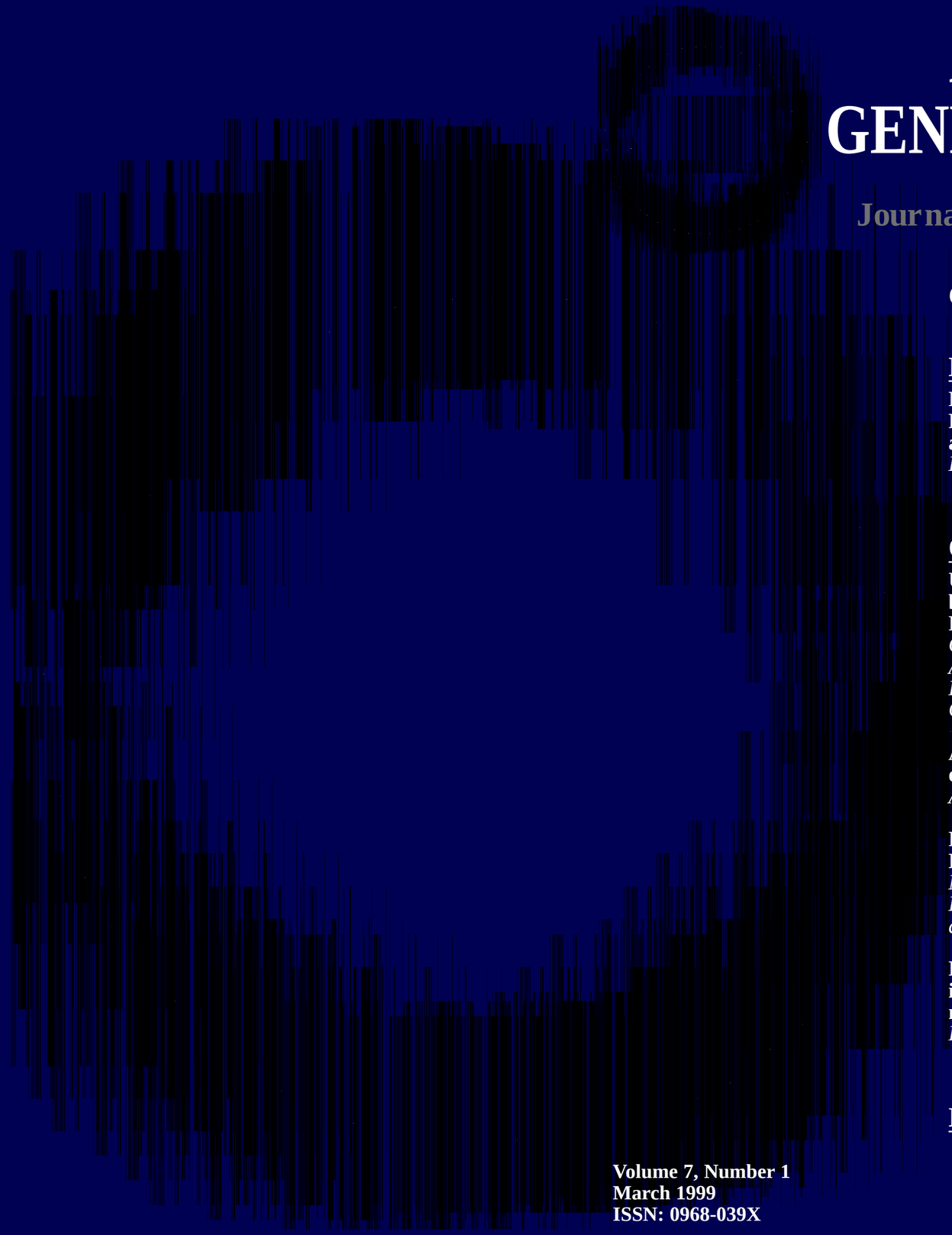

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Journal of the GPs in Asthma Group

CONTENTS

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New GPIAG chair in Primary Care Respiratory Medicine to be hosted at Aberdeen

Primary care has developed into a major clinical discipline. It is an effective and economical way of delivering healthcare. Primary care physicians treat both a wide array of disease and channel more difficult or unusual problems into the hospital setting. All medical schools in the UK now have departments of general practice or primary care.

Since its inception the General Practitioners In Asthma Group (GPIAG) has aimed to revolutionise respiratory care in the UK. A major step in achieving this aim has been realised by securing funding from a consortium of pharmaceutical companies to support a Chair in Primary Care Respiratory Medicine for a period of five years. We are delighted to announce that our interview panel (Dermot Ryan and David Price, for the GPIAG, and Robert McKinley and Douglas Flemming, independent interviewers) awarded this post to the Department of General Practice and Primary Care at Aberdeen University. The professorship will be advertised and an appointment made later this year.

The professorial post will be a resource to develop pertinent, evidence-based solutions, to initiate epidemiological and clinical studies; to further develop the research network; and to explore and develop the interface between primary and secondary care. The post will support the application of evidence-based medicine by those working in primary care. By establishing this new post, the GPIAG is providing an opportunity for primary care-led research and innovation.

Respiratory diseases are major reasons for consultation in primary care.[1] The primary care team manages most patients with these problems exclusively. Guidelines for the management of asthma,[2,3] COPD[4] and rhinitis[5] have been produced, but only a few[3,4] have had input from primary care. Secondary care solutions are not always appropriate for primary care problems, one of the reasons for this new post.

The GPIAG Research Unit in Dundee continues to be responsible for important respiratory research[6–14] (full bibliography on web page) and runs the group web page (http://www.gpiag-asthma.org/asthma/GPIAG/welcome.htm). Members actively participate in national and international respiratory conferences and many have contributed significantly to the medical literature in the last 20 years.[15] The group has an extensive research network of more than 250 practices. Our journal, *Asthma in General Practice*, publishes work relevant to primary care respiratory disease, including abstracts of work presented at our Annual Scientific Meeting.■

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Underpresentation of shortness of breath in the general population: Results of the DIMCA programme

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ABSTRACT
Objectives: To investigate the extent of underpresentation of shortness of breath to general practitioners (GPs) in a random sample of the general population without a confirmed diagnosis of obstructive airways disease (OAD). A second objective was to assess the influence of a person's perception of symptoms and psychological factors as possible causes for underpresentation.
Design: A random sample of the general population ($n = 1155$) was screened for respiratory symptoms. Of those who experienced shortness of breath at some stage during the preceding year, the ability to perceive dyspnoea was assessed in 134 patients, by means of a Borg score and a visual analogue scale (VAS) during each step of a histamine provocation test. A psychological profile was assessed in 130 subjects using five validated questionnaires.
Patients: Two random sample groups ($n = 134$ and $n = 130$) of adults reporting dyspnoea without a diagnosis of OAD.
Results: Of the initial sample, 285 (25%) had experienced shortness of breath in the year preceding the screening: only 93/285 (33%) had ever consulted their GP for this. Multivariate analysis showed that neither a person's perception of dyspnoea nor psychological factors could explain underpresentation.
Conclusions: Underpresentation of symptoms is a major factor contributing to underdiagnosis of OAD, but this is not related to the patient's perception of symptoms nor to their psychological profile.

