NEL Primary and Secondary Care Adult Asthma Prescribing Guidelines

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Abbreviations	
ACT	Asthma Control Test
ACQ6	Asthma Control Questionnaire 6
BD	Twice daily
DPI	Dry Powder Inhaler
FeNO	Fractional Exhaled Nitric Oxide
ICS	Inhaled corticosteroid
LAMA	Long acting muscarinic antagonist
LABA	Long acting beta 2 agonist
MART	Maintenance and Reliever Therapy
mcg	micrograms
MDI	Metered Dose Inhaler
OCS	Oral Corticosteroids
OD	Once daily
SABA	Short acting beta2 agonist
SE	Side effects

Introduction

This updated guideline focuses on ensuring that the most clinically effective, green, and cost-effective asthma treatments are those that a patient will and can take correctly. It highlights the importance of competent inhaler technique assessment and adherence considerations before deciding on the drug molecule. The guide also promotes prescribing by brand and device as well as combination inhalers over separate inhalers prescribing. It supports choosing inhalers devices requiring similar inhalation technique. These will in turn drive our agenda of improved asthma care and greener inhaler outcomes. In addition, we also advise on MART therapy as an alternative to traditional separate reliever and fixed dose preventer inhalers highlighting the future direction of where MART sits within asthma treatment ladder. This will support the drive away from SABA reliance and positively impact clinical care and the NHS low carbon agenda.

First assess Inhaler Technique to decide if patients could use Dry Powder Inhaler devices.
See Table 1 for patients with ability and shared decision to use Dry Powder Inhaler (DPI) devices as first line supporting the green agenda.

<table>
<tr><th colspan="6">Table 1. Adult Asthma Guidelines DPI options</th></tr>
<tr><td colspan="6">Review patient 4 to 8 weekly and consider moving patients across treatment pathway if symptoms remain uncontrolled despite optimising patient's personalised asthma care.
Refer to secondary care if patients have ≥ 2 exacerbations despite optimising all modifiable risk factors and treatment.</td></tr>
<tr><td>Step 1 and New Diagnosis</td><td>Step 2</td><td>Step 3</td><td colspan="3">Steps 4 and 5 consider referral to secondary care for asthma phenotyping and consideration for biologics.</td></tr>
<tr><td>PRN low dose combination ICS-formoterol reliever use</td><td colspan="5">Maintenance and Reliever Therapy (MART) REGIMENS</td></tr>
<tr><td>Patients with infrequent symptoms and with no exacerbation risk factors:
Symbicort® Turbohaler® 200/6
Dose: 1 puff as needed
(max 8 puffs daily)</td><td colspan="2">Fostair® NEXThaler® 100/6 (max 8 puffs daily)
Symbicort® Turbohaler® 200/6 (max 8 puffs daily)
Dose: 1 to 2 puffs BD and as needed
Consider MART for all patients and particularly those likely to be non-adherent to regular ICS preventer therapy. Stop PRN SABA while on MART*.</td><td colspan="3">Specialist care may prescribe a high-dose ICS containing fixed-dose preventer with MART reliever for selected high-risk patients with concerns of adherence and life-threatening exacerbations off license.</td></tr>
<tr><td colspan="6">FIXED-DOSE PREVENTER AND RELIEVER REGIMENS</td></tr>
<tr><td colspan="6">PRN SABA DPI to be used alongside fixed dose ICS containing options below: Salbutamol Easyhaler 100mcg 1- 2 puffs PRN</td></tr>
<tr><td rowspan="2">Low Dose ICS

Beclometasone Easyhaler® 200mcg 1 puff BD

Pulmicort® Turbohaler® 200mcg 1 puff BD

All patients who report any SABA usage must be on inhaled steroids.</td><td rowspan="2">Low Dose ICS/LABA

Atectura® Breezhaler® 125/62.5mcg 1 puff OD

Fostair® NEXThaler® 100/6 mcg 1 puff BD

Symbicort® Turbohaler® 200/6 mcg 1 puff BD

(+/- Montelukast 10mg ON) Consider 6-week trial and stop if no benefit, caution neuropsychiatric SEs</td><td rowspan="2">Medium Dose ICS/LABA

Atectura® Breezhaler® 125/127.5mcg 1 puff OD

Fostair® NEXThaler® 100/6 mcg 2 puffs BD

Relvar® Ellipta® 92/22mcg 1 puff OD

Symbicort® Turbohaler® 200/6 mcg 2 puffs BD

(+/- Montelukast 10mg ON) Consider 6-week trial and stop if no benefit, caution neuropsychiatric SEs</td><td>Eosinophils ≥0.3 on treatment →</td><td>High Dose ICS/LABA
Atectura® Breezhaler® 125/260mcg 1 puff OD

