"Prehabilitation" prior to CABG surgery improves physical functioning and depression

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 examine the clinical and economic impact of a cognitive-behavioural intervention (HeartOp Programme), for patients placed on the non-urgent waiting list for coronary artery bypass graft surgery, in comparison with no intervention. The HeartOp Programme reduced depression and cardiac misconceptions, improved physical function, and was a cost-effective addition to nurse counselling alone. The study appears to have been based on valid and well reported methodology, which enhances the reliability of the authors’ conclusions.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to examine the clinical and economic impact of a cognitive-behavioural intervention, in comparison with no intervention, for patients placed on the non-urgent waiting list for undergoing coronary artery bypass graft (CABG) surgery.

Interventions
The intervention was a brief, home-based, cognitive-behavioural, phone-facilitated programme called the HeartOp Programme, which was added to routine nurse counselling for people waiting for CABG surgery. This programme was compared with nurse counselling alone.

Both interventions consisted of a 45 to 60 minute first interview conducted in the out-patient clinic by the nurse, followed by 10 to 15 minute phone calls to the patient’s home at weeks one, three, and six (± one week), and then monthly until they were admitted for their operation.

The HeartOp Programme also supplied the patients with a two-part booklet, an audiotape (or CD), and a diary for recording their activity and risk factor reduction goals.

Location/setting
UK/tertiary care.

Methods
Analytical approach:
This economic evaluation was based on a single study with a six-month time horizon. The authors stated that the perspective of the health provider, namely the UK National Health Service (NHS), was adopted.

Effectiveness data:
The clinical data came from a single-blinded, randomised controlled trial (RCT) which enrolled 204 patients (100 in the intervention group, 85% male and 104 in the control group, 76% male). The length of follow-up was six months post-operatively, with data being collected at baseline, after the third phone call (before surgery), and post-operatively at six weeks, three and six months. The potential impact of baseline differences was dealt with by means of an analysis of covariance. The key clinical outcome was the reduction in anxiety pre-operatively, which was measured by the State scale of the State Trait Anxiety Inventory.

Monetary benefit and utility valuations:
The health-related utility valuations were derived from the sample of patients enrolled in the trial using the European Quality of life questionnaire (EQ-5D). The utility weights were assessed at baseline and after approximately eight weeks.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure. Other measures of benefit, such as the reduction in anxiety, depression, physical functioning, and cardiac misconceptions were reported, but were not combined with costs.

Cost data:
The economic analysis included the costs of materials, general practitioner visits, and hospital stay. The unit costs were derived from previous studies or national averages. The resource use data were based on self-reported data in the patient sample enrolled in the trial. These data were collected at baseline and eight weeks post-operatively. All costs were in UK pounds sterling (£) and referred to 2003 to 2004 prices.

Analysis of uncertainty:
The issue of uncertainty was addressed using a Bayesian approach and by calculating credible intervals around the mean cost-utility ratio. Cost-effectiveness acceptability curves were generated.

Results
The trial showed that anxiety was similarly reduced in both groups after surgery. However, there were significant differences between the groups, in favour of the intervention, in terms of depression, physical functioning, and cardiac misconceptions.

At eight weeks, the expected QALYs were 0.109 in the intervention group and 0.103 in the control group. The mean cost per patient was £24.10 in the intervention group and £22.37 in the control group. These differences in both costs and benefits were not statistically significant.

The incremental cost per QALY gained with the intervention was £288.33. The calculation of 95% credibility interval showed that there was high uncertainty around this estimate. Nevertheless, the cost-effectiveness acceptability curve suggested that there was more than a 90% probability that the cost per QALY would be less than £30,000 with the intervention.

Authors’ conclusions
The authors concluded that the HeartOp Programme reduced depression and cardiac misconceptions and improved physical function while at the same time it was a cost-effective addition to nurse counselling alone.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clearly reported, given that pre-operative nurse counselling for behaviour change was the routine care in several UK centres. The two strategies were described in detail.

Effectiveness/benefits:
The use of an RCT to derive the clinical data was appropriate given the strengths of such a design. The inclusion and exclusion criteria and randomisation procedures were reported. Power calculations, which ensure an appropriate sample size, were carried out and were reported. The analysis of the clinical data was based on the intention-to-treat and the patient groups were comparable at baseline, which makes the comparison more robust. Methods to handle missing data were reported and appear to have been appropriate. However, the authors noted that the study failed to achieve its target sample size and so some comparisons may have been underpowered. The derivation of the benefit measure was reported and was based on a validated instrument. QALYs were an appropriate measure, because they not only synthesise in a single index the dimensions of quality and quantity of life, but also allow for cross-disease comparisons.

Costs:
The authors stated that the perspective was that of the NHS and it appears that the categories of costs for this were
appropriately selected. The unit costs and quantities of resources used were presented separately. The sources of costs, the price year, and the use of statistical tests were reported. In general, the economic analysis was carried out in a transparent fashion.

Analysis and results:
The synthesis of costs and benefits was appropriately performed. The issue of uncertainty was satisfactorily addressed, using a probabilistic approach. The study findings were reported in detail and discussed in depth. The authors stated that a potential limitation of the analysis was the issue of contamination between the two strategies, which may have reduced the efficacy of the intervention.

Concluding remarks:
The study appears to have been based on valid and well reported methodology, which enhances the reliability of the authors' conclusions.

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