



Title A Preliminary Model-Based Assessment of the Cost Utility of a Screening Program for Early Age-Related Macular Degeneration

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Aim

To estimate the cost effectiveness of screening for age-related macular degeneration (AMD) by developing a decision analytic model.

Conclusions and results

Due to the likelihood of uncertainty in key areas of the model, an objective of the study was to identify major areas of uncertainty and inform future research priorities in this disease area.

At a cost per screen of 3 pounds sterling (GBP), the mean results show that the most effective strategy (annual screening from age 50 years) produces an additional 0.0057 quality-adjusted life-years (QALYs) per person (discounted at 3.5%) compared to no screening, at an additional cost of GBP 73 per person. Arranging the screening programs in increasing order of effectiveness, the mean results show that annual screening from age 60 years has the highest acceptable incremental cost per QALY of GBP 17 399. The probabilistic results reveal significant levels of uncertainty such that the 95% credible interval for annual screening from age 60 years ranges from this option dominating the previous option to an incremental cost per QALY of GBP 722 485. Plotting a cost-effectiveness acceptability frontier shows that while annual screening from age 60 years has the highest net benefits at a value of QALY of GBP 30 000, the associated probability of this option being the most cost effective is only around 20%. The sensitivity analyses around potential future treatment options indicate that screening may become more cost effective with the new treatments, though even greater levels of uncertainty surround these estimates.

Recommendations

The extent of the uncertainty around the mean result, the additional resources, and possible reorganization of services required to implement screening indicate that it may be preferable to reduce the level of uncertainty before implementing a *de novo* screening program for AMD.

Methods

Systematic literature reviews were undertaken of the epidemiology and natural history of the different forms of AMD, the effectiveness of alternative AMD treatment options and screening tests, and health-related quality of life and patient utilities relating to AMD. The review of the effectiveness of interventions for AMD was restricted to high-quality reviews and horizon scanning to identify potential interventions. The data derived from the review informed the structure and implementation of the decision analytic model, which was also informed by an iterative process of discussions with expert ophthalmologists.

Further research/reviews required

Of prime importance is the need to assess how routine data may be used to describe clinical presentation rates of age-related maculopathy (ARM). Other potential studies include a pilot study of the effectiveness of screening and opticians' referral patterns for AMD, and a costing study of blindness as a continuum of association with deterioration in vision.