

Greener Inhaler Guide (Sheffield)

See Glossary of abbreviations [here](#)

The Environmental Impacts and UK Facts

- Pressurised metered dose inhalers (pMDIs) contain HFA's which are powerful greenhouse gases.
- Inhalers contribute to 3% of the NHS carbon footprint - pMDI's account for most of this¹.
- The UK is far more reliant on pMDIs than any other country in Europe – 70% of inhalers used in the UK are pMDI's compared to 13% in Sweden²
- Dry powder inhalers (DPI's) offer a low carbon alternative to pMDIs
- The NHS Long Term Plan³ highlights that lower carbon DPIs should be considered where clinically

Patient Factors

- Inhaler device switches should be carried out **face to face** and with the agreement of the patient
- Check compliance and technique at every opportunity
- Many patients do not use a pMDI correctly or with a spacer device and therefore do not receive the full dose⁴ See [Spacer Device Guide for pMDIs](#)
- Most patients are able to use a dry powder inhaler with appropriate education/demonstration
- Many patients find DPIs, which require a quick and deep breath in, easier to use
- DPI's do not require spacers and come with dose counters
- Use the [NICE Patient Decision Aid – Inhalers for Asthma](#) to assist with decision making
- Some patients lack the inspiratory effort to use DPIs. In-check dials and whistle devices may be used as training aids
- For some patients dexterity and coordination issues may play a role in inhaler choice
- pMDI plus spacer remains the preferred delivery method for most children under 12 years
- For further advice see [Inhaler Device Type Choice Guide](#)

Greener inhaler Top 10 Tips

1. Do not carry out “mass switching” of inhaler device types from pMDI to DPI for the purpose reducing carbon footprint
2. Use dry powder inhalers first line in adults where clinically appropriate and agreed with the patient and keep device types the same wherever possible
3. Address [SABA over reliance](#) and ICS under use in asthma as a priority
4. If DPI reliever is routinely prescribed consider additional pMDI salbutamol + spacer as a back-up for emergencies only
5. Prescribe Salamol pMDI instead of Ventolin Evohaler - this is a small volume salbutamol canister containing less propellant. See [Salamol poster and leaflet](#)
6. Avoid Symbicort pMDI and Flutiform pMDI which contain a more potent HFA. (HFA 227)
7. Consider [MART regimes](#) in asthma where appropriate
8. Review the use of [unlicensed pMDI's in COPD](#)
9. Use [closed triple therapy](#) instead of open triple therapy with separate ICS/LAMA and LAMA inhalers where appropriate
10. Teach correct inhaler technique and assess regularly. **The greenest inhaler is the one the patient can and will use!**

For additional support for greener inhaler prescribing in asthma use the [asthma toolkit](#) from Greener Practice. www.greenerpractice.co.uk

Addressing over reliance on SABA in asthma

A significant proportion of asthma patients are over-reliant on the SABA inhaler. SABA does not control asthma as it does not treat airway inflammation. Many patients are under using their regular ICS “maintenance” treatment and overusing “reliever” SABA. If someone is using 3 or more SABA inhalers per year they are over-reliant and may be at much higher risk of an asthma attack. Most asthma patients should be able to achieve complete control of their asthma with appropriate maintenance therapy.

Complete control of asthma should be⁴:

- No daytime symptoms
- No limitation of activities
- No night-time waking due to asthma
- No need for rescue medication

By ensuring appropriate maintenance treatment for asthma is being used and reducing over reliance on SABA there could be a considerable reduction in the use of pMDI's.