Fostair® NEXThaler® 200/6 mcg (note contains 120 doses) 2 puffs BD

Relvar® Ellipta® 184/22 mcg 1 puff OD</td><td rowspan="2">High Dose Triple ICS/LABA/LAMA

Enerzair® Breezhaler® 114/46/136 mcg 1 puff OD</td></tr>
<tr><td>→
Eosinophils <0.3 and / or with obstructive spirometry</td><td>Medium Dose Triple (Note licensing for COPD i.e. airways obstruction) ICS/LABA/LAMA

Trelegy® Ellipta® 92/55/22 mcg 1 puff OD

Trimbow® NEXThaler® 88/5/9 mcg 2 puffs BD</td></tr>
</table>

N.B. Inhalers are listed in alphabetical order and not in order of preferences. ***Consider prescribing a one-off rescue pack Salamol® MDI 100 via spacer and teach patient tidal breath technique for use in an asthma exacerbation emergency.**

For patients unsuitable for DPI devices, see Table 2 for Metered Dose Inhaler (MDI) options to be used via spacers

<table>
<tr><th colspan="6">Table 2. Adult Asthma Guidelines MDI options</th></tr>
<tr><td colspan="6">Review patient 4 to 8 weekly and consider moving patients across treatment pathway if symptoms remain uncontrolled despite optimising patient’s personalised asthma care. Refer to secondary care if patients have ≥ 2 exacerbations despite optimising all modifiable risk factors and treatment.</td></tr>
<tr><td>Step 1 New Diagnosis</td><td>Step 2</td><td>Step 3</td><td colspan="3">Steps 4 and 5 consider referral to secondary care for asthma phenotyping and consideration for biologics.</td></tr>
<tr><td>PRN low dose combination ICS-formoterol reliver use</td><td colspan="5">Maintenance and Reliever Therapy (MART) REGIMENS</td></tr>
<tr><td>Patients with infrequent symptoms and with no exacerbation risk factors:
**Luforbec® MDI 100/6
Dose: 1 puff as needed
(max 8 puffs daily)</td><td colspan="2">Luforbec® MDI 100/6
Dose: 1 to 2 puffs BD and as needed
(max 8 doses daily in total)

Consider MART for all patients and particularly those likely to be non-adherent to regular ICS preventer therapy. Stop PRN SABA while on MART*.</td><td colspan="3">Specialist care may prescribe a high-dose ICS containing fixed-dose preventer with MART reliever for selected high-risk patients with concerns of adherence and life-threatening exacerbations off license.</td></tr>
<tr><td colspan="6">FIXED-DOSE PREVENTER AND RELIEVER REGIMENS</td></tr>
<tr><td colspan="6">PRN SABA to be used alongside fixed dose ICS containing options below: Salamol® MDI 100mcg 1-2 puffs PRN via spacer
Teach patients tidal breath technique via spacer in the event of an asthma exacerbation emergency</td></tr>
<tr><td rowspan="2">Low dose ICS

Soprobec® MDI 200 mcg
1 puff BD
Via spacer

All patients who report any SABA usage must be on inhaled steroids.</td><td rowspan="2">Low dose ICS/LABA

Luforbec® MDI 100/6 mcg
1 puff BD via spacer

Combisal® MDI 50/25mcg
2 puffs BD via spacer

(+/- Montelukast 10mg ON) Consider 6-week trial and stop if no benefit, caution neuropsychiatric SEs</td><td rowspan="2">Medium dose ICS/LABA

Luforbec® MDI 100/6 mcg
2 puffs BD via spacer

Combisal ®MDI 125/25mcg
2 puffs BD via spacer

(+/- Montelukast 10mg ON) Consider 6-week trial and stop if no benefit, caution neuropsychiatric SEs</td><td>Eosinophils ≥0.3 on treatment →</td><td>High Dose ICS/LABA

Luforbec® MDI 200/6 mcg
2 puffs BD via spacer

Combisal® MDI 250/25 mcg
2 puffs BD via spacer</td><td rowspan="2">High Dose Triple ICS/LABA/LAMA

Trimbow® MDI 172/5/9 mcg
2 puffs BD via spacer</td></tr>
<tr><td>Eosinophils <0.3 and / or with obstructive spirometry →</td><td>Medium Dose Triple ICS/LABA/LAMA

