

## About this guide

Inhalers account for 3% of total NHS carbon emissions and make up 13% of primary care's footprint. Reducing this by prescribing more environmentally friendly or "greener" inhalers plays an important role in achieving the [NHS 'Net Zero' ambition](#) and forms part of one of the [national medicines optimisation opportunities](#).

This guide is intended to support practices and PCNs working towards reducing the carbon footprint of their inhaler prescribing by providing a quick reference source of alternative devices to consider when discussing a change of device type with a patient.

It is envisaged that most switches will be undertaken opportunistically, for example at the patient's annual review or during a structured medication review (SMR). This guide may also be used where a practice or PCN wishes to review a particular cohort of patients such as those already receiving both a pMDI and a DPI, or patients issued with more than 6 SABA inhalers per year (both of which can be identified through Eclipse).

Open Prescribing provides readily accessible charts for the [average footprint of salbutamol inhalers](#) and the [ratio of DPIs to MDIs for non-salbutamol devices](#) at ICB and practice level.

This guide should be used in conjunction with our current [adult asthma](#) and [COPD](#) prescribing guidelines, as well as the larger [inhaler choices document](#).

## The switch tables

The most clinically effective, cost effective and environmentally friendly inhaler is the one that the patient can and will actually use. The way in which different DPIs are primed and used varies and no one device will be suitable for all patients. Further information on the relative ease of use of different DPIs can be found in the [From Puff to Powder](#) webinar. For this reason, several alternatives are presented where possible. Devices with a lower required inspiratory flow rate (IFR) are marked "LF" (low flow) in line with our other formulary documents.

The tables suggest alternatives for 40 of the 50 pMDI devices prescribed in Cornwall according to the [Open Prescribing measure](#). The remaining inhalers have no direct alternative (such as Atrovent), are unlikely to be used by adults (Seretide 50) or are prescribed in very low numbers (Flixotide 250).

Switches are broken down by the degree of complexity: a straight swap, the same active ingredient(s) but a different regimen, and those where the active ingredient(s) and possibly the regimen will be changed. Straight swaps may be more acceptable

to some patients, whereas others may benefit from a more complex switch that results in a simpler regimen.

Whilst the focus of this guide is on reducing carbon footprint, it should not be forgotten that DPI devices offer benefits to the patient. They are easier to use correctly, resulting in greater deposition in the lungs and so an increased therapeutic effect and the opportunity to reduce SABA usage. All DPI devices include a dose counter to remind the patient to order a new inhaler when the current one is nearly empty.

The choice of which device a patient is switched to should be the result of a shared decision between the patient and clinician. Whilst every consultation will be different, possible levers for change include:

- The patient has approached the practice requesting a greener device
- The patient is having difficulty with pMDI technique
- The patient's condition is poorly controlled and requires a change in therapy
- The patient has a complex regimen and would benefit from it being simplified

The [NICE patient decision aid: Asthma inhalers and climate change](#) can be used to inform conversations between a patient and their healthcare professional, supporting them to make informed choices in line with their personal values and preferences.

Salamol pMDI is included as a direct switch SABA option with a footprint less than half that of Ventolin Evohaler for patients uncomfortable with using a DPI reliever.

### **The carbon footprint tables**

The lifetime carbon footprint of each device is taken from [PrescQIPP data](#). Some manufacturers are offsetting the carbon footprint of some of their inhalers so that the device can be certified as carbon neutral (for example Trelegy Ellipta). These devices are not shown as zero in the charts and tables.

Whilst the carbon figure shows the scale of the benefit of switching to DPIs, it can be hard to put into context. Using the number of miles travelled in a car to illustrate the footprint is something that most patients will be able to relate to. A value of 230g per mile from [RAC data](#) was used to calculate the equivalency in this guide. The equivalent miles for a given device may vary slightly between this guide and other sources, however the figures are internally consistent.

A numerical table is included to allow clinicians to localise the discussion with the patient; "47 miles is here to x, 3.7 miles is here to y..."

