COPD—Management of Acute Exacerbation

**Key**
- Green: Primary Care
- Blue: Secondary Care

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Go to stable COPD pathway
Go to COPD exacerbations, specialist pathway
Go to COPD exacerbations, specialist pathway
1 Background information

Scope:
- early detection, diagnosis, assessment and management of chronic obstructive pulmonary disease (COPD) in adults
- interventions include:
  - inhaled and oral therapies
  - oxygen therapy
  - pulmonary rehabilitation
  - surgical interventions
  - management of psychological sequelae
  - health promotion and preventive measures
- management of complications of COPD including:
  - respiratory failure
  - cor pulmonale
  - abnormal body mass index (BMI)
- covers criteria for specialist referral
- covers principles of palliative care in COPD

Out of scope:
- smoking cessation
- palliative care

Definition:
- COPD is characterised by airflow obstruction:
  - forced expiratory volume in 1 second (FEV1) less than 80% predicted and FEV1/forced vital capacity (FVC) ratio less than 0.7
- airflow obstruction is due to a combination of airway and parenchymal damage
- COPD is an umbrella term that includes:
  - emphysema
  - chronic bronchitis
  - chronic airflow limitation
  - the definition may include some cases of chronic asthma

Incidence and prevalence:
- an estimated 3 million people are effected by COPD in the UK:
  - approximately 2 million of these remain undiagnosed
- rate of COPD in the population is estimated to be between 2-4%
- incidence is difficult to determine as disease develops insidiously
- prevalence rates are increasing in women but have reached a plateau in men

Prognosis:
- COPD accounts for approximately 30,000 deaths each year in the UK (more than 90% of these occur in those over age 65 years)
- mortality from COPD in England shows a strong urban rural gradient

Risk factors:
- smoking
- occupational exposure
- increasing age
- deprived communities

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2 Information resources for patients and carers


The following resources have been produced by organisations certified by The Information Standard:
3 COPD - acute exacerbation

- acute exacerbation is the sustained worsening of the patient's symptoms from their usual stable state which is beyond normal day-to-day variations, and is acute in onset:

- commonly reported symptoms are:
  - worsening breathlessness
  - cough
  - increased sputum production
  - change in sputum colour

- the change in symptoms often necessitates a change in medication

- diagnosis of exacerbation is made clinically:
  - it does not depend on the results of investigations, but investigations may at times assist in ensuring appropriate treatment is given
  - sputum culture is not normally recommended

Presenting features of acute exacerbations of chronic obstructive pulmonary disease (COPD):

- worsening of previously stable condition:
  - increased wheeze (rhonchus)
  - increased dyspnoea
  - increased sputum volume
  - increased sputum purulence
  - chest tightness
  - peripheral oedema
  - respiratory failure

4 Consider differential diagnoses

- pneumonia
- pneumothorax
- left ventricular failure
- pulmonary embolism
- lung cancer
- upper airways obstruction

5 Initial management

- add or increase bronchodilators:
  - check if inhaler device and technique are appropriate
consider giving up to ten puffs via a spacer

- prescribe an antibiotic if two or more of the following are present:
  - increased breathlessness
  - increased sputum volume
  - more purulent sputum

- prednisolone 30mg daily for 7-14 days if not contraindicated; and:
  - significant increase in breathlessness; and/or
  - admitted to hospital

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### 6 Can patient be managed at home?
Consider the following when deciding where to manage:

- patient ability to cope at home
- breathlessness
- cyanosis
- level of consciousness
- general condition
- receiving long-term oxygen therapy (LTOT)
- level of activity
- social circumstances
- worsening peripheral oedema
- acute confusion
- rapid rate of onset
- significant co-morbidity (particularly cardiac disease and insulin-dependent diabetes)
- oxygen saturation of arterial blood (SaO2) less than 90%
- changes on the chest radiograph

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### 7 Yes
The following factors favour treatment at home:

- ability to cope at home
- mild breathlessness
- good general condition
- good level of activity
- cyanosis absent
- normal level of consciousness
- worsening of peripheral oedema absent
- not receiving long-term oxygen therapy
- good social circumstances
- acute confusion absent
- rapid rate of onset absent

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### 8 No
The following factors favour treatment in hospital:

- inability to cope at home
- severe breathlessness
- deteriorating general condition
- poor level of activity or confined to bed
- cyanosis present
- impaired level of consciousness
- worsening of peripheral oedema
- receiving long-term oxygen therapy
- poor social circumstances/living alone/not coping
- acute confusion
• rapid rate of onset

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9 Investigations
Investigations for home management:
• sputum culture not normally recommended
• pulse oximetry if severe exacerbation

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11 Consider treatment options
Home treatment of acute exacerbations:
• arrange appropriate review
• arrange multidisciplinary assessment if necessary

Establish optimal therapy:
• add or increase bronchodilators (check if inhaler device and technique are appropriate)
• if patient remains breathless or has exacerbations despite maintenance therapy with LABA, consider the following:
  o LABA plus inhaled corticosteroid (ICS) in a combination inhaler
  o LAMA in addition to LABA where ICS is declined or not tolerated
  o offer LAMA in addition to LABA plus ICS if patient remains breathless or has exacerbations despite taking LABA plus ICS, irrespective of their FEV1
• prescribe an antibiotic if two or more of the following are present:
  o increased breathlessness
  o increased sputum volume
  o more purulent sputum
• prescribe oral corticosteroids if:
  o a significant increase in breathlessness interferes with daily activities
• oral corticosteroids may also be prescribed if:
  o the patient is already on maintenance oral corticosteroids;
  o there is a previously documented response to oral corticosteroids;
  o airflow obstruction fails to respond to an increase in bronchodilator dosage;
  o this is the first presentation of airflow obstruction
• consider lifestyle management (smoking, weight, exercise)
• arrange appropriate review

