

**DERBYSHIRE JOINT AREA PRESCRIBING COMMITTEE  
(JAPC)**

**NHS Derby and Derbyshire ICB & System Partners:  
Greener Inhaler Prescribing Guidance**

**NHS Derby and Derbyshire ICB/System partners support the prescribing of inhalers with a reduced carbon footprint such as dry powder inhalers (DPIs) and Soft Mist inhalers (SMIs), wherever clinically appropriate and acceptable to the patient.**

**Please note that the recommendation for prescribing dry powder inhalers does NOT currently apply to short acting beta<sub>2</sub> agonist inhalers (SABAs) such as salbutamol where the preferred choice is Salamol MDI.**

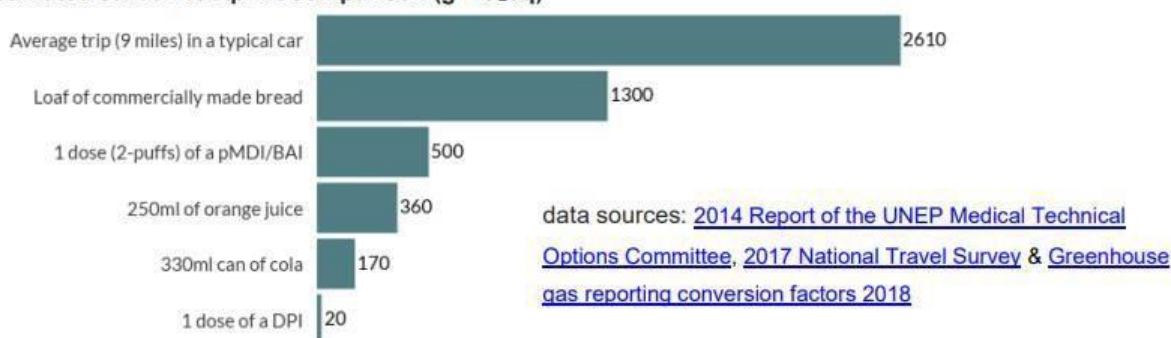
**Background**

In 2019, the NHS Long-Term Plan committed the NHS to reducing its carbon footprint. “Delivering a ‘Net Zero’ National Health Service”, published in October 2020, built on this by committing the NHS to reaching net zero carbon (and equivalent emissions) by 2040 for those emissions under the direct control of the NHS (the ‘NHS Carbon Footprint’).

Inhalers alone are responsible for 3% of the NHS carbon footprint. Most of these emissions come from the propellants used in metered dose inhalers (MDIs) to deliver the medicine, rather than the medicine itself. Optimising the choice of inhaler, as part of a shared decision-making conversation between the patient and the clinician, can play a significant role in achieving the NHS net zero target.

It is important to be aware that just one dose of an average MDI has a carbon footprint (CF) 25 times greater than that of an equivalent dose given via an average DPI.

**Estimated carbon footprint comparison (g CO<sub>2</sub>eq)**



**NHSE Memorandum of Understanding (MOU)**

The MOU between NHSE and the former CCG stated responsibilities for the CCG, one of which was: Support patient choice of less carbon intensive inhalers, for example dry powder inhalers, where clinically appropriate, resulting in a 2% reduction of emissions by March 2022

**Investment and Impact Fund (IIF)**

The IIF forms part of the Direct Enhanced Service (DES) for PCNs.

The Sustainable NHS Domain of the 2022/23 fund contains the following indicators:

ID	Description	Numerator (N)	Denominator (D)	Prevalence numerator (E)	Indicator Type; Points; Desired Direction; Thresholds; Data source
<b>Environmental sustainability (ES) area</b>					
ES-01	Metered Dose Inhaler (MDI) prescriptions as a percentage of all non-salbutamol inhaler prescriptions issued to patients aged 12 years or over	Of the denominator, the number of prescriptions for metered dose inhalers	Number of prescriptions for non-salbutamol inhalers issued to patients aged 12 years or over	Indicator denominator	Standard Quantitative; 27; Downwards; 44% (LT) / 35% (UT); GPES
ES-02	Mean carbon emissions per salbutamol inhaler prescribed (kg CO <sub>2</sub> e)	Total carbon emissions from all inhalers in the denominator (kg CO <sub>2</sub> e)	Number of salbutamol inhalers prescribed	Number of patients prescribed salbutamol inhalers	Standard Quantitative; 44; Downwards; 22.1kg (LT) / 18.0kg (UT);

