A prospective, controlled evaluation of home chemotherapy for children with cancer

Close P, Burkey E, Kazak A, Danz P, Lange B

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 care programme delivering selected repetitive home infusion chemotherapy to children with cancer.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Children with cancer.

Setting
Community and hospital. The economic study took place in Philadelphia, USA.

Dates to which data relate
The effectiveness and resource use data corresponded to patients who were enrolled into the study during the period January 1989 to December 1990. The fiscal year was not explicitly specified.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were not used to determine the sample size. For participation in the study, eligibility criteria included availability of electricity, telephone, refrigeration, access to emergency care and reliable intravenous access. Parents were required to be physically present in the home during infusions and had to demonstrate their ability to operate infusion pumps and lines. 14 families (15 children, mean age 8.75 years) were included in the study. 10 additional patients were excluded for various reasons including both parents working, or mother occupied with other young children at home.

Study design
The study was a non-randomised trial with concurrent self-controls carried out in a single centre. The duration of the
study was based on the time taken to administer three courses of chemotherapy: the first course was administered in the hospital to assess eligibility for entry into the trial; the second course was also given in the hospital and the outcomes were then compared to the third course which was given at home.

Analysis of effectiveness
The analysis was based on intention to treat. The primary health outcomes used in the analysis were interruptions in the delivery of chemotherapy, complications, and quality of life measured by a Likert scale with a range from 0 to 6, including seven patient-related variables (well-being, independence, appetite, school work, mood, sleeping at night, and "up-and-about") and four parent-related variables (keep up household tasks, keep up with work responsibilities, spend time with spouse, and spend time with other children). The scale was developed specifically for this study.

Effectiveness results
One patient returned to the hospital for 2 days during his home chemotherapy course but then returned home to complete his treatment. No other interruptions in delivery of chemotherapy or complications of care occurred at home. Quality of life improved for both patients and their families (p<0.05 and 0.001, respectively for all variables included).

Clinical conclusions
Administration of selected chemotherapy at home results in a more satisfying lifestyle for patients and parents.

Measure of benefits used in the economic analysis
Quality of life measured by means of a parent-scored Likert scale assessing seven patient variables and four parent variables was the main measure of benefit.

Direct costs
Costs were not discounted due to the short time frame adopted for the study. Medical costs included itemised hospital statements and itemised clinic, laboratory, and professional charges. Actual consumption of supplies, ordering of tests, and professionals' hours were measured in an attempt to relate costs to charges. Medical costs for home care included itemised charges for infusion supplies, durable medical equipment, itemised nursing fees, and clinic, laboratory and professional medical charges. Out-of-pocket expenses were calculated from daily logs maintained by one or both parents and included expenditure on food, transport/parking, telephone and baby-sitters. Costs and quantities were not analysed separately. The perspective adopted in the cost analysis was that of the third-party payer and the patient's parents. The date of the price data was not explicitly specified.

Statistical analysis of costs
The paired t test was used to compare the modalities in terms of billed medical charges, out-of-pocket costs, and loss of wages.

Indirect Costs
Costs were not discounted due to the short time frame adopted for the study. Loss of wages was calculated for the parents. Quantities were not reported separately from the costs. The sources of cost data were not given. The perspective adopted in the cost analysis was that of the patient's parents. The date of the price data was not explicitly specified.

Currency
US dollars (§).
Sensitivity analysis
No sensitivity analyses were carried out.

Estimated benefits used in the economic analysis
Patients were judged as having significantly greater well-being (p<0.001), better appetite, more independence (p<0.01), greater contentment, and greater ability to keep up with their school work (p<0.05) when they were at home than in hospital. The amount of time they were out of bed or sleeping at night was not significantly different in the two environments. Parents were significantly better able to keep up with household tasks, maintain their jobs, spend time with one another, and spend time with the other children, (p=0.001).

Cost results
The attempt to estimate actual costs failed as the authors were unable to count accurately the man-hours for all persons participating in the care of the children. The mean cost per day (based on billed medical charges) in the hospital was $2,329 (+/-627) and $1,865 (+/- 883) at home, (p<0.01). The mean out-of-pocket expense per day in the hospital was $68 (+/- 31) compared with $12 (+/- 6) at home, (p=0.0001). The loss of wages per course of chemotherapy in the hospital was $265 (+/- 229) compared with $61 (+/- 107) at home, (p<0.005).

Synthesis of costs and benefits
Costs and benefits were not combined since the intervention was regarded as the dominant strategy.

Authors' conclusions
A home care programme that delivers selected repetitive home infusion chemotherapy to children with cancer could reduce billed charges and out-of-pocket costs. Home care is also less disruptive than hospital care and most parents prefer to receive care at home. High-technology home care is a cost-effective means of delivering care, and it preserves a more normal family life than hospital care.

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

Validity of estimate of measure of benefit
In assessing the internal validity of the effectiveness results the following points should be considered:as the authors mentioned, patients were selected according to well-defined medical and psychosocial criteria and only 15-20% of children receiving chemotherapy in the hospital participated in the study; the sample size (n=14) was small and the follow-up period was short-term.

Validity of estimate of costs
Quantities were not reported separately from the costs, however, adequate details of methods of cost estimation were given. As the authors mention, the study was unable to estimate the true costs.

Other issues
Given the small sample size, the lack of sensitivity analysis, and estimation of true costs, the results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed.

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Bibliographic details