

Prevalence of treated asthma and its management in general practice in England and Wales, 1994–1998

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INTRODUCTION

Asthma is a common chronic inflammatory condition of the airways, the cause of which is not completely understood (see Box 1).¹ It remains an important cause of ill health in the United Kingdom with an estimated 5.1 million people (including 1.4 million children) receiving treatment for asthma.^{2,3} Consultation rates for asthma with general practitioners increased nearly five-fold between 1976 and 1994.⁴ Although asthma management lies mainly within primary care, in the United Kingdom in 1999 there were nearly 74,000 admissions to hospital due to asthma.⁵ As a result, asthma places a considerable financial burden on the National Health Service (NHS). A recent estimate, based on the number of people being treated, was that the annual cost of asthma to the NHS was about £850 million.⁶

The number of deaths due to asthma in England and Wales in 2000 was 1,272.⁷ The Department of Health has included asthma mortality of those aged 5–44 as a 'potentially avoidable mortality' health outcome of NHS care, since the management of chronic asthma and the treatment of severe attacks directly affect asthma mortality.⁸

The first British guidelines on asthma management were published in 1990 by the British Thoracic Society (BTS).⁹ These guidelines and subsequent revisions in 1993 and 1997 highlight the importance of using prophylactic (preventive) medication such as inhaled steroids and cromoglycate in addition to inhaled bronchodilators to reduce asthma morbidity.^{1,10}

Data from the Prescribing Analysis and Cost system (PACT) show that there has been a substantial increase in the prescribing of bronchodilators and inhaled steroids by general practitioners since the early 1980s.¹¹ The PACT system includes information on all

The aim of this study was to examine trends in the prevalence of treated asthma and its management in general practice between 1994 and 1998. Data was obtained from approximately 1.4 million patients in 210 practices in England and Wales that contribute to the General Practice Research Database. The prevalence of treated asthma increased in both sexes and all age groups except for children under 5 years. The percentage of patients being treated with the combined use of bronchodilators with regular preventive treatment increased, suggesting improved adherence to British Thoracic Society guidelines. The prevalence of treated asthma varied by deprivation quintile and region but there was little variation in management of asthma across deprivation quintiles or regions.

prescriptions issued by general practitioners that are dispensed to patients. Data also show that the prescribing of inhaled steroids has risen more quickly than that of bronchodilators between 1992 and 1998, resulting in a marked increase in the ratio of inhaled steroids to bronchodilators.¹² Additionally, a previous article published in *Health Statistics Quarterly* has shown that between 1994 and 1996 the percentage of asthmatics being prescribed inhaled steroids, either alone or in combination with bronchodilators, increased in all age groups.¹³

The objectives of this study were to update information on trends of treated asthma prevalence and management in general practice described in the earlier article in *Health Statistics Quarterly*¹³ using data from General Practice Research Database (GPRD) between 1994 and 1998. In addition this study examines whether the prevalence and management of treated asthma vary between practices, regions, and levels of material deprivation.

Box one

ASTHMA

Asthma is a common chronic inflammatory condition of the airways, the cause of which is not understood completely. In asthma, inflammation of the airways makes them very sensitive and they narrow easily in response to a wide range of stimuli. This may result in coughing, wheeziness, chest tightness, and shortness of breath. Narrowing of the airways is usually reversible, but in some patients with chronic asthma the inflammation may lead to irreversible airflow obstruction.

Childhood asthma is common and is often undiagnosed and undertreated. There is no specific test to diagnose asthma and doctors often have difficulty in diagnosing this condition in very young children. There are major difficulties in the use of the term 'asthma' in infants (under one year of age) and it is acceptable to refer to 'wheezing illness' or 'infantile asthma' in order to avoid entering a major area of disagreement, namely the definition of asthma in very young children.

The main groups of drugs used to manage asthma are:

Bronchodilators

Used for immediate relief in the management of asthma.

Corticosteroids

Very effective in management of asthma as they reduce airway inflammation.

Cromoglycate and leukotriene receptor antagonists

Sodium cromoglycate can reduce the incidence of asthma attacks and allow dosage reduction of bronchodilators and oral corticosteroids. Leukotriene receptor antagonists may be beneficial in exercise-induced asthma.

Management of chronic asthma is not solely reliant on drug therapy but also includes:

- avoidance of trigger factors where possible;
- patient's involvement and education;
- working towards a self-management plan; and
- selection of the best inhaler device.

METHODS

Data source

The data for this study came from 210 general practices in England and Wales who contribute to the GPRD. The GPRD was originally set up in 1987 by the VAMP software company and was subsequently acquired by Reuters Health Information Ltd, who donated it to the Department of Health in 1994. The Office for National Statistics managed the database from 1994 until 1999 when overall management and financial control of the GPRD was given to the Medicines Control Agency.