### **Greener Inhaler Use**

There are many ways to reduce inhaler carbon footprint, including:

1. **Ensure control of asthma and COPD is optimised and clinicians are adhering to NICE asthma and COPD treatment pathways – this will benefit patients and reduce use of short-acting bronchodilators. Currently, salbutamol MDIs account for over 40% of inhaler items in Derbyshire, and in the latest 3 months (June to August 2021) well over 100,000 salbutamol MDIs were prescribed. Ensuring optimal control of both asthma and COPD could make a big difference to our carbon footprint.**
2. Ensure all inhalers are used with the correct technique for greater effectiveness and reduced wastage
3. **Initiate new patients on lower Global Warming Potential (GWP) impact devices such as DPIs, soft mist inhalers (e.g. Respimat) and low carbon MDIs (salbutamol only) where clinically appropriate**
4. Discuss a potential switch with existing patients (where it is clinically appropriate to do so) to a device with a lower GWP, e.g. during annual reviews
5. Switch patients using more than one single component MDI to a combination inhaler where one is available and is suitable for the individual. This will reduce the overall number of inhaler items used and be more convenient for patients.
6. Patient education – including sign posting to resources such as RightBreathe and NICE Patient Decision Aids, and promoting the Greener NHS via GP Practices and social media
7. Inhaler disposal schemes – current advice is to return used inhalers to a pharmacy for disposal. Inhalers should never be discarded in household refuse.
8. Ensure inhalers are not discarded unnecessarily before they are empty
9. Reduce over-prescribing of short-acting bronchodilators by reviewing ordering patterns

### **Switching Patients to inhalers with a lower carbon footprint**

To reach the targets in the NHSE plan it is clear that patients who are currently taking MDIs will need to be considered for switch to DPIs or Soft Mist inhalers. Certain patients may be more suitable for switch than others. This may include those:

- with poor inhaler technique with current device
- with poor control of COPD/asthma
- with poor adherence/excessive use
- prescribed mixed devices (already using a DPI and an MDI)
- prescribed separate inhalers where combination inhalers are available (e.g. LAMA and LABA)
- prescribed expensive inhalers

**Please be aware that all DDICB formulary dry powder inhalers contain lactose and are contraindicated in patients with hypersensitivity (anaphylaxis) to lactose or milk proteins. Refer to [The SPC](#) for full prescribing information.**

### **Undertaking a switch**

- 'Blanket switching' of patients from one type of inhaler to another (e.g. MDI to DPI) is **NOT** recommended. This is not patient-centred and there is evidence that switching without consent can lead to poorer asthma control.
- Most older children and adults will be able to use a DPI. However, an MDI with spacer or breath actuated inhaler (BAI) should be used
  - where a patient is unlikely to have sufficient inspiratory flow, for example in younger children or the very elderly if following a personalized review of inhaler options, a patient cannot or does not want to use a DPI or SMI.
  - where a patient is already using an MDI/BAI with effective technique, has good disease control, and the risks of changing inhalers are thought to outweigh the benefits.
  - the InCheck device can be used to confirm appropriateness of a DPI if there is any uncertainty about inspiratory flow
- Good inhaler technique is essential. If a face-to-face appointment is not possible every effort should be made to ensure good technique. This may involve a variety of measures such as video consultation, on-line training videos (available via RightBreathe – see useful resources), new medicine service (NMS) from community pharmacist.
- The patient should receive safety-netting advice. For example, what symptoms may indicate deteriorating control and who to contact for advice.
- Feedback suggests that most asthma patients using MDIs would change device for environmental reasons so long as the new inhaler was efficacious, easy to use and fitted their current routine, and that they could change back if needed.

