Development and implementation of a clinical pathway for patients undergoing total laryngectomy: impact on cost and quality of care

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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.

Health technology
Clinical management of total laryngectomy using the clinical pathway approach.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing total laryngectomy. Those requiring flap reconstruction as part of the surgical procedure were not included in the study.

Setting
A tertiary care academic medical centre. The economic study was conducted in Little Rock Arkansas USA.

Dates to which data relate
Effectiveness data were collected between 1995-1996, before the introduction of the clinical pathway and between November 1996 and September 1997, after the introduction of the clinical pathway. Cost data relate to the same years.

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

Link between effectiveness and cost data
Costing was undertaken on the same patient sample as that used in the effectiveness analysis, prospectively for the pathway group and retrospectively for the pre-pathway group.

Study sample
In total, 45 patients were included in the study. The clinical pathway was implemented for 15 patients, while the other 30 patients were treated without the implementation of the pathway guidelines. The pre-pathway and pathway groups were comparable with regard to patients' demographic characteristics, disease stage and payer mix. Patients who required flap reconstruction as part of the surgical procedure were not included in the study. Power calculations relating to the sample size were not performed.
Study design
This was a non-randomised study with historical controls.

Analysis of effectiveness
The analysis was based on treatment completers only. The main health outcomes used in the analysis were length of hospital stay and readmission rate.

Effectiveness results
Length of stay decreased by 2.9 days (29% reduction, \( p=0.001 \)) after the introduction of the clinical pathway. Readmission rate also decreased from 23% (7/30) prior to protocol implementation to 7% (1/15).

Clinical conclusions
Pathway implementation did not compromise the quality of care for total laryngectomy patients.

Measure of benefits used in the economic analysis
The authors did not provide a summary measure of benefits. As such, a cost-consequences approach was used and the reader is referred to the effectiveness results reported above.

Direct costs
Direct hospital variable costs were considered: routine room, intensive care unit (ICU), critical care unit (CCU), operating room, recovery room, anaesthesiology, hospital pharmacy, central sterile supply, respiratory therapy, occupational and speech therapy, nutrition services, outpatient pharmacy, radiology, anatomical pathology, clinical laboratory. Costs were not discounted due to the short duration of the study.

Statistical analysis of costs
The \( t \) test was used for statistical analysis.

Indirect Costs
Indirect costs were not considered.

Currency
US dollars ($).

Sensitivity analysis
A sensitivity analysis was not performed.

Estimated benefits used in the economic analysis
The reader is referred to the effectiveness results reported above.

Cost results
The average hospital variable cost decreased from $3,992 to $3,419 per case. The implementation of the pathway did not result in any additional implementation costs. The reduction in costs was determined by a reduction in length of hospital stay, a reduction in the use of ICUs, a reduction in the operating room costs with the introduction of the pathway's recommended pre-assembled 'laryngectomy instrument set' and a reduction in pharmaceutical costs.
Synthesis of costs and benefits
Cost and benefits were not combined because of the cost-consequences approach adopted.

Authors' conclusions
Implementing a carefully developed clinical pathway may reduce cost without compromising the quality of care for patients undergoing total laryngectomy.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparators is clear, as both management strategies for total laryngectomy were used in the authors' setting. The database user should consider if the same applies in their own setting.

Validity of estimate of measure of benefit
The authors did not provide a summary measure of benefits and only clinical outcomes were presented. The pathway was well documented and derived using clinical experts in the field. The non-randomised nature of the study design and lack of concurrent controls, however, weakens the validity of the results due to the potential for confounding variables and selection bias.

Validity of estimate of costs
The rationale for choosing variable hospital cost is that it more accurately reflects the impact of a clinical pathway on the overall costs of patient care. Comparisons made with studies dealing with the implementation of clinical pathways for head and neck surgery revealed similar cost results.

Other issues
Good comparisons were made with other studies. The cost results may not be generalisable to other settings or countries.

Implications of the study
Implementing a carefully developed clinical pathway may reduce cost without compromising the quality of care for patients undergoing total laryngectomy. However, any clinical pathway should have enough financial flexibility to allow for individual patient needs.

Source of funding
Sources of funding were not stated.

Bibliographic details

PubMedID
10555697

Indexing Status
Subject indexing assigned by NLM

MeSH
AccessionNumber
21999002117

Date bibliographic record published
28/02/2001

Date abstract record published
28/02/2001