INTRODUCTION

As with many chronic diseases, a significant proportion of the general population has obstructive airways disease (OAD) which is undiagnosed by the GP. Comparison of the number of diagnosed cases from morbidity registration systems with the results of population surveys indicates that the discrepancy may be as much as ten-fold.[1–4] The GP has generally been blamed for this underdiagnosis;[5] however, it is likely that underpresentation of respiratory symptoms by the patient may also contribute. The early symptoms of OAD are often non-specific and may be ignored, and the condition may worsen so gradually that patients adapt to it.

In the Detection, Intervention and Monitoring of COPD and Asthma (DIMCA) programme, patients without a confirmed diagnosis of OAD, but with early signs of OAD, were detected by means of a two-stage programme consisting of screening followed by monitoring for up to two years. The details of this study have been published elsewhere;[6,7] the results confirm that there is a significant level of underpresentation. A large proportion (74%) of subjects with respiratory problems during the year preceding the screening never consulted a GP for this, regardless of the severity. Of the subjects with persistently reduced lung function or increased levels of bronchial hyperresponsiveness and reversibility, 69% did not seek medical help.[7] Poor perception of symptoms may be a possible explanation of underpresentation.[8–10]

In our opinion, shortness of breath is the core alarm symptom of asthma. Other symptoms, such as cough and phlegm production, are less specific. The aim of this study was to determine the prevalence of shortness of breath in the general population and the extent to which this was reported to a GP. The second aim was to assess the extent to which perception of symptoms and psychological factors explain the underpresentation of shortness of breath.

METHODS

Design

This study is part of the DIMCA programme, which aimed to assess the efficacy and cost-effectiveness of active detection and early treatment of OAD.[6] The programme consisted of detection and treatment phases. A random sample of undiagnosed adult subjects from the general population ($n = 1155$), aged between 25 and 70 years, were invited for screening, consisting of a standardised respiratory symptoms questionnaire and lung function assessment. Subjects with symptoms or objective signs of OAD or both, were invited to participate in the second stage of the detection phase: the monitoring. In this phase, lung function and symptoms were measured every three months for up to two years, during which patients were selected for the treatment phase.

As part of the screening, subjects were asked whether they had experienced shortness of breath during the preceding 12 months and, if so, whether they had consulted their GP or chest physician for this. Two random samples of those reporting shortness of breath were studied further: one ($n = 134$) to assess an individual's ability to perceive shortness of breath; the other ($n = 130$) to assess the role of psychological factors in relation to medical consultation.

Patient characteristics

The characteristics of patients who experienced shortness of breath during the year preceding the screening were compared with those who did not. Within the group reporting shortness of breath, the characteristics of those who did and did not consult their GP were compared. The VC, FVC, FEV_1 and reversibility were measured using a portable Microspiro HI-298 (Chest Corporation, Tokyo, Japan).[11] After instruction, subjects were asked to perform three unforced and three forced expiratory manoeuvres from maximum inspiration. The FEV_1 corresponding to the manoeuvre with the highest sum of the FEV_1 and FVC was recorded as the FEV_1 at that moment. Predicted values were calculated using

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the equations by Quanjer *et al.*[12] The degree of reversibility was measured as the change in FEV_1 relative to the predicted value after salbutamol administration. Current smoking, smoking history and the number of pack-years were assessed during the screening.

Perception and medical consultation
Perception of shortness of breath was assessed during a histamine provocation test.[13] Patients were instructed to record their experienced level of shortness of breath 30 seconds after each dose of histamine and immediately before the FEV_1 measurement. The extent of shortness of breath was rated on a vertically oriented modified Borg scale, with a 12-point ordinal scale ranging from 0 (no breathlessness at all) to 0.5 (very, very slight breathlessness) to 10 (maximum breathlessness),[13,14] and on an anchorless 100-mm visual analogue scale (VAS).[15]

Table 1: Clinical characteristics of patients who experienced shortness of breath in the year preceding the screening ($n=285$) compared with the rest of the screened sample ($n=870$)

Variable	Shortness of breath	No shortness of breath	*p* value
FEV_1 (ml)	2997	3320	**< 0.01**
FEV_1 % pred	91.9 (90.1–93.7)	98.5 (97.6–99.4)	**< 0.01**
VC (ml)	3827	4149	**< 0.01**
Reversibility (%)	4.1 (3.5–4.7)	3.0 (2.8–3.2)	**< 0.01**
Pack-years	9.6	7.6	**0.01**
Current smokers (%)	47.0	33.9	**< 0.01**
Ex-smokers (%)	31.6	35.5	0.23
Gender (% female)	59.7	53.9	0.09
Age	44.5	43.4	0.14

FEV_1, forced expiratory volume in 1 s; FEV_1 % pred, FEV_1 as percentage of the predicted value; VC, vital capacity
NB: Reversibility defined as % change in FEV_1, 15 min after inhalation of 800 µg salbutamol; (95% CI)

Table 2: Clinical characteristics of patients who experienced shortness of breath in the year preceding the screening and who consulted their GP ($n=93$) compared with those who did not ($n=189$)[a]

Variable	Did consult GP	Did not consult GP	*p* value
FEV_1 (ml)	3056	2972	0.41
FEV_1 % pred	89.8 (86.6–93.0)	93.0 (90.8–95.2)	0.11
VC (ml)	3954	3759	0.13
Reversibility (%)	5.5 (3.9–7.1)	3.5 (2.9–4.1)	**0.01**
Pack-years	9.6	9.7	0.93
Current smokers (%)	45.2	47.9	0.66
Ex-smokers (%)	36.6	29.2	0.21
Gender (% female)	59.1	59.8	0.92
Age	41.9	45.8	**0.01**

[a]Three subjects answered do not know / do not want to tell
FEV_1, forced expiratory volume in 1 s; FEV_1 % pred, FEV_1 as percentage of the predicted value; VC, vital capacity
NB: Reversibility defined as % change in FEV_1, 15 min after inhalation of 800 µg salbutamol; (), 95% CI

Psychological factors and medical consultation
The following five validated questionnaires were completed:

1. The Utrecht Coping List (UCL),[17] of which the first four scales (Active tackling, Palliative responses, Avoidance, and Seeking social support) were used
2. The State-Trait Anxiety Inventory[18]
3. Multidimensional Health Locus of Control Scale, which assesses perceived causes of health and illness[19]
4. The Respiratory Illness Opinion Survey, which assesses attitudes of patients with respiratory disorders towards their illness.[20] Two subscales Optimism and Stigma, were used
5. The Dutch Personality Inventory, of which only the subscale Inadequacy (neuroticism) was measured by means of a questionnaire completed by the patients themselves.[21]

Analysis
Differences between patient characteristics were tested with independent Student's *t* tests. The proportions of men to women and smokers to non-smokers were tested by χ^2 tests. The association between a perception of symptoms and medical consultation was assessed by a logistic regression analysis, with consultation with a doctor (0 = no,1 = yes) as the dependent variable. Perception of symptoms was defined as the difference in Borg (VAS) score [the last Borg (VAS) score minus the baseline Borg (VAS) score]. A large difference would indicate good perception; no difference, despite a decrease in FEV_1, would indicate poor perception. The difference in Borg (VAS) entered the equation as an explanatory or independent variable. The change in FEV_1 during histamine provocation, baseline Borg (VAS), baseline FEV_1 and age were entered as covariates in the analysis. All possible interaction effects (multiplicative) were also entered in the model. In the case of a non-interaction model, the results from the reduced model (for example, without the interaction terms) were presented. A forward procedure to enter the variables in the equation was used: inclusion of variables was based on a likelihood function (SPSS 6.0 for Windows: Logistic Regression; Forward Likelihood). In a second analysis, perception was dichotomised. Subjects who had a difference in Borg (VAS) score equal to zero, in spite of a decrease in FEV_1, were labelled 'non-perceivers' whereas the remainder of the sample was labelled 'perceiver'. The association between psychological factors and medical consultation was assessed in a similar way by logistic regression analysis. In this analysis, whether or not a doctor was consulted was entered into the analysis as the dependent variable, and the scale scores from the psychological tests were entered as independent variables, including all one-by-one interaction terms (multiplicative).

