Lancashire & South Cumbria Medicines Management Group

East Lancashire Health Economy Medicines Management Board

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Asthma Treatment Guideline for Adults (aged 17 and over)

Sharon Andrew

MLCSU

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VERSION CONTROL.
Please access via the LMMG website to ensure that the correct version is in use.

Version Number	Amendments made	Author	Date
1.0	Document to supersede LMMG Asthma summary guideline for adults and over 12s (March 2014)	Sharon Andrew	January 2019
2.0	Update in line with new evidence / national guidelines	Sharon Andrew	February 2022

Background Information and the Rationale for Guideline Development.
There have recently been developments in the treatment of Asthma with the publication of new national/international guidelines, the licensing of new drugs and devices and requests by clinicians to use new inhalers. As the developments affect the current LSCMMG Asthma guideline, the LSCMMG requested a review and update of the guideline.

Acknowledgement: members of the Lancashire and South Cumbria Clinical Asthma Group led by Dr Aashish Vyas for their contributions.

Contents

1. INTRODUCTION

Asthma guidelines have been drawn up jointly by The British Thoracic Society (BTS) and Scottish Intercollegiate Guidelines Network (SIGN), the most recent were published in 2019.[1] More recently, there are also Global Initiative For Asthma (GINA) Report 2021.[2]

Following the publication of National Institute for Health and Care Excellence (NICE) guidelines (NG80)[3] for diagnosis, monitoring and chronic asthma management (2017), there are now two national guidelines, for England at least, with some (apparently) striking differences.

The evidence base considered by the BTS/SIGN and NICE guideline development groups is broadly the same for each guideline, but the methodology used to produce recommendations is significantly different:

- SIGN methodology is a multidisciplinary clinically led process which employs robust critical appraisal of the literature, coupled with consideration of pragmatic studies to ensure that guidelines provide clinically relevant recommendations.
- NICE methodology overlays critical appraisal of the literature with health economic modelling, with interpretation supported by advice from a multidisciplinary guideline development group

These different processes have resulted in some discrepancies in recommendations made by BTS/ SIGN and NICE.

2. PURPOSE AND SUMMARY

This asthma summary guideline has been created in collaboration with the Lancashire and South Cumbria Clinical Asthma Group led by Dr Aashish Vyas, with the aim to provide a consistent approach to asthma treatment for adults within the Lancashire and South Cumbria region.

3. SCOPE

This guideline covers the chronic management of asthma only. These guidelines should **NOT** be referred to for the management of acute asthma in adults >17 years of age.

This guidance does not override the individual responsibility of health professionals to make decisions in exercising their clinical judgement in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Please note that not all ICS / LABAs have a UK marketing authorisation for use in young people aged under 18 for this indication.

For full prescribing information please refer to the BNF and SPC ensuring correct SPC according to dose is consulted.

4. ADDITIONAL INFORMATION

MART = Maintenance And Reliever Therapy. This is when a combination inhaler is to be used by a patient as both the maintenance and reliever therapy, as part of a specific treatment regime.
A separate reliever inhaler i.e. SABA, is not needed.

MART is the preferred treatment pathway if clinically appropriate for the patient.

TRIPLE INHALERS i.e. ICS +LABA+LAMA – several are now licensed for use in the treatment of asthma e.g. Trimbow (87/5/9 and 172/5/9) (MDI), Enerzair (114/46/136) (DPI). However, these guidelines only recommend them to be initiated by a clinical expert in primary / secondary care, in those patients who are not adequately controlled with a maintenance combination of a long-acting beta2-agonist and a high dose (Trimbow 172/5/9 and Enerzair) or medium dose (Trimbow 87/5/9) of an inhaled corticosteroid, who experienced one or more asthma exacerbations in the previous year.

5. Overarching Principles of the Guideline

- **The right inhaler for the patient is the one they can and will use – spend time working with the patient to find the right device and regimen**

- Ensure good inhaler technique right from the start and also that each patient has an asthma action plan in place

- **MART first** - This guidance promotes the use of MART as the initial regimen of choice in patients with Asthma. However, this will not suit every patient and it is OK to use regular preventer and separate reliever if this works better for the patient.

