The Evolving Legislative Landscape for Medical HFCs

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Background: Respiratory Medicine & the Environment

- Respiratory diseases including asthma and chronic obstructive pulmonary disease (COPD) are amongst the leading causes of death and disability globally
- In the UK: Approximately 8M people have been diagnosed with asthma[1] and COPD affects approximately 3M people[2]
- Inhaled treatments using devices such as pressurized metered dose inhalers (pMDIs), dry powder inhalers (DPIs), soft mist inhalers (SMIs) and nebulizers are used across the world as the mainstay of treatment for patients with respiratory conditions.
- The total healthcare contribution to global net emissions (4.4% in 2014)[3] continues to be raised as an issue
- It is recognised that inhalers contribute to the overall carbon footprint of healthcare, in particular the impact of propellants used in pMDIs and this continues to be a focus for global and regional legislation, in national healthcare guidelines, policies, or recommendations.
- This presentation is intended as an overview of key legislation and its ongoing review

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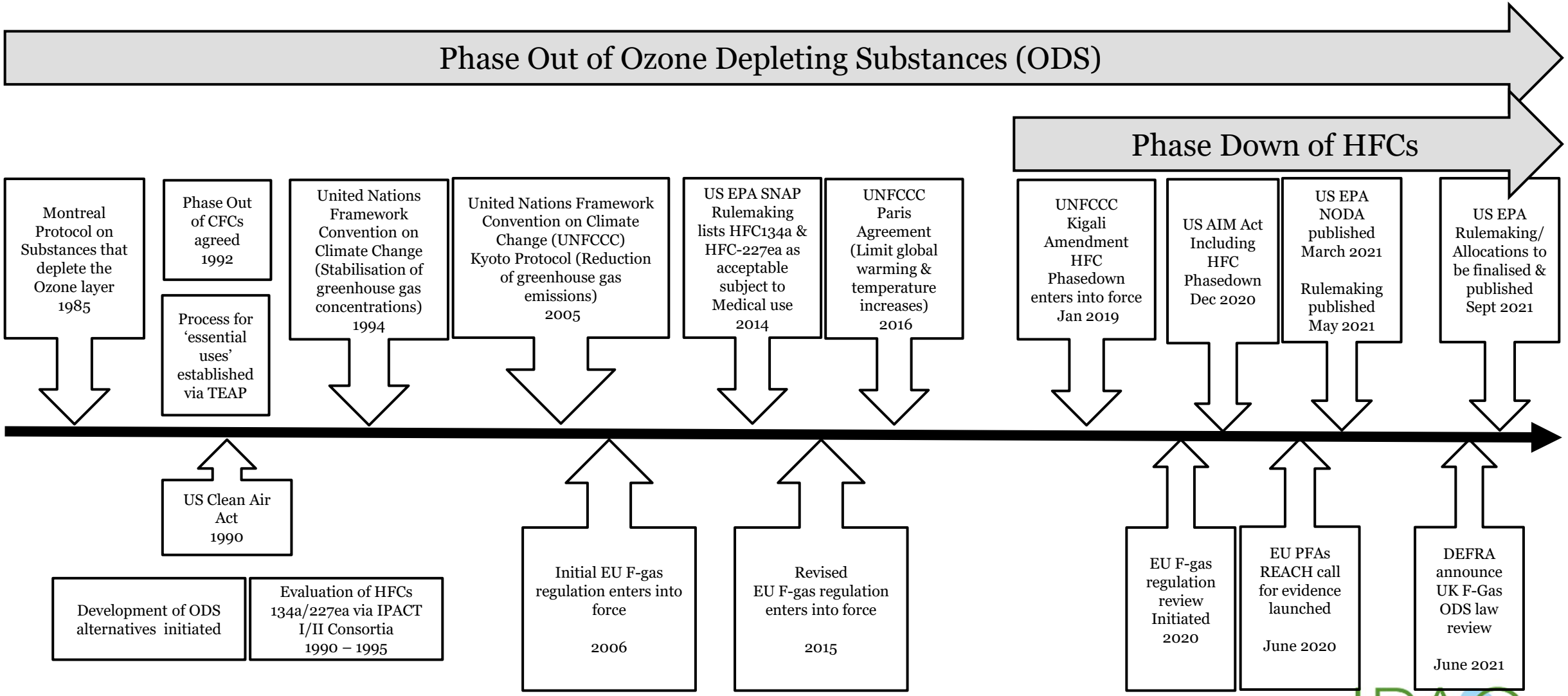
Evolving Global Legislative & Policy Landscape For HFCs