All pMDIs have a carbon footprint of over 11,000g and in many cases much more, and all DPIs (except Pulmicort Turbohaler and Fixkoh Airmaster) have a footprint of under 1,000g. Any switch undertaken has the potential to offer at least 90% reduction and, in some cases, up to 98%. The small difference in footprint between DPIs is insignificant compared to the reduction when moving from a pMDI, and the most suitable DPI for the patient is the one that should be prescribed.

## From Puff to Powder – Greener Inhalers for Adults

Videos demonstrating the correct technique for all these devices can be found on the [RightBreathe website](#). Further information can be found in the [From Puff to Powder](#) webinar

### Low flow (LF) options

Devices marked LF have a lower required IFR and may be suitable where there are concerns about the patient's ability to use other DPIs. An [In-Check DIAL device](#) may be useful for assessing IFR.

### Direct Switches

These devices may be directly interchanged including dose regimen.

Original Inhaler	Green Alternative
Fostair 100/6 pMDI Luforbec 100/6	Fostair 100/6 NEXThaler
Fostair 200/6 pMDI Luforbec 200/6	Fostair 200/6 NEXThaler
Trimbaw 87/5/9 pMDI	Trimbaw NEXThaler (COPD only)
Beclometasone 200mcg	Easyhaler Beclometasone 200mcg
Beclometasone extrafine 100mcg (Qvar, Kelhale)	
Symbicort 200/6 pMDI	Fobumix Easyhaler 160/4.5* DuoResp Spiromax 160/4.5*
Ventolin Evohaler	Easyhaler salbutamol 100mcg Salamol pMDI

### Switches requiring minor changes

These devices contain the same active ingredient(s) but will require adjustment to the dose regimen. Any reduction in the number of doses per day will make it easier for the patient to take their inhaler as directed and further reduce the carbon footprint.

Original Inhaler (TWO puff dose)	Green Alternative (ONE puff dose)
Beclometasone 100mcg	Easyhaler Beclometasone 200mcg
Beclometasone extra fine 50mcg dose (Qvar, Kelhale)	
Salmeterol & fluticasone 125/25	Fixkoh Airmaster 50/250 Seretide 250 Accuhaler
Salmeterol & fluticasone 250/25	Fixkoh Airmaster 50/500 Seretide 500 Accuhaler
Symbicort 200/6 pMDI	Fobumix Easyhaler 320/9* DuoResp Spiromax 320/9*
Ventolin Evohaler	Easyhaler salbutamol 200mcg Ventolin Accuhaler (LF)