RESULTS

Underpresentation of shortness of breath in the general population
Of all subjects screened 285/1155 (24.7%) had experienced shortness of breath during the year preceding the screening. These subjects had a significantly lower FEV_1, indicating airways obstruction. This difference remained after correction for age, gender and height (FEV_1 expressed as percentage of the predicted value). Subjects with shortness of breath had a smaller vital capacity and a higher level of reversibility after inhalation of salbutamol. They had significantly more pack-years and were more often currently smokers (Table 1). Although they experienced shortness of breath at least once, only 93/285 (32.6%) had ever consulted a GP for this. Those who consulted their GP had a higher level of reversibility and were four years younger, on average, than those who did not, but there were no significant differences in FEV_1 expressed as a percentage of the predicted value or vital capacity nor in smoking status or gender (Table 2).

Poor perception as possible cause of underpresentation
In the first sample ($n=134$), perception of shortness of breath was assessed during a histamine provocation test. The change in FEV_1 induced by the test was normally distributed with an average of -18% (SD 10%). Most subjects (72%) had a decrease in FEV_1 greater than 10%. In this subgroup, 51 (38.1%) had consulted a GP for respiratory symptoms, a percentage similar to that in the whole group. The results from the logistic regression model showed that a person's perception was unlikely to be a significant factor in his decision to seek medical help. Perception, defined as the difference in Borg scores, was not statistically significantly different ($p=0.51$) between those who consulted a GP and those who did not (Table 3). As expected, a person's perception of symptoms correlated well with the decrease in FEV_1 induced (the greater the induced dyspnoea, the larger the perceived difference in dyspnoea). However, none of the covariates reached the level of statistical significance. The result was similar using the VAS scores: neither perception of symptoms nor any of the covariates in the model played a significant role in medical consultation. Table 4 presents the results from the dichotomised analysis: 23 subjects indicated that they did not perceive shortness of breath in spite of a decrease in FEV_1, induced by histamine, while the remaining 111 subjects did perceive the induced dyspnoea, to some extent. Only 22% of the non-perceivers consulted their GP compared with 41% of those who did perceive symptoms. This almost two-fold difference approached statistical significance ($p=0.08$); the associated odds ratio was 2.55.

Psychological factors as possible causes of underpresentation
A second sample was studied to determine whether psychological factors were associated with seeking medical help. Despite randomisation, a smaller proportion (20.8%) of this group had consulted their GP than in the whole group. None of the psychological instruments showed significant differences between those who did and did not consult a GP for shortness of breath. Univariate testing of the differences produced similar results, indicating that correction for partial correlations did not influence the outcome. All differences between the two groups were very small (the effect sizes ranged from 0.09 to 0.30).

DISCUSSION

Increasing attention has been paid in recent years to preventing underdiagnosis of asthma and COPD. The development of guidelines for diagnosis and therapy of asthma are examples of efforts in this

Table 3: Association between perception of shortness of breath and medical consultation due to shortness of breath: Results of logistic regression analysis

Variables	ß	Standard error	*p*
Dependent variable Consultation (0 = no; 1 = yes) Main effect			
Difference in Borg score	**0.09**	**0.13**	**0.51**
Covariates			
Percentage change in FEV_1	- 3.27	1.96	0.09
Baseline Borg score	0.14	0.17	0.40
Baseline FEV_1	< 0.01	< 0.01	0.43
Age	< - 0.01	0.02	0.60
Dependent variable Consultation (0=no; 1=yes) Main effect			
Difference in VAS score	**0.01**	**0.01**	**0.34**
Covariates			
Percentage change in FEV_1	- 3.26	1.92	0.09
Baseline VAS score	0.01	0.01	0.38
Baseline FEV_1	< 0.01	< 0.01	0.31
Age	- 0.01	0.02	0.75

Table 4: Perception of shortness of breath as determined by GP consultation

	Did consult GP	Did not consult GP	
Did not perceive	5 (22%)	18 (78%)	23 (100%)
Did perceive	46 (41%)	65 (59%)	111 (100%)
	51 (38%)	83 (62%)	134 (100%)

$\chi^2=3137$; $p=0.08$; odds ratio = 2.55

Table 5: Association between psychological factors and medical consultation due to shortness of breath: Results of logistic regression analysis

Factors	ß	Standard error	*p*
Dependent variable: Consultation (0=no; 1=yes) Main effect:			
Utrecht Coping List			
Active tackling	- 0.08	0.09	0.37
Palliative responses	- 0.10	0.13	0.45
Avoidance	0.01	0.09	0.92
Seeking social support	< - 0.01	0.18	0.99
State-Trait Anxiety Inventory			
State-anxiety	0.01	0.07	0.84
Multidimensional Health Locus of Control Scale			
Internal	0.03	0.07	0.67
External	0.06	0.08	0.49
Chance	0.11	0.08	0.15
Respiratory Illness Opinion Survey			
Optimism	- 0.08	0.10	0.44
Stigma	- 0.01	0.05	0.82
Dutch Personality Inventory			
Inadequacy	0.05	0.04	0.24

respect. This is particularly important as there is evidence that the irreversible loss of lung function can be minimised by initiating proper treatment at an early stage.[22] However, when there are patients who are currently undiagnosed, screening may be the only option to significantly reduce underdiagnosis. Our study revealed that a substantial proportion of the adult general population had shortness of breath and only a few of these consulted a GP for this; raising the question of whether patients were able to perceive dyspnoea. Most patients did perceive the increase in airway obstruction induced by histamine, but this varied among patients and was related to the level of induced obstruction. There was no difference, however, in the level of perceived shortness of breath, corrected for covariates, between those who did and those who did not consult their GP. Analysis of the Borg and the VAS ratings of perceived shortness of breath produced non-significant results. From this, it can be concluded that the level of perception of dyspnoea is unlikely to be a significant cause for underpresentation and hence underdiagnosis. In a dichotomised analysis, non-perceivers had consulted their GP less frequently, but this difference was not statistically significant.

If underpresentation cannot be explained by differences in perception, personal psychological characteristics, such as the extent of coping or the anxiety aroused by a symptom, might offer an explanation. However, a number of psychological tests all failed to reveal differences between the two groups and the effect sizes were very small, indicating that the psychological profiles of the subjects who did and did not consult the GP were similar. The analysis had limited statistical power because of the uneven distribution of medical consultation (21% *vs* 79% of the sample), but it is unlikely that a more even distribution would have led to significant results.

