



# Children's Asthma Inhaler Choice Full Guidance

## Shortcuts to pathways and inhalers

- [Pathways for inhaled therapies 12-17y](#)
- [Inhalers on formulary 12-17y](#)
- [Pathways for inhaled therapies 5-11y](#)
- [Inhalers on formulary 5-11y](#)
- [Pathways and inhalers <5y](#)
- [Adult Asthma Inhaler Choice Guidance](#)

## Other related resources

- [NCL Asthma Attack in Children Clinical Pathway](#)
- [Respiratory Diagnostic Hublets \(RDHs\)](#)





# Background & rationale for creation of this formulary

- This document is aimed at all healthcare professionals involved in the care of Children and Young People (CYP) 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.
- This document is designed to be in line with [BTS/NICE/SIGN guideline \(2024\)](#) recommendations. Significant changes within this guideline including use of MART and AIR regimens mean that prescribing recommendations have changed considerably. Licenced options for CYP are different to those for adults, therefore a formulary of recommended inhalers is provided to help clinicians identify appropriate inhaler options for CYP.
- 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.
- CYP suffering from difficult to control or severe asthma are routinely under the care of a respiratory specialist paediatrician and have an individualised 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 the [BTS/NICE/SIGN guideline \(2024\)](#) and refer to [Respiratory Diagnostic Hublets \(RDHs\) - NCL ICB General Practice Website](#) for further information on local diagnostic pathways and algorithms.
- 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>
- The greenest asthma treatment is that which controls asthma the best so uses fewest reliever inhalers and acute admissions. However, this document highlights the environmental impact of inhalers on formulary in NCL and aims to guide clinicians and patients to choosing sustainable options where clinically suitable.

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# Objectives and goals of asthma care in NCL

# Key Objectives for the CYP asthma inhaler formulary in NCL



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## To Improve Efficacy and Safety of Prescribing for Asthma

- 1) Support clinicians to optimise asthma care following national [guidelines<sup>1</sup>\(BTS/NICE/SIGN guideline \(2024\)\)](#)
- 2) Reduce [SABA/salbutamol over-reliance](#) through improved prevention and [offering MART or AIR](#) where suitable
- 3) Avoid any CYP with asthma being managed **solely with SABA or LABA** without an ICS or ICS/LABA prescription
- 4) Focus on finding the right medication and device for each individual in consultation with them and their carers, through shared decision making
- 5) Assess and **optimise inhaler technique** and **preventer adherence** at every opportunity
- 6) To reduce the carbon footprint of inhaler prescribing

## What should we not do?

- 1) Do not undertake blanket switching if changing the device type or medication
- 2) Do not refuse to issue SABA when required – the key is to initiate full asthma review for SABA overuse rather than to prevent access to a potentially life-saving medication

## What is not covered in this document

- 1) For management of acute asthma, see the [NCL Asthma Attack in Children Clinical Pathway](#)
- 2) For **diagnosis** of asthma, refer to [BTS/NICE/SIGN diagnostic algorithm](#) and refer to [Respiratory Diagnostic Hubs \(RDHs\) - NCL ICB General Practice Website](#) for further information on local diagnostic pathways and algorithms

# Key Safety Issues and Messages



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## Avoid SABA over-reliance – why?

- 1) Overuse of SABA inhalers (**more than twice per week or more than three inhalers per year**) suggests that **asthma is poorly controlled** and would benefit from review and addressing preventer adherence and technique, addressing reversible triggers and/or stepping up on preventer treatment.
- 2) Overuse of SABA inhalers is associated with a **higher risk of exacerbations and mortality**<sup>2,3</sup> and SABA overuse is a common feature in child deaths due to asthma.<sup>4</sup>
- 3) Regular use of SABA, even for 1–2 weeks, is associated with **increased airway hyperresponsiveness, reduced bronchodilator effect and increased allergic response**.<sup>5</sup>
- 4) Currently available SABA MDI inhalers **do not have dose counters**. Deaths from asthma have been attributed to cases where inhalers have been emptied of active ingredients, but patients have been unaware of this.<sup>4</sup>

## How to reduce risk if an inhaler without a Dose Counter is needed (eg any SABA pMDI)

- 1) Consider whether a patient could use a DPI (e.g. Symbicort in a MART regimen) which does contain a dose counter.
- 2) If a SABA pMDI is unavoidable (e.g. under 5yo or step 1 management in 5-11yo) then:
  - a) Ensure CYP and families are aware that the inhaler will continue to “puff” after the 200 doses are all used
  - b) Share information about how to know when an inhaler is empty (ie dose counting): [How can I tell if my inhaler is empty? Patient Information Leaflet](#)
  - c) **Exceptions:** If a child has very severe asthma or concomitant food allergy, specialists may consider prescribing a back-up emergency SABA inhalers which is kept sealed and only opened if the child has severe wheeze despite using their normal inhaler and has called 999

## No one with asthma should ever be managed with a SABA or LABA alone<sup>1,2,3</sup>

- Anyone currently prescribed a SABA or LABA alone should be switched to a different regimen.