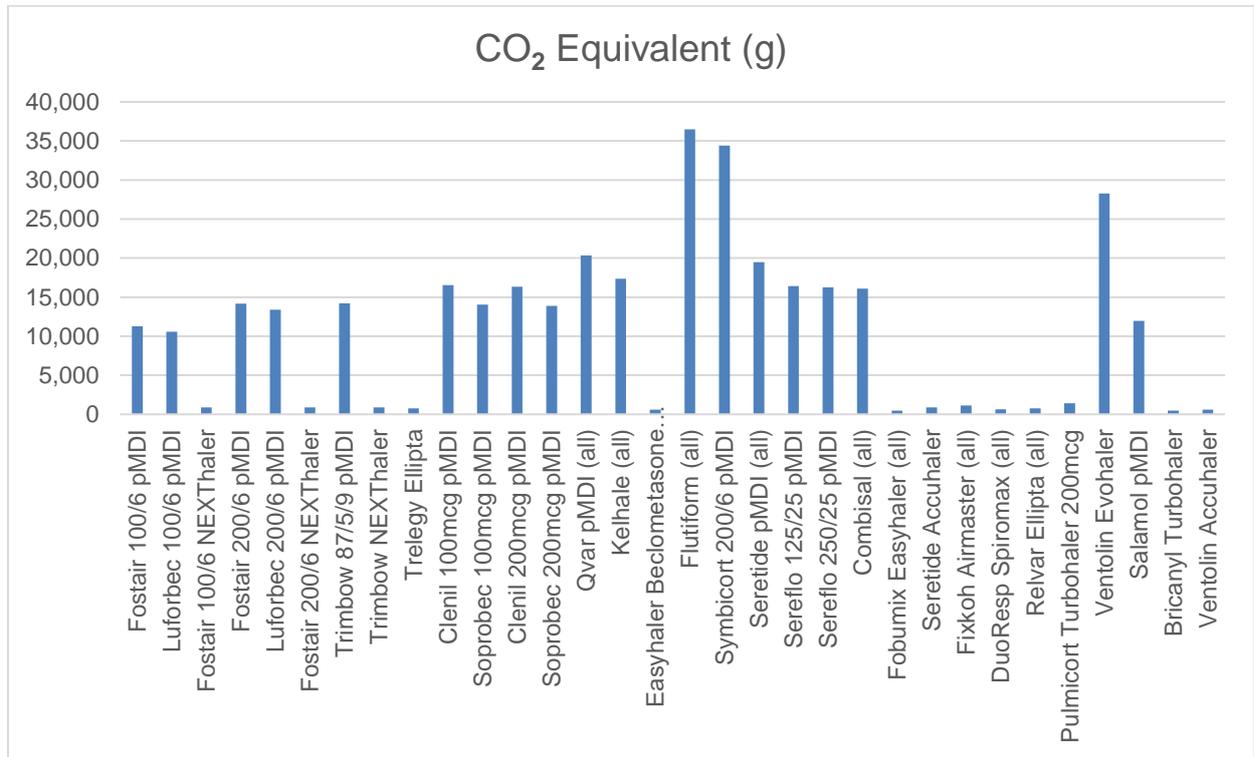
## Switches changing active ingredient

These devices contain different active ingredients and may also require a change to the dose regimen.

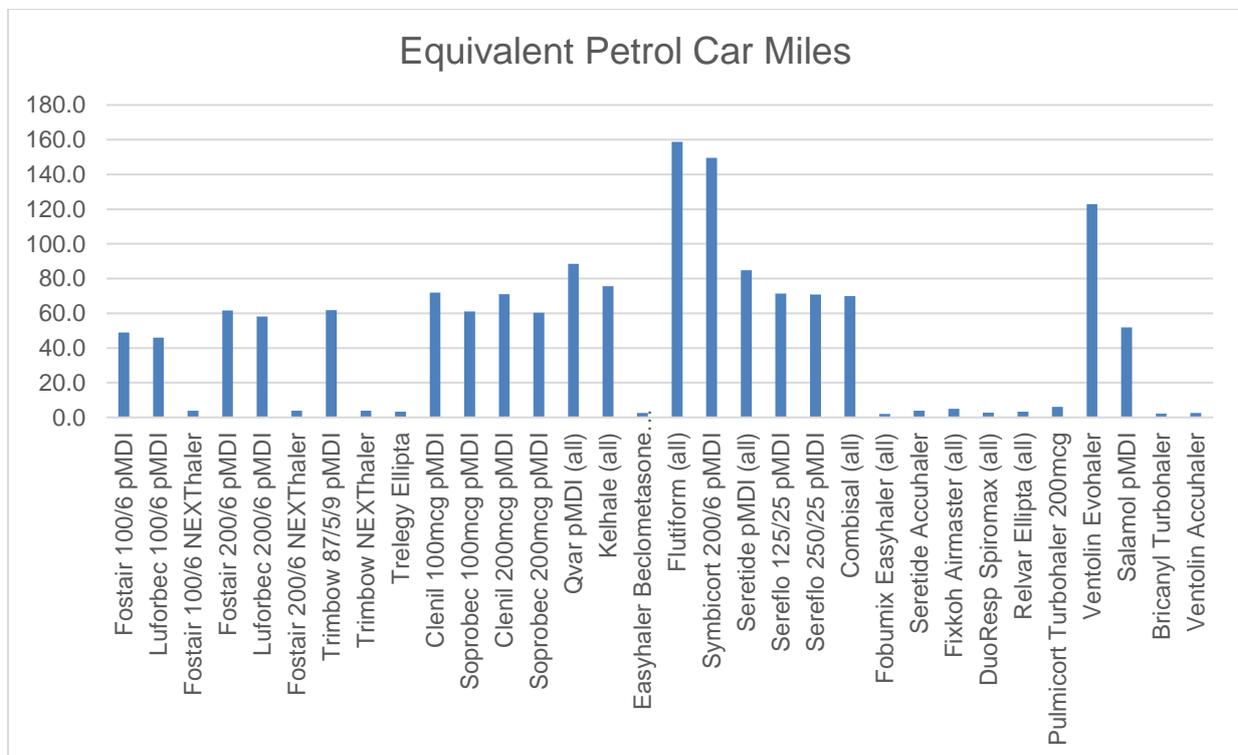
Original Inhaler (TWO puffs unless otherwise stated)	Green Alternative
Trimbow 87/5/9 pMDI	Trelegy Ellipta (COPD only) @ 1 puff once daily
Fostair 100/6 pMDI @ 1 puff dose	Fobumix Easyhaler 160/4.5* @ 1 puff dose
Luforbec 100/6 @ 1 puff dose	
Salmeterol & fluticasone 50/25	Fostair NEXThaler 100/6 @ 1 puff dose
Flutiform 50/5	Relvar Ellipta 92/22 (LF) @ 1 puff once daily
Fostair 100/6 pMDI	Fobumix Easyhaler 320/9* @ 1 puff dose
Luforbec 100/6	
Salmeterol & fluticasone 125/25	Fostair Nexthaler 100/6 @ 2 puff dose
Flutiform 125/5	Relvar Ellipta 92/22(LF) @ 1 puff once daily
Salmeterol & fluticasone 250/25	Fobumix Easyhaler 320/9 * @ 2 puff dose
Flutiform 250/10	
Fostair 200/6 pMDI	DuoResp Spiromax 320/9* @ 2 puff dose
Luforbec 200/6	
Beclometasone 100mcg @ 2 puffs or 200mcg @ 1 puff dose	Pulmicort Turbohaler 200mcg (LF) @ 1 puff dose
Beclometasone extra fine 50mcg @ 2 puffs or 100mcg @ 1 puff dose (Qvar, Kelhale)	
Ventolin Evohaler	Bricanyl Turbohaler 500mcg @ 1 puff dose
Salamol pMDI	

