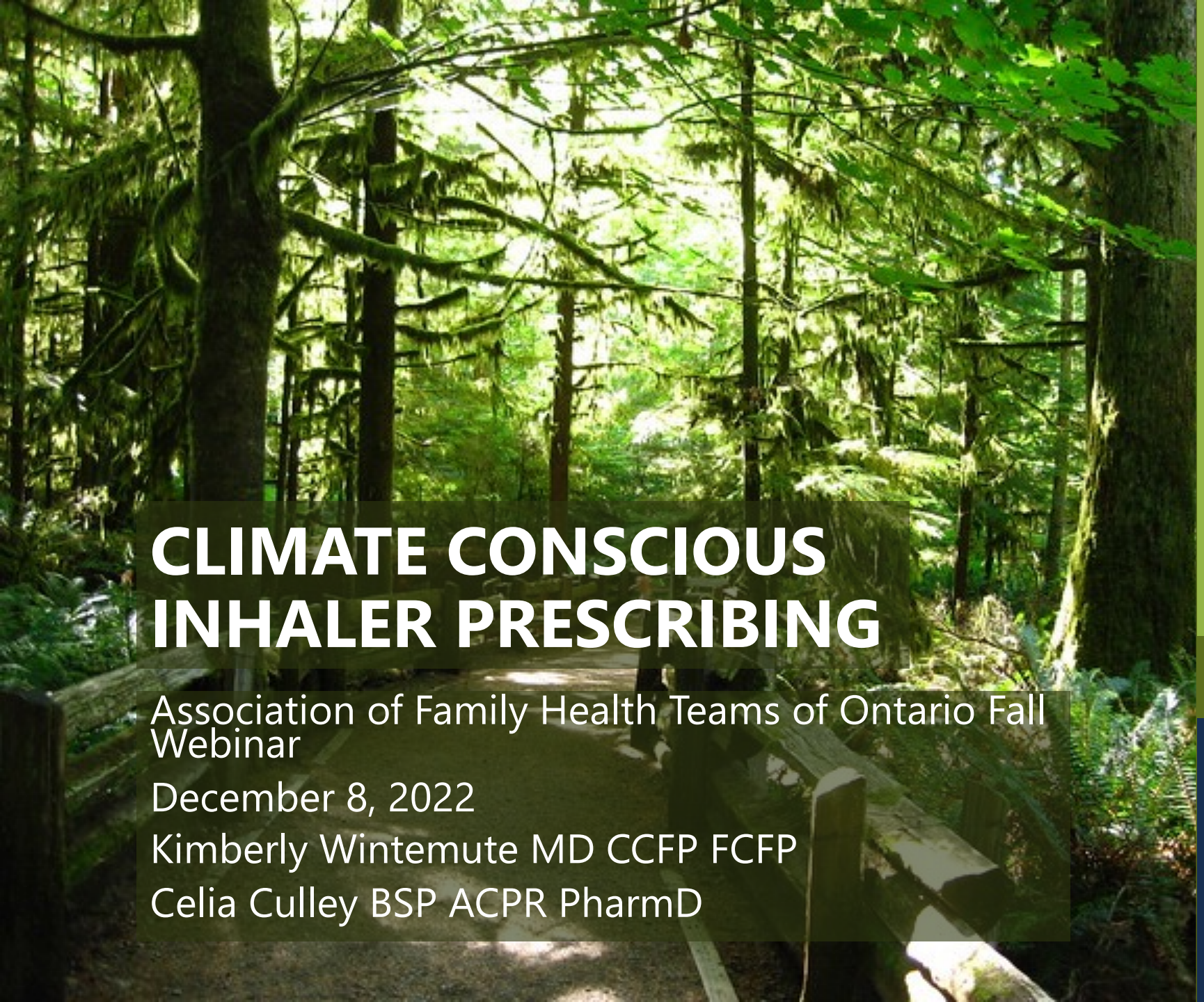


CLIMATE CONSCIOUS INHALER PRESCRIBING

Association of Family Health Teams of Ontario Fall Webinar

December 8, 2022

Kimberly Wintemute MD CCFP FCFP

Celia Culley BSP ACPR PharmD

Family & Community Medicine
UNIVERSITY OF TORONTO

island health

CASCADES
Climate Action Healthcare + Action climatique soins de santé

This project was undertaken with the financial support of the Government of Canada.

Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.

Canada

Photo credit: Celia Culley

Disclosure – Kimberly Wintemute MD CCFP FCFP

Relationships (all academic, not-for-profit):

- **Choosing Wisely Canada** (Health Canada), salary support 2015-21
- **Ontario College of Family Physicians**: Scientific Planning Committee Member and Facilitator, Practicing Wisely Course, stipends
- University of Toronto, **Centre for Sustainable Health Systems,** stipend

Potential for conflicts of interest: N/A

Plan to mitigate any conflicts of interest: N/A

Disclosure – Celia Culley BSP ACPR PharmD

Relationships (all academic, not-for-profit):

- Employment at **Island Health**
- **CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis) and Environment and Climate Change Canada,** grant
- **CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis) and Environment and Climate Change Canada,** stipend

Potential for conflicts of interest: N/A

Plan to mitigate any conflicts of interest: N/A

Learning Objectives

- Explore carbon footprint of health care systems and how inhalers contribute to it
- Ask four questions related to inhaler prescribing in adults
- Imagine practice change that results in immediate reduction in greenhouse gas emissions: "high value, low carbon care"

Andy, age 25

- Requests renewal salbutamol metered-dose inhaler (MDI)
- Prescribed 5 years ago
- Renewed twice, without reassessment
- “I use it for my asthma every time I get a cold”

Andy

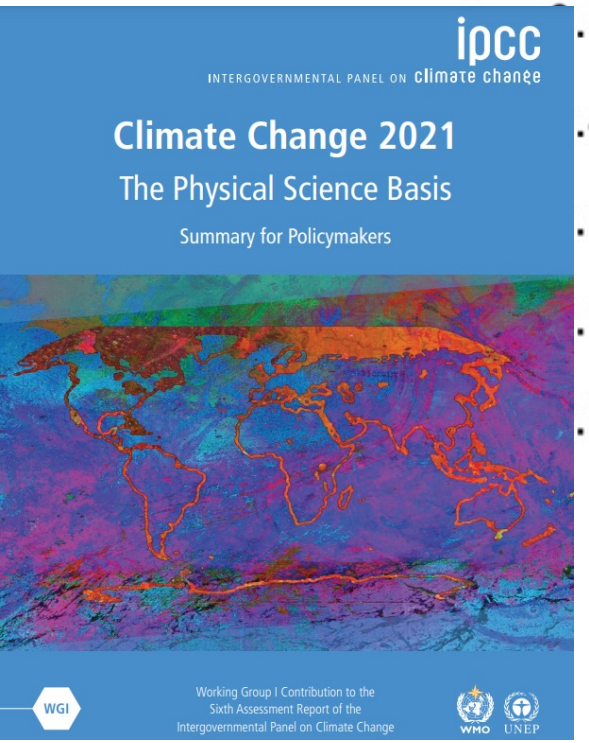
- No spacer
- Coughs x 3 wks if no inhaler
- Never had breathing tests