    - NICE 2017 and GINA 2021 guidelines / report on the management of asthma place significant focus on Maintenance and Reliever Therapy regimens (MART / SMART).
    - MART regimens can help overcome poor concordance with ICS inhalers and historic over reliance on beta2 agonist reliever therapy.
    - There is also evidence these regimens can reduce exacerbation frequency by reducing the number of inhalers.
    - This also can reduce the environmental impact.

- **Spacer for MDI** – Use of a Spacer device is recommended for all pMDIs: e.g. A2A, Aerochamber Plus or Volumatic; check SPCs for device and spacer compatibility.

- Any new inhaler or change in regimen should be reviewed after 4 weeks

6. Environmental Impact 'Green' Agenda

The UK Government has committed to cutting the UK's greenhouse gas emissions by 78% of 1990 levels by 2035 and achieving net zero by 2050.

- Inhalers make up 3% of all NHS carbon emissions.
- According to NICE, MDIs have estimated carbon footprints of 500g, dry powder inhalers (DPIs) have estimated carbon footprints of 20g CO2eq per dose.
- For comparison, estimated carbon footprints indicate an average trip (9 miles) in a typical car produces 2,610g CO_2eq (or 290g CO_2eq per mile). [5]
- More than 26 million prescriptions for MDIs were written in primary care in England in 2016/17. They made up 70% of UK inhaler sales in 2011, compared with fewer than half in other European countries and just 10% in Sweden.[4]
- Where several inhalers could be viable options, clinicians and patients should:
    - opt for the more environmentally friendly option, to help to cut the health service's carbon footprint.
    - A DPI should be the first choice for inhaled therapy, if clinically appropriate
    - If an MDI is required then an MDI with the lowest carbon emissions / recycling potential should be used.
    - A MART regimen will also minimise carbon emissions due to a separate reliever inhaler not being required.
    - If patient is on a fixed dose regimen, then a regular check should be done on the number of SABA inhalers the patient is receiving. This would give an indication of overuse / possible poor inhaler technique / poor asthma control.
- Data on the carbon footprint of individual inhalers is very limited, therefore the following tables provide indicative rather than actual values. The figures are based on usual daily doses and median CO_2eq values per inhaler as estimated by PrescQIPP.[5]
- NICE have produced a patient decision aid which highlights that some inhalers have a much higher carbon footprint than others. This aid will help people with asthma, alongside health professionals, to identify which inhalers could meet their needs and control their symptoms. https://www.nice.org.uk/guidance/ng80/resources/patient-decision-aid-pdf-6727144573[6]

Examples of Indicative Carbon Footprint of Different Steroid / Combination Inhaler Devices

Device	Active ingredients	CO_2eq per puff (g) midpoint value	Number of puffs per 28 days (max)	Annual CO_2eq (g)	Equivalent annual car miles
Fostair Nexthaler 100/6µg* (DPI)	formoterol fumarate dihydrate 6µg and beclometasone dipropionate 100µg /puff	7.41	112	10789	**37**
Fostair Nexthaler 200/6µg (DPI)	formoterol fumarate dihydrate 6µg and beclometasone dipropionate 200µg /puff	7.42	112	10804	**37**
Fostair 100/6µg * (MDI)	formoterol fumarate dihydrate 6µg and beclometasone dipropionate 100µg /puff	93.74	112	136485	470
Fostair 200/6µg (MDI)	formoterol fumarate dihydrate 6µg and beclometasone dipropionate 200µg /puff	117.94	112	171721	592
DuoResp Spiromax 160/4.5 µg * (DPI)	formoterol fumarate dihydrate 6µg and budesonide 200µg /puff	6.8	112	9901	**34**
Fobumix Easyhaler 160/4.5µg * (DPI)	formoterol fumarate dihydrate 4.5µg and budesonide 160µg /puff	4.04	112	5882	**20**
Symbicort 100/6µg Turbohaler* (DPI)	formoterol fumarate dihydrate 6µg and budesonide 100µg /puff	4.83	112	7032	**24**
Symbicort 200/6µg Turbohaler* (DPI)	formoterol fumarate dihydrate 6µg and budesonide 200µg /puff	6.67	112	9712	**33**
Luforbec 100/6µg inhaler* (MDI)	formoterol 6µg +beclomethasone 100µg /puff	93.74	112	136485	**470**
Qvar Autohaler 100µg (MDI)	beclometasone dipropionate 100µg /puff	101.75	56	74074	255
Pulmicort Turbohaler 200µg (DPI)	budesonide 200µg /inhalation	14	56	10192	**35**
Flixotide Accuhaler 100µg (DPI)	fluticasone propionate 100µg /inhalation	14	56	10192	**35**
Relvar Ellipta 92/22µg (DPI)	vilanterol 22 µg and fluticasone furoate 92 µg /puff	26	28	9464	**32**
Relvar Ellipta 184/22µg (DPI)	vilanterol 22µg and fluticasone furoate 184µg /puff	26	28	9464	**32**
Clenil Modulite 100µg (MDI)	beclometasone dipropionate 100µg /puff	82.76	112	120499	416
Flixotide Evohaler 50µg (MDI)	fluticasone propionate 50µg /puff	158	112	230048	793
Flutiform 50/5µg (MDI)	formoterol fumarate dihydrate 5µg and fluticasone propionate 50µg /puff	295	112	429520	1481
Flutiform 125/5µg (MDI)	formoterol fumarate dihydrate 5µg and fluticasone propionate 125µg /puff	295	112	429520	1481
Flutiform 250/10µg (MDI)	formoterol fumarate dihydrate 10µg and fluticasone propionate 250µg /puff	295	112	429520	1481

