Cost effectiveness and outcomes of a nurse practitioner-paramedic-family physician model of care: the Long and Brier Islands study

Martin-Misener R, Downe-Wamboldt B, Cain E, Girouard 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.

CRD summary
This study examined the clinical and economic impact of a model of rural primary health care, involving nurse practitioners, paramedics, and physicians, for patients with at least one chronic illness. The authors concluded that the new pattern of care decreased costs, increased access, was well accepted, and satisfied the patients. There were some limitations in the study design and caution is required when interpreting the authors’ conclusions.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the clinical and economic impact of a model of rural primary health care, involving nurse practitioners, paramedics, and physicians, for patients with at least one chronic illness.

Interventions
The programme consisted of primary health care and emergency services provided on-site, by a nurse practitioner and paramedics, and off-site, by a family physician, to adults living in a rural community. The comparator was the usual care before the implementation of the programme.

Location/setting
Canada/primary care.

Methods
Analytical approach:
The analysis was based on one study with a three-year time horizon. The perspective was not explicitly stated.

Effectiveness data:
The clinical data were estimated using a within-group comparison study of 86 participants who were selected before the implementation of the programme and followed-up during and after its implementation. This study was carried out on Long and Brier Islands, a geographically remote area in Nova Scotia on the east coast of Canada. The analysis included 50 people with complete data at all three time points (before, midpoint, and end of the project); a three-year period. The main endpoint was the score on the Psychosocial Adjustment to Illness Scale - Self Report (PAIS-SR), which assessed health care orientation, vocational environment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress. Individual and group interviews were carried out.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The main outcome was the change in PAIS-SR score.

Cost data:
The analysis included the costs of primary care, emergency department and specialist visits, days of hospitalisation, various health and social service professionals, laboratory services, and several out-of-pocket expenses (medications,
travel, parking, childcare, and other social services). Lost individual and family income and cash transfers (costs to private insurance, workers compensation, disability payments, and other costs to government) were included. The costs and resource quantities were mainly estimated using a health and social service use questionnaire, competed by the participants of the programme. All costs were in Canadian dollars (CAD).

Analysis of uncertainty:
Not considered.

Results
The total mean costs were CAD 11,346 in year one (before implementation of the programme), CAD 10,521 in year two (midpoint), and CAD 4,706 in year three (end of the programme). There was a statistically significant decrease in prescriptions of medications and travel for health care over the three years of the programme. There was a statistically significant increase in the number of reported illnesses at year three, which was likely to have been due to earlier diagnosis of disease.

The total PAIS-SR scores were 31.83 in year one, 31.46 in year two, and 34.22 in year three. No statistically significant difference in the PAIS-SR scores was observed over the three years of the programme.

An increase in accessibility to a range of health services for residents was observed. Acceptance of the new model of care by residents and health care providers increased substantially over the three years. Community residents expressed many general statements of satisfaction with the service.

Authors’ conclusions
The authors concluded that the new pattern of care decreased costs, increased access, was well accepted, and satisfied the patients.

CRD commentary
Interventions:
The selection of the comparators was appropriate as the programme was compared against usual care in the remote setting. A description of each pattern of care was provided.

Effectiveness/benefits:
A before-and-after study was used to estimate the clinical impact of the programme on patients’ health. The same group of patients was assessed before and after the implementation of the programme. Power calculations were performed before recruitment and the inclusion and exclusion criteria were clearly reported. A large number of patients were lost to follow-up, but the authors demonstrated the comparability of the included patients with those lost. Statistical analyses were carried out to assess the significance of differences in the clinical endpoints, but these endpoints were intermediate measures of the clinical effect of the programme. This will not allow comparisons to be made with the benefits of other health care programmes. The authors assessed the internal consistency of the instrument used to estimate the clinical effect, and this was high, but they stated that the instrument might have not been sensitive to some psychosocial changes in the participants.

Costs:
The perspective was not explicitly stated, but the categories of costs indicated a societal perspective. Those costs incurred by third-party payers, and patients and their families were considered and assessed using a questionnaire completed prospectively by patients at different time points. The authors stated that the instrument used had high reliability and validity, but some recall bias or missing values could not be excluded. The cost of the programme does not appear to have been included; thus the study only assessed savings due to reduced medication prescriptions or travel, without considering the additional cost of implementing the programme. No variation of costs was considered in the sensitivity analysis and the price year was not explicitly reported.

Analysis and results:
The results were clearly presented, but no cost-effectiveness ratios were calculated and no sensitivity analyses were carried out. Statistical analyses were conducted to assess the significance of mean differences in outcomes. The authors acknowledged some limitations of their study mainly due to its design and tried to overcome these with an extensive
statistical analysis, but some issues remain as discussed above. The study results were specific to the authors’ setting and cannot be transferred to other situations.

**Concluding remarks:**
There were some limitations in the study design and caution is required when interpreting the authors’ conclusions.

**Funding**
Funded by the Nova Scotia Department of Health, Emergency Health Services.

**Bibliographic details**

**Original Paper URL**
http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=3473864

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Allied Health Personnel; Canada; Cost-Benefit Analysis; Emergency Medical Services; Humans; Nurse Practitioners; Physicians, Family; Primary Health Care; Rural Health Services

**AccessionNumber**
22011000177

**Date bibliographic record published**
16/03/2011

**Date abstract record published**
07/09/2012