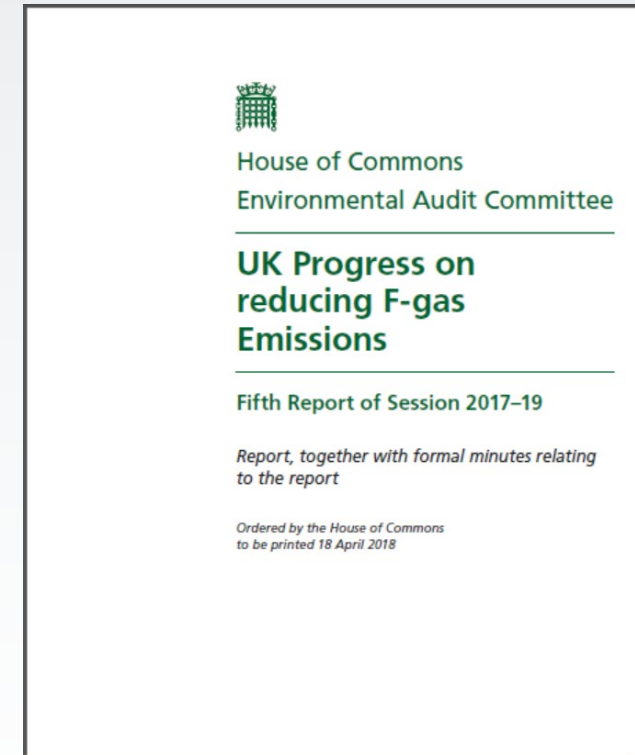
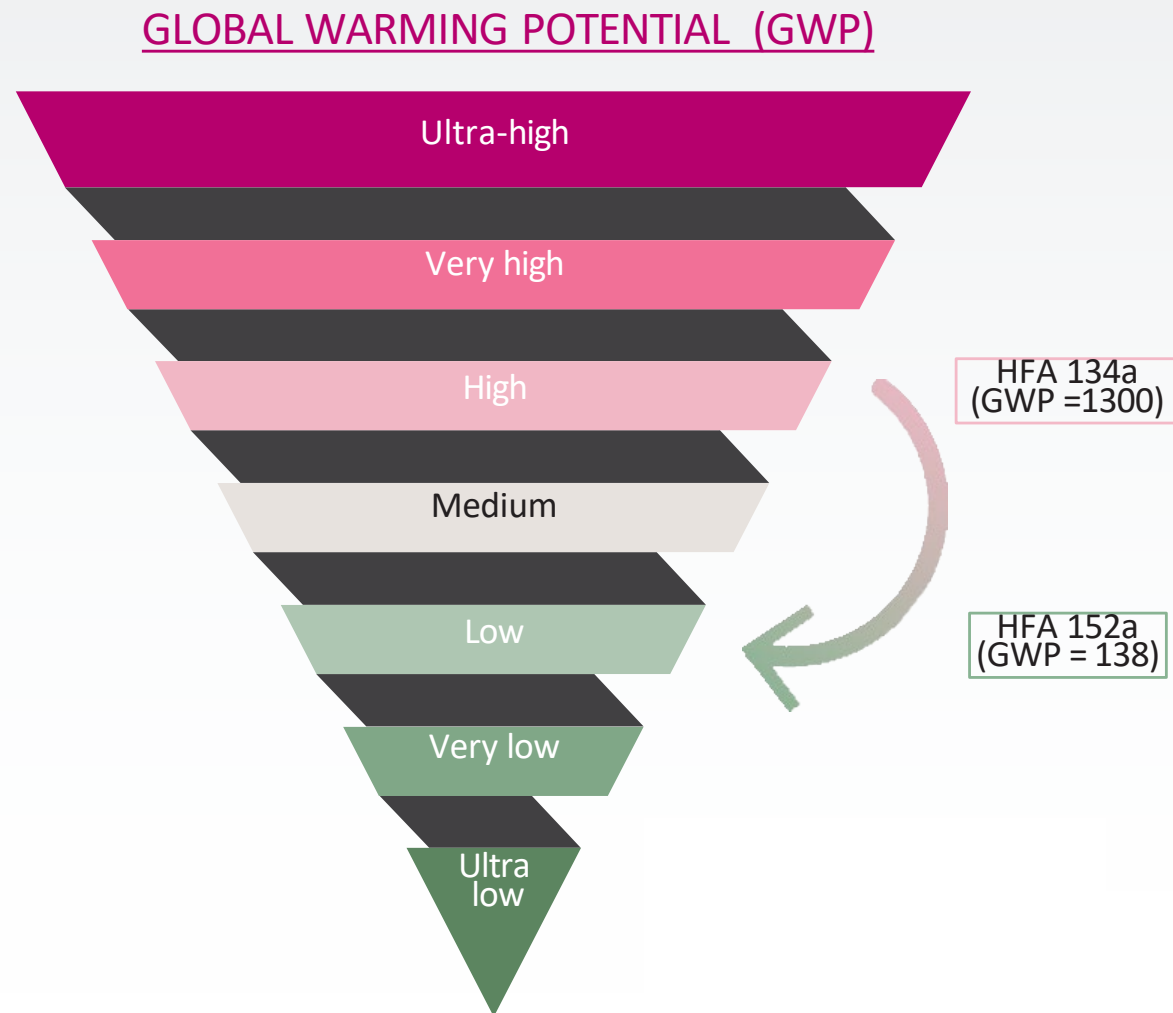