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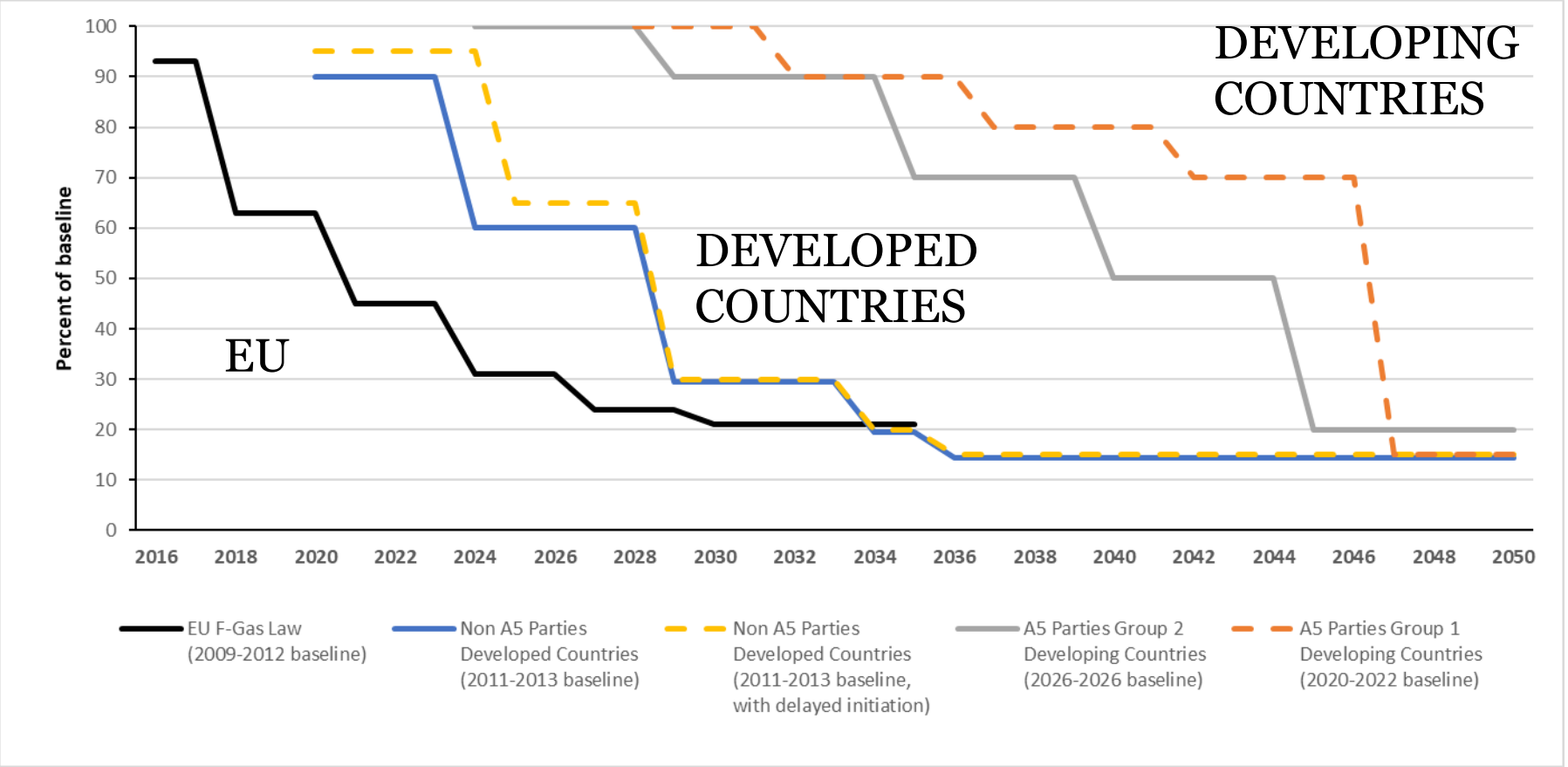
Montreal Protocol on Substances that Deplete the Ozone Layer