Participating practices follow agreed guidelines for the recording of clinical data and submit anonymised, patient-based clinical records on a regular basis to the database. Consequently the database contains longitudinal data on diagnoses, prescriptions and hospital referrals. The availability of these data provides opportunities for research in areas such as drug safety, use of health services, and epidemiology of many diseases.¹⁴ The comprehensiveness and accuracy of the data recorded in the GPRD has been documented previously.¹⁵

Practices were included in this study if they submitted data to the GPRD throughout the five-year period 1994–98 and this data passed quality checks. The 210 practices selected had a total list size of about 1.4 million in 1998, representing 2.6 per cent of the population of England and Wales. The GPRD population has a similar age-sex composition to that of England and Wales in 1998.^{16,17}

Prevalence and management of treated asthma

Patients were included in the prevalence and disease management analyses if they were alive and permanently registered at the practice at the end of the year of study, and had been registered for at least six months prior to that date. Consequently, only survivors were included and the six months registration requirement meant that infants and the more mobile population groups were under-represented.

In calculating the prevalence of treated asthma between 1994 and 1998, cases were included where patients had a diagnosis of asthma ever-recorded and also had treatment with bronchodilators, corticosteroids, cromoglycate, related therapy and leukotriene receptor antagonists, or a combination, during the analysis year. The rationale for this definition ('treated asthma' rather than 'asthma' alone) was to exclude patients who might have had a diagnosis of asthma made in the past but who no longer had active disease. Whenever referring to 'asthma' in this paper, this means 'treated asthma' as defined above.

Crude rates were calculated (giving an indication of the workload for GPs), as well as age-standardised rates (which enable comparisons over time allowing for differing age distributions). Directly age-standardised rates were derived by applying the standard European population to age-specific rates.¹⁶

Similarly, patients were included in treatment analyses if they had a diagnosis of asthma ever-recorded and also had treatment with anti-asthmatic drugs. These patients were further classified by the drug(s) they were prescribed during the analysis year. It was therefore possible to calculate the percentage of asthma patients who were being treated with: bronchodilators alone; corticosteroids alone; cromoglycate alone; or bronchodilators and prophylactic medication (either corticosteroids or cromoglycates or both).

Inter-practice variation

For each of the 210 practices in this study, the age-standardised prevalence of treated asthma was calculated and the median with full

Table 1

Prevalence of treated asthma per 1,000 patients by age and sex in 1994 and 1998

England and Wales

		Age group						Crude rate (all ages)	Age-standardised rate* (95% confidence interval)
		0-4	5-15	16-24	25-44	45-64	65 and over		
Males									
Prevalence of treated asthma per 1,000 patients	1994	102.8	128.2	64.0	43.7	44.6	74.2	66.6	67.7 (67.0-68.4)
	1998	98.0	132.8	73.2	51.6	51.1	82.4	72.8	73.7 (73.0-74.3)
Percentage change 1994-98		-4.7	3.5	14.4	18.0	14.5	11.1	9.3	8.8
Females									
Prevalence of treated asthma per 1,000 patients	1994	67.3	100.1	74.2	52.5	58.3	66.1	65.9	67.3 (66.6-68.0)
	1998	63.0	104.7	85.6	64.2	71.6	80.2	76.6	76.9 (76.2-77.6)
Percentage change 1994-98		-6.4	4.6	15.4	22.3	22.8	21.3	16.3	14.3

* Age-standardisation using the European Standard Population.

and inter-quartile ranges presented. Within each practice the proportion of patients being prescribed bronchodilators, corticosteroids or cromoglycate alone, or prescribed bronchodilators and prophylactic medication, was calculated. The results were presented as median values with full and inter-quartile ranges. The inter-quartile range (between the 25th and 75th percentile) is useful to see where 50 per cent of the practices lie, thus excluding practices with extreme values.

Deprivation

Deprivation scores were assigned to each practice based on the Townsend Material Deprivation Score for the census ward in which the practice was located.¹⁸ The higher the score, the greater the level of relative deprivation. Data were aggregated for all participating practices in each category. In order to assign categories, all wards for England and Wales were ranked by ascending deprivation score along with the total population of each ward in 1991, then divided into quintiles containing 20 per cent of the population in each. The population quintiles are referred to as Q1, Q2, Q3, Q4 and Q5, where Q1 is the least deprived and Q5 is the most deprived.¹⁶ It was not possible to obtain ward information for one practice, so this section of analysis was limited to 209 practices.

Regions

No information was available from the GPRD on patients' address, so geographic analyses were based on practice location. Practice postcode was used to ascertain in which census ward the practice was located and then practices were assigned to one of the eight NHS Regional Office areas in England (which replaced Regional Health Authorities in 1996) or Wales. Data were aggregated for all participating practices in each region. Variation in asthma prevalence and prescribed treatment was analysed geographically for all 210 practices.