Managing the end of life of inhalers through
a postal inhaler recycling scheme –
experience and learnings

Setting the scene – why is it essential to take action!



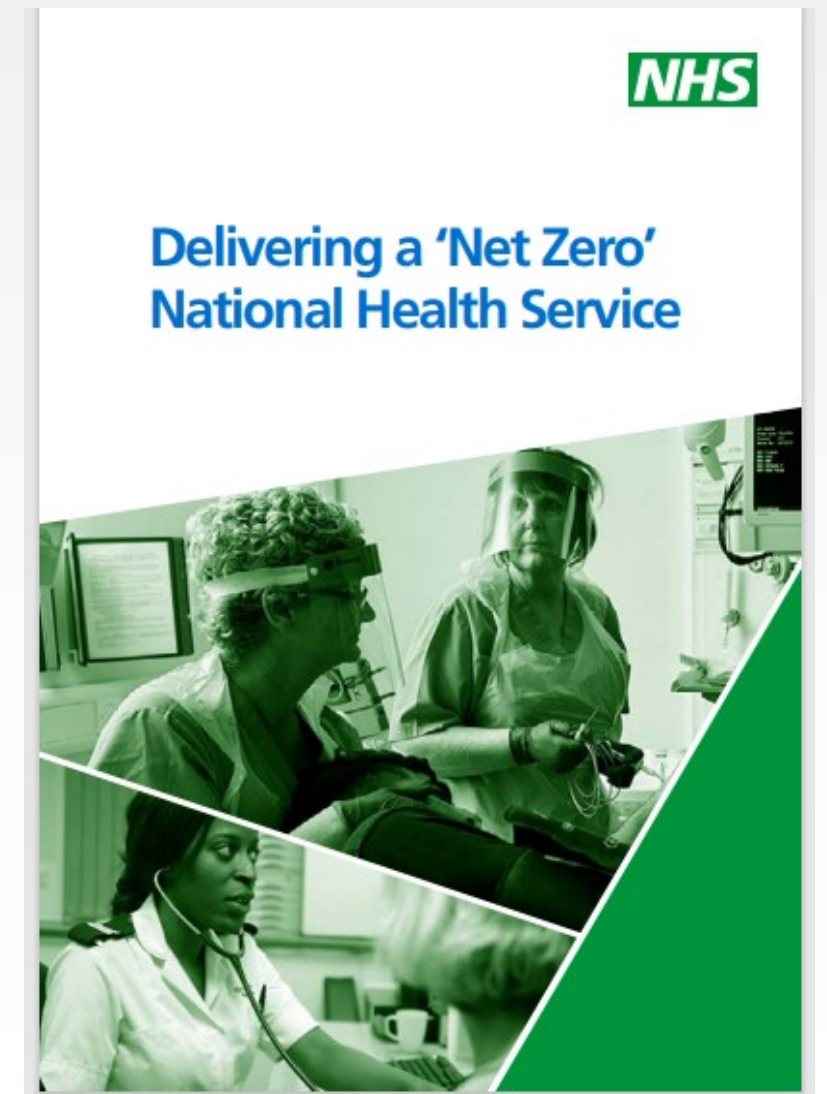
UK National Policy driver – ..."as part of the ongoing plan to reduce the environmental impact if inhalers, metered dose inhalers should be recycled to prevent the propellant being released into the atmosphere through disposal in landfill sites"....

