

Inhalers for asthma

Patient decision aid: user guide and data sources

Role of the patient decision aid

This patient decision aid is designed to help people with asthma and their healthcare professional discuss the different inhaler devices that are available to them. It is intended to be used by adults aged 17 years and over.

This decision aid is not an evaluation of the medicines or devices available. It does not provide guidance on the choice of medicine – this should be discussed and decided prior to using the aid. It is designed to supplement the interaction between the person and their healthcare professional, rather than replace it. Decisions on treatment in asthma should be based on clinical need and the person's ability to use the device.

The Clinical Knowledge Summary on [asthma](#) states that a pressurised metered dose inhaler (pMDI), with or without a spacer, is as effective as any other hand held inhaler, but some people may prefer to use a dry powder inhaler (DPI). Any inhaler must be used correctly to be effective. The Clinical Knowledge Summary states that factors to consider when choosing a delivery system include

- the ability of the person to develop and maintain an effective technique with the specific device is pivotal when choosing an inhaler type – this may depend on such factors as age, dexterity, coordination, and inspiratory flow.
- The suitability of the device to the person's lifestyle, considering such factors as portability and convenience.
- The person's preference for, and willingness to use, a particular device.

This decision aid presents some of the information to help a person and their healthcare professional decide which inhaler they might like to try, taking into consideration how efficiently they can use each inhaler, and other factors which might be important to them.

Decision aids are not formal NICE guidance.

Information about the NICE patient decision aid on inhalers for asthma. Last updated April 2019

How to use this patient decision aid

Before using this patient decision aid, the class of medicine to be used should already have been decided – see the NICE algorithm on [pharmacological treatment of chronic asthma in adults](#).

The characteristics of the device and the person's preferences may differ depending on whether treatment is intended for maintenance therapy or symptom relief (for example, the need to carry a reliever inhaler with them at all times compared to a preventer inhaler which can be left at home in-between doses). It is recommended that consideration is given to this when using this patient decision aid.

The patient decision aid starts with some information about asthma and inhalers. This is followed by a description of the options.

The patient decision aid is then split into 4 sections:

1. **Options table:** A table for the person with asthma to complete to help determine which of these factors are important to them when choosing an inhaler device. This table can be used to focus the discussions or identify areas of concern.
2. **Flowchart:** A flowchart which describes the respiratory effort and technique required for each inhaler, as well as the requirement to press the canister and breathe at the same time. We recommend this section is used to determine if certain inhalers are going to be less suitable and to focus the discussion on inhalers which the person may be able to use more efficiently. When assessing a person's ability to use a particular inhaler, the [UK Inhaler Group Inhaler Standards and Competency Document](#) should be referred to.
3. **Summary:** A summary of all the factors and how the different options compare with each other.
4. **Detailed information:** More detailed information on all of the factors presented in the summary.

All parts of the document should be made available to the person making the decision. Understanding the time constraints associated with a consultation, consideration should be given to the following:

1. Not everyone will want to complete the options table. If they do want to complete it, it could be completed prior to the consultation or at the beginning of the consultation, so that those issues important to the person can be prioritised during the consultation.
2. The flowchart should be used by the person and their healthcare professional together, ideally using placebo devices or devices used to assess inspiratory ability.
3. If, after using the flowchart, the person has a choice of more than one inhaler, the summary table could be used to help the person decide which inhaler they would like to try. The options table could be used to guide this discussion around the issues important to the person.
4. The person could then be given the document, including the detailed information, to take away with them and read in more detail in their own time.

Important notes

The NICE algorithm outlines pharmacological treatment options of chronic asthma in adults aged 17 years and above. All inhaler devices included in this patient decision aid are available for many of the options outlined in the algorithm. When deciding which inhaler device to use, the following exceptions and considerations should be noted:

1. If a long-acting beta₂ agonist is being considered, this should only be prescribed alongside an inhaled corticosteroid. Consideration should be given to minimising the number of inhalers used, by using combination inhalers (inhalers containing more than one medicine) where available.
2. Soft mist inhalers (SMIs) have not been included. At the time of development, the only SMI available for people with asthma was a long-acting muscarinic receptor antagonist (LAMA). NICE recommends LAMAs as an option in people who remain uncontrolled despite treatment with a moderate inhaled corticosteroid and a long-acting beta₂ agonist with or without a leukotriene receptor antagonist. An SMI is therefore only an option in the later stages of the care pathway and consequently only available to a limited number of people. Therefore, this patient decision aid is not suitable for those considering treatment with a LAMA.

3. Consideration should be given to minimising the number of different types of inhaler used by each person as far as possible.
4. Not all products have UK marketing authorisation for use at all dosages or in all ages: if considering prescribing a product outside the terms of its marketing authorisation, follow relevant professional guidance and take full responsibility for the decision. Obtain and document informed consent. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information

