An economic evaluation of an abdominal aortic aneurysm screening program in Italy

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 assessed the cost-effectiveness of a national programme of ultrasound screening, compared with no screening, for abdominal aortic aneurysms, in men aged 65 to 75 years. The authors concluded that screening was cost-effective from the perspective of the Italian NHS. The methods were valid and transparent and various areas of uncertainty were considered. The authors’ conclusions appear to be robust.

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

Study objective
This study assessed the cost-effectiveness of a national programme of ultrasound screening, compared with no screening, for abdominal aortic aneurysms, in men aged 65 to 75 years.

Interventions
Ultrasound screening was compared with no screening (incidental detection). It was assumed that only one scan was performed if no aneurysm was detected.

Location/setting
Italy/secondary care.

Methods
Analytical approach:
The analysis was based on a Markov model, with a lifetime horizon. The authors stated that it was conducted from the perspective of the Italian NHS.

Effectiveness data:
The clinical data were from selected sources and authors’ opinions. Most of the evidence was from randomised controlled trials (RCTs) identified by a recent Cochrane review or from a UK Health Technology Assessment (HTA). The patients’ characteristics and other local data were from a pilot programme, at an Italian hospital (San Martino Hospital, Genova), with 4,327 individuals attending for screening. Other data were from national databases. The transition rates and mortality due to ruptured aneurysms were key inputs. Some assumptions were made and justified.

Monetary benefit and utility valuations:
The utility values for the health states were from the Italian pilot programme study.

Measure of benefit:
Quality-adjusted life-years (QALYs) and life-years were the summary benefit measures and they were discounted at an annual rate of 3%.

Cost data:
The economic analysis included the costs of invitation to screening, ultrasound examination, emergency aneurysm treatment (including endovascular aneurysm repair and open surgery), and follow-up (visits, abdominal computed tomography, and ultrasound). All costs for screening implementation were from the Italian pilot programme study, while those for follow-up were from regional out-patient procedure tariffs. All costs were presented in Euros (EUR) and US dollars ($) and were discounted at an annual rate of 3%.
Analysis of uncertainty:
One-way, multi-way, and probabilistic sensitivity analyses were carried out to investigate the uncertainty in the base-case findings. The ranges for the deterministic analysis were from a literature review. Conventional statistical distributions were used for the probabilistic analysis.

Results
The total cost per person invited for screening, was EUR 350 ($485) with screening and EUR 290 ($402) without screening. The life-years were 13.115 with screening and 13.101 without. The QALYs were 10.354 with screening and 10.343 without.

Compared with no screening, the incremental cost per life-year gained with screening was EUR 4,415 ($6,125); the incremental cost per QALY gained was EUR 5,673 ($7,870). Slightly lower figures were observed without discounting.

The sensitivity analyses showed that the base-case findings were robust. The most influential inputs were the attendance rate, the probability of incidental detection, and the large aneurysm rupture rate, but the incremental cost per QALY with screening remained acceptable in all circumstances.

The probabilistic analysis indicated that screening was cost-effective in almost 100% of simulations, at a threshold of EUR 50,000 per QALY gained.

Authors’ conclusions
The authors concluded that a screening programme for abdominal aortic aneurysms, in men aged 65 to 75 years, was cost-effective from the perspective of the Italian NHS.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear as the proposed screening strategy was compared against the usual care in the authors’ setting (no screening).

Effectiveness/benefits:
Valid sources were generally used for the clinical inputs. Most of the transition probabilities were from meta-analyses of clinical trials and these are likely to have had high internal validity. Local data were obtained from an ongoing screening programme in Italy. This provided accurate patient characteristics, attendance rates, and other epidemiological estimates. An extensive sensitivity analysis was undertaken. Both QALYs and life-years were valid benefit measures, allowing comparisons to be made with other disease interventions. The utility weights were from Italian people included in the screening programme, but the instrument used to elicit these preferences was not reported.

Costs:
The economic analysis was consistent with the perspective; the cost categories and their sources reflected the viewpoint of the public payer. The data were mainly collected during the screening programme and accurately reflected Italian clinical practice. Other standard Italian sources were used. The unit costs were reported, but few resource quantities were given. The impact of alternative cost estimates was considered in the sensitivity analyses. Reflation exercises will not be possible, as the price year was not reported.

Analysis and results:
The results were clearly presented. The projected costs and benefits were synthesised, using an incremental approach. The uncertainty was satisfactorily investigated, using various methods, and the results confirmed that the base-case findings were robust. The decision model was extensively described. Both discounted and undiscounted results were reported. The authors compared their results with those of other published studies and highlighted the similarities and differences. The authors tried to estimate whether each assumption made did or did not favour the screening programme. These results were specific to the Italian context and their transferability was not discussed.

Concluding remarks:
The methods were valid and transparent and various areas of uncertainty were considered. The authors’ conclusions
appear to be robust.

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