Trimbow® MDI 87/5/9 mcg
2 puffs BD via spacer</td></tr>
</table>

N.B. Inhalers are listed in alphabetical order and not in order of preferences. ***Consider prescribing a one-off rescue pack Salamol® MDI 100 via spacer and teach patient tidal breath technique for use in an asthma exacerbation emergency. ** Current unlicensed use but equivalent to Symbicort Turbohaler on DPI section (NEL respiratory network consensus to include the use of a combination ICS-formoterol MDI product in Step 1 for PRN use).**

Asthma checklist cycle for personalised asthma care for all patients (Adapted from GINA 2021)

REVIEW
- Symptoms -ACT/ ACQ6
- Exacerbations
- Side effects to medications
- Bone health if 2 or more oral steroid courses yearly
- Lung function and FeNO
- Patient satisfaction and understanding of personalised Action plan

ASSESS
- Diagnosis confirmation
- Symptom control and modifiable risk factors e.g. tobacco dependence
- Comorbidities
- Inhaler Technique
- Adherence
- Patient preference and goals

ADJUST
- Treat modifiable risk factors and comorbidities
- Shared decision making supporting adherence
- Inhaler technique
- Education
- Adjust asthma medications according to pathway

Inhaler Technique Considerations on Initiation of Inhalers

Does the patient have the right inspiratory effort to inhale the contents from a Dry Powder Inhaler Device?

Ask patient to breathe out comfortably and lift chin up
Can patient take a QUICK DEEP breath in 2 to 3 seconds?
If unsure after observing patient, consider using training devices e.g. training whistles, in-check dial to assess

YES	NO
Consider a DPI [Low carbon option] Consider dexterity ability, adherence and patient preference, benefit of OD vs BD dosing for drug and device decisions.	Consider Metered Dose Inhalers (MDI) [High carbon option] via an aerochamber® plus vu and /or Soft Mist Inhalers (SMI) [Low carbon option]

TRAIN:
If healthcare professional (HCP) is competent, show using placebos and provide links to videos.
If HCP is not competent in inhaler technique checks, to provide links to videos and refer to a competent HCP

Prescribe a consistent device type for all inhalers

Prescribe combination inhalers where possible

Prescribe by Brand and Device

Ongoing Inhaler Technique Reviews should be assessed and optimised with standardised seven step checks based on UK Inhaler Group Standards by a competent HCP. https://www.ukinhalergroup.co.uk/

Right Breathe- Inhaler prescribing information https://www.rightbreathe.com/
Asthma & Lung UK- How to use your inhaler https://www.asthma.org.uk/advice/inhaler-videos/

Mometasone potency equivalence for Atectura and Enerzair Breezhaler

ICS dose level	Asmanex Twisthaler (Mometasone)	Atectura Breezhaler (Mometasone / Indacterol)	Enerzair Breezhaler (Mometasone/ Indacterol/Glycopyrronium)
Low	200mcg	80mcg	Not investigated
Medium	400mcg	160mcg	80mcg
High	800mcg	320mcg	160mcg

The pharmaceutical interactions of glycopyrronium increases the fine particle mass of mometasone in Enerzair Breezhaler. This means that the smaller nominal mometasone dose still delivers a comparable ICS dose to the lung as per table above.

Buhl R, Nikolaev I, Tillmann HC, Vaidya S, Bartels C, Jain M, Jauernig J, Kerstjens HAM. Dose bridging data for mometasone furoate in

Asthma Symptom control

In the past 4 weeks, has the patient had:		Level of asthma symptom control		
Daytime asthma symptoms more than twice/week?	Yes /No	Well controlled none of these	Partially controlled 1-2 of these	Uncontrolled 3-4 of these
Any night waking due to asthma?				
Reliever needed for symptoms more than twice/week?				
Any activity limitation due to				

Adherence to inhaled steroid containing therapy and Support		
FeNO suppression readings where available		
Inhaler dose counter checks and electronic sensors data where available		
Medication Possession Ratio (MPR)- calculation via prescription refill data $\frac{\text{No. of doses prescribed (in a fixed time frame)}}{\text{No. of doses expected (in the same fixed time frame)}} \times 100\%$		
E.g. patient on Symbicort® 400/12 turbohaler at 2 puffs bd (60doses/inh) and collects 1 inhaler monthly over 12 month period on GP records MPR % = $\frac{60 \text{ doses } \times 12 \text{ months}}{4\text{doses} \times 30\text{days} \times 12\text{months}} \times 100\% = 50\%$		
Good Adherence ≥75%	Suboptimal 50- 74%	Poor <50%
3min Test of Adherence to Inhalers (TAI) self Questionnaire to help identify non-adherence https://taitest.com/ https://www.taitest.com/docs/Guia_Usuario_TAI_EN.pdf		

