Cost effectiveness of chest pain unit care in the NHS

Oluboyede Y, Goodacre S, Wailoo A

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 cost-effectiveness of a single chest pain unit (CPU) in comparison with routine care for patients presenting with acute chest pain at an emergency department. The authors concluded that the CPU was non-significantly more effective and less expensive than routine care, but this was subject to a substantial amount of uncertainty and no clear conclusion on the cost-effectiveness of the CPU could be drawn. The study was based on valid methodology which strengthens the authors’ conclusions.

Type of economic evaluation
Cost-utility analysis

Study objective
This study examined the cost-effectiveness of a single chest pain unit (CPU) in comparison with routine care for patients presenting with acute chest pain at an emergency department.

Interventions
CPU care was compared with usual care.

Location/setting
UK/emergency department.

Methods
Analytical approach:
This economic evaluation was based on a decision analytic model, which mainly used evidence from a clinical trial. The time horizon was not explicitly reported, but it was stated that the long-term costs and benefits were considered. The authors stated that the perspective of the National Health Service (NHS) was adopted.

Effectiveness data:
The clinical evidence came from selected studies. The bulk of the evidence for the first six months after admission came from the Effectiveness and Safety of Chest pain Assessment to Prevent Emergency admissions (ESCAPE) study, which was a multi-centre randomised controlled trial (RCT), which enrolled patients from 14 hospitals, which were randomised to routine care or CPU care. These data were supplemented with published evidence in order to extrapolate the short-term data to a long-term horizon. No details of these sources were given. The key clinical outcomes were the reduction in the time delay to reperfusion for ST-elevation myocardial infarction, and the reduction in the proportion of patients inadvertently discharged home, with acute coronary syndrome.

Monetary benefit and utility valuations:
The utility valuations were derived from the ESCAPE trial, using the European Quality of life (EQ-5D) questionnaire, for a subgroup of 200 patients. The data were collected at follow-up at one and six months.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure. These were discounted, but the discount rate was not explicitly reported.

Cost data:
The health service costs were those of the initial emergency department attendances, CPU care, hospital admissions, re-
admissions, out-patient visits, diagnostic tests, operations, procedures, telephone health advice, visits to health care professionals (general practitioners, nurses, and social workers), and long-term costs of survivors with coronary heart disease (CHD). The resource use data for the initial six-month period were derived from the ESCAPE study. The costs were derived from official national sources such as the Personal Social Services Research Unit and NHS Reference Costs. The long-term data came from published studies. All costs were in UK pounds sterling (£) for the financial year 2005 to 2006.

Analysis of uncertainty:
A probabilistic sensitivity analysis was undertaken to consider the issue of uncertainty for all the model inputs which were each assigned a probability distribution. Cost-effectiveness acceptability curves were presented.

Results
The CPU led to a non-significant improvement in effectiveness of 0.0075 QALYs per patient (95% confidence interval, CI: -0.0168 to 0.0331) and a non-significant reduction in costs of £32 (95% CI: -480.41 to 399.86) in comparison with the usual care. Thus, under base-case conditions, the CPU was the dominant strategy, as it was less expensive and more effective.

The probabilistic sensitivity analysis highlighted the high degree of uncertainty around these base-case findings. At a willingness to pay of £20,000 per QALY, the probability that the CPU would be considered cost-effective was about 70% and did not exceed 75% regardless of the willingness to pay threshold.

Authors’ conclusions
The authors concluded that the CPU was non-significantly more effective and less expensive than routine care, but there was a substantial amount of uncertainty. Thus, no clear conclusion on the cost-effectiveness of the CPU could be drawn.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear, since the proposed care unit was compared with the usual care for this specific patient population. However, a description of the two strategies was not provided.

Effectiveness/benefits:
Most of the evidence came from a large RCT, which is usually considered to be a valid and robust source of evidence given the strengths of its design. Furthermore, the multi-centre nature of the trial should have improved the generalisability of the data. Little information on the trial was provided as this had been published elsewhere. Further data came from selected published studies, whose designs were not reported, but the methods used to derive the clinical inputs were described. The approach used to elicit the patient preferences in the RCT was reported. QALYs are a validated benefit measure, which allow cross-disease comparisons and capture the impact of the interventions on both the survival and quality of life.

Costs:
The analysis of costs was appropriately conducted. The categories of costs and their sources were consistent with the perspective. However, the long-term costs were derived from a published study, whose methods were not reported. Some aspects of the derivation of these costs were not transparently reported. For example, the use of discounting was not reported although it would have been relevant. The price year and the use of probability distributions for the costs were appropriately reported.

Analysis and results:
The use of an incremental analysis to combine the costs and benefits was appropriate and showed the dominance of one strategy over the other. The issue of uncertainty was satisfactorily investigated by means of an appropriate comprehensive approach and the findings were clearly presented. The authors provided a clear description of the decision tree and the possible pathways. Furthermore, all the assumptions were explicitly stated. The authors noted a key limitation of their analysis, which was that they did not take account of other studies, which had shown that the implementation of CPU care might increase attendances with chest pain or medical admissions. Furthermore, it was
pointed out there was considerable variation, in the outcomes, between the individual hospitals involved in the ESCAPE trial, which introduced further uncertainty.

Concluding remarks:
On the whole, the study was based on valid methodology which strengthens the authors’ conclusions.

Funding
Funded by the NHS Service Delivery and Organisation R&D programme.

Bibliographic details
Oluboyede Y, Goodacre S, Wailoo A. Cost effectiveness of chest pain unit care in the NHS. BMC Health Services Research 2008; 8: 174

PubMedID
18700961

DOI
10.1186/1472-6963-8-174

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Chest Pain /economics /therapy; Cost-Benefit Analysis; Decision Trees; Diagnostic Tests, Routine /economics; Emergency Service, Hospital /economics /organization & administration; Great Britain; Health Care Costs; Hospital Units /economics; Humans; Models, Economic; Myocardial Infarction /economics /therapy; Process Assessment (Health Care); Quality Assurance, Health Care; Quality-Adjusted Life Years; State Medicine /economics

AccessionNumber
22008101637

Date bibliographic record published
06/05/2009

Date abstract record published
01/07/2009