INTRODUCTION

The pharmacological treatment required to attain satisfactory control of asthma has been integrated into steps by the British Thoracic Society British Guidelines on Asthma Management (BGAM) [1].

Patients who suffer an asthma attack have been estimated to cost the National Health Service (NHS) £1,481 on average during the year compared with £188 for those who did not [2]. Therefore, improving primary care management may lead to fewer asthma exacerbations thereby reducing healthcare costs and pressures on hospital services.

The aim of this study was to determine the factors affecting the annual primary care cost of managing asthma patients initially on BGAM steps 2/3.

METHODOLOGY

Asthma-related primary care resource utilisation was obtained from the DIN-link database, which contains information on 0.9 million live patients managed by approximately 240 GPs in the UK, naturally distributed general practices (using AAM Health software).

A data set was created for patients who were prescribed twice-daily inhaled steroids and who were on steps 2 or 3 during 1993. Patients were followed up for 3 years.

The data set was stratified by patients’ age, treatment step, and compliance with inhaled steroids.

A difference in resource use between different years of treatment was tested for statistical significance using the Chi-square test.

Unit resource costs were obtained from published sources [3-7] and applied to the resources used to estimate the mean annual cost per patient.

Patients were assigned to a BGAM treatment step based upon the highest regimen they received during the previous year.

Time between prescription issue for the inhaled steroid taking into account prescription size and closing instructions was used as a proxy for compliance. One hundred percent compliance was considered to have occurred when the elapsed time between subsequent prescriptions was equal to the theoretical duration of the earlier prescription.

Patients were defined as being in a high compliance band if their compliance for inhaled steroids was between 71% and 100%; a medium compliance band if their compliance for inhaled steroids was between 31% and 70%; and a low compliance band if their compliance for inhaled steroids was between 0% and 30%.

The DIN-link data set comprised 4,519 patients who were on steps 2/3 during 1993 and who were prescribed twice-daily inhaled steroids. Of these, 2,128 (27%) patients were <16 years of age, 2,959 (65%) were between 16-69 years of age and 342 (8%) were >69 years of age.

The management of these patients is shown in Figure 1.

Compliance Profiles

Compliance increased with age and was better among patients on steps 4/5 than steps 2/3. The increase was 42% in 11-year-old children whose compliance rate during year 1 was the same irrespective of treatment step (Table 1).

The ratio of the number of prescriptions for inhaled steroids to short-acting beta-2 agonists for patients on steps 2/3 during year 3 according to the following compliance band:

Steps 2/3
Low
Medium
High

Mean annual cost of patients <16 years of age stratified by compliance.

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The mean annual cost of managing these patients was higher in the medium compliance band than the high compliance band.

DISCUSSION

There was an approximately three-fold increase in costs between low- and high-compliance patients. However the ratio of the number of prescriptions of inhaled steroids to short-acting beta-2 agonists was similar for patients with different levels of compliance, suggesting that high-compliance patients are better controlled than those who are poorer compliers [8].

Compliance may vary in accordance with disease severity. High-compliance patients may be bearing more primary care costs due to them having more severe asthma and using more healthcare resources. Alternatively patients who are high compliers with their steroid inhalers may also be high compliers with other prescription items.

In most instances, patients managed on steps 2/3 had a lower compliance rate than those managed on steps 4/5. Furthermore, for patients on the same BGAM step in year 1, the higher step they were managed on during year 3, the better their compliance during year 3 (except for children <16 years of age who were on step 2/3 during year 5).

Additionally, there were 38 patients in the DIN-link database who were on steps 2/3 during 1997 and who were being prescribed a once-daily inhaled steroid. Their mean compliance rate with once-daily inhaled steroids was 77%, compared to 59% among the <16-year-old high-compliant inhaled steroid users (p<0.001). Compliance was higher with once-daily inhaled steroids and for the same patients managed on lower BGAM steps 2/3, probably due to better adherence and/or the selective criteria of patients chosen for management with once-daily inhaled steroids and/or the characteristics of interesting general practitioners and their cohort populations.

The analysis was limited to patients managed on BGAM steps 2/3 for at least one year in the DIN-link database. The analysis did not consider:

- Patients who were lost to follow-up.
- Missed appointments.
- These differences may be due to once-daily inhaled steroids facilitating asthma-related primary care resource utilisation was obtained from the DIN-link database, which contains information on 0.9 million live patients managed by approximately 240 GPs in the UK, naturally distributed general practices (using AAM Health software).

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REFERENCES

1. The British Thoracic Society, the National Asthma Campaign, the Royal College of Physicians of London

2. Inhaled steroid

3. Plumb JM & Guest JF. The economic impact of tibolone compared to continuous-combined HRT in the management of postmenopausal women with climacteric


5. Review and Position Statement.


ACKNOWLEDGEMENTS

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