Environmental Audit Committee Report, April 2018

There are opportunities to go further and faster. For example, the NHS should reduce reliance on asthma medication which uses Metered Dose Inhalers (MDIs), which use high GWP HFC propellants, by increasing the use of low GWP Dry Powdered Inhalers. In addition, medical companies or the NHS should establish a pharmacy recycling system to ensure that residual HFCs from MDIs are recycled rather than being released in landfill.

Managing end of life of inhalers – national goals

- To reduce the environmental impact of pressurised metered dose inhaler (pMDIs) at the end of device life by diverting the waste inhalers from the domestic waste streams (and ultimately landfill sites) to specialist disposal, recovery and/or recycling processors
- To support UK Government ambition to increase volumes of returned inhalers to 50% of all pMDIs¹
- To support NHS to achieve desired carbon impact reductions and achieve Net Zero as set out in the report - Delivering a 'Net Zero' National Health Service²



1. House of Commons Environmental Audit Committee UK. Progress on reducing F-gas Emissions Fifth Report of Session 2017-19. Published April 2018
2. NHS England. Delivering a 'Net Zero' National Health Service. Published July 2022

What do users of inhalers think – Opinion survey April 2020 (M&F Health)

Results from Chiesi survey of 487 UK asthma patients who use inhalers

Beliefs:

- 47% feel guilty about the environmental impact of their inhaler
- 49% worry about the carbon footprint of their inhalers
- 70% would feel able to make a contribution towards climate change by recycling their used inhalers

Awareness:

- 78% have not been told by their GP, nurse or pharmacist what inhaler recycling options are available in their area
- 53% are unaware that inhalers can be recycled and that they should not be put in their council recycling bin and thought that rubbish collectors would know what to do about recycling inhalers
- 80% would recycle if they knew more about what recycling options are available to them

Accessibility:

- 77% think that more needs to be done to make inhaler recycling accessible in their area
- 70% wish that there was an inhaler recycling scheme available in their local area
- 77% would recycle their used inhalers on a more regular basis if they could just post them to a recycling centre

Chiesi postal scheme objectives

This was a Chiesi Limited scheme supported by University Hospitals of Leicester NHS Trust and Leicestershire and Rutland Local Pharmaceutical Committee (LPC).



- To divert waste inhalers from domestic waste streams to safe disposal methods
- To provide an alternative disposal option for patients unable or unwilling to take their inhalers to a community pharmacy (collected as part of NHS clinical waste scheme)
- To provide 'proof of concept' data to NHS and industry consortium, including benefits/disbenefits on pharmacy teams
- To provide a project framework for replication in Chiesi global affiliates



⁴ Department for Environment and Food Affairs. Energy from Waste: a guide to the debate. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284612/pb14130-energy-waste-201402.pdf

Set up challenges

Government Waste Legislation

- Classification of inhalers in waste form
- Liaison with Environment Agency (regulators)
- Exemption for patients to complete waste transfer note
- Chiesi registration as waste broker
- Chiesi registration as F-Gas handler
- Duty of care

Pharmacy Medicines Legislation

- Prescription only medicines (POM) classification
- Sites for collection of inhalers/issue of envelopes
- Ownership of waste
- Duty of care

Mail Carriage Regulations

- Classification of waste (hazardous vs non-hazardous)
- Waste transfer liabilities
- Civil aviation authority
- Deviation from standard terms and conditions
- Duty of care
- Process audit requirement

Waste Classification

Guidance on the classification and assessment of waste (1st Edition v1.1)
Technical Guidance WM3

Logos: SEPA Scottish Environment Protection Agency, NIEA Northern Ireland Environment Agency, Cyfoeth Naturiol Cymru Natural Resources Wales, ENVIRONMENT AGENCY

Duty of care: waste transfer note Keep this page and copy it for future use. Please write as clearly as possible.

Section A – Description of waste

A1 Description of the waste being transferred _____

A2 How is the waste contained?
Loose Sacks Skip Drum
Other _____

List of Waste Regulations code(s) _____

A3 How much waste? For example, number of sacks, weight _____

Section B – Current holder of the waste – Transferor
By signing in Section D below I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011 Yes

B1 Full name _____
Company name and address _____
Postcode _____ SIC code (2007) _____

B2 Name of your unitary authority or council _____

B3 Are you:
The producer of the waste?
The importer of the waste?
The local authority?
The holder of an environmental permit?
Permit number _____
Issued by _____
Registered waste exemption?
Details, including registration number _____
A registered waste carrier, broker or dealer?
Registration number _____
Details (are you a carrier, broker or dealer?) _____

Section C – Person collecting the waste – Transferee

C1 Full name _____

C2 Are you:
The holder of an environmental permit?