Age and reversibility were the only two characteristics that were significantly different between those who did and those who did not consult a GP. The average age of those who consulted their GP for shortness of breath was lower, whereas in general, consultation frequency rose with age. An explanation for this paradoxical result might be that the interpretation of the seriousness of the symptom is different among different age groups. Elderly people may interpret shortness of breath as a natural consequence of ageing and underestimate its seriousness. It is not surprising that reversibility was a significant factor as an earlier study demonstrated that medical consultation was significantly associated with airway variability and a diminished quality of life.[7]

The positive predictive value of shortness of breath for respiratory disease is crucial to the interpretation of these results. The DIMCA data confirmed that shortness of breath may indeed be considered a core alarm symptom: 83% of all monitored patients with shortness of breath complied with criteria for early treatment at some stage during the monitoring. Thirty-four patients (22%) with shortness of breath fulfilled criteria for mild-to-moderate asthma or COPD. Another 28 patients (18%) with shortness of breath showed a rapid decline in FEV_1 during the monitoring (> 80 ml/year.), with increased levels of reversibility and/or bronchial hyperresponsiveness. Furthermore, 62 patients (41%) with shortness of breath showed an accelerated decline in FEV_1 (> 80 ml/2 years) with mild objective signs of reversibility or bronchial hyperresponsiveness. Only 17% of patients who reported shortness of breath during the year preceding the screening did not meet the above criteria.

In order to reduce underdiagnosis, GPs should be aware that a substantial proportion of subjects have unreported asthma symptoms. Medical consultation is not associated with either perception of these symptoms or with individual psychological factors. Patients are more likely to consult their GP when the condition affects their normal daily activities or the variability of the airways exceeds a certain level, often in an advanced stage of disease. Consequently, early diagnosis may be possible only by means of active case-finding or screening strategies.■

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A randomised trial of the initiation of asthma treatment

A.H. Morice and M.E. Taylor

ABSTRACT

Objective: To compare the effectiveness of four classes of anti-asthma medication as initial treatment in a randomised open study in an asthma clinic setting.

Design and subjects: Eighty-six patients aged 16–70 years were recruited into an open trial following informed consent. The diagnosis of asthma was established by either a 15% diurnal variability in peak expiratory flow (PEF) or a > 15% bronchodilation to inhaled salbutamol. Patients were randomised to one of the following drug classes: a short-acting ß2-agonist ($n = 21$); an inhaled steroid ($n = 25$); nedocromil sodium 4 mg qds ($n = 22$); and oral theophylline ($n = 18$). Symptoms and daily PEF measurements were recorded on a diary record card.

Results: Baseline characteristics of the four groups were similar. Mean FEV_1 (predicted) and FVC were 2.61 (82%) and 3.61 (91%), respectively. Wheeze, cough and expectoration were present on 4.2, 3.8 and 2.8 days per week. At one month, the greatest improvement in number of symptom-free days was seen in the group taking the inhaled steroids. Mean days per week with wheeze fell by 1.3 ($p < 0.05$), cough by 0.5 (NS) and expectoration by 1.5 ($p < 0.05$). Nedocromil sodium produced a mean decrease in symptom days of 0.8, 0.3 and 0.8, respectively (NS). Other modalities of treatment produced no significant change in symptoms. Mean improvement in FEV_1 was greatest in the steroid group (11%; $p < 0.02$) followed by nedocromil sodium (9%; $p < 0.02$). There was no change with short-acting ß2-agonists or theophylline.

Conclusions: Initiation of treatment with anti-inflammatory therapy produces the greatest symptomatic and physiological improvement in mild asthma.

INTRODUCTION

Therapy for asthma shows wide variation between countries.[1] In part, this is due to health economics with cheaper medications, such as theophyllines, being widely prescribed in developing countries. Even in countries with sophisticated healthcare, there are considerable differences in prescribing practices for the newly diagnosed person with asthma.[2] Our increased understanding of the chronic inflammatory nature of asthma has led some authorities to advocate the use of anti-inflammatory drugs in first-line management.[3] In the UK, despite widespread knowledge and acceptance of guidelines recommending the early use of steroids in adults, ß2-agonist bronchodilator therapy alone is still the most widely used first-line treatment.[2]

The objective of asthma management is to improve the quality of life for patients by abolition of symptoms, improvement of lung function, and reduction of severity and frequency of exacerbations.[4] As the majority of asthmatics are in the mild-to-moderate category, the first choice of anti-asthma medication is important both in terms of achieving these objectives and providing cost-effective care. In this study we have examined the short-term response of the commonly prescribed asthma medications in a 'real-life' study conducted in a nurse-run asthma clinic designed to be as similar as possible to that seen in primary healthcare.

METHOD

The trial was approved by the Local Ethics Committee. Patients with mild-to-moderate asthma were recruited by direct referral from interested general practitioners or from hospital departments. Some patients were seen as self-referrals and were randomised after contact with their GP. Only patients not currently taking anti-asthma therapy were recruited. Previous occasional use of ß2-agonist bronchodilators did not preclude entry into the study.

The diagnosis of asthma was established by the demonstration of one of the following:

- A 15% diurnal variability in PEF over one week;
- A >15% increase in FEV_1 with salbutamol 200 µg from a metered dose inhaler;
- A reproducible fall of 15% in PEF caused by exposure to a precipitating factor.

Informed consent was obtained on the initial visit. Patients were assessed by computerised questionnaire

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for family history, smoking habits, previous episodes of wheeze and shortness of breath, known allergies including hayfever and eczema, current medication and occupation. Lung function was measured in triplicate (Vitalograph Compact). If, at visit one the FEV_1 was <70% predicted, the patient was randomised at this time otherwise, randomisation took place at visit two after at least one week of observation. Serial PEF readings and symptoms were recorded at home on a diary record card (DRC). A salbutamol inhaler could be used as required throughout the study and, therefore, all patients were instructed on inhaler technique, which was assessed at each visit.

Patients were randomised following baseline assessment from a computer-generated list designed to provide balanced recruitment to one of four classes of asthma medication. The medication was administered in an open fashion and efficacy was assessed over a one-month period. Where possible, patients were randomised to one of two formulations within each class to ensure applicability of the results as a class effect. The four drug classes were:

- A short-acting ß$_2$-agonist (Aerolin Autohaler 200 µg prn or Bricanyl Turbohaler 0.5 mg prn; $n = 21$);
- An inhaled steroid (Becotide 200 µg bd or Pulmicort Turbohaler 100 µg bd; $n = 25$);
- A cromone (nedocromil sodium 4 mg qds; $n = 22$);
- Oral theophylline (Nuelin 250 mg bd or Theodur 300 mg bd; $n = 18$).

Once randomised, the patient was required to complete a DRC for one month, recording serial PEF readings, daily symptom scores on a scale of nought to nine, night-time disturbance and daily use of relief medication. If the patient was randomised to theophylline subsequent visits were arranged to assess theophylline blood levels until therapeutic levels of 10–20 mg/l were achieved.

In the event of an adverse reaction or worsening of DRC symptoms, patients were instructed to contact the clinic as soon as possible to discontinue the medication and introduce second-line medication.

ANOVA was used to determine the degree of statistical significance of any differences between treatment arms in changes from baseline values following one month's treatment.