Examples of unintentional non-adherence	Suggested Support
Critical errors with inhaler technique	Correction and optimising technique via a competent HCP
Financial barriers	Suggest pre-payment certificates; increasing quantities of inhalers per prescription
Forgets	Phone reminders, consider inhalers with OD dosing pending suitable inhaler technique
Poor understanding of disease and treatment	Education support

Steroids

Gradual withdrawal of oral steroids should be considered in the following patients:

- Received more than 40mg prednisolone (or equivalent) daily for more than 1 week.
- Been given repeated doses in the evening
- Received more than 3 weeks' treatment
- Recently received repeated courses
- Taken a short course within 1 year of stopping long term therapy

A Blue steroid treatment card and a Red Steroid Emergency Card with Sick day rule counselling should be issued to the following patients

- Receiving high dose ICS (>1000BDP or equivalent)
- On long term oral steroids e. prednisolone 5mg daily or equivalent for 4 weeks or longer and for 12 months after stopping oral steroids
- Taking 40mg prednisolone daily or equivalent for longer than 1 week or repeated short courses of oral corticosteroids.
- Patients taking concurrent steroids via multiple routes (e.g. inhaled and/ or oral steroids with intramuscular or intra-articular glucocorticoid injections)

https://www.england.nhs.uk/2020/08/steroid-emergency-card-to-support-early-recognition-and-treatment-of-adrenal-crisis-in-adults/

https://www.endocrinology.org/adrenal-crisis

Stepping up treatment

Check patients asthma control based on symptoms, limitation of activities and use of rescue medication.

Numerical asthma control tools for assessing symptom control are: ACQ (asthma control questionnaire) and Asthma Control Test (ACT).

Consider increasing preventer therapy if using short acting beta agonist 3 times a week or more.

All patients should have their adherence checked prior to increasing or commencing new asthma treatments.

Any patients not responding to ICS/LABA treatment should have their diagnoses confirmed before increasing treatment.

Are symptoms due to comorbid conditions e.g. chronic rhinitis, gastroesophageal reflux

Stepping down treatment

Consider stepping down when good asthma control has been achieved and maintained for 12 months, to find the lowest treatment that controls the patients symptoms and minimises exposure to side effects.

Choose an appropriate time for step-down (no respiratory infection, patient not travelling, not pregnant).

Step down to reduce the ICS dose by 25-50% at yearly intervals .

References

- BTS/SIGN Asthma Guidelines 2019. The BTS/SIGN Guideline for the management of asthma published on July 2019.
- NICE Asthma: diagnoses, monitoring and chronic asthma management guidelines published February 2020.
- UK Inhaler group. Inhaler standards and competency document. Scullion J, Respiratory Nurse Consultant, University hospital of Leicester NHS Trust. Contributors Murphy, Anna. Consultant Pharmacist, University Hospitals of Leicester. Published December 2019.
- Global Initiative for Asthma. Global Strategy for Asthma management and prevention. 2022 update.
- Electronic British National Formulary. BMJ Group and Pharmaceutical Press. Accessed Aug 2022
- Electronic Medicines Compendium. Medicines.org.uk/emc/ Accessed September 2022
- QOL Tech. Measurement of Health-Related Quality of life & Asthma control. 1999; Available at: https://www.qoltech.co.uk/miniaqlq.html. Accessed October 2022.
- Asthma.com. Asthma Control Test Available at: http://www.asthma.com/additional-resources/asthma-control-test.html. Accessed October 2022.

