Who should follow up lung cancer patients after operation?
Gilbert S, Reid K R, Lam M Y, Petsikas D

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
Long-term follow-up, performed by a family physician (FP), for the detection of cancer recurrences after limited-stage non-small cell lung cancer (NSCLC) resection.

Type of intervention
Treatment and secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients treated surgically for a pulmonary neoplasm (surgically treated stage IA to IIB NSCLC patients). The following exclusion criteria were applied: malignancy other than NSCLC stage IA to IIB; history of previous pulmonary malignancy; synchronous lung cancer primaries; inability to withstand pulmonary resection; use of adjuvant therapy such as radiation or chemotherapy; and death within 30 days of operation.

Setting
Hospital-based clinic in a tertiary care centre and primary care. The economic analysis was carried out in Canada.

Dates to which data relate
Effectiveness and resource use data were collected in the period from 1 January 1988 to 31 December 1995, with a follow-up period extended to 31 December 1997, ensuring a minimum post-operative follow-up of 2 years for each subject. The price year was not explicitly specified.

Source of effectiveness data
The evidence for the final outcomes was based on a single study.

Link between effectiveness and cost data
Costing was retrospectively performed on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 245 surgically treated stage IA to IIB NSCLC patients with a median age of 64 years (range: 34 - 83). 344 patients were scheduled for surgical treatment of an NSCLC. 99 patients were excluded on the grounds of one or more of the exclusion criteria.
Study design
This was a retrospective cohort study, carried out in a single centre. The median duration of the follow-up was 41 months (range: 1 - 107). Follow-up to January 1997 was completed in 96% of patients (9 patients were lost to follow-up). The records of the thoracic surgery clinic, the regional cancer database, referring family practitioners, and peripheral hospitals were used to determine disease-free and overall survival. Whenever necessary, patients or close relatives were contacted to complete existing records.

Analysis of effectiveness
The principle used in the analysis of effectiveness was treatment completers only. The clinical outcomes were recurrence rate, presentation at recurrence (asymptomatic versus symptomatic), the physician detecting the recurrence (FP versus surgeon), and 5-year survival. All survival curves were calculated using the Kaplan-Meier method. Multivariate analysis with a proportional hazard regression model was used to analyse the effect of prognostic factors on survival.

Effectiveness results
Ninety of the 111 recurrences were detected during the study period while the patient was followed up in the thoracic surgery clinic. Despite clinic follow-up, 66.7% (60/90) were identified by the FP, and only 28.9% (26/90) by the surgeon. The remaining 4.4% (4/90) were detected by other physicians. The proportion of symptomatic recurrences was 78.3% (47/60) in the FP-detected group and 30.8% (8/26; p<0.001) in the surgeon-detected group. 96% (25/26) of surgeon-detected recurrences had suspicious clinical or chest radiographic findings, compared with 92% for FP-detected recurrences (55/60; not significant). The five-year survival was 53%. There was no significant difference in 5-year survival in patients whose recurrence was detected by the surgeon as opposed to the FP.

Clinical conclusions
Despite regular surgical clinic follow-up, a physician other than the thoracic surgeon (64/90; 71.1%) detected most recurrences. These recurrences were detected during the interval between clinic appointments. The ratio of symptomatic to asymptomatic recurrences was significantly lower in the surgeon-detected group than in the FP-detected group. This can be explained by the fact that visits to the surgical clinic were scheduled regardless of the presence of symptoms. Visits to the FP in the interval between surgical appointments were likely to have been prompted by the appearance of symptoms, which could explain the higher proportion of symptomatic recurrences detected by the FP.

Measure of benefits used in the economic analysis
The benefit measure was the number of recurrences detected by FPs compared to surgeons.