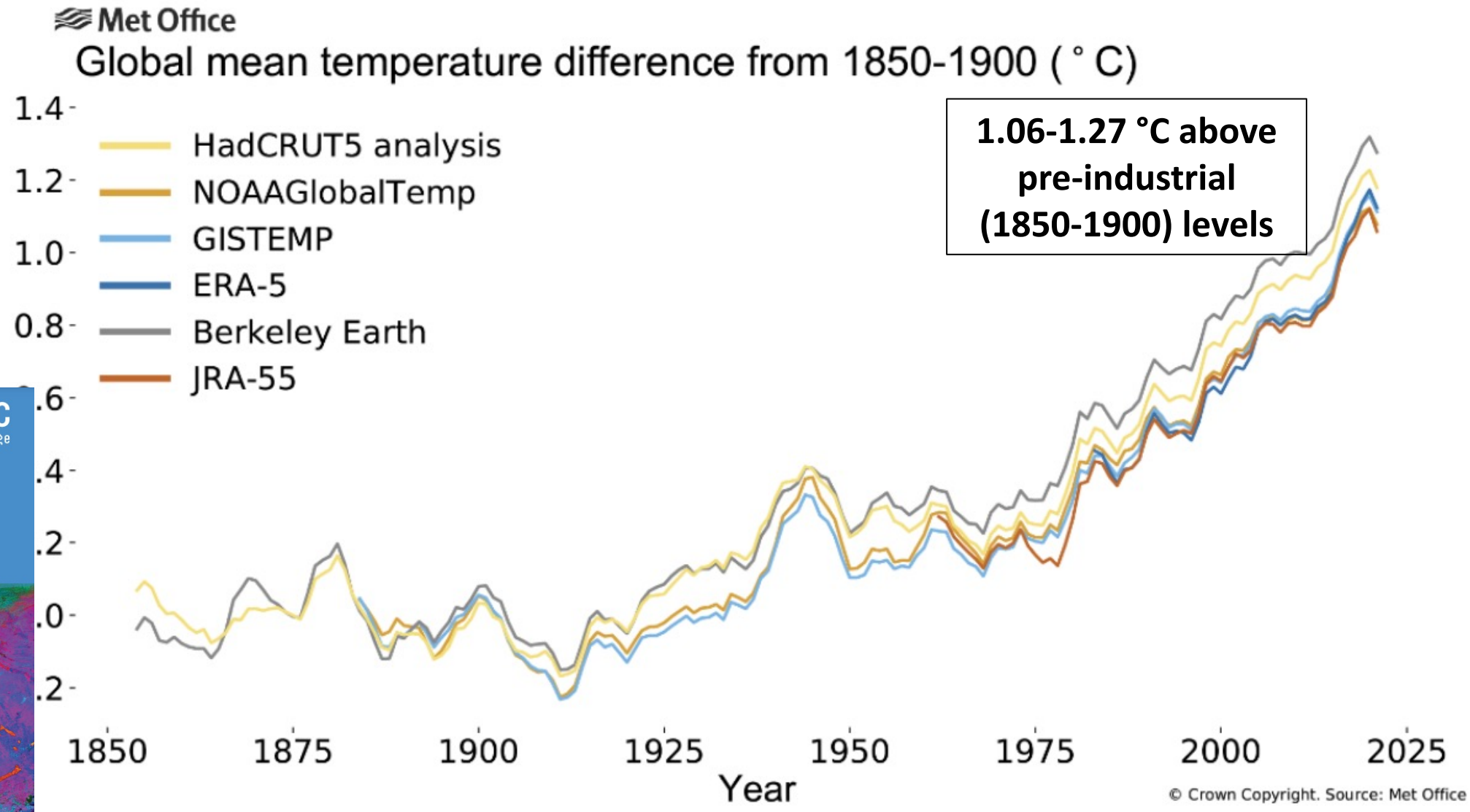
- Chest clear, vital signs normal

Climate Crisis

Intergovernmental Panel on Climate Change 2018:

