.

Cost results
For the above benefits to be realised (in scenario 1), the total intervention cost through the population of Quebec was estimated to be Can$36,385,066. The range of estimates for the cost of screening range from Can$7.7 million to Can$75 million.

Synthesis of costs and benefits
Using a screening programme at a frequency of every 3 years, the CE estimate was Can$100,000 per year of blindness avoided, and 354 cases per year were avoided when patients aged 40-79 were included, the participation and compliance rates were 75%, and efficacy was 50% (scenario 1). The CE estimate was Can$36,000 per year of blindness avoided, and 209 cases per year were avoided when patients aged 65-79 years were screened every 3 years, participation and compliance was 75%, and efficacy was 50%. The CE estimate was Can$208,000 per year of blindness avoided, and 354 cases per year were avoided with a screening programme identical to scenario 1, carried out yearly.

Authors’ conclusions
There is no proof that treatment of glaucoma would prevent blindness. Even when treatment efficacy is assumed to be as high as 50%, glaucoma screening programmes were not shown to be competitive with regard to cost-effectiveness.

CRD COMMENTARY - Selection of comparators
The selection of different scenarios analysed was broad and seemed to take into account a reasonable range of possible outcomes.

Validity of estimate of costs
No discounting was performed, because the authors stated that the treatment is presumed to be effective immediately upon administration (at steady state). They argue that each annual investment leads to an immediate reduction in blindness. While this may be true at steady state, it could take several years to reach this point. Also, discounting would have been useful for comparison with other studies.

Other issues
As the authors pointed out, the estimate of effect assumed in this analysis is not based on good quality clinical evidence.

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None stated.

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