RESULTS

Prevalence of treated asthma

Between 1994 and 1998 the prevalence of treated asthma increased in both sexes and in all age groups except for children under 5 years (Table 1). The crude rates show that the percentage increase was greater in females (16.3 per cent) than in males (9.3 per cent). This trend was also reflected in the age-standardised rates, which show a greater increase in prevalence of asthma in females (14.3 per cent) than males (8.8 per cent). Since 1994 the greatest increase in prevalence of treated asthma has occurred in males aged 25-44 years and females aged 45-64 years.

The prevalence of treated asthma decreased in children under 5 between 1994 and 1998 (from 103 to 98 per 1,000 boys and from 67 to 63 per 1,000 girls). Although the decrease between 1994 and 1998 was not consistent (Table 2), testing the difference between the proportions showed that the decrease was statistically significant ($p < 0.05$).

In 1998 treated asthma was most prevalent in boys aged 5-15 years (133 per 1,000 patients) followed by girls aged 5-15 years (105 per 1,000 patients) (Figure 1).

For children aged 15 years or less, a larger proportion of boys than girls were being treated for asthma in 1998. This was reversed in adults between the ages of 16 to 64 years where the prevalence in females was greater than in males. In adults aged over 65, the pattern reverted to a male predominance.

Table 2

Prevalence of treated asthma for under 5 year-olds by sex 1994-1998

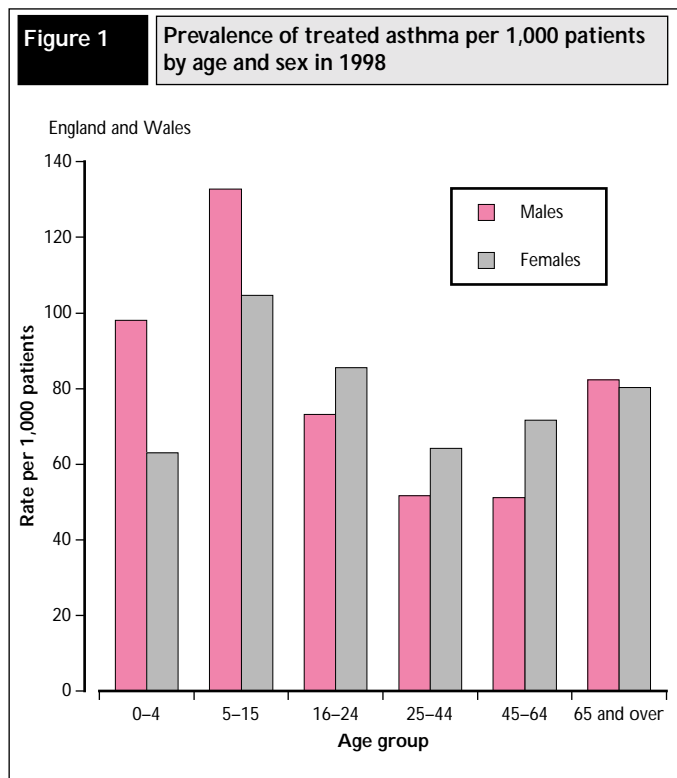
England and Wales

		Boys	Girls
Prevalence of treated asthma per 1,000 patients	1994	102.8	67.3
	1995	98.2	66.2
	1996	104.1	67.6
	1997	103.1	68.4
	1998	98.0	63.0
Percentage change 1994-98		-4.7	-6.4

Prescribed treatment for asthma

Between 1994 and 1998 the percentage of patients being treated for asthma who were prescribed bronchodilators in combination with prophylactic medication increased in all age groups and in both sexes (Table 3). In 1998, 67 per cent of males and 68 per cent of females who were prescribed treatment for asthma were prescribed combination treatment (compared to 61 and 63 per cent in 1994).

There was a corresponding decrease in the use of bronchodilators alone, from 33 to 27 per cent in males and from 31 to 25 per cent in females. The greatest reduction in use of bronchodilators alone was for children under 5, from 51 to 32 per cent in boys and from 54 to 33 per cent in girls. In 1998, patients aged 16-24 years were most likely to be prescribed bronchodilators alone (36 per cent of males and 34 per cent of females).



Prescription of cromoglycate as sole therapy decreased in all age groups and in both sexes, while prescription of corticosteroids alone increased in all age groups between 1994 and 1998 with the exception of female patients aged 16-44 years.

Inter-practice variation

The age-standardised prevalence of females being treated for asthma in each of the 210 practices in this study ranged from 19.1 to 164.5 per 1,000 patients, with a median rate of 75.6 per 1,000 (Figure 2). For males, the prevalence of treated asthma varied between practices from 17.8 to 136.3 per 1,000 patients, with a median of 71.5 per 1,000. Half of the practices had female rates of 62.2 to 86.3 per 1,000 and male rates of 61.3 to 81.4 per 1,000. The correlation between the prevalence of treated asthma in males and females in the same practice was statistically significant, $r = 0.84$ ($p < 0.01$).

