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.

Health technology

Intensive follow-up was compared with conventional follow-up of patients after curative resection for colorectal cancer (CRC). Details of the two strategies were not comprehensively described in the article.

Type of intervention

Diagnosis.

Economic study type

Cost-effectiveness analysis.

Study population

The study population comprised a hypothetical cohort of patients treated for CRC.

Setting

The setting was not explicitly reported, although it is likely to have been secondary care. The economic study was conducted in the UK.

Dates to which data relate

The effectiveness evidence and most of the resource use data came from studies published between 1995 and 2002. The price year was 2002.

Source of effectiveness data

The effectiveness evidence was derived from a review of published studies.

Outcomes assessed in the review

The outcome assessed from the published evidence was the absolute reduction in all-cause mortality with the intensive follow-up strategy relative to the conventional approach.

Study designs and other criteria for inclusion in the review

The evidence came from a meta-analysis of 5 randomised clinical trials (1,342 patients) and a meta-analysis of 4 of these 5 trials.

Sources searched to identify primary studies

Not stated.
Criteria used to ensure the validity of primary studies
The validity of the primary studies was ensured by the fact that they were randomised trials. Further characteristics of the studies were not provided in this paper.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
The effectiveness evidence was derived from 5 primary studies.

Methods of combining primary studies
The primary study estimates were combined using the Mantel-Haenszel fixed-effects method.

Investigation of differences between primary studies
Not stated.

Results of the review
The absolute reduction in all-cause mortality with the intensive follow-up strategy relative to the conventional approach was 7% (95% confidence interval, CI: 5 - 9) in the 5-trial approach and 9% (95% CI: 7 - 11) in the 4-trial approach.

Measure of benefits used in the economic analysis
The summary benefit measure used in the economic analysis was the improved survival with intensive follow-up relative to the conventional method. It was calculated from the effectiveness analysis and discounted at a rate of 1.5%. The number of life-years lost and gained came from each trial, using the average life expectancy data for the UK population and taking into account the proportion of males and females, the mean ages at initial treatment, and the number of observed deaths.

Direct costs
A 6% discount rate was applied. The costs were estimated for a 5-year period. The unit costs were reported for all items, however details of resource use were not specified in this paper although full details are available in an Excel file on the website accompanying the paper abstracted. The health services included in the economic analysis were physical examination, laboratory tests, endoscopic and imaging procedures, and treatments (palliative and salvage therapies). Chemotherapy regimens were not considered. The cost/resource boundary of the study was that of the health service. The unit costs were derived using a bottom-up approach and came from Department of Health reference costs, two published studies, and the in-house financial department. Resource use was estimated using data coming from the trials, the authors’ assumptions, and other published information. No individual data were available, so the distribution of censored events (deaths) was modelled using constant numbers for each 3-month period. Full attendance to follow-up was considered. The costs were expressed in 2002 prices.

Statistical analysis of costs
The costs appear to have been treated deterministically.

Indirect Costs
Indirect costs were not included in the economic analysis.
Currency
UK pounds sterling (\(\))\(\). The conversion rates from into Euros (Euro) and US dollars (\(\$\)) were \(\text{1 = Euro 1.4 = $1.7}\).

Sensitivity analysis
Both univariate and multivariate sensitivity analyses were conducted to estimate the impact of variations in some variables on the estimated cost per life-year saved. The variables included the discount rate, distribution of deaths, false positive test rates, and maximum surveillance and treatment costs.

Estimated benefits used in the economic analysis
The estimated improved survival was 0.73 years in the 5-study meta-analysis and 0.82 in the 4-study meta-analysis.

Cost results
In the 5-study meta-analysis, the costs per patient were 4,758 with intensive follow-up and 2,279 with conventional follow-up, and the cost difference was 2,479. The corresponding costs in the 4-study meta-analysis were 5,100 (intensive follow-up) and 2,570 (conventional follow-up), respectively, and the cost-difference was 2,529.

Synthesis of costs and benefits
An incremental cost-effectiveness ratio was calculated to combine the costs and benefits of intensive follow-up in comparison with conventional follow-up.

The incremental cost per life-year gained was 3,042 in the 5-study meta-analysis and 3,077 in the 4-study meta-analysis.

Both figures were substantially lower than the threshold of 30,000 used in the UK NHS setting.

The results were robust to the variations investigated in the sensitivity analyses.

Authors’ conclusions
From the perspective of the National Health Service (NHS), intensive follow-up of patients after curative resection for colorectal cancer (CRC) represented a cost-effective option in comparison with conventional follow-up.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparator was clear. Conventional follow-up was selected since it represented the standard approach for the management of patients treated for CRC. Intensive follow-up represented an alternative approach that has been used in more recent trials. However, the characteristics of the two approaches were not described in this paper. Full details are reported in the first paper published by the authors, see ‘other publications of related interest’. You should decide whether they are valid comparators in your own setting.

Validity of estimate of measure of effectiveness
The analysis of effectiveness used the results of a published meta-analysis and the pooled analysis of 4 of the same trials. Only very limited details of the effectiveness analysis were reported within this paper. The search methods were not reported and additional details of the primary studies were not provided. The authors stated that the primary studies were randomised trials, but no other details were given. The method used to pool the trials was reported and the results were depicted graphically. These issues tend to enhance the internal validity of the analysis.

Validity of estimate of measure of benefit
Survival was used as the summary benefit measure. It was obtained directly from the effectiveness analysis and was discounted appropriately. The use of survival facilitates comparisons with the benefits of other interventions.
Validity of estimate of costs
The perspective adopted in the study was explicitly reported. It appears that all the relevant categories of costs have been included in the analysis. A detailed breakdown of the cost items was reported. The unit costs and the price year were reported, thus enhancing the reproducibility of the study in other settings. The authors made some assumptions to estimate resource use. The costs were treated deterministically, but sensitivity analyses were conducted to assess the robustness of the estimates used. The censored data, which were used to replace individual data on survival and recurrences, were examined thoroughly in sensitivity analysis. Discounting was relevant and was performed appropriately. Further, the authors investigated the use of a greater discount rate or no discounting.

Other issues
The authors compared their findings with those from other studies, but did not specifically address the issue of the generalisability of the study results to other settings. However, sensitivity analyses were conducted and details on the costs were provided. Thus, the external validity of the analysis was high. The authors noted some strengths of their analysis, for example, the use of the bottom-up approach for costs and robust results. They also noted some limitations, for example, the clinical heterogeneity of follow-up regimens among the trials considered in the meta-analysis. Other limitations were the lack of quality of life data, the absence of individualised patient data, and the fact that the trials were carried out over a decade prior to the present study (and thus may not have reflected appropriately the actual clinical management of post-CRC patients).

The validity of the study was further enhanced by the transparency of the modelling, the details of which are openly available on the BMJ website (see Web Address at the end of this abstract. Additional information relating to the data extraction, treatment costs and the decision tree analysis, and the Excel file used to calculate the estimates, are also available on the BMJ website.

Implications of the study
The study results suggested that intensive follow-up should be recommended for the management of patients with CRC, and that its cost-effectiveness compares favourably with screening for breast and CRC cancers and for abdominal aortic aneurysms. The authors suggested that large randomised trials should be carried out to confirm the economic advantages of intensive follow-up. They also discussed the critical issues that need further exploration.

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