

# Adult Asthma Inhaler Choice

## Interim guidance

Authored by members of the NCL Inhaler Sustainability Group

This guideline was approved by the North Central London Joint Formulary Committee in January 2023 (Version 2.1).

Please send any queries or feedback to [admin.ncl-mon@nhs.net](mailto:admin.ncl-mon@nhs.net)

# Background & rationale for update

- This document is aimed at all healthcare professionals involved in the care of adult patients with asthma in NCL to support the choice of pharmacological treatments for asthma. Therefore, the document details all treatments which are currently on formulary within NCL.
- Paediatric patients are excluded from the scope of this document. This document is not intended to affect treatments in patients where efficacy, safety and tolerability has been established, but can be used to consider options available during patient reviews.
- Patients suffering from difficult asthma are routinely under the care of a respiratory specialist and have an individualized asthma management plan; this may involve treatments which are outside the scope of this guideline
- Diagnosis of asthma is outside of the scope of this document; for further information, please refer to [NICE](#), [SIGN/BTS](#) (a joint guideline is in progress with a view to publish in late 2023) or [GINA](#) guidelines
- NCL ICS have made a commitment to improve asthma care whilst reducing carbon emissions in accordance with the NCL Green Plan and national Greener NHS plans.<sup>1</sup>
- This document highlights the environmental impact of inhalers on formulary in NCL and aims to guide clinicians to choosing sustainable options where clinically suitable. The recommendations in this guideline can be used to inform clinical decisions to meet targets outlined in the IIF to improve patient care and reduce carbon emissions.

## **Key updates reflected in this guideline:**

- Updated inhaler choices on formulary based on NCL JFC decisions
- Updated information on steroid cards available and when to use
- Information on environmental sustainability and the carbon footprint of formulary inhalers
- Treatment pathway updated (in line with GINA guidelines), which now also recommends low-dose ICS/LABA as reliever therapy
- Guidance provided for reviewing patients in primary care, particularly those who are over-reliant on SABA monotherapy, and considering optimising therapy using low carbon footprint devices

## Objectives and goals of asthma care in NCL

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### Pathway A

- As required SABA monotherapy
- Maintenance – Step 1: Low dose ICS therapy
- Maintenance – Step 2: Low to medium dose ICS/LABA combination therapy

### Pathway B

- As required low-dose ICS/LABA combination therapy
- Maintenance – Step 1-2: Maintenance and Reliever Therapy (MART)

### Pathway A or B continued:

- Maintenance – Step 3: High-dose ICS/LABA combination therapy
- Maintenance – Step 4: ICS/LABA/LAMA triple therapy (specialist initiation)

## Further information and advice

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- Spacers
- FAQs
- Steroid safety cards in adults with asthma prescribed ICS or systemic steroids
- Optimising inhaler therapy
- Example clinical scenarios

## References and abbreviations

## Additional resources

## Appendix 1: Inhalers on the NCL Joint Formulary

# Objectives and goals of asthma care in NCL

# Objectives for NCL

## To reduce the carbon footprint of inhaler prescribing

- 1) Optimise asthma care following national guidelines
- 2) Offer DPIs or SMIs as first choice when clinically appropriate
- 3) If pMDIs are needed for an individual then choose brand and regime with care to minimise the carbon footprint
- 4) Ask patients to return all used or unwanted inhalers to community pharmacies or dispensaries for appropriate disposal

## To safely and effectively change inhalers

- 1) Focus on finding the right medication and device for each individual in consultation with them and their carers, through shared decision making
- 2) Assess and optimise inhaler technique at every opportunity
- 3) Follow patients up to ensure suitability of device and disease control
- 4) Do not undertake blanket switching if changing the device type or medication

## Making every contact count – checklist for patient reviews

- 1) Every patient should have a Personal Asthma Action Plan, with inhaler therapy optimised to the individual
- 2) Ask every asthmatic if they smoke and offer immediate referral for treatment of tobacco dependence and behavioural support
- 3) Routinely check inhaler technique (make sure those using a pMDI are always offered a spacer)
- 4) Review diagnosis and proactively 'step down' therapy whenever clinically appropriate
- 5) Check the patient has been using their inhaled therapy as prescribed before changing therapy.
- 6) Provide steroid safety cards for all eligible patients (see information on [steroid safety cards](#))
- 7) If the patient is struggling with asthma control, consider referring them to the severe specialist asthma services. See more information in the [AAC consensus pathway](#) on the management of uncontrolled asthma in adults

# Sustainability and the environmental impact of inhalers

- In recent years there has been growing awareness and concern from healthcare professionals and patients alike about the impact of respiratory inhalers on our environment, particularly pressurised Metered Dose Inhalers (pMDIs) which account for 3.5% of the entire NHS carbon footprint<sup>2</sup>
- The majority of inhalers prescribed in the UK (around 70%) are pMDIs - comparatively Sweden use only 13%. pMDIs contain propellants called hydrofluorocarbons which are potent greenhouse gases, thousands of times more powerful than carbon. Dry powder inhalers (DPIs) do NOT use these propellants and have substantially lower global warming potential.<sup>3</sup>
- The image below demonstrates the equivalent tailpipe carbon emissions between a Ventolin pMDI and Ventolin DPI (image credit: [www.greenerinhaler.org](http://www.greenerinhaler.org))<sup>4</sup>



- In England the majority of inhalers prescribed are short acting beta agonist inhalers (SABA) such as Ventolin. It's estimated that salbutamol pMDIs produce 8,724 tonnes of CO<sub>2</sub> per annum in NCL. That's the equivalent of driving an average diesel car for 31.4 million miles – equivalent to 65 trips to the moon and back!

# Objectives for asthma control

## The long-term goals of asthma management are:

- To achieve good control of symptoms and maintain normal activity levels
- To minimize the risk of asthma-related death, exacerbations, persistent airflow limitation and side-effects, through better management of their treatment and avoidance of exacerbating factors (e.g., smoking cessation)
- To elicit and deliver the patient's own goals regarding their asthma, as these may differ from conventional medical goals (taking into account cultural and personal preferences)

## What well controlled asthma looks like

- The ideal scenario is for patients to remain symptom free, without night waking or requiring a reliever, and without suffering exacerbations of their disease
- We consider asthma to be **well controlled** if the patient:
  - experiences daytime asthma symptoms  $\leq 2$  times per week; and
  - requires their reliever therapy  $\leq 2$  times per week; and
  - Has no night-time waking from symptoms; and
  - Their asthma does not limit their activity.
- See [NICE CKS](#) for information on assessment for symptomatic asthma and associated test scores