The percentage of patients prescribed different treatment strategies varied widely although the majority of patients were prescribed combination treatment. The variation between practices for this treatment ranged from 39 to 86 per cent in female patients and from 27 to 81 per cent in male patients (Figure 3). The inter-quartile range for combination treatment shows that half of the practices prescribed this for about 60 to 70 per cent of their asthma patients.

The percentage of asthmatics prescribed bronchodilators alone varied between practices, from 4 to 51 per cent in female patients and from 9 to 50 per cent in male patients. Half of the practices prescribed bronchodilators alone to about 20 to 35 per cent of their patients.

Variation by deprivation category

Variation in the prevalence of treated asthma with deprivation was not consistent. Figure 4 shows that in 1998 the lowest prevalence rate by deprivation quintile was 72 per 1,000 patients. For males this rate was in the second most favourable quintile (Q2) and for females this was in

Table 3 Percentage of patients prescribed specific treatment for asthma by age and sex in 1994 and 1998

England and Wales

	Combination treatment (%)		Bronchodilators alone (%)		Corticosteroids alone (%)		Cromoglycate alone (%)	
	1994	1998	1994	1998	1994	1998	1994	1998
Males								
Age group								
0-4	46.3	62.4	50.7	31.9	2.1	5.4	0.8	0.3
5-15	61.4	67.2	31.4	26.4	5.0	5.7	1.7	0.6
16-24	52.2	59.4	43.5	36.1	3.7	4.1	0.5	0.3
25-44	56.1	61.3	36.6	32.1	5.7	6.3	1.4	0.3
45-64	69.6	70.8	22.2	21.2	7.2	7.6	0.8	0.4
65 and over	74.4	77.2	19.9	16.3	5.4	6.2	0.2	0.2
All ages	61.1	66.9	32.5	26.6	5.1	6.1	1.1	0.4
Age-standardised rate* (95% confidence interval)	60.9 (60.3-61.5)	66.0 (65.6-66.5)	32.4 (31.9-33.0)	27.3 (26.9-27.8)	5.4 (5.2-5.7)	6.2 (6.0-6.5)	1.0 (0.9-1.2)	0.4 (0.3-0.4)
Females								
Age group								
0-4	42.5	61.9	53.7	33.1	2.0	4.5	1.6	0.3
5-15	59.0	65.5	34.4	28.6	4.6	5.4	1.7	0.5
16-24	58.0	60.6	36.4	34.1	5.1	5.0	0.3	0.2
25-44	60.1	64.6	32.4	28.4	6.9	6.7	0.5	0.2
45-64	70.6	73.2	21.4	18.1	7.4	8.3	0.6	0.3
65 and over	71.3	75.0	22.2	17.5	6.1	7.2	0.3	0.2
All ages	62.7	68.1	30.5	24.9	5.9	6.6	0.8	0.3
Age-standardised rate* (95% confidence interval)	62.2 (61.7-62.7)	67.3 (66.9-67.8)	30.9 (30.4-31.4)	25.7 (25.3-26.1)	6.0 (5.7-6.3)	6.6 (6.3-6.8)	0.7 (0.6-0.8)	0.3 (0.2-0.3)

* Age-standardisation using the European Standard Population.

Table 4

Percentage of patients prescribed specific treatment for asthma in Q1 and Q5 by age and sex in 1998

England and Wales

	Combination treatment (%)		Bronchodilators alone (%)		Corticosteroids alone (%)		Cromoglycate alone (%)	
	Q1	Q5	Q1	Q5	Q1	Q5	Q1	Q5
Males								
Age group								
0-4	63.0	61.0	27.9	35.7	8.2	3.0	0.6	0.2
5-15	68.6	66.4	23.7	29.1	6.8	3.9	0.8	0.5
16-24	60.0	62.4	35.0	35.7	3.9	1.6	0.9	0.2
25-44	59.8	63.8	33.3	31.2	6.8	4.7	0.1	0.3
45-64	68.7	73.7	22.0	21.3	8.7	4.7	0.7	0.2
65 and over	79.4	76.8	14.3	18.7	6.0	4.3	0.2	0.2
All ages	67.0	67.6	25.6	28.2	6.8	3.9	0.5	0.3
Age-standardised rate* (95% confidence interval)	65.6 (64.3-67.0)	67.7 (66.6-68.7)	26.8 (25.6-28.1)	28.0 (27.0-29.0)	7.0 (6.3-7.7)	4.0 (3.6-4.5)	0.5 (0.3-0.7)	0.3 (0.2-0.4)
Females								
Age group								
0-4	70.7	60.3	23.1	36.4	5.4	2.9	0.7	0.4
5-15	64.9	66.7	28.5	29.5	6.0	3.8	0.7	0.1
16-24	60.4	62.6	33.7	34.0	5.6	3.4	0.2	0.0
25-44	65.9	66.8	26.7	28.7	7.0	4.3	0.2	0.3
45-64	72.4	76.9	18.3	18.1	8.9	4.9	0.2	0.1
65 and over	76.9	77.6	14.6	17.7	8.3	4.5	0.3	0.1
All ages	68.9	70.1	23.4	25.6	7.3	4.2	0.3	0.1
Age-standardised rate* (95% confidence interval)	68.2 (66.9-69.6)	69.4 (68.5-70.4)	24.1 (22.9-25.3)	26.2 (25.3-27.1)	7.2 (6.5-8.0)	4.2 (3.8-4.6)	0.3 (0.2-0.5)	0.2 (0.1-0.2)

* Age-standardisation using the European Standard Population.

the least deprived quintile (Q1). The highest prevalence of treated asthma for both female and male patients was in the second most deprived quintile (Q4).