Atectura Breezhaler 125 micrograms / 260 micrograms (DPI)	indacaterol 125µg / mometasone furoate 260µg per 1 dose	13	28	4732	**16**
Enerzair Breezhaler (DPI)	indacaterol 114µg / glycopyrronium 46µg / mometasone 136 µg inhalation powder, hard capsules	17	28	6188	**21**

* estimates do not include additional "prn" use as part of MART regimens

Examples of Indicative Carbon Footprint of Different SABA Inhaler Devices

Device	Active ingredients	CO_2eq per puff (g) midpoint value	Number of puffs per 28 days (max)	Annual CO_2eq (g)	Equivalent annual car miles
Salamol 100µg Easi-Breathe inhaler (MDI)	Salbutamol 100µg / puff	59.8	224	174,138	600
Salamol 100µg inhaler CFC free (MDI)	Salbutamol 100µg / puff	60.4	224	175,885	606
Ventolin 100µg Evohaler (MDI)	Salbutamol 100µg / puff	141	224	410,592	1,416
Ventolin 200µg Accuhaler (DPI)	Salbutamol 200µg / puff	10	112	3,360	11.6
Airomir 100µg inhaler (MDI)	Salbutamol 100µg / puff	48.6	224	141,523	488
Airomir 100µg Autohaler (MDI)	Salbutamol 100µg / puff	48.6	224	141,523	488
Easyhaler Salbutamol sulfate 100µg dry powder inhaler (DPI)	Salbutamol 100µg / puff	3.1	224	9,027	31
Easyhaler Salbutamol sulfate 200µg dry powder inhaler (DPI)	Salbutamol 200µg / puff	3.1	112	4513.6	15.6

Individual MDIs have significantly different carbon footprints and if an MDI is needed, then one with a lower carbon foot print should be considered. Please consult Attachment 1 of https://www.prescqipp.info/our-resources/bulletins/bulletin-295-inhaler-carbon-footprint/ for further information.

7. MART REGIMEN -PREFERRED PHARMACOLOGICAL TREATMENT PATHWAY FOR ADULTS (AGED ≥17) – NO SABA REQUIRED

Note: Patient Compliance and Inhaler Technique should be checked at each visit, every step change in treatment and at least once a year**.**
Prescribe by brand to ensure device continuity.
Whenever a change in medication / dose is made, consider 'diagnosis'

The aim of asthma management is control of the disease. Complete control is defined as: • no daytime symptoms • no night-time awakening due to asthma • no need for rescue medication • no asthma attacks • no limitations on activity including exercise • normal lung function (in practical terms FEV_1 and/or PEF >80% predicted or best) • minimal side effects from medication.

