Laryngeal cancer: quality-of-life and cost-effectiveness  
*Morton R P*

**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**  
Radiotherapy and surgery (total laryngectomy) for laryngeal cancer.

**Type of intervention**  
Treatment.

**Economic study type**  
Cost-effectiveness analysis.

**Study population**  
Patients (average age 66 years) with squamous cancer of the glottis.

**Setting**  
Hospital. The economic study was carried out in New Zealand.

**Dates to which data relate**  
The data for the effectiveness and resource use analyses were collected during the period August 1989 to 1993. 1995 prices were used.

**Source of effectiveness data**  
The evidence for final outcomes was derived from a single study.

**Link between effectiveness and cost data**  
The costing was undertaken retrospectively and not on the same patient sample as that used in the effectiveness study.

**Study sample**  
Power calculations were not used to determine the sample size. The study sample comprised 42 men and 4 women with squamous cancer of the glottis. Their average age was 66 years. There is no evidence that the initial study sample is appropriate for the clinical study question. Most patients (n=31) had early (T1 or T2) glottic tumours; there were 13 T3 tumours (13%) and 2 T4 tumours. Radiotherapy was given for all the early tumours and surgery for the advanced tumours. One patient with an early tumour had surgery as primary treatment.

**Study design**  
The study was a non-randomized controlled trial with concurrent controls in one centre in New Zealand. A quality of life questionnaire was completed by patients at entry and at 3 months, 12 months and 24 months. All patients completed
the questionnaire at the time of diagnosis but only 44, 41 and 31 patients completed the questionnaire at 3, 12 and 24 months after treatment, respectively.

Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. Quality of life (QL) was used as the primary health outcome in the analysis. The single-item QL parameters used were: dysphagia, weight loss, appetite, pain, speech difficulty, cough and family support. Two composite measures were also used: the General-Health Questionnaire (GHQ) and the Life Satisfaction Scale (LS). At diagnosis there was no significant difference in LS or GHQ related to age, sex, tumour stage or treatment plan. It was not stated whether groups were comparable in age, sex or prognostic features.

Effectiveness results
By 12 months the GHQ indicated that there was significantly less psychological distress than at the time of diagnosis. By 24 months, LS and GHQ were no different than at presentation, although there was more coughing and more pain on average than had been present at the time of presentation/diagnosis. The increase in average pain scores from 2.6 at presentation to 2.9 at 12 months, although statistically significant, was very small. The presence of a laryngectomy did not result in significantly different emotional well-being (LS) or psychological distress (GHQ) at 12 or 24 months when compared with the patients who had been treated by RT only. At 3 months the only variable to be significantly different (p=0.0001) was difficulty speaking, which was worse after surgery.

Clinical conclusions
There were no major QL differences between patients treated surgically and those receiving RT.

Measure of benefits used in the economic analysis
Quality of life (QL) was used as the measure of benefit in the analysis. The single-item QL parameters used were: dysphagia, weight loss, appetite, pain, speech difficulty, cough and family support. Two composite measures were also used: General-Health Questionnaire (GHQ) and Life Satisfaction (LS). At diagnosis there was no significant difference in LS or GHQ related to age, sex, tumour stage or treatment plan. The quality of life questionnaire was completed by patients at entry and at 3 months, 12 months and 24 months.

Direct costs
Only health care costs were considered. Direct costs for a patient having a standard course of radical radiotherapy were based on costs in oncology department and on a dose of 60Gy in 30 fractions. Direct costs for a patient undergoing laryngectomy were based on costs in one Head & Neck surgery department and were calculated on the basis of 2 weeks in hospital, 3 hours in the operating room and standard, uncomplicated postoperative and rehabilitative care. The calculation of direct costs was based on two assumptions:

(1) that the surgery group does not receive postoperative radiotherapy; and
(2) that the radiotherapy group does not have chemotherapy.

Costs were not discounted.

Indirect Costs
Not included.

Currency
New Zealand dollars (NZ$) 1995.
Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
At diagnosis, there was no significant difference in LS or GHQ related to age, sex, tumour stage or treatment plan. By 12 months the GHQ indicated that there was significantly less psychological distress than at the time of diagnosis. By 24 months, LS and GHQ were no different than at presentation, although there was more coughing and more pain on average than had been present at the time of presentation/diagnosis. At 3 months the only variable to be significantly different (p=0.0001) between the two treatment groups was difficulty speaking, which was worse after surgery. At 12 months, the greater difficulty speaking among laryngectomees persisted. This was accompanied by a tendency to dysphagia and increased cough, but the differences were not statistically significant.

Cost results
Direct costs for a patient having a standard course of radical radiotherapy for a glottic carcinoma in one oncology department were NZ$6,473, based on a dose of 60Gy in 30 fractions. Direct costs for a patient undergoing laryngectomy in one Head & Neck surgery department were NZ$15,840, based on 2 weeks in hospital and 3 hours in the operating room and standard, uncomplicated postoperative and rehabilitative care. If the cost of salvage laryngectomy for patients with recurrent disease were added to the cost of treating advanced glottic cancers with radiotherapy, then the average cost per case (NZ$12,565) would have approached that for primary surgery alone.

Synthesis of costs and benefits
A synthesis of costs and benefits was not performed although it was necessary.

Authors’ conclusions
The implicit conclusion of the authors was that the cost-effectiveness of surgery, from the perspective of patient-based quality of life outcome, was very similar to that for radiotherapy in advanced cancer of the larynx.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear. You, as a database user, should consider if this applies to your own setting.

Validity of estimate of measure of benefit
As noted by the authors the estimate of the measure of benefit was based on only a small sample of patients in one centre and the study may therefore not be powerful enough to detect real effects in quality of life changes.

Validity of estimate of costs
Resource quantities were not reported separately and the costs presented were not based on the patient sample from which the effectiveness data were derived.

Other issues
Given the uncertainties in the data the author's conclusions should be treated with some caution.

Source of funding
Contract grant sponsors: NZ Lotteries Commission Medical Research Fund, and Greenlane Hospital Research and Education Trust.
Bibliographic details

Indexing Status
Subject indexing assigned by NLM

MeSH
Aged; Combined Modality Therapy; Comparative Study; Cost-Benefit Analysis; Female; Glottis; Humans; Laryngeal Neoplasms /radiotherapy /surgery /economics; Longitudinal Studies; Male; Neoplasms, Squamous Cell /radiotherapy /surgery /economics; Quality of Life; Surveys and Questionnaires; Research Support, Non-U.S. Gov't; Time Factors

AccessionNumber
2199700963

Date bibliographic record published
28/02/1999

Date abstract record published
28/02/1999