Implementation of a process-orientated multidisciplinary approach (POMA), a system of cost-effective healthcare delivery within a cardiac surgical unit

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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
This study examined the clinical and economic impact of implementing a process-orientated multidisciplinary approach (POMA) for the management of patients in a cardiac surgical unit. The implementation of the POMA improved cancellations, postoperative clinical incidents, and postoperative length of stay, for the single-surgeon cardiac practice. The study focused on the clinical, rather than the economic impact of the programme. The authors’ conclusions should be treated with some caution due to the limitations of the study.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to examine the clinical and economic impact of implementing a process-orientated multidisciplinary approach (POMA) for the management of patients in a cardiac surgical unit. The analysis focused on the impact of the POMA on the number of cancellations (NOC), postoperative clinical incidents (POCI), and postoperative length of stay (PLOS) in patients undergoing coronary artery bypass grafting (CABG).

Interventions
The POMA was a method of delivering consultant-led health care from the first outpatient clinic visit through to discharge, bringing together clinical and operational management. The primary objective of the POMA was to identify and solve, as early as possible, any problem which might result in an unnecessary occupation of a hospital bed, in order to reduce the cancellations and maximise the use of the available operating facility. Periods before and after the implementation of the POMA were compared.

Location/setting
UK/hospital.

Methods
Analytical approach:
This economic evaluation was based on a single study. The time horizon was restricted to the hospitalisation period. The authors did not explicitly report the perspective, but it was clearly that of the National Health Service (NHS).

Effectiveness data:
The clinical evidence was based on a prospective cohort study with historical controls. There were 248 eligible patients in the pre-POMA group (82% men, mean age 62.1 years), and 262 eligible patients in the post-POMA group (80.4% men, mean age 63.1 years). The clinical study was carried out at one consultant cardiac surgeon's practice. The study covered the period from February 2001 to March 2006, with the POMA being introduced in January 2003. Patients were followed-up until their hospital discharge. Those with a length of stay of more than seven days were excluded from the analysis. A multivariate analysis was performed to study the correlation of baseline factors with the key clinical endpoints, which were the NOC, POCI, and PLOS.

Monetary benefit and utility valuations:
None.
Measure of benefit:
No summary benefit measure was used as a cost-consequences analysis was carried out. The key clinical endpoints were the NOC, POCI, and PLOS.

Cost data:
The costs included elective operation, emergency operation, and hospital stay. The resource use was based on data from the clinical study. The costs were presented as macro-categories and those for each category were derived from NHS tariffs as applied to the trust. All costs were in UK pounds sterling (£), but were also presented in US dollars ($), and Euros (EUR). The price year was 2005.

Analysis of uncertainty:
The issue of uncertainty was not addressed.

Results
The NOC rate was 4.5% in the pre-POMA group and 0.4% in the post-POMA group (p<0.05).

The POCI rate was 44% pre-POMA and 36.1% post-POMA (p<0.05). In particular, from pre-POMA to post-POMA, the incidence of atrial fibrillation fell from 23.6% to 16.5% (p<0.05) and that of respiratory tract infection fell from 4.8% to 1.5% (p<0.05).

The rates of patients discharged by postoperative day five were 42.7% pre-POMA and 53.1% post-POMA. The PLOS significantly decreased from 6.3 to 6.1 days (p=0.002).

The statistical analysis revealed that the implementation of POMA was the only significant factor in the reduction in POCI.

The cost-savings related to avoided cancellations in the post-POMA period amounted to £285,868 (EUR 400,215; $508,845).

Authors' conclusions
The authors concluded that, over a five-year period, the implementation of POMA improved the operational efficiency and clinical outcomes of patients undergoing primary elective CABG in a single-surgeon cardiac practice.

CRD commentary
Interventions:
The selection of the comparators appears to have been appropriate in that a pre-intervention period was compared to a post-intervention period.

Effectiveness/benefits:
The clinical data were derived from a single study which compared the pre- and post-POMA periods. Such a design has a limited internal validity. Several factors might affect the validity of the comparison due to its non-simultaneous assessment. In fact, the authors acknowledged that the use of a historical control group might reduce the validity of the comparison. Nevertheless, the authors performed statistical analyses to take into account potential confounding factors. Another potential limitation was the fact that the two study groups were not perfectly matched at baseline (there were differences in the EuroScore). No formal justification was provided for the suitability of the sample size. Finally, the study was carried out at a single medical centre, which might reduce its ability to represent the patient population.

Costs:
The analysis of costs was a secondary aim of the study. These costs were presented as macro-categories and were not broken down into individual items. Accordingly, the data on unit costs and quantities of resources used were not presented. This might reduce the transparency of the cost evaluation. The categories of costs reflected the perspective of the NHS which reimburses local trusts for health care services. Typical NHS sources were used to derive the total costs. The price year was reported. No statistical analyses appear to have been carried out on the cost estimates.
Analysis and results:
The costs and benefits were not synthesised, which was appropriate given the cost-consequences framework. The authors did not address the issues of uncertainty or the generalisability of their findings to other settings. The results of the clinical analysis were well reported and discussed, but the economic findings were not reported in the same detail.

Concluding remarks:
This study focused on the clinical impact of the programme and the economics were a minor aspect. The authors’ conclusions should be treated with some caution due to the limitations of the study.

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