- Global agreement to phase out the consumption and the production of major ozone-depleting substances (ODS), including CFC propellants, ratified in 1987
- A highly successful universal, consensus-based treaty, incorporating shared activity, funded multilaterally
  - ODS emissions reported as part of the UNFCCC GHG inventory process, ODS substitutes including HFCs used in aerosols are also reported [4]
- Montreal Protocol supported by the Technology and Economic Assessment Panel (TEAP) which in turn is supported by five Technical Options Committee's
  - The Technical Options Committee's monitor progress (annual updates and assessment reports), raise technical, scientific & economic issues and support the yearly decision-making process at during the preparatory Open Ended Working Groups (OEWG) feeding into the annual Meetings of the Parties (MOP).
  - The Medical & Chemical Options Committee (MCTOC) covers **medical/non-medical aerosols**, sterilising agents, feedstocks, solvent applications, laboratory and analytical uses, recycling & destruction
  - MCTOC members include industry, government, scientific bodies & academic institutions
- Next TEAP Quadrennial Assessment Report due 2022

Kigali Amendment to the Montreal Protocol

- In 2016 the **Kigali Amendment** to the Montreal Protocol recognised that the hydrofluorocarbons (HFCs) that replaced ODS , are powerful greenhouse gases with high global warming potential (GWP) [5]
- Amendment brings in measures to **phase down** (rather than phase out) the production and consumption of 18 designated HFCs by more than 80% over next 30 years
- Ratified by 120+ countries
- Phase down schedule different for specified country groupings/regions.
- Countries are aligning with the phase down schedule by ratification only and/or local regulation to implement phase-down and monitor compliance (for example EU F-Gas law, US AIM Act)

HFC Phase Down Schedules



Progress vs phase down schedule is monitored and subject to periodic review

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US Clean Air Act: Significant New Alternatives Policy (SNAP)

- Authorised under Section 612 (c) of US Clean Air act
- Underpinned phase out of Ozone Depleting Substances (ODS) to support protection of Ozone layer
- EPA lists of acceptable and unacceptable substitutes for Class I or Class II ODS
  - For example HFC-134a prohibited (delisted) for automotive use from mid 2020
  - Specific section on Medical Aerosols, listing HFC-134a & 227ea as acceptable in medical aerosols [6]

US – EPA, AIM Act 2020 Implementation

- Signed into law in the US as part of the COVID-19 package, passed in Dec 2020
- US EPA held stakeholder workshops in Q2 2021 and a public hearing on 3rd June, where they sought additional information to support allocations process and further understand each Sector
- Establishes a US phasedown, down aligned with Kigali, to 15% over 15-year period (2020-2035) for listed HFCs with GWP>150, including HFC-227ea & HFC-134a
- The AIM Act will provide 'mandatory allocations' for designated sectors, including medical use, initially for a 5-year period, until 2025 (can potentially be extended via petition)
- Rulemaking Docket published in Federal Register on May 19 with 45 day commenting period [7]
- EPA Letters requesting data sent to manufacturers and suppliers via population of sector specific spreadsheets
  - Data requests focus on domestic bulk HFC production, import/export and use, domestic pMDI production/import/export, and non-domestic pMDI imports
  - Current rulemaking states that the phasedown baseline calculations focus on bulk HFC only, and indicates only bulk allocations will be provided for US manufacture
  - EPA seeking additional information to support allocations process and further understand each Sector
- Finalised rule will be published on 23rd September and initial allocations announced 1st October 2021

EU F-Gas law review (517/2014)

