

Reducing the environmental impact of inhalers

[Prescribing Oversight Committee ClinDoc 059]

For the latest information on interactions and adverse effects, always consult the latest version of the Summary of Product Characteristics (SPC), which can be found at:

<http://www.medicines.org.uk/>

Approval and Authorisation

Approved by	Job Title	Date
Prescribing Oversight Committee	POC Chair	01/07/2020

Change History

Version	Date	Author	Reason
v.1.0	01/07/2020	C. Lylyk	New Document

This prescribing guideline remains open to review considering any new evidence

This guideline should only be viewed online and will no longer be valid if printed off or saved locally

Author	C. Lylyk	Date of production:	02/06/2020
Job Title	Pharmaceutical Advisor	Review Date	July 2023
Protocol Lead	C. Lylyk	Version	v.1.0

Inhalers and Their Carbon Footprint:

There is growing awareness and concerns from patients and clinicians, regarding the carbon footprint of MDIs. The latest BTS guidelines 2019 state:

Metered dose inhalers contain propellants which are liquefied, compressed gases used as a driving force and an energy source for atomisation of the drug. Chlorofluorocarbons (CFCs), which were used originally, are potent greenhouse gases and ozone-depleting substances, and were phased out under the Montreal Protocol. They have been replaced by two hydrofluoroalkane (HFA) propellants identified as having a high global-warming potential. As a result of this change, MDIs currently contribute an estimated 3.5% of the carbon footprint of the NHS in the UK. The UK has a high proportion of MDI use (70%) compared with the rest of Europe (< 50%).

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

DPIs - should be used when they are likely to be equally effective.

Reducing environmental impact of inhalers – the following can be used as a guide to reducing the use of MDIs and can help when answering questions posed by patients regarding this topic.

What to do	How to do it	Impact
Improve asthma control	Review treatment and encourage regular preventer treatment by every means possible	Fewer symptoms and reduced use of salbutamol metered dose inhalers (MDIs) which contain potent greenhouse gases
Improve COPD control and reduce use of SABA reliever inhalers	Prioritise smoking cessation, exercise promotion and pulmonary rehabilitation, flu immunisation. Finally add in regular long acting bronchodilators.	These preventive interventions are proven to be more cost-effective treatments than inhalers. Regular long acting bronchodilators should be the mainstay of drug treatment in COPD.
Promote effective self-management	Written personal action plans	Better disease control and quicker response to exacerbations
Ensure all inhalers are used with correct technique for greater effectiveness	Know how to assess this and teach it. Encourage use of online video tutorials	Reduced waste, more effective use of inhalers
Consider changing MDI treatments to DPIs for regular therapy.	Ensure this is clinically appropriate and acceptable to the patient. Matching the inhaler to the patient's abilities and preferences can improve technique and compliance.	Typical MDIs have a carbon footprint of ~20kgCO ₂ e each. DPIs and Respimat devices are less than 1kgCO ₂ e each
Make optimal use of spacers to increase clinical effectiveness of MDIs where these are used	Encourage all patient using MDIs to use spacers when at home	Increases lung deposition and reduces oral deposition of drug
Prescribe MDIs so as to minimise propellant quantity	Salamol inhaler contains half as much propellant as Ventolin inhaler for equivalent dosage. Beclometasone 200mcg one puff twice daily uses half as much propellant as Beclometasone 100mcg two puffs twice daily	Halves the carbon footprint. One Ventolin inhaler has a carbon footprint of 28kgCO ₂ e per inhaler. (equivalent to a journey of 180 miles in an average car)
Prioritise HFA134a inhalers over HFA227ea inhalers	HFA134a is 1,300 times more potent than CO ₂ but HFA227ea is 3,320 times more potent. Most inhalers use HFA134a, but Flutiform and	Switching Flutiform or Symbicort MDI to another MDI such as Fostair saves ~20kgCO ₂ e per inhaler

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	Symbicort MDI contain HFA227ea. (NB Symbicort turbobaler is a DPI and contains no propellant)	
Offer patients at risk of exacerbations an MDI and spacer emergency treatment pack for self-management of exacerbations, especially if using DPIs for regular treatment	Provide emergency treatment packs with clear simple pictorial instructions for their use.	Patient can access effective therapy even during exacerbations when inspiratory flow rates drop.
Ensure MDIs are not discarded before they are empty	Ensure patients know how many doses their MDI contains when new, especially if the inhaler lacks a dose counter	Recycling studies show that many MDIs are discarded when still half full.
Promote responsible disposal of inhalers	Encourage patients to return used inhalers to local pharmacies, or ideally to a pharmacy where they can be recycled. Check www.pharmacyfinder.completethecycle.eu for your nearest pharmacy	Inhalers returned in medical waste are incinerated. Thermal degradation converts the HFAs into products with far lower greenhouse effect. Recycling captures the HFAs for re-use in refrigeration or air conditioning, and reduces plastic and aluminium waste.

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