## No child should be prescribed a pMDI inhaler without a spacer<sup>6</sup>





# What is well-controlled asthma?

## 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:
  - Has had **no exacerbations** requiring oral corticosteroids; and
  - 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**; and
  - They **do not miss days of school** due to their asthma
- We recommend using an objective symptom score (e.g. ACT score) to assess asthma symptoms
- The NCL ICB dedicated “**NCL CYP asthma**” **EMIS template** allows you to calculate the ACT score

## Examples of poor asthma control...

- Low ACT score (<20)
- Overuse of SABA inhalers (e.g. >3 in a year)
- Underuse of preventer inhaler
- Exacerbations needing oral steroids or A&E attendance or admission
- Presence of any of the features not seen above in well-controlled asthma

# What should an asthma review include?



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## 8 Care Processes should be completed in every Asthma Review

1. assessment of control,
  2. related atopic conditions (eg allergic rhinitis),
  3. triggers and trigger avoidance,
  4. smoking exposure (including vaping),
  5. air quality,
  6. compliance/adherence,
  7. education on inhaler technique\*
  8. and development of a written Personalised Asthma Action Plan.
- The NCL ICB dedicated “**NCL CYP asthma**” **Emis template** helps prompt you to cover each Care Process
  - At the time of asthma review, it is also important to double check that the diagnosis is correct
  - Asthma reviews can also be good times to address:
    - Weight management
    - Mood
  - \*When a new inhaler is started, the initiating clinician is responsible for prescribing and explaining inhaler technique. This is especially important when specialist inhalers are initiated which primary care teams may be less familiar with.
  - Community pharmacists may be able to help reinforce technique through the New Medicines Scheme; however initial education should come from the prescriber.



# Common Co-morbidities to consider within an asthma review:



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## Atopy – especially allergic rhinitis

- Poorly controlled allergic rhinitis can worsen asthma control, so addressing this is essential in an asthma review.
- Prescribe hay fever treatments if needed for asthma control, even if they are available over the counter.
- Daily antihistamines, followed by intra-nasal corticosteroids (INCS) are indicated. [Allergic rhinitis | Health topics A to Z | CKS | NICE](#)
- It is important to share information on INCS technique: [How to use a nasal spray | Asthma + Lung UK](#)

## Smoking/Vaping

- Always ask about smoking and vaping.
- **Vaping** impacts lung function in young people and rates are **increasing** – this is important to discuss.
- Information to share about vaping: [Vaping and e-cigarettes | Asthma + Lung UK](#)
- Information to share if parents smoke: [How can passive smoking affect your child's lungs? | Asthma + Lung UK](#)
- Each borough has smoking cessation services for >12yo – offer this to patients and/or parents.

## Weight Management

- Children with obesity are at higher risk of asthma and at risk of poorer control
- It is important to address weight issues using a non-judgemental and supportive approach
- The NCL child weight management pathway has further information about how to approach consultations and resources available to help with weight management in children

## Impact on mood

- Asthma is associated with depression and anxiety in young people. Consider referral to local

# Approach to escalating therapy



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## 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?
  - Is the patient still being exposed to avoidable irritants?
  - Are there other related conditions also needing treatment (e.g. allergic rhinitis)?
  - Does the patient [smoke](#) or [vape](#)? 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 – check when prescriptions have been issued?
- 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](#)
- 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 (and 4-6 weeks after any exacerbations).

# Approach to de-escalating therapy



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## 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** 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 moderate dose MART (i.e. maintenance step 3), consider de-escalating to low dose MART (i.e. maintenance step 2).
- When stepping down from low dose MART or regular inhaled ICS therapy in >12yo, an AIR regimen (i.e. maintenance step 1) is suitable to avoid the risks associated with SABA monotherapy.
- 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 (and 4-6 weeks after any exacerbations).

# Prescribing for schools and other locations



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## Why might prescribing be different when children are at school?

- Schools may request an additional inhaler so the child can keep one in their medical room and use be supervised by staff should the child need it during school hours.
- In **secondary schools**, children are usually asked to carry an inhaler on them (+ spacer if MDI) at all times in addition to the inhaler stored at school.
- Schools should require a copy of a child's written Personal Asthma Action Plan (PAAP) to be kept alongside their school inhaler.
- School staff are not medically expert, and school nurses are not usually on site, therefore they need a written plan to be able to use inhalers safely.
- There is further guidance on policy for schools in the [Asthma Friendly Schools guide](#).

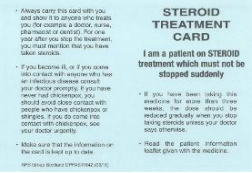
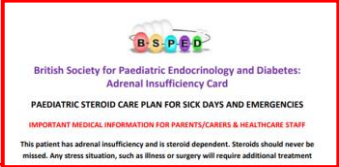
## Can schools buy inhalers?

- [Yes, they can](#). However, all children with asthma should also be able to access their own inhaler at school.
- Schools should have a PAAP for each child with asthma regardless.

## What about requests for inhalers at different locations (eg childminder or second carer's house)?

- These requests should be considered on a case-by-case basis after assessment of need by a clinician.
- Ideally a child should carry their inhaler with them at all times, but there may be family scenarios where duplicate sets of inhalers are needed.
- If a child is receiving more than 3 inhalers per year in total this should prompt review of their usage through discussion with the family to see whether they are overusing the inhalers or whether this is due to inhalers being kept in multiple locations but being used rarely.
- If a reliever is being used **>2 times per week** this suggests [poor asthma control](#) and should prompt an asthma review.
- Where a family has multiple inhaler locations, it is especially important that they are aware of the risks of empty inhalers continuing to "puff" if they are using [SABA pMDIs without dose counters](#) as it may be harder to keep track of how many doses have been used.

Steroid safety cards in children with asthma prescribed ICS or systemic steroids<sup>7-9</sup>