## Environmental impact charts

Indicative lifetime carbon equivalent per inhaler as per PrescQIPP data v2.27



Carbon equivalent expressed as the number of miles driven in the average new petrol car in 2022 according to RAC environmental data



## Environmental impact data

Device	CO <sub>2</sub> Equivalent (g)	Petrol Car Miles
Bricanyl Turbohaler	492	2.1
Clenil 100mcg pMDI	16,552	72.0
Clenil 200mcg pMDI	16,322	71.0
Combisal (all)	16,087	69.9
DuoResp Spiromax (all)	630	2.7
Easyhaler Beclometasone 200mcg	610	2.7
Fixkoh Airmaster (all)	1,125	4.9
Flutiform (all)	36,500	158.7
Fobumix Easyhaler (all)	484	2.1
Fostair 100/6 NEXThaler	889	3.9
Fostair 100/6 pMDI	11,248	48.9
Fostair 200/6 NEXThaler	890	3.9
Fostair 200/6 pMDI	14,152	61.5
Kelhale (all)	17,368	75.5
Luforbec 100/6 pMDI	10,556	45.9
Luforbec 200/6 pMDI	13,377	58.2
Pulmicort Turbohaler 200mcg	1,400	6.1
Qvar pMDI (all)	20,350	88.5
Relvar Ellipta (all)	754	3.3
Salamol pMDI	11,950	52.0
Sereflo 125/25 pMDI	16,420	71.4
Sereflo 250/25 pMDI	16,270	70.7
Seretide Accuhaler	898	3.9
Seretide pMDI (all)	19,485	84.7
Soprobec 100mcg pMDI	14,056	61.1
Soprobec 200mcg pMDI	13,864	60.3
Symbicort 200/6 pMDI	34,400	149.6
Trelegy Ellipta	765	3.3
Trimbow NEXThaler	889	3.9
Trimbow 87/5/9 pMDI	14,203	61.8
Ventolin Accuhaler	583	2.5
Ventolin Evohaler	28,262	122.9

Using the PrescQIPP colour-coded symbols, all pMDIs above would be red and all DPIs would be green. All DPIs would have the “green leaf” symbol in MIMS.