Table 1: Baseline characteristics of patients enrolled into the study

Baseline	Steroid	Cromone	Theophyline	ß$_2$-agonist
FEV_1 (SD) %*predicted*	2.8 (1.3) *84.7*	2.3 (1.1) *71.2*	2.6 (1.2) *73.7*	2.5 (0.8) *81.9*
FVC (SD) %*predicted*	4.0 (1.4) *98.7*	3.4 (1.2) *90.4*	3.7 (1.3) *87.9*	3.4 (1.1) *93.9*
Days per week with wheeze (SD)	4.3 (3.1)	5.0 (2.7)	5.4 (2.2)	3.3 (3.2)
Days per week with cough (SD)	3.7 (3.3)	4.6 (3.1)	2.8 (3.0)	4.3 (3.2)
Days per week with sputum (SD)	3.0 (3.2)	4.1 (3.3)	1.8 (2.3)	2.6 (3.2)

Table 2: Lung function and symptom scores following one month of treatment *$p < 0.05$, **$p < 0.02$

After one month	Steroid	Cromone	Theophyline	ß$_2$-agonist
FEV_1 (SD)	3.1 (1.5)**	2.5 (1.2)*	2.6 (1.5)	2.5 (1.0)
FVC (SD)	4.1 (1.7)	3.4 (1.3)	3.7 (1.5)	3.3 (1.3)
Days per week with wheeze (SD)	3.0 (2.6)*	4.2 (3.0)	3.8 (2.9)	3.5 (3.2)
Days per week with cough (SD)	3.2 (3.2)	4.3 (3.2)	3.5 (3.2)	4.1 (3.5)
Days per week with sputum (SD)	1.5 (2.0)*	3.3 (3.3)	1.9 (2.7)	2.4 (3.3)

RESULTS

Baseline characteristics of the four groups were similar; mean FEV_1 (predicted) was 2.61 (82%); FVC was 3.61 (91%). Wheeze, cough and expectoration were present on 4.2, 3.8 and 2.8 days per week (Table 1).

At one month, the greatest improvement in the number of symptom-free days was seen in the group taking inhaled steroids. Mean days per week with wheeze fell by 1.3 ($p < 0.05$) cough by 0.5 and expectoration by 1.5 ($p < 0.05$). Nedocromil sodium produced similar but less striking results (0.8, 0.3 and 0.8, respectively; NS). Other modalities of treatment produced no significant change in symptoms (Table 2). In this group of people with mild asthma mean improvement in FEV_1 was greatest in the steroid group (11%; $p < 0.02$) followed by the nedocromil sodium (9%; $p < 0.02$). There was no change with short-acting ß$_2$ agonists or theophylline (Table 2).

DISCUSSION

In this comparison of four commonly prescribed therapies for mild asthmatics, we have confirmed the efficacy of inhaled steroids both in reducing symptoms and improving lung function. A similar, but less marked, improvement was seen with nedocromil sodium. There was no overall improvement with bronchodilator therapy alone.

Our patients were relatively naïve to asthma treatment, having previously only received inhaled bronchodilator medication or no therapy at all. They were thus very similar to many asthmatics seen in the early stages of the disease in primary care. In an attempt to mimic the clinical setting, it was decided to administer the medication in an open-label fashion. Although this prohibits any definite conclusions being drawn as to the absolute efficacy of the medications studied, it does allow for comparisons to be made between treatment groups. Previous studies have demonstrated the bronchodilating effect of inhaled steroids in mild-to-moderate asthma even in subjects whose symptoms are not troublesome.[5] The striking finding of our study is that inhaled steroids were effective not only in terms of lung function, but also in reducing the number of symptomatic days even after only one month of treatment whereas inhaled bronchodilators had no clinically important effect on symptom frequency. It is questionable as to whether the current recommendation that treatment be initiated with bronchodilators is soundly based. Our findings probably reflect the efficacy of inhaled steroids on airway inflammation. Bronchial hyper-responsiveness, a surrogate for airway inflammation, is improved in these patients.[5,6] In Haahtela's study of the long-term treatment of mild-to-moderate asthma with inhaled steroids or ß$_2$-agonists,[5] there was almost complete clinical recovery and normalisation of lung function with confirmed use of inhaled steroids.

In the subgroup of treated patients, bronchial biopsy specimens showed significant reductions in the number of inflammatory cells after budesonide treatment.[7] Those patients who have a poor response to inhaled steroids are usually those with a more prolonged history before commencement of anti-inflammatory treatment.[8] Our study may therefore provide further evidence for the benefit of early intervention with inhaled steroids in asthma.

We found that the cromone nedocromil sodium had a similar spectrum of activity on symptoms and lung function, but was less potent. This is consistent with the known activity of nedocromil sodium being anti-inflammatory, but to a lesser degree than that of inhaled steroids. Within the group of patients responding to nedocromil sodium, as might be anticipated, some patients reported considerable benefit. Whether such patients respond as well as they would to inhaled steroids, thereby establishing nedocromil sodium as a true alternative to inhaled steroids in a subset of patients, is unknown. Unfortunately, there appears to be little likelihood of long-term efficacy studies for this group of compounds.

What is the best first-choice treatment for patients with mild-to-moderate asthma? National guidelines suggest the use of ß$_2$-agonists as the first choice, with early intervention with a low-dose inhaled steroid. The results of our study suggest that those patients taking short-acting ß$_2$-agonists are following a treatment which does not improve lung function and provides poor symptomatic relief. This indicates a need for large-scale studies of first-use inhaled steroids in mild-to-moderate asthma in primary care.■

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Preschool children with asthma: Do their GPs know?

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ABSTRACT

Objective: To answer the following question: Are children with asthma known to their GP?

Methods: Parents of all 464 children, 1–3 years of age and registered with five general practices, received a postal questionnaire asking about asthma symptoms of the child, and past and present asthma medication. Thus, children were classified as having no, mild, moderate or severe asthma. The GPs' records were checked for recorded asthma symptoms, medication and asthma-related diagnoses. The presence of these items was compared with asthma severity.

Results: Eighty-seven percent of parents responded to the questionnaire (mean age of children 30.1 months). For all classes of severity, 75% of children with asthma were known to their GP. Although all children with severe asthma were known to their GP, the proportion of asthmatic children known to their GP fell with decreasing severity. Symptoms and medication were recorded more often than asthma-related diagnoses.

Conclusions: Most preschool children with asthma are known to their GP. The diagnosis is recorded less often than asthma symptoms and medication.

