

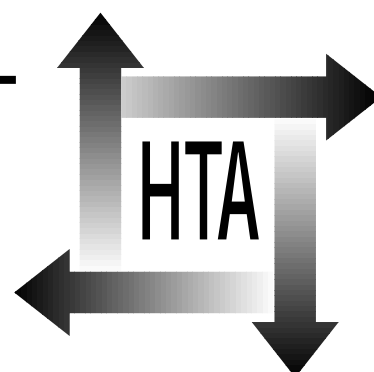
Executive summary

**Resource allocation for chronic
stable angina: a systematic
review of effectiveness, costs
and cost-effectiveness of
alternative interventions**

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Health Technology Assessment
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Executive summary

Objectives

To update earlier reviews of the effectiveness of treatment for chronic stable angina and to include

- assessment of medical therapy and of newer adjunctive technologies such as coronary stents
- broader assessment of patient benefits
- consideration of cost and cost-effectiveness.

Methods

Full details of the search strategy are presented in the full report.

Results

In all, 197 papers were reviewed in full – 148 relating to clinical effectiveness, 24 to health-related quality of life (HRQoL) and 25 to cost and cost-effectiveness.

Medical treatment

- Few studies exist of long-term effectiveness, with little evidence of large differences between different classes of drug.
- There is little evidence on patients' quality of life.
- No UK cost or cost-effectiveness studies were identified.

CABG versus medical therapy

- Coronary artery bypass grafts (CABG) have mortality benefits for up to 5 years and possibly longer (up to 10 years) compared with medical therapy, particularly in patients with greater extent of disease.
- One study showed that initial benefits to patients from CABG, in terms of extent of angina and activity limitation, have disappeared by 10 years.
- Available economic data reflect the results of effectiveness studies; CABG is most cost-effective where there is greatest incremental benefit – in patients with severe angina, left main disease and multi-vessel disease.

PTCA versus medical therapy

- Some evidence supports percutaneous transluminal coronary angioplasty (PTCA) in terms of relief of angina but evidence on myocardial infarction (MI) rates is conflicting.

- Clinical benefit is apparently reflected in improved HRQoL, although information on long-term effects of revascularisation is lacking.

PTCA versus CABG

- No differences emerged between PTCA and CABG in terms of mortality and non-fatal MI.
- CABG is likely to be associated with fewer additional procedures than PTCA in the first year post-surgery and appears to be more effective in relief of angina.
- CABG improves survival compared with PTCA in patients with severe disease.
- No differences were found between CABG and PTCA in terms of HRQoL largely due to methodological problems. Indirect assessment of HRQoL (via reductions in angina rates) shows a benefit for CABG over PTCA.
- The relative cost of procedures depends on point of follow-up. The most recent UK cost analysis showed an initial mean cost for PTCA of 52% that for CABG, increasing to 81% at 2 years.
- No recent cost-effectiveness analyses were identified, and none relating to UK practice.

Non-comparative studies of CABG

- CABG relieves angina in most patients undergoing surgery.
- Interior mammary artery (IMA) grafts appear to be associated with greater long-term patency and less angina at long-term follow-up than non-IMA grafts.
- Many outcomes appear to be slightly worse in women than men, and in older patients.
- There is a clear association between short- and longer-term mortality and disease severity (number of vessels diseased), ejection fraction and initial severity of angina.
- HRQoL improves after CABG; physical, sexual and social functioning improve significantly in most patients.

Medical adjuncts to CABG

- Aspirin (with or without dipyridamole) appears to reduce occlusion following CABG.
- No evidence was identified on HRQoL or cost-effectiveness.

Non-comparative studies of PTCA

- There is some evidence of gender differences in long-term outcomes.

- Success of PTCA is influenced by age of patient and angina class.
- PTCA can be effective in patients with left ventricular disease.
- HRQoL improves after PTCA but no information is available on key subgroups.