## Inhaler choice is important to achieve control

- In this guidance, there are several choices of therapy at each stage
- The choice of treatment should be individualised to the patient, and should take into account patient preference (e.g., dose frequency, inhaler device) and practical issues (e.g., manual dexterity)
- Above all else, choose the treatment which is best suited to the patient so that they are able to take their therapy regularly as prescribed in the long term
- Lower carbon footprint inhalers should be used where clinically appropriate and suitable for the patient
- Higher carbon footprint inhalers (pMDIs) can be used if the patient finds it easier or more manageable to use
- Clinicians may note that patients are sometimes aware of other inhalers commonly prescribed and may therefore question the choice made. The choice of inhaler should be explained where this is helpful

# Approach to escalating therapy

## When to escalate treatment

- Patients who demonstrate uncontrolled asthma (i.e., do not fit the criteria here), then they should be considered for the next step in asthma therapy.
- Treatment decisions should be based on a personalised cycle of **Assessment, Adjustment and Review**

## Assessment

- Before considering escalation in therapy, consider why the patient still has symptoms, e.g.:
  - Is the diagnosis of asthma correct (e.g., COPD with asthma)? Is the patient still being exposed to avoidable irritants (e.g. occupational factors, air pollution, allergens, non-steroidal anti-inflammatory drugs)? Are there other related conditions also needing treatment (e.g. rhinitis, anxiety, gastro-oesophageal reflux)?
  - Does the patient still smoke? Is there passive smoke exposure?
  - Is the patient using their medication correctly (check inhaler technique and change device if needed before escalating therapy)? Are they adherent, collecting and taking their medication regularly as prescribed?
- Modifiable risk factors for asthma exacerbation should be addressed at every opportunity; this includes smoking cessation and over-reliance on the patient's SABA device

## Adjustment

- In the case of uncontrolled asthma, choose a therapy from the next step in accordance with the recommended treatment pathways ([found here](#))
- When appropriate, discuss the use of a lower carbon footprint inhaler (using the [NICE patient decision aid](#))
- Ensure you provide sufficient patient education during consultation, such as providing [steroid treatment/emergency cards](#) where appropriate, providing inhaler technique training and providing details on useful resources (such as the [Asthma UK inhaler technique demonstration videos online](#))

## Review

- Schedule a follow-up appointment with the patient when changing therapy, & ideally review within 8 weeks
- Healthcare providers are encouraged to assess control, adherence and inhaler technique at every opportunity
- Conduct an asthma review at least every 12 months (or more frequently following exacerbations)



# Approach to de-escalating therapy

## When to de-escalate treatment

- Treatment decisions should be based on a personalised cycle of **Assessment, Adjustment and Review**

## Assessment

- As with the approach to escalating therapy, consider modifiable risk factors at every opportunity; this includes smoking cessation and over-reliance on the patient's SABA device.
- Patients with controlled asthma for 2-3 months and whose lung function has plateaued can be considered to step-down their inhaler therapy.
- Ensure the patient is not over-using their SABA device to maintain lung function.

## Adjustment

- If appropriate, de-escalation should be considered in every asthma review.
- In controlled asthma, consider optimising the choice of treatment to the previous step in the patient pathway.
- For example, when stepping down from high-dose ICS/LABA combination therapy (i.e. maintenance step 3), consider de-escalating to a medium dose ICS/LABA (i.e. maintenance step 2).
- When stepping down from regular inhaled ICS therapy, a low-dose ICS/LABA used as required is considered an appropriate option to avoid the risks associated with SABA monotherapy.
- When appropriate, discuss the use of a lower carbon footprint inhaler (using the [NICE patient decision aid](#))
- Ensure you provide sufficient patient education during consultation, such as providing [steroid treatment/emergency cards](#) where appropriate, providing inhaler technique training and providing details on useful resources (such as the [Asthma UK inhaler technique demonstration videos online](#))

## Review

- Schedule a follow-up appointment with the patient when changing therapy, & ideally review within 8 weeks
- Healthcare providers are encouraged to assess control, adherence and inhaler technique at every opportunity
- Conduct an asthma review at least every 12 months (or more frequently following exacerbations)

# Treatment options for asthma in adults

Interim guidance of inhaled therapies currently on the  
NCL Joint Formulary

# How to use this guide

**Brand name**  
 Note: **ALWAYS** prescribe by brand name AND inhaler type

**Generic name**

For inhalers containing an ICS:  
 Steroid potency, described in terms of beclomethasone dipropionate (BDP) equivalence where data is available

**Device strength and dose**

**Photo of device**

**Carbon footprint:**  
 Labelled as either **LOW** or **HIGH**

**LOW** carbon footprint items are preferred choices in NCL where it is clinically appropriate to use.

**HIGH** carbon footprint pMDIs contain a propellant which carry a higher carbon footprint relative to dry powder inhalers. These are suitable for use where patients are more suited to a pMDI (e.g., if they have poor inspiratory effort, or have better inhaler technique with a pMDI than other devices)


### Example inhaler monograph

**Fostair Nexthaler**

**Beclometasone/ Formoterol inhaler**

**Low dose (BDP 500mcg/day):**  
 100/6 micrograms device: 1 dose BD

**Medium dose (BDP 1000mcg/day):**  
 100/6 micrograms device: 2 doses BD



**Carbon footprint: LOW**      **DPI**

**Type of device:**

**pMDI** = pressurised metered dose inhaler, which uses a propellant  
**BAI** = breath-actuated inhaler, which also contains a propellant  
**SMI** = soft mist inhaler, which contains a liquid but no propellant  
**DPI** = dry powder inhaler, which contains no propellant

For a full list of abbreviations in this guideline, [see here](#)

**Choosing a device:** It is useful to check the patient’s inspiratory effort to ensure they can generate enough inspiratory pressure for appropriate use of DPIs, which require a higher inspiratory effort than pMDIs. Although DPIs require a more forceful inspiration than pMDIs, adult asthma patients can still generate the inspiratory flows needed when unwell and if their inhaler technique is better suited to a DPI then this will still be the best option, even during an exacerbation. It is also usually better to have only one inhaler type to avoid errors arising from using different inhalation techniques

