Controlled trial of an audit facilitator in diagnosis and treatment of childhood asthma in general practice

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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
The use of an audit facilitator in the diagnosis and treatment of childhood asthma in general practice.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Children of both sexes aged between 1 and 15 inclusive, with symptoms suggestive of asthma.

Setting
Primary care and hospitals in Tayside, Scotland, UK.

Dates to which data relate
Effectiveness and resource data related to the duration of the study, which was 1990-1993. Prices were calculated for 1991.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing and effectiveness data for the intervention and control groups were based on the same sample. It is not clear whether costing was undertaken prospectively or retrospectively.

Study sample
From a search of case records a total of 10,752 children were identified as being in the required age group (1-15).

Further selection criteria included the presence of 'major key items'; treatment for asthma (past or present), wheezy bronchitis, diagnosis of asthma, and two or more episodes of wheeze or bronchospasm, and 'minor key items'; eczema, persistent cough, bronchitis, chestiness, family history of asthma (first degree relative), hay fever, bronchitis, allergy, seasonal symptoms, and five or more respiratory consultations, three or more prescriptions for respiratory problems, and two or more prescriptions for cough, linctus within the past year.
A final total of 3,373 children with at least one major key item or at least two minor key items were entered into the study. Children were initially stratified into age bands of 1-4, 5-9 and 10-15 inclusive. By a system of random generation the children were entered into the intervention group (n = 1585) and the control group (n = 1563). A total of 351 patients in the intervention group defaulted assessment in year 2 and 291 patients were not formally assessed (reason not stated). Power calculations in determining the sample size were not stated.

**Study design**
Randomised controlled trial (stratified) over 12 GP practice sites. The method of randomisation was not explicitly stated. Stratification according to age group was carried out and clinicians were blinded from the control group. A loss to follow-up of 6.7% occurred due to patients leaving the practices over the period of the study, and 5 more patients were excluded as they had confounding symptoms from other conditions (cystic fibrosis and Down's syndrome). The period of follow-up was 12 months.

**Analysis of effectiveness**
The analysis investigated intention to treat. Health outcomes were measured in terms of asthma-related consultations, prescriptions and hospital attendances.

**Effectiveness results**
In comparison with the controls, the intervention group had:

1. more practice initiated consultations for asthma (relative risk 2.18 (95% CI 1.74 to 2.73))
2. more new diagnoses of asthma (relative risk 2.83 (95% CI 2.26 to 3.54))
3. more past diagnoses reaffirmed (relative risk 1.3 (95% CI 1.08 to 1.58))
4. were prescribed inhaled cromoglycate more frequently (relative risk 1.52 (95% CI 1.02 to 2.25)).

Hospital inpatient day rates fell from 152 to 122 in the intervention group and rose from 69 to 117 in the control group between the year before and the year after the study.

**Clinical conclusions**
An audit facilitator can bring about a favourable influence in the pattern of diagnosis and treatment of childhood asthma in general practice.

**Measure of benefits used in the economic analysis**
Intermediate outcomes were measured in terms of asthma related consultations, prescriptions and hospital attendances.

**Direct costs**
Some costs and quantities were reported separately. Direct costs included:

- GP consultation or day-time visit,
- review,
- nurse review,
- out-of-hours visit,
- night visit,
attendance at Accident and Emergency, 
out-patient clinic 
and average cost per in-patient day.

Discounting was not applied. Price year was 1991. Costs were based on actual data (unit of analysis). GP costs were obtained from the NHS scale of fees and allowances, prescription costs were derived from the British National Formulary and hospital costs were derived from local data.

**Currency**
UK Pounds sterling (€).

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

**Estimated benefits used in the economic analysis**
In comparison with the controls, the intervention group had:

more practice initiated consultations for asthma (relative risk 2.18 (95% CI: 1.74 to 2.73))
more new diagnoses of asthma (relative risk 2.83 (95% CI: 2.26 to 3.54)),
more past diagnoses reaffirmed (relative risk 1.3 (95% CI 1.02 to 2.25)).

Hospital inpatient day rates fell from 152 to 122 in the intervention group and rose from 69 to 117 in the control group between the year before and the year after the study.

**Cost results**
Estimated per-patient cost in the intervention group was 35.03 in year 1 and 36.57 in year 2. For the control group the cost was 26.76 in year 1 and 30.48 in year 2. The total cost for the intervention group was 113,494 and 89,470 for the control group over the two year period.

**Synthesis of costs and benefits**
The study did not employ any summary measure.

**Authors' conclusions**
The study demonstrated that an audit facilitator was able to favourably influence the pattern of diagnosis and treatment of childhood asthma in general practice. A desirable increase in treatment and costs within primary care may result in a fall in hospital treatment and costs. However, although these changes may be associated with an improved clinical outcome, the lack of an agreed objective, long term outcome measure is problematic.

**CRD Commentary**
Overall, a well conducted study.

However:

1. The authors did not include the salary of the audit facilitator in calculating costs. This would have had the effect of inflating the costs of patients in the intervention group.
2. The authors acknowledged the difficulty of determining a good long term outcome measure in childhood asthma treatment. Intermediate outcomes addressed in the study therefore have some acknowledged limitations.

3. Although the intervention group, when compared with the controls, experienced a reduction in hospital attendance between year 1 and year 2 of the study period, this may have been due to a bias in the year 1 hospital attendance figures in which hospital costs for the intervention group were almost double that of the control group.

4. The authors acknowledged the potential criticisms arising from the fact that the 12 GP practices were not chosen at random, although steps were taken to ensure a representative mix. Randomisation was carried out within practices resulting in GPs treating both intervention and control groups. This may have compromised the blinding process.

**Implications of the study**

If longer term biological outcome measures (of childhood asthma) are to be evaluated then a prolonged follow up of the study cohort is required. The study achieved its aim of evaluating the use of audit facilitators in primary care and argues for their use in other areas of clinical practice.

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