

# Respiratory Medicine: A Review

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## ABSTRACT

The General Medical Services (GMS) contract has centred on the provision of medical services to the general public attention of United Kingdom (UK) family physicians (general practitioners) on the provision of high-quality routine care for people with chronic illness, with the quality indicators defining contract terms acknowledge the necessity for objective diagnosis Suggested structured care by the British Thoracic Society Network for Society/Scottish Intercollegiate Guidance (BTS–SIGN) asthma management recommendations and The NICE (National Institute for Clinical Excellence) recommendation concerning the administration of chronic obstructive pulmonary disease (COPD)<sup>2,3</sup> In this study the most important suggestions for

These recommendations and their pragmatic implementation The realm of general practise is explained in detail on diagnosis, monitoring, management, self-management and care delivery.

## 1. INTRODUCTION

### Diagnosis of asthma and COPD

The variety of asthma symptoms, indicators, and lung function is the defining characteristic of the disease. Box 1 provides tips for the accurate diagnosis of asthma. Diagnosis can be evaluated and documented as a three-step procedure.

Normal history Variable symptoms of wheezing, shortness of breath, chest tightness, and cough are diagnostic of asthma, although some individuals with moderate asthma treated in primary care may experience sporadic symptoms only after allergen or virus exposure. The presence of audible wheeze may be limited to exacerbations. A personal or familial history of atopy strengthens the diagnostic conclusion.

Objective exams Peak flow is the most practical lung function test for diagnosing asthma. Multiple measurements must be taken over a period of time to establish diurnal variation, worsening upon exposure to a trigger, or reversibility following therapy. A single normal peak flow measured in the doctor's office does not rule out the presence of asthma.

Response to therapy -The diagnosis should be reconsidered if a trial of asthma medication, such as inhaled steroids, is ineffective.[2] The differential diagnosis COPD, heart failure, bronchiectasis, and hyperventilation are among the causes of cough and wheeze in adults.

**Diagnosis objective of asthma in neonates**

Diagnosing asthma in infants is more difficult due to the impracticality of objective measures of lung function in ordinary practise and the rising recognition of the varied phenotypes of asthma in infancy. Common in infancy, wheezing due to a virus, some children will have asthma throughout childhood, a few will have asthma for life, and some children will have more major pathologies. [4]

**Objective diagnosis of COPD**

Treatment response. Failure to react to an asthma therapy trial, such as inhaled corticosteroids, should trigger a reevaluation of the diagnosis.[2] The differential diagnosis COPD, heart failure, bronchiectasis, and hyperventilation are among the adult conditions associated with cough and wheeze.

**Infants can be objectively diagnosed with asthma**

Diagnosing asthma in infants is more difficult because objective measures of lung function are not practicable in ordinary practise and because of an increasing understanding of the various phenotypes of asthma in infants. Common in infancy, wheezing due to a virus, some children will have asthma throughout childhood, a few will have asthma for life, and some children will have additional significant pathologies. [4]

Spirometry. A consistently low peak flow with little variation in a smoker with usual symptoms may suggest COPD, but spirometry is required for objective diagnosis and severity assessment. 3,8 Obstruction is indicated by a FEV<sub>1</sub> (forced expiratory volume in 1 second) less than 80 percent of the expected value and a FEV<sub>1</sub>/FVC ratio less than 70 percent. Some patients with COPD will have significant reversibility (>15% and 200 ml increase in FEV<sub>1</sub>), although a significant rise in FEV<sub>1</sub> (more than 400 ml) is indicative of asthma. Box 2 outlines some important considerations for the provision of a spirometry service.

The most recent NICE guideline suggests classifying COPD as mild, moderate, or severe when FEV<sub>1</sub> falls below 80%, 50%, or 30% of the expected value, bringing UK practise in line with worldwide recommendations.[3,8] Although lung function is a reliable indicator of prognosis, it does not precisely reflect impairment and may underestimate or overestimate the severity of the disease in some patients. The GMS contract in the United Kingdom has set a 70% threshold for adopting the quality markers for COPD on the grounds that symptoms are rare at higher lung function levels. [1]

There is mounting evidence that reversibility testing with bronchodilators and oral corticosteroids does not accurately predict their therapeutic usefulness, which should be determined by clinical benefit.[9] However, poor reversibility must be demonstrated for diagnostic considerations, primarily to eliminate the diagnosis of asthma.