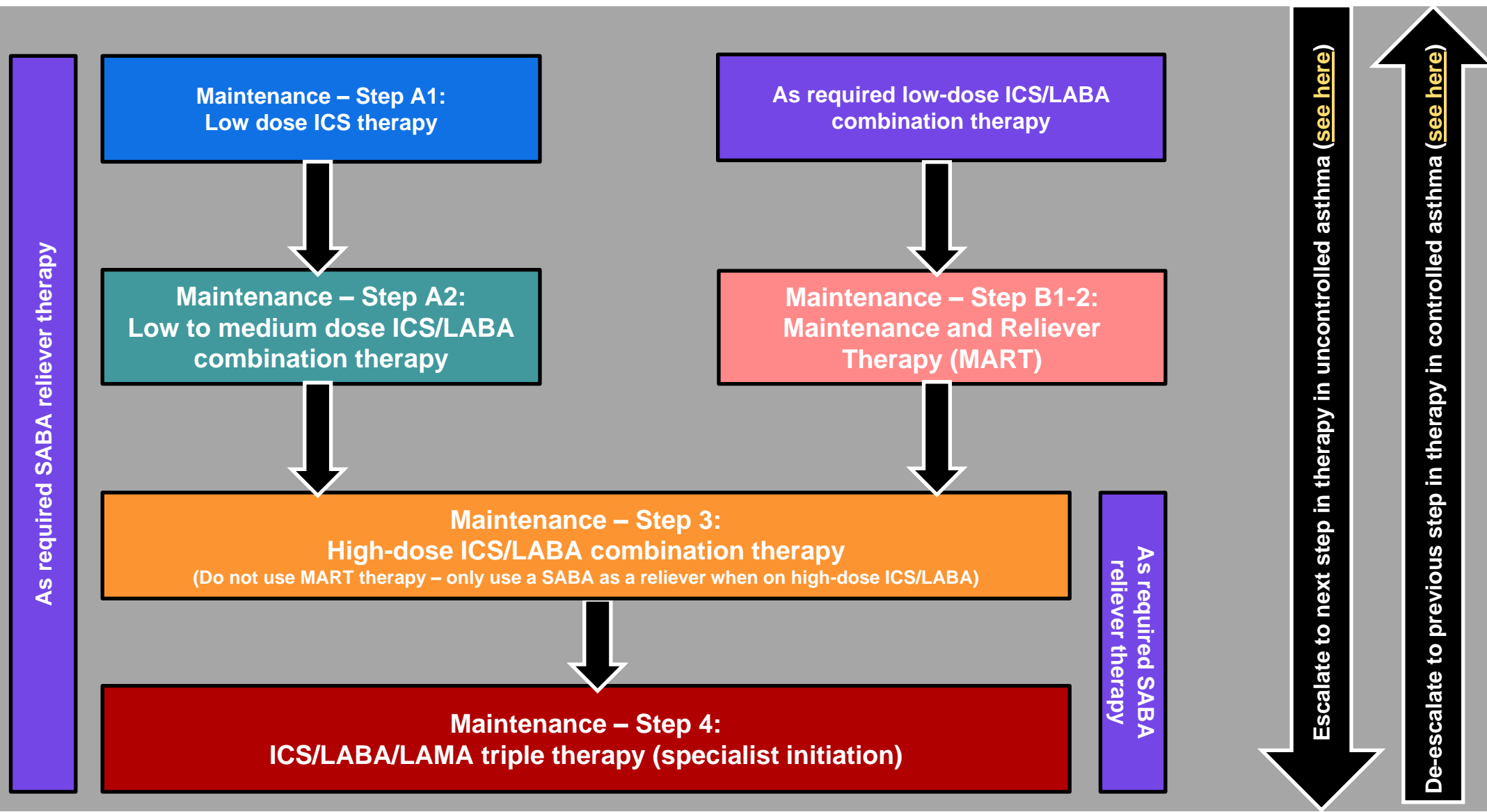
## Scope of inhaled therapies included in this guideline

- This guide includes inhaler options currently on the NCL Joint Formulary (as per V1.0 of this guideline) and subsequent updates which are recommended for use in NCL. It will be updated following pan-London recommendations; therefore, options are subject to change following NCL JFC or pan-London recommendations.
- QVAR® is not routinely recommended in primary care (though is on formulary in NCL and may be initiated by specialists in some exceptional circumstances)
- LABA monotherapy without ICS (e.g., Serevent® or Oxis®) are not routinely recommended for asthma management and hence not included (though can be initiated by specialists in some exceptional circumstances).
- Ventolin® has been removed from the NCL Joint Formulary and should not be initiated in new patients.
- Flutiform® has been removed from the NCL Joint Formulary and is reserved for specialist use in exceptional circumstances only (patients stabilised on therapy in primary care who do not wish to change can continue to receive prescriptions for Flutiform®)
- DuoResp® has been removed from the scope of this guideline for new initiations. However, treatment can continue whilst patients remain stable on DuoResp®.

# Pathways for inhaled therapies for asthma

Patients can follow either Pathway A or B. Click on a step to see more information

Pathway A	OR	Pathway B
<ul style="list-style-type: none"> <li>A SABA is used as a reliever alongside Steps A1, A2, 3 and 4</li> <li>SABA monotherapy traditionally considered in infrequent, short-lived wheeze with normal lung function, but move towards consideration of an ICS in all asthmatic adults</li> <li>Avoid over-reliance on SABA (avoid adding to repeat list)</li> </ul>		<ul style="list-style-type: none"> <li>SABA inhalers are not routinely needed alongside as required low-dose ICS/LABA combination therapy or MART therapy</li> <li>Use a SABA device alongside Steps 3 and 4 only</li> <li>Avoid over-reliance on SABA (avoid adding to repeat list)</li> </ul>



# Reliever therapy: As required short-acting beta agonist (SABA) reliever therapy

- Ventolin® Evohaler should **NOT** be prescribed in NCL. Although Salamol® CFC-Free inhaler is defined as having a ‘high’ carbon footprint, it has half the carbon footprint of Ventolin® Evohaler. Note: Salamol contains a small amount of ethanol which may be unsuitable for some patients due to religious, cultural or personal reasons; clinicians are encouraged to discuss with their patient to determine a suitable alternative formulary option. If a pMDI is required, it would be appropriate to use a non-formulary pMDI as an exceptional circumstance.
- In North Central London we are committed to improving patient care whilst reducing carbon. A key part of this work relates to SABA overuse. Overprescribing reliever therapy can leave patients at risk of potentially life-threatening asthma attacks and could be associated with an increase in hospitalization and mortality.<sup>8</sup>
- Asthma is considered well controlled if relievers are used <3 times per week (as well as being symptomatic <3 times per week and not experiencing night awakenings)
- Asthmatics using >6 SABA inhalers per year suggests over-use and poor control. Therefore, optimising care & following national guidance can significantly reduce the carbon impact of inhaler prescribing.
- Inform the patient that if inspiratory force is impaired to the extent where they cannot use their inhaler device, they should seek immediate medical attention (alternatives include salbutamol pMDI plus spacer or salbutamol via nebuliser)

## Inhaler options on the NCL Joint Formulary

### Ventolin Accuhaler 200mcg/dose

Salbutamol 200micrograms/dose dry powder inhaler

**NOTE – 200 micrograms per dose**

1 dose as required (max 1 dose QDS)