Approach to management
1. Start treatment at the level most appropriate to initial severity.
2. Achieve early control.
3. Maintain control by: • increasing treatment as necessary • decreasing treatment when control is good

MART regimen

ICS (**Low** Dose) + **LABA in MART regimen**

If still poorly controlled asthma (low ACT score of <22 or >1 exacerbation in 12 months)

Note: Not all inhalers are licensed for MART. Consider patient preference and ability to adhere to regime – **inform patient of maximum dose**

Note: Consider addition of LTRA If still uncontrolled and patient has atopic symptoms and there is evidence of good compliance and inhaler technique
Review in 2 weeks (if no improvement stop LTRA)

Increase ICS to **moderate** maintenance dose in **MART regimen**

Increase ICS to a **high** maintenance dose + LABA as a **fixed dose regimen** (A SABA will be required if patient placed on fixed dose regimen)

If patient remains symptomatic or diagnosis uncertain consider referral of patient to specialist service as per local pathway
If the patient is intolerant of formoterol, consider vilanterol or salmeterol combinations.

Note:

If a patient's asthma has been controlled for 3-6 months then consider decreasing current maintenance therapy.

When reducing maintenance therapy, reduce dose of medicines in an order that takes into account the clinical effectiveness when introduced, side effects and the patient's preference e.g. consider stepping down by halving ICS dose i.e. reverse pathway. **However, if control deteriorates then increase back to higher, previous maintenance dose**

ICS (**high** maintenance dose) + LABA as a fixed dose regimen +Leukotriene Receptor Antagonist (LTRA), (**review in 2 weeks,** if no improvement **STOP** LTRA)
OR
Trial an alternative drug e.g. Long Acting Muscarinic Receptor Antagonist (LAMA) (Tiotropium – Spiriva Respimat) **AND** refer to secondary care