|                                       |  |  |
|---------------------------------------|--|--|
|                                       | Following the National Patient Safety Alert (2021), steroid cards are recommended to all adult patients. The alert did not cover children, but they can be considered for children and young people.   |  |
|                                       | Steroid TREATMENT card   | Steroid EMERGENCY card & care plan   |
|                                       |   |   |
| Purpose                               | 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.<br>This should be provided by the initiating clinician/centre but check on every patient contact that the patient has a treatment card.   | 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. This should be provided by the prescribing clinician, and the dispensing pharmacist should check that the patient has an emergency card.  |
| When to provide a steroid safety card | <p><b>Consider supplying</b> a steroid treatment card to patients on:</p> <ul style="list-style-type: none"><li>• <b>High dose ICS</b> (see boxes for ranges for age)</li><li>• <b>Oral corticosteroids</b> for &gt;3 weeks or <b>&gt;4 short courses in 1 year</b></li></ul> <div><p><b>ICS Dose ranges per 24h for 12y+</b></p><ul style="list-style-type: none"><li>• <b>Low dose</b> – 200-500mcg beclomethasone or budesonide or 100-250mcg fluticasone</li><li>• <b>Mod dose</b> – 600-800mcg beclomethasone or budesonide or 300-500mcg fluticasone</li><li>• <b>High dose</b> – 1000-2000mcg beclomethasone or budesonide or 500-1000mcg fluticasone</li></ul></div> <div><p><b>ICS Dose ranges per 24h for 5-12y</b></p><ul style="list-style-type: none"><li>• <b>Paediatric Low dose</b> – 100-200mcg beclomethasone or budesonide or 100mcg fluticasone</li><li>• <b>Paediatric Mod dose</b> – 300-400mcg beclomethasone or budesonide or 150-200mcg fluticasone</li><li>• <b>Paediatric High dose</b> – 500-800mcg beclomethasone or budesonide or 250-400mcg fluticasone</li></ul></div> <p><b>Consider</b> at a lower dose if there is 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 prednisolone 5mg/day or equivalent for ≥4 weeks across all administration routes (oral, inhaled, topical or intranasal)</li><li>• Patients taking &gt;40mg prednisolone or equivalent for &gt;1 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="#">BSPED</a></p> |
| How to obtain                         | Primary care: <a href="#">PCSE online portal</a> to order paper cards<br>Secondary care can order from the <a href="#">Xerox online portal</a><br><b>Prescribing will usually be guided by secondary or tertiary care.</b>   | The care plan can be downloaded from BSPED <a href="#">here</a><br><b>These patients will generally be under secondary or tertiary care.</b>   |

# Sustainability and the environmental impact of inhalers

## Environmental Impact of Inhalers

The NHS has committed to **reducing its carbon footprint by 51%** by 2025 to meet the target in the Climate Change Act, including a shift to dry powdered inhalers (DPI) to deliver a reduction of 4%.

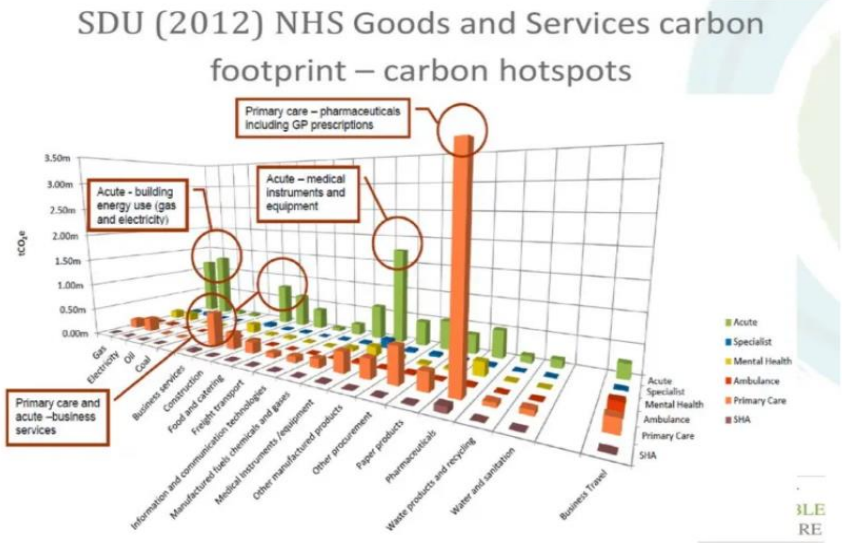
In recent years there has been growing awareness and concern from healthcare professionals and patients alike about the impact of respiratory inhalers on our environment, particularly pressurised Metered Dose Inhalers (**pMDIs**) which **account for 3.5% of the entire NHS carbon footprint**<sup>10</sup>



**pMDIs use a hydrofluoroalkane propellant**, which is a greenhouse gas that contributes to global warming.



**DPIs do not contain hydrofluoroalkane propellants**<sup>11</sup>, so from this perspective have less of a carbon footprint. However, DPIs require children and young people (CYP) to adapt to a new way of using an inhaler (from tidal breathing via a spacer) and will require training in the appropriate technique. The NHS aims to use more DPIs, where clinically appropriate.



## What to do as a clinician?

**Treatment with inhalers should only be initiated or changed when it is clinically warranted and with appropriate training.** It is important that patients have good inhaler technique and adherence to treatment in order to achieve good asthma control.

## Well controlled asthma has the lowest carbon footprint

Provide information to support low carbon footprint inhalers wherever possible and suitable: [NICE has produced an inhaler decision aid](#) to facilitate discussion about inhaler options in adult patients. This may also be useful for young people.

[Top tips – greener respiratory prescribing care in children and young people](#) – NHS England

Patients should be encouraged **to reduce inhaler waste** by not over-ordering their inhalers, looking after their inhalers, and returning used or unwanted inhalers to their pharmacy for environmentally safe disposal.