Despite the emphasis on organised care provided by asthma nurses 19 as part of the Chronic Disease Management programme 20 in the majority of UK practises, only about one-third of patients receive an annual review. Patients' opinion that their asthma is not severe enough to merit the time and effort required to attend an asthma clinic is a typical explanation for their reluctance to attend an asthma review, according to an analysis of 21 and 22 studies. [21,22] If practises wish to increase the proportion of patients now receiving a regular review, they will need to consider innovative means of enhancing access. A trial of telephone consultations shown that this style of consultation can improve the proportion of patients reviewed without compromising the quality of life or patient satisfaction associated with

asthma.[23] The reduced time of telephone consultations shows that this mode of care delivery may be efficient.

Other improvements, such as e-mail consultations, have not yet been assessed, but they may improve access to routine asthma reviews.

### **Asthma management**

The BTS–SIGN asthma guidelines reiterate that inhaled corticosteroids are the recommended preventer drug for adults and children<sup>2</sup>, despite the fact that it is now evident that the optimal maintenance dose for many patients may be 400 mcg via a metered dose inhaler daily (BDP) for adults and 200 mcg for children. When low dosages of inhaled corticosteroids fail to appropriately treat symptoms, recent advancements have increased our understanding of the best alternatives. When asthma control deteriorates, it is crucial not to disregard the necessity for a comprehensive evaluation, despite the extensive research conducted to find appropriate therapy regimens.

Patients may discontinue the use of inhaled steroids or forsake the spacer device that provides effective drug delivery. Whether at home or on the job, environmental considerations might be significant. Importantly, the decline may be attributable to the emergence of other disease disorders.

### **COPD management**

Agonists and anticholinergics remain the cornerstone of the pharmacological treatment of COPD.<sup>3</sup> These likely

work, at least in patients with severe disease, by decreasing hyperinflation as opposed to bronchodilation, and their efficacy is not predicted by increases in lung function.

Treatment trials should be based on clinical response rather than peak flow or reversibility of spirometry. Some individuals may be limited in their ability to use greater doses of bronchodilators, which should ideally be administered with a metered dose inhaler and spacer. Recent evidence affirms the role of long-acting  $\beta_2$ -agonists in patients who continue to suffer symptoms when taking short-acting bronchodilators. Long-acting  $\beta_2$ -agonists give persistent symptom alleviation and increase exercise tolerance. <sup>3,8,39</sup>

### **Tiotropium**

Tiotropium is an anticholinergic medication with a very long duration of action that improves clinical results, such as decreasing shortness of breath and the frequency of exacerbations.<sup>40</sup> It is administered daily on a consistent basis. With a half-life of several days, the greatest effect may not be realised for up to a week.

### **Steroids inhaled in COPD**

Four significant studies with a variety of inhaled steroids and individuals with varying disease severity have showed that inhaled steroids do not slow the acceleration of lung function decrease in COPD. <sup>9</sup> Therefore, current guidelines do not suggest the routine use of inhaled steroids in COPD patients. <sup>3,8</sup> Response to a short course of oral steroids is not a reliable indicator of long-term benefit with inhaled steroids.[ <sup>3,8,9</sup>]

The reduction of the exacerbation rate from 1.33 to 0.99 episodes per year was indicative of an improvement in quality of life, as shown by a major UK trial involving moderate to severe patients.<sup>9</sup> This shows that people with moderate to severe illness (FEV1 50% expected) who experience frequent exacerbations (such as more than two per year) would benefit from utilising inhaled steroids.

However, there remain practical questions. Which inhaled steroid, at what dose, and with what delivery mechanism should be used? At the relatively high dosages of inhaled steroids (800 mcg to 2000 mcg [BDP] via metered dose inhaler daily) employed in these investigations, adverse effects, including easy bruising and local mouth symptoms,<sup>9,42</sup> may be of concern.

