Assessment of the clinical outcomes and cost-effectiveness of the management of systolic heart failure in Chinese patients using a home-based intervention

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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 evaluated the clinical effectiveness and costs of a home-based telephone intervention in Chinese heart failure patients. The authors concluded that a six-month home-based nurse-led telephone service may improve clinical outcomes and provide cost-savings in Chinese heart-failure patients. Reporting was generally good, and the authors reached appropriately conservative conclusions. The authors demonstrated that telephone intervention success was dependent on setting and patient population characteristics.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The clinical effectiveness and costs of a home-based telephone intervention in Chinese heart failure patients was evaluated.

Interventions
A heart failure centre specialist nurse led home-based telephone intervention was compared with usual care. Heart failure centre care consisted of enhanced telephone follow-up that emphasised health education, diet therapy, fluid restriction, adverse effect management, and communication between patients and their health care team. The intervention started 48 to 72 hours after initial discharge at two-weekly periods until stabilisation, then every three to four weeks. The management was based on American Heart Association guidelines.

Location/setting
Taiwan/outpatient and Inpatient

Methods
Analytical approach:
The economic evaluation was conducted alongside a 550 patient non-randomised trial. The perspective of the study was not explicitly stated, but only hospital-related costs were included, which indicated a hospital perspective. Patients were followed up for six months.

Effectiveness data:
The heart failure centre group (275 patients) was selected prospectively, while the usual care group (275 patients) was retrospectively selected from the same hospital during the same time-frame (December 2003 to July 2005). Patients were selected using the same inclusion criteria. Care was taken to make sure usual care patients had not been offered the heart failure centre intervention.

The effectiveness outcome measures were hospital admission and readmission rates, and duration of respective stays. The primary effectiveness measures were percentage changes between different hospital admission rates and durations of stay between heart failure centre care and usual care. The change percentages were evaluated for statistical significance with p values reported. Additional p values were calculated after adjustment for baseline differences through univariate and multivariate regression.

Monetary benefit and utility valuations:
Measure of benefit:
The study reported disaggregated clinical effectiveness outcomes for hospitalisation; there was no primary measure of benefit. The outcomes measured were: all-cause admission rate and duration of all-cause stay; heart-failure admission rate and duration of heart-failure stay; and all-cause readmission rate.

Cost data:
Cost data came from the hospital involved in the clinical study. Cost categories included outpatient costs, inpatient costs, and emergency room costs. Costs were assessed for percentage change and statistical significance. Cost were converted from new Taiwan dollars (TWD) to US $ using a 2005 exchange rate.

Analysis of uncertainty:
Three alternative regression models were used to adjust for baseline differences and results. Model 1 was a univariate analysis; model 2 adjusted for age, gender, left ventricular ejection fraction, coronary artery disease, hypertension, diabetes mellitus, hyperlipidaemia, and smoking; and Model 3 added adjustment for medication use to Model 2.

**Results**
The all-cause hospital admission rate was 0.60 (SD ±0.77) with the heart failure centre care and 0.96 (SD ±0.85) with usual care. Heart failure centre care was more effective with statistically significant differences (with p values less than 0.05 in all effectiveness outcomes). When costs were compared for statistically significant differences, only the cost of non-heart failure inpatient care had a non-significant difference.

The total cost per patient per month was US $1,454 (SD ±2,397) for usual care and US $1,006 (SD ±2,083) for heart failure centre care. When regression models adjusting for baseline differences were undertaken, only the differences in costs of non-heart failure inpatient care remained non-statistically significant.

Authors’ conclusions
The authors concluded that a six-month home-based nurse-led telephone service from the heart failure centre may improve clinical outcomes and provided cost-savings in Chinese heart-failure patients.

**CRD commentary**
Interventions:
The interventions appeared generally appropriate. Details of the provision of the interventions were sufficient.

Effectiveness/benefits:
The reporting of clinical study and effectiveness data was adequate. There were no direct measurements of patient health or functioning. The authors acknowledged several limitations of the effectiveness data: the data was non-randomised with some heterogeneity; the short follow-up may have overestimated benefits as the initial benefits may not be sustained; usual care had different medication use at baseline than heart failure centre care; and patients for heart failure centre care were selected from a broader variety of sources than usual care patients, which may account for some of their baseline differences.

Costs:
Broad cost categories were reported but there was no detailed breakdown of costs reported. The cost-perspective was limited to the hospital; decision-makers should evaluate whether other costs were appropriate to their setting. The source of cost data was not explicitly stated, but it appeared to come from the hospital where the study was conducted.

Analysis and results:
Reporting of results was generally adequate, with variances and p-values given for all statistically significant results. It was not clear what type of regressions were carried out in the sensitivity analyses. It would have been useful to report the confidence intervals around the differences in costs and effects.

The authors compared their results with those in other settings and found that results were highly dependent on the characteristics of the setting, so the generalisability of the study results was likely to be limited.
Concluding remarks:
Reporting was generally good, and the authors reached appropriately conservative conclusions. The authors demonstrated that telephone intervention success was dependent on setting and patient population characteristics.

Funding
Not stated.

Bibliographic details

PubMedID
20233536

Original Paper URL
http://imr.sagepub.com/content/38/1/242.abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Asian Continental Ancestry Group; Case-Control Studies; Cost-Benefit Analysis; Female; Follow-Up Studies; Health Care Costs /statistics & numerical data; Heart Failure, Systolic /economics /nursing; Home Care Services, Hospital-Based /economics; Humans; Length of Stay; Male; Middle Aged; Outcome Assessment (Health Care) /economics; Patient Readmission; Prospective Studies; Survival Rate; Telemedicine; Telephone

AccessionNumber
22010000938

Date bibliographic record published
10/11/2010

Date abstract record published
04/06/2013