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Norfolk and Waveney Integrated Care System

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Norfolk and Waveney suggested options to reduce the carbon footprint of inhalers PHASE ONE Age ≥ 18 years only

Short-Acting Beta$_2$- Agonists (SABA) and Inhaled Corticosteroid plus Long-Acting Beta$_2$ Agonist (ICS / LABA) **inhalers with the highest Global Warming Potential (GWP)**

Click for Norfolk and Waveney ICS website patient information

Background

- The NHS long term plan includes an ambition to reduce the carbon footprint through the shift to using lower carbon inhalers
- Inhalers are estimated to contribute 3.9% of the total carbon footprint of the NHS in the UK.
- The annual carbon footprint (CO2e) of a patients' inhaler regime can vary from 15kg to 450kg depending on the inhalers used.
- Dry Powder Inhalers (DPIs) have the lowest global warming potential (GWP) but may not be suitable for all patients. Devices also differ in the level of inspiratory flow required *(Use an In-Check® Dial to check)*.Pressurised Metered dose inhalers (pMDIs) vary in their GWP.
- MDIs which contain HFA227ea have the highest environmental impact followed by those which contain HFA134a. Soft-mist (SMI) inhalers (Respimat®) have a similar impact to DPIs
- The two pMDIs with the highest GWP are Flutiform® and Symbicort® **pMDI** (HFA227ea), followed by Ventolin® Evohaler (HFA134a *large volume* SABA - contains *more propellant*)

Options to help reduce the carbon footprint of inhalers

- **Ensure that patients have their inhaler technique and concordance checked regularly**. If the patient can, and does, use their inhalers effectively control of their respiratory condition will be maximised. *This will reduce waste and the need for emergency use of short-acting beta$_2$-agonist inhalers (SABAs) e.g., salbutamol*
- **Advise patients to return used inhalers to their pharmacy/dispensary** for **recycling** *(may be available - the aluminium, plastic and propellants can be reused)* or **waste collection** *(thermal degradation of the HFA has a lower global warming potential*)
- **Choose inhalers with dose counters, *if available,* ensure that the patient is aware of how many doses their device contains.** *This reduces the waste and carbon footprint from disposing half-used inhalers.* **All DPIs have dose counters.**
- **Switch to an inhaler with a lower GWP** *(at patient review with a suitably trained Healthcare professional- HCP)* e.g., a DPI / SMI *or,* ***if not clinically appropriate***, a pMDI with a lower environmental impact (HFA134a small volume). *Some patients cannot generate the necessary inspiratory flow necessary for DPIs (approx. min required 30 l/min) particularly during exacerbations*

Other key considerations when choosing inhaler devices

- **Airways severity** – *consider inspiratory flow, risk of frequent exacerbations etc*
- **Ability to use the device / device consistency** – *inspiratory flow and manual dexterity?*
- **Personal preference / patient factors** – *e.g., size, number of doses per day*
- **Efficacy , product licence** *(e.g., Maintenance and Reliever Therapy, MART)* **and adverse effects of the drug content**

Click the following links for: NICE Patient decision aid - inhalers for asthma *(incl. chart with information on GWP)*
The Primary Care Respiratory Society: Guidance on making safe and clinically appropriate changes to inhalers
Beat Asthma Leaflet: How can I tell if my inhaler is empty

Short-Acting Beta$_2$- agonists (SABA)

Things to consider and device information (salbutamol only)

- **Risk of severe attack / exacerbation** –For patients at high risk, an MDI + spacer may still be the most clinically appropriate option. *DPIs are not recommended for use during a **severe** exacerbation due to reduced inspiratory flow and ability to use the device.*
- **Patients with very well controlled asthma** *ideally* may only need one SABA inhaler per year – check in use shelf life and advise the patient. *Consider issuing a separate MDI + spacer for emergency use if standard fixed dose treatment is via a DPI.*[3]
- **Which other type of device(s) does the patient use?** *– aim for device consistency*

