Changing asthma prescribing in primary care 1995 -1998

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Aim
To identify changes in asthma related prescribing in primary care over the period April 1995 to April 1998.
Method
Anonymised electronic patient information from the Continuous Morbidity Recording practices was used in this study. Yearly cross-sectional analysis of asthma related prescribing was performed in a cohort of 4,968 patients diagnosed with asthma and resident in Continuous Morbidity Recording practices throughout the period 1995-1998 .
Results
There was a significant increasing trend for prescription of inhaled corticosteroids and other recommended adjunct therapies with a significant trend from steps 1 and 2 of the British Thoracic Society Guidelines to steps 3 and 4. These changes were particularly evident in children.
Conclusions
The use of routinely acquired computerised data from primary care offers the potential of relatively inexpensive and comprehensive whole population surveillance for changing management in common diseases such as asthma.

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INTRODUCTION

The treatment of asthma has changed in recent years in response to the recognition of the chronic inflammatory nature of the disease, improvements in delivery systems, and increasing support for the early introduction of inhaled corticosteroids (ICS).

Recent reports have inferred that the more liberal use of ICS has been responsible for a steady decline in morbidity and mortality despite a rising prevalence of the condition.[2,3] The early use of ICS has also been associated with an improved long-term outcome.[4]

METHODS

The Continuous Morbidity Recording (CMR) project was established in 1994 and collects anonymised information on every direct doctor/patient contact on behalf of the data collection systems of the Information and Statistics Division, part of the Scottish Executive's Common Services Agency. In February 1998 the CMR project had 55 Practices enrolled which aimed to represent the age/sex and rural/urban mix of the Scottish population with more than 290,000 registered patients.[5]

In addition to recording all morbidity data (Read Version 2.0),[6] CMR practices also record all repeat prescribing information using practice specified formularies which include names and types of generic and proprietary drugs, in addition to the first and most recent issue date of each prescription. With each presentation of morbidity, a separate additional code is entered that identifies the condition as a first occurrence (the first ever presentation of a disease), a persistent problem with previous recent contacts, or a re-occurrence (defined as a subsequent presentation after a quiescent interval). This coding system provides the opportunity of identifying first regular drug treatment after an initial asthma diagnosis. As patient records used within the consultation are largely paper based, data operators employed within each participating CMR practice, code and enter morbidity data directly into the clinical system after the patient contact has been completed. This arrangement was chosen both due to the variable consulting room use of computers and also to encourage the standardisation in the range of codes used by data operators who make reference to a coding dictionary.[7]

Recent revisions of the British asthma management guidelines completed in 1995 and published in 1997[8] have been widely disseminated and implemented in primary care. Hence we paid particular attention to ICS and new adjunct therapies over the period April 1995 to April 1998 a period in which we postulated that change in prescribing practice would be most evident.

In order to follow any changes in the management of individual patients, a cohort of 4,968 patients with a diagnosis of asthma, who were registered within the same general practices from April 1995 until the end of the study were identified. Each patient was then allocated to a step of the 1995 British Thoracic Society (BTS) guidelines[7] for the years 1996, 1997 and 1998. Asthmatic patients were identified as those with a doctor diagnosis of asthma (Read code H33).

Steps two to five directly followed BTS guidelines whilst those patients on step 1 of the these guidelines were considered to include all registered patients with a diagnosis of asthma with no record of asthma related prescriptions and those who were listed as having a repeat prescription for bronchodilators only (Table 1).

Trends in the repeat prescribing of asthmatic patients were expressed as age specific period prevalence rates per 1000 patients with asthma. Age bands were chosen to be representative of early childhood, late childhood and early adulthood, adulthood and the elderly.

We calculated odds ratios and 95% confidence intervals with the Mantel-Haenszel test for linear association, stratifying by year, giving P values. The statistics were carried out using the Centres for Disease Control and Prevention's statistical package Epi Info[9], using the year beginning April 1995, the first year of available data, as the reference year. Permission for the analyses of anonymised CMR data was sought and granted by the Privacy Advisory Committee of the Scottish Executive.

Table 1. British Thoracic Society Asthma Guidelines[8]

Step 1	Diagnosis of asthma and repeat inhaled/oral bronchodilators only. (inhaled short-acting bronchodilators as requried but more than once daily)
Step 2	Low dose inhaled corticosteroid Beclomethasone diproprionate, Budesonide <=400mg. Fluticasone proprionate <=200mg (initial trial of cromones)
Step 3/4	High dose inhaled corticosteroid Beclomethasone diproprionate, Budesonide <=400mg. Fluticasone proprionate <=200mg And/or inhaled long-acting beta stimulant Or Cromones Or Ipatroprium/oxytropium Or sustained release oral theophylline (Plus prenisolone for under 5 years)
Step 5	Regular oral steroid therapy *(No step 5 for under 5 years)*

Table 2. Trends in numbers of patients at treatment steps 1-5 of the British Thoracic Society Guidelines[8] betweem 1995-1998