Table 1: Classification of asthma severity according to questionnaire answers

No asthma
- no respiratory symptoms and no medication

Mild asthma
- dyspnoea at least twice in past 12 months
- wheezing 4 to 12 times in past 12 months
- present weekly use of bronchodilators for less than6 weeks
- present daily use of deptropine for less than 6 weeks or deptropine use in past 12 months
- if doctor ever said to parents their child has asthma
- if parents think their child has asthma now

Moderate asthma
- wheezing less than12 times in the past 12 months
- 'yes' to at least two out of the three following questions: [8]
  - Wheezy or asthmatic condition once or more per week?
  - Hampered in daily activities (feeding, play, going to school or creche)?
  - Awakened by coughing or wheezing during night-time?
- present use of sodium cromoglycate or ketotifen
- present use of deptropine for 6 or more weeks
- present daily use of bronchodilators
- present weekly or monthly use of bronchodilators for 6 weeks
- use of corticosteroids for less than 3 weeks in past 12 months

Severe asthma
- all three following questions answered 'yes'.[8]
  - Wheezy or asthmatic condition once or more per week?
  - Hampered in daily activities (feeding, play, going to school or creche)?
  - Awakened by coughing or wheezing during night-time?
- use of corticosteroids during 3 or more weeks in past 12 months
- present use of corticosteroids

INTRODUCTION

Speight highlighted the underdiagnosis and undertreatment of childhood asthma more than 15 years ago.[1] In a general practice audit by Levy and Bell, only one-third of asthmatic children had their illness diagnosed before the age of four years, despite most having presented with respiratory symptoms by this age.[2] Since then, this subject has been of increasing interest to researchers, clinicians and general practitioners. This is reflected in the publication of various consensus reports during the last few years.[3-6] We would expect more children with asthma-like symptoms to be known to their GPs.

The prevalence of asthma in 0–3-year-olds is high; rates vary from 5% to 31% according to the definition of asthma and methods used for identifying cases. Guidelines for appropriate therapy have been widely disseminated and publicised[3-6] and some authors have argued that this process may improve long-term prognosis.[7,8]

By studying GPs' medical records of children, Neville found that 32% were potentially asthmatic.[9] No attempt was made, however, to validate these findings by interviewing parents. Strachan[10] reviewed general practice records of 369 children at seven years of age: 31% had some record of wheeze. He compared the records with data from parental questionnaires of 174 of these children, and concluded that parental recall of early episodes is incomplete and biased by the severity and persistence of the symptoms of the child.

In the Netherlands, every patient is registered with a general practitioner who acts as 'gatekeeper' to secondary care. This offers a comprehensive sampling base for asthma research. We compared GPs' medical records of children with parental questionnaires to answer the following question: Are preschool children with asthma known to their GP?

Table 2: Number (%) of GPs' files ($n = 464$) containing asthma symptoms or diagnoses

Asthma symptoms		
All asthma symptoms	163	(35.1)
chest congestion or phlegm	74	(15.9)
wheeze	63	(13.9)
rhonchi	63	(13.6)
nocturnal cough	37	(8.0)
dyspnoea	35	(7.5)
Asthma-related diagnoses		
All asthma-related diagnoses	93	(20.0)
acute bronchitis	71	(15.3)
chronic non-specific respiratory disease	43	(9.3)
asthma	2	(0.4)

METHODS

Parents of all 464 preschool children (1–3 years old) in five general practices received a postal questionnaire through their GP. Two weeks later, a reminder was sent to non-responders. The practices (both rural and urban areas; nine general practitioners), which were affiliated with the Department of General Practice of Erasmus University, had no special interest in asthma (no clinics or asthma nurses).

As there is no suitable and well-validated questionnaire for assessing asthma in this age group,[11] we devised one of our own by adopting validated questions from previously developed questionnaires.[12–14] Our questionnaire contained items about asthma symptoms (such as wheezing, dyspnoea), past and present asthma medication, and morbidity experienced by the child.

Based on the answers received, the children were classified as having no, mild, moderate or severe asthma (Table 1), according to recurrent airway symptoms and use of specific asthma medication.[2–5] Peak expiratory flow measurements are not possible in most preschool children. Jones *et al.* showed that asthma symptoms are closely related to results of lung function tests in children over five years.[12] We examined general practitioners' records (some handwritten, some computerised, some both) of these children, checking them for asthma symptoms, specific asthma medication and asthma-related diagnoses (asthma, acute bronchitis, chronic non-specific respiratory disease) since birth. The two people who studied the files were unaware of the answers in the parental questionnaire.

Asthma severity, based on questionnaire answers, was compared to asthma symptoms, specific asthma medication and asthma-like diagnoses found in the general practitioners' records. Data were analysed with SPSS-PC. Differences between responders and non-responders were tested by means of a χ^2 test ($p < 0.05$).

RESULTS

A total of 404/464 (87%) parents responded to the questionnaire. Analysis of the non-responders showed no differences between responders and non-responders with respect to the GPs' recorded information on contact frequency and the presence of asthma-like symptoms, diagnoses and medication. Forty percent of the non-responders were from ethnic minorities (Morocco and Turkey) compared with 14% in the total population ($p < 0.01$).

Of the 404 children for whom questionnaires were completed, 281 (70%) did not suffer from asthma. According to our criteria, 98 (24%) were classified as having mild asthma, 17 (4%) as having moderate asthma and 8 (2%) as having severe asthma.

Asthma symptoms were recorded in 35% of the 464 files of children 1–3 years of age (Table 2). The distribution of these asthma symptoms in the GPs' files showed some overlap between different items. Chest congestion with or without sputum production was recorded most frequently, followed by wheezing and rhonchi.

In nearly 32% of all records, the general practitioners prescribed specific asthma medication, including deptropine, an anticholinergic drug which is frequently prescribed in the Netherlands, but is uncommon elsewhere.[7] The prescription frequencies of specific asthma drugs are shown in Table 3. For reasons of comparison with other countries, we present figures with and without deptropine. When deptropine prescriptions were excluded, the prescription of specific asthma medication consequently dropped from 32% to 11%.

Asthma-related diagnoses were registered by GPs in 20% of the files (Table 2). Acute bronchitis was recorded most frequently. To answer the main question, we compared questionnaire data with the GPs' records. The data from the records for each degree of asthma severity, found in the parental questionnaire, is shown in Figure 1.

All children with severe asthma were known to their GP (either by diagnosis or asthma medication). The proportion drops with falling levels of severity. Asthma-like diagnoses were recorded in fewer children than both asthma symptoms and medication. For all classes of severity combined, 75% of children with asthma are known to their GPs.

DISCUSSION

The return of 87% completed questionnaires was similar to that of other studies on this subject.[10,11] A substantial percentage (40%) of the non-responders were from ethnic minorities, who may have had difficulties understanding the questionnaire.

By focusing on information recorded by GPs, we may have underestimated the number of known asthmatics. If we had asked the GP directly: 'Does this child have asthma?', more cases would probably have been classified as 'known'. We suspect this latter method of data collection would be more liable to bias than checking for information that was actually written down during patient care.[15] In this study, discrepancies between the two sources of information may partly be explained by the effect of time. As the diagnosis of asthma is seldom made in a single consultation, there may be patients who are still on their way to being diagnosed by their GP among the children we have labelled as 'asthmatic'. Furthermore, questions regarding the diagnosis of mild asthma in this age group and the consequences of this diagnosis for future respiratory disease are still unsolved.[16,17] Another aspect of time worth mentioning is reflected in the expectation that many children with airway symptoms will grow out of them, especially in this age group where viral infections may cause asthma-like symptoms.[18]

Table 3: Number (%) of GPs' files ($n = 464$) with specific asthma medication

Specific asthma medication		
All asthma medication	148	(31.9)
deptropine	137	(29.5)
All asthma medication (deptropine excluded)	51	(11.0)
ß2-sympaticomimetics	34	(7.3)
ketotifen	30	(6.5)
ipratropium bromide	7	(1.5)
corticosteroids	7	(1.5)
sodium cromoglycate	5	(1.1)
xanthines	3	(0.6)

Of all items recorded by GPs, medication was the best recorded. Recorded asthma medication was mostly deptropine, an oral drug with anticholinergic properties. Use of this drug is in accordance with the previous version of the guidelines for asthma in childhood issued by the Dutch College of General Practitioners.[19] If deptropine had been unavailable (as in other countries), we assume that other drugs would have been prescribed. Antibiotics were excluded from our search as their prescription for asthma is not advised.

