

## The management of exacerbations of chronic obstructive pulmonary disease in primary care

### Definition of an acute exacerbation of Chronic Obstructive Pulmonary Disease

Chronic Obstructive Pulmonary Disease (COPD) is a slowly progressive condition characterised by episodes of acute exacerbations, which have dramatic effects on the patient. An exacerbation of COPD is defined as "a worsening of the patient's condition, from the stable state and beyond normal day-to-day variation that is acute in onset and necessitates a change in regular medication".<sup>1</sup> Typically, patients will present with acute increasing dyspnoea combined with a productive cough and a change in the amount, viscosity, and colour of their sputum.<sup>2</sup>

Exacerbations range in severity from mild (causing few problems) to severe (associated with respiratory failure and hospital admission). There is evidence to suggest that up to 50% of patients suffering from an acute exacerbation will not report to a health care professional.<sup>3</sup> Even mild exacerbations may be important and are associated with impaired health status and decline in lung function. While there is no formal classification of severity, one can classify admissions in terms of health care utilisation, ranging from mild (self-managed) to those involving unscheduled care:

- Visit to GP
- Out of hours visit
- A&E attendance
- Hospital admission

### Cost of care

The cost of managing COPD within our society is huge, with direct costs to the National Health Service (NHS) estimated at £492 million, and indirect costs estimated at £981 million. Most of the costs are due to acute exacerbations. The average cost of a patient with COPD in the UK is £819.41. Of this, 60% is attributable to the management of acute exacerbations of COPD, and most of this cost is spent on secondary care treatment. Only 14% of the total cost of an "average COPD" patient is spent on treatment and investigation costs.<sup>4</sup> Thus, reducing the frequency and severity of an

acute exacerbation of COPD by adopting a proactive approach centred on the patient will have benefits not only to the patient but also makes good financial sense.

### Management of acute exacerbations within primary care

The proactive approach to managing acute exacerbations with patients encompasses four aspects:

1. Reducing exacerbation frequency
2. Providing self-management advice for patients suffering an exacerbation of COPD
3. Assessing and appropriately managing an exacerbation
4. Ensuring correct follow up of patients following an exacerbation

### Reducing Exacerbation Frequency

The National Institute for Health and Clinical Excellence (NICE) guidelines<sup>5</sup> advise the use of an inhaled corticosteroid (ICS) in patients with a predicted FEV<sub>1</sub> < 50%, a history of ongoing shortness of breath, and a history of two or more exacerbations in the previous year. It is suggested that a dose of 1000mcg or equivalent of beclomethasone dipropionate is used. At the time of publication, ICS treatment for COPD is only licenced in the UK when the ICS is combined with a long-acting beta-agonist (LABA) in a combination inhaler. The evidence is stronger for the use of combination inhalers in this context, probably because these are the formulations which have been most investigated over the last few years.<sup>6</sup> There is also evidence that the use of long-acting anticholinergics and mucolytics may decrease exacerbation frequency.<sup>7,8</sup>

Pneumococcal vaccination and annual influenza vaccination are recommended for patients with COPD by both the Chief Medical Officer and by NICE guidelines. Although the evidence base is stronger for the impact of influenza vaccination on reducing COPD exacerbations than that for pneumococcal vaccination, both are highly recommended with all patients with COPD.

### Providing Self-Management Advice

The evidence base for the use of self-management plans (SMPs) is conflicting and sparse. However, there is evidence from a Cochrane review in 2004 that the prompt administration of oral steroids within three days of onset will reduce breathlessness and improve recovery time.<sup>9</sup> There is also evidence on the prompt use of broad-spectrum antibiotic in reducing the recovery time from an acute exacerbation and reducing subsequent mortality.<sup>10</sup> This evidence would suggest that the most simple SMP would entail advice on when to take these drugs at the onset of an acute exacerbation.<sup>11</sup> Therefore, in patients with moderate to severe COPD who have a history of recurrent exacerbations, the provision of a home supply of a broad-spectrum antibiotic and oral steroid would empower patients to start these therapies at an earlier phase of an acute exacerbation.

An instruction of when to alert the clinician following self-administration needs to be an integral part of the plan. Thus the steps involved in a patient SMP should include:

- Instruction on increasing bronchodilator use to the maximum
- Commencement of oral steroids if symptoms persist (30mg of prednisolone for 7-10 days)
- Starting a course of a broad spectrum antibiotic if the sputum becomes purulent
- How to recognise features of an exacerbation which indicate the need for urgent action e.g. when to call an ambulance
- Follow-up arrangements

An example of a SMP is included in Appendix 1.