10-12 years to avoid catastrophic and irreversible warming

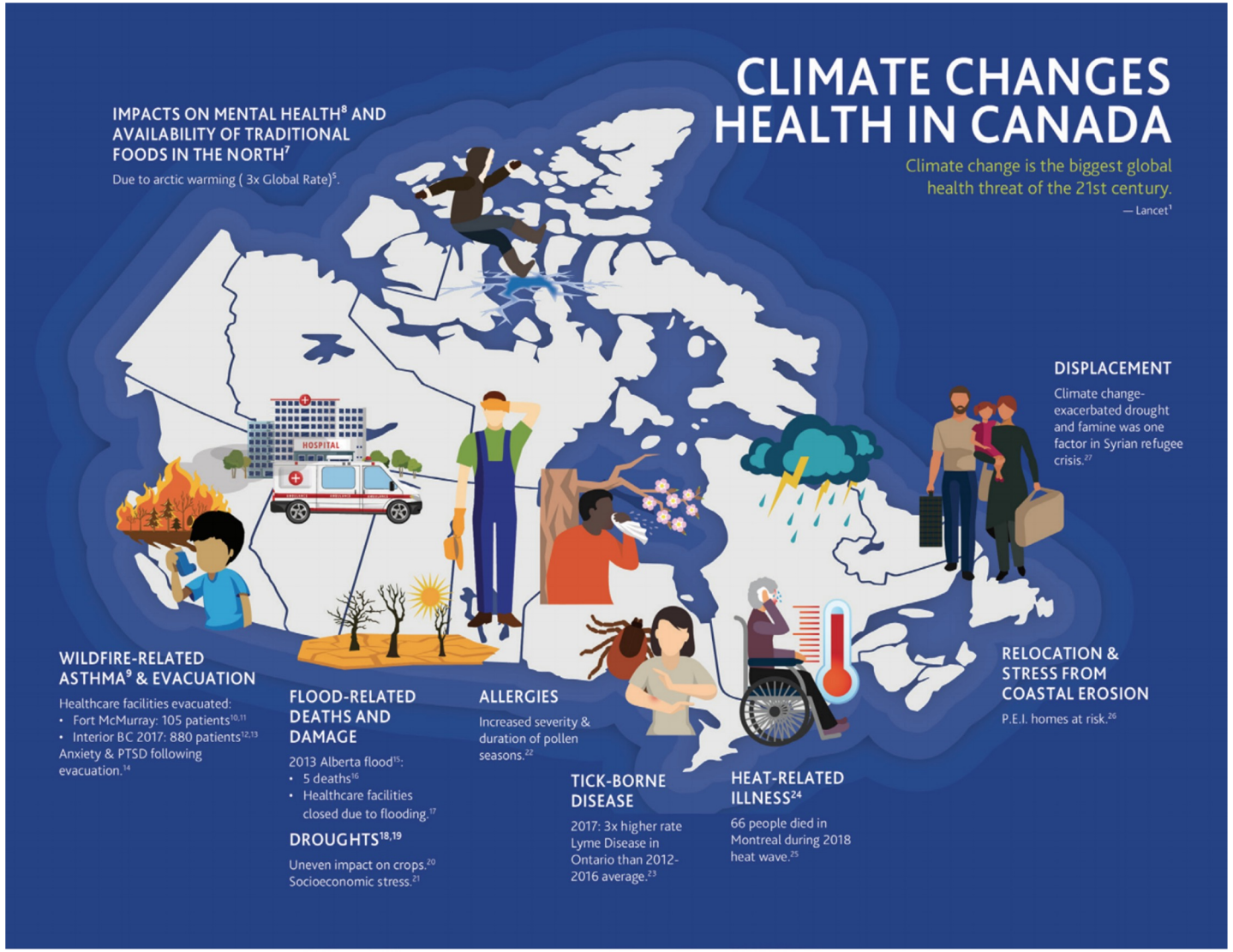




1.06-1.27 °C above pre-industrial (1850-1900) levels

Figure: https://public.wmo.int/en/resources/united_in_science
Image: https://www.ipcc.ch/report/ar6/wg1/

Climate Change in Canada



The Lancet Countdown, November 2019

What is our role in Health Care?