In 1998, the majority of asthma patients in the most deprived areas were being treated with combination therapy (68 per cent of males and 69 per cent of females after age-standardisation) (Table 4). This was nearly two per cent higher than the rate for those patients being prescribed combination treatment in the least deprived areas but this was not a statistically significant difference.

Corticosteroids were prescribed as sole therapy for patients in the least deprived areas (Q1) more commonly than for those in the most deprived areas (Q5) for all age groups and both sexes in 1998. Age-standardised rates with 95 per cent confidence intervals show that this difference was statistically significant: 7.0 per cent (6.3-7.7) of males in Q1 compared with 4.0 per cent (3.6-4.5) in Q5; 7.2 per cent (6.5-8.0) of females in Q1 compared with 4.2 per cent (3.8-4.6) in Q5.

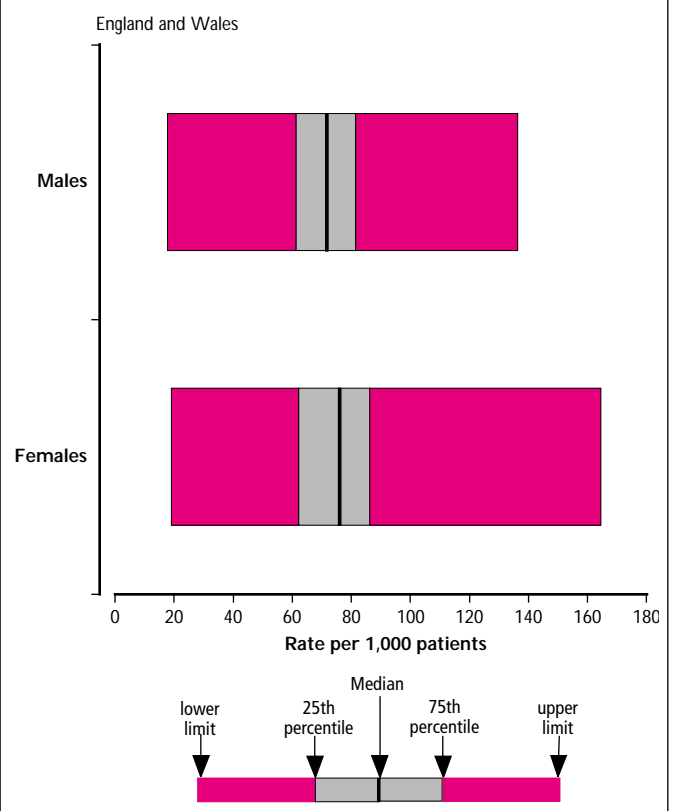
Prescribing of bronchodilators alone was much higher in the 0-4 age group in the most deprived areas compared with the least deprived areas (35.7 and 27.9 per cent in boys; 36.4 and 23.1 per cent in girls).