DH Department of Health

Environment and sustainability
Health Technical Memorandum
07-01: Safe management of healthcare waste

Image showing hazardous waste containers with labels: DANGEROUS WASTE, FLAMMABLE, RADIOACTIVE, ORGANIC PEROXIDE, 5.2, 3201.

Prohibited and restricted items

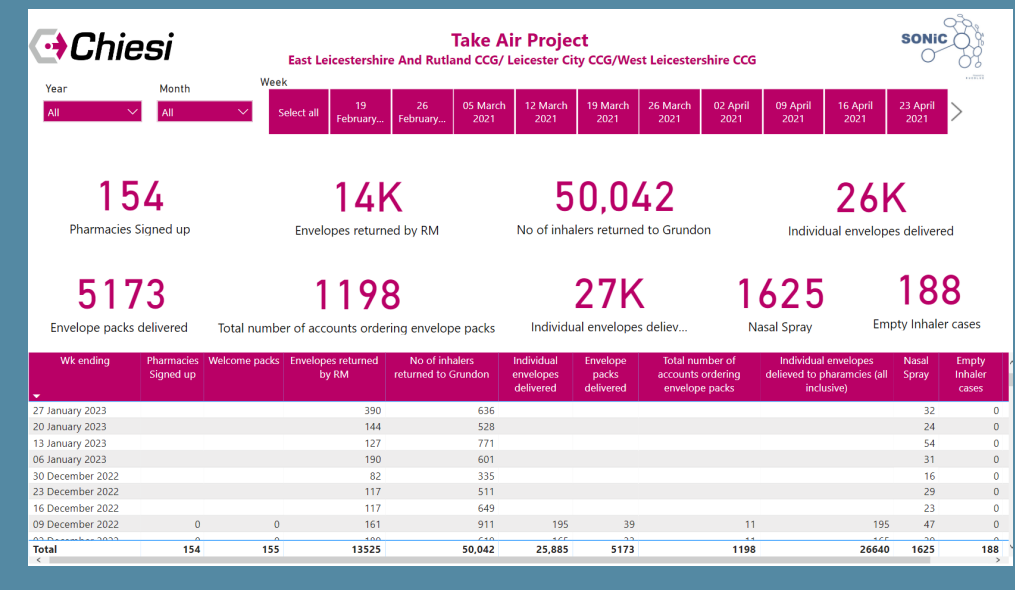
A guide to what you can and cannot send in the mail

