

## ACTION



**Environmental stewardship, through patient focussed conversations, on the use of pressurised metered-dose inhalers - where safe and practical.**

### WHAT IS THE PROBLEM

Pressurised metered-dose inhalers (pMDIs) contain hydrofluorocarbon propellants in which medicines are dissolved. They are liquids when under pressure and are released as a gas when the device is used. These hydrofluorocarbon compounds are potent global warming gases: 1350-3350 times more potent per gram than carbon dioxide.

More than 90% of the carbon footprint of these inhalers is due to these gases. In the UK, these gases are responsible for about 4% of the carbon footprint of the entire health service. **The propellant gas in a typical salbutamol inhaler can cause as much warming as the tailpipe emissions from a car driving 300km.**

There are other respiratory inhaler alternatives to pMDIs such as dry powder inhalers (DPIs) and soft mist inhalers (SMIs) which do not use these gases and consequently have much lower carbon footprints. In many countries, pMDIs are commonly used, despite high quality evidence that, for many patients, DPIs and SMIs would be equally efficacious.

Misdiagnosis of respiratory disease is also common, leading in some cases to overprescription of respiratory medicines. Their use and environmental impact are directly within the control of respiratory care providers and thus, exercising stewardship represents an important opportunity for positive change and leadership in healthcare environmental sustainability.

The health and safety of patients is paramount, but it is also important to recognise patient autonomy and involve them in these decisions.

### AUTHORS

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### WHAT IS THE ACTION

Practitioners exercise stewardship in the use of pressurised metered dose inhalers (pMDIs), engaging in practices that reduce their use, when clinically safe to do so and at the same time recognising that many patients are willing to exercise sustainable choices where practical.

#### **Step 1: Reduce unnecessary use**

- First, think critically about your patient's diagnosis. Do they need this respiratory medicine at all?
- Optimise preventers to reduce PRN salbutamol use. In general optimising care will not only improve patient outcomes but have the greatest impact on reducing greenhouse gas emissions by reducing unnecessary use. Regularly review inhaler technique and encourage spacer use. Emphasise the importance of preventer/maintenance inhalers. Remember the importance of other approaches to improve disease control – smoking cessation support, pulmonary rehabilitation, vaccination for at-risk individuals.

#### **Step 2: Consider alternative devices when practicable**

- Is there a compelling reason to choose a pMDI?
- Some people do better with MDIs, such as young children (especially under the age of 6), people with poor inspiratory capacity and those experiencing an acute exacerbation. But most people, even those with obstructive diseases, can breathe in sufficiently to use other inhalers.

#### **Step 3: Have patient focussed conversations to find possible solutions**

- Acknowledge that many patients prefer pMDIs and some can't do without them (safe treatment is the first priority).
- Have a patient decision aid available such as the one provided below from the NHS in the UK
- If you are changing the inhaler type your patient is used to, remember to educate them on the new device and re-check inhaler technique at future consultations.
- Don't let this need for device education be a barrier to change. Many patients will find the change easy, and will appreciate being free of the need to use a spacer.
- Patient safety is paramount in device choice and medication delivery. Informing patients and respecting patient autonomy can help people feel empowered by allowing a 'guilt'-free choice. Patients are often keen to embrace choices that deliver more sustainable care.

#### **Step 4: Recycle inhalers**

- Plastic cases no-longer suitable for use should be recycled along with other hard plastic.
- Pressurised canisters can be returned to the pharmacy for suitable disposal.

#### **Step 5: Support the development of low impact propellants by Industry**

- Innovation by industry is promising pMDIs with greatly reduced carbon footprints. These may eventually be helpful in those patients who cannot safely transition to inhalers other than MDIs.
- In the meantime, do not hesitate to transition patients to dry powder inhalers where this is appropriate.



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<b>MEASURE</b>	Do an audit of your practice, now and later, to see if your prescribing is moving away from pMDIs.
<b>SUCCESS STORY</b>	<p>In many European countries dry powder inhalers (DPIs) have been and remain the norm – for example in Sweden, only about 10% of inhalers are pressurised metered dose inhalers (pMDIs).</p> <p>In terms of changing prescribing habits in countries with historically high MDI use, the United Kingdom is leading in awareness. Broadly, the UK aims to reduce health system emissions by 80% by around 2030, and to net zero by 2040.</p> <p>Large-scale projects in the UK are underway (in Hull and Stevenage) and involve systems for review of asthma patients who are overusing their salbutamol inhalers (-6 or more per year), checking their diagnosis, reviewing inhaler technique and optimising therapy, usually by offering to switch to maintenance and reliever therapy and prioritising dry-powder inhalers (DPIs) where they are clinically appropriate. This strategy targets those patients with the most symptoms, who also have the largest carbon footprint, and aims to optimise their treatment. <b>Early evidence shows this strategy to be popular with patients, with big reductions in over-reliance on reliever inhalers (and therefore carbon footprint) and better compliance with controller therapies.</b></p>
<b>SUPPORTING INFO/ RESOURCES</b>	<p>Green inhaler: <a href="https://greeninhaler.org/">https://greeninhaler.org/</a> - a website about this issue by UK respiratory specialist Alex Wilkinson</p> <p>Greener practice guide to inhaler prescribing: <a href="https://www.greenerpractice.co.uk/greener-practice-guide-to-inhaler-prescribing">https://www.greenerpractice.co.uk/greener-practice-guide-to-inhaler-prescribing</a></p> <p>British Thoracic Society: Position Statement on <a href="#">“The Environment and Lung Health 2020”</a>. Particularly section 3:0 on “Low Carbon Inhalers”</p> <p>“Carbon Footprint of choice of inhalers for asthma and COPD” <a href="https://thorax.bmj.com/content/thoraxjnl/75/1/82.full.pdf">https://thorax.bmj.com/content/thoraxjnl/75/1/82.full.pdf</a></p> <p><a href="#">“How to reduce the Carbon Footprint of inhaler prescribing”</a></p> <p><b>Some relevant videos:</b></p> <p>From the UK: <a href="https://www.youtube.com/watch?v=FJ2MT2cjTS8">https://www.youtube.com/watch?v=FJ2MT2cjTS8</a></p> <p>From Australia: <a href="https://www.youtube.com/watch?v=fqN1EYV9T7A">https://www.youtube.com/watch?v=fqN1EYV9T7A</a></p> <p>An inhaler device decision aid from NICE (UK) incorporating environmental as well as clinical issues: <a href="https://www.nice.org.uk/guidance/ng80/resources/inhalers-for-asthma-patient-decision-aid-pdf-6727144573">https://www.nice.org.uk/guidance/ng80/resources/inhalers-for-asthma-patient-decision-aid-pdf-6727144573</a></p> <p>“How to” videos about respiratory inhaler devices – helpful for patient education: <a href="https://www.nationalasthma.org.au/living-with-asthma/how-to-videos">https://www.nationalasthma.org.au/living-with-asthma/how-to-videos</a></p>
<b>MOST IMPORTANT LESSONS</b>	<p>Caution is needed in applying this change internationally, as in some health systems there are important cost differences between MDIs and other inhalers.</p> <p>Consider the cost to your patient of various inhaler types and whether this will be a barrier to accessing their medicine and achieving good disease control.</p>