Non-medical adjuncts to PTCA

- Results of on-going trials with longer follow-up periods are awaited before conclusions can be drawn on effectiveness of elective stenting. At present, evidence is very limited; few studies support the current opinion of cardiologists that stents are effective.
- Aspirin therapy as an adjunct to stenting results in a lower risk of MI, fewer repeat interventions and less occlusion of the stented vessel.
- There is no evidence that laser angioplasty or atherectomy add any benefit to conventional PTCA.
- Cost studies undertaken in the USA showed that adjunctive technologies cost more than PTCA overall. Their cost-effectiveness is doubtful.

Medical adjuncts to PTCA

- Few trials detected any important benefits from the addition of drugs to PTCA.
- Some evidence supports the use of aspirin, in terms of reduced long-term MI and restenosis rates.
- There is some evidence that calcium antagonists are useful in reducing restenosis after coronary angioplasty.
- Patients benefited from a lower rate of in-hospital MI, CABG and repeat PTCA after a new glycoprotein IIb/IIIa receptor monoclonal antibody. However, the benefits came at the cost of an increased bleeding rate which may have been a function of the relatively high level of heparin administration. A cost analysis showed a 6-month difference in costs between the new drug and placebo of \$293 per patient.
- The platelet-derived growth factor antagonist rapivudin has been shown to be more effective than aspirin in reducing restenosis after PTCA.
- Good quality meta-analyses showed the effectiveness of antiplatelet agents in reducing risk of MI and stroke in post-PTCA patients.
- One meta-analysis showed that supplemental fish oils reduce restenosis.

Conclusions

Policy implications

- Healthcare purchasers and providers should consider local information, such as local

epidemiological data, cost structures and available patterns of care.

- The relative benefit of alternative forms of clinical management involves values or preference weightings being placed on a range of outcomes generated by an intervention. Decision-makers could consider local information on public or patients' values.
- For purchasers the evidence could imply that blanket decisions to provide only one form of intervention to patients should not be made. The various main forms of treatment for stable angina should be available and patients should be informed of the therapeutic options rather than offered a single therapy based on provider preferences.
- The provision of local evidence-based guidance to general practitioners on smoking cessation may also help improve outcomes in smokers undergoing CABG or PTCA.
- Local decisions about resource allocation should be informed by the use of decision analysis as a framework to handle the multiple factors that need to be considered.
- Formal evaluation of new technologies should be considered before they become widely diffused.

Research recommendations

- Adequately-powered, long-term studies are needed of costs and effects of rational combinations of medical treatments.
- Cost and cost-effectiveness of PTCA should be compared with medical therapy.
- Relative cost-effectiveness of the new generation medical and non-medical adjuncts to PTCA and CABG, including stents, requires assessment.
- Relative cost-effectiveness of new interventions such as transmyocardial revascularisation and minimally invasive bypass grafting needs assessment.
- In stable angina, studies of patients' treatment- and health-related preferences are required.
- More economic evaluation of alternative treatments for stable angina is needed; it should cover a wider selection of technologies and reach higher methodological standards than those already published.

Publication

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NHS R&D HTA Programme

The overall aim of the NHS R&D Health Technology Assessment (HTA) programme is to ensure that high-quality research information on the costs, effectiveness and broader impact of health technologies is produced in the most efficient way for those who use, manage and work in the NHS. Research is undertaken in those areas where the evidence will lead to the greatest benefits to patients, either through improved patient outcomes or the most efficient use of NHS resources.

The Standing Group on Health Technology advises on national priorities for health technology assessment. Six advisory panels assist the Standing Group in identifying and prioritising projects. These priorities are then considered by the HTA Commissioning Board supported by the National Coordinating Centre for HTA (NCCHTA).

This report is one of a series covering acute care, diagnostics and imaging, methodology, pharmaceuticals, population screening, and primary and community care. It was identified as a priority by the Acute Sector Panel and funded as project number 93/01/02.

The views expressed in this publication are those of the authors and not necessarily those of the Standing Group, the Commissioning Board, the Panel members or the Department of Health. The editors wish to emphasise that funding and publication of this research by the NHS should not be taken as implicit support for the recommendations for policy contained herein. In particular, policy options in the area of screening will, in England, be considered by the National Screening Committee. This Committee, chaired by the Chief Medical Officer, will take into account the views expressed here, further available evidence and other relevant considerations.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search, appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

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