Device Feature	Ventolin® Evohaler	Salamol pMDI Inhaler® *(if generically written- Ventolin Evohaler may be dispensed)*	Easyhaler® Salbutamol	Ventolin® Accuhaler
Device Type	pMDI *large volume*	pMDI *small volume*	BA DPI	BA DPI
Dose Counter	No	No	Yes	Yes
In use shelf life	2 years	3 years	6 months	2 years
Image				

Inhaled Corticosteroid + Long-Acting Beta$_2$ Agonist (ICS / LABA)

Device information: cost-effective DPIs, *with similar drug content (see table on next page)* ***see Norfolk and Waveney net.formulary*** *for all other device options and other drug content*

Device Feature	Flutiform®	Symbicort® 200/6 pMDI	Fobumix Easy-haler®	Wock-AIR®	Luforbec® pMDI	Bibecfo® pMDI	Fostair NEXT-haler®	Relvar Ellipta®
Device Type	pMDI HFA227	pMDI HFA227	BA DPI carbon neutral	BA DPI	pMDI HFA134a carbon neutral		BA DPI	BA DPI
Dose Counter	Yes	Yes	Yes	Yes	Yes		Yes	Yes
In use shelf life	3 months	3 months	4 months	2 years	3 months Store in fridge until opened		6 months	*6 weeks*
Image *example*								
Product Licence	Asthma **50/5** ≥ 5yrs **125/5** ≥ 12yrs **250/10** ≥ 18yrs	COPD ≥ 18yrs	Asthma *(incl MART for 80/4.5 or 160/4.5)* & COPD ≥ 18yrs	Asthma *(incl AIR & MART for 160/4.5)* ≥ 12yrs & COPD ≥ 18yrs	Asthma *(incl MART for 100/6)* & COPD *100/6* ≥ 18yrs		Asthma *(incl MART for 100/6)* & COPD *100/6* ≥ 18yrs	**92/22:** Asthma & COPD **184/22:** Asthma ≥12yrs
Suggested SABA device to ensure consistency			Salbutamol Easyhaler	Ventolin Accuhaler	Salamol pMDI		Ventolin Accuhaler	Ventolin Accuhaler
RED	Highest Global Warming Potential (GWP)		**GREEN**	Lowest GWP		Lower GWP		
				With consideration of device consistency				

References:

1. Wilkinson AJK, Braggins R, Steinbach I, et al. Costs of switching to low global warming potential inhalers. An economic and carbon footprint analysis of NHS prescription data in England. BMJ Open 2019;9:e028763. doi: 10.1136/bmjopen-2018-028763
2. https://www.medicines.org.uk/emc
3. Keeley D, Partridge MR. Emergency MDI and spacer packs for asthma and COPD. Lancet Respir Med 2019;7:380–2
4. MIMs carbon footprint inhaler table Nov 22
5. https://www.nice.org.uk/guidance/ng80/resources/inhalers-for-asthma-patient-decision-aid-pdf-6727144573

PHASE ONE: Suggested switches from SABA and ICS / LABA inhalers *with the highest Global Warming Potential (GWP)* to a device with a lower GWP

Age ≥ 18 years only

ONLY if clinically appropriate and at patient review with a suitably trained HCP, plus follow up review