Using 3 SABA inhalers in a year means a patient would be using 12 puffs a week or 2 puffs per day, this is indicative of poor asthma control. (See [Asthma Slide Rule](#))

For further support to address SABA over reliance see [Asthma Right Care \(ARC\) addressing SABA over-reliance in Sheffield](#)

Maintenance and reliever therapy (MART) regimes in asthma

MART is a treatment strategy for asthma where a patient uses the same inhaler as both their regular maintenance treatment twice a day and as their reliever inhaler (in place of SABA) whenever they get symptoms. Since MART regimes ensure patients receive anti-inflammatory treatment for their asthma as well as bronchodilation they can improve asthma control which reduces the need for rescue medication

MART can be considered:

- When a patient remains uncontrolled on either low or medium dose ICS or ICS/LABA
 - Where concordance may be an issue
 - Where the patient may benefit from a simplified inhaler regime
- Careful education of patients is required for this treatment strategy
 - Inhalers for MART contain formoterol as the LABA component (bronchodilator)
 - Formoterol is both a long acting and quick acting bronchodilator (as quick as salbutamol)
 - Only lower strength products have a MART licence e.g., Fostair® 100/6, Symbicort® Turbohaler® 100/6 and 200/6. Fostair® 200/6 and Symbicort® Turbohaler® 400/12 must NOT be used for MART
 - Prescribing SABA with MART regimes is not encouraged. Less SABA prescribing can lead to less pMDI prescribing and hence lower carbon footprint

Review the use of unlicensed pMDI's in COPD

There are many ICS/LABA combination pMDI's being used to treat COPD. Many of these do not have a licence to treat COPD. By addressing the use of these unlicensed products by using a formulary choice DPI where appropriate we can improve clinical care and reduce carbon footprint at the same time.

Suggested actions

- Search for patients with COPD only who are prescribed an unlicensed pMDI (see list below)
- Review if there is continued need for ICS in patients with COPD alone (no asthma). See [Sheffield ICS withdrawal protocol](#) and [COPD algorithm](#)
- Review patients to discuss whether it is appropriate to change to;
 - a [formulary choice](#) licensed DPI ICS/LABA combination. These are Relvar Ellipta® 92/22, Symbicort Turbhaler® 400/12 and , Fostair® NEXThaler® 100/6 or
 - a [formulary choice](#) DPI LABA/LAMA (long acting muscarinic antagonist). These are Anoro Ellipta® ▼ 55 micrograms/22 micrograms, Duaklir Genuair® ▼ 340 micrograms/12 micrograms or Ultibro Breezhaler® 85 micrograms/43 micrograms inhalation capsules and device or
 - a [formulary choice](#) DPI triple therapy inhaler (ICS/LABA/LAMA) if the patient is also taking a separate LAMA – options are Trelegy® Ellipta® or Trimbow® NEXThaler®
- Ensure [correct inhaler technique](#) with any new inhaler prescribed
- If a pMDI is needed see [Continuing pMDI for maintenance therapy where appropriate](#)
 - If a pMDI ICS/LABA is still required choose Fostair® pMDI
 - If a pMDI LABA/ LAMA is still required choose Bevespi® Aerosphere®
 - If a pMDI triple therapy inhaler is still required choose Trimbow® pMDI or Trixeo® Aerosphere®

ICS/LABA pMDI's which do not have a licence for the management of COPD

- Seretide Evohaler 50/125/250
- Sirdupla pMDI 125/250
- Airflusal pMDI 125/250
- Sereflo pMDI 125/250
- Aloflute pMDI 125/250
- Combisal pMDI 50/125/250

Closed Triple Inhalers

- Closed triple inhalers containing ICS/LABA and LAMA in one inhaler device should be used where appropriate in place of open triple therapy with 2 separate inhalers ICS/LABA and LAMA. This reduces the number of inhalers a patient is using and therefore will reduce the carbon footprint.
- Care should be taken not to adjust overall ICS dose when changing to a closed triple inhaler
- Trelegy® Ellipta®, Trimbow® NEXThaler®, Trimbow® pMDI 87/5/9mcg (low strength only) and Trixeo® Aerosphere® are licensed for COPD
- Trimbow® pMDI 87/5/9mcg and 172/5/9mcg and Enerzair® Breezhaler® are licensed for asthma

