The cost-effectiveness of an early interventional strategy in non-ST-elevation acute coronary syndrome based on the RITA 3 trial


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 early intervention for non-ST-elevation acute coronary syndrome in patients with a variety of risk profiles. The authors concluded that early intervention was likely to be cost-effective for patients at high and intermediate risk, but less likely to be cost-effective for patients at low risk. With the exception of the cost data, the study was relatively well reported, the methods were good, and the authors' conclusions seem to be justified.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of an early intervention for non-ST-elevation acute coronary syndrome in patients with a variety of risk profiles.

Interventions
The early intervention comprised a routine angiography, followed by revascularisation if clinically indicated, and this was compared with a conservative strategy, which comprised ischaemia or symptom-driven angiography.

Location/setting
UK/secondary care.

Methods
Analytical approach:
A decision tree determined the incidences of events during the trial hospitalisation period and these incidences supplied a Markov model tracking the health status of patients, over a lifetime horizon. The authors stated that the perspective was that of the UK health service.

Effectiveness data:
Most of the effectiveness data were derived from a randomised controlled trial (RCT) called the third Randomised Intervention Trial of Unstable Angina (RITA 3). These data were supplemented with data from life tables. The RITA 3 was a prospective, randomised, multi-centre trial, with 1,810 patients from 45 hospitals in England and Scotland. The length of follow-up was five years. The main clinical parameter was myocardial infarction or cardiovascular death. The risk of an event during the trial was calculated using logistic regression. The risk following discharge was extrapolated using a Weibull proportional hazards model.

Monetary benefit and utility valuations:
Quality-of-life estimates were collected from patients in the RITA 3 using the European Quality of life (EQ-5D) questionnaire.

Measure of benefit:
The summary measure of benefit was the quality-adjusted life-year (QALY) and these were discounted at an annual rate of 3.5%.
Cost data:
The cost categories, unit costs and resources were not reported, but may have been in an earlier paper (Epstein, et al. 2007, see ‘Other Publications of Related Interest’ below for bibliographic details). The resource use data were obtained from the RITA 3. The source of the price data was not clear, but it is likely to have been reported in the previous paper. The price year was 2003 to 2004 and all costs were reported in UK pounds sterling (£). They were discounted at a rate of 3.5% per annum.

Analysis of uncertainty:
The uncertainty in the cost-effectiveness was evaluated using probabilistic sensitivity analysis. In a further sensitivity analysis the risk of a combined event was calculated using a meta-analysis of RCTs.

Results
Early intervention was associated with an increased risk of a myocardial infarction or cardiovascular death during the index hospitalisation (odds ratio: 1.52; confidence interval, CI: 0.86 to 2.68), but it was also associated with a lower risk after the index hospitalisation (hazard ratio: 0.62; CI: 0.46 to 0.83).

During the index hospitalisation, early intervention was associated with a higher mean cost of £5,654 compared with the conservative strategy (£1,778), but was associated with a lower mean cost of -£1,106 (compared with £2,735) during the first year after the index hospitalisation.

The results of the cost-effectiveness analysis were presented separately for patients with different risk profiles. The mean incremental cost per QALY gained by early intervention was approximately £55,000 for low risk, £22,000 for medium risk, and £12,000 for high risk patients.

The cost effectiveness of the early intervention strategy in low risk patients was sensitive to assumptions about the duration of the treatment effect.

The sensitivity analysis using the meta-analysis for treatment effect showed that these results were robust.

Authors' conclusions
The authors concluded that an early intervention for patients presenting with non-ST-elevation acute coronary syndrome was likely to be cost-effective for patients at high and medium risk, but less likely to be cost-effective for patients at low risk.

CRD commentary
Interventions:
The two interventions were relatively well described and appear to have been relevant strategies for the management of patients with non-ST-elevation acute coronary syndrome in the authors' setting.

Effectiveness/benefits:
Most of the effectiveness data were derived from a large RCT, but the full details of this trial were published elsewhere and it was therefore not possible to make a full assessment of its internal validity. The effectiveness analysis was completed using data from a meta-analysis of published trials as well as the base-case estimates, which increases the generalisability of the findings. The primary outcome was the QALY, which was appropriate for these interventions.

Costs:
As the categories of costs were not reported (in this paper), it is not possible to say if the appropriate cost categories were included. The level of reporting of the cost data was generally limited and only some information on the unit costs and resource use was given. However, adjustments, including for the price year and discounting, were reported.

Analysis and results:
The synthesis of the costs and benefits was appropriately performed. The subgroup analysis was appropriate given the different outcomes observed for patients with different risk profiles. The issue of uncertainty was adequately addressed through the probabilistic sensitivity analysis. The key features of the model, including a diagram, were given. The
authors noted some additional limitations of their analysis.

Concluding remarks:
With the exception of the cost data, the study was relatively well reported, the methods were good and the authors’ conclusions seem to be justified.

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