Screening men for abdominal aortic aneurysm: 10 year mortality and cost effectiveness results from the randomised Multicentre Aneurysm Screening Study

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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.

CRD summary
This study evaluated whether screening for abdominal aortic aneurysm in men aged 65 to 74 years was cost-effective. The authors concluded that a national screening programme for these men was likely to be cost-effective. The study was satisfactorily reported and the methods were sound. Overall, the authors' conclusions are consistent with the evidence.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to determine whether screening for abdominal aortic aneurysm in men aged 65 to 74 years was cost-effective and decreased mortality.

Interventions
Ultrasound screening for abdominal aortic aneurysm, with surveillance and the option of surgery for those diagnosed with an abdominal aortic aneurysm, was compared with no screening.

Location/setting
UK/primary care.

Methods
Analytical approach:
The economic evaluation, with a 10-year time horizon, was conducted using data collected from a clinical trial. The authors stated that the perspective was that of the UK National Health Service (NHS).

Effectiveness data:
The effectiveness data were collected in a large multi-centre randomised controlled trial. Some details of the trial were reported, including the sample size (67,770 patients) and the randomisation details. The control group contained 33,887 patients and the intervention group 33,883. The primary outcome was the mortality related to abdominal aortic aneurysm. Outcomes over a maximum of 10 years of follow-up were compared between the control and intervention groups.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The primary measure of benefit was the reduction in mortality over 10 years of follow-up, which was also expressed as the number of life-days gained.

Cost data:
The direct costs of invitation to screening, scanning, referral to surgery, and surgery were included. The unit costs were from a single UK Department of Health report, using 2000 to 2001 prices, which were then inflated to 2008 to 2009 prices. The costs were discounted at 3.5% per annum and reported in UK pounds sterling (£).
Results
Over 10 years of follow-up, the deaths related to abdominal aortic aneurysms were 155 with screening and 296 in the control group, a relative risk reduction of 48% (95% CI 37 to 57). During follow-up, there were 552 elective operations with screening and 226 in the control group. The number of life-days gained was 2,743.0 in the control group and 2,747.8 with screening.

The discounted mean costs were £108 in the control group and £208 with screening. The incremental cost per person screened was £100 (95% CI 82 to 118).

The incremental cost-effectiveness ratio was £7,600 (95% CI 5,100 to 13,000) per life-year gained.

Authors' conclusions
The authors concluded that a national screening programme in men aged 65 to 74 years halved the mortality and was cost-effective.

CRD commentary
Interventions:
The authors compared the screening programme with no screening, which was likely to have been the status quo. The screening programme was adequately described along with the usual situation in the UK.

Effectiveness/benefits:
The effectiveness evidence was from a large published randomised trial. The trial had a large number of participants and a long follow-up. Insufficient details were presented for a full assessment of its validity, but it is likely to have been of high quality. The clinical estimates were well reported. The primary outcomes were the reduction in mortality related to abdominal aortic aneurysm and the life-years gained. The latter will aid comparisons across interventions.

Costs:
The perspective was reported and all the appropriate costs seem to have been included. The costs were relevant to the study population and setting, without the need for assumptions. It seems that the sources selected were of a high standard, which will enhance the validity of the results. Not all the resource use and unit costs were presented and the rate used to adjust the costs for inflation was not reported. These issues will not impact on the results, but might limit the ability to transfer them to other settings.

Analysis and results:
An incremental analysis was conducted and it took into account the censoring that occurred at the end of follow-up. The methods were reported and seem to have been appropriate. No sensitivity analysis was conducted, but the authors commented on the impact of varying the unit costs on their results. They also used an appropriate method to calculate confidence intervals for the incremental cost-effectiveness ratio. A probabilistic sensitivity analysis would have allowed a full assessment of the impact of variations in the parameter estimates on the results. The authors discussed other limitations of their study and compared their findings with those of other similar analyses.

Concluding remarks:
On the whole, this cost-effectiveness analysis was satisfactorily performed and the authors' conclusions appear to be appropriate.

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