Inhaler therapy options for patients with COPD

**Non-pharmacological options for ALL patients, consider at all stages (please see page 3):**
- Inhaler technique
- Smoking cessation
- Assess co-morbidities
- Encourage Exercise
- Annual flu vaccination
- Pulmonary rehabilitation
- Measure oxygen saturation

**SABA**
- Salbutamol cfc free MDI or DPI OR
- Terbutaline DPI

**Still symptomatic**

**Add LAMA**
- 1st choice: Glycopyrronium (Seebri Breezhaler®) DPI
- Alternatives: Aclidinium (Eklira Genuair®) DPI, Tiotropium (Spiriva Respimat®) SMI or Umeclidinium (Incruse Ellipta®) DPI

- ≥1 hospitalisation within 1 year OR
- ≥2 exacerbations within 1 year OR
- Breathlessness requiring treatment*

**FEV1 <50% predicted and ≥1 hospitalisation OR ≥2 exacerbations in 1 year**

**Add ICS/LABA**
- 1st choice: Beclometasone/formoterol Fostair® NEXThaler® DPI 100mcg/6mcg OR Fostair® MDI 100mcg/6mcg
- Alternative: Fluticasone/vilanterol (Relvar Ellipta®) DPI 22mcg/92mcg, (consider if once daily DPI device required)

**Switch to single inhaler LAMA/LABA combination**
- Step up from glycopyrronium: glycopyrronium/indacaterol (Ultibro Breezhaler®) DPI
- Step up from aclidinium: formoterol/aclidinium (Duaklir Genuair®) DPI
- Step up from tiotropium: olodaterol/tiotropium (Spiolto Respimat®) SMI
- Step up from umclidinium: umclidinium/vilanterol (Anoro Ellipta®) DPI

**Breathlessness requiring treatment**

**Further exacerbations or hospital admission**

**Add LAMA if further exacerbations or breathlessness requiring treatment**

**Triple therapy: ICS/LABA/LAMA**
- Glycopyrronium (Seebri Breezhaler®) + EITHER beclometasone/formoterol (Fostair®) OR fluticasone/vilanterol (Relvar Ellipta®)
- Aclidinium (Eklira Genuair®) + beclometasone/formoterol (Fostair®)
- Tiotropium (Spiriva Respimat®) + beclometasone/formoterol (Fostair®)
- Umeclidinium (Incruse Ellipta®) + fluticasone / vilanterol (Relvar Ellipta®)

* MRC Dyspnoea scale ≥3 can be used to measure dyspnoea level for step-up treatment
**Footnotes**

a Patients intolerant of a SABA may be initiated on a short or long-acting antimuscarinic [SAMA or LAMA].

b The first choice initial LAMA is guided by a preference to use glycopyrronium/indacaterol if step up is required. This recommendation has been made based on the large body of clinical evidence supporting the effects of glycopyrronium/indacaterol on relevant clinical outcomes including symptoms and exacerbations. Alternative choices can be made based on a preference for a different inhaler device, or twice a day dosing.

c, d, e Patients who require twice daily dosing or a multidose DPI can use aclidinium (Eklira Genuair®) DPI. Patients requiring a non-DPI device can use tiotropium (Spiriva Respimat®) soft-mist inhaler. For patients who are intolerant to a LAMA, try a LABA; indacaterol (Onbrez Breezhaler®) is preferred.

f Beclometasone / formoterol is available as an MDI and DPI. Some severe COPD patients might prefer to use an MDI with a spacer. The choice of which beclometasone / formoterol device to use as part of triple therapy should match to the LAMA device if possible e.g. use DPI with glycopyrronium or aclidinium, use MDI with tiotropium.

These treatment recommendations are suitable for newly diagnosed COPD patients. For COPD patients already established on treatment, then the recommendations here may also be used in cases where symptoms and / or exacerbations require a change in treatment, or cost reduction is being considered. This list of inhaler therapy options is not intended to be used to change therapy if it is working well nor to completely rule out any device.
Non-Pharmacological Treatment Guide

- Inhaler technique: This should be reviewed regularly and always before increasing treatment.
- Common errors with an MDI include not shaking the device before use, poor co-ordination and inhaling too quickly.
- Common errors relating to dry powder inhalers (DPI) are inhaling too slowly and priming/positioning errors.
  - Good Practice Point: Consider adding a spacer device for use with MDI. Instruction for inhaling via a MDI should be “gentle and deep”. Instruction for inhaling via a DPI should be “forceful and deep”.
  - Resource: educational podcasts which show correct technique for each device are available at [www.wessexahsn.org.uk/videos](http://www.wessexahsn.org.uk/videos)
- Pulmonary rehabilitation: Patients should be referred if they have exercise limitation due to breathlessness (NICE Quality Standard, 2016). This is usually MRC 3 or greater. Main contraindications include uncontrolled cardiovascular disease, significant balance/gait disorders and significant cognitive impairment.
  - Resource: Video clip showing patients participating in and talking about their experience of pulmonary rehabilitation.
- Smoking Cessation: Take every opportunity to discuss the benefits of stopping smoking and offer support to quit.
- Oxygen referral: Patients with a persistent, resting, stable SpO2 of ≤92% should be referred for home oxygen assessment. COPD treatment should be optimised prior to referral. Consider referral for patients with SpO2 of ≤94% where there is evidence of polycythaemia (haematocrit ≥55% in males or ≥47% in females), peripheral oedema or pulmonary hypertension.
- Self-Management Plan & Rescue Pack: A self-management plan should be given to all patients. Rescue packs are suitable for some patients e.g. patients who are able to identify own symptoms of an exacerbation and act promptly, patients who are unlikely to overuse with repeated courses of steroids, patients who have had proper education on self-management etc.
- Consider and treat co-morbid disease e.g. consider screening for anxiety and depression (for example using PHQ-9 & GAD-7). Cognitive behaviour therapy can be useful.
- Consider conversations about advance care planning and end of life care with referral to specialist teams as appropriate. Ensure these patients are on the [Gold Standards Framework register](http://www.goldstandardsframework.org.uk) as appropriate. Refer to local palliative care guidance.
FEV1