# Additional guidance – best practice tips

## 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 **ALWAYS** and certainly if inhaler technique is suboptimal without



Easy to prescribe the correct spacer on EMIS by:

- Age range
- With or without mask if adult size
- Use the spacer type preferred by the patient

## 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 should never be used without spacers** for children and young people
- Patients over 12y **generally have sufficient inspiratory flow to use a dry powder inhaler, even when unwell**. Many over 6y will also be able to.
- 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 [Asthma Attack in Children - NCL ICB General Practice Website](#)
- Patients who start a new inhaler are eligible for review by their community pharmacist under the 'new medicines service'



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# **MART and AIR prescribing for Children and Young People**



# What are MART and AIR therapy?



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## MART = Maintenance and Reliever Therapy

- One inhaler with low-dose inhaled corticosteroids (ICS) + fast-acting long-acting beta agonist (Formoterol LABA)
- Taken regularly **and** as-needed for symptoms
- Does not need a [SABA inhaler](#)

## AIR = Anti-Inflammatory Reliever

- ICS + formoterol combined inhaler used only when needed (no daily preventer)
- Simplified, flexible treatment for mild asthma
- Does not need a [SABA inhaler](#)

Both use **formoterol** – a LABA with a **rapid onset of action**

- Formoterol **works within 5 minutes** (vs 4 minutes for Salbutamol), therefore SABA is not required in addition to this

[Why should we use MART and AIR therapy for asthma?](#)

# Why should we use MART and AIR therapy?



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## MART and AIR work better and are safer:

- Reduce **severe asthma attacks** vs traditional regimens (ICS + SABA)<sup>13</sup>
- Combines quick relief with anti-inflammatory action – treats the underlying problem
- Avoids over-reliance on beta agonists alone
- All MART inhalers have dose counters which avoids the danger of not knowing a reliever inhaler is empty.

## MART and AIR can simplify treatment regimens

- MART simplifies to **one inhaler**, improving adherence
- Once **secondary school age**, children often need to carry their own inhaler with them – a single inhaler facilitates this
- MART can be safely and easily delivered via DPI inhalers which avoids the need to carry a spacer
- Adolescents report **stigma around inhaler use** - a discrete DPI device without a spacer may help reduce this.

## MART and AIR can reduce overall steroid exposure

- Reducing severe exacerbations reduces oral corticosteroid exposure
- AIR **reduces ICS exposure** in mild asthma<sup>14</sup>.

## What is the evidence base for this?

- <sup>1</sup>NICE/BTS/SIGN 2024: Asthma: diagnosis, monitoring and chronic asthma management. National Institute for Health and Care Excellence (NICE). Updated 2024. <https://www.nice.org.uk/guidance/ng80>
- <sup>13</sup>Beasley et al. 2020: ICS-formoterol reliever therapy stepwise treatment algorithm for adult asthma, European Respiratory Journal 2020 55: 1901407. [ICS-formoterol reliever therapy stepwise treatment algorithm for adult asthma | European Respiratory Society](#)
- <sup>14</sup>Beasley et al. 2019: Controlled trial of budesonide–formoterol as needed for mild asthma. N Engl J Med. 2019;380(21):2020–2030. [Controlled Trial of Budesonide–Formoterol as Needed for Mild Asthma | New England Journal of Medicine](#)
- GINA Report 2024 Global Initiative for Asthma (GINA). Global Strategy for Asthma Management and Prevention. 2024 Update. <https://ginasthma.org>.

## What can we say to patients when switching to MART or AIR?

# What can we say to patients when switching to MART or AIR?



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## Do:

### Share information from the Asthma UK website:

- [Maintenance and Reliever Therapy \(MART\) | Asthma + Lung UK](#)
- [AIR \(anti-inflammatory reliever\) | Asthma + Lung UK](#)

### Use a MART or AIR Written Personal Asthma Action Plan (PAAP)

- Use the NCL ICB dedicated “**NCL CYP asthma**” Emis template for your reviews
- Standardised **London-wide MART and AIR written asthma plans** will pop-up when closing the template if you tick the “written asthma plan” box

## Don't:

- Blanket switch patients to a new regimen
- Stop or delay SABA prescriptions without discussion

[MART and AIR prescribing in 12+ year olds](#)

[MART prescribing in 5-11 year olds](#)

We can **upgrade** your old blue inhaler to a new type of reliever.

Did you know there's a **new way to treat asthma** that works better?

Did you know that using a blue inhaler too much can make it stop working as well?

# When is MART or AIR suitable for 12+yo?



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## MART/AIR is the preferred pathway for over 12+yos with asthma

- Because it **works better**, is **safer**, **simplifies** treatment regimens and **can reduce overall steroid exposure**
- Start **all NEW** patients on AIR/MART
- Switch **all patients on an old “SABA as needed only” regimen** to AIR (even if control as good)
- There are licenced pMDI and DPI options for MART ([See RightBreathe for details of adolescent inhaler licensing](#))
- **SABA inhalers are not routinely needed** alongside as required low-dose ICS/LABA combination therapy or MART therapy
- Combined budesonide/formoterol inhalers can be **used as relievers**.

## When should I NOT use MART/AIR?

- Patients who are **already established** on an ICS + SABA regimen and their asthma is **well controlled** (i.e. no exacerbations and no interval symptoms)
- They have significant side effects with AIR/MART (e.g. significant tremor or tachycardia)
- The child or their carers are unable to use or understand an AIR or MART regimen
- An alternative regimen has been recommended by secondary or tertiary specialists.

## When should I switch to MART/AIR if a patient is already on another regimen?

## When should I start on MART (i.e. step 2 maintenance) and when on AIR (i.e. step 1 maintenance?)

# When should I switch to MART and which step should I start on for 12+yo?



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## When should I switch to MART/AIR if a patient is already on another regimen?

- Do not blanket switch patients but consider switching when:
  - A child is **not on ICS at all** (e.g. on an old regimen with **SABA alone**) – **all** of these patients should be switched to AIR or MART, even if control is adequate, as they have a higher risk of severe attacks
  - **Control is poor** on ICS + SABA
  - The child is **secondary school age** and would benefit from a single inhaler

## When should I start on MART (i.e. Step 2-3 maintenance) and when on AIR (i.e. Step 1 maintenance)?

- **Step 1 (AIR)** is suitable for patients with:<sup>18</sup>
  - Symptoms  $\leq 3$  days per week
  - Nighttime symptoms  $< 1$  night per week
  - No high-risk features (see box)
  - Patients switching from a SABA-only regimen who have good control
- **Starting at Step 2 or 3 (MART)** is suitable for:<sup>18</sup>
  - Symptoms 4+ days per week
  - Nighttime symptoms at least once per week
  - Low lung function
  - Patients switching from regular ICS regimens
  - Any patient with any high-risk features (see box) should start with MART (step 2 or 3)

### **\*High risk features**

- Severe exacerbation at presentation
- Hospital admission in the past year
- More than two courses of prednisolone in the past year
- Overuse of SABA (more than 3 issues in 12 months)
- Concomitant food allergy

**If present, start at step 2 or 3 (MART)**

# MART for 5–11-year-olds



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## What is licenced?