### **Switches**

The table below shows the estimated carbon footprint of commonly prescribed inhalers – Preferred (DPI/SMI) choices are shown in **bold**. The carbon footprint may be reduced by prescribing or switching to the preferred product and by switching from single ingredient inhalers to combination inhalers. e.g. Switching from Fostair MDI + Braltus Zonda to Trimbaw Nexthaler reduces the annual CO<sub>2</sub>eq from 142.8 (136 + 6.8) to 10.8Kg.

*Where more than one strength of an inhaler is available (and if different), the highest values for CO<sub>2</sub> emissions have been quoted unless otherwise stated.*

Active ingredient	Device	Type	CO <sub>2</sub> eq per puff (g)	Daily dose	Annual CO <sub>2</sub> Eq/Kg	Cost per 30 days *
<b>Long-acting beta-agonists (LABAs)</b>						
<b>Formoterol</b>	<b>Easyhaler</b>	<b>DPI</b>	<b>4.53</b>	<b>2 puffs</b>	<b>3.3</b>	<b>£11.88</b>
Formoterol	Atimos Modulite	MDI	130	2 puffs	94.6	£18.04
Salmeterol	Soltel*	MDI	130	4 puffs	189.2	£19.95
<b>Long-acting Muscarinic Antagonists (LAMAs)</b>						
<b>Tiotropium</b>	<b>Tiogiva cap/device</b>	<b>DPI</b>	<b>18.75</b>	<b>1 puff</b>	<b>6.8</b>	<b>£19.99</b>
<b>Tiotropium</b>	<b>Spiriva Respimat</b>	<b>SMI</b>	<b>0.01</b>	<b>2 puffs</b>	<b>0.007</b>	<b>£23.00</b>
Tiotropium	Braltus Zonda	DPI	18.75	1 Puff	6.8	£25.80
Glycopyrronium Bromide	Seebri Breezhaler	DPI	18.75	1 Puff	6.84	£27.50
Umeclidinium	Incruse Ellipta	DPI	24	1 puff	8.7	£27.50
Aclidinium Bromide	Eklira Genuair	DPI	8.67	2 puffs	6.3	£32.50
<b>LAMA/LABA combination inhalers</b>						
Tiotropium and olodaterol	<b>Spiolto Respimat</b>	<b>SMI</b>	<b>0.01</b>	<b>2 puffs</b>	<b>0.007</b>	<b>£32.50</b>
Aclidinium and formoterol	<b>Duaklir Genuair</b>	<b>DPI</b>	<b>9.17</b>	<b>2 puffs</b>	<b>6.7</b>	<b>£32.50</b>
Indacaterol and glycopyrronium	<b>Ultibro Breezhaler</b>	<b>DPI</b>	<b>18.75</b>	<b>1 puff</b>	<b>6.8</b>	<b>£32.50</b>
Umeclidinium and vilanterol	<b>Anoro Ellipta</b>	<b>DPI</b>	<b>24</b>	<b>1 puff</b>	<b>8.7</b>	<b>£32.50</b>
<b>ICS/LABA combinations</b>						
Budesonide + formoterol	<b>Fobumix easyhaler</b>	<b>DPI</b>	<b>4.04</b>	<b>4 puffs</b>	<b>5.9</b>	<b>£21.50</b>
	<b>WockAIR</b>	<b>DPI</b>	<b>10</b>	<b>4 puffs</b>	<b>15</b>	<b>£19.00</b>
	DuoResp Spiromax	DPI	6.8	4 puffs	9.93	£27.97
	Symbicort Turbohaler 200/6	DPI	6.67	4 puffs	9.74	£28.00
Beclometasone + formoterol	Fostair Nexthaler 100/6	DPI	7.42	2 to 4 puffs	10.8	£29.32
	Luforbec 100/6 or Fostair 100/6	MDI	93.7	2 to 4 puffs	136	£20.52/ £29.32
Fluticasone propionate and salmeterol	<b>Fusacomb Easyhaler**</b>	<b>DPI</b>	<b>9.53</b>	<b>2 puffs</b>	<b>6.9</b>	<b>£26.99</b>
	<b>Fixkoh Airmaster</b>	<b>DPI</b>	<b>18.75</b>	<b>2 puffs</b>	<b>13.65</b>	<b>£16.12</b>
	Seretide Accuhaler 100	DPI	15	2 puffs	10.9	£18.00
	AirFluSal 125/25	MDI	161	4 puffs	234	£16.42
	Combisal 50/25	MDI	134	4 puffs	195	£13.50
<b>Triple combination- ICS/LAMA/LABA</b>						
Beclometasone, formoterol and glycopyrronium	<b>Trimbow NEXThaler</b>	<b>DPI</b>	<b>7.41</b>	<b>4 puffs</b>	<b>10.8</b>	<b>£44.50</b>
Fluticasone, vilanterol and umeclidinium	<b>Trelegy Ellipta</b>	<b>DPI</b>	<b>26</b>	<b>1 puff</b>	<b>9.49</b>	<b>£44.50</b>
Mometasone, indacaterol and glycopyrronium	Enerzair Breezhaler (for asthma only)	DPI	17	1 puff	6.19	£44.50
Beclometasone, formoterol and glycopyrronium	Trimbow	MDI	118	4 puffs	172	£44.50

