# IPG HEALTH GLOBAL MARKET ACCESS

# The cost of prescribing inhalers with high and low carbon emissions in England in 2021/2022

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#### BACKGROUND

Pressurised metered-dose inhalers (pMDIs) contain hydrofluorocarbon (HFC) propellants. Although these do not deplete the ozone layer, they are potent greenhouse gases. HFC pMDIs currently account for roughly 3-4% of the total healthcare carbon footprint in the UK. By switching patients to dry powder inhalers (DPIs) or soft mist inhalers (SMIs), the National Health Service (NHS) in England could reduce the carbon footprint associated with inhalers, whilst maintaining their effectiveness.<sup>1</sup>

The UK has a higher pMDIs prescribing rate compared with other countries in Europe;<sup>2</sup> in order for the NHS to achieve their net zero target, the switch from pMDIs to low carbon alternatives is crucial.

#### **CASE STUDIES**

Table 1 presents three cost and carbon footprint case study comparisons for available beclometasone dipropionate inhalers. Switching patients to low carbon alternatives offsets the NHS carbon footprint in all case studies and can also be cost-saving, as presented in Case Study 1.

Table 1	Case Study 1: Beclometasone dipropionate 200 mcg		Case Study 2: Beclometasone dipropionate 200 mcg, formoterol fumarate dihydrate 6 mcg		Case Study 3: Beclometasone dipropionate 200 mcg	
Inhaler* <sup>2,5</sup>	pMDI	DPI	pMDI	DPI	pMDI	DPI
Quantity 2021/22 <sup>2</sup>	692,199	3,030	5,148,641	725,496	33,119	3,030
Cost per pack <sup>2,5</sup>	£16.17£14.93By switching patients† on the pMDI inhaler to the DPI inhaler, the NHS could save £858,326		£29.32 £29.32 By switching patients <sup>†</sup> on the pMDI inhaler to the DPI inhaler, the cost impact to the NHS would be <b>neutral</b>		£12.13£14.93By switching patients† on the pMDI inhaler to the DPI inhaler, the cost to the NHS would <b>increase</b> by £97,733	
Carbon footprint/ inhaler (gCO <sub>2</sub> e) <sup>5</sup>	16,322 By switching part to the DPI inhale 10,875 gCO <sub>2</sub> e	610 tients on the pMDI er, the NHS could <b>offset</b>	11,248 By switching patie the DPI inhaler, th 53,337 gCO <sub>2</sub> e	889 ents on the pMDI to he NHS could <b>offset</b>	13,864 Although this s price increase, 439 gCO <sub>2</sub> e	610 switch would cause a the NHS could <b>offset</b>

#### **OBJECTIVES**

This research aims to understand spending on prescribed inhalers with high vs low carbon emissions in England. This analysis will focus on the two inhaled active ingredients with the highest spending in 2021/2022.

### METHODS

An analysis was conducted to identify the current spending on high vs low carbon emission inhalers in England in the year 2021/2022 (Figure 1).

1. Data collected from NHS Business Services Authority (NHBSA) 2021/2022 Prescription Cost Analysis (PCA) summary tables<sup>2</sup>

2. Complete PCA dataset was filtered by isolating products coded with the British National Formulary (BNF) legacy Chapter 03 (Respiratory System) code

3. Products were further filtered by those that indicated they are an inhaler in the BNF name

4. Inhalers were grouped according to their BNF active ingredient

\*The brands of the pMDI inhalers are different in Cases 1 and 3. The BNF presentation codes for the products in each case study are as follows: Case Study 1, 0302000C0BPACBV and 0302000C0BNAABU, Case study 2, 0302000C0BQAABX and 0302000C0BRAABY, Case study 3, 0302000C0BTABBV and 0302000C0BNAABU. <sup>†</sup>NHS England have initiated a drive to reduce carbon emissions from inhalers, which includes updating national asthma guidelines to position DPI's over pMDIs. <sup>6</sup> The updates are expected to be published in July 2024.<sup>7</sup> We assumed dose equivalence between high and low carbon emission inhalers. DPI, dry powder inhaler; gCO<sub>2</sub>e, g, carbon footprint; CO<sub>2</sub>e, carbon dioxide equivalent; mcg, micrograms; NHS, national health service.

Table 1: Case study comparisons of select beclometasone dipropionate inhalers

# DISCUSSION

The results of our analysis suggest that although current spending on high carbon emission inhalers is higher, lower carbon alternatives, where possible, are in use. With their pledge to net zero by 2040, the NHS have agreed that amongst the 60 million inhalers prescribed every year, the default option will switch to include DPIs over pMDIs for adults and children over 12 years old where clinically appropriate.<sup>6</sup> National guidelines to this affect are expected in July 2024.<sup>7</sup>

However, some patients may not want to switch to or have the ability to use DPIs. Furthermore, switching may not be suitable for patients; with limited

5. The two active ingredients with highest total spend (beclometasone dipropionate, budesonide and their respective combination products) were selected

6. The two groups were each divided by products containing a single or multiple active ingredients

7. The four groups were further subdivided by their carbon emissions into high or low carbon groups

#### Figure 1: Data filtering for analysis

- High carbon emission inhalers were those that contained a propellant such as norflurane (HFA 134a) or apaflurane (HFA 227), according to each product's summary of product characteristics<sup>3</sup>
- The analysis compared total spending (Great British Pounds, £) on each of the eight groups<sup>2</sup>

#### RESULTS

According to Prescription Cost Analysis for England in 2021/2022<sup>2</sup>, the NHS spent more on inhalers containing beclometasone dipropionate or budesonide than any other inhaled active ingredient. Amongst the inhalers included in this study, a total of £264,414,417 was spent on high carbon emission inhalers, whilst £146,460,323 was spent on lower carbon alternatives. The majority of the high carbon emission inhalers were beclometasone dipropionate products, only

inspiratory flow, e.g., children, the elderly, frequent exacerbators, patients with unstable conditions, and patients with effective disease control whereby the risks of switching outweigh the benefits.<sup>4</sup>

Before switching to a DPI, prescribers and pharmacists should consider the imminent launch of pMDIs that contain the propellant HFA-152a, which reduces carbon emissions by >90%, compared with other HFA propellants.<sup>8</sup> These inhalers may be preferred by some patients or suitable for patients that cannot switch to a DPI, however, their cost impact is still unknown.

Finally, the launch years of analysed products were not considered. Therefore, due to this limitation, some low carbon inhalers may not have been commercially available long enough to materially affect prescribing trends.

# CONCLUSIONS

In 2021/2022, NHS spending on high-cost inhalers included those with low carbon emissions, but clinicians should carefully consider the choice of beclometasone inhalers to achieve the NHS net zero carbon target.

From an acquisition cost perspective, commissioners may also realise a saving when switching patients to low carbon alternatives, where this is clinically appropriate.

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£3,217,690 was contributed from budesonide as there appears to be more low carbon alternatives available for patients on budesonide inhalers (Figure 2).



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