A cost-utility analysis in patients receiving enteral tube feeding at home and in nursing homes

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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 cost-utility of long-term enteral tube feeding (ETF) in patients with cerebrovascular accident, both in nursing homes and at home, in comparison with no ETF. It was found that, in both settings, ETF was a cost-effective strategy only if the non-medical costs were paid privately. If state contributions were required for patients in nursing homes then ETF was not cost-effective. The study appears to have been based on valid methodology, which makes the authors’ conclusions more robust.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to examine the cost-utility of long-term enteral tube feeding (ETF) in patients with cerebrovascular accident (CVA, stroke) both in nursing homes and at home, in comparison with no ETF.

Interventions
The long-term use of ETF was compared with a strategy of no ETF. ETF was assumed to supply 1,500 kcal per day.

Location/setting
UK/community (patients’ home and nursing home).

Methods
Analytical approach:
This economic evaluation was based on a single study with a three-year time horizon. The perspective was not explicitly stated.

Effectiveness data:
The clinical data on ETF came from an audit carried out by the British Artificial Nutrition Survey (BANS) on patients who started home ETF between 1995 and 2005. There were 2,888 patients in their own homes and 7,007 patients in nursing homes. However, the clinical data came only from a subset of these patients with CVA. The length of follow-up was three years, with three-monthly assessment of the clinical status. Clinical data on the comparator were based on authors’ assumptions. The key clinical endpoint was mortality.

Monetary benefit and utility valuations:
The utility valuations were based on data from the BANS for ETF and on authors’ opinions for the comparator. The quality of life was determined using the European Quality of life (EQ-5D) visual analogue scale in a randomly selected sample of 25 patients on the BANS database.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure. No discounting was applied in the base-case analysis.

Cost data:
The health service costs were those of the initial hospital services (insertion of gastrostomy and in-patient training).
home visits (general practitioner, dietician, community district nurse, speech and language therapist, community physiotherapist, chiropodist, community occupational therapist), feed plus ancillaries and delivery, investigations, hospital re-admissions, and nursing home. These costs came from multiple sources such as Personal Social Services Research Units, the British National Formulary, and the Department of Health. A number of assumptions were also made for some cost categories. All costs were in UK pounds sterling (£), but were also reported in Euros (EUR). They referred to 2004 to 2005 prices and they were not discounted in the base-case scenario.

Analysis of uncertainty:
The issue of uncertainty was investigated, with different scenarios for the following estimates: assumptions on survival without home ETF, survival in patients who returned to full oral nutrition, home visits by health care workers, quality of life scores, state versus private payment for nursing homes, entire treatment in hospital, and the discount rate (3% or 5% for both the costs and benefits).

Results
The quality of life score was 0.47 (standard deviation, SD: 0.28) for those in their own homes and 0.47 (SD: 0.25) for those in nursing homes.

Under the base-case assumptions, which were a survival time in the control group of 0 years and a quality of life and survival, for those who reverted to full oral feeding, the same as for those continuing on ETF, the incremental cost per QALY with home ETF over no ETF was £12,817. When alternative assumptions on the quality of life, survival, discounting, and costs of care were made, this incremental cost-utility ratio ranged from £8,544 to £25,633.

In the nursing home setting, the cost-effectiveness of ETF depended on the amount of the state contribution: without state contribution the incremental cost per QALY was £10,303 (thus private contributions covered most of non-medical costs), while with full state contribution, this figure rose to £68,065. The incremental cost per QALY was below £30,000 when the state contribution was less than 34%.

If patients received ETF in the hospital, the incremental cost per QALY was £171,727.

Authors' conclusions
The authors concluded that ETF for CVA patients either at home or in nursing homes was a cost-effective strategy only if the non-medical costs were paid privately. If state contributions for patients in nursing homes were required, then ETF was not cost-effective.

CRD commentary
Interventions:
The selection of no intervention as the comparator was intended to determine the additional value of ETF, even though it may not have represented a real alternative.

Effectiveness/benefits:
The clinical data came from the analysis of a national survey, on an administrative database, rather than data collected for the purposes of the study. The advantages of such an approach stem from the large sample of patients, the long follow-up, and a representative patient sample. The main drawback of this method was the lack of a control group, whose clinical endpoints were based on authors' opinions. The derivation of the utility valuations was based on a valid tool. However, the authors noted that a potential limitation of their analysis was the fact that that the utility valuations came from a small sample of patients. QALYs are an appropriate benefit measure because they capture the impact of the disease on both the quality of life and survival. It was pointed out that the analysis considered only the quality of life for patients and not for their carers. The sensitivity analysis highlighted the relevant assumptions on quality of life.

Costs:
The categories of costs and their sources suggest that the viewpoint was that of the National Health Service (NHS), but this was not explicitly stated. The quantities of resources used were presented separately from their unit costs for several items. The price year was reported, which will allow reflation exercises for other time periods. The use of discounting was investigated in the sensitivity analysis where alternative rates or no discounting were considered.
general, the economic analysis was carried out transparently and credibly.

**Analysis and results:**
The use of an incremental analysis to synthesise the costs and benefits was appropriate. However, the expected costs and benefits were not reported and the authors presented only incremental cost-utility ratios. The investigation of the issue of uncertainty was a key aspect of the analysis, because some of the clinical estimates were based on authors’ opinions, especially for the comparator. Thus, a number of alternative scenarios were considered and were clearly described.

**Concluding remarks:**
On the whole, the study appears to have been based on valid methodology, which makes the authors’ conclusions more robust.

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