Switch FROM ➡	**Drug Content**	**Dose‡**	**Cost p/a***	⬇ **Switch TO** Cost- effective options with ***most similar drug content*** only included- ***other DPIs and drug content are available***	**Drug content**	**Dose‡**	**Cost p/a*** (365 days)	***Approx.* potential CO_2 e** saving ***per inhaler[4]*** ***9-mile car journey = 2.61kgCO_2e[5]***
Ventolin Evohaler pMDI	Salbutamol 100mcg/dose	1-2 doses PRN	£1.50 200 doses	**Easyhaler Salbutamol 100mcg** ***carbon neutral (cn) DPI***	Salbutamol 100mcg/dose	1-2 doses prn	£3.31 200 doses	⬇ 27kg / 93 car miles
				Ventolin Accuhaler 200mcg	Salbutamol **200mcg**/dose	**1 dose** prn	£1.99 60 doses	⬇ 27kg / 93 car miles
				Salamol pMDI*(NB if generically written- Ventolin Evohaler may be dispensed)*	Salbutamol 100mcg/dose	1-2 doses prn	£1.46 200 doses	⬇ 16kg / 55 car miles
Symbicort pMDI^ 200/6	Budesonide / formoterol	2p BD	£340	**Fobumix Easyhaler 320/9 ^#** ***carbon neutral***	Budesonide / formoterol	1p BD	£262	⬇ 34kg / 117 car miles
				WockAIR 320/9 ^# *(2x60dose in one pack)*	Budesonide / formoterol	1p BD	£231	⬇ 33kg / 114 car miles
				Fostair 100/6 **NEXThaler ^# $**	***Extrafine*** beclometasone / formoterol	2p BD	£357	⬇ 34kg / 117 car miles
				Luforbec *(carbon neutral)* **or Bibecfo** 100/6 **pMDI ^# $**			£170	⬇ 23kg / 79 car miles
Flutiform pMDI 50/5 #	Fluticasone *propionate* / formoterol	2p BD	£175	**Fobumix Easyhaler** 80/4.5 **# $** ***carbon neutral***	Budesonide / formoterol	2p BD	£262	⬇ 36kg / 124 car miles
				Fostair 100/6 **NEXThaler ^# $**	*Extrafine* beclometasone / formoterol	1p BD	£178	⬇ 36kg / 124 car miles
				Luforbec *(carbon neutral)* **or Bibecfo** 100/6 **pMDI ^# $**			£85	⬇ 25kg / 86 car miles
Flutiform pMDI 125/5 #		2p BD	£340	**Fobumix Easyhaler** 160/4.5**^# $** ***carbon neutral***	Budesonide / formoterol	2p BD	£262	⬇ 36kg / 124 car miles
				WockAIR 160/4.5**^# $** *(2x60dose in one pack)*	Budesonide / formoterol	2p BD	£231	⬇ 35kg / 121 car miles
				Fostair 100/6 **NEXThaler ^# $**	*Extrafine* beclometasone / formoterol	2p BD	£357	⬇ 36kg / 124 car miles
				Luforbec *(carbon neutral)* **or Bibecfo** 100/6 **pMDI ^# $**			£170	⬇ 25kg / 86 car miles
				Relvar Ellipta 92/22 **^#**	Fluticasone ***furoate*** */ vilanterol*	1p ***OD***	£268	⬇ 36kg / 124 car miles
Flutiform pMDI 250/10 #		2p BD	£554	**Fobumix Easyhaler** 320/9 **^#** ***carbon neutral***	Budesonide / formoterol	2p BD#	£523	⬇ 36kg / 124 car miles
				WockAIR 320/9 ^# *(2x60dose in one pack)*	Budesonide / formoterol	2p BD#	£462	⬇ 35kg / 121 car miles
				Fostair 200/6 **NEXThaler #**	*Extrafine* beclometasone / formoterol	2p BD	£357	⬇ 36kg / 124 car miles
				Luforbec *(carbon neutral)* **or Bibecfo 200**/6 **pMDI #**			£170	⬇ 25kg / 86 car miles
				Relvar Ellipta *184*/22**#**	Fluticasone ***furoate***/ *vilanterol*	1p ***OD***	£359	⬇ 36kg / 124 car miles

MART - Maintenance & Reliever Therapy **^** licensed for COPD **#** licensed for asthma **$** licensed for asthma MART regimen **BA DPI -** Breath-actuated Dry Powder Inhaler

Cost June 2024 *CO_2e – annual carbon footprint. **‡** Dose equivalence suggestions based on NICE Asthma NG 80 ICS doses **ICS DOSE low – moderate – high**