# Barriers to the use of spirometry in general practice

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**BACKGROUND**

Guidelines advise chronic obstructive pulmonary disease (COPD) should be diagnosed and managed by using spirometry to demonstrate irreversible airflow limitation and monitor change in smokers and ex-smokers aged over 35 years.

**METHODS**

A cross-sectional study of patients and their general practitioners investigating use of spirometry in COPD in two practices by lung function assessment, review of practice records, interviews and focus groups.

**RESULTS**

Sixteen GPs, and 38 patients with a diagnosis of COPD participated. At diagnosis, although 72% had spirometry, this occurred in only 41% of 17 patients diagnosed by a GP; but in all 19 cases when a specialist was involved. Diagnosis often occurred late, despite all patients having previously recorded symptoms typical of COPD. General practitioners expressed a preference to diagnose COPD on clinical grounds. Although 58% of patients had recent spirometry for current management, only 32% were performed by their GP. There were organisational and technical barriers to spirometry and poor recognition of the essential role of spirometry in the diagnosis of COPD.

**DISCUSSION**

There are a number of potentially reversible factors that hinder practice recommendations regarding the use of spirometry in general practice to diagnose and manage COPD .

Chronic obstructive pulmonary disease (COPD) has a high prevalence in Australia. At least 600 000 Australians are aware of being affected by it,[1] but as many may not be recognised (based on a South Australian community sample of mild COPD not previously diagnosed[2]). There is good evidence that smoking cessation will halt the accelerated decline in lung function in smokers with COPD,[3] therefore early identification of smokers with COPD is important to enable smoking interventions.

The hallmark physiological change in COPD is expiratory airflow limitation that is not fully reversible. This is best measured by spirometry, the key to the diagnosis of COPD.[4] Australian guidelines for the diagnosis of COPD (COPDX Plan) were issued by the Thoracic Society of Australia and New Zealand and the Australian Lung Foundation in March 2003.[5] They advise the diagnosis should be considered in all smokers and ex-smokers over 35 years of age. Inappropriate breathlessness, chronic daily cough, frequent sputum production or relapsing acute bronchitis should be investigated with spirometry. We sought to investigate the current use of, and attitudes to, spirometry for COPD in general practice.

## Methods

We undertook a pilot study of a cross sectional survey of patients with COPD and their general practitioners. Patients were either identified by GPs directly, or by searching their electronic records for bronchodilator or theophylline use. We excluded patients with a primary diagnosis of asthma, another serious medical condition or significant cognitive impairment. We extracted data on symptoms, respiratory diagnoses, investigations and management from the clinical records. A sample of patients participated in semistructured interviews about their respiratory illness with a trained interviewer. Focus groups and semistructured interviews about COPD were also conducted with GPs.

## Results

In 2002, we recruited 38 patients (20 women) with a mean age of 68 years (SD:10.6) with a recorded diagnosis of COPD from two general practices in Hobart (Tasmania) with a practice population across a wide range of socioeconomic levels. Patients completed health status questionnaires. The dates of diagnosis were available for 36 patients, of whom 23 (13 women) were interviewed and their 16 GPs (eight women) participated in focus groups or interviews. The mean age of patients at diagnosis was 60 (SD:10.6) years with a mean history of smoking for 39 (SD:12) years before diagnosis.

In every case, typical symptoms of COPD had been recorded before diagnosis, most frequently cough (89%) and breathlessness (86%), and in 78% of patients, at least two key symptoms (cough, breathlessness, sputum or wheeze).

Spirometry had been performed in 72% of patients at the time of diagnosis. Seventeen (47%) were under the care of their GP only at the time of diagnosis, of whom only seven had spirometry recorded. All 19 managed by both GP and respiratory specialist had undergone spirometry. The GP had performed spirometry in only four cases when a specialist was also involved (*Table 1*). In 19 patients (53%), the diagnosis was not made until an acute exacerbation resulted in hospital admission, even though symptoms had been previously recorded for up to 10 years. Spirometry was less frequently used during ongoing management (*Table 1*).