	Year	1996	1997	1998
Step 1	No (%)	3069 (62)	2968 (60)	2938 (60)
	Odds ratio (95% c.i.)		0.92 (0.85 to 1.00)	0.90 (0.83 to 0.97)
Step 2	No (%)	1184 (24)	1106 (22)	999 (20)
	Odds ratio (95% c.i.)		0.92 (0.83 to 1.01)	0.80 (0.73 to 0.89)
Step 3/4	No (%)	655 (13)	829 (17)	961 (19)
	Odds ratio (95% c.i.)		1.32 (1.18 to 1.48)	1.58 (1.42 to 1.76)§
Step 5	No (%)	60 (1)	65 (1)	70 (1)
	Odds ratio (95% c.i.)		1.08 (0.75 to 1.57)	1.17 (0.81 to 1.68)

§ P for Liner trend <0.01

RESULTS

Significant increasing trends (p<0.0001) in the prevalence of ICS drug prescribing were found in the age groups 0 to 9 years and 10 to 19 years with the greatest increase found in the youngest age group. Those aged 20 to 64 years also showed a significant increasing trend in ICS prescribing over the three years studied (p<0.005), with a substantial increase from 1996 to 1997. A small but downward trend in prescribing in this age group can be observed between 1997 and 1998, but this did not affect overall significance. There were significant increases (p<0.0001) for all age groups in the prescribing of new adjunct therapies[5] (Figure 1).

Of the 4,968 asthmatics followed from April 1995 to April 1998, there was a trend away from steps 1 and 2 (bronchodilator, low dose ICS) resulting in a significant shift to steps 3 and 4 (high dose ICS, long-acting bronchodilators, leukotriene inhibitors, cromones and theophyllines) (p<0.001, Chi = 21.65) (Table 2).

Mean interval between initial asthma diagnosis and onset of regular (repeat) prescribing of ICS did not differ by age group or by year with a mean of 112.29 (Standard Deviation 106.3) days.

DISCUSSION

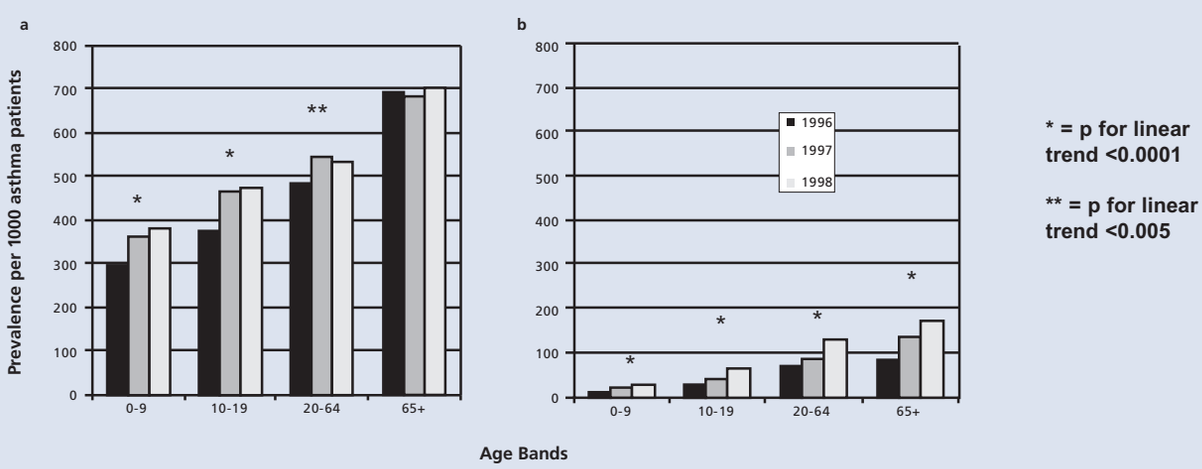
This study relies on the accuracy of doctor diagnosed asthma by General Practitioners. A diagnosis is made on the judgement of the doctor as no clear definition of this chronic disease exists.[10] Doctors are encouraged to code only to the level of certainty and not to include provisional diagnoses.

It was observed that ICS use was greatest in the elderly and that the greatest increase in usage was in the youngest age group (Figure 1). This emphasises the need to monitor potential long term risks, costs and

Figure 1. The changing asthma therapies over three consecutive years

a. Inhaler corticosteroid use by asthmatics

b. Asthma patients on new adjunct therapies (long-acting bronchodilators, leukotriene inhibitors)



benefits in these age groups, as it is in the very young and the elderly where clinical trial data is most sparse.

This study also demonstrates a recent change in asthma prescribing, with increased use of ICS at higher doses although not to an earlier prescription for ICS in newly diagnosed asthmatics. This may have been due to the introduction of guidelines which has increased the formality of asthma treatment. These changes were also accompanied by an increasing use of recommended adjunct therapies showing a willingness by GPs to prescribe new drugs.

Although the initial costs involved in the setting up a computerised database from primary care are expensive, this routinely acquired information offers the potential of relatively inexpensive and comprehensive whole population surveillance for changing management in common diseases such as asthma. ■

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