Cost effectiveness of an allergy consultation in the management of asthma

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
Use of an allergist consultation (asthma/allergy specialist evaluation) for moderately severe and severe asthma patients in the framework of a large staff-model health maintenance organization (HMO). Some of the components reported to be incorporated in the asthma/allergy consultation were as follows: attempts to identify triggers, individualising home care plans with use of a peak flowmeter, aggressive use of inhaled anti-inflammatory medications, close communication with primary care physicians, patients, and family, and early aggressive treatment of acute exacerbation.

Type of intervention
Treatment and secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study included patients (males and nonpregnant females) with moderate to severe asthma defined as requiring asthma medication and who had at least two acute care (ER) visits and/or one hospitalisation. Patients who were smokers and who suffered from chronic obstructive pulmonary disease were excluded.

Setting
Primary care and hospital. The economic study was carried out in Denver, USA.

Dates to which data relate
Effectiveness and resource use data were obtained from patients’ charts for one year before and one year after the AE, and were reviewed through April 1994. No further information was provided. The price year was not explicitly specified.

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

Link between effectiveness and cost data
The 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. A total of 70 patients (from 300 asthmatic referrals to the Allergy/Asthma Department) fulfilled the study criteria and had an age range from 3 to 70 years. The age
distribution of the study patients was as follows: 20% in the 3-5 year group, 26% in the 6-12 year group, 13% in the 13-19 year group, and 39% in the age range of over 20 years.

**Study design**
This was a before and after study, carried out in a large HMO. The patients were followed for at least one year by a primary care physician before the allergy evaluation (AE) and for at least one year after the AE. Loss to follow-up appears not to have been relevant in this context since one of the study criteria for patient selection was that all patients had to have a full one year follow-up before and after AE.

**Analysis of effectiveness**
The principle employed in the analysis of effectiveness appears to have been treatment completers only (by implication from the patient selection criteria). The clinical outcome was the overall morbidity of asthma as measured by the number of sick office visits, acute care visits, hospitalisation, and average hospital days.

**Effectiveness results**
The effectiveness results were as follows:

1. overall number of sick office visits, 45% decrease after the AE (308 to 169, p=0.0001) - distribution as follows: 29% in the 3-5 year age group, 48% in the 6-12 year age group, 64% in teenagers, and 46% in adults;
2. the number of acute care visits after the AE, 55% decrease, (266 to 118, p=0.0001) - distribution as follows: 39% in the 3-5 year age group, 77% in the 6-12 year age group, 79% in teenagers, and 44% in adults;
3. the number of hospitalisations after the AE, 67% decrease (34 to 11, p=0.001) - distribution as follows: 37% in the 3-5 year age group, 77% in the 6-12 year age group, 100% in teenagers, and 72% in adults);
4. average hospital days, a decrease from 4 to 2.5 days, (p<0.09).

**Clinical conclusions**
After an allergy consultation, there was an overall decreased morbidity of asthma with fewer hospitalisations, shorter hospitalisations, less acute care (ER visits), and less sick office visits. However, in the 3-5 year-old age group there was somewhat less improvement than in the older age group. This may reflect the prominent triggering role of viral infections in this age group.

**Measure of benefits used in the economic analysis**
No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

**Direct costs**
Costs were not discounted as they were incurred in a one year time period for each health technology. Quantities were reported separately from the costs. Cost items were reported separately. The cost analysis covered the costs of sick office visits, acute care (ER), and hospitalisations. The perspective adopted in the cost analysis was not explicitly specified. Retrospective chart review was the source of resource use data. Fee for service charges were used to estimate costs. The standard per diem charge was used for hospital costs. The date of the price data was not explicitly specified.

**Indirect Costs**
Not included.
Currency
US dollars ($).

Sensitivity analysis
Not conducted.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The overall total cost for 70 patients was $208,245 for the pre-AE period versus $62,778 for the post-AE period; yielding a saving of about $145,500 for 70 patients or $2,100 per patient.

Synthesis of costs and benefits
Costs and benefits were not combined since the use of an allergist consultation appears to be the dominant strategy in the context in question.

Authors' conclusions
An allergy consultation in moderate-to-severe asthma is cost-effective. This was noted in all age groups with greater improvement noted in the older children, teenagers, and adults.

CRD COMMENTARY - Selection of comparators
A justification was provided for the choice of the comparator (the health care provided in the primary care setting before the allergy/asthma referral). One year of continuous primary care before AE referral was deemed to be a reliable normal base against which to compare changes after the AE referral. You, as a database user, should consider whether this is a widely used health technology in your own setting.

Validity of estimate of effectiveness:
The internal validity of the effectiveness results may be subject to biases due to the retrospective nature of the study design, as acknowledged by the authors. The study sample appears to have been representative of the study population. The effects of potential confounding variables were not investigated.

Validity of estimate of measure of benefit
The authors did not derive a summary measure of health benefit. The study may therefore be regarded as a cost-consequences analysis.

Validity of estimate of costs
Quantities were reported separately from the costs. Insufficient details of methods of cost estimation were provided. The use of charge data (standard per diem hospital charge) in place of true costs may have adversely affected the external validity of the cost results. Direct and indirect costs imposed on patients, and society in general, were not discussed. The price year was not given and it is not clear how the difference in the costs incurred in two financial years was accounted for.

Other issues
In view of the retrospective nature of the study design, and the lack of sensitivity analysis and statistical analysis of the costs, the study results should be interpreted with some degree of caution. The issue of generalisability to other settings or countries was not addressed although appropriate comparisons were made with other studies; it was reported that the study results may not be comparable with another study (National Jewish Center model) with a study sample consisting of chronic, severe, life-threatening asthma. The study results do not appear to have been reported selectively. The study enrolled patients with moderate to severe asthma and this was reflected in the authors’ conclusion.

**Implications of the study**

In spite of the study limitations, the outcome is strongly indicative of the benefits of an allergy/asthma consultation. In the study managed care setting, the authors recommended that all moderate to severe asthmatic patients should have an allergy/asthma consultation.

**Source of funding**

None stated.

**Bibliographic details**


**PubMedID**

9066831

**Other publications of related interest**

Kritz S E, Meyer L C. Improving patient outcomes for severe asthma through comprehensive specialized treatment: a report of the prototype project to develop a center of excellence model for treatment of severe asthma. John Hancock Mutual Life Insurance Company and National Jewish Center of Immunology and Respiratory Medicine, 1993.

**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Acute Disease; Adolescent; Adult; Aged; Asthma / economics / therapy; Child; Child, Preschool; Cost-Benefit Analysis / economics / statistics & numerical data; Female; Humans; Hypersensitivity / economics; Male; Middle Aged; Referral and Consultation / economics / statistics & numerical data; Retrospective Studies

**AccessionNumber**

21997000489

**Date bibliographic record published**

30/11/2000

**Date abstract record published**

30/11/2000