Carbon footprint: **LOW**

DPI

### Easyhaler Salbutamol 100mcg/dose

Salbutamol 100micrograms/dose dry powder inhaler

**NOTE – 6 month expiry once opened**

1-2 dose(s) as required



Carbon footprint: **LOW**

DPI

### Salamol CFC-Free inhaler 100mcg/dose

Salbutamol 100micrograms/dose inhaler CFC free

**NOTE – contains small amount of ethanol**

1-2 puff(s) as required



+ spacer

Carbon footprint: **HIGH**

pMDI

### Salamol Easi-Breathe 100mcg/dose

Salbutamol 100micrograms/dose breath actuated inhaler CFC free

1-2 dose(s) as required







Carbon footprint: **HIGH**

BAI

# A Maintenance – Step 1: Low dose ICS therapy

- Offer a low dose ICS as first-line maintenance therapy if:
  - Symptoms at presentation clearly indicate the need for maintenance therapy (e.g., symptoms  $\geq 3$  times per week or causing night waking)
  - or asthma remains uncontrolled with SABA reliever or as required low-dose ICS/LABA combination therapy therapy alone (e.g., requires reliever 3 times or more per week)
- If asthma remains uncontrolled on low dose ICS, an LTRA (montelukast 10mg OD) may sometimes be used if there are exercise induced or rhinitis symptoms (note: montelukast may cause neuropsychiatric reactions or sleep disturbance, so extra caution should be taken in patients with history of related conditions); it should only be continued if deriving benefit.





## Inhaler options on the NCL Joint Formulary

<p><b>Pulmicort Turbohaler</b> Budesonide dry powder inhaler</p> <p><b>Low dose (BDP 400mcg/day):</b> 100 micrograms device: 2 doses BD 200micrograms device: 1 dose BD</p>		<p><b>Flixotide Accuhaler</b> Fluticasone propionate inhaler CFC-free</p> <p><b>Low dose (BDP 400mcg/day):</b> 50 micrograms device: 2 doses BD</p>	
<p><b>Carbon footprint: LOW</b></p>	<p><b>DPI</b></p>	<p><b>Carbon footprint: LOW</b></p>	<p><b>DPI</b></p>
<p><b>Clenil Modulite</b> Beclomethasone inhaler CFC free</p> <p><b>Low dose (BDP 400mcg/day):</b> 100 micrograms device: 2 puffs BD</p>	 <p>+ <a href="#">spacer</a></p>	<p><b>Flixotide Evohaler</b> Fluticasone propionate inhaler CFC-free</p> <p><b>Low dose (BDP 400mcg/day):</b> 50 micrograms device: 2 puffs BD</p>	 <p>+ <a href="#">spacer</a></p>
<p><b>Carbon footprint: HIGH</b></p>	<p><b>pMDI</b></p>	<p><b>Carbon footprint: HIGH</b></p>	<p><b>pMDI</b></p>

# A Maintenance – Step 2: Low to medium dose ICS/LABA combination

- If asthma remains uncontrolled on low dose ICS, offer low dose regular ICS/LABA combination therapy for 4-8 weeks.
- If asthma remains uncontrolled on low dose ICS/LABA combination therapy, consider increasing to medium dose regular ICS/LABA for 4-8 weeks.
- Inform patients that it will take time for the effect of the ICS to build up and that it is vital to take the therapy regularly as prescribed even if they do not notice immediate benefit.
- Note: Fostair uses ‘extra-fine’ beclomethasone dipropionate particles which are more potent than standard particle size beclomethasone dipropionate (hence not proportional to Clenil used in step 1).

## Inhaler options on the NCL Joint Formulary

<p><b>Fostair NEXThaler</b> Beclometasone/ Formoterol inhaler</p> <p><b>Low dose (BDP 500mcg/day):</b> 100/6 micrograms device: 1 dose BD</p> <p><b>Medium dose (BDP 1000mcg/day):</b> 100/6 micrograms device: 2 doses BD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>		<p><b>Relvar Ellipta</b> Fluticasone furoate/ Vilanterol dry powder inhaler</p> <p><b>Low dose:</b> Not available</p> <p><b>Medium dose (BDP 1000mcg/day):</b> 92/22 micrograms device: 1 dose OD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>	
<p><b>Symbicort Turbohaler</b> Budesonide/ Formoterol dry powder inhaler</p> <p><b>Low dose (BDP 400mcg/day):</b> 100/6 micrograms device: 2 doses BD or 200/6 micrograms device: 1 dose BD</p> <p><b>Medium dose (BDP 800mcg/day):</b> 200/6 micrograms device: 2 doses BD or 400/12 micrograms device: 1 dose BD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>		<p><b>Fostair pMDI</b> Beclometasone/ Formoterol inhaler</p> <p><b>Low dose (BDP 500mcg/day):</b> 100/6 micrograms device: 1 dose BD</p> <p><b>Medium dose (BDP 1000mcg/day):</b> 100/6 micrograms device: 2 doses BD</p> <p><b>Carbon footprint: HIGH</b>      <b>pMDI</b></p>	 <p>+ <a href="#">spacer</a></p>

## B Reliever therapy: As required low-dose ICS/LABA combination therapy

- The 2022 GINA guideline now recommends initiation of asthma treatment with a low-dose ICS/LABA inhaler containing formoterol used “as required”, instead of SABA monotherapy
- These recommendations were made to reduce the risk of asthma—related exacerbations and death from airway inflammation, and to avoid over-reliance on SABA monotherapy early in the course of the disease; this is a change from previous standard practice.
- The LABA element (formoterol) is fast acting and so achieves a similar relief to that of a SABA; the inclusion of an ICS increases the amount of inhaled ICS to achieve prolonged relief of airway inflammation
- Low-dose ICS/LABA as reliever therapy is suitable as initial treatment in adult patients who have symptoms less than 4-5 days a week. SABAs are not required in addition to low dose ICS/LABA during acute episodes
- If asthma remains uncontrolled (i.e., using reliever  $\geq 3$  days per week, symptomatic  $\geq 3$  days per week or waking with symptoms once a week), then switch to MART regimen (see [MART therapy options](#))

### Inhaler options on the NCL Joint Formulary

#### Fostair NEXThaler

Beclometasone/ Formoterol inhaler

100/6 micrograms device: 1 dose when required (up to max 8 doses daily)

Do not use the 200/6 micrograms device for ‘as required’ therapy



Carbon footprint: LOW

DPI

#### Symbicort Turbohaler

Budesonide/ Formoterol dry powder inhaler

100/6 micrograms device: 1 dose when required (usual max 8 doses daily)  
200/6 micrograms device: 1 dose when required (usual max 8 doses daily)