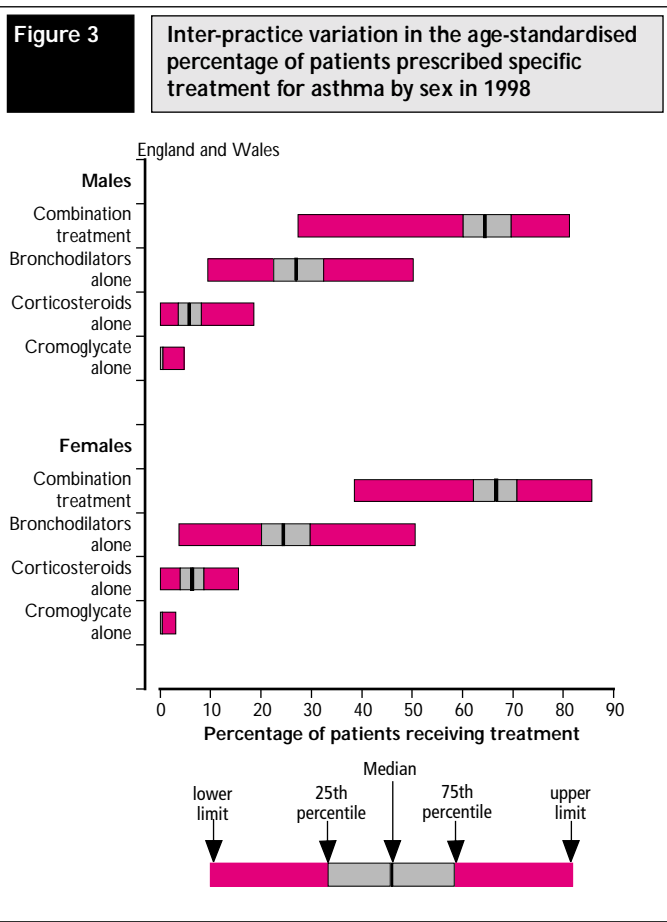
Variation by region

The age-standardised rate of treated asthma was 75.3 per 1,000 patients in 1998 but prevalence varied throughout England and Wales (Figure 5). The prevalence of treated asthma in Anglia and Oxford was 10 per cent higher than the nation-wide rate. Conversely, the prevalence in North Thames and South Thames was lower than that of England and Wales (11 and 12 per cent).

Figure 2

Inter-practice variation in the age-standardised prevalence of treated asthma per 1,000 patients by sex in 1998





Geographical analysis of prescribed treatment for asthma showed that there was little variation in disease management between regions in England and Wales. Combination treatment was the most widely prescribed but no one region was significantly different from all the other regions for any of the asthma treatments prescribed (data not shown).

DISCUSSION

Main findings

The age-standardised prevalence of treated asthma increased between 1994 and 1998, from 74 per 1,000 in males and 77 per 1,000 in females. However the prevalence of treated asthma decreased significantly ($p < 0.05$) in children under 5 between 1994 and 1998 (from 103 to 98 per 1,000 boys and from 67 to 63 per 1,000 girls).

The 1997 British Thoracic Society (BTS) revision differs from the 1993 revision in that a distinction is made between the management of asthma in children under 5 and those over 5 (whose management is similar to adults). The 1997 revision includes 3 charts specifically dealing with disease management in children less than 5 years old. The GPRD data show a decrease in prevalence of treated asthma for both boys and girls under 5 in 1998 compared with 1997. The decrease in treated prevalence may reflect changes in diagnosis and treatment patterns, possibly as an effect of the 1997 guidelines rather than a real decrease in prevalence of asthma in this age group. More recent data are required to confirm any persistent downward trend in treated asthma prevalence in this age group.

Prevalence of treated asthma in children aged 15 years or less was found to be more common in boys than girls but this pattern was reversed in the 16–64 age group, before reverting to a male predominance in later years. A similar pattern was found for asthma consultation rates in the 1991/92 OPCS General Practice Morbidity survey.¹⁹ However, the Health Survey for England 1996 indicated that more males than females reported ‘ever wheezing’ in all age groups. In the 25–64 age group very similar proportions of males and females reported ‘wheezing in the past 12 months’, but more females than males reported doctor-diagnosed asthma.² It is therefore possible that the higher prevalence of treated asthma in females aged 16–64 years in the GPRD data may be partly due to women consulting more in these years (resulting in diagnosis and treatment of asthma) rather than an excess of asthma symptoms.