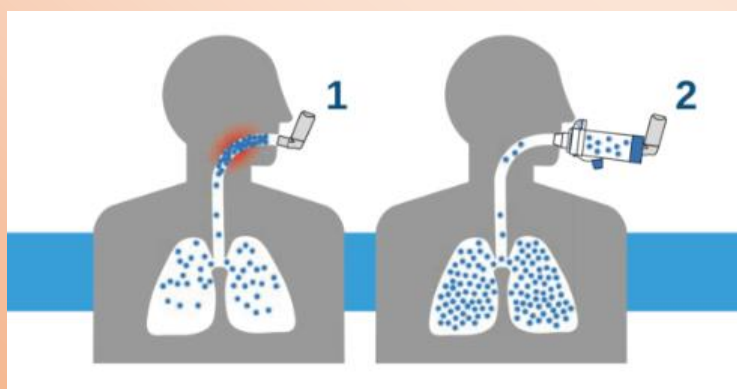
Continuing pMDI for maintenance therapy where appropriate

Some patients may not be suitable for a DPI due to inhalation or dexterity issues. In all instances pMDI still remains an option where clinically appropriate for the patient.

If patients are continuing to use a pMDI:

- Ensure [inhaler technique](#) is optimised
- Advise patients to keep a track of the number of doses (where there is no dose counter) so that inhalers are not discarded before they are empty. Counter apps are available for iOS and Android which can be used to support dose counting
- Advise patients to use the whole inhaler and not to order a new one monthly if the inhaler will last them longer
- Rationalise the number of puffs required, for example if someone is using Clenil[®] 100 2 puffs BD change this to Clenil[®] 200 1 puff BD where appropriate
- Use a spacer with either a [single breath](#) or [tidal breathing](#) (see [Spacer Device Guide for pMDI's](#)). Many patients do not use a pMDI correctly or with a spacer device and therefore do not receive the full dose⁵.

Diagram 1⁶ shows the improvement in lung deposition seen when using a pMDI without an AeroChamber[®] (1) to with an Aerochamber (2)



Returning inhalers to pharmacies for disposal

Encourage all patients to return inhalers to the pharmacy to be disposed of safely. Returned inhalers will be sent for incineration which will destroy any remaining greenhouse gases and prevent inhaler plastics going to landfill. Inhalers should not be placed on domestic waste or recycling.

See [Returning Inhalers to Pharmacy poster](#)

See [Returning inhalers to Pharmacy Campaign support pack](#)

See [Returning Inhalers to Pharmacy animation](#)

There are currently no inhaler recycling schemes available in South Yorkshire

Use [COPD algorithm](#) and [Asthma Guideline](#) to support prescribing decisions

Glossary of Abbreviations

COPD	chronic constructive pulmonary disorder
DPI	dry powder inhaler
HFA	hydrofluoroalkane
ICS	inhaled corticosteroid
LABA	long-acting beta agonist
LAMA	long-acting muscarinic antagonist
MART	maintenance and reliever therapy
PCRS	primary care respiratory society
Pmdi	pressurised metered dose inhaler
SABA	short acting beta agonist

References

1. NHS 75 England, Greener NHS, Improving health outcomes for respiratory patients while reducing carbon emissions <https://www.england.nhs.uk/greenernhs/whats-already-happening/improving-health-outcomes-for-respiratory-patients-while-reducing-carbon-emissions/> [Accessed 28.03.23]
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3. The NHS Long Term Plan 2019 www.longtermplan.nhs.uk/ [Accessed 28.03.23]
4. BTS/SIGN British Guideline on the Management of Asthma, A National Clinical Guideline 2003 revised July 2019
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6. Pritchard J, Usmani O. The Greenest Inhaler: A Patient-centric Approach. *Respiratory*. [online] Available at: <https://www.emjreviews.com/respiratory/article/the-greenest-inhaler-a-patient-centric-approach/> [Accessed 28.03.23].

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