Appendix 1 Example MART Action Plan

ASTHMA Maintenance and Reliever Therapy (MART) ACTION PLAN

MART is a combined ICS and LABA treatment in a single inhaler, containing both ICS and a fast-acting LABA. It is used for both daily maintenance therapy and the relief of symptoms as required. Licensed MART Inhalers include: Fostair® NEXThaler® 100/6; Symbicort® Turbohaler® 200/6; Duoresp® Spiromax 160/4.5; Fobumix® Easyhaler 160/4.5; Luforbec® MDI 100/6; Fostair® MDI 100/6

CONTROLLED ASTHMA	INCREASING ASTHMA SYMPTOMS	ASTHMA EMERGENCY
My asthma is **WELL CONTROLLED** when: I have no difficulty sleeping because of my asthma symptoms. I have no symptoms of wheeze, cough or chest tightness day or night. I can “work & play” without difficulty. I do not need additional puffs of my asthma medication. Usual best peak flow: _________L/min My MART Inhaler is ______________________________ My regular maintenance dose is: ________ puff/s morning and evening. (Use spacer if your inhaler is an MDI) My reliever dose is: One additional puff when needed for relief of my asthma symptoms up to a maximum of 8 puffs in a day.	If over a period of two to three days my asthma is **GETTING WORSE** when: My asthma is causing me to wake during night-time or early morning. I am having difficulty at work or play because of my breathing. I have cough, wheeze, or chest tightness which causes me to need my reliever three times a week or more. I should continue my MART Inhaler twice daily and when required, and I should check my peak flow If my peak flow is **less than**…………… (75 % of my best) **AND/ OR I'm using 6 or more puffs a day** of my inhaler for a period longer than a few days**, please make an appointment with your GP practice for a review.** **IF I SUDDENLY FEEL WORSE or IF THERE IS NO IMPROVEMENT AND**: I have been prescribed a rescue pack of Prednisolone, I **should contact my GP practice** for advice on whether to start these for at least 5 days or until better**. If unable to contact GP, then I should start the pack.** □ If I **do not** have rescue steroids, **I should contact my GP practice for an urgent review.** □	**SIGNS OF AN EMERGENCY** My MART inhaler is not relieving my symptoms. I am having extreme difficulty in breathing. I am too breathless to speak in full sentences. My peak flow is …………………. (Less than 50% of my usual best). Sit upright and keep calm. Loosen tight clothing. Take one puff immediately. (If I am using an MDI device take one puff through my spacer). Then try taking slow steady breaths. If there is no improvement take another puff of my inhaler every 2 minutes up to a maximum of 8 puffs in total. If I do not feel better after taking my inhaler as instructed above: - **SEEK MEDICAL ADVICE IMMEDIATELY BY CALLING 999 OR GO DIRECTLY TO HOSPITAL** - If my symptoms improve, **still make an urgent same day appointment** with the GP practice for a review.

Appendix 2 Example Inhalers used in asthma management with images. See NEL formulary for full list

ICS		ICS/LABA		ICS/LABA/LAMA	
DPI	MDI	DPI	MDI	DPI	MDI
Beclometasone Easyhaler® 200mcg Pulmicort Turbohaler® (Budesonide) 100, 200, 400mcg Budesonide Easyhaler® 100, 200, 400mcg	Clenil Modulite® MDI (Beclometasone) 100, 200mcg Sobrobec® MDI (Beclometasone) 100, 200, 250mcg	**Budesonide/ Formoterol** Duoresp Spiromax® 160/4.5mcg (MART); 320/9 Fobumix Easyhaler® 80/4.5mcg (MART); 160/4.5mcg (MART); 320/9mcg Symbicort Turbohaler® 100/6 (MART); 200/6 (MART); 400/12	**Beclometasone/ Formoterol** Fostair® MDI 100/6 (MART); 200/6 Luforbec® MDI 100/6 (MART); 200/6	Enerzair Breezhaler® 114/46/136mcg (Indacaterol/ Glycopyrronium/ Mometasone)	Trimbow ® MDI 87/5/9; 172/5/9mcg (Beclometasone/ Formoterol/ Glycopyrronium)
		Fostair NEXThaler® 100/6 (MART); 200/6 (Beclometasone/ Formoterol)	**Fluticasone propionate/ Salmeterol** Combisal® MDI 50/25; 125/25; 250/25 Sereflo® MDI 125/25; 250/25 Seretide® MDI 50/25		
		Fusacomb Easyhaler® 250/50; 500/50mcg (Fluticasone propionate/ Salmeterol)			
		Relvar Ellipta® 92/22; 184/22mcg (Fluticasone Furoate/ Vilanterol)			
		Atectura Breezhaler® 125/62.5; 125/127.5; 125/260mcg (Indacterol/ Mometasone)			

SABA	
DPI	MDI
Salbutamol Easyhaler® 100mcg	Salamol® MDI 100mcg (Salbutamol)
Bricanyl Turbohaler® 100mcg (Terbutaline)	

Spacer to prescribe with MDIs:
Aerochamber Plus Flow-Vu Mouthpiece

Low carbon footprint device choice