From qualitative thematic analysis of interviews and focus groups with GPs, a number of themes emerged that were influencing the use of spirometry in COPD. These related to the performance of spirometry or resources (*Table 2*). General practitioners expressed a preference to diagnose COPD 'clinically' rather than on the basis of spirometry. They described a consistent pattern of situations when they would consider the diagnosis, namely: increasing respiratory symptoms in smokers, increasing frequency of respiratory infections, or the need for inhaled bronchodilators to be used regularly rather than intermittently.

Other themes of GPs' attitudes to managing COPD emerged (*Table 3*). Interviews with patients indicated a general lack of knowledge about COPD; they were not aware that regular testing of lung function was recommended. Negative opinions about the spirometry testing procedure were not common.

## Discussion

We found low use of spirometry by GPs for diagnosis and continued management of COPD. This is supported by Medicare claims for spirometry testing from general practice:

**Table 1. Use of spirometry in COPD in general practice**

| | | |
|---|---|---|
| **At diagnosis** | | **n** |
| By GP | Spirometry by GP | 7 |
| By GP and specialist | No spirometry | 10 |
| | Spirometry by GP | 4 |
| | Spirometry by specialist | 19 |
| **During management in the previous 2 years** | | |
| By GP | | 7 |
| By specialist | | 15 |
| None | | 16 |

**Table 2. GP perceived barriers to spirometry**

- Lack of access to a well maintained spirometer
- Lack of expertise in performance of spirometry
- Patient reluctance to attend a referral centre for spirometry
- Increased cost to patients for longer consultations
- Time waiting for repeat spirometry after bronchodilator
- Low confidence in ability to interpret spirometry results

**Table 3. Attitudes of GPs to COPD**

- Reluctance to make a formal diagnosis
- Think the term 'emphysema' is disliked by patients
- Believe the acronym COPD is not understood by patients
- Not concerned by differentiation from asthma with spirometry
- Worry that normal spirometry is a disincentive to quit smoking
- See COPD as one of multiple chronic illnesses in a typical patient, often not the most important
- Manage medication by trial of clinical response
- Do not see regular follow up with spirometry as useful for patients

during 15 months from July 2002 there were 1472 claims for spirometry performed before and after a bronchodilator made by 289 GPs in the Tasmanian Southern Division of General Practice; equivalent to less than five spirometry claims per GP per year in total.[6]

The study was designed as a pilot to investigate the views of local primary care doctors caring for COPD patients and how they influence management. It is not necessarily representative of the views of all GPs, but may give some insight into why there is low use of spirometry in primary care. This work highlights some potential barriers to the use of spirometry in the diagnosis and management of COPD that need to be tackled to increase spirometry rates to practice guideline levels. The New South Wales clinical services framework with standards, recommendations, milestones and targets for COPD was published in 2003,[7] and similar targets are likely to be adopted in other states. According to these, by December 2003, 100% of COPD patients should have access to spirometry (although the model of testing is not specified), and by June 2004, 100% of hospital inpatients with a smoking history of 15 pack years should be assessed by spirometry.

The scepticism expressed by GPs about the relevance of spirometry to the diagnosis of COPD and a reluctance to make the diagnosis before acute exacerbations occur are barriers that will need to be overcome even if all GPs have access to spirometry. Although pharmacological interventions are not known to alter the prognosis in COPD, earlier diagnosis combined with effective assistance to stop smoking would prevent disease progression. Although abnormal lung function on spirometry might increase the motivation of smokers to attempt to quit, this does not translate into a significant difference in sustained quit rates.[8]

General practitioners may require advice on the best choice of spirometer for use in general practice that would facilitate high quality spirometry and access to effective practical training for the appropriate personnel. A Medicare rebate for single occasion spirometry, without the need for administration of bronchodilator, is likely to improve use. The low use of spirometry testing in general practice remains a barrier to a strategy for earlier diagnosis of COPD. Factors identified in this study will need to be addressed if these targets are to be met in the near future.

**Implications of this study for general practice**

- Guidelines advise that COPD should be considered in patients aged over 35 years with a history of smoking.
- Guidelines advise that the diagnosis of COPD should be based on spirometry.
- Spirometry may be important in slowing the progression of COPD by encouraging more smokers to give up.
- COPD was often diagnosed in our study without measurement of lung function.
- There are barriers to use of spirometry in primary care.
- A Medicare rebate for single occasion testing and GP training in spirometry may increase use.

Conflict of interest: none declared.

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