- Symbicort 100/6 DPI has a [licence for regular use as a preventer](#) and [\(from Sept 2025\) for MART in 6+ year olds](#)
- Symbicort 100/6 DPI in 5 year olds would be off-licence, although there is evidence of efficacy and it is used commonly in some UK regions.
- There are currently no MDI inhalers with a MART licence for 6-11 year olds.

## What is the evidence base for Symbicort 100/6 use for MART in 4–11-year-olds? [Bisgaard et al 2006](#) <sup>15</sup>

- Double-blind Randomised Controlled Trial of 341 children aged 4-11y with asthma uncontrolled on ICS
- Symbicort MART vs Symbicort regularly (+SABA) vs high paediatric dose ICS regularly (+SABA)
- MART prolonged the time to first exacerbation vs reg Symbicort( $p<0.001$ ) and vs reg hi dose ICS( $p=0.02$ )

## Can young children use a DPI?

- The majority of children over 5yo can generate sufficient inspiratory effort to use a Symbicort DPI<sup>16</sup>
- Using an [In-check](#) dial, inhaler whistle device or dummy inhaler can be useful in assessing ability

[\*\*NICE asks clinicians to “assess ability to manage MART” in 5-11 year olds – how do I do this?\*\*](#)

# How do I “assess ability to manage MART” in 5-11 year olds?



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**NICE asks clinicians to “assess ability to manage MART” in 5–11-year-olds – how do I do this? [17](#)**

## **1) MART should only be commenced in 5–11-year-olds by a [tier 3](#) (or above) trained clinician**

- Every GP practice should have at least one professional with [tier 3](#) CYP asthma training
- Online tier 3 training available free here: [NHSE elfh Hub \(e-lfh.org.uk\)](https://www.nhse.uk/elfh-hub) (Training takes ~6h to complete)
- Face to face training free for NCL professionals will be advertised here: [NCL Training Hub](#)

## **2) Check there are no contraindications to MART?**

- Do not start MART in primary care <12yo if a child has **had had a PICU admission or life-threatening attack**

## **3) Are there advantages to MART for the child at this age?**

- Strongly consider MART as children **approaching secondary school transition** where they may need to carry their own inhaler.

## **4) Pragmatically, are child and carers able to use MART?**

- Is the child **able to use a Symbicort Turbohaler (DPI)**? Ability should be formally assessed e.g. with an [Incheck Dial](#), inhaler whistle device or [dummy inhaler](#).
- Is there **adequate understanding and social support** to allow the child to follow a flexible MART regimen?
- Allocate **extra time** for the consultation in order to explain and educate on MART regimens and the MART PAAP.
- There is capacity for **more frequent reviews** and **prescribing alerts** for higher-than-expected usage. This is to ensure patient understanding and adequate inhaler technique, effectiveness of the regimen and review potential side effects of steroid toxicity or from higher dose formoterol use.

**[Back to MART for 5-11year old](#)**

# References and abbreviations



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## 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 AIR: Anti-inflammatory Reliever MART: Maintenance and Reliever Therapy

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# **Pathways for inhaled therapies and inhalers on formulary for CYP**

# Pathways for inhaled therapies for asthma for 12-17y – see inhalers

## New Diagnosis of Asthma at 12+ – MART pathway

Should we start at step 1 (AIR) or step 2-3 (MART)

Symptoms 4+ days per wk  
Night symptoms ≥1d per wk  
Abnormal lung function  
High risk features present:  
START WITH MART

Symptoms ≤3d per week  
Night symptoms <1d per week  
No high risk features

Anti-inflammatory Reliever (AIR) – Step 1:  
As required ICS/formoterol combination therapy  
No SABA required

Maintenance – Step 2:  
Low dose Maintenance & Reliever Therapy (MART)  
No SABA required\*

Maintenance – Step 3:  
Moderate dose Maintenance & Reliever Therapy (MART)  
No SABA required\*

Control poor at step 3 despite good adherence and inhaler technique

Retest FENO (if available) and blood eosinophils

FENO <20ppm and/or  
Eosinophils <0.4 x10<sup>9</sup>/L

No improvement

Secondary care referral

FENO >20ppm  
or  
Eosinophils >0.4 x10<sup>9</sup>/L

Secondary care referral

Maintenance – Step 4:  
Regular high dose ICS/LABA or ICS/LABA/LAMA  
(Specialist initiation)

ALWAYS switch  
to AIR or MART

If control poor,  
switch to MART

If control poor,  
switch to MART

Previous/alternative  
pathway

No preventer or  
non-adherent  
\*\*\*NEVER  
INITIATE SABA  
ONLY REGIMEN\*\*\*

+ SABA as  
needed

Maintenance –  
Step A1:  
Low dose ICS  
therapy

+ SABA  
as needed

Maintenance –  
Step A2:  
Low to medium  
dose ICS+LABA  
combination

+ SABA as  
needed

Unable to  
tolerate  
MART

Secondary care  
referral

+ SABA as  
needed

Maintenance – Optional  
step

Consider a 8-12 weeks trial of either:  
LTRA (montelukast)  
or LAMA  
in addition to moderate-dose MART

ICS Dose ranges per 24h for 12y+

- **Low dose** – 200-500mcg beclomethasone or budesonide or 100-250mcg fluticasone
- **Mod dose** – 600-800mcg beclomethasone or budesonide or 300-500mcg fluticasone
- **High dose** – 1000-2000mcg beclomethasone or budesonide or 500-1000mcg fluticasone