Sources of data

Statement	Evidence
<p><i>'How do I need to breathe to be able to use the inhaler?'</i></p> <p><i>'How is the medicine released?'</i></p> <p><i>'Do I need to breathe in and press the inhaler at the same time?'</i></p> <p><i>'Will I be able to tell how many doses are left?'</i></p> <p><i>'Do I need to clean it?'</i></p>	<p>This data were taken from the Summary of Product Characteristics (SmPC) for each individual inhaler. Most types of inhaler are produced by a number of different manufacturers. So that a consensus could be reached regarding the advice to be given for each group of inhalers, all available SmPCs were referred to.</p> <p>SmPCs were last accessed in July 2018 via https://www.medicines.org.uk/emc.</p>
<p><i>'What is the carbon footprint of the inhaler?'</i></p>	<p>Some inhalers contain propellants, known as hydrofluorocarbons (HFCs). HFCs do not have an effect on the ozone layer. However, they are powerful greenhouse gases and can contribute to global warming. This is referred to as their carbon footprint, measured in carbon dioxide equivalents (g CO₂eq). The 2016 Carbon Footprint update for NHS in England 2015 reports that propellants in pMDIs are responsible for around 3.5% of all NHS emissions.</p>

Statement	Evidence
	<p>pMDIs and breath-actuated metered dose inhalers (BAIs) contain HFCs. DPIs do not contain HFCs.</p> <p>The 2014 Report of the UNEP Medical Technical Options Committee estimates that DPIs have less than one-tenth the carbon footprint of pMDIs, mostly due to the absence of HFCs in DPIs. They estimate the carbon footprint of DPIs to be <20 g CO₂eq per dose (2-puffs), compared to 200–800 g CO₂eq per dose (2-puffs) for pMDIs (depending on the type of HFC used). For comparison purposes, they estimate a 330 ml can of cola to have a carbon footprint of 170 g CO₂eq, 250ml of orange juice to be 360 g CO₂eq and a loaf of commercially made bread to be 1,300 g CO₂eq.</p> <p>Using the 2017 National Travel Survey and Greenhouse gas reporting conversion factors 2018 it has been estimated that an average journey of 9 miles in a typical car has a carbon footprint of 2610 g CO₂eq. The average journey of 9 miles has been estimated by dividing the average miles travelled in a car or van per person each year (5104) by the average number of car or van trips per person each year (594). This has been multiplied by the conversion factor for an average car (0.29 kg CO₂eq), which equals 2.61 kg CO₂eq or 2610 g CO₂eq.</p> <p>Hillman et al. 2013 reported that DPIs have a carbon footprint 18 times lower than pMDIs.</p> <p>As BAIs contain the same propellants as pMDIs, the estimated carbon footprints for pMDIs can reasonably be extrapolated to BAIs.</p> <p>Data on the actual carbon footprints of individual inhalers is limited. However, the available data consistently show that there is a significant difference between DPIs</p>

Statement	Evidence
	and pMDIs/BAIs, and due to the absence of HFCs, DPIs have a low carbon footprint compared to other inhalers.
<i>'Can it be recycled?'</i>	<p>The link provided in the patient decision aid directs users to the 'Recyclenow' webpage and from there the 'Complete the cycle' inhaler recycling scheme can be found. This scheme is operated by GlaxoSmithKline. The scheme accepts all inhalers, regardless of type or manufacturer.</p> <p>Currently, very few inhalers are recycled and the majority end up in landfill. Recycling inhalers reduces the amount of HFC released into the atmosphere, and allows the plastic and aluminium to be recycled. Used pMDI canisters still contain propellants that are powerful greenhouse gases and can contribute to global warming. All used pMDI canisters should be returned to a pharmacy to dispose of in an environmentally safe way. If there is no recycling scheme they can be placed in the pharmacist's normal pharmaceutical waste bins.</p> <p>Other recycling schemes may be available – people should be advised to check with their local pharmacy. However, the 'Complete the cycle' scheme is currently the most widely available. As there is a limited number of inhalers currently being recycled, raising the awareness of recycling inhalers was considered important.</p> <p>Spacers cannot be recycled in the 'Complete the cycle' scheme. We are unaware of any specific schemes for recycling spacers.</p>

Notes:

1. This product was developed as a proof-of-principle project on including environmental information in a patient decision aid. As such, the scope was restricted to inhalers used in asthma.
2. Partial funding was received from the Sustainable Development Unit (SDU) to produce this patient decision aid. The SDU provided comments on the environmental section of the patient decision aid, but have not had any other input into its development, design or content.

Related documents

[NICE Pathway: Asthma](#)

[Asthma: diagnosis, monitoring and chronic asthma management \(NICE guideline NG80\)](#)

[Inhaled corticosteroid doses for NICE's asthma guideline](#)

[Clinical Knowledge Summary: Asthma](#)

[British National Formulary: Asthma, chronic](#)

[Medtech innovation briefing \[MIB90\] Smartinhaler for asthma](#)

References

Department for Business, Energy & Industrial Strategy (2018) [UK Government GHG Conversion Factors for Company Reporting](#)

Department of Transport (2018) [National Travel Survey: England 2017 statistical release](#)

Information about the NICE patient decision aid on inhalers for asthma. Last updated April 2019

General Medical Council (2013) [Good practice in prescribing and managing medicines and devices](#)

Hillman, T, Mortimer, F, Hopkinson, N (2013) [Inhaled drugs and global warming: time to shift to dry powder inhalers.](#) BMJ 346:f3359

Sustainable Development Unit (2016) [Carbon Footprint update for NHS in England 2015](#)

UK Inhaler Group (2016) [Inhaler Standards and Competency Document](#)

United Nations Environmental Programme (2014) [Report of the Medical Technical Options Committee: 2014 Assessment Report](#)