Primary Care Respiratory Society UK - Opinion No.37

# Opinion

# Diagnosis of COPD in Primary Care

**COPD (Chronic Obstructive Pulmonary Disease)** is a term used to describe a group of conditions: including "chronic bronchitis", "emphysema", "COAD" and some patients with chronic asthma. All these conditions have differences in the way they present and progress- but share in common the presence of airflow obstruction which is not fully reversible.

The COPD National Strategy Document stresses the importance of health care professionals understanding the risk factors for the development of COPD and offering suitable intervention and management for those individuals.[1]

**The aim of this opinion sheet** is to provide the reader with an understanding of the symptoms, signs and investigations associated with making a diagnosis of COPD and the tools to assess the severity of COPD.

**Diagnosis of COPD** should be considered in anyone who is or has been a smoker, over the age of 35years, who presents with persistent breathlessness, cough or sputum production. A diagnosis of COPD is made using the clinical features mentioned below and confirmed by ***post bronchodilator spirometry*** which is also used to assess severity in conjunction with symptoms.

**Symptoms of COPD** are varied and differ from patient to patient: they include exertional breathlessness, recurrent bouts of "chest infections" (probably the most common reason for patients to present), recurrent wheeze, cough or sputum production. Less common symptoms include weight loss, effort intolerance, night time wakening, ankle oedema, and fatigue. There tends to be little variation in the symptoms on a daily basis but there will be deterioration over time. Teasing out a history of worsening breathlessness is often difficult – patients tend to adapt their lifestyle to compensate for their symptoms: i.e. using their car to go shopping when previously they may have walked: moving into a bungalow when walking upstairs becomes difficult or giving up their hobbies such as walking, playing bowls or dancing. A useful score to measure breathlessness which can be used to assess deterioration, progress or response to treatment is the MRC dyspnoea scale: wherever possible an MRC score should be recorded when discussing a patient's breathlessness. Increased use of patient held "personal health plans" which encourage the patients to set their own personal targets may allow us to see more easily which activities have been given up by the COPD sufferer. See Table 1

**Table 1. The Medical Research Council dyspnoea score**

| GRADE | Degree of Breathlessness related to Activities |
|---|---|
| 1 | Not troubled by breathlessness except on strenuous exercise |
| 2 | Short of breath when hurrying or walking up a slight hill |
| 3 | Walks slower than contemporaries on level ground because of breathlessness, or has to stop for breath when walking at own pace |
| 4 | Stops for breath after walking about 100 m or after a few minutes on level ground |
| 5 | Too breathless to leave the house, or breathless when dressing |

The common presenting features of COPD are shown in box 1.

**Box 1**

A diagnosis of COPD should be considered in anyone over the age of 35 years with a risk factor (cigarette smoking in the world) who presents with one or more of the following persistent symptoms:

- Exertional breathlessness
- Chronic cough
- Regular sputum production
- Frequent "winter bronchitis"
- Wheeze[1]

**Examination findings:** clinical examination of patients with COPD is often unhelpful in making a firm diagnosis as it may be normal or signs may be non specific and shared with other disease entities. However the following signs may be present according to the progression of disease and the patient's clinical state (for example cyanosis may be present during an exacerbation but absent during a period of clinical stability).

- Hyper-inflated chest
- Use of accessory muscles of respiration
- Wheeze – or indeed reduced breath sounds
- Signs of right sided heart failure
  - Peripheral oedema
  - Raised JVP
- Cyanosis
- Cachexia

The most common differential diagnosis of COPD is asthma: spirometry can help to distinguish the two conditions, but a good history will provide a solid base from which to proceed (Table 2)

**Spirometry** is used to confirm a diagnosis of COPD in patients at risk: i.e. those with a smoking history and symptoms. There are questionnaires available to identify those most at risk of COPD. A simple eight question tool[3] is available from the IPAG/asthma/COPD management handbook (www.ipagguide.org) which will target spirometry resources at those most likely to have COPD. (Similar tools are available for other obstructive lung diseases).

Spirometry should be performed at diagnosis and at regular review (routinely annually unless $FEV_1$ <30% in which case a 6 monthly review should be conducted). If an unexpected change in spirometry is seen after a treatment intervention an alternative diagnosis should be considered. Spirometry should be performed and interpreted by personnel who have had appropriate training. Regular training should be undertaken and maintained. For more information on spirometry and its application in primary care see the *PCRJ* proposed standards for spirometry[4] and the PCRS-UK Spirometry opinion Sheet (http://www.pcrs-uk.org/resources/os1_spirometry.pdf).

**Table 2. Clinical features differentiating COPD from asthma.[5]**

| | COPD | Asthma |
|---|---|---|
| Smoker or ex-smoker | Nearly all | Possibly |
| Symptoms under age 35 | Rare | Often |
| Chronic productive cough | Common | Uncommon |
| Breathlessness | Persistent and progressive | Variable |
| Night time waking with breathlessness and/or wheeze | Uncommon | Common |
| Significant diurnal or day-to-day variability of symptoms | Uncommon | Common |

**Interpretation: Spirometry should always be interpreted in relation to the history and clinical picture: never in isolation.**

A normal individual can exhale nearly all of his/her lung capacity within one second – a post bronchodilator $FEV_1$/FVC ratio of less than 70% indicates airway obstruction. The post bronchodilator $FEV_1$ in patients with a history suggestive of COPD is used to indicate severity of disease (see below). Bronchodilator reversibility is used to identify the presence or absence of reversibility (i.e. asthma) and guidelines differ about which values to use.

Interpretation of reversibility is always a difficult issue as there is a degree of variance between authorities. Interpretation of reversibility requires evaluation of spirometry in line with the history and clinical picture.