Escalate to next step in therapy in uncontrolled asthma

De-escalate to previous step in therapy in controlled asthma

# Inhalers on the NCL Joint Formulary for 12-17y – see pathway

PREFERRED PATHWAY (AS PER NICE)

| AIR Step 1: PRN<br>ICS/formoterol  | Maintenance Step 2: low dose<br>MART  | Maintenance Step 3: moderate<br>dose MART   |
|--|---|---|
| <b>Symbicort Turbohaler</b><br>Budesonide/ Formoterol                        | <b>Symbicort Turbohaler</b><br>Budesonide/ Formoterol   | <b>Symbicort Turbohaler</b><br>Budesonide/ Formoterol   |
| 200/6mcg device:<br>1 dose PRN (up to 8 doses<br>daily)                      | 100/6mcg device:<br>1 dose BD & 1 dose PRN<br>Usually up to 8 doses daily; max 12<br>doses daily<br>Max 6 at any one time | 200/6mcg device:<br>1-2 dose BD & 1 dose PRN<br>Usually up to 8 doses daily; max 12<br>doses daily<br>Max 6 at any one time   |
| CO <sub>2</sub> : LOW<br>DPI   | CO <sub>2</sub> : LOW<br>DPI  | CO <sub>2</sub> : LOW<br>DPI  |
| <b>Duoresp Spiromax</b><br>Budesonide/ Formoterol                            | <b>Duoresp Spiromax</b><br>Budesonide/ Formoterol   | <b>Duoresp Spiromax</b><br>Budesonide/ Formoterol   |
| 160/4.5mcg device:<br>1 dose PRN (up to 8 doses<br>daily)                    | 160/4.5mcg device:<br>1 dose BD & 1 dose PRN<br>Usually up to 8 doses daily<br>Max 6 at any one time                      | 160/4.5mcg device:<br>2 dose BD & 1 dose PRN<br>Usually up to 8 doses daily<br>Max 6 at any one time                          |
| CO <sub>2</sub> : LOW<br>DPI   | CO <sub>2</sub> : LOW<br>DPI  | CO <sub>2</sub> : LOW<br>DPI  |
| <b>Symbicort pMDI§</b><br>Budesonide/ Formoterol                             | <b>Symbicort pMDI</b><br>Budesonide/ Formoterol   | <b>Symbicort pMDI</b><br>Budesonide/ Formoterol   |
| 100/3mcg device:<br>2 dose PRN (up to 16 doses<br>a day)<br>§ NB: Unlicensed | 100/3mcg device:<br>2 dose BD & 2 dose PRN<br>Up to 16 doses daily<br>Max 12 at any one time                              | 100/3mcg device:<br>2-4 dose BD & 2 dose PRN<br>Usually up to 16 doses daily; max 24<br>doses daily<br>Max 12 at any one time |
| CO <sub>2</sub> : HIGH<br>pMDI   | CO <sub>2</sub> : HIGH<br>pMDI  | CO <sub>2</sub> : HIGH<br>pMDI  |

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



Share a video: How to  
use your inhaler

Optional step:

**Montelukast**

(Mod dose MART+)  
Montelukast 5-10mg nocte  
8-12 week trial  
Discuss risk of neuropsychiatric side  
effects before prescribing



CO<sub>2</sub>: LOW  
PO

**LAMA: Spiriva Respimat**

(Moderate dose MART+)  
Spiriva Respimat  
2.5 mcg device:  
2 doses OD  
8-12 week trial



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

**\* MART inhalers  
are the preferred  
choice for 12+y  
SABA is not  
required with  
MART**

Specialist initiation – specialist should issue first prescription and  
give inhaler technique education

Step 4: High dose ICS/LABA

**Symbicort Turbohaler**  
Budesonide/ Formoterol

400/12 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

**Seretide**

Fluticasone / Salmeterol

250 Evohaler  
2 doses BD  
DO NOT use for MART



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

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

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

**Duoresp Spiromax**

Budesonide/ Formoterol

320/9mcg device:  
1 dose BD



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

**Consider steroid safety  
card for high dose ICS**

Spacers should always be used with pMDIs:

Offer patient's preferred spacer type

Prescribe by age and +/- mask



PREVIOUS/ALTERNATE PATHWAY

| Maintenance Step A1: Low-dose<br>ICS                        | Maintenance Step A2: Low to medium dose ICS/LABA   |   |
|---|--|---|
| <b>Pulmicort Turbohaler*</b><br>Budesonide                  | <b>Symbicort Turbohaler*</b><br>Budesonide/ Formoterol   | <b>Relvar Ellipta*</b><br>Fluticasone furoate/ Vilanterol |
| 100mcg device:<br>2 doses BD<br>200mcg device:<br>1 dose BD | 200/6 mcg device<br>Low dose: 1 dose BD<br>Mod dose: 2 doses BD<br>Other devices available         | 92/22 mcg device<br>No low dose<br>Mod dose: 1 dose OD    |
| CO <sub>2</sub> : LOW<br>DPI                                | CO <sub>2</sub> : LOW<br>DPI   | CO <sub>2</sub> : LOW<br>DPI                              |
| <b>Clenil Modulite*</b><br>Beclomethasone                   | <b>Seretide*</b><br>Fluticasone / Salmeterol   | <b>Duoresp Spiromax*</b><br>Budesonide/ Formoterol        |
| 100mcg device:<br>2 doses BD                                | Low dose: 50 Evohaler<br>2 doses BD<br>Mod dose: 125 Evohaler<br>2 doses BD<br>DO NOT use for MART | 160/4.5mcg device:<br>1-2 dose BD                         |
| CO <sub>2</sub> : HIGH<br>pMDI                              | CO <sub>2</sub> : HIGH<br>pMDI   | CO <sub>2</sub> : LOW<br>DPI                              |