Do not use the 400/12 micrograms device for ‘as required’ therapy



Carbon footprint: LOW

DPI

#### Fostair pMDI

Beclometasone/ Formoterol inhaler

100/6 micrograms device: 1 dose when required (up to max 8 doses daily)

Do not use the 200/6 micrograms device for ‘as required’ therapy



Carbon footprint: HIGH

pMDI

+ [spacer](#)



## B Step 1-2: Maintenance and Reliever Therapy (MART)

- MART therapy can be more effective than a separate salbutamol reliever. It is a continuation of the low-dose ICS-LABA used as reliever therapy, but with doses also taken on a regular basis.
- Fostair 100/6 (either DPI or pMDI) is licensed for MART therapy, with a maximum of 8 inhalations daily in total. Fostair 200/6 is not licensed and should not be prescribed for MART.
- Symbicort 100/6 and 200/6 DPI is licensed for MART. Additional “as required” doses are not normally needed, although can be used for a limited period during exacerbation. Symbicort 400/12 is not licensed and should not be prescribed for MART.
- Patients requiring excessive doses of MART therapy outside of an acute worsening (i.e. asthma is uncontrolled – [see here](#)) should have an urgent medical review where high-dose ICS regimens will be considered.

### Inhaler options on the NCL Joint Formulary

#### Fostair NEXThaler

Beclometasone/ Formoterol inhaler

**100/6 micrograms device:** 1 dose BD, and 1 dose when required (up to max 8 doses daily)

**Do not use the 200/6 micrograms device for MART regimen**



Carbon footprint: LOW

DPI

#### Symbicort Turbohaler

Budesonide/ Formoterol dry powder inhaler

**100/6 micrograms device:** 1 dose BD, and 1 dose when required (usual max 8 doses; up to 12 doses can be used)  
**200/6 micrograms device:** 1-2 dose(s) BD, and 1 dose when required (usual max 8 doses; up to 12 doses can be used)

**Do not use the 400/12 micrograms device for MART regimen**



Carbon footprint: LOW

DPI

#### Fostair pMDI

Beclometasone/ Formoterol inhaler

**100/6 micrograms device:** 1 dose BD, and 1 dose when required (up to max 8 doses daily)

**Do not use the 200/6 micrograms device for MART regimen**



Carbon footprint: HIGH





pMDI

+ [spacer](#)

# A & B Maintenance – Step 3: High-dose ICS/LABA combination therapy

- Consider for escalation to high-dose ICS/LABA therapy if the patient remains uncontrolled on medium dose ICS/LABA combination therapy OR MART therapy
- Patients using a high-dose ICS/LABA should NOT use a MART regimen; a SABA should be used as a reliever instead
- Always offer both a steroid treatment card AND a steroid emergency card

## Inhaler options on the NCL Joint Formulary

<p><b>Fostair NEXThaler</b> Beclometasone/ Formoterol inhaler</p> <p>High dose (BDP 2000mcg/day): 200/6 micrograms device: 2 doses BD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>		<p><b>Relvar Ellipta</b> Fluticasone furoate/ Vilanterol dry powder inhaler</p> <p>High dose (BDP 2000mcg/day): 184/22 micrograms device: 1 dose OD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>	
<p><b>Symbicort Turbohaler</b> Budesonide/ Formoterol dry powder inhaler</p> <p>High dose (BDP 1600mcg/day): 400/12 micrograms device: 2 doses BD</p> <p><b>Carbon footprint: LOW</b>      <b>DPI</b></p>		<p><b>Fostair pMDI</b> Beclometasone/ Formoterol inhaler</p> <p>High dose (BDP 2000mcg/day): 200/6 micrograms device: 2 doses BD</p> <p><b>Carbon footprint: HIGH</b>      <b>pMDI</b></p>	 <p>+ <a href="#">spacer</a></p>

# A & B Maintenance – Step 4: ICS/LABA/LAMA triple therapy (specialist initiation)

- Specialist services may consider the addition of a long-acting anti-muscarinic (LAMA) therapy, either via a single triple-therapy device or a high-dose ICS/LABA with a separate LAMA
- A direct BDP equivalence to the mometasone contained in Enerzair® could not be identified; the manufacturer considers the dose of mometasone to be “high-dose” (as per the IRIDIUM trial).
- Other options the specialist may discuss with the patient include theophylline, oral corticosteroids, long-term antibiotics and/or biologic therapy via tertiary services (discuss with the specialist service consultant for more information)
- Rescue packs (a course of oral corticosteroids +/- antibiotics which the patient may self-initiate during exacerbations) may sometimes be considered by the specialist on a patient-by-patient basis and communicated to the patient’s GP.
- Always offer both a steroid treatment card AND a steroid emergency card

## Inhaler options on the NCL Joint Formulary

### Enerzair Breezhaler

Indacaterol/ Glycopyrronium bromide/ Mometasone furoate inhalation powder capsules

Triple therapy (**considered high-dose steroid**):

114/46/136 micrograms device: 1 dose OD



Carbon footprint: LOW

DPI

### Combination of high-dose ICS/LABA with Spiriva Respimat (Tiotropium inhaler)

Triple therapy in separate devices

Choose a high-dose ICS/LABA from [here](#) (e.g. Relvar Ellipta 1 dose OD)

Plus LAMA with Spiriva Respimat 2.5 micrograms device: 2 doses OD



Carbon footprint: LOW

SMI

### High dose ICS/LABA

+

### Trimbow Beclometasone dipropionate/ Formoterol fumarate dihydrate/ Glycopyrronium bromide inhaler

#### Triple therapy

87/5/9 micrograms device (**Medium dose - BDP 1000 mcg/day**): 2 puffs BD

172/5/9 micrograms device (**High dose - BDP 2000 mcg/day**): 2 puffs BD



Carbon footprint: HIGH

pMDI

+ [spacer](#)

# Further information and advice

# Additional guidance

## Monitoring peak flow



- Monitoring peak flow readings can be a useful indicator to see if a change in treatment has been effective (or is equally as effective as their last treatment)
- A patient's best score is their usual best when they are feeling well
- A peak flow reading between 80% to 100% of their best score is usually considered normal
- A peak flow reading <80% requires action, based on the patient's circumstances (e.g., if the patient has recently had their treatment changed, consider reverting back to the previous therapy)
- Consider local infection prevention and control measures where appropriate

## Spacers

pMDIs should be used with a spacer where possible and certainly if inhaler technique is suboptimal without

Aerochamber range  
(with mask available in small, medium and large; mouthpiece device available in large only)



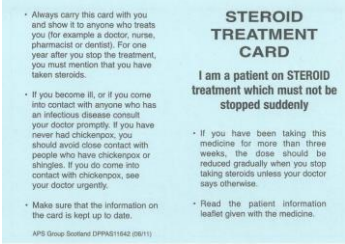

Volumatic device  
(available as a paediatric device with mask)