Refer patient to specialist service as per local pathway

If still uncontrolled after 2 weeks on LTRA as per ACT definition

8. ‘MART’ INHALERS

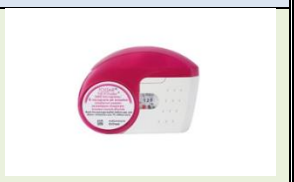
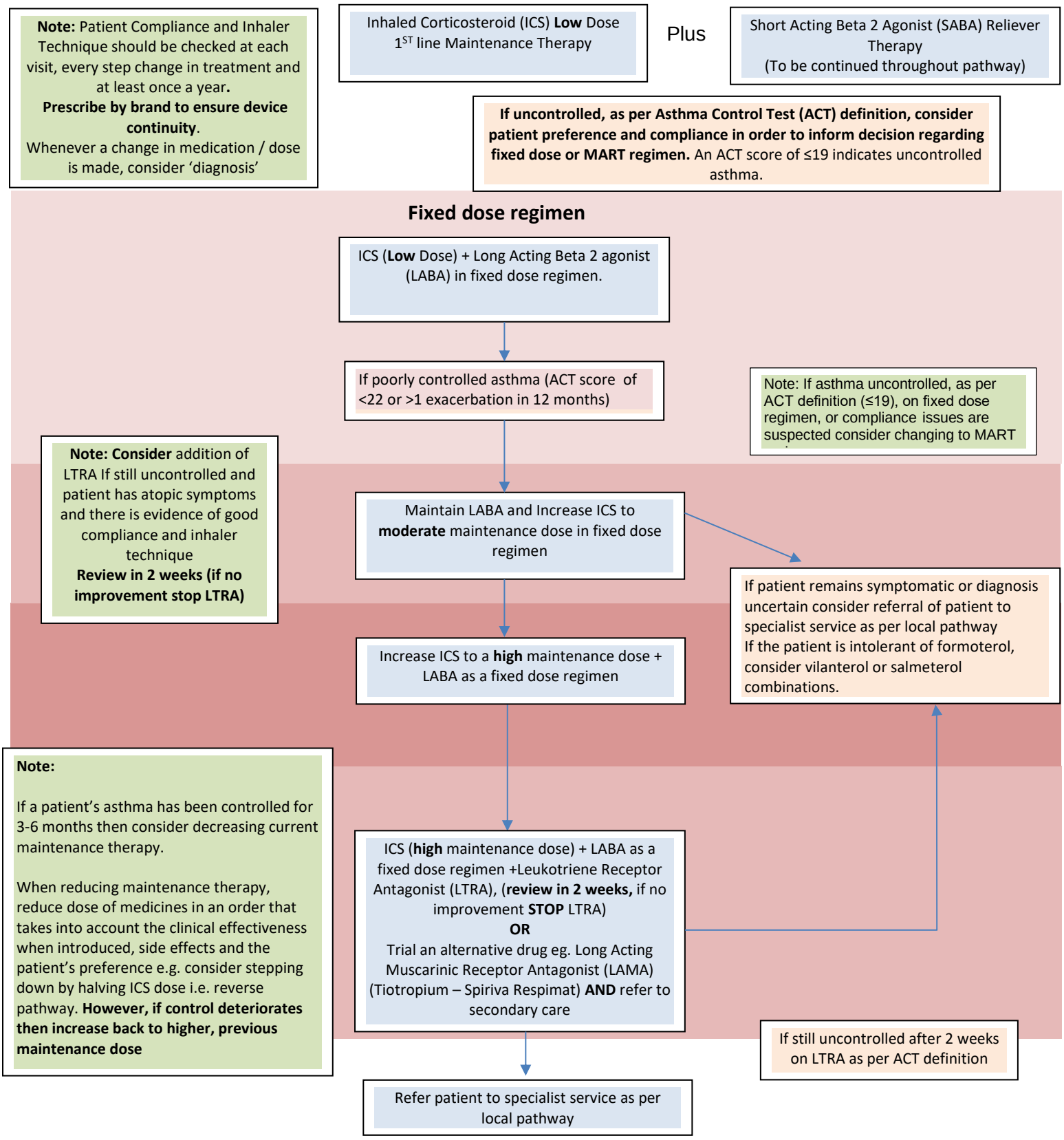
Inhaler	Dosage	Maximum daily number of puffs	Annual CO2eq (g)	
Fostair Nexthaler 100/6 **formoterol fumarate dihydrate 6µg and beclometasone dipropionate 100µg /puff**	1 puff twice daily plus PRN	8	37	
Duoresp Spiromax 160/4.5 **formoterol fumarate dihydrate 6µg and budesonide 200µg /puff**	Either 1 puff twice daily plus PRN or 2 puffs twice daily plus PRN	12	34	
Fobumix Easyhaler 160/4.5 **formoterol fumarate dihydrate 4.5µg and budesonide 160µg /puff**	Either 1 puff twice daily plus PRN or 2 puffs twice daily plus PRN	12	20	
Symbicort Turbohaler 100/6 and 200/6 **formoterol fumarate dihydrate 6µg and budesonide 100µg or 200 µg /puff**	Either 1 puff twice daily plus PRN or 2 puffs twice daily plus PRN	12	24 / 33	
Fostair MDI 100/6 **formoterol fumarate dihydrate 6µg and beclometasone dipropionate 100µg /puff**	1 puff twice daily plus PRN	8	470	
Luforbec 100 / 6 inhaler **formoterol 6µg +beclomethasone 100µg /puff**	Either 1 puff twice daily plus PRN or 2 puffs twice daily plus PRN	8	470	

Table of licensed MART dosages and devices (as of January 2022)

- In persons using a MART regime, a persistent requirement for PRN doses of their inhaler more than twice per week indicates poor asthma control and should prompt a review of therapy.
- Persons using a MART regime may require prescribing of a greater number of MART inhalers, (but no SABA).
- Fostair and Luforbec MDIs have the largest carbon footprint of the inhaler devices licensed for MART and should only be used when an MDI is clinically appropriate.

9. ALTERNATIVE PHARMACOLOGICAL TREATMENT PATHWAY FOR ADULTS (AGED ≥17) FIXED DOSE REGIMEN (ICS/LABA + SABA when required)



10. EXAMPLES OF ALTERNATIVE 'FIXED DOSE' INHALER PATHWAYS (NON MART)

N.B. These are just a few illustrated examples, showing a 'single' inhaler device pathway. Other inhaler devices, with low carbon footprints are also approved by LSCMMG eg, Breezhaler, Duoresp Spiromax.