### Assessing and appropriately managing an exacerbation

The first response to an acute exacerbation should be from the patient in line with their SMP. However, many patients may present with previously-undiagnosed COPD. Patients presenting with features of an acute exacerbation of COPD should be seen as soon as reasonably possible since deterioration of

**Table 1. Factors favouring management at home. Adapted from NICE Guidelines<sup>5</sup>**

Able to cope at home	Yes
Breathlessness	Mild
General Condition	Good
Level of activity	Good
Cyanosis	No
Worsening peripheral oedema	No
Level of consciousness	Normal
Already receiving long-term oxygen therapy (LTOT)	No
Social circumstances	Good
Acute confusion	No
Rapid rate of onset	No
Significant co-morbidity (particularly cardiac disease and/or Type 1 diabetes)	No
SaO <sub>2</sub> <90%	No
Chances on Chest X-ray	No

their clinical state can be rapid. Thus, patients who are known to have a history of exacerbations should be flagged within practices so that they are identified early and can be fast tracked to consult their usual clinician. It is important to take a full clinical diagnosis to confirm both the previous diagnosis of COPD and the presence of an acute exacerbation. Whether a patient can be managed at home requires a full assessment. Factors that would suggest that admission to hospital for further assessment and management is necessary include:

#### Clinical History

- Unconfirmed or ambiguous diagnosis
- Poor social support
- Confusion and drowsiness
- Unremitting dyspnoea
- Chest pain

#### Clinical Examination

- Pyrexia (and/or a history of rigors)
- Cyanosis
- New onset of peripheral oedema
- Co-morbid conditions - such as active heart failure or uncontrolled diabetes

#### Investigations

- Worsening hypoxia
- Pulse oximetry ≤ 90%

The decision to treat at home should also be dependent on the clinician's experience and confidence in managing acute exacerbations, their ability to provide accessible regular assessments during the exacerbation period, the services available to support the patient within their own homes, and the safety of the patient throughout the exacerbation period. There are a number of assessment tools available for clinicians in assessing the appropriateness of home management as opposed to hospital admission (see Table 1). If managing the patient at home, it is

incumbent on the clinician to assess the patient regularly at an appropriate frequency (which in many patients may be daily until the patient's condition is stable), to ensure that the patient is being treated with appropriate therapies as per their SMP, and to ensure appropriate review and subsequent referral following the exacerbation. NICE also recommends the use of the anti-viral drug, oseltamivir, during flu epidemics - although administration should be within 48 hours of the onset of symptoms. Zanamivir is not recommended in these circumstances as it may induce bronchospasm.

Practice protocols detailing the treatment and management of acute exacerbations can help to facilitate best practice and ensure consistency of care. The GPIAG have produced a protocol for the management of acute exacerbations which can be adapted by general practices.<sup>12</sup>

#### Ensuring correct follow-up of a patient following an acute exacerbation

It can take at least six weeks for a patient to recover fully from an acute exacerbation of COPD.<sup>13</sup> Following an exacerbation a full review should be performed. Essential aspects of this review should include:

1. Ensuring the patient is on optimal medical therapy in line with NICE guidelines
2. Education to discuss self management and if appropriate smoking cessation
3. Referral to pulmonary rehabilitation - if not undertaken before and if they fulfil criteria i.e. on optimised treatment and functionally disabled (MRC score ≤ 3)
4. Assessment of O<sub>2</sub> needs - either for long term O<sub>2</sub> therapy or ambulatory O<sub>2</sub> ■

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Date of Preparation: December 2007

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Editor: Dr Paul Stephenson, GPIAG Editor-in-Chief: Dr Mark Levy

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## SUGGESTED COPD ACTION PLAN

**What action to take if your symptoms get worse**

**FIRST:**

Check the colour of your sputum:  
Cough onto a white tissue. If your sputum colour has changed from clear or pale to a darker shade e.g. yellow or green : start antibiotics

<p><b>Reliever Treatment</b></p> <p>Via inhaler or nebuliser</p> <p>Maximum dose _____ / _____ times per day</p> <p>Maximum dose _____ / _____ times per day</p>
<p><b>Antibiotics</b></p> <p>Please take your home supply or obtain a prescription without delay from the surgery</p>
<p><b>Prednisolone</b></p> <p>Take 30mg once a day ( 6 x 5mg tablets) until back to normal and then for 2 more days before stopping. Maximum 2 weeks.</p>

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**THEN: Look at the table**

Symptoms	Column 1 <b>OK</b>	Column 2 <b>Caution</b>	Column 3 <b>Action</b>
Breathlessness	Normal/usual	Worse than usual	Much worse than usual
Cough	Normal/usual	Worse than usual	Much worse than usual

If all your symptoms are in **Column 1 (OK)** continue usual treatment

If any of your symptoms are in **Column 2 (CAUTION)** you should:  
Increase your **RELIEVER TREATMENT**, take regular doses up to the maximum allowed. Keep a close eye on your symptoms: if you improve within 2 days resume your usual treatment. If there is **NO** improvement start **PREDNISOLONE**

If any of your symptoms are in **Column 3 (ACTION)** you should take the maximum allowed dose of reliever treatment and **START PREDNISOLONE 30MG** per day **IMMEDIATELY**

**Contacts**

Surgery: \_\_\_\_\_ Respiratory Nurse: \_\_\_\_\_

Notes: \_\_\_\_\_

**WARNING**

**At any time if you get:**

**Severe symptoms:** If you have symptoms as shown in **column 3 (ACTION)** and you've tried medication and you are not getting any better, please contact your doctor/nurse for an urgent appointment.

**EMERGENCY**

If you have any of the following:  
very short of breath  
Chest pains  
High fever  
Feeling of agitation, fear, drowsiness or confusion

**DIAL 999 FOR AN AMBULANCE**