Valid from Nov 2018

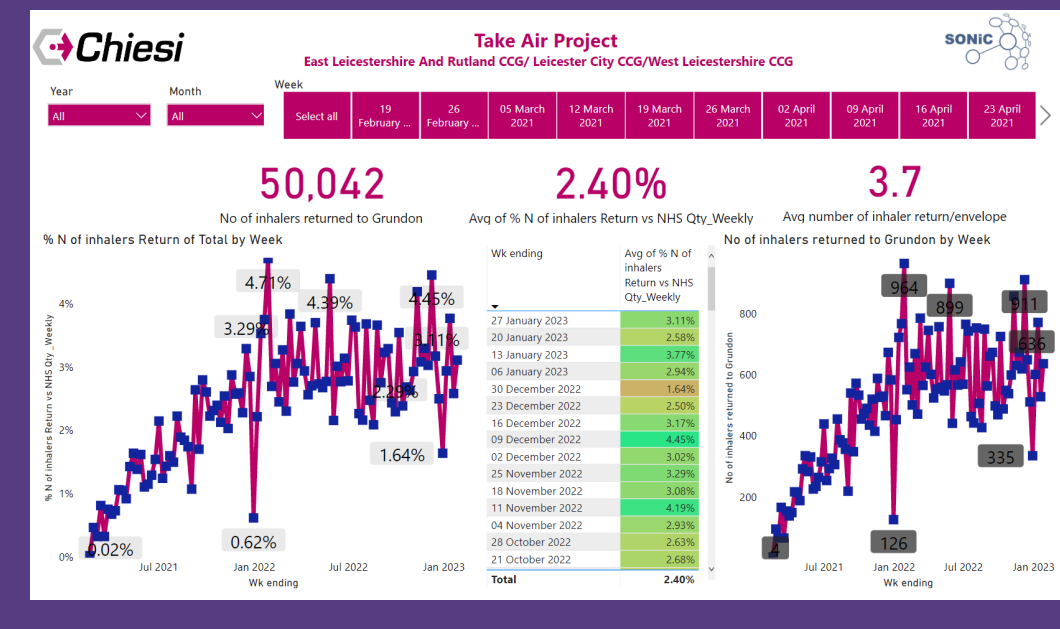
Logos: Royal Mail, MAIL-TO-FORCE

Project management dashboard (outcome metrics)

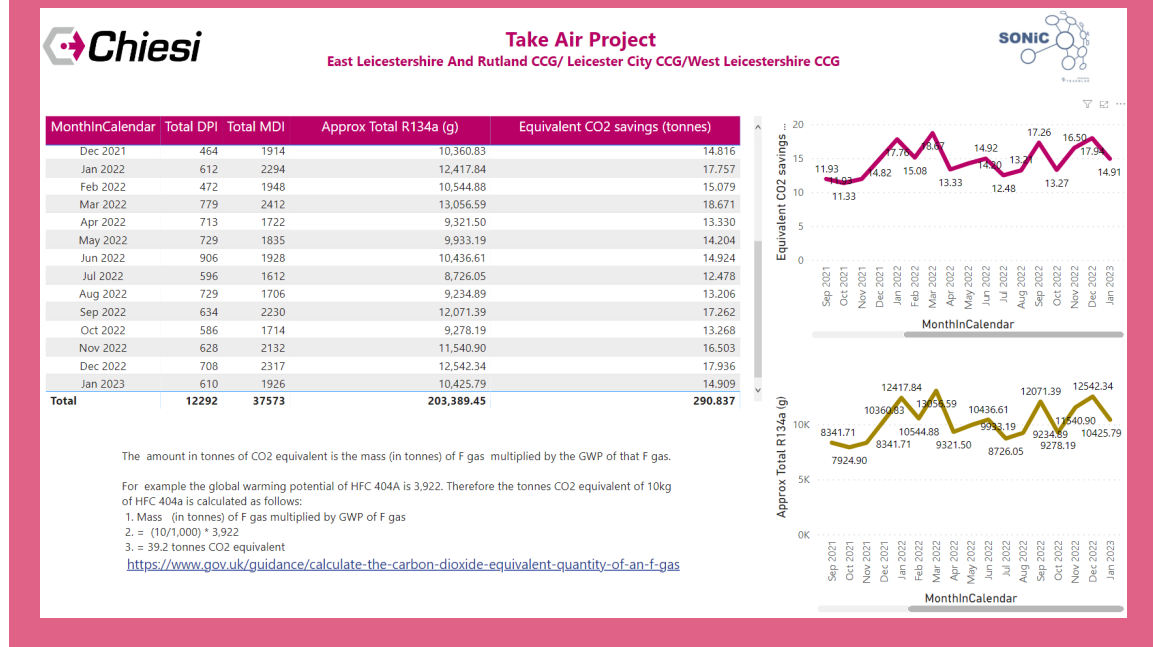
Orders from pharmacies – number of envelopes issued



Inhalers returned through scheme



Environmental impact – carbon emissions avoided



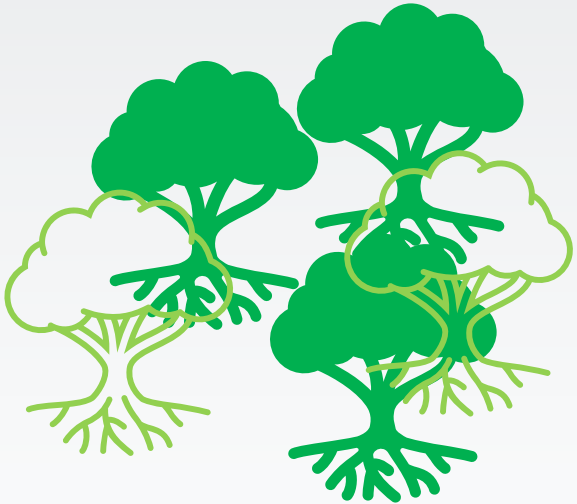
Checks

- Monitoring process measures to ensure delivery:
 - Envelope management data
 - Returns to recycling centre vs inhalers prescribed
 - Feedback from suppliers
- Patient feedback data
- Emails to Take AIR team
- Spend vs budget (Waste, postage, materials costs)