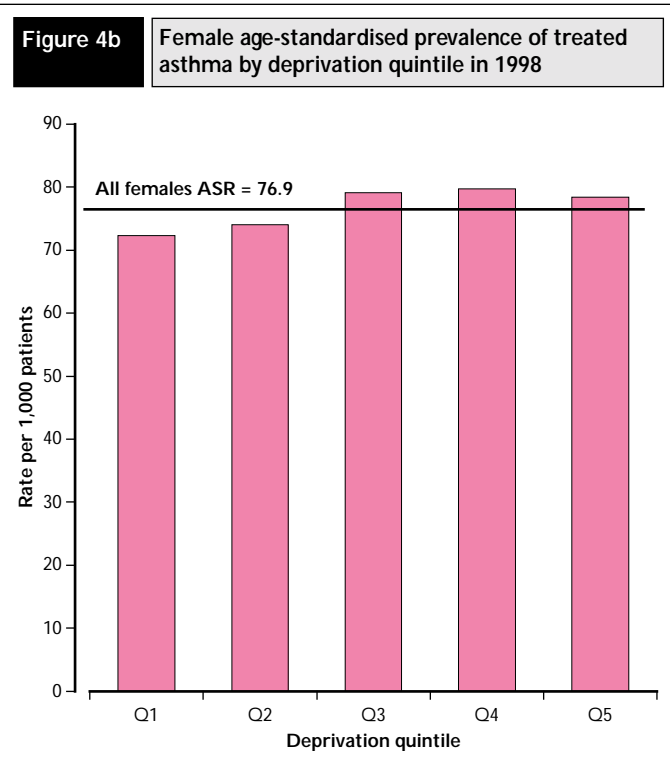
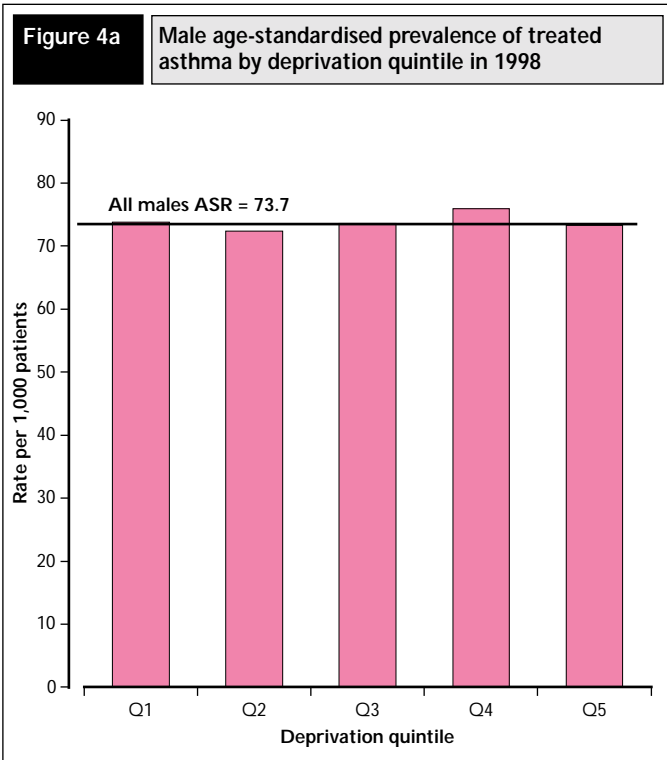
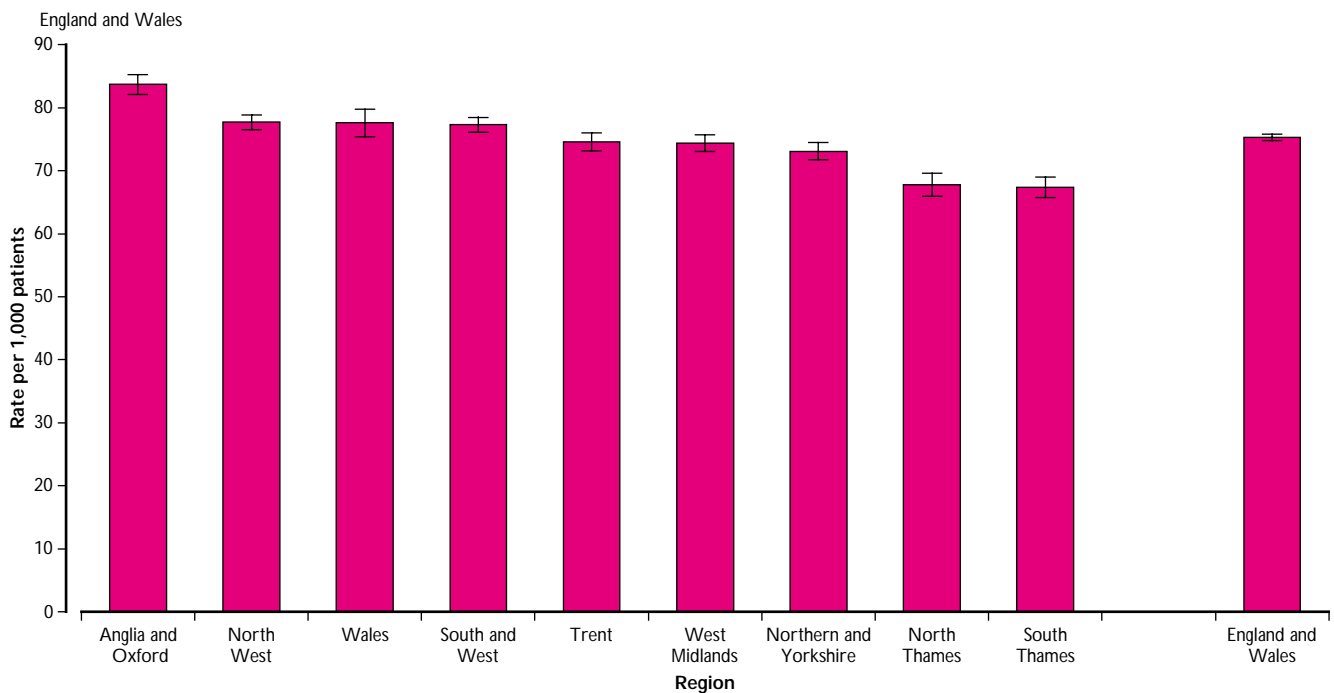


Figure 5 Age-standardised prevalence of treated asthma by region in 1998

Overall the GPRD data show that management of asthma within primary care is changing in line with the revised BTS guidelines of 1993 and 1997 with an increased use of combination treatment. In total, 74 per cent of patients were prescribed corticosteroids (either alone or in combination) in 1998. Since the variation in asthma prescribing across different regions was minimal, these data show that there was a nation-wide improvement in management of asthma in primary care.