Direct costs
Costs were not discounted due to the short time frame of the cost analysis. Some quantities were reported separately from the costs. Cost items were not reported separately. The cost analysis covered the costs of follow-ups in surgery clinic (using the number and length of follow-up visits) and FP's office. These costs accounted for the physician's fees, office-related expenses, and the cost of a chest radiography interpreted by the radiologist. The perspective adopted in the cost analysis was not explicitly specified. The institution's cost-accounting system and a referring family physician's practice were the sources of data regarding the cost of follow-up appointments. The price year was not specified. The cost calculations for a surgical clinic appointment did not take into account expenses related to a hospital-based clinic such as rent, utilities, and the cost of commuting to a tertiary care centre.

Indirect Costs
Indirect costs were not included.
**Currency**
Canadian dollars (Can$). No conversion to other currencies was made.

**Sensitivity analysis**
No sensitivity analysis was carried out.

**Estimated benefits used in the economic analysis**
Despite clinic follow-up, 66.7% (60/90) of the recurrences occurring during the study period were identified by the FP, and only 28.9% (26/90) by the surgeon. The remaining 4.4% (4/90) were detected by other physicians.

**Cost results**
The mean total cost for each study group was not reported (although it can be calculated from the figures given for the cost per recurrence detected and the number of recurrences detected).

**Synthesis of costs and benefits**
The estimated cost per recurrence detected by the thoracic surgeon was Can$4,387. If FPs were following up these patients at the same frequency, the cost per recurrence detected would be Can$1,105.

**Authors’ conclusions**
Long-term follow-up after limited-stage non-small cell lung cancer resection could possibly be performed by a FP alone without compromising overall survival, and with significant cost savings.

**CRD COMMENTARY - Selection of comparators**
A justification was given for the choice of the comparator. It was a widely practised procedure in the context in question. You, as a database user, should consider whether this is a widely used approach in your own setting.

**Validity of estimate of measure of effectiveness**
The internal validity of the effectiveness results can not be guaranteed due to the retrospective nature of the study design, introducing the possibility of selection, recall, interviewer, and misclassification biases, as acknowledged by the authors. The effects of prognostic factors on survival were assessed using multivariate regression analysis. The study sample appears to have been representative of the study population.

**Validity of estimate of measure of benefit**
The estimate of the benefit measure was directly, and appropriately, derived from the effectiveness analysis. The choice of the estimate was implicitly justified. As there was no significant differences between the two groups in terms of the 5-year survival, the life-years gained could not be used as the measure of benefit.

**Validity of estimate of costs**
A positive feature of the cost analysis was that some details of the methods of cost estimation were given. However, the following features may have adversely affected the validity of the cost analysis: the price year and perspective adopted in the cost analysis were not explicitly reported; the costing was conducted retrospectively, introducing the possibility of bias into the calculations; it is not entirely clear whether the cost data were based on true costs or on charges/reimbursement; the direct cost analysis was not comprehensive as some important components of the costs (such as costs of travel, etc.) were omitted from the calculations; statistical analyses were not performed on resource use or cost data; the effects of alternative procedures on indirect costs were not addressed. Due to these limitations, the cost results may not be generalisable to other countries.
Other issues
Given the inherent limitations of the study design, and the lack of sensitivity analysis and statistical analysis of the costs, the results should be treated with some degree of caution. The issue of generalisability to other settings or countries was not addressed, although some comparisons were made with other studies. The degree to which the study sample was representative of the study population was not addressed in the authors' comments. An incremental cost-effectiveness ratio could have been calculated to produce a more informative measure of cost-effectiveness. With respect to the chronic nature of the disease, it may have been more appropriate to adopt a cost-utility approach in order to incorporate the subjective assessment of the patients in the analysis.

Implications of the study
As only 2.3% of recurrences were detected by physical examination alone, perhaps detailed phone surveys administered by trained nurses could be as efficient as clinic appointments with a physician. It becomes difficult to justify costs associated with the thoracic surgical clinic follow-ups after limited stage NSCLC resection when considering the possibility that no survival advantage results from having a recurrence diagnosed by a thoracic surgeon. However, surgeons could be reluctant to delegate this task, as it is an integral part of their training and is believed to be an important responsibility.

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Other publications of related interest

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