## Best practice tips

- **The main priority is to ensure that asthma is well controlled by using the right inhaler, tailored to the patient and their preference so they use it regularly and correctly**
- pMDI inhalers require patients to inhale slowly and steadily for 3-5 seconds, whereas DPI inhalers require a patient to inhale quickly and deeply. Matching the inhaler to the patient's abilities and preferences can improve technique and compliance.
- Consider using a standardised inhaler type across all inhalers used by a patient to improve compliance
- Adult asthma patients generally have sufficient inspiratory flow to use a dry powder inhaler, even when unwell.
- Ensure each patient is reviewed prior to switching therapy (i.e. do not switch a patient's inhaler therapy without review!)
- Try to avoid having SABA on repeat lists to avoid over-reliance and overprescribing. If SABA devices are being over ordered, take the opportunity to review their asthma control.
- It is usually better to have one type of device across all inhalers that a patient uses to avoid errors from using different inhaler techniques
- For information on acute asthma management, see [NICE CKS](#)
- Patients who start a new inhaler are eligible for review by their community pharmacist under the 'new medicines service'.  
Speak to the community pharmacist for more information

# Steroid safety cards in adults with asthma prescribed ICS or systemic steroids<sup>5-7</sup>

	Steroid TREATMENT card	Steroid EMERGENCY card
	 <p>The image shows a 'Steroid Treatment Card' with text including: 'Always carry this card with you and show it to anyone who treats you (for example a doctor, nurse, pharmacist or dentist). For one year after you stop the treatment, you must mention that you have taken steroids.' It also states 'I am a patient on STEROID treatment which must not be stopped suddenly' and provides instructions on what to do if the patient becomes ill or has contact with someone who has chickenpox.</p>	 <p>The image shows a 'Steroid Emergency Card' with the NHS logo. It includes 'IMPORTANT MEDICAL INFORMATION FOR HEALTHCARE STAFF' stating the patient is physically dependent on daily steroid therapy. It provides fields for Name, Date of Birth, NHS Number, Why steroid prescribed, and Emergency Contact. It also lists emergency treatment steps for adrenal crisis: 1) Immediate 100mg Hydrocortisone i.v. or i.m. injection, followed by 24hr continuous i.v. infusion of 200mg Hydrocortisone in Glucose 5% OR 50mg Hydrocortisone i.v. or i.m. qds (100mg if severely obese); 2) Rapid rehydration with Sodium Chloride 0.9%; 3) Liaise with endocrinology team. A QR code is provided for further information.</p>
<b>Purpose</b>	<p>To make patients aware of the risks involved with high-dose or prolonged courses of corticosteroids and to record details of the prescriber, drug, dosage, and duration</p> <p>This should be provided by the initiating clinician/centre, but check on every patient contact that the patient has a treatment card</p>	<p>For patients with or at risk of developing adrenal insufficiency from exogenous steroids for whom missed doses, illness or surgery put them at risk of adrenal crisis</p> <p>This should be provided by the prescribing clinician and the dispensing pharmacist should check that the patient has an emergency card</p>
<b>When to provide a steroid safety card</b>	<p><b>Supply</b> a steroid treatment card to patients on:</p> <ul style="list-style-type: none"> <li>High dose ICS (<math>\geq 1000</math>micrograms BDP/day equivalence)</li> <li>Oral corticosteroids for <math>&gt;3</math> weeks or <math>&gt;4</math> short courses in one year</li> </ul> <p><b>Consider</b> supplying a steroid treatment card to patients on medium dose ICS (<math>\geq 400</math>micrograms to <math>&lt;1000</math>micrograms BDP equivalence).</p> <p>Risks increase with concomitant use of intranasal and/or topical corticosteroids, or with medicines that inhibit metabolism of corticosteroids (cytochrome p450 inhibitors, such as ritonavir, itraconazole or ketoconazole)</p>	<p><b>Supply</b> a steroid emergency card to patients:</p> <ul style="list-style-type: none"> <li>On high dose ICS (<math>\geq 1000</math>micrograms BDP/day equivalence)</li> <li>On prednisolone 5mg/day or equivalent for <math>\geq 4</math> weeks across all administration routes (oral, inhaled, topical or intranasal)</li> <li>Patients taking <math>&gt;40</math>mg prednisolone or equivalent for <math>&gt;1</math> week or repeated courses of short oral doses</li> <li>Patients taking an oral glucocorticoid within 1 year of stopping long-term therapy</li> <li>Patients with established or suspected primary adrenal insufficiency (e.g., Addison's disease, congenital adrenal hyperplasia etc)</li> <li>Patients with established or suspected diagnosis of adrenal insufficiency due to hypothalamo-pituitary disease who are on permanent glucocorticoid replacement therapy or require glucocorticoids during illness or stress such as surgery</li> </ul> <p>See more information via the <a href="#">NPSA alert</a> and advice from <a href="#">SPS/Society for Endocrinology</a></p>
<b>How to obtain</b>	<p>Primary care: <a href="#">PCSE online portal</a></p> <p>Secondary care can order from the <a href="#">Xerox online portal</a></p>	<p>Primary care: <a href="#">PCSE online portal</a></p> <p>Secondary care can order from the <a href="#">Xerox online portal</a></p> <p><a href="#">Online printable PDF</a></p>

# Optimising inhaler therapy

The NCL Inhaler Sustainability Group encourages the use of inhalers with a lower carbon footprint where clinically appropriate. Any change in therapy should be undertaken on an individual patient basis after review of their overall asthma management. The information on this page is a suggested strategy for identifying patients who would benefit from an asthma review (those who are overprescribed reliever therapy), and tips on how to conduct the asthma review.