Value to the environment (Feb 2021 to Feb 2023)



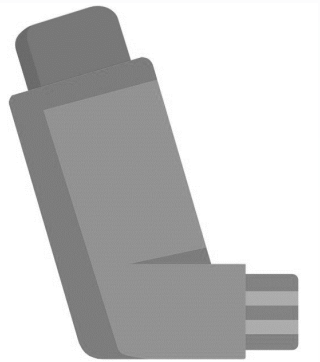
305.3
tonnes of CO₂e
saved



5,048
Carbon stored by tree
seedlings grown for
10 years*



14,060
envelopes returned
by patients



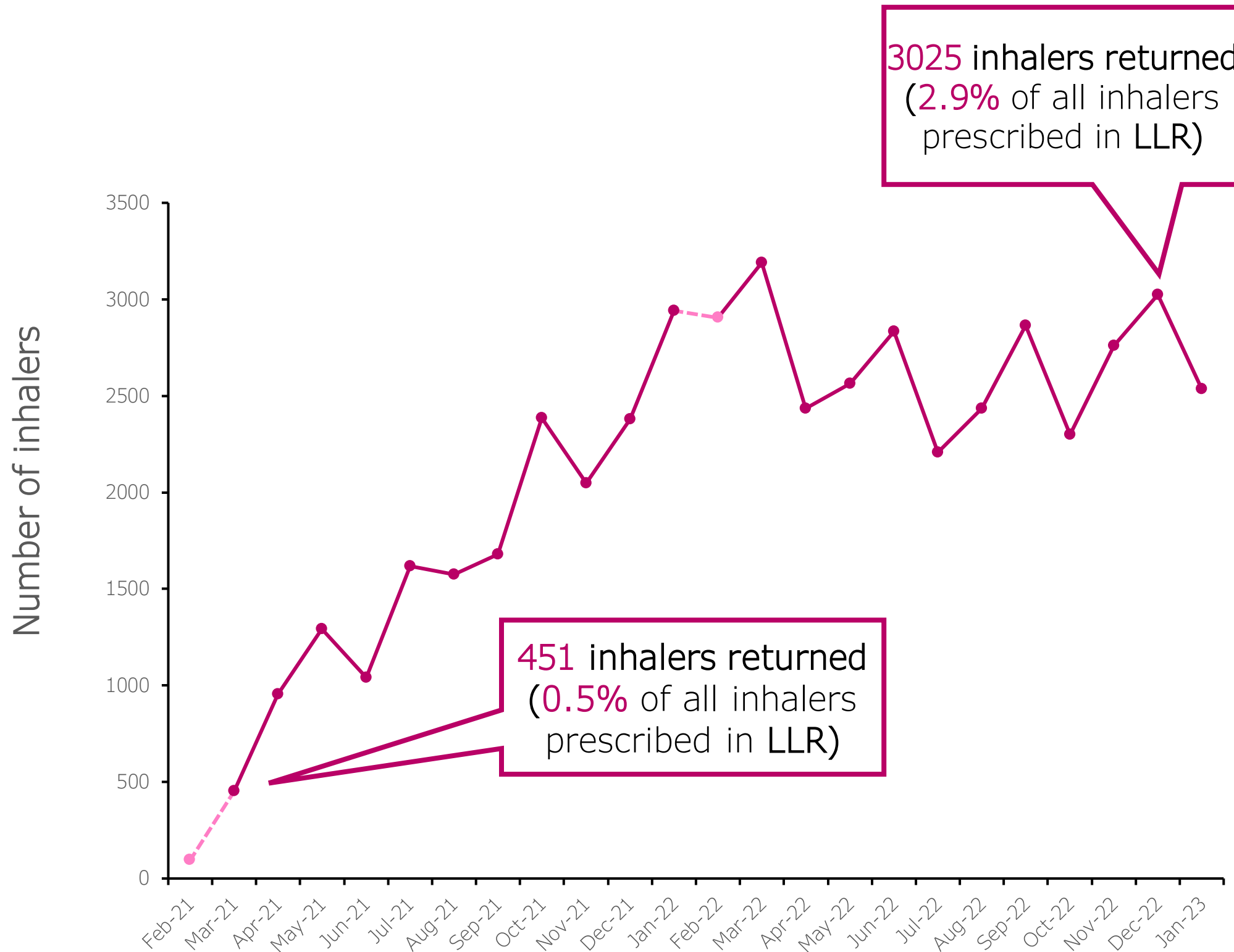
52,148
inhalers returned by
patients



3.7
Average number of
inhalers per
envelope

Chiesi. Data on file
* Converted using United States Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. Available from: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Value for patients



