Health service costs of coronary angioplasty and coronary artery bypass surgery: the Randomised Intervention Treatment of Angina (RITA) 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.

Health technology
Percutaneous transluminal coronary angioplasty (PTCA) in the treatment of angina.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with angina, requiring myocardial revascularisation.

Setting
Hospital. The economic study was conducted in London, Manchester, Leicester, Belfast, Glasgow, Sheffield, Edinburgh, Cardiff and Nottingham, UK.

Dates to which data relate
The most recent results of the randomised intervention treatment of angina (RITA) trial were published in 1993. Resources and costs relate to 1993-94.

Source of effectiveness data
Single study (case A).

Link between effectiveness and cost data
Costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
1011 patients were included in the study of whom 501 were randomised to CABG and 510 to PTCA. Exclusion criteria included left-main-stream disease, haemodynamically significant valve disease, previous PTCA or CABG, or a non-cardiac disease likely to limit long-time prognosis. Power calculations were not reported.

Study design
Randomised trial, multicentre trial. Duration of follow-up was 2 years.
Analysis of effectiveness

Analysis of effectiveness was based on intention to treat. The primary health outcomes used in the analysis were: deaths, classified in cardiac and non-cardiac, non-fatal myocardial infarctions and prevalence of angina after 1 or 2 years (grade 1 to 4). Comparability analysis between the groups was not reported.

Effectiveness results

Over 2 years, 13 deaths were recorded in the PTCA group (8 cardiac and 5 non-cardiac) and 9 deaths in the CABG group (7 cardiac and 2 non-cardiac). In the same period 32 non-fatal myocardial infarctions were recorded in the PTCA group and 25 in the CABG group. For death or non-fatal myocardial infarction the difference was not statistically significant between the two groups (p = 0.576). After one year, the prevalence of angina in the PTCA group was as follows: none- 343 patients; grades 1 or 2- 106 patients; and grades 3 or 4- 47 patients compared to 398 patients, 61 patients and 21 patients respectively for the CABG group. After two years, in the PTCA group, the prevalence of angina was: none- 328 patients, grades 1 or 2- 117 patients and grades 3 or 4- 34 patients, compared to 373 patients, 71 patients and 29 patients respectively in the CABG group. The difference for the prevalence of angina was significant between the two groups (p<0.0001 and p = 0.0023 at one year and two years after randomisation.

Clinical conclusions

There was no significant difference in mortality and non-fatal myocardial infarction between the two treatment groups during the 2-year follow-up, but subsequent angina was more common among patients randomised to PTCA. Overall, neither treatment was unequivocally better.

Measure of benefits used in the economic analysis

Given the similarity of clinical outcomes, the economic study was based on the difference in costs only.

Direct costs

Generally, costs and quantities were reported separately. Costs were discounted at 6%. Direct health service costs were included: initial revascularisation procedures, hospital stay, subsequent revascularisation procedures, in-patient care, medication. 1993-1994 prices were used.

Statistical analysis of costs

For total costs and some quantities mean values and standard errors were reported.

Indirect Costs

Hospital costs were based on actual data (sample of centres participating in the trial). Drug costs were derived from the British National Formulary.

Currency

UK pounds sterling.

Sensitivity analysis

No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis

Not applicable.
Cost results
Duration of costs was for 2 years after randomisation or until death within 2 years. Costs were discounted at 6%. In the London centre, the mean total cost per patient was 6,916 (SE: 235) and 8,739 (SE: 212) for the PTCA and CABG groups respectively. For the non-London centre, these values were 5,448 (SE: 173) and 6,498 (SE: 134) respectively. The mean difference in cost was 1,823 (95% CI: 1202-2444) and 1,050 (95% CI: 621-1,479) for the London and non-London centre respectively. No p-values for the difference were reported. Costs for sub-groups with single-vessel and multi-vessel disease were calculated. The results showed that mean total costs were higher in the multi-vessel disease group, but cost differences between groups were similar. The initial average cost of treating a patient randomised to PTCA is about 52% of that of CABG, but after two years this increased to about 80% because of the greater need for subsequent procedures.

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
The balance of advantage between PTCA and CABG may change after several years. However, on the basis of patients’ status at 2 years, the cost-advantages of PTCA cannot be ignored.

CRD Commentary
Good overall study. To retrieve more detailed information about the clinical analysis, the original study should be considered. P-values to test the difference in costs would have been useful.

Implications of the study
Further research is definitely necessary to assess the cost effectiveness of PTCA.

Source of funding
British Heart Foundation; British Cardiac Society; Department of Health; ACS, UK; Medtronic Ltd., Schneider.

Bibliographic details

PubMedID
7934351

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Angina Pectoris /economics /surgery /therapy; Angioplasty, Balloon, Coronary /economics; Coronary Artery Bypass /economics; Great Britain; Health Resources /economics /utilization; Hospital Costs /statistics & numerical data; Humans; London; State Medicine /economics

AccessionNumber