Early discharge with home health care in the coronary artery bypass patient
Penque S, Arom K, Petersen B, Ratner E, Halm M

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
Early discharge with home health care after coronary artery bypass graft surgery.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
Subjects who underwent elective coronary artery bypass graft surgery on the same day as admission, without coronary angiogram or concurrent surgical procedures.

Setting
Hospital. The study was carried out at a Midwestern medical centre in the USA.

Dates to which data relate
The dates to which effectiveness, resource use and cost data relate were not reported. The price year was not reported.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was carried out on the same patient sample as that used in the effectiveness study. The costing was carried out prospectively alongside the effectiveness study.

Study sample
The study included 47 men and 3 women aged over 20 years who underwent elective coronary artery bypass graft surgery on the same day as admission, without coronary angiogram or concurrent surgical procedures. 25 patients were assigned to each group. The mean age in the control group was 61.9 (range: 43-73) and 60.6 (range: 49-73) in the intervention group. No power calculations were reported in the calculation of sample size. Patients were excluded if they required an intra-aortic balloon pump, experienced major post-operative complications, did not have their physicians’ recommendation for home health care, could not speak English, had more than a 10% predicted risk of operative mortality, or had a history of psychiatric or neurologic disease.
Study design
This was a prospective randomised controlled trial carried out at a single centre. The method of randomisation was not outlined and blinding was not achieved. Patients were followed up for three months after discharge. The loss to follow-up was not reported.

Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcomes included health status (using the HSQ-12 health status questionnaire), patient satisfaction (using a patient satisfaction questionnaire on post-operative day 14), 30-day re-admission rates (using the National Society of Thoracic Surgeons’ database), and patients’ exercise capacities at the time of discharge and on post-operative day 14. The authors did not demonstrate the samples’ comparability at baseline, although this was partially addressed by the inclusion/exclusion criteria and the reporting of age and gender characteristics. The sample was biased in favour of men.

Effectiveness results
The effectiveness results were as follows:

No patients from the experimental group were re-admitted to the hospital within 7 days, but one patient from the control group was re-admitted on post-operative day 7 for uncontrolled atrial fibrillation.

In the first 30 days post-discharge, one patient from the control group and two from the experimental group were re-admitted.

Both groups’ health status had improved by post-operative day 14, and they reported similar responses for all items.

At 3 months, patients in both groups reported a decrease in health status in terms of lifting, climbing stairs, ability to walk several blocks, ability to perform work or other daily activities, effects of emotional problems on accomplishments in work or other daily activities, and feeling depressed.

The metabolic equivalent level was 1.87 at discharge and 3.21 at 2 weeks post-surgery for the experimental group.

The metabolic equivalent level was 1.89 at discharge and 3.20 at 2 weeks post-surgery for the control group.

Patients who received home health care reported the same level of satisfaction as those who received standard care.

All patients in the control group believed that their physician had adequately explained their diagnosis and treatment, but only 88% of the experimental group patients reported this same level of satisfaction.

Clinical conclusions
Home health care can contribute to shortened length of stay and improved patient and family satisfaction.

Measure of benefits used in the economic analysis
The measures of benefit included health status (using the HSQ-12 health status questionnaire), patient satisfaction (using a patient satisfaction questionnaire on post-operative day 14), 30-day re-admission rates (using the National Society of Thoracic Surgeons’ database), and patients’ exercise capacities at the time of discharge and on post-operative day 14. Hence, this study may be regarded as a cost-consequences analysis.

Direct costs
Direct costs were not discounted given the short time frame of the study (less than 1 year). Quantities and costs were not reported separately. Direct costs included costs of hospital stay and home health care. The quantity/cost boundary adopted was that of society. The estimation of quantities and costs was based on actual data. The price year was not reported.
Statistical analysis of costs
Not reported.

Indirect Costs
Indirect costs of hospital stay and home health care were included.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was conducted.

Estimated benefits used in the economic analysis
See effectiveness results above.

Cost results
Average total health care costs per patient were $17,749 in the experimental group and $17,480 in the control group.

Synthesis of costs and benefits
Costs and effectiveness measures were not combined into a cost-effectiveness ratio.

Authors’ conclusions
The authors concluded that discharging open-heart surgery patients on post-operative day 4 with home health care was found to be safe and cost-effective.

CRD COMMENTARY - Selection of comparators
Although no explicit justification was given for the comparator used, it would appear to represent current practice in the authors’ setting. You, as a user of the database, should decide if the comparator represents current practice in your own setting.

Validity of estimate of measure of benefit
The analysis was based on a randomised controlled trial, which was appropriate for the study question. The study sample was representative of the study population, although it was not large enough to ensure the internal validity of the findings. The authors did not report whether patient groups were comparable at analysis. The analysis of the effectiveness data was conducted in a sound manner. Estimation of benefits was obtained directly from the effectiveness analysis without the use of a summary benefit measure.

Validity of estimate of costs
All categories of cost relevant to the perspective adopted were included in the analysis. It was unclear whether or not, for each cost category, all relevant costs were included in the analysis. Costs and quantities were not reported separately and no statistical analysis of quantities or prices was performed. It was not clear whether charges were used as a proxy for prices. The price year was not reported. The above considerations limit the validity and generalisability of the cost results.
Other issues
The authors did make appropriate comparisons of their findings with those from other studies and the issue of generalisability to other settings was addressed. The authors did not present their results selectively. The study enrolled patients undergoing coronary artery bypass grafts and this was reflected in the authors’ conclusions. The small sample size and the fact that the study was not blinded represent limitations.

Implications of the study
Important areas for future research include repeating the study using a large sample and exploring cost-effectiveness in relation to the length of time home health care is needed after open-heart surgery. The effect of home health care on female patients’ recovery also needs to be explored. This study should also be repeated on groups of patients with higher predicted mortality rates, and other care models using earlier discharge and home health care should be explored.

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