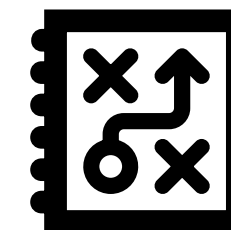
Scheme feedback from participants



82 responses total;
81 patients completed all questions



93% of respondents (77/82) very satisfied/satisfied with Take AIR*



100% of respondents found instructions easy/very easy

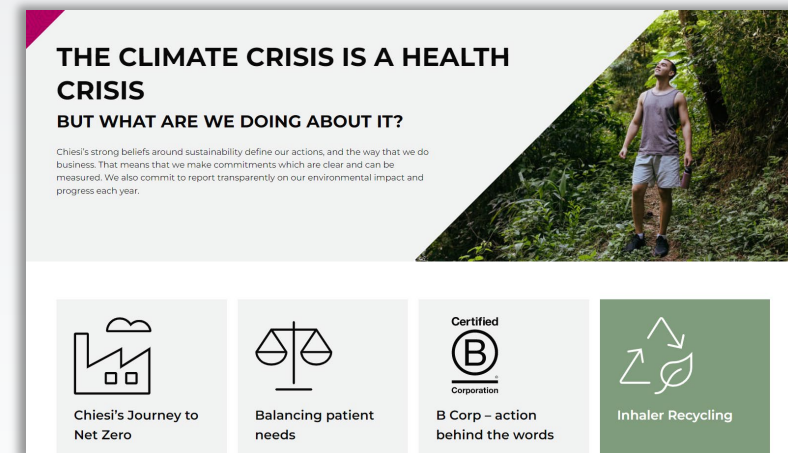


96% (78/81) participated in Take AIR because of environmental concerns

*Overall, 79% (65/82) and 14% (12/82) of participants were 'very satisfied' or 'satisfied', respectively
Chiesi data on file

Sharing our learning

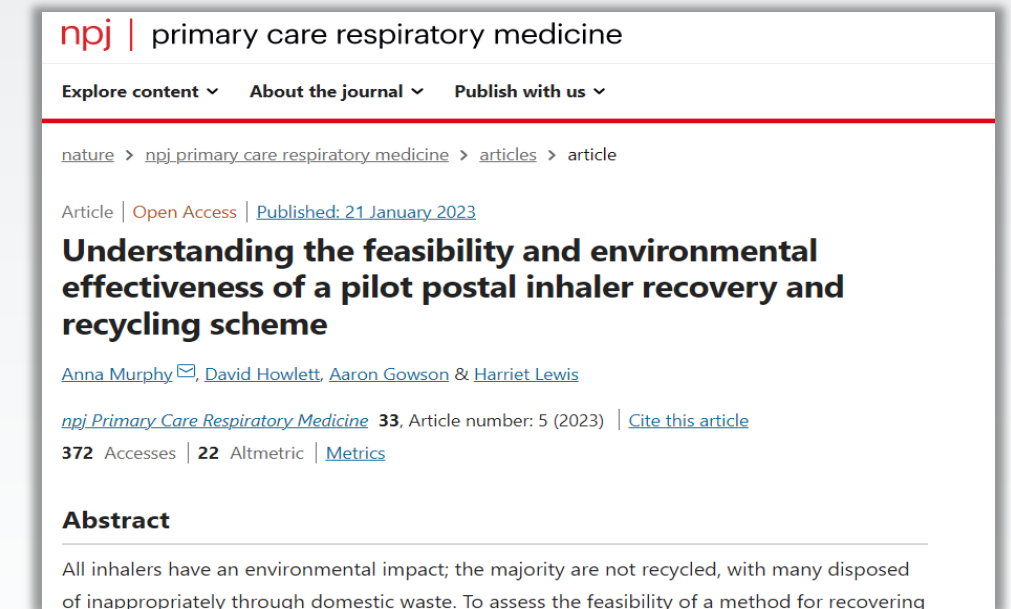
Implementation toolkit (Nov '22)