- EU F-Gas law phases down the use of HFCs by prohibiting specific uses and establishment of a quota system for placing HFC on the market from 2018 onwards [8]
  - Medical use in MDI is exempt from quota (Article 15) and from the prohibition on placing on the market (POM) for >150 GWP aerosols (Article 11), but bulk HFC used for local manufacture is included in the phase down total (includes exports). HFC in imported pMDIs is reported only
- In 2020 EU Commission launched a review of the existing law, including review of current medical use exemptions
  - General and Sector specific workshops have been scheduled & held
  - IPAC co-hosted a workshop with European Federation of Allergy and Airways Diseases Patients' Associations (EFA) which included European Commission (DG Clima), European Respiratory Society (ERS), German Environment Agency (UBA), European Federation of Hospitals (HOPE) & International Primary Care Respiratory Group (IPCRG), with the objective of raising awareness of patient healthcare in the context of the environmental policy
  - As part of the ongoing stakeholder engagements & review, Öko-Recherche (consultants engaged by EC) drafted a white paper on the MDI sector for comment
  - EU commission currently targeting to complete the review and table a new legislative proposal to amend the current EU F-Gas Regulation by the end of the year. This will then go to European Parliament and the Council (27 member states) who will negotiate the final text

UK Post-Brexit Reporting & Legislation Review

- Department of Environment and Rural Affairs (DEFRA) have published UK guidance [9] and have initiated a comprehensive review of UK F-Gas legislation
  - The Environment Agency operates the GB F-Gas and ODS systems on behalf of the UK, Scottish and Welsh governments
  - F-Gas and ODS legislation applies in GB as 'retained EU law'. The requirements remain the same as under EU legislation
  - Review will underpin UK's Net Zero commitments and scope includes activities to further phase down HFC use and emissions
  - Review will link with other Government policies including medical F-Gas use
- Sector specific groups formed including MDI medical, targeting Assessment Report in 2021/22 and legislative proposal/formal consultation in 2022. 1st MDI Sector call held on 5th August 2021
- UK HFC reporting process now in force, 2021 data due by end Q1 2022

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UK Inhaler Return Awareness Campaign[11]

The International Pharmaceutical Aerosol Consortium (IPAC) is a consortium comprised of and funded by AstraZeneca, Boehringer Ingelheim, Chiesi Limited, GSK, Kindeva and Teva. IPAC's mission is to input into environmental policies relevant to inhaled therapies to support a patient-centric approach to meeting important sustainability objectives. This awareness campaign has been organised by IPAC and funded by its members. Third party organisations may support by disseminating campaign assets, but will not receive a financial contribution from IPAC, or the composite pharmaceutical companies, either directly or in kind. **If there is evidence of suspected side effects, incidents or defective devices from patients who use an inhaler, patients should be encouraged to talk to their doctor, pharmacist or nurse. This includes possible side effects not listed in the package leaflet. Individuals can also report side effects and defective devices directly via the Yellow Card Scheme at www.yellowcard.mhra.gov.uk. By reporting side effects they can provide more information on the safety of medicines. Date of Preparation: July 2021 I NP-GB-CAU-BNNR-210001**

Restriction Proposals For PFAS

- A 'call for evidence' process was initiated in May 2020 by Norway, Germany, Netherlands, Sweden and Denmark to restrict production, marketing and use of per- or polyfluroalkyl compounds ('PFAS') in the EU. This includes HFCs but covers a much broader range of products including polymeric can coatings, as often deployed in MDIs [9]
- Manufacturers, importers and users were requested to submit information within specific member states and public consultation under Art 69 para 6 of REACH* restrictions.
  - 1st stakeholder call for evidence took place in the latter half of 2020, via questionnaire/calls
  - Norway contracted consultants to compile reports following data gathering, covering medical and non-medical applications. Several reports produced including Medicinal Products (API, diagnostics, anaesthetics and intermediates), Medical Devices, and PFAS/PFA polymer production
  - 2nd stakeholder call for evidence initiated 19th July 2021, via additional questionnaire and sector reports. Stakeholders asked to review the published information and submit comments on necessary corrections and/or missing data initially by **17th October 2021** [10]
- UK (DEFRA) also hosted a PFAS workshop in April 2021

*Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Summary & Conclusions

- The current regulations governing HFC production and consumption, and the ongoing process for their review, create direct and indirect impetus to innovate pMDIs using low GWP propellants so that this delivery platform remains an available option for patients who need or prefer it
- Lessons learned during the transition away from CFCs includes the need for collaboration across all stakeholders, to ensure that continued patient care is the priority, to encourage innovation, and to allow sufficient time for research and development activities
- Input from multiple stakeholders to minimise the impact of inhaled therapy across the whole product lifecycle and during the patient healthcare pathway is recommended
- We must learn from experience to play our part, and together we have the opportunity to improve patient care and tackle the global challenge of climate change

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International Pharmaceutical Aerosol Consortium (IPAC)

- Formed in 1989 in response to the mandates of the Montreal Protocol and fully supported a timely and effective transition away from chlorofluorocarbons (CFCs) under the Montreal Protocol that balanced patient health and environmental concerns.

