

design flaw in the omission of any 'no preference' check box in the questionnaire.

Unfortunately ethnic minorities were under-represented in this survey and such groups may have important differences in preference for treatment device.

It is difficult to correlate patient preference with greater levels of compliance within the confines of a self-administered questionnaire. These issues could be explored further by way of a prospective double blind placebo controlled randomised study comparing compliance with either inhaler or tablet.

### CONCLUSION

These findings emphasise the varying preferences exhibited by patients. In a disease such as asthma where compliance is a major issue, it is important to take into account patients' own preference for device and route of delivery.<sup>3</sup> The majority of patients, particularly the young and those on more than three inhalers would prefer additional therapy via the oral route. Such preferences should be identified when prescribing in asthma. ■

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## Home or surgery based screening for chronic obstructive pulmonary disease (COPD)?

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### ABSTRACT

#### Aims

To compare the effectiveness of opportunistic spirometric screening of patients attending a general practice surgery with screening on randomly selected home visits.

#### Method

100 patients aged 45+ attending the Honiton Surgery (surgery group) and 100 randomly selected patients visited at their homes (home group) were invited to perform spirometry and complete a symptom and medication questionnaire. Main outcome measures were successful completion of spirometry and questionnaire and an estimate of COPD prevalence.

#### Results

Surgery assessments were successful in 94/100 (95% C.I. 89% to 99%) cases. Eighteen percent of those visited at home refused the invitation to attend for spirometry; 33% (95% C.I. 24% to 42%) resulted in a successful assessment; there was no reply when visiting 46% of cases and 3% of the visits were refused or terminated on the day.

The mean age of the surgery group and home group was 63.7 years and 64.5 years respectively. The mean time per patient was 17 minutes in the surgery group and 1 hour 26 minutes in the home

group.

Twenty five (27%, 95% C.I. 18% to 36%) of those assessed in the surgery group and 10 (30%, 95% C.I. 14% to 46%) of the home group had an FEV<sub>1</sub> < 80% predicted. Of these, 14/25 (56%) and 4/10 (40%) were current or ex-smokers. Of these, eight and three respectively had cough, wheeze or breathlessness, giving an overall COPD prevalence of 11/127 (9%, 95% C.I. 0% to 19%). Three of these eleven (27%) had mild disease, 7/11 (64%) moderate and 1/11 (9%) severe. The mean age of the patients with COPD was 70.8 years. Four of the eleven (36%) patients with COPD already had a diagnosis recorded in their records (3 COPD, 1 asthma). Analysis of surgery attendance (any health care professional) of all patients aged 45 and above, indicated that over a one year period 79.1% (95% C.I. 78.2% to 80.0%) and over a two year period 89% (95% c.i. 88.3% to 89.7%) of the total practice population attended on at least one occasion.

#### Conclusion

Opportunistic spirometric assessment of patients routinely attending surgery results in a high uptake; over a period of two years around 84% of the target population could be assessed. Home visiting may be used for reaching those not routinely attending the surgery.

## BACKGROUND

Management of chronic disease accounts for an increasingly large proportion of NHS workload.<sup>1</sup> Chronic obstructive pulmonary disease (COPD) accounts for over 25,000 deaths in England and Wales each year: approximately 6.5% of all male deaths and 4% of all female deaths.<sup>2,3</sup> The burden of disease is however considerably greater. Morbidity from COPD is high and patients are frequent users of primary and secondary care facilities. As many as 1 in 8 hospital admissions may be due to COPD<sup>4</sup> and consultation rates in General Practice are 2-4 times higher than those for angina.<sup>5</sup> Primary care interest in-patients with COPD has increased recently, partly as a result of the desire to differentiate patients with COPD from those with asthma and partly as a result of the publication of guidelines on COPD management.<sup>2</sup> Unlike asthma, true estimates of the prevalence of COPD depend on determination of airflow limitation using spirometry, rather than being amenable to questionnaire surveys. Consequently there is little data on the true prevalence of COPD or the morbidity associated with this. We are unaware of any data comparing the information held in a General Practice computerised database with the actual prevalence or level of symptoms.