### Oxygen treatment

Oxygen therapy is essential both initially, to treat asthma attacks or other respiratory emergencies, and chronically, to alleviate symptoms. The hypoxia associated with severe COPD. Pulse oximeters are commonly accessible and reasonably priced, and oximetry has been demonstrated to be both practicable and beneficial in basic care. <sup>51</sup> Consideration should be given to the requirement for long-term oxygen therapy in patients with severe COPD (FEV1 30% expected) and those with peripheral oedema or polycythemia. Screening in primary care would ensure that all potentially eligible patients (those with an oxygen saturation of less than 92%) are sent for formal evaluation for long-term oxygen therapy.

On the horizon, drugs Monoclonal anti-immunoglobulin E antibodies. Omalizumab is an anti-immunoglobulin E antibody that decreases levels of free immunoglobulin E, hence decreasing antigen reactivity. This can lessen symptoms and exacerbation rates for patients with severe allergic asthma. 2 to 4-weekly subcutaneous injections of omalizumab are administered. Patients report a higher quality of life despite the inconvenience this causes. [22]

At the outset of improvement, should we advise patients to double their inhaled corticosteroids? The studies that have contributed to the body of evidence supporting self-management have included an increase in inhaled steroids. The minimal benefit of doubling inhaled steroid doses in investigations of compliant patients with inadequate control on moderate doses has cast question on the efficacy of this method. [13-15] In a study of patients with mild to moderate asthma, however, Foresi demonstrated that 200 mcg of budesonide daily, with a five-fold increase for 1 week at the onset of an attack, reduced exacerbations as effectively as 800 mcg of budesonide throughout and significantly better than the group maintained on 200 mcg of budesonide.[15] Patients with mild asthma, who are frequently non-compliant and on a low maintenance dose, should be urged to significantly increase (or resume) inhaled corticosteroids as soon as control is lost.

Should patients maintain a supply of oral steroids for emergency use? Delay is the most prevalent preventable cause of asthma mortality, and timely administration of oral corticosteroids is crucial. Patients at risk of acute episodes may wish to assume responsibility for initiating a course of corticosteroids when symptoms worsen and bronchodilators lose efficacy. A decline in peak flow to less than 60 percent of its maximum will indicate the need for intervention.

### Provision of care for individuals with respiratory disease

Bridging the Gap.<sup>20</sup> was released in January 2003 by an alliance of UK medical charities, organisations, and professional bodies with an interest in the provision of respiratory care. This document established "reasonable patient expectations" and gave checklists for primary and secondary care professionals collaborating with primary care trusts to provide high-quality, integrated respiratory health care. If these objectives are to be achieved, current services will need to be expanded and new initiatives will need to be

promoted. (A list of respiratory organisations and helpful websites is included in box 2 of the supplementary materials.)

### **Spirometric testing services**

Recognition of the significance of spirometry and the availability of very inexpensive electronic spirometers have sparked a significant interest in general practise spirometry. Two-thirds of general practises have a spirometer in 2001. [21] Concerns exist, however, regarding the quality of spirometry performed in primary care,[22] especially in light of a recent survey finding that in one-fourth of general practises, spirometers were used by personnel without formal training. [16]

### **Home hospitalisation**

Respiratory sickness accounts for one in eight emergency hospital admissions [13] and is a significant contributor to the winter bed shortage.[14] There is tremendous interest in the concept of hospital at home, and recent trials indicate that around one-third of hospital admissions can be avoided [25] and lengths of stay can be cut in half [16] with supported release and nurse-led home care. High patient satisfaction with these programmes. [17]

### **Allergy-related services**

The rising prevalence of allergic diseases, such as asthma and rhinitis, has exposed the inadequacy of allergy services in the United Kingdom. In their study Containing the allergy epidemic, the Royal College of Physicians recommends that allergy services be integrated in a regional allergy centre, but acknowledges the "front-line" role of primary care and urges for enhanced training of GPs and practises to handle the rising demand. [18]

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