

COPD Screening and Case Finding

Introduction and Background

Chronic obstructive pulmonary disease (COPD) is a progressive, largely preventable, lung disease caused mainly by cigarette smoking. Despite being associated with significant levels of mortality and morbidity, most people have never heard of COPD.¹ Moreover, many people relate chronic productive cough and reduced exercise tolerance to smoking or ageing and tend not to report these symptoms to their doctor. Consequently, many people with COPD are diagnosed late, when symptoms are severe and considerable impairment and disability is apparent, and thus the benefits of treatment are reduced and the burden on healthcare services increased. The impact of late diagnosis is compounded when clinicians fail to suspect or test for COPD in people with obvious symptoms, as this leads to inappropriate treatment and management.² Recent evidence suggests that COPD could affect 3.7 million people in the UK yet only 900,000 people currently have a diagnosis.³ The workload burden in general practice may lead us to ignore this undiagnosed population until they develop significant symptoms or exacerbation that results in hospitalisation. The case for finding our missing COPD patients appears compelling – yet the current evidence base to support such an approach is limited. This opinion sheet discusses the current evidence and practicalities of screening and case finding for COPD in primary care.

Early diagnosis

Early diagnosis is justified if it prevents disease progression and reduces symptoms. It is well known that smoking cessation results in a significant reduction in the age-related decline in FEV₁ associated with the disease.⁴ Aggressive promotion of smoking cessation and appropriate support for those undertaking a quit attempt should therefore be a priority – irrespective of baseline lung function. However, evidence that early detection of COPD

through spirometry improves smoking cessation rates is conflicting.⁵ It has recently been proposed that telling smokers their lung age (the age of the average person who has an FEV₁ equal to the individual) significantly increases quit rates.⁶ Further studies are underway to explore further the use of lung age to promote lung health.

To date the benefits of early diagnosis in COPD are seen in those with symptomatic COPD where appropriate treatment and management reduces morbidity and improves functional status and health-related quality of life.⁷ Exacerbations and hospital admissions – which produce a significant burden for patients and health services – occur more frequently with severe COPD, yet 10% of unscheduled admissions to hospital for exacerbations of COPD have no prior diagnosis. People who get admitted to hospital for COPD are frequent users of primary care services in the 12 months prior to admission, and most will have seen their GP in the month prior to admission.⁸ These are important opportunities for detecting undiagnosed disease and to instigate appropriate treatment before an admission occurs.

Screening and Case Finding

There are two main approaches that can be taken to increase identification of COPD: screening, and case finding. Yet both are only justified if the outcome of early diagnosis is better health or reduced risk.

Screening

Screening of people at risk of COPD could lead to an earlier diagnosis than would happen if diagnosis was left until individuals present themselves to their GP. However, screening for COPD is controversial. Screening projects are often undertaken in the community to increase awareness of COPD and are not necessarily targeted at high risk individuals. The diagnostic yield from such programmes tends to be low and there is little evidence to recommend mass spirometry screening for asymptomatic people.⁹ On the other hand,

spirometric screening of at-risk groups in primary care can identify individuals with COPD. For example, one study of smokers aged >40 years with no formal diagnosis of COPD suggests that using screening questionnaires and spirometry in general practice may yield 10–20% undiagnosed COPD cases.¹⁰ However, spirometry as a screening tool can only be justified if it detects people with symptomatic COPD who may benefit from intervention. There are also concerns about the quality of the test and interpretation of results, and subsequently there is potential for over-diagnosis and inappropriate treatment.¹¹

Case Finding

Case finding involves the targeted screening of symptomatic patients at high risk of lung disease (see Box 1). Case finding is efficient in reaching target groups and has a high yield. In one study of opportunistic case finding, 27% of patients aged over 35 years, who were current or ex-smokers and had a chronic cough, had a reduced FEV₁ value.¹² Undertaking opportunistic spirometry assessments on patients in general practice is feasible: over a period of two years, over 80% of high-risk patients can be assessed. Home visiting may also be used to reach those who do not routinely attend the surgery.¹³ However, the use of spirometry for case finding has the same limitations as for screening: it is only justified if it detects people with symptomatic disease who may benefit from treatment. Increasing the numbers of asymptomatic individuals with mildly impaired lung function on COPD registers will also have a significant impact on primary care workload, and may lead to overtreatment and increased treatment costs.