Studies have shown an increase in the number of cases of obstructive airways disease (asthma and chronic obstructive pulmonary disease) in all age groups over the past few decades.<sup>6,7</sup> Prevalence studies have indicated substantial numbers of undiagnosed COPD cases particularly amongst the elderly.<sup>8,9,10</sup> However, a recent study screening older patients (aged 60-75) for obstructive airways disease in a British general practice indicated that few new cases were found and of those none had severe disease.<sup>11</sup> An editorial accompanying the latter study indicated that there is still uncertainty as to true prevalence of COPD and that attention should be focussed as to the benefits of screening younger age groups to detect disease and institute measures to prevent deterioration in later life.<sup>12</sup>

This pilot study was devised in order to determine the most effective way in which to screen an entire general practice population for obstructive airways disease. The screening process also provided an opportunity to examine the electronic medical records for morbidity data and medication prescribed for each subject.

## METHOD

The setting was the Honiton Group Practice, a research practice receiving National Health Service (NHS) Research and Development support funding. The practice area is semi-rural with a population of approximately 15,000 patients. Honiton is a small market town in East Devon with an age, sex and social class distribution typical of many English towns. The practice holds extensive computerised clinical records and prescribing data on all patients registered. Asthma and COPD patients receive regular review by their own doctor and by two practice nurses trained in primary care respiratory medicine.

The pilot study compared the participation rates and time taken to complete assessment of 100 patients aged 45 and over attending the surgery with home visits to a randomly selected group of 100 patients aged 45 and older. Assessment consisted of performing satisfactory spirometry and completion of a symptom and medication questionnaire.

## Surgery Assessments

The computerised appointments system was scrutinised the day before the surgery in question by a senior receptionist who highlighted suitable candidates within the relevant age group. Patients were selected at approximately half-hour intervals from each general practitioner surgery list in turn so as to allow the research nurse time to perform the spirometric assessment. On the day of attendance the relevant patient was identified when checking in at reception and asked if they were happy to participate in the study. If the patient consented they were handed an explanatory letter and the questionnaire to be completed while they were waiting for their appointment.

Using the appointments computer screen the research nurse was able to see when the patient had checked in and could call the patient in for spirometry either before (if time permitted) or after the appointment with the GP or other health professional. Where necessary the research nurse helped with completion of the questionnaire. The nurse explained the use of the spirometer (what it measures, the measurement technique and its importance) for the benefit of the patient. Patients' age was recorded and their height was measured.

Spirometry was performed according to standard procedures with the machine calculating results based on the best three attempts. The nurse recorded results onto the questionnaire and any other relevant information, such as recent chest infection and poor technique.

## Community visits

The practice computer was used to generate a list of patients aged 45 years and older; and each patient numbered. One hundred patients were selected using random number tables. Explanatory letters on the project were sent to the patients at least two weeks before a proposed visit. Patients were given the opportunity to decline a visit by returning a reply-paid refusal form or by telephoning the surgery direct.

The research nurse prepared visits on a geographical basis where possible; these were performed on a variety of weekdays and at different times of the day ranging from 9am to 7pm. Visits were commenced after the start of British Summer Time.

Calling slips were left for patients who were not in when the nurse called to assure them that no further action would be necessary.

## Database analysis

The computerised surgery database was examined for diagnostic and prescription data for patients with significant airways obstruction and significant declared symptoms.