Formoterol plus Beclometasone (QVAR / Fostair NEXThaler) (DPI) (Low Carbon Footprint)

Please note different doses apply to MART regimen for Fostair NEXThaler 100/6

QVAR 100 Autohaler
(1 puff twice daily)

Low Dose ICS + LABA

Fostair NEXThaler 100 / 6
(1 puff twice daily)

Moderate Dose ICS +LABA

Fostair NEXThaler 100 / 6
(2 puffs twice daily)

High Dose ICS +LABA

Fostair NEXThaler 200 / 6
(2 puffs twice daily)

NB Fostair NEXThaler 100/6 and 200/6 do not currently have a licence for use in patients under the age of 18 years.

Formoterol plus Budesonide (Pulmicort / Symbicort) (DPI) (Low Carbon Footprint)

Please note different doses apply to MART regimen

Low Dose ICS + LABA

Pulmicort 200 Turbohaler
(1 puff twice daily)

OR

Symbicort 100 / 6 Turbohaler
(2 puffs twice daily)

Symbicort 200 / 6 Turbohaler
(1 puff twice daily)

Moderate Dose ICS +LABA

Symbicort 200 / 6 Turbohaler
(2 puffs twice daily)

High Dose ICS +LABA

Symbicort 200 / 6 Turbohaler
(4 puffs twice daily)

OR

Symbicort 400 / 12 Turbohaler
(2 puffs twice daily)

Vilanterol plus Fluticasone (Flixotide / Relvar) (DPI) (Low Carbon Footprint)

Pathway maybe useful if patient compliance is an issue

Flixotide 100 Accuhaler
(1-2 puff twice daily)

Low / Moderate Dose ICS +LABA

Relvar Ellipta 92/ 22
(1 puff daily)

High Dose ICS +LABA

Relvar Ellipta 184/22
(1 puff daily)

Formoterol plus Beclometasone (Clenil / Fostair) (MDI) – HIGH carbon footprint

Please note different doses apply to MART regimen for Fostair 100/6

Clenil Modulite 100 inhaler
(2 puffs twice daily)

Low Dose ICS + LABA

Fostair 100 / 6 Inhaler
(1 puff twice daily)

Moderate Dose ICS +LABA

Fostair 100 / 6 inhaler
(2 puffs twice daily)

High Dose ICS +LABA

Fostair 200/6 Inhaler
(2 puffs twice daily)

NB Fostair 100/6 and 200/6 do not currently have a licence for use in young people under the age of 18.
The AeroChamber Plus® is the recommended spacer device for Fostair MDI.

Formoterol plus Fluticasone (Flixotide / Flutiform) (MDI) - VERY HIGH carbon footprint

Flixotide 50 Evohaler

(2 puffs twice daily)

Low Dose ICS + LABA

Flutiform 50micrograms / 5micrograms / dose inhaler

(2 puffs twice daily)

Moderate Dose ICS +LABA

Flutiform 125micrograms / 5micrograms / dose inhaler

(2 puffs twice daily)

High Dose ICS +LABA

Flutiform 250micrograms / 10micrograms / dose inhaler

(2 puffs twice daily)

The AeroChamber Plus® Flow-Vu® is the recommended spacer device for Flutiform MDI.

10. REFERENCES

[1] Health improvement Scotland. BTS/SIGN British Guideline for the management of asthma. 2019. SIGN 158.

[2] Global Initiative For Asthma (GINA) Report 2021 https://ginasthma.org/gina-reports/

[3] Asthma: diagnosis, monitoring and chronic asthma management, NICE NG80, November 2017. https://www.nice.org.uk/guidance/ng80

[4] Inhaled drugs and global warming: time to shift to dry powder inhalers, BMJ 2013;346:f3359 and Climate friendly asthma inhaler swap encouraged, Nursing Times, 23 March 2017

[5] Prescqipp Bulletin 295: Inhaler carbon footprint – Attachment 1 - endorsed by NHSEI Inhaler Working Group. https://www.prescqipp.info/media/5932/attachment-1-inhaler-carbon-footprint-data-2101.xlsx

[6] NICE patient decision aid – inhalers for asthma 2020 https://www.nice.org.uk/guidance/ng80/resources/inhalers-for-asthma-patient-decision-aid-pdf-6727144573