RELIEVERS

Additional reliever therapy – SABA – Only for Step 4 or Alternative Pathway

**Easyhaler Salbutamol\***

Salbutamol – 6 month expiry once opened

1-2 puff(s) as required  
Dose indicator goes red when  
20 doses remain



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

**Bricanyl Turbohaler\***

Terbutaline

1-2 puff(s) as required  
Dose indicator goes red when  
20 doses remain



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

**Salamol CFC-Free MDI\***

Salbutamol – contains ethanol

1-2 puff(s) as required  
NO DOSE COUNTER



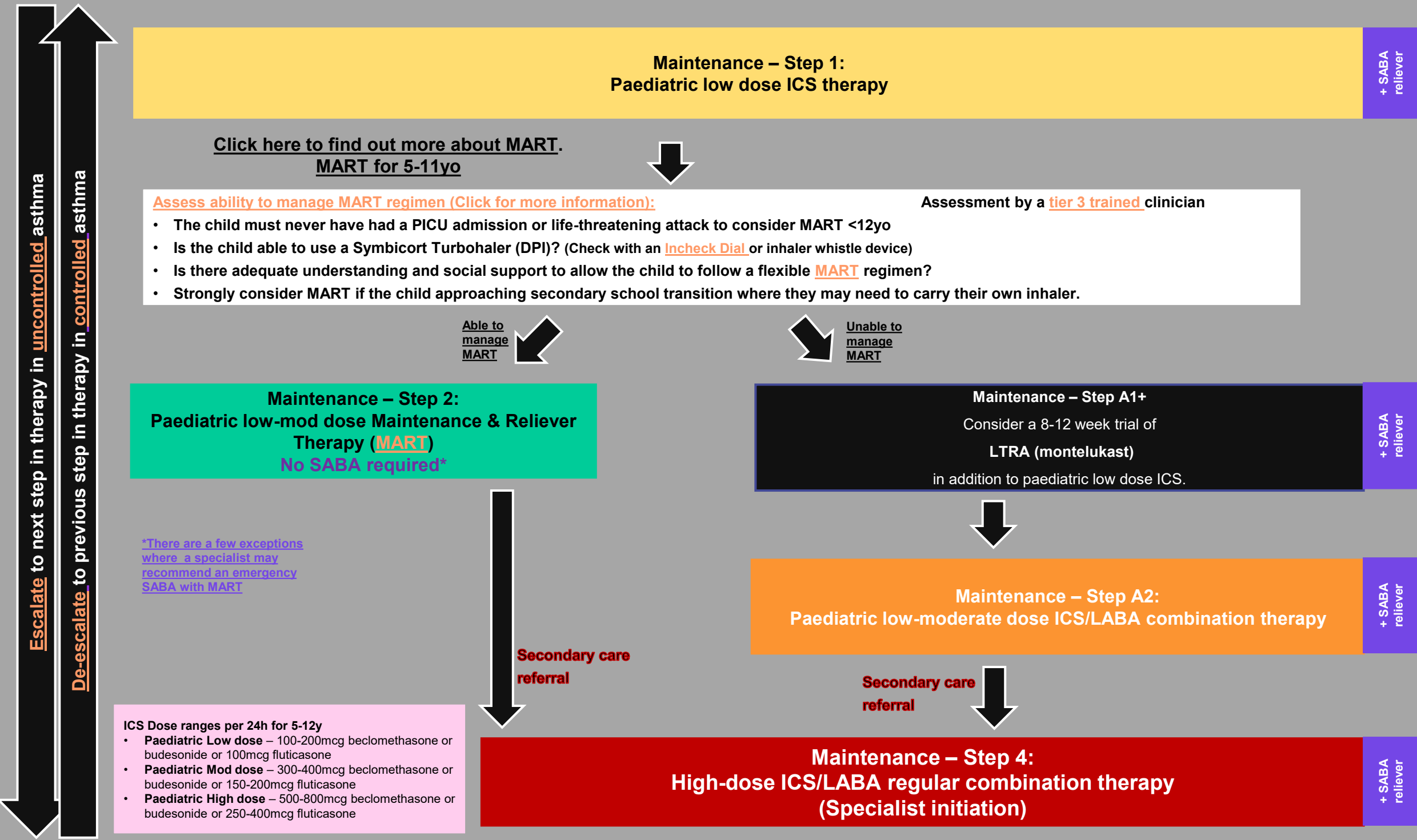
CO<sub>2</sub>: HIGH  
pMDI

SABA prescribing advice

Dose Counters and Indicators

- Children have died after using empty Salbutamol inhalers.
- Inhalers will still “puff” when no active ingredient remains.
- Patients and parents must be counselled to count doses when used and discard inhaler after 200 doses.

# Pathways for inhaled therapies for asthma for 5-11y – see inhalers



# Inhalers on the NCL Joint Formulary for 5-11y – see pathway

UNIVERSAL START POINT

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

**Maintenance Step 1: Low-dose ICS**

**Clenil Modulite**  
Beclomethasone


50mcg device:  
2 doses BD  
100mcg device:  
1 dose BD

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

**Pulmicort Turbohaler**  
Budesonide

100mcg device:  
1 dose BD

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



[Share a video: How to use your inhaler with a spacer](#)


MART PATHWAY

**Maintenance Step 2: Low paed dose MART**

**Symbicort Turbohaler**  
Budesonide/ Formoterol

100/6mcg device:  
1 dose BD & 1 dose PRN  
Max 8 doses/24h;  
Max 4 doses at any one time

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



[Share a video: How to use your symbicort turbohaler](#)

Spacers should always be used with pMDIs:  
Offer patient's preferred spacer type  
Prescribe by age and +/- mask



CONVENTIONAL PATHWAY

**Maintenance – step A1+:**

**Montelukast**

(Low dose ICS +) montelukast 4-5mg nocte  
8-12 week trial  
Discuss risk of neuropsychiatric side effects before prescribing