An overview of [example clinical scenarios](#) resulting from consultation can be seen on the next page

**IDENTIFY** – search for patients who will benefit from an asthma review

- Suggested search strategy: Asthmatic patients (without COPD) prescribed >6 SABA pMDI devices per annum

**REVIEW** – Consider factors which may result in uncontrolled asthma

- Discuss the rationale for the number of SABA pMDIs requested (additional devices might be requested without over reliance on reliever therapy); check symptom frequency (episodes per week, and whether it occurs at night)
- Determine the patient's current or historical use of inhaled maintenance therapy (e.g., ICS)
- Discuss whether the patient is compliant with their medication, and adherent to their management plan
- Check the patient's inhaler technique and whether they use a spacer
- Discuss whether the patient finds their pMDI easy to use
- Check for modifiable risk factors, such as exposure to irritants or smoking (in which case, offer immediate referral for treatment of tobacco dependence and behavioural support)
- Check if the patient has any allergies (Note: most DPIs in this guideline contain small amounts of lactose. Whilst the content is usually too small to cause problems in most lactose-intolerant patients, it's advisable to consider lactose content in patients with severe lactose allergy)
- Use the opportunity to check that the patient is up to date with their flu and COVID-19 vaccinations

**ENVIRONMENTAL IMPACT** – Describe the issues around carbon footprint and impact on the environment from inhalers

- Have a discussion with the patient around the carbon footprint of inhalers in general
- Inform the patient of the carbon footprint of their pMDI and how it compares with other inhaler types
- Use the [NICE patient decision aid](#) to discuss the inhaler options available to the patient, the difference in carbon footprint between devices and the potential impact from switching therapy
- Inform the patient that all used or expired inhalers should be taken to a pharmacy where it will be disposed of appropriately

**DECIDE** – Based on the consultation, discuss appropriate treatment options with the patient

- Consider the patient's views on their treatment and impact of their inhaler on the environment
- Consider if the patient has stable or unstable asthma
- In the case of uncontrolled asthma, consider whether the patient requires escalation to the next step in treatment
- Rationalise the number of reliever inhalers requested; ensure SABA is not added to the patient's repeat prescription list
- Choose an appropriate inhaled therapy from one of the options in this guideline – See the [example clinical scenarios](#) provided
- Share video demonstrations to help improve the patients' inhaler technique (e.g., [Asthma + Lung UK has produced videos for every device](#))
- After dose or device changes, review within 8 weeks post change to check compliance and asthma control

# Example clinical scenarios (see [above](#) for full consultation advice)

Adult asthmatic patients who are using >6 SABA devices in the previous 12 months identified, reviewed and consulted (as per "[optimising inhaler therapy](#)" page)

Patient requires their SABA pMDI on  $\geq 3$  times per week (uncontrolled)

Tolerates their pMDI & is compliant

Patient has not received maintenance therapy before

Patient requires their SABA pMDI on  $\geq 3$  times per week (uncontrolled)

Tolerates their pMDI & is compliant

Patient is currently using an ICS containing inhaler

Patient requires their SABA pMDI <3 times per week and not at night (well controlled asthma)

Does not have good inhaler technique with a pMDI

Patient requires their SABA pMDI <3 times per week and not at night (well controlled asthma)

Has good inhaler technique

This patient would benefit from escalating their asthma therapy to Step 1

- Demonstrate correct technique with a DPI and ask if the patient finds it easy to use and practical

If patient is willing to change device:

- Offer a DPI SABA device and offer a DPI ICS only device

If patient wishes to remain on a pMDI:

- Continue the pMDI SABA device and offer a pMDI ICS only device

This patient would benefit from escalating their asthma therapy to Step 2

- Demonstrate correct technique with a DPI and ask if the patient finds it easy to use and practical

If patient is willing to change device:

- Offer a DPI SABA device and consider a DPI option from the next step in therapy

If patient wishes to remain on a pMDI:

- Continue the pMDI SABA device and offer a pMDI from the next step in therapy

This patient would benefit from a review to optimise their choice of device which might be easier for them to use. Possible options are the use of an aid, use of a spacer, or considering a DPI

- Check dexterity and inspiratory capacity.
- If dexterity issues with a pMDI but has good inspiratory flow rate, consider a DPI
- If dexterity issues but has poor inspiratory flow rate, consider an aid to administer a pMDI and a spacer device
- Consider the next step in asthma maintenance therapy if appropriate

This patient currently has optimal asthma therapy. They may be interested in considering use of a DPI if they find it easier to use or carry, or due to the environmental impact of their pMDI.

- Demonstrate correct technique with a DPI and ask if the patient finds it easy to use and practical
- Check the patient is willing to trial an inhaler with a lower carbon footprint

If patient is willing to change device:

- Offer a DPI SABA device

If patient wishes to remain on a pMDI:

- Continue the pMDI SABA device

After dose or device changes, review within 8 weeks post change to check compliance and asthma control



# References and abbreviations

## Abbreviations:

Key: pMDI: Pressurised Metered Dose Inhaler DPI: Dry Powder Inhaler SMI: Soft Mist Inhaler BAI: Breath-Actuated Inhaler SABA: Short-Acting Beta2 Agonist ICS: Inhaled Corticosteroid LABA: Long-Acting Beta2 Agonist LTRA: Leukotriene Receptor Antagonist BDP: Beclometasone Dipropionate (where used, this denotes the equivalent BDP dose relative to the steroid administered in the dose advised) OD: Once daily BD: Twice daily QDS: Four times daily

## References:

1. North Central London Integrated Care System. North Central London Green Plan. North Central London Integrated Care System. Accessed September 18, 2022. <https://nclhealthandcare.org.uk/about/our-plans/ncl-green-plan/>
2. Asthma UK. Sustainable inhaler switch must not be at expense of people with asthma staying well. Asthma + Lung UK. Accessed September 18, 2022. <https://www.asthma.org.uk/about/media/news/sustainable-inhaler-switch-must-not-be-at-expense-of-people-with-asthma-staying-well/>
3. Janson C, Henderson R, Löfdahl M, Hedberg M, Sharma R, Wilkinson AJK. Carbon footprint impact of the choice of inhalers for asthma and COPD. *Thorax*. 2020;75(1):82-84. doi:10.1136/thoraxjnl-2019-213744
4. Wilkinson AJK. The Problem with Inhalers. Green Inhaler. Published November 21, 2018. Accessed September 18, 2022. <https://greeninhaler.org/the-problem-with-inhalers/>
5. Erskine D, Simpson H. Adrenal insufficiency and adrenal crisis - who is at risk and how should they be managed safely. Published March 10, 2021. Accessed September 19, 2022. [https://www.endocrinology.org/media/4091/spssfe\\_supporting\\_sec\\_final\\_10032021-1.pdf](https://www.endocrinology.org/media/4091/spssfe_supporting_sec_final_10032021-1.pdf)
6. Simpson H, Tomlinson J, Wass J, Dean J, Arlt W. Guidance for the prevention and emergency management of adult patients with adrenal insufficiency. *Clinical Medicine*. 2020;20(4):371-378. doi:10.7861/clinmed.2019-0324
7. Royal College of General Practitioners, Royal College of Physicians, Society for Endocrinology. National Patient Safety Alert: Steroid Emergency Card to support early recognition and treatment of adrenal crisis in adults. Accessed September 19, 2022. <https://www.england.nhs.uk/wp-content/uploads/2020/08/NPSA-Emergency-Steroid-Card-FINAL-2.3.pdf>
8. Nwaru BI, Ekström M, Hasvold P, Wiklund F, Telg G, Janson C. Overuse of short-acting  $\beta$ 2-agonists in asthma is associated with increased risk of exacerbation and mortality: a nationwide cohort study of the global SABINA programme. *European Respiratory Journal*. 2020;55(4). doi:10.1183/13993003.01872-2019
9. Global Initiative for Asthma (GINA). Global strategy for asthma management and prevention. Published May 2022. Accessed September 19, 2022. <https://ginahq.org/wp-content/uploads/2022/07/GINA-2022-Pocket-Guide-WMS.pdf>