Spirometry is needed to make the diagnosis of COPD. FEV1 can be used to measure worsening or improvement in patients.

However, the majority of treatment decisions regarding bronchodilators and ICS should be based on symptoms and exacerbations, not FEV1.

Stepwise approach to treatment

Most patients can be treated with a stepwise escalation of pharmacotherapy, adding in one extra drug at a time (not two). This has the advantage of being able to assess the response to each drug, and preventing overtreatment. In general, a threshold of 2 or more exacerbations or one hospitalisation in the last year can be used to step up treatment.

Initial COPD treatment

Newly diagnosed COPD patients should be treated with a SABA initially. The next step (if needed) should be the addition of a LAMA; these drugs improve symptoms and reduce exacerbations.

The only exception is patients with FEV1<50% and ≥ 2 exacerbations who may start on ICS / LABA immediately.

Dual Bronchodilator Combinations

Patients who are breathless or suffering with exacerbations, despite treatment with a LAMA can be stepped up to receive a combination inhaler containing a LABA + LAMA. These combination inhalers reduce symptoms and exacerbations.

Triple therapy step down

Historically, some patients have been treated with ICS+LABA+LAMA, but have never suffered with exacerbations. Most of these patients can be safely treated with LABA+LAMA alone, as ICS are indicated only in patients with regular exacerbations. For patients with FEV1>50%, and who have never suffered with exacerbations, ICS can be stopped and the patient switched to a LABA+LAMA combination. However, there is currently insufficient evidence to guide whether this stop should be immediate or stepped down. Consider individual patient circumstances [e.g. dose and duration of treatment] and a step down approach may require temporary use of a preparation without a marketing authorisation for use in COPD.
Criteria for referral to Specialist Respiratory Team including Community Services

For patients with frequent exacerbations despite optimal primary care management, seek advice from a specialist respiratory team, which may be located within a community service.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>Diagnostic uncertainty</td>
<td>Confirm diagnosis and optimise therapy</td>
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<tr>
<td>Patients requiring &gt; 3 courses of steroids or antibiotics in a 12 month period*</td>
<td>For patients with frequent exacerbations seek advice from a specialist respiratory team</td>
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<tr>
<td>Frequent chest infections*</td>
<td>Exclude bronchiectasis</td>
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<tr>
<td>Co morbidity or secondary illness causing deterioration</td>
<td>Arrange Echo / BNP / CXR and ask for specialist advice</td>
</tr>
<tr>
<td>Onset of cor pulmonale (Hypoxia / Cyanosis / signs of heart failure or low SPO$_2$)</td>
<td>Confirm diagnosis and optimise therapy - Referral for LTOT Assessment</td>
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<tr>
<td>Assessment for oral corticosteroid therapy</td>
<td>Justify need for long term treatment or supervise withdrawal</td>
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<tr>
<td>A rapid decline in FEV1</td>
<td>Encourage early intervention</td>
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<tr>
<td>Assessment for lung volume reduction treatments</td>
<td>Identify candidates for surgery and newer endobronchial treatments</td>
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<tr>
<td>Assessment for lung transplantation</td>
<td>Identify candidates for surgery</td>
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<td>Dysfunctional breathing</td>
<td>Confirm diagnosis, optimise pharmacotherapy and access other therapists</td>
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<tr>
<td>Aged under 40 years or a family history of alpha1-antitrypsin deficiency</td>
<td>Identify alpha1-antitrypsin deficiency, consider therapy and screen therapy</td>
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<tr>
<td>Symptoms disproportionate to lung function deficit</td>
<td>Look for other explanations</td>
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<tr>
<td>Haemoptysis</td>
<td>Exclude carcinoma of the bronchus</td>
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*For patients with recurrent exacerbations requiring antibiotics and / or corticosteroids, careful investigation of infection is needed. Patient education is also important. Seek specialist advice if needed. In general, consider local community options before secondary care.
Terminology and abbreviations

DPI - dry powder inhaler
Exacerbation - worsening of disease requiring oral corticosteroid treatment
ICS - inhaled corticosteroids
LABA - long acting beta agonist
LAMA - long acting muscarinic antagonist
Mcg - micrograms
MDI - metered dose inhaler
MRC Dyspnoea scale - Medical Research Council Dyspnoea Scale
SABA - short acting beta agonist
SMI - soft-mist inhaler