The proportion of patients who are receiving combination treatment may be an underestimate in this study. The commonly prescribed bronchodilator inhalers have a shelf life of two years and contain 200 metered doses. It is quite possible that patients who have been prescribed sole therapy with corticosteroids or cromoglycate, are in fact on combination treatment, but have not required a recent supply of bronchodilator. Prescription of prophylactic treatment only in this data may therefore be an indicator of good asthmatic control.

The decrease in the use of cromoglycate alone has continued, following on from a previously described trend.²⁰ In general, cromoglycate is considered less effective in adults than inhaled corticosteroids. The mode of action is not completely understood and it is difficult to predict which patients will benefit, so corticosteroids may be preferentially prescribed.

The variation in prevalence of patients being treated for asthma was greater across practices for female than male patients. However the inter-quartile range showed quite similar treatment rates for both sexes, about 60–85 asthmatics per 1,000 patients. The widespread variance in treatment rates may be influenced by many factors, including the threshold for consultation of the practice population, the interest and threshold for diagnosis of the general practitioner, and practice organisation. Age-standardised rates take into account the age-composition of different practices so this would not be a valid explanation.

The prevalence of treated asthma was lower in the least deprived areas for female patients but there was little variation in prevalence for males. There was some variation in the nature of prescribing between deprivation quintiles. Corticosteroids were prescribed as the sole therapy for patients in the least deprived areas more commonly than for those in the most deprived areas in all age groups and both sexes in 1998. In the most deprived areas patients were just slightly more likely to receive combination treatment or bronchodilators for treatment of asthma but there was no significant difference. However this analysis is slightly limited since deprivation areas were assigned due to practice location, and this does not necessarily reflect the level or deprivation in the area in which the patient lived.

Evaluation of this study

The data used for this study were extensive and reliable; the GPRD has been used for epidemiological research for over 10 years and the same 210 practices were used to produce data for 1994 and 1998. The database covers nearly 1.4 million patients and the patients represent a similar age and sex distribution of the population of England and Wales, although practices are larger than average and practices in Inner London are under represented.

Within the database, information is held in individual patient records and practices were required to record both significant morbidity events and prescriptions, enabling this study to evaluate disease management. The practices had to pass data quality checks before their records were included in the database, although no doubt there will remain a slight variation in the accuracy and thoroughness of the recording.

Any study involving epidemiology and disease management of asthma faces the problem of the absence of an agreed case definition. Many studies have confirmed that there is substantial variation between doctors, between areas and over time in the degree to which the asthma label has been applied to wheezing illnesses.²¹ Consequently, there are

difficulties in comparing the results of different studies. In this study, the case selection criteria meant that patients were only classified as 'asthmatics' if they were actively being treated for the condition – in that they had recorded morbidity and prescriptions for asthma within the last 12 months. This ensures that all cases included are most likely diagnosed asthma, but also exclude cases which have not been accurately diagnosed or presented; something which can be particularly difficult in young children where there is a fine line between asthma and wheezing.

Within GPRD data there is no measure of the severity of the diagnosed asthma, which may be useful to examine appropriate prescribing based on the BTS 1997 guidelines. It is also not possible to differentiate between inhaled and oral steroids. This makes it difficult to precisely evaluate the BTS step-wise guidelines on prescribing. Previous research has suggested that female patients were more than five times more likely to report the use of oral steroids than male patients but it was impossible to evaluate this relationship from the GPRD data available.²²

CONCLUSIONS

This study shows that prevalence of treated asthma in England and Wales has increased between 1994 and 1998 for all age groups and both sexes except for children under 5 years. The percentage of patients being treated for asthma with a combination of bronchodilators and prophylactic measures increased by six per cent in males and five per cent in females. The greatest increase in the use of this treatment was in children under 5. This suggests that 1997 BTS guidelines for the management of asthma are being adhered to.

The variation in prevalence of patients being treated for asthma was greater across practices for female than male patients but the inter-quartile range showed quite similar treatment rates for both sexes, about 60–85 asthmatics per 1,000 patients. There was some variation in the prevalence of treated asthma by region and deprivation quintile but there was no significant difference in therapeutic asthma management across region or deprivation quintiles.

Key findings

- The age-standardised prevalence of treated asthma increased between 1994 and 1998 to reach a rate of 74 per 1,000 in males and 77 per 1,000 in females.
- The prevalence of treated asthma in children under 5 years old decreased between 1994 and 1998 from 103 to 98 per 1,000 boys and from 67 to 63 per 1,000 girls.
- Between 1994 and 1998 the management of asthma within primary care changed in line with the revised BTS guidelines of 1993 and 1997, with an increased use of combination treatment.
- In 1998, 74 per cent of patients were being treated with corticosteroids, either alone or in combination with inhaled bronchodilators.
- Prevalence of treated asthma varied throughout the regions in England and Wales with the highest rate being in Anglia and Oxford, and the lowest rates in North and South Thames.
- Prevalence of treated asthma in females was lowest for practices in the least deprived areas. There was little variation in prevalence for males.

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