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Table 1. Respiratory questionnaire results

	Surgery (n=94)		Home (n=33)	
	No.	%	No.	%
Daily cough for > 3 months each year	21	22.3	2	6.1
Daily phlegm for > 3 months each year	16	17.0	3	9.1
Breathlessness:				
Hurrying on hills	15	16.0	3	9.1
On level with peers	9	9.6	3	9.1
On level at own pace	16	17.0	10	30.3
Wheezing or whistling in chest	30	31.9	4	12.1
Woken at night by breathlessness	12	12.8	6	18.2
Off work because of chest illness with phlegm	16	17.0	7	21.2
Ever told had:				
Asthma	17	18.1	5	15.2
Chronic bronchitis	8	8.5	3	9.1
Emphysema	3	3.2	1	3.0
Taken any medication for breathing in past year	28	29.8	11	33.3
Have a beta agonist inhaler	12	12.8	15	45.5
Use it:				
> 4 x day	1	8.4	1	6.7
3-4 x day	4	33.3	4	26.7
1-2 x day	4	33.3	5	33.3
<1 x day	3	25.0	5	33.3
Have an anticholinergic inhaler	5	5.3	2	6.1
Use it:				
> 4 x day	1	20.0	1	50.0
3-4 x day	1	20.0		
1-2 x day	1	20.0		
<1 x day	1	20.0		
Have a preventer	13	13.8	4	12.1
Use it:				
Never	3	23.0	2	40.0
Only occasionally	2	15.4	1	20.0
Every day	8	61.6	2	40.0
Ever use another person's inhalers	1	1.1	1	3.0
Current smoking:				
Never	80	85.1	20	60.6
<5/day	2	2.1	1	3.0
5-9/day	5	5.3	2	6.1
10-20/day	7	7.4	1	3.0
>20/day	0	0.0	0	0.0
Ex-smoker	30	31.9	9	27.3
Current or ex-smoker	44	46.8	13	39.4
In past year, because of difficulty breathing:				
Attended a GP surgery	20	21.2		
Called GP to house	8	8.5	8	24.2
Been to A&E	8	8.5	5	15.2
Been admitted	8	8.5	6	18.2
Due to heart problems	7	7.4	4	12.1
Have low FEV <sub>1</sub> (<80% predicted)	25	26.6	10	30.3

Analysis jobs were run to determine attendance at surgery for all patients to any health care professional over the period of one and two years.

## RESULTS

The assessment of patients attending surgery for routine appointments occurred with minimal disruption of normal surgery activity. Of 100 invited to participate,

two declined, giving a response rate of 98% and spirometry was not possible in four patients seen at the surgery because of inadequate technique, producing 94 complete data sets (94%, 95% c.i. 89% to 99%). Of the 94 screened patients 49% were aged 45-64 years and 51% 65 years and older.

Home visits proved more problematic. Of 100 invitations, 18 replied declining to participate. Of the 82 attempted visits 33 (33%, 95% C.I. 24% to 42%) resulted in a successful assessment with both spirometry and the questionnaire being completed. No reply when visiting occurred in 46 (46%) cases 3 (3%) visits were refused or terminated on the day. Of 53 patients aged 45-64, 13 (25%) and of 47 patients aged 65 and over, 20 (43%) were successfully screened at home. Of the 33 patients screened at home 39% were aged 45-64 years and 61% were 65 years and over. Surgery assessments were organised in clinics providing 16-minute appointments. With a success rate of 94% the average time for successful assessment was 17 minutes. The 33 successful home assessments took 47 hours 30 minutes of nurse time (taking into account the large number of patients not being at home at the time of visit) resulting in a successful home assessment requiring 1 hour 26 minutes of nurse time.

The mean ages of the surgery and home groups were 63.7 years and 64.5 years respectively (NS). The results of the questionnaire survey and of spirometry for both surgery and home visit groups combined are shown in Table 1. Twenty five (27%, 95% c.i. 18% to 36%) of the surgery group and 10 (30%, 95% c.i. 14% to 46%) of the home visit group had an FEV<sub>1</sub> < 80% predicted. Of these, 14/25 (56%) and 4/10 (40%) respectively were ex-smokers. Of these 8 had coughs and 3 had wheeze or breathlessness, giving an overall prevalence of COPD of 11/127 (9%, 95% c.i. 0% to 19%).<sup>2</sup> Three of the eleven (27%) of these had mild disease, 7/11 (64%) moderate and 1/11 (9%) severe. All of these had a history of smoking.

