Implications of attendance patterns in Northern Ireland for abdominal aortic aneurysm screening
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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
The objective was to assess the cost-effectiveness of an abdominal aortic aneurysm screening programme, focusing on the impact of attendance rates, in men aged 65 years. The authors concluded that low attendance led to more aneurysms being missed, but screening was still cost-effective. The methods were valid, even though most of the details were reported in another publication. The authors’ conclusions appear to be robust.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of an abdominal aortic aneurysm screening programme, focusing on the impact of attendance rates, in men aged 65 years.

Interventions
Aneurysm screening consisted of an ultrasound scan of the abdominal aorta. Patients with small aneurysms received an annual ultrasound scan, while those with medium-sized aneurysms were scanned every three months. When the aneurysms reached 55mm, patients were referred for surgical consideration. The comparator was no screening.

Location/setting
UK/primary care.

Methods
Analytical approach:
A published Markov model was used to assess the health and economic impact of the screening programme. The model mainly relied on evidence from the Multi-centre Aneurysm Screening Study (MASS). A 30-year time horizon was considered. The authors did not explicitly state the perspective adopted.

Effectiveness data:
The clinical data were from a published study, which reported the implementation of a local screening programme, in which general practitioners (GPs) from Northern Ireland provided contact details for men aged 65 to 75 years in their practices. These men were sent a postal invitation to participate in the screening programme. There were 13,316 men invited and 5,931 (44.5%) attended for a scan. Population projections were based on data from the Northern Ireland Statistics and Research Agency. Other clinical inputs were from the published Markov model, which included patient-level data from the MASS clinical trial. The attendance rates were a key input for the model.

Monetary benefit and utility valuations:
The utility values were estimated using published age-specific population norms for the European Quality of life (EQ-5D) questionnaire.

Measure of benefit:
Life-years and quality-adjusted life-years (QALYs) were the summary benefit measures and a 3.5% annual discount rate was applied.
Cost data:
The costs were all from the published Markov model, based on the MASS. The methods and results of the cost analysis were reported in the model publication. The total cost of the screening was from the NHS Abdominal Aortic Aneurysm Screening Programme introduced in England in March 2009. All costs were in UK pounds sterling (£) and were discounted at an annual rate of 3.5%.

Analysis of uncertainty:
A probabilistic analysis was carried out, using Monte Carlo simulation, to calculate 95% uncertainty intervals.

Results
The projected total number of aneurysms in men in Northern Ireland increased over time. Compared with no screening, screening led to a gain of 0.0141 life-years or 0.0110 QALYs, at an additional cost of £33.22.

The incremental cost per life-year gained with screening was £2,350 (95% UI 1,620 to 4,290) and the incremental cost per QALY gained was £3,020 (95% UI 2,080 to 5,500).

Authors' conclusions
The authors concluded that low attendance led to more aneurysms being missed, but screening was still cost-effective.

CRD commentary
Interventions:
The selection of the comparators was appropriate as the proposed mass screening programme was compared with no screening, which was the usual practice in many settings.

Effectiveness/benefits:
The attendance rate and prevalence of aneurysms were from a large sample of patients invited for screening in the local area. They were representative of patients in Northern Ireland and were a valid source for the epidemiological data. Other clinical inputs were from patient-level data from the MASS, which was not described, but is likely to have been a valid source. The data were varied in a probabilistic sensitivity analysis. QALYs and life-years were both appropriate benefit measures as they capture the impact of the disease on health. Limited information on the derivation of utility values was reported.

Costs:
The cost information was not presented as it was incorporated in the published model. The study perspective, categories of costs, resource use, unit costs and price year were not provided. The model used patient-level data from a clinical trial (MASS) and the resource use is likely to have been detailed.

Analysis and results:
The results were selectively presented; only the incremental differences between the two programmes were reported. The uncertainty was appropriately investigated using a comprehensive approach that considered the uncertainty in all the model inputs simultaneously, but only the confidence intervals around the mean values were reported. Most of the data were from the MASS model and were not presented in this article, limiting the transparency of the analysis. The results appear to be specific to the authors’ context and might be difficult to transfer to other settings. The authors compared their results with those of other published economic evaluations, which generally showed that screening was cost-effective, but used higher attendance rates. The key message was that the attendance rate did not substantially influence the cost-effectiveness of screening.

Concluding remarks:
The methods were valid, even though most of the details were reported in another publication. The authors’ conclusions appear to be robust.

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