- \* Based on standard dose
- \*\* Only for adults if a switch to a budesonide containing alternative is not possible
- + Soltel MDI contains soya lecithin and is contraindicated in peanut or soya allergy

**Please note that all formulary DPIs are contraindicated in lactose (milk protein) hypersensitivity (anaphylaxis)**

#### References:

NHS England. Greener NHS (accessed via [Greener NHS » Delivering a net zero NHS \(england.nhs.uk\)](#) on 21/10/2021)

PresQIPP Carbon Footprint Data 2021 (accessed via <https://www.prescqipp.info/> on 20/10/2021)

RightBreathe (accessed via <https://www.rightbreathe.com/> on October 27<sup>th</sup> 2021)

Chiesi Medical Information Response (Ref CHIESI-GB-21102021-4967) Received 27/10/2021

Network Contract Directed Enhanced Service Contract specification 2022/23 – PCN Requirements and Entitlements (accessed via [NHS England Report Template 7](#) on May 31<sup>st</sup> 2022)

#### Useful Resources:

- NICE Patient Decision Aid. Inhalers For Asthma.  
<https://www.nice.org.uk/guidance/ng80/resources/inhalers-for-asthma-patient-decision-aid-pdf-6727144573>
- RightBreathe <https://www.rightbreathe.com/>

## Appendix 1 Greener Practice- How to Reduce the Carbon Footprint of Inhaler Prescribing

<https://www.greenerpractice.co.uk/greener-practice-guide-to-inhaler-prescribing>

Reviewed and endorsed by the NHSE&I Inhaler Working Group, Asthma UK, and the British Lung Foundation, this guide can support healthcare professionals to safely and effectively reduce the carbon footprint of inhaler prescribing in collaboration with patients, whilst optimising patient care.

The guide consists of 5 sections:

1. Introduction and recommendations
2. Explanation of recommendations
3. Frequently asked questions
4. Tables of inhalers by carbon footprint
5. Reference

### Key recommendations:

#### To reduce the carbon footprint of inhaler prescribing:

- Optimise asthma and COPD care following national guidelines.
- Offer dry powder inhalers or soft mist inhalers as first choice when clinically appropriate.
- If pMDIs are needed for an individual then chose brand and regime with care to minimise carbon footprint.
- Ask patients to return all used or unwanted inhalers to community pharmacies or dispensaries for disposal by incineration or re-cycling.

#### To safely and effectively change inhalers:

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

Document Control	Date
V2: Lactose hypersensitivity warning added	May 2022
V3: MDI SABA use clarified, formulary update, PCN DES information/references updated for 22/23	May 2022
V4: CCG replaced with ICB	July 2022