The limited number of practices included in our study means that the conclusions should be generalized with caution. Regarding the affiliation with the Department of General Practice, the chance of selection bias will be small as several hundred practices have contact with the Department for teaching, vocational training and research activities. None of the practices that participated in this study had been involved in any previous study in the field of childhood asthma.

For the practices studied, our results indicate that most children with probable asthma are known to their general practitioners. Our results also indicate that both recorded asthma symptoms and specific asthma medication are more sensitive pointers for detecting children with asthma from GPs' files than specific diagnoses of asthma or asthma-like disorders.■

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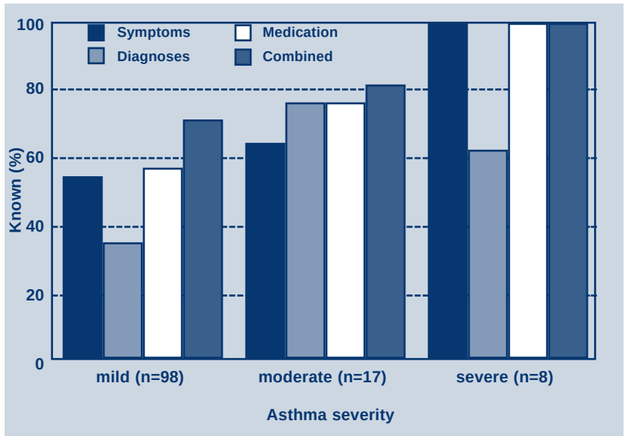

Figure 1: Proportion of asthmatic children known to their GP as indicated by registered symptoms, diagnoses and medication, shown according to degree of asthma severity

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Does implementing COPD guidelines improve patient care and save money in practice?

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ABSTRACT
Objectives: To identify and assess the management of patients with COPD attending our practice asthma clinic by implementing protocols for the diagnosis and management of COPD, including reversibility testing.
Design and subjects: All patients aged over 39 years attending the asthma clinic at The Roborough Surgery were included. We assessed the implementation of the protocols and analysed prescribing data in those found to have irreversible airflow obstruction.
Results: COPD was found in 35/58 adults (60%) over 40 years, of these, 6 (17%) were irreversible. In irreversible patients, less inhaled steroids were prescribed, but this was offset by more anticholinergic prescriptions. The majority had had appropriate diagnostic tests, but the uptake of immunisation was 51% for influenza and 43% for pneumococcal infection.
Conclusion: Applying COPD protocols did not reduce prescribing costs, but encouraged optimum patient care in terms of investigations, diagnosis, appropriate treatment and immunisation.

INTRODUCTION
It has been stated that most patients with COPD have irreversible airway obstruction.[1,2] These patients often receive expensive, but ineffective, drug treatment.[3] As the disease progresses and they become more breathless, more treatment is added, with increased prescribing costs. Reversibility testing is useful in excluding chronic asthma from COPD and establishing whether drug therapy is likely to be beneficial. It has been predicted that large savings could be made if reversibility testing is systematically applied to patients with COPD in primary care.[3]

In June 1996, the surgery introduced protocols for the diagnosis and management of COPD agreed by partners and nurses. These include reversibility testing, appropriate investigations, smoking advice, vaccination and treatment review. The protocols were produced in conjunction with British Thoracic Society (BTS) members, but preceded the publication of the BTS guidelines.[1] They are compatible with the European Respiratory Society (ERS) guidelines.[4] The primary aim of this audit was to establish how many patients attending the 'asthma' clinic had COPD, and to assess the use and impact of the management guidelines within our practice. The secondary aim was to assess the effect on prescribing costs of implementing a policy of stopping inhaled steroids in patients with irreversible airway obstruction.

METHODS
The study group consisted of all patients aged over 39 years who were attending the nurse-led clinic, which is supported by two general practitioners with an interest in respiratory disorders. The practice used two spirometers: the first, a small vane type (Medical Micro Ltd), was used for screening and in GP consultations. The second was a fully computerised type (Vitalograph 2120), which needed calibration whenever it was set up and was used by the nurse during asthma clinics. Being more accurate, it also was used to check the findings of the microspirometer.

The practice has one half-time and five full-time doctors caring for 10,700 patients [47% (5030) aged over 39 years]. It is located in the northern suburbs of Plymouth and extends to the southern fringes of Dartmoor in southwest Britain. There is a wide range of social class with a deprivation index close to the national average.

Protocols
The protocols were designed in conjunction with Professor D. Shale of the Department of Respiratory Medicine at the University of Wales School of Medicine. The following were agreed by the primary care team.

All patients over 39 years of age attending the asthma clinic should have diagnosis by spirometry. If the FEV_1 was more than 80% of expected or the FEV_1: FVC ratio was more than 75%, COPD was excluded. Others had spirometry repeated and, if still low, underwent reversibility assessment. Those who could be reversed, by the methods listed below, to normal FEV_1 or FEV_1: FVC ratio were diagnosed as asthma, the remainder with persistent airflow obstruction were deemed to have COPD.

Reversibility assessment
Reversibility was defined as a variation in FEV_1 or peak expiratory flow (PEF) of more than 20%. This was checked by the following methods:

1. Informal: Recent recordings of lung function in the patient's notes at times showed sufficient variability to confirm reversibility, for instance, before and after a course of prednisolone.

2. ß$_2$-agonists: By using 5 mg of salbutamol by nebuliser, acceptable alternatives include salbutamol, terbutaline or ipratropium bromide metered-dose inhaler via large volume spacer. Dramatic changes in FEV_1 or PEF are suggestive of asthma rather than COPD and merits reconsideration of the diagnosis. The two conditions can coexist.

3. Inhaled corticosteroids: By using two to three months of high-dose inhaled corticosteroids (beclomethasone dipropionate or budesonide 800–1000 µg or fluticasone propionate 500 µg daily).

4. Oral steroids: Two weeks of prednisolone at a dose of 30 mg daily.

Chest X-ray
A chest X-ray was recommended within two years of diagnosis and at least once every five years thereafter.

Minimum data recording
We agreed that the minimum data set would be recorded in all patients notes. Smoking habits were recorded as past exposure (best expressed as pack-years)[1] and current status. Smoking advice was recorded and leaflets were made available for patients to take home.

The presence of other pulmonary conditions was recorded, for example, tuberculosis and bronchiectasis as well as other significant medical conditions such as ischaemic heart disease, osteoporosis and diabetes.

Vaccination status
In our practice, we recommend influenza immunisation annually. We agreed that we would record whether patients were advised to have the vaccine, and if and when it was administered.

