Cost and cost-effectiveness of increased community and primary care facility involvement in tuberculosis care in Lilongwe District, Malawi

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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
Treatment strategies for new smear-positive and smear-negative pulmonary patients were compared. Strategy one (S1), for new smear-positive patients, comprised inpatient care for the first 2 months with a daily drug regimen of streptomycin. Strategy two (S2), for new smear-positive patients, comprised the choice of inpatient or outpatient care for the first 2 months with a drug regimen of ethambutol three times a week. Strategy three (S3), for new smear-negative patients, was not to have any observation of treatment. Strategy four (S4), for new smear-negative pulmonary patients, comprised direct observation of their drug treatment by a community member "guardian" or a health worker for the first 2 months of treatment.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised all new smear-positive and new smear-negative pulmonary patients.

Setting
The setting was secondary care and community care. The economic study was carried out in Lilongwe District, Malawi.

Dates to which data relate
The effectiveness and resource use evidence were from the period 1 January 1997 to 31 October 1997 for the comparator strategies, and from 1 January to 31 December 1998 for the new strategies. The price year was 1998.

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

Link between effectiveness and cost data
The same patients provided both the cost and effectiveness data. It was unclear whether the costing was conducted prospectively or retrospectively.

Study sample
It was unclear if power calculations were conducted in the planning phase and they have not been reported in this
Study design
This was a multi-centre, non-randomised study with historical controls. The patients were followed up for 8 months after treatment began. For full details please refer to Nyirenda et al. 2003.

Analysis of effectiveness
The analysis was conducted on an intention to treat basis. The primary health outcomes used were the cure rate for smear-positive patients and the treatment completion rate for smear-negative patients. Information on the comparability of the groups was not given in this paper.

Effectiveness results
For new smear-positive patients, the cure rate was 58% for S1 and 68% for S2. For smear-negative patients, the treatment completion rate was 33% for S3 and 50% for S4.

Clinical conclusions
The authors concluded that the changes in treatment strategy introduced at the end of 1997 improved health outcomes for smear-positive and smear-positive pulmonary patients, as both the cure rates and the treatment completion rates improved in the intervention groups of patients.

Measure of benefits used in the economic analysis
The summary measures of benefit used were the number of smear-positive patients cured and the number of smear-negative patients completing treatment.

Direct costs
An interest rate of 3% was used to derive an annualised value for capital costs. The costs were not discounted as they were incurred in less than 2 years. The costs and the quantities were analysed separately and given from the point of view of the health system and the patient. The data were obtained from the hospital and the district, published drug prices, standard salary scales, vehicle log books, district reports, laboratory records, the Reserve Bank of Malawi, the National Economic council, the ministry of works, interviews with Ministry of Health staff, medical equipment company employees, patients and guardians. The costs associated with diagnosis and routine training were not included in the analysis as they were common to all strategies. The price year was 1998.

Statistical analysis of costs
No statistical analysis of the costs was carried out.

Indirect Costs
Discounting was not carried out as the costs were incurred in less than 2 years. The indirect costs were estimated from interviews with the patients and guardian. The indirect costs consisted of patient time and guardian time used for the treatment, and was valued as time lost from work at the average monthly income. The price year was 1998.
Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
For new smear-positive patients, the cure rate went from 58% (S1) to 68% (S2), a gain of 10%.

For new smear-negative patients, the cure rate went from 33% (S3) to 50% (S4), a gain of 17%.

The absolute numbers were reported in Nyirenda et al. 2003.

Cost results
For smear-positive patients, the cost per patient was $456 with S1 and $201 with S2. For smear-negative patients, the cost per patient was $67 with S3 and $101 with S4.

Synthesis of costs and benefits
The cost per smear-positive patient cured was $786 with S1 and $296 with S2. The cost per new smear-negative patient treated was $200 with the new strategy, which was “similar” to that of the old strategy.

Authors’ conclusions
The new strategy of allowing patients to spend the first 2 months of treatment in the community and of supervising smear-negative patients for the first 2 months improved health outcomes and reduced costs for smear-positive patients.

CRD COMMENTARY - Selection of comparators
An implicit justification for the comparator was that it had represented current practice in the authors' setting up to the end of 1997. You should decide if the comparator represents current practice in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness data were derived from a single study, a non-randomised study with historical controls. The design of the study was not ideal, but as it studied consecutive years it is unlikely that there were many other changes in that time. Although the authors considered the study to be an assessment of community-based care rather than hospital-based care, they also changed the drug regimen. Therefore, it is not certain that all the changes can be attributed to the organisation of treatment. The study sample appears to have been representative of the study population in that there did not appear to be any eligible patients excluded from the study. The patient groups were not shown to be comparable at analysis. Full details of the study were not presented in this paper, thus it was difficult to determine the internal validity of the effectiveness estimates. Please refer to Nyirenda et al. 2003 for further details of the study.

Validity of estimate of measure of benefit
The measure of benefit was taken directly from the effectiveness analysis. Since it was disease-specific, it may limit the comparison of the cost-effectiveness results with treatments of other diseases.

Validity of estimate of costs
The authors estimated the costs from a societal perspective. With the exception of the costs associated with diagnosis and routine training, which were common to all four strategies, all relevant costs were included. The costs were
reported separately from the quantities. Resource use quantities were taken from a single study, while the prices were taken from the authors' setting. No statistical, sensitivity, or any other kind of analysis of the quantities or prices was carried out. The price year was reported, which will aid any future reflation exercise.

Other issues
The authors compared their results with those from other studies. The issue of generalisability to other areas of Malawi was addressed. The authors do not appear to have presented their results selectively. The authors reported several limitations of their study. First, other factors might have changed between the two time periods. Second, the cost analysis for hospital care was based on one of three hospitals. Third, a relatively small number of guardians were interviewed. Finally, the costs incurred by patients' relatives other than guardians were not included. The authors' conclusions appear to reflect the scope of the analysis, although the drawbacks outlined should be taken into consideration.

Implications of the study
The changes in policy reduced total costs, and resulted in a higher cure rate for smear-positive patients and a higher treatment completion rate for smear-negative patients. Therefore, the new decentralised and community-based treatment of TB patients was a dominant strategy as a whole.

Source of funding
None stated.

Bibliographic details

PubMedID
12971652

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Community Health Services /economics /utilization; Cost-Benefit Analysis; Costs and Cost Analysis; Health Care Costs /statistics & numerical data; Hospitalization; Humans; Length of Stay; Malawi; Primary Health Care /economics /utilization; Tuberculosis, Pulmonary /drug therapy /economics

AccessionNumber
22003001275

Date bibliographic record published
28/02/2006

Date abstract record published
28/02/2006