More than 200mls reversibility is said to be significant according to some guidlelines (GOLD) but where diagnostic doubt exists (between COPD and asthma) the following may be useful (NICE 2010).

- A large (>400mls) response to bronchodilators or an oral steroid (30mg prednisolone for 2 weeks) strongly indicates an asthma component to the disease
- Serial peak flow measurements showing >20% or more diurnal or day to day variability
- If the $FEV_1$ and the $FEV_1$/FVC ratio both return to normal with drug therapy COPD is not present

There may be exceptions to these rules at either end of the age spectrum, and clinically perhaps the most important is in the older population where a COPD diagnosis should be reconsidered in the absence of symptoms: even if the $FEV_1$/FVC ratio is less than 70% (this needs to be interpreted with the history, clinical findings and presence of confounding co-morbidities). In younger patients with a suggestive history but a normal $FEV_1$/FVC ratio: COPD may be present (NICE 2010).

Examples of normal and obstructive spirometry traces are shown in Figure 1.

The $FEV_1$ value is used to assess severity (Table 3) although the absolute value should be taken into consideration with other factors: including symptoms, exercise limitation (MRC score), exacerbation rates and body mass index (BMI).

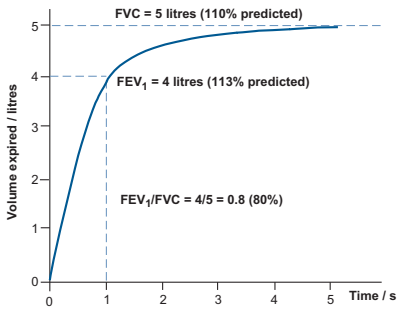
Recently the NICE guidelines have changed and are now in line with the international GOLD classification: (in the UK this may have implications for the Quality and Outcomes Framework).

**Assessment of Severity in COPD:** Disability affecting patients with COPD is often poorly reflected using $FEV_1$ values alone however assessment of severity is made after spirometry is performed and then interpreted in line with the clinical picture. (See Table 3).

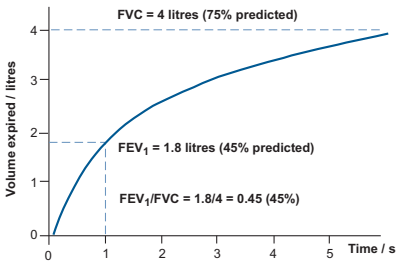
The NICE 2010 recommends spirometry in combination with the BODE index (see below) and other features: listed below.

- Smoking status- and whether smoking cessation has been offered/undertaken
- A full blood count to exclude anaemia (present in up to 15% of patients) or reveal polycythaemia in severe disease
- A chest x-ray to exclude other lung pathology
- Pulse oximetry (see PCRS-UK Opinion Sheet on pulse oximetry (http://www.pcrs-uk.org/resources/os28_pulse_oximetry.pdf)
- An ECG or echocardiogram may be useful where a cardiac cause for dyspnoea is suspected
- A calculation of their body mass index (a low BMI indicates the need for referral for dietary advice and a high BMI>30 is associated with a greater mortality rate)
- Assessment of symptoms: using the MRC scale
- TLCO
- Assessment of functional capacity: using an exercise based outcome measure (the 6 minute walk is easy and achievable in Primary Care)
- Assessment of their health status impairment using a quality of life measure
  - Examples which are suitable for use in Primary Care and are freely available include the Clinical Copd Questionnaire (www.ccq.nl) and the Copd Assessment Tool (www.catestonline.org)
- Exacerbations frequency
- Identification and treatment of co-morbidities such as ischaemic heart disease (common), osteoporosis (common as cigarette smoking, low BMI, immobility and frequent steroid use all common in COPD), diabetes or hypertension – all common diseases in patients with COPD. Identification of co-existent anxiety or depression is important and has an impact on the patients health status

**Figure 1. Examples of normal & obstructive spirometry traces.**




Spirometry tracing of a patient with normal spirometry: the $FEV_1$/FVC is 80% and the $FEV_1$ is normal (i.e. 80% predicted)




Spirometry tracing of obstructive lung disease: the $FEV_1$/FVC ratio is 45% and the $FEV_1$ is less than 80% predicted.

**Table 3. Spirometric classification of severity (NICE 2010).[5]**

| Severity | Post BD $FEV_1$/FVC ratio | Post BD $FEV_1$% predicted |
|---|---|---|
| Stage 1 mild | <0.7 | >=80% |
| Stage 2 moderate | <0.7 | 50-79% |
| Stage 3 severe | <0.7 | 30-49% |
| Stage 4 very severe | <0.7 | <30% (or <50% with respiratory failure) |

- The BODE index should be assessed where the information is available (BMI;Obstruction:Dyspnoea;Exercise test 6min walk)
- If the degree of breathlessness is out of proportion to the impairment (FEV1) consider referral for more sophisticated lung function or consider alternative diagnoses.

For more information on COPD Review and Assessment please see the PCRS-UK resources:- opinion sheet No 19 - http://www.pcrs-uk.org/resources/os19_copd_review.pdf) and COPD Review and Assesment Protocol (http://www.pcrs-uk.org/resources/protocol3_copd_assess.pdf) and COPD Review Checklist (http://www.pcrs-uk.org/resources/copd_checklist_final.pdf)

Early identification of patients with COPD is becoming increasingly important as it is evident that many patients present relatively late in their disease. The COPD National Strategy stresses the importance of making efforts to do this and suggests the use of case finding questionnaires or screening level spirometry (although it does accept there is no definite evidence to support this at present – see opinion sheet on case finding and screening – URL when available)

## References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