- IPAC's mission is to ensure that environmental policies relevant to inhaled therapies are patient-centric and appropriately balance both patient care and sustainability objectives. HFC pMDIs played a critical role to the transition as one of the key ozone-friendly alternatives developed to replace CFC pMDIs.

- IPAC members: AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Kindeva, Organon and Teva


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A Multi-Stakeholder Approach to Minimizing the Environmental Impact of Inhaled Therapies and Improving Patient Care

A Proposal for Discussion

Purpose

This paper sets out initial thoughts from members of the International Pharmaceutical Aerosol Consortium (IPAC) on a proposed patient outcome-based approach to reduce the carbon footprint of patients using inhaler treatments, and therefore simultaneously supporting improvements in patient care **together with** reducing the environmental impact of inhaler devices.

This paper was prepared in response to the ambition set out in the NHS England Long Term Plan to halve emissions from inhalers by 2030 and in support of the action plan being developed by the NHS England and NHS Improvement Inhaler Working Group led by the Sustainable Development Unit (SDU). The core elements of this proposal, to undertake focused interventions to improve inhaler use, also align with the work being undertaken by the national Taskforce for Lung Health[1].

The overarching vision of this proposal is to introduce a fully integrated model of inhaler management and disposal that can become embedded into 'business as usual' for pharmacists, whilst in parallel, industry and the NHS undertake efforts to inspire and prepare for transition to low carbon inhalers. Low carbon inhalers include DPIs, SMIs, and pMDIs with lower global warming potential propellants (under development). It is important to note that some SMIs and DPIs are reusable which lowers the impact of plastic waste. Taking active measures along the patient journey has the potential to reduce the overall environmental impact of the component parts of inhalers, whilst supporting improvement in patient outcomes of their condition. It is also important to encourage and support innovation for new technologies, including pMDIs using novel, low carbon medical propellants.

The paper proposes a multi-stakeholder, co-creation approach, focused on improving specific elements of the patient journey. Each element has the potential for improving patient outcomes as well as minimizing environmental impact. Combining all elements together into a fully integrated programme provides the opportunity for focused activities at each touchpoint of the patient journey, including supporting correct diagnosis, effective prescribing, inhaler device choice, device training, waste management and the effective disposal of inhaler components.

[1] https://www.blf.org.uk/taskforce/plan

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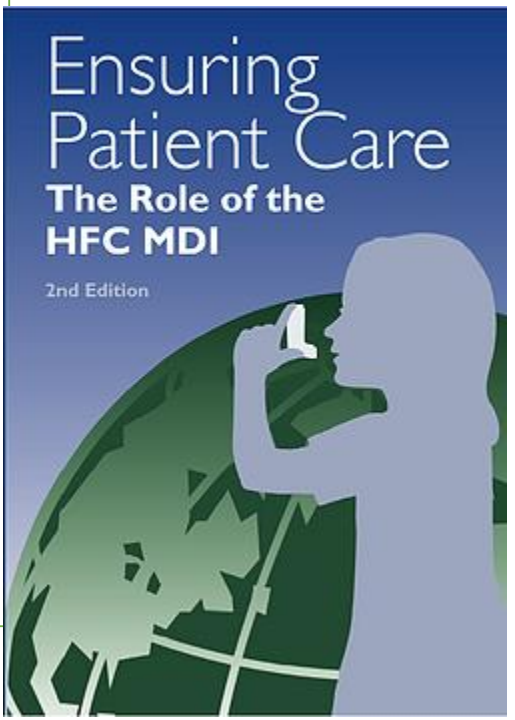

https://www.ipacinhaler.org/

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