**Supporting High-quality Low-carbon asthma care: Mapping exercise**

**Theory of change thinking:**

**What is the problem?**

* We have high use of MDIs in the UK which is contributing to climate & ecological crisis.
* We also have SABA overuse which is associated with poorer control and poorer outcomes in patients with asthma.
* MDIs are inappropriately disposed leading to release of GHG.

In order to tackle climate & ecological crisis we need to reduce MDI use by:

* Reducing SABA MDI overuse (and over dispensation)
* Switching from MDI to DPI for prevention and/or reliever use
* Encourage appropriate MDI disposal

**Background**

1. Asthma care needs [improvement in UK](https://www.asthma.org.uk/support-us/campaigns/publications/national-review-of-asthma-deaths/)
2. SABA overuse (>3 inhalers/yr) [associated with poorer outcomes](https://doi.org/10.1007/s12325-020-01444-5)
3. Patients should [not be on SABA alone](about:blank) except in a very few cases
4. MDIs much more effective with spacers yet many patients do not use spacers.
5. MDIs contain propellant with very high carbon footprint (1000 – 3000 x CO2) and account upto a quarter of GP prescribing carbon footprint
6. MDIs often do not have a dose counter so patients are at risk of using empty inhaler (inhaling propellant only) or throwing away half-used inhaler
7. DPIs can be safely and effectively used by majority of patients
8. DPIs have dose counters so reduced risk of using empty inhaler and waste
9. Patients receiving [>2hours self-management support for asthma](https://www.bmj.com/content/370/bmj.m2521) have improved health & QoL outcomes

**HIGH SABA USE**

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| Potential causes | Potential solutions |
| **SYSTEMS TO IDENTIFY SABA OVERUSE**   * Currently asthma review QoF re SABA use per week rather than number of inhalers in a year * Lack of IT system for checking following when request for salbutamol comes in or at medication review: * How many SABA in previous 12 months? * Is there a confirmed diagnosis and what is it? * Is patient on a preventer inhaler? * Has patient had an acute exacerbation in last year needing oral steroids or admission | IT solution to enable pulling out information on SABA use in last 12 months for use at   * SABA request (doctors/pharmacist use) * Medication review (doctor/pharmacist use) * Asthma review (Nurse use)   Pharmaoutcomes IT may help pharmacists help with this.  New Discharge medicines service may help community pharmacy identify asthma patients who have been admitted. |
| **LACK OF PATIENT & PRACTITIONER KNOWLEDGE ON ASTHMA**   * That good asthma control means few to no symptoms * Hardly anyone should be on SABA alone * More than three SABA a year associated with poorer health outcomes. * Problems with lack of dose counters in MDIs can lead to suboptimal use and waste. * Practitioner only: That at the time of diagnosis need to prescribe a preventer (people still prescribing SABA and some not returning for review) * Practitioner only: The problems with patient compliance with spacers and MDIs (real world spacer use low and & therefore MDI’s may be sub optimally used) | **Education of practitioners**   * Local CCG/PCN learning (online or F2F) * Incorporation into BTS guidance * Incorporation into CCG guidance on asthma management * Asthma UK website * NHSE inhaler guidance * Asthma templates * QoF criteria (ask question re number of inhalers)   **Education of patients:**   * Incorporate into PAAP (Asthma UK involvement) * Short infographic/leaflet/video that can be sent before each review (AccuRx) * Group consultations to support improved self-management |
| **LACK OF PATIENT & PRACTITIONER KNOWLEDGE ON IMPACT OF MDI ON CLIMATE & ECOLOGICAL CRISIS**   * Climate and health (Therefore lack of motivation to address) * Specific climate impact of inhalers * Different impact of reliever inhalers (Ventolin v Salamol) * That inhalers need safe disposal in terms of environmental impact | Bulk switching of all patients on Ventolin to Salamol with pharmacy engagement and patient information letter.  **Practitioner Education:**   * e-LFH 30 minute module on climate & Health * E-learning? * NHSE guide * Local CPD   **Patient education:**   * Short infographic/leaflet/video that can be sent before each review (AccuRx) |
| **FAMILIARITY & SAFETY CONCERNS**   * With different types of inhalers * Concern about ability to teach/learn different device and how this may affect control * Practitioners tend to prescribe the brand name they know (familiarity) * Concerns about safety of switching and possible impact on control of asthma * Confusion with previous knowledge of guidance for example stressing importance of spacers, especially in emergencies. | * Visual guide of different inhalers (connected to IT?) * Education * All patients offered emergency pack |
| **POOR CONTROL**   * Poor Inhaler technique * Concordance with preventer * Need treatment to be stepped up * Do not know how to recognise poor control * Air pollution | * Video or F2F inhaler technique assessed with support from Asthma UK videos. * Group consultations to improve self-management * Consider routinely giving patients peak flow meter so they can self-manage better * Inform on links between asthma and air pollution * Inform on benefits of exercise, singing. (link/leaflet to patients given at annual review?) |
| **INAPPROPRIATE USE**   * Using SABA alone to manage asthma * Using SABA to manage anxiety * Concerns re prescription cost of using two inhalers * Convenience of blue inhaler that carry with them * Positive feedback from instant relief from SABA | * QI to make sure people with diagnosis of asthma are not on SABA alone * QI to make sure people on SABA have diagnosis. * Cost: Prescribe preventer at higher dose so lasts 2 months and less waste. * Consider MART * Questions in Asthma template/QoF asking about anxiety/dysfunctional breathing and link to breathing resources. |
| **DISPENSING TOO FREQUENTLY**   * IT default time interval for for salbutamol inhaler prescription 28 days * Pharmacies not checking for overuse? | * Switch default SABA interval to 180 days (and have 28 days as option for COPD) * Incentivise pharmacies to check for overuse. |

