Cost-effectiveness of screening for colorectal cancer in France using a guaiac test versus an immunochemical test

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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 two-yearly colorectal cancer screening, using a guaiac faecal occult blood test (FOBT) or an immunochemical FOBT, in the general population, compared with no screening. The authors concluded that screening with immunochemical FOBT could be considered in the mass screening for colorectal cancer. Assuming that the clinical evidence was the most relevant, the authors' conclusions seem to be appropriate for the strategies considered.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to assess the cost-effectiveness of two-yearly screening for colorectal cancer, using a guaiac faecal occult blood test (FOBT) or an immunochemical FOBT, in the general population, compared with no screening.

Interventions
The three strategies were: no screening; screening with a nonrehydrated guaiac FOBT performed on three consecutive stool samples, and repeated every two years; and screening with an immunochemical FOBT, performed on two stool samples and repeated every two years.

Location/setting
France/the setting was not reported.

Methods
Analytical approach:
A state-transition Markov model, with a one-year cycle length, was used to assess the costs and outcomes associated with each strategy. A lifetime horizon was used and the authors stated that the perspective was that of the French Health Care Insurance system.

Effectiveness data:
Most of the effectiveness data were from two published French studies that involved some of the authors of this study; one of the these studies was controlled. Some data were from international studies. The key clinical parameters were the sensitivity and positive predictive value of the two screening strategies.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measure of benefit was the number of life-years (LYs) gained.

Cost data:
The costs included those of screening, follow-up diagnostic tests, and colorectal cancer treatment. The cost estimates were from published French studies. The price year was 2006 and all costs were reported in Euros (EUR). They were discounted at an annual rate of 3%.
Analysis of uncertainty:
A one-way sensitivity analysis was performed on the key epidemiological and economic parameters, and the results were reported as changes to the baseline cost-effectiveness ratio.

Results
No screening was associated with a cost of EUR 66,888,753, guaiac FOBT incurred a cost of EUR 74,608,067, and immunochemical FOBT incurred a cost of EUR 78,579,147. No screening resulted in 17,053 LYs lost, guaiac FOBT resulted in 14,235 LYs lost, and immunochemical FOBT resulted in 12,906 LYs lost.

Compared with no screening, guaiac FOBT had a cost per LY gained of EUR 2,739, while immunochemical FOBT had a cost per LY gained of EUR 2,819. Compared with guaiac FOBT, immunochemical FOBT had a cost per LY gained of EUR 2,988.

The sensitivity analysis showed that these results were robust to changes in the key model parameters, with the incremental cost-effectiveness ratio for immunochemical FOBT (compared with guaiac FOBT) remaining below EUR 3,600.

Authors' conclusions
The authors concluded that compared with no screening or guaiac FOBT, immunochemical FOBT could be considered in the mass screening for colorectal cancer.

CRD commentary
Interventions:
The interventions were clearly described and were appropriate for the authors' setting. There might have been other relevant screening strategies, which could change the cost-effectiveness of these comparators. The authors did not explain why a screening frequency of every two years was considered.

Effectiveness/benefits:
The effectiveness data were mainly from two relevant French studies. A systematic review of the literature does not appear to have been conducted, which makes it difficult to determine if the most up-to-date and relevant data were used. The introduction suggested that these were the only relevant data, but this was not stated. The measure of benefit was disease specific and did not capture the impact of the intervention on a patient's quality of life, nor does it allow cross-disease comparisons to be made, but it was clinically meaningful.

Costs:
The costs reflected the stated perspective. Their sources were reported and appear to have been appropriate. Most of the resource use data were from the same trial that provided the clinical data, ensuring that correlated clinical and cost data were used. Little detail was provided on the resource use, which limits the transparency of the analysis. The price year was reported, allowing the results to be re-valued for future years. Other adjustments, such as discounting, were reported and appear to have been appropriate.

Analysis and results:
An incremental analysis was appropriately performed to determine the cost-effectiveness of each strategy. The results were clearly reported, but LYs gained would have been useful, as well as LYs lost, as the gain was the measure used for the cost-effectiveness ratios. The uncertainty was investigated, in a one-way sensitivity analysis, which was appropriate, but a more complete investigation would have included a probabilistic analysis. The authors discussed some limitations of their analysis.

Concluding remarks:
Assuming that the clinical evidence was the most relevant, the authors' conclusions seem to be appropriate for the strategies considered.

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