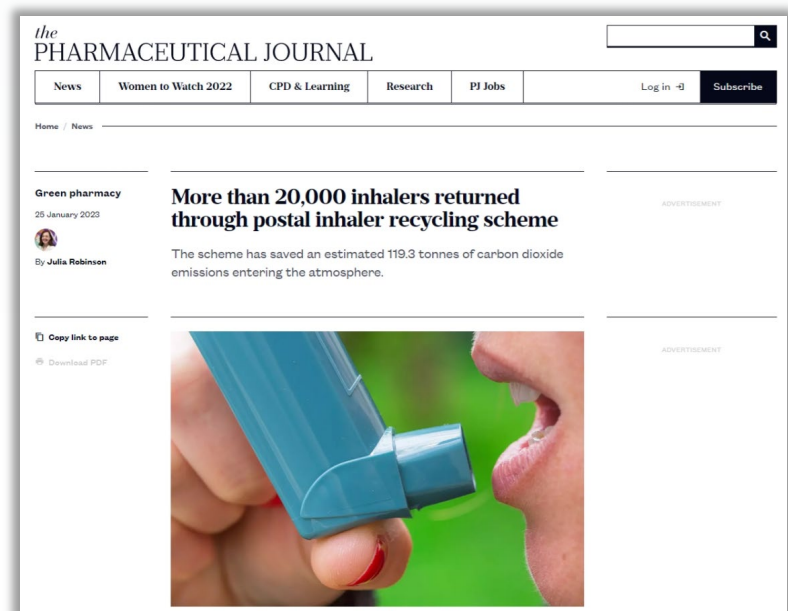
Clinical conference (Dec '22)



Academic journal (Jan '23)



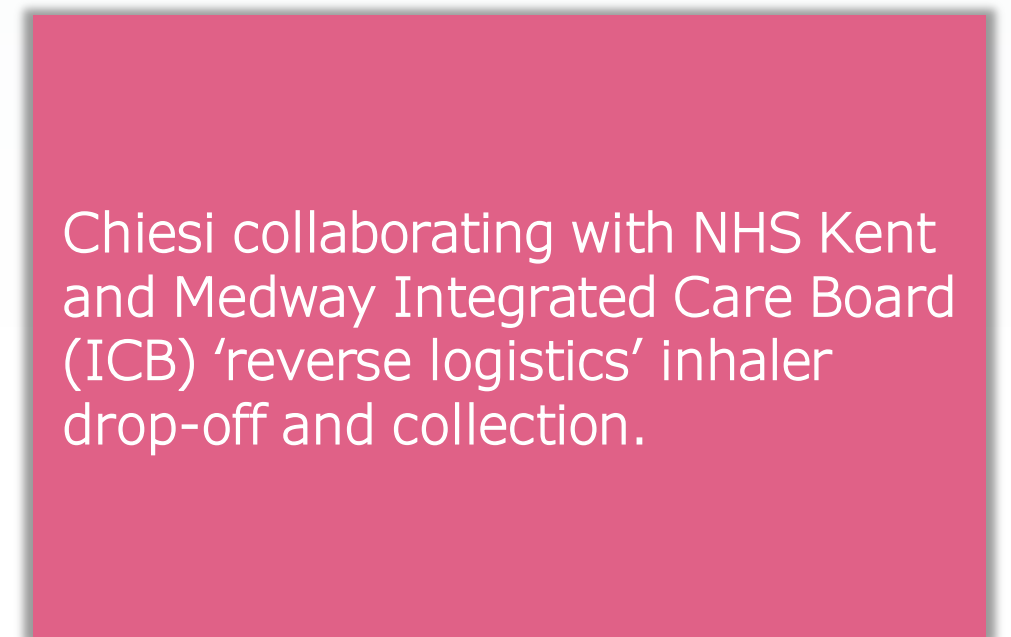
Healthcare media (Jan '23)



F-Gas regulations (Feb '23)



Supporting innovation (July '23+)



Planning for future options



Chiesi Vision

To normalise the recycling of inhalers by:

- creating a 'business as usual' model and
- changing patient behaviour

Delivery options

- Chiesi provision of a 'How To' guide for others to set-up own scheme
- Chiesi collaboration with other companies and/or organisations to;
- Develop other/parallel returns channels
 - Community drop off (supermarket, libraries, banks, pubs, etc)
 - Electronic postal returns process (learning from online retail processes)
 - Other?

