An innovative enterostomal therapy nurse model of community wound care delivery: a retrospective cost-effectiveness analysis

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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 impact of enterostomal nursing by assessing the cost-effectiveness of various types of care delivery in the community for the treatment of acute and chronic wounds. The authors concluded that, the greater the involvement of an enterostomal advanced wound ostomy skills nurse in the management of wounds, the greater the cost savings and the shorter the healing time. The study was well conducted and reported, but the authors' conclusions need to be corroborated by future studies.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the role and impact of enterostomal nursing by assessing the cost-effectiveness of various types of care delivery in the community for the treatment of acute and chronic wounds. A budget impact analysis was also carried out.

Interventions
Three models of care delivery were considered.

A hybrid model in which the specialty nursing agency coordinated visits, with registered nurses and registered practical nurses visiting nurses from other community nursing agencies.
An enterostomal advanced wound ostomy skills only model, in which patients were seen exclusively by a specialty agency.
A registered nurses and registered practical nurses only model with no specialty involvement.

The last model was not analysed, due to a lack of data. In the hybrid model, different degrees of involvement for the enterostomal nurses were considered, from high involvement (75% to 100% of visits) to low (less than 25% of visits).

Location/setting
Canada/community.

Methods
Analytical approach:
This economic evaluation was based on a single study. The time horizon of the analysis was the time to wound healing. The authors did not state explicitly the perspective that was adopted.

Effectiveness data:
The clinical data came from a retrospective pragmatic review of patient charts at four community nursing agencies and an enterostomal-owned and enterostomal-operated community-nursing agency. All eligible discharged charts between January and April 2006 were reviewed and additional data were derived from the period 2003 to 2005. In total, 496 charts were reviewed, but the analysis included a final sample of 360 chronic wounds (154 in the enterostomal group and 206 in the hybrid group) and 54 acute surgical wounds (eight in the enterostomal group and 46 in the hybrid group). The length of follow-up appears to have been the period of wound healing. The key clinical endpoints were the course
of wound healing and the time to 100% closure. Both outcomes were estimated using the Kaplan-Meier survival methodology.

**Monetary benefit and utility valuations:**
Not included.

**Measure of benefit:**
The benefit measure was the time to 100% closure of the wound.

**Cost data:**
The economic analysis included only nursing visit costs, which were valued using the average fee for the service provided by the reimbursement authority in Ontario, Canada, for 2005. All costs were in Canadian dollars (CAD). A budget impact analysis was also conducted using statistics from the community care access centres that participated to the study.

**Analysis of uncertainty:**
The issue of uncertainty was investigated by means of a Monte Carlo simulation, which generated mean costs and mean benefits together with their 95% confidence intervals (CIs).

**Results**
The mean time to 100% closure of chronic wounds was 98.58 days (95% CI 80.60 to 116.56) in the enterostomal group and 143.39 days (95% CI 117.51 to 169.26) in the hybrid group (p=0.0006). In general, in the hybrid group healing courses improved as there was more involvement by the enterostomal nurses, and there was a statistically significant difference between high involvement of enterostomal nurses versus low involvement.

The mean costs were CAD 1,183 in the enterostomal group and CAD 7,110 in the hybrid group. The enterostomal group was the dominant strategy, as it was more effective and less costly. The average cost-effectiveness ratio was CAD 12 in the enterostomal group and CAD 49 in the hybrid group and similar results were observed for acute wounds.

Using the data for the Waterloo region in the province of Ontario, the budget impact analysis showed that the predicted savings to the Ministry of Health were approximately CAD 1.3 billion per year for chronic wounds and approximately CAD 575 million per year for acute wounds when the involvement of the enterostomal nurse was greater than 50%.

**Authors' conclusions**
The authors concluded that, the greater the involvement of an enterostomal nurses in the management of wounds, the greater the cost-savings and the shorter the healing times.

**CRD commentary**
**Interventions:**
The selection of the interventions was appropriate as various types of nursing services in the community were considered.

**Effectiveness/benefits:**
A retrospective review of patient charts is generally considered to be a weak source of evidence, as the retrospective nature precludes any verification of data accuracy. The authors reported extensive information on the data sources such as the inclusion and exclusion criteria, sample size, and the baseline characteristics of the groups. They noted the problems in the identification of an adequate number of charts for patients in the group with no specialty involvement. The study groups were also not fully comparable at baseline. The final measure of efficacy was an intermediate measure of the impact of the interventions on the patients' health and was disease specific, which means it cannot be compared with the benefits of other health care interventions.

**Costs:**
The analysis of costs was restricted to the costs of nurse visits, the source of which was reported. The resource use data were derived from the actual consumption of resources in the study sample. The budget impact analysis considered
those costs relevant to the third-party payer in the authors’ setting. The unit costs and the price year were reported, improving the transparency of the economic analysis.

Analysis and results:
The costs and benefits were synthesised using average cost-effectiveness ratios. An incremental analysis was not required given the clear superiority of one strategy over the other. The issue of uncertainty was satisfactorily investigated by means of a comprehensive approach (Monte Carlo simulation). The authors stated that this was the first cost-effectiveness study on this topic. Some limitations of the analysis were highlighted such as the limited ability of the study sample to be representative, which limits the external validity of the findings.

Concluding remarks:
The study was well conducted and reported, but the authors’ conclusions need to be corroborated by future studies.

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