**INHALER DISPOSAL - LANDFILL**

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| Potential causes | Potential solutions |
| * Lack of knowledge of climate impact of incorrect disposal * Lack of facilities for recycling * Not convenient to bring back to pharmacy | * Incorporate into PAAP (Asthma UK) * Infographic/leaflet/video (Accurx) * Lobby for recycling * Pharmacies to request patients to bring back used inhalers when dispensing old ones * Incentivise pharmacies |

**HIGH PROPORTION OF MDI INHALERS**

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| Potential causes | Potential solutions |
| **Lack of knowledge amongst patients and practitioners:**   * Climate and health (Therefore lack of motivation to address) * Specific climate impact of MDI inhaler * MDIs may be more effective with spacers yet many patients do not use spacers. * MDIs often do not have a dose counter so patients are at risk of using empty inhaler (inhaling propellant only) or throwing away half-used inhaler * DPIs can be safely and effectively used by majority of patients * DPIs have dose counters so reduced risk of using empty inhaler and waste * Can reduce number of inhalers used in stable patient by switching to higher dose inhaler that saves money and carbon * Which are highest carbon footprint inhalers | **Education of practitioners**   * E-learning * Local CCG/PCN learning (online or F2F) * Incorporation into BTS guidance * Incorporation into CCG guidance on asthma management * Asthma UK website * NHSE inhaler guidance * Asthma templates with access to visual guidance * QoF criteria (ask question has low carbon inhaler been considered? Would patient benefit from an inhaler with a dose counter?)   **Education of patients:**   * Short infographic/leaflet/video that can be sent before each review (AccuRx) * Group consultations to improve information sharing and self-management * QI project to focus on high carbon footprint inhalers first. * IT to alert practitioners to lower carbon options. |
| **Lack of familiarity**   * With different types of inhalers * Concern about ability to teach/learn different device and how this may affect control * Practitioners tend to prescribe the brand name they know (familiarity) | * Clear visual guidance |
| **Safety concerns.**   * Concerns about safety of switching and possible impact on control of asthma * Confusion with previous knowledge of guidance for example stressing importance of spacers, especially in emergencies. | * Education of practitioners that switching is opportunity to improve control |
| **Lack of knowledge of existing incentives and NHSE Long-term plan commitment** |  |
| **Local guidance**   * Local medicines management guidance which may put MDI as first line (this is changing). * Medicines guidance prioritizing inhaler choice based on cost (not taking into account costs of MDI drug wastage) | * Information to all MMTs on national guidance to support local guidance * Information that addresses cost concerns * Placing carbon cost above cost considerations |
| **As prescribing by brand not clear which inhalers are high and low carbon** | * IT solution to alert prescriber to low-carbon options * IT solution to label inhalers as high or low carbon |
| **Child to Adult switching** | * Group education to support self-management and consider DPI use before 12 (school) like DESMOND |
| **Pharmaceutical company influence** |  |

**Ideas for QI projects for high quality, low-carbon asthma care:**

**Baseline audit on what inhalers are dispensed from practice (% relievers. % MDIs)**

1. **Focus on patients at high risk or with poor control**

Search for

* 1. Patients who have been admitted or needed oral steroids for asthma in the last year
  2. Patients who are overusing salbutamol (> 4 – 6/ year?)\*

Prioritise these patients for an asthma review focussing on inhaler technique. Offer DPI if not using spacer with MDI. Consider MART therapy if using one combination inhaler will aid compliance.

Make sure there is a mechanism for clinicians to be alerted to SABA overuse – e.g. put a limit of on number of SABA inhalers a year or a min of number of days between SABA request.

*Poor control is defined by needing to use a SABA inhaler more than three times a week. This means with good control, patients should need no more than 2 SABA inhalers a year. There is a 2020 paper which defines 3 prescriptions for SABA inhalers per year as high use and shows that this doubles the risk of an exacerbation. Sometimes patients want to keep inhalers in two different locations. 4 inhalers a year should allow for this.*

1. **Focus on patients who are using highest carbon footprint inhalers**

Search for Flutiform and Symbicort MDI. Conversation with patients about switching to a lower equivalent MDI or DPI if clinically appropriate.

1. **Focus on switching from Ventolin to Salamol**

E.g., Salamol has half the carbon footprint of Ventolin. Consider a batch switch with letter to patients explaining they are receiving the same drug but this preparation is better for environment.

1. **Focus on reducing waste**
   1. *Reduce number of inhalers*: Carbon footprint can be halved by changing dose of inhaler e.g: switching from 2 puffs bd Clenil 100mcg MDI to 1puff BD Clenil 200mcg MDI.
   2. *Correct disposal*: Develop a mechanism for patients to return used inhalers to pharmacies for safe disposal or recycling – website, collection by surgery, script note.
2. **Focus on prevention through improved self-management:**
   1. Download personal asthma management plan from asthma.org - type into it and send via an electronic messaging service such as Accurx
   2. Send information on inhalers with annual review appointment electronically ([greeninhaler.org](http://greeninhaler.org/), [greener practice](http://www.greenerpractice.co.uk), NICE PDA etc).
   3. Consider routinely giving patients peak flow meter so they can self-manage better
   4. Inform on links between asthma and air pollution
   5. Inform on benefits of exercise, singing. (link/leaflet to patients given at annual review?)
   6. Consider group consultations to generate time needed for self-management?