Pneumococcus immunisation was recommended to be administered on one occasion for all patients, according to current Department of Health advice.[5]

RESULTS
Fifty-eight adults over 39 years of age attended the asthma clinic in the preceding 12 months. After spirometry according to the protocols, 35/58 (60%) patients were diagnosed as having COPD. The mean FEV_1 was 1.31l, range 0.34–2.40. Table 1 shows the grade of severity and results of reversibility testing in

Figure 1: Methods by which reversibility was confirmed in 20 patients, aged over 39 years, with COPD who were attending an asthma clinic in a general practice

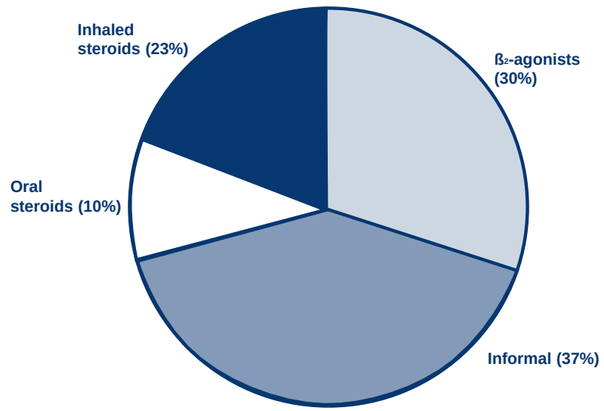

Table 1: Grade of severity of air flow obstruction and results of reversibility testing in 35/58 patients with COPD attending the asthma clinic

	Reversible	Irreversible
All	29	6
Mild	10	1
Moderate	11	3
Severe	8	2

Table 2: Changes in prescribing for six patients shown to be irreversible on formal testing. The figures represent total numbers of inhalers prescribed for these patients for six months before and six months after reversibility testing

	Steroid inhalers	ß2-agonist inhalers	Anticholinergic inhalers	Combination antichol/ ß2-agonist inhalers
Before	11	31	6	10
After	8	31	13	15
Change in costs	-£58.50	0	+£29.40	+£32.50

those identified as having COPD. Reversibility was demonstrated in 29/35 (83%) patients; the diagnosis was made most frequently by informal assessment from the records (Figure 1).

Prescribing data were analysed for six months before and after reversibility testing for those deemed to have irreversible obstruction (six patients; Table 2). Three patients with irreversible disease were on inhaled steroids – two stopped and one continued as his cough became worse after stopping. The reduction in the cost of inhaled steroids, however, was offset by the increase in anticholinergic prescriptions which were more likely to be supplied after attending the asthma clinic. Of 17 patients started on inhaled anticholinergic therapy, 70% are continuing long-term.

In the patients diagnosed as having COPD, a chest X-ray was performed within two years of diagnosis in 57%, within the last five years in 71%, but five patients (14%) had no chest X-ray at diagnosis or in the last five years. Immunisation for influenza within the last 12 months occurred in 51%, and for pneumococcal infection within the last five years in 43%.

Three of the 35 patients were taking ß-blockers at the time of assessment; one was on aspirin and another on an oral non-steroidal anti-inflammatory agent.

DISCUSSION

This audit was limited to patients attending the asthma clinic and is not necessarily representative of all patients with COPD attending the surgery.

It is believed that airflow reduction in COPD is usually irreversible. [1,2,4] However, data from the USA demonstrated that up to two-thirds of patients with COPD have a significant response to inhaled bronchodilators. [6,7] Of our patients with COPD, 29 out of 35 (83%) demonstrated evidence of reversibility. In practical terms, reversibility testing was easy: two-thirds could be assessed in minutes either via review of records or by response to nebulised bronchodilator. As in the case of the ERS statement, [4] our guidelines originally did not include a minimum 200 ml increase in FEV_1, as recommended by the BTS guidelines, but were supported by (PEF) monitoring. We now suggest adherence to the BTS recommendation. As the PEF is less reliable, it may be misleading in COPD reversibility assessment especially in more severe cases, so there is an argument for the use of spirometry.

There are practical difficulties in stopping inhaled steroids in patients with irreversible COPD: They tend to have more severe disease and do not always take kindly to having their treatment reduced when they are getting worse. Even if there are no objective changes in spirometry, this does not necessarily mean that they are not benefiting from anti-inflammatory treatment. In such situations, it is difficult to blindly follow guidelines and stop inhaled steroids rather than listen to the patient. After all the guidelines still suggest using bronchodilators which may be equally ineffective.

As only a small minority of our patients with COPD was irreversible and had their prescriptions reduced, reversibility testing may not lead to marked reductions in prescribing costs in COPD. However, these results need to be considered cautiously as our numbers were small and may not be representative of other populations of COPD patients in primary care. The findings do justify a larger multicentre study; such a study is due to start shortly.

The process of systematic review of patients with COPD may, in fact, increase costs as other drugs may need to be added. Anticholinergic drugs have a particular place in COPD [8,9] and we have advocated a trial of this therapy; 70% of those patients who started, continued to use these drugs. In this sample of patients, none were receiving regular oral steroids, theophyllines or long-acting bronchodilators.

Despite active encouragement, our influenza vaccination rates are unacceptably low, demonstrating the need for a register of those at risk to check that they are invited at the right time and that they attend. We also had low rates of uptake of pneumococcal immunisation, but this may be less important and is not routinely recommended by the British or European guidelines on COPD. [1,4]

The value of performing a chest X-ray in all cases is debatable. It is helpful to exclude other pathology, such as carcinoma of the bronchus. The X-rays in this group did not reveal any major pathology which required subsequent management. The BTS guidelines recommend chest X-rays in moderate-to-severe disease only, unless other symptoms are present. Previously, three patients in our practice had presented with cough, wheeze and a positive response to inhaled steroids, and subsequently proved to have bronchial carcinoma. Therefore, our guidelines err on the side of caution. In this group, it was encouraging that chest X-rays had been performed in the majority (86%) albeit that not all were done at diagnosis or in the last five years.

ß-blockers, aspirin and non-steroidal anti-inflammatory drugs are known to sometimes cause respiratory problems. Three patients attending the asthma clinic were being prescribed ß-blockers; these were discontinued immediately with beneficial clinical effect. Iatrogenic causes of airway obstruction should not be overlooked; auditing patients helps to avoid such pitfalls.

CONCLUSION

Our study describes a method for diagnosis and management of patients with COPD in general practice. Use of COPD protocols in patients attending the asthma clinic optimised patient care in terms of investigations, diagnosis, appropriate treatment and immunisation. We were, however, unable to reduce our prescribing costs through inappropriate use of inhaled steroids in patients with irreversible airway obstruction. Further larger studies in this area are needed.■

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Letter to the Editor

Editor
Dr Sheikh comments on the common association of rhinitis and asthma in his paper on 'Asthma and co-existent disease' (*Asthma in Gen Pract* 1998; **6(2):** 15–18).

This was a personal problem for me, as I am an asthmatic. Effective treatment is to exhale through the nose after inhaling the preventive steroids prescribed for asthma. This is simple but seems to be little known.

Dr G S Plaut
Halstead, Essex, UK.

Editor,
Dr Plaut suggests that asking patients to exhale (via the nose) their inhaled asthma steroids is effective treatment for co-existent rhinitis. Whilst this sounds plausible, and may be of benefit to some patients, as far as I am aware, there is no published evidence supporting the routine use of such a strategy. [1]

Highly effective, proven treatments for rhinitis, however, do exist and I would suggest that these are employed as first-line treatment options. [2]

Dr A Sheikh
Imperial College School of Medicine, London, UK.

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