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12 Follow-up
Follow-up of patients treated at home:
• if patient deteriorates, reassess and consider need for hospital treatment
• if not fully improved in 2 weeks consider chest X-ray and hospital referral
• reassess inhaler technique and patient’s understanding of recommended treatment regime
• emphasise potential benefits of lifestyle management (smoking, weight, exercise)
• consider need for referral for pulmonary rehabilitation via secondary care specialist

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13 Progress not satisfactory
Assess progress by:
• improvement in symptoms
• functional capacity
• activities of daily living (ability to cope)
Assessment should also include:

- re-assessment of inhaler technique and of the patient's understanding of recommended treatment regime
- advice on smoking cessation as necessary

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14 Progress satisfactory
Assess progress by:

- improvement in symptoms
- functional capacity
- activities of daily living (ability to cope)

Assessment should also include:

- re-assessment of inhaler technique and of the patient's understanding of recommended treatment regime
- advice on smoking cessation as necessary

If patient shows an exceptionally good response to treatment, perform spirometry to reconsider the diagnosis.

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15 Consider pulmonary rehabilitation
Pulmonary rehabilitation:

- should be available to all appropriate patients with COPD, including those recently hospitalised for an acute exacerbation
- programme should be:
  - multidisciplinary programme of care
  - individually tailored to optimise the individual's physical and social performance and autonomy
  - be held at times that suit patients, and in buildings that are easy for the patient to get to
- in practice, usually offered to those who consider themselves functionally disabled by chronic obstructive pulmonary disease (COPD; usually MRC grade 3 and above)
- not suitable for those:
  - unable to walk
  - with unstable angina
  - who have had a recent myocardial infarction
- should include:
  - physical training
  - disease education
  - nutritional intervention
  - psychological intervention
  - behavioural intervention
- patient should be made aware of the benefits of rehabilitation and the commitment required to gain these benefits

MRC dyspnoea scale.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Degree of breathlessness related to activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not troubled by breathlessness except on strenuous exercise</td>
</tr>
<tr>
<td>2</td>
<td>Short of breath when hurrying or walking up a slight hill</td>
</tr>
<tr>
<td>3</td>
<td>Walks slower than contemporaries on level ground because of breathlessness, or has to stop for breath when walking at own pace</td>
</tr>
<tr>
<td>4</td>
<td>Stops for breath after walking about 100m or after a few minutes on level ground</td>
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<tr>
<td>5</td>
<td>Too breathless to leave the house, or breathless when dressing or undressing</td>
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Local Information
Due to limited access to pulmonary rehab services in the ABMU Health Community this service is only available by consultant referral. Any patients assessed as meeting the criteria in primary care should be referred to a secondary care specialist, requesting assessment for pulmonary rehab.

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17 Monitor patient
Follow-up on resolution of acute exacerbation is as for stable chronic obstructive pulmonary disease (COPD):
- highlight diagnosis in notes and computer database
- record results of spirometric tests at diagnosis (absolute and percentage of predicted)
- document the effects of each drug treatment as it is tried
- record opportunistic measurements of spirometric parameters (loss of 500mL over 5 years will identify those with rapidly progressing disease – may need specialist referral and investigation)
- measurements required:
  - FEV1 and forced vital capacity (FVC)
  - body mass index (BMI)
  - Medical Research Council (MRC) dyspnoea scale dyspnoea score
- clinical assessment to include:
  - smoking status and desire to quit
  - adequacy of symptom control:
    - breathlessness
    - exercise tolerance
    - estimated exacerbation frequency
  - presence of complications
  - effects of each drug treatment
  - inhaler technique
  - need for referral to specialist and therapy services
  - need for pulmonary rehabilitation
- assessment of disease severity should take into account:
  - degree of airflow obstruction
  - degree of disability
  - frequency of exacerbations
  - prognostic factors such as:
    - forced expiratory volume in 1 second (FEV1)
    - breathlessness (using the MRC dyspnoea scale)
    - health status
    - exercise capacity
    - BMI
    - oxygen saturation less than/ equal to 92% breathing air

Follow-up in primary care of mild COPD (FEV1 50-80%) and moderate COPD (FEV1 30-49%) is required at least annually and clinical assessment should evaluate:
- smoking status and desire to quit
- adequacy of symptom control:
  - breathlessness
  - exercise tolerance
  - estimated exacerbation frequency
- presence of complications
- effects of each drug treatment
- inhaler technique
- need for referral to specialist and therapy services
- need for pulmonary rehabilitation
Follow-up in primary care of severe COPD (FEV1 less than 30%) is advised at least twice per year with clinical assessment as above plus:

- need for long-term oxygen therapy
- patient's nutritional state
- presence of depression
- need for social services and occupational therapy input
- measurement of oxygen saturation of arterial blood (SaO2)
- spirometry (FEV1 and FVC)
- BMI

Regular hospital review is not normally needed in stable severe COPD. Locally agreed mechanisms should allow rapid hospital assessment when needed. Patients likely to have frequent exacerbations leading to hospital admissions may need monitoring for long-term oxygen therapy (LTOT).

Shared care between the hospital and GP is the usual pattern.

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**References**