- Health care systems generate greenhouse gas emissions [1,2]
- Emissions contribute to poor health of individuals and populations [1,2]
- Multiple inextricable links between health and climate change [2,3]

1. Eckelman MJ, Sherman JD, MacNeill AJ. Life cycle environmental emissions and health damages from the Canadian healthcare system: an economic-environmental-epidemiological analysis. PLoS medicine. 2018 Jul 31;15(7):e1002623
2. The 2022 report of The *Lancet* Countdown on health and climate change. Available at The Lancet Countdown on health and climate change
3. Canadian Medical Association. Available at https://www.cma.ca/news/physicians-concerned-about-climate-change-and-its-worsening-impact-health-cma-survey

Primary Care Prescriptions

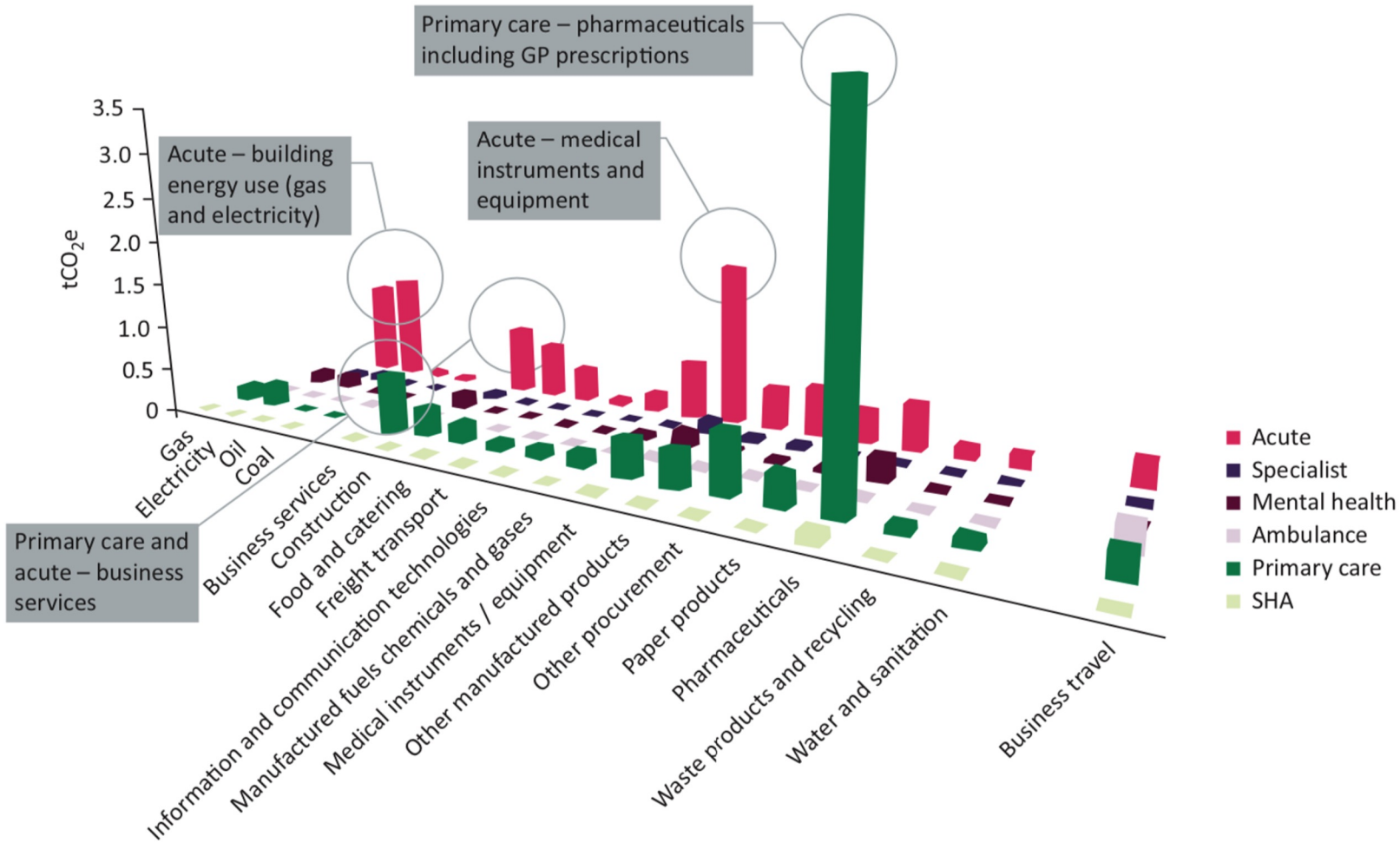
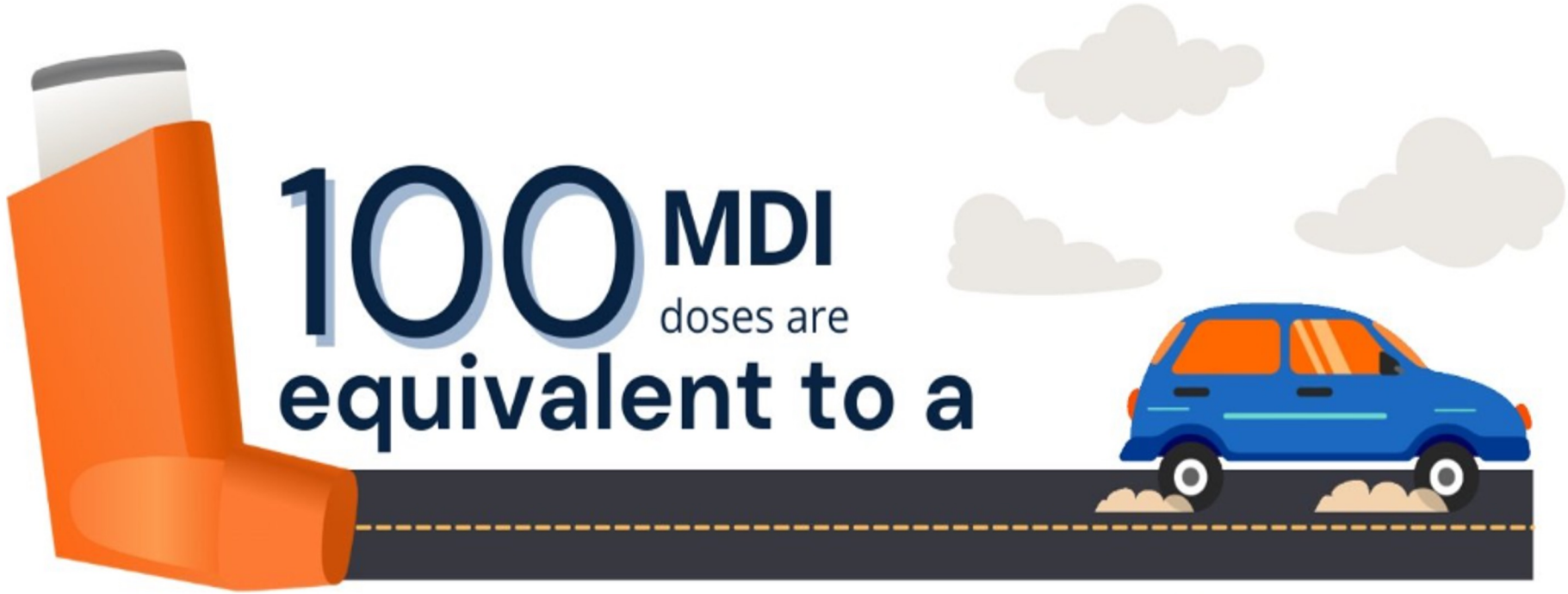