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

**Maintenance Step A2: Paed low - mod dose ICS/LABA**

**Seretide**  
Fluticasone / Salmeterol

Low dose: 50 Evohaler  
1 dose BD  
Mod dose: 50 Evohaler  
2 doses BD  
DO NOT use for MART

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

**Symbicort Turbohaler**  
Budesonide/ Formoterol

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

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

Other devices available

Specialist initiation – specialist should issue first prescription and give inhaler technique education

**Step 4: Mod-high dose MART**

**Symbicort pMDI**  
Budesonide/ Formoterol

100/3mcg device:  
1-2 dose BD&2 dose PRN  
Max 16 doses/24h;  
Max 8 doses at any one time

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

**Symbicort Turbohaler**  
Budesonide/ Formoterol

100/6mcg device:  
1-2 dose BD&1 dose PRN  
Max 8 doses/24h;  
Max 4 doses at any one time

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

**Step 4: High dose ICS/LABA**

**Seretide**  
Fluticasone / Salmeterol

125 Evohaler  
2 doses BD  
DO NOT use for MART

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

[Consider steroid safety card for high dose ICS](#)

RELIEVERS

**Additional reliever therapy – SABA – Only for Step 4 or Alternative Pathway**

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

1-2 puff(s) as required  
Dose indicator goes red when 20 doses remain

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

**Bricanyl Turbohaler**  
Terbutaline

1-2 puff(s) as required  
Dose indicator goes red when 20 doses remain

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

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

1-2 puff(s) as required  
NO DOSE COUNTER

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

[SABA prescribing advice](#)

**Dose Counters and Indicators**

- Children have died after using empty Salbutamol inhalers.
- Inhalers will still “puff” when no active ingredient remains.
- Patients and parents must be counselled to count doses when used and discard inhaler after 200 doses.

# Pathways for inhaled therapies for asthma for <5y and inhalers

Child under 5yo with:

- Suspected asthma and symptoms indicating need for maintenance therapy or
- Severe acute episodes of difficulty breathing and wheeze

**Spacers** should  
always be used

Offer patient's preferred type

Prescribe by age and +/- mask



**Trial of treatment: Consider 8 to 12 week trial of Paediatric Low-dose ICS**

No resolution of  
symptoms with  
trial of treatment

Symptoms improve during trial

Consider stopping ICS and SABA after trial & review symptoms after further 3 months

Symptoms recur on stopping

Restart Paediatric low-dose ICS

Titrate up to Paediatric mod-dose ICS if needed

Secondary care  
referral

Consider an LTRA (Montelukast) in addition to ICS for trial of 8-12 weeks, then  
stop if ineffective or side effects

Secondary care referral

**Refer to Secondary Care for further investigation and management**

**Clenil Modulite**  
Beclomethasone

50mcg device:

2 doses BD



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

**Clenil Modulite**  
Beclomethasone

50mcg device:

2 doses BD



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

**Clenil Modulite**  
Beclomethasone

100mcg device:

2 doses BD



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

**Montelukast**

(Low dose ICS +)  
montelukast 4-5mg  
nocte

8-12 week trial  
Discuss risk of neuropsychiatric  
side effects before prescribing



CO<sub>2</sub>: LOW  
PO

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

1-2 puff(s) as  
required

NO DOSE COUNTER



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

SABA prescribing  
advice

+ SABA reliever

**Share a video:  
How to use your  
inhaler with a  
spacer**

Escalate to next step in therapy in uncontrolled asthma  
De-escalate to previous step in therapy in controlled asthma



# Who to contact for more help?

## Questions about this guidance or about specialist prescribing?

- NCL ICB medicines optimisation team: [nclicb.medsoptimisation@nhs.net](mailto:nclicb.medsoptimisation@nhs.net)

## Contact your local paediatric secondary care service via ERS A&G:

- UCLH
- Whittington
- Royal Free Hospital (Hampstead, Barnet and North Middlesex)

## If you have a patient who has reached secondary care referral threshold, refer to paed at:

- UCLH
- Whittington
- Royal Free Hospital (Hampstead, Barnet and North Middlesex)

## If you have a patient at high risk of asthma attack, refer to your local asthma community nursing team:

- **Complete EMIS referral form:** *Paediatric Community Asthma Nurse Referral*
- **Where to find the form:** Shared Folder > NCL ICB Resource Publisher > Global Documents > Paediatric
  - **Barnet:** [rf-tr.paedbarnetasthmanurse@nhs.net](mailto:rf-tr.paedbarnetasthmanurse@nhs.net)
  - **Enfield:** [rf-tr.paedasthmanurseenfield@nhs.net](mailto:rf-tr.paedasthmanurseenfield@nhs.net)
  - **Haringey:** [whh-tr.paedasthmanurseharingey@nhs.net](mailto:whh-tr.paedasthmanurseharingey@nhs.net)
  - **Camden:** [rf-tr.ccnatopyclinic@nhs.net](mailto:rf-tr.ccnatopyclinic@nhs.net)
  - **Islington:** [whh-tr.childnurseclinicisl@nhs.net](mailto:whh-tr.childnurseclinicisl@nhs.net)

## Further training for front line staff:

- Every clinician working with children with asthma must have [Tier 2 training](#) (takes 1-2h on [ELFH](#))
- At least one clinician in each GP practice must **have** [Tier 3 training](#) (on [ELFH](#) or in person via [Training Hub](#))



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### Community High Risk Asthma Nursing Service Eligibility Criteria:

- Confirmed diagnosis of asthma and age 5-18, with:
- 2+ presentations a year with asthma (any setting)
  - 1 asthma hospital admission
  - 1+ oral steroid course in a year due to asthma
  - 6+ SABA prescriptions in a year
  - Poor adherence or parental/social factors
  - Asthma-related poor school attendance