Economic impact with home delivery of chemotherapy to pediatric oncology patients

Holdsworth M T, Raisch D W, Chavez C M, Duncan M H, Parasuraman T V, Cox F 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.

Health technology
Home delivery of chemotherapy versus hospital admission for chemotherapy (HAC) for pediatric oncology patients.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Children requiring chemotherapy.

Setting
Home and hospital. The economic study was carried out in New Mexico, USA.

Dates to which data relate
The effectiveness, resource and cost data for the intervention were collected from June 1991 to June 1994. The corresponding dates for the data related to the comparator were not explicitly given. Resources were measured in 1993 values.

Source of effectiveness data
Estimates of the final outcomes were derived from a single study.

Link between effectiveness and cost data
The costing for both the intervention and the comparator was undertaken retrospectively on the same intervention sample as that used in the effectiveness study.

Study sample
The HCP group comprised a total of 44 (25 male) consecutive patients who were treated in the home setting with courses of chemotherapy. The mean age was 9.5 (+/- 5.1) years. The HCP patients treated in the home received a total of 262 courses of chemotherapy with a mean number of 5.8 (+/- 4.4) courses per patient. The home chemotherapy treatments were estimated to account for a total of 1,012 patient care days. The HAC group consisted of 19 patients receiving 51 courses of chemotherapy. Power calculations to determine the sample size were not reported.

Study design
Non-randomised trial with historical control. The HCP was delivered by two local home care agencies. The HAC was delivered in a hospital. The duration of the follow-up was 3 years. There was no loss to follow-up.

**Analysis of effectiveness**
The analysis of the clinical outcomes was based on treatment completers only. The primary health outcomes used in the analysis were the number of acute complications (nausea and vomiting) and the rate of successful control of nausea and vomiting. The daily activity interference (DAI) was also assessed. The successful control of nausea and vomiting and DAI were measured by administering a previously validated survey. The patients in the two study groups were not compared.

**Effectiveness results**
There were no cases of acute complications. The authors reported that "Nausea and vomiting surveys were available for 16 patients who received 66 courses of highly emetogenic chemotherapy with the antiemetic combination of ondansetron and methylprednisolone". Nausea severity, vomiting severity, and DAI for the HCP group were 84.9%, 78.8%, and 78.8%, respectively. The corresponding figures for the HAP group were 78.9%, 68.4%, and 84.2%, respectively.

**Clinical conclusions**
Effective control of nausea and vomiting can be accomplished at home in the majority of patients with an ondansetron-based antiemetic regimen.

**Measure of benefits used in the economic analysis**
No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

**Direct costs**
Costs were not discounted. Resource utilisation was not reported separately from the costs. The cost items were reported separately and consisted of inpatient bed fee, the cost of chemotherapy, supportive care medications, infusion pump rental, medication preparation fees, nursing fees, intravenous fluids, and intravenous ancillary supplies. Charges were used as a proxy for costs. The cost analysis for the comparator was performed on the intervention study group as if they had been treated with the comparator. The quantity/cost boundary adopted was the patient and/or third-party payer. The sources of cost data were the two agencies involved in providing the care for the HCP patients, and the study hospital. The date to which the price data referred was 1993. Professional fees (i.e., physician fees) were not considered in the cost analysis.

**Indirect Costs**
Not considered.

**Currency**
US dollars ($).

**Sensitivity analysis**
Multi-way sensitivity analyses were carried out on home care and hospital care charges.

**Estimated benefits used in the economic analysis**
Not applicable.
Cost results
Monetary savings from the HCP were estimated to range from $5,180 per course of ifosfamide plus etoposide to $367 per course for high-dose methotrexate. Total monetary savings from the HCP during the 3-year period were estimated to be $640,793.

Synthesis of costs and benefits
A synthesis of the estimated benefits and costs was not provided and no incremental analysis was performed. Sensitivity analysis established the robustness of the results to alterations in values of cost parameters.

Authors' conclusions
HCP for pediatric oncology patients results in substantial monetary savings to payers. Effective control of nausea and vomiting can be accomplished at home in the majority of patients with an ondansetron-based antiemetic regimen.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
The estimate of measure of benefit used in the economic analysis may not be internally valid due to lack of a randomised design.

Validity of estimate of costs
The resource quantities were not reported separately from the prices, although adequate details of the methods of quantity/cost estimation were given. As acknowledged by the authors, the study lacked an inpatient control group (because of a lack of willingness in patients to participate in such a group), and this may have adversely affected the internal validity of the cost calculations.

Other issues
Given the lack of randomisation and statistical analysis, the results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed although appropriate comparisons were made with other studies and the results were not presented selectively. A synthesis of the estimated benefits and costs would have been helpful.

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