## Additional resources

- Greener Practice: How to reduce the carbon footprint of inhaler prescribing - <https://s40639.pcdn.co/wp-content/uploads/Reducing-Carbon-Footprint-of-Inhaler-Prescribing-v3.3.2.pdf>
- AAC pathway for uncontrolled asthma in adults - <https://www.oxfordahsn.org/our-work/asthma-biologics-toolkit/aac-consensus-pathway-for-management-of-uncontrolled-asthma-in-adults/>

# Appendix 1: Inhalers on the NCL Joint Formulary


PATHWAY A

## Maintenance Step 1: Low-dose ICS/LABA

**Pulmicort Turbohaler**  
Budesonide

100mcg device:  
2 doses BD  
200mcg device:  
1 dose BD


**CO<sub>2</sub>: LOW**  
DPI



**Flixotide Accuhaler**  
Fluticasone propionate

50mcg device:  
2 puffs BD


**CO<sub>2</sub>: LOW**  
DPI



**Clenil Modulite**  
Beclomethasone

100mcg device:  
2 doses BD


**CO<sub>2</sub>: HIGH**  
pMDI



**Flixotide Evohaler**  
Fluticasone propionate

50mcg device:  
2 puffs BD

**CO<sub>2</sub>: HIGH**  
pMDI




## Maintenance Step 2: Low to medium dose ICS/LABA

**Fostair Nexthaler**  
Beclometasone/ Formoterol

100/6 mcg device  
Low dose: 1 dose BD  
Med dose: 2 doses BD


**CO<sub>2</sub>: LOW**  
DPI



**Relvar Ellipta**  
Fluticasone furoate/ Vilanterol

92/22 mcg device  
No low dose  
Med dose: 1 dose OD

**CO<sub>2</sub>: LOW**  
DPI




**Symbicort Turbohaler**  
Budesonide/ Formoterol

200/6 mcg device  
Low dose: 1 dose BD  
Med dose: 2 doses BD

Other devices available


**CO<sub>2</sub>: LOW**  
DPI



**Fostair pMDI**  
Beclometasone/ Formoterol

100/6 mcg device  
Low dose: 1 dose BD  
Med dose: 2 doses BD

**CO<sub>2</sub>: HIGH**  
pMDI




## Step 3: High dose ICS/LABA

**Fostair Nexthaler**  
Beclometasone/ Formoterol

200/6 mcg device:  
2 doses BD

**CO<sub>2</sub>: LOW**  
DPI



**Relvar Ellipta**  
Fluticasone furoate/ Vilanterol

184/22 mcg device:  
1 dose OD


**CO<sub>2</sub>: LOW**  
DPI



**Symbicort Turbohaler**  
Budesonide/ Formoterol

400/12 mcg device:  
2 doses BD


**CO<sub>2</sub>: LOW**  
DPI



**Fostair pMDI**  
Beclometasone/ Formoterol

200/6 mcg device:  
2 doses BD

**CO<sub>2</sub>: HIGH**  
pMDI




## Step 4: Triple therapy (ICS/LABA/LAMA)

**Energair Breezhaler**  
Indacaterol/ Glycopyrronium/ Mometasone

114/46/136 mcg device:  
1 dose OD


**CO<sub>2</sub>: LOW**  
DPI



**High-dose ICS/LABA with Spiriva Respimat (Tiotropium)**

High-dose ICS/LABA plus Spiriva Respimat  
2.5 mcg device:  
2 doses OD


**CO<sub>2</sub>: LOW**  
SMI



**Trimbow**  
Beclometasone/ Formoterol/ Glycopyrronium

87/5/9 mcg device: 2 puffs BD  
172/5/9 mcg device: 2 puffs BD

**CO<sub>2</sub>: HIGH**  
pMDI




## Reliever therapy - SABA

**Ventolin Accuhaler**  
Salbutamol – 200micrograms/dose

1 dose as required (max 1 dose QDS)

**CO<sub>2</sub>: LOW**  
DPI



**Easyhaler Salbutamol**  
Salbutamol – 6 month expiry once opened

1-2 puff(s) as required


**CO<sub>2</sub>: LOW**  
DPI



**Salamol CFC-Free inhaler**  
Salbutamol – contains ethanol

1-2 puff(s) as required


**CO<sub>2</sub>: HIGH**  
pMDI



**Salamol Easi-Breathe**  
Salbutamol

1-2 dose(s) as required

**CO<sub>2</sub>: HIGH**  
BAI



Next steps for PATHWAYS A or B

## Reliever therapy: As required low-dose ICS/LABA combination therapy (additional SABA not required)

**Fostair Nexthaler**  
Beclometasone/ Formoterol

100/6 mcg device:  
1 dose PRN (up to 8 doses daily)


**CO<sub>2</sub>: LOW**  
DPI



**Symbicort Turbohaler**  
Budesonide/ Formoterol

100/6mcg or 200/6mcg device:  
1 dose PRN (up to 8 doses daily)


**CO<sub>2</sub>: LOW**  
DPI



**Fostair pMDI**  
Beclometasone/ Formoterol

100/6 mcg device:  
1 dose PRN (up to 8 doses daily)

**CO<sub>2</sub>: HIGH**  
pMDI




## Maintenance Step 1-2: Maintenance and Reliever Therapy

**Fostair Nexthaler**  
Beclometasone/ Formoterol

100/6 mcg device:  
1 dose BD and 1 dose PRN (up to 8 doses daily)


**CO<sub>2</sub>: LOW**  
DPI



**Symbicort Turbohaler**  
Budesonide/ Formoterol

100/6mcg device:  
1 dose BD & 1 dose PRN  
200/6mcg device:  
1 dose BD & 1 dose PRN  
Usually up to 8 doses daily; max 12 doses daily


**CO<sub>2</sub>: LOW**  
DPI



**Fostair pMDI**  
Beclometasone/ Formoterol

100/6 mcg device:  
1 dose BD and 1 dose PRN (up to 8 doses daily)

**CO<sub>2</sub>: HIGH**  
pMDI



## Additional reliever therapy – SABA – choices as per Pathway A

**\*Always prescribe by brand only\***

PATHWAY B

## Spacers used with pMDIs where possible