The mean age of the 11 patients with COPD was 70.8 years and 3 had a diagnosis of COPD recorded in their medical records and one a diagnosis of asthma. These four (36%) patients stated they were receiving inhaled bronchodilators and inhaled corticosteroids and these data were confirmed in the medical records.

A retrospective analysis of surgery attendances of all patients aged 45 years and above to any healthcare professional indicated that over a one year period 79.1% (95% c.i. 78.2% to 80%) and over a two year period 89% (95% c.i. 88.33% to 89.7%) of the total practice population attended on at least one occasion. This is likely to be an underestimate of the potential screening population as patients who had left the practice during the preceding two years were excluded from the analysis and patients often attend surgery for reasons other than a healthcare appointment.

## DISCUSSION

Previous published studies of screening for chronic airways obstruction have produced variable response

rates to the initial invitation to screening. Studies from Manchester, UK<sup>9</sup> and the Netherlands<sup>13</sup> produced rates of 62.5% and 66% respectively. Studies from single general practices in the UK<sup>11,12</sup> of 81% and 93% respectively. All of the studies involved postal invitations and not opportunistic screening.

We have shown that opportunistic assessments of patients attending surgery results in high uptake of spirometry with a response rate of 94% obtained under normal working surgery conditions. High uptake depended upon having a well-trained and motivated nurse with adequate time for the assessment. The use of a computerised surgery appointments system allowed forward planning of the assessments and informed the nurse when the patient had been checked in. The retrospective analysis of surgery attendances indicated that with a response rate of 94% around 73% of patients aged 45 and over could be assessed over a period of one year and 84% over two years. With the close association of smoking cigarettes with a diagnosis of COPD we would propose targeting patients with a positive smoking history to improve the detection rate. It is possible that demonstration of impaired spirometry may prove a powerful incentive for smoking cessation. Over a period of one year around 73% of the target population and over a period of two years around 84% of the target could be assessed in the surgery.

In this study, home visiting was a less efficient method of recruitment for routine screening. A low rate of assessment resulted mainly from patients not being at home. This is reflected in the lower percentage of patients successfully screened aged under 65 years who were likely to be at work. This could be largely overcome by making prearranged appointments, especially after working hours, which would probably raise response rate to around two thirds of those invited to participate. However, home visiting could be used for reaching those people not routinely attending the surgery, though at higher costs in terms of nursing time. We detected a prevalence of COPD of around 9%, which is in agreement with other studies of prevalence.<sup>9,7,11</sup> Only 3 of the 11 cases with a low FEV<sub>1</sub>,<sup>1</sup> who had been smokers and had symptoms, had a diagnosis of COPD recorded in the medical records indicating a high level of undetected significant disease. Current or ex-smokers accounted for 45% of the screened population with only 14% being current smokers. This is lower than the national average and probably reflects the older age distribution of the screened group.

The strengths of this study include confirmation of the relevant nature of the computerised appointments system employed in the surgery allowing accurate an easy identification of potential candidates for assessment. The practicality of performing assessment in surgery with minimal disruption to routine functioning has been demonstrated.

The study only set out to detect airways obstruction and not perform reversibility testing. This procedure would involve more nurse time, possible prescription of medication and the need for re-assessments; these were outside the scope of this pilot study.

This study has provided valuable data and experience for the planning of a full-scale COPD prevalence and smoking cessation study. The method of screening would primarily be opportunistic surgery based assessments of smokers over a period of two years. For those not attending surgery over this period, specific surgery invitations and home visiting would enhance coverage of the population. The implications of case detection and organised smoking cessation therapy would have large organisational and cost implications and would be subjected to health economic analysis.

## CONCLUSION

Opportunistic spirometric assessment of patients routinely attending surgery results in a high uptake; over a period of two years around 84% of the target population could be assessed. Home visiting may be used for reaching those not routinely attending the surgery.

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