Help reduce global warming by returning used or unwanted aerosol inhalers to your pharmacy for environmentally safe disposal

## Less polluting pMDIs

There may be circumstances where a patient:

- has not yet been reviewed with a view to switching them to a dry powder inhaler (DPI)
- has been offered a DPI but refused or was changed back to a pMDI
- is not able to use a DPI

In these situations, prescribers may consider changing to a pMDI device with a lower carbon footprint to reduce the environmental impact of the patient's treatment as per BTS/SIGN asthma guidelines. This table summarises the least polluting pMDI option for each category of inhalers:

Active ingredient(s)	Lowest Carbon Footprint Option
Beclometasone dipropionate	Soprobec
Beclometasone (extrafine)	Kelhale
Beclometasone & formoterol	Luforbec
Salbutamol	Salamol
Salmeterol & fluticasone	Combisal

pMDIs with a lower footprint may achieve this by using a different and/or lower volume of propellant per actuation. It may be useful to reassure patients that it is normal to notice that a new inhaler tastes or feels different in use and that this does not mean that the new device is any less effective. The Greener Practice Group have produced a [poster](#) and [patient leaflet](#) to support the change to Salamol pMDI that includes this information.

Where the patient has a spacer device, compatibility with a different pMDI can be checked on the [RightBreathe](#) website. Licensed inhaler and spacer combinations will be detailed in the inhaler's [summary of product characteristics \(SmPC\)](#). The makers of [Aerochamber](#) and [Volumatic](#) devices recommend that they are replaced after 12 months of regular use.

## References

\*Symbicort 200/6, DuoResp Spiromax 160/4.5 and Fobumix 160/4.5 are the same strength. Symbicort 200/6 refers to the metered dose whereas DuoResp and Fobumix 160/4.5 refers to the delivered dose. European licensing requirements now require inhaler devices to be named by their delivered dose rather than the metered dose. Similarly, Symbicort 400/12 is equivalent to DuoResp or Fobumix 320/9.

[PrescQIPP guide to inhaler carbon footprints](#)

[Greener Practice – Guide to Greener Inhaler Prescribing](#)

[Green inhaler website](#)

[SIGN categorisation of ICS in adults \(2019\)](#)

Cornwall Joint Formulary – [Adult asthma prescribing guidelines](#)

Cornwall Joint Formulary – [COPD inhaler prescribing guidelines](#)

[NICE patient decision aid: Asthma inhalers and climate change](#)

[Asthma UK – What to do when your medicine changes](#)

[NHS England – Delivering a ‘Net Zero’ National Health Service](#)

[RAC Environmental FAQs](#) – average new petrol car in 2022 emits 143g of CO<sub>2</sub> per km, equivalent to 230g per mile.

[BTS/SIGN Asthma guidelines 2019](#) – Prescribers, pharmacists and patients should be aware that there are significant differences in the global-warming potential of different MDIs and that inhalers with low global-warming potential should be used when they are likely to be equally effective. Where there is no alternative to pMDIs, lower volume HFA134a inhalers should be used in preference to large volume or HFA227ea inhalers.

### Approval information and version control

Approved by Cornwall Area Prescribing Committee (CAPC) March 2024, review by March 2026

Version number	Date	Written or updated by	Details
1.0	26 May 2022	Chris Burgin, pharmaceutical advisor, KCCG Jill Leyshon, respiratory specialist nurse, RCHT	First approved version
1.1	7 June 2022	Chris Burgin	Clarified Trimbow NEXThaler licensed for COPD only. Minor layout amendments.
1.2	27 June 2022	Chris Burgin	Correction of typographical error
2.0	30 Jan 2024	Chris Burgin	Introduction re-written Added Luforbec to charts and tables Footprints checked against latest PrescQIPP data Mileage equivalents recalculated Added Less Polluting pMDIs section Links updated as necessary