Surveillance of Barrett's oesophagus: is it worthwhile?

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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 endoscopic surveillance of Barrett's oesophagus. The authors concluded that surveillance programmes do more harm than good. The quality of the methodology was good and both the methods and results were adequately reported. The authors' conclusions are appropriate given the scope of the analysis.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of endoscopic surveillance of Barrett's oesophagus.

Interventions
This study compared an endoscopic surveillance regimen with no surveillance for patients with Barrett's oesophagus.

Location/setting
UK/secondary care.

Methods
Analytical approach:
A Markov model was used to study the progression of patients through the diagnostic stages and treatment states of Barrett's oesophagus under a surveillance regimen and with no surveillance. The time horizon was 20 years. The authors reported that the perspective was that of the National Health Service (NHS).

Effectiveness data:
The authors undertook a systematic review in order to identify the relevant clinical evidence for the model. In addition, an expert workshop was held to develop the model. The methods of both the systematic review and the collection of expert opinion were reported in Garside, et al. 2006, (see 'Other Publications of Related Interest' below for bibliographic details). The authors reported that, due to a lack of randomised controlled trial (RCT) data, a systematic review of case series was used to estimate the transition probabilities for the model. The main clinical effectiveness estimate was disease progression in both arms of the study.

Monetary benefit and utility valuations:
The authors reported that, because no relevant robust utility values were identified by their search, the utility estimates were taken from a pilot study in which panel members valued health states, defined using a short description, according to the standard gamble method (Stein, et al. 2006, see 'Other Publications of Related Interest' below for bibliographic details).

Measure of benefit:
The measure of benefit was quality-adjusted life-years (QALYs) gained. These were discounted at an annual rate of 1.5% based on HM Treasury's 2004 guidance.

Cost data:
The direct costs were those to the health care service. The methods were reported in a published article (Garside, et al. 2006) and so only a brief summary was given. The direct costs were those of surgical treatment, endoscopy, pre-surgical...
tests, proton pump inhibitors, hospitalisation, prostheses, stenting, and treatment of surgical complications. The unit costs were derived from the British National Formulary, the healthcare resource group, and national sources. The price year was 2004 and all costs were reported in UK pounds sterling (£). As the costs were incurred over a period of 20 years, the authors discounted future costs at an annual rate of 6% in accordance with the current guidance.

Analysis of uncertainty:
The authors reported that extensive one-way sensitivity and threshold analyses were undertaken. In addition, the authors performed probabilistic analyses using a Monte Carlo simulation, and an expected value of perfect information (EVPI) analysis to guide future research.

Results
The cost of endoscopic surveillance for one thousand patients was £3,869,048 compared with £2,951,230 for no surveillance.

The QALYs gained by one thousand patients in the endoscopic surveillance group were 11,982 compared with 12,029 in the no surveillance group.

The costs and benefits were not combined for the base-case scenario because the no surveillance strategy was found to be dominant (i.e. both more effective and less costly) over endoscopic surveillance.

The results of the one-way sensitivity analyses showed that the model was most sensitive to changes in the recurrence rate of adenocarcinoma, the rate at which adenocarcinoma becomes symptomatic, and the utility values. The probabilistic sensitivity analysis revealed that the no surveillance strategy was dominant with a probability of 75% and that surveillance was cost-effective at a £30,000 per QALY threshold with a probability of 11%. The results of the EVPI analysis showed that, for England and Wales, the cost of acquiring perfect information about Barrett's oesophagus surveillance was £6.5 million.

Authors' conclusions
The authors concluded that surveillance programmes do more harm than good. They also stated that further research should be undertaken so that the question of the cost-effectiveness of surveillance in reducing mortality and morbidity from adenocarcinoma could be answered with confidence.

CRD commentary
Interventions:
The interventions under investigation were reported clearly. As with other published studies of Barrett’s oesophagus, the authors compared surveillance with no surveillance.

Effectiveness/benefits:
The effectiveness and clinical data were derived from a systematic review of the literature. The review consisted mainly of case series, and was supplemented by expert opinion, both of which are inferior to evidence derived from RCTs. However, the authors explicitly reported that this approach was necessary given the lack of RCT data. The full details of the review were not reported as these had already been published. However, the authors reported the main effectiveness and utility values used and their sources.

Costs:
As the methods of the costing study had been published elsewhere, the authors only provided basic details. As a result, it is unclear whether all the categories of cost relevant to the health care system were included. For example, it was not clear whether the authors included the costs of primary care or outpatient specialist care. The authors did, however, report the time horizon over which the costs were incurred, the discount rate used, and the price year.

Analysis and results:
The Markov model was well reported with a detailed illustration. The impact of uncertainty on the model's results was exhaustively tested using sensitivity analyses which included probabilistic and EVPI. The level of reporting was adequate, and the authors appropriately referred the readers to the original published report for more detail of the
methods. The authors also highlighted the limitations of their study, which mainly centred on the lack of robust clinical evidence.

**Concluding remarks:**
The quality of the methodology was good, and both the methods and results were adequately reported. The authors’ conclusions are appropriate, given the scope of the analysis.

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**Other publications of related interest**


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