A practical approach

Case identification of symptomatic smokers is the most productive and efficient strategy for primary care. Opportunistic or diagnostic spirometry of everyone in the target groups is

Box 1 High risk groups

1. The highest at-risk groups (priority for case finding)
 - Current and ex-smokers: are most at risk of developing COPD. Both COPD and smoking are more prevalent in lower socio-economic groups. Thus, the proportion of COPD patients within a primary care population will be directly related to local smoking rates.¹
 - Symptomatic patients over 35 years*: with chronic cough, sputum, breathlessness and/or exercise limitation and those requiring frequent courses of antibiotics for lower respiratory tract infections and/or inhaled medication with no COPD diagnosis.
2. Other risk groups
 - Occupational exposures: to inhaled dust and gases also present risk. Men employed in routine and manual occupations represent almost half of the people with (diagnosed or undiagnosed) COPD in England.²
 - Those with a family history of emphysema or a first degree relative with COPD: as a familiar link has been identified.
 - Alpha-1antitrypsin (AAT) deficiency: AAT is an enzyme inhibitor secreted by the liver. Deficiency is inherited and leads to the early development of emphysema. Smoking and other exposures worsens the impact and leads to severe COPD in young to middle-aged adults. In primary care AAT should be suspected when there is family history of AAT, early onset emphysema (age <45 years), emphysema in the absence of, or out of proportion to risk factors such as smoking, occupational exposure etc.
 - Premature birth, low birth weight and severe childhood infection: are associated with reduced lung function in adult life.

* DH Consultation on a clinical strategy for COPD services in England recommends case finding in those over 40 years.

largely unfeasible given current workload and the limited evidence for benefit. A practical alternative would be to adopt a staged approach to case finding using pocket spirometry and/or questionnaires to exclude those with a low probability of COPD before moving on to a confirmatory diagnostic assessment with formal spirometry. While current evidence to support this approach is limited, it is recommended.² Of the at-risk groups, smokers of 20 'pack years' or more who are aged over 40, those who have been treated with frequent courses of antibiotics and/or inhaled medication, or those with symptoms such as chronic cough or breathlessness, should be regarded as being most at-risk and should be prioritised (Box 1).

Pocket spirometers

Battery powered pocket spirometers can accurately measure FEV₁ as long as patient effort is good. Some also detect airflow obstruction from six-second FVC manoeuvres using FEV₁/FEV₆ and FEV₁% predicted. Pocket spirometers are relatively inexpensive, but cannot replace diagnostic-quality spirometers as they lack a visual display to assess the quality of the blow, and cannot print hard copies and/or allow data transfer into electronic medical records.¹⁴ Pocket spirometers can be used to identify smokers with an FEV₁ >80% predicted who therefore have a low probability of COPD.¹⁵ Those with reduced FEV₁ should undergo diagnostic spirometry to confirm airway obstruction. Symptomatic patients with FEV₁ >80% should undergo

further investigation to identify the underlying cause. All smokers, irrespective of lung function, should of course be actively encouraged and supported to stop smoking.

Questionnaires

Simple questionnaires can also be used to identify people likely to have COPD, or to exclude those with a low probability of the disease (see Box 2).

Box 2 Example of Case Finding Questionnaire¹⁶

- Do you cough several times a day?
- Do you bring up phlegm or mucus?
- Do you get out of breath more easily than others your age?
- Are you older than 40 years?
- Are you a current or ex-smoker?
- Three or more positive answers are indicative of COPD and simple breathing tests should be done.

(The GOLD "Could it be COPD?" questionnaire)

Further work on early diagnosis is currently being undertaken by the UK Lung Improvement Programme.

KEY POINTS

- COPD is significantly under-diagnosed
- Diagnosis happens late when symptoms have significant impact
- Earlier diagnosis can improve outcomes for symptomatic patients
- Case finding of symptomatic patients is an appropriate and practical approach for primary care
- A staged approach using questionnaires and/or pocket spirometry may increase efficiency

High quality spirometry is essential for accurate diagnosis

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