Fig 4. Goods and services carbon hotspots by healthcare sector. Source: *Goods and services carbon hotspots*. NHS Sustainable Development Unit, 2012.[10] Reproduced with permission. SHA = strategic health authority

Primary Care Prescriptions – Where Can We Start?



SUSTAINABLE HEALTH SYSTEM
COMMUNITY of PRACTICE

Source: https://cascadescanada.ca/resources/all-topics/inhalers/infographics-posters-inhalers/

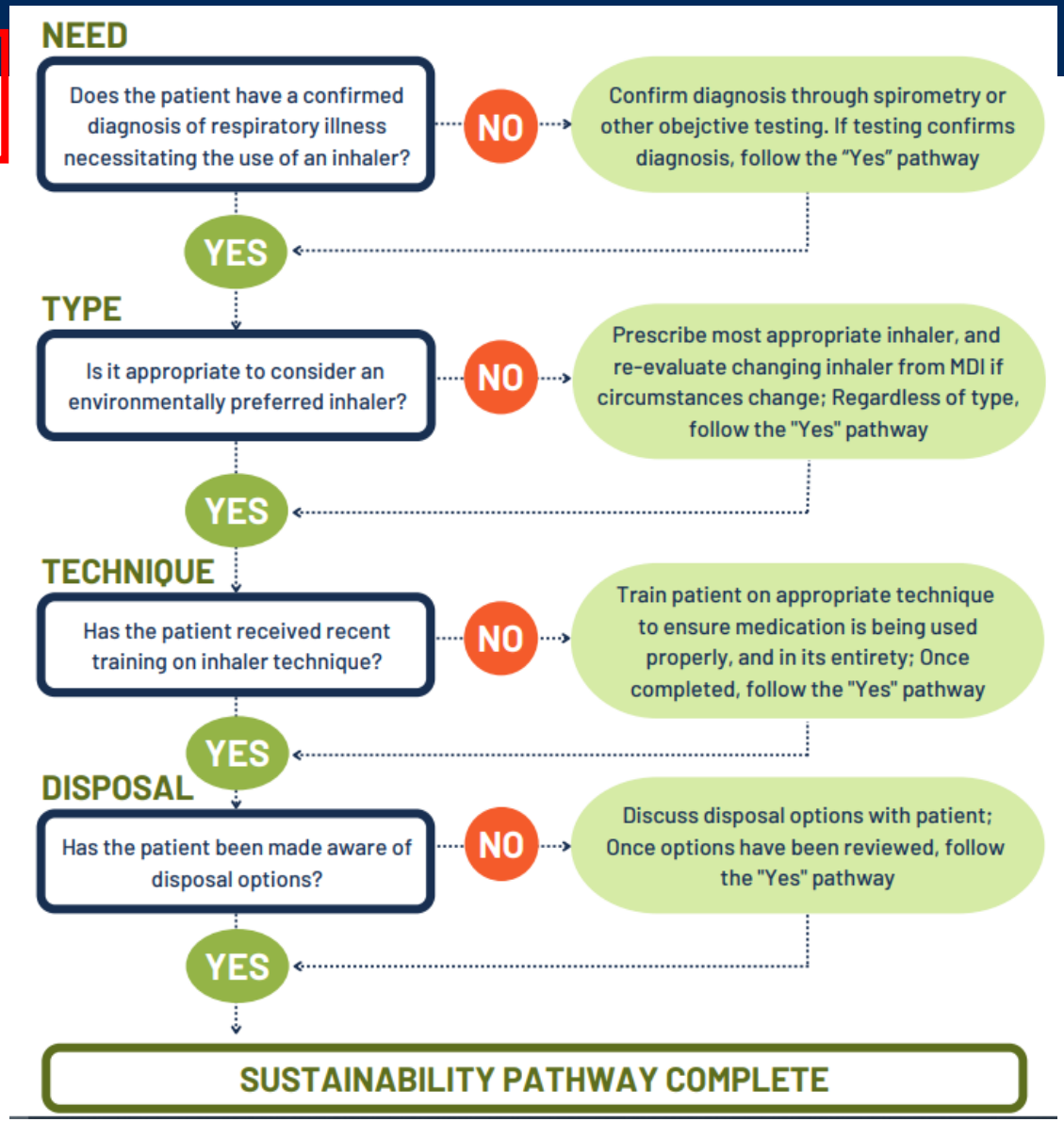
Climate Conscious Inhaler Practice

Step 1

Step 2

Step 3

Step 4



https://cascadescanada.ca/wp-content/uploads/2022/09/Sustainability-Pathway.pdf

Reliability of a “Diagnosis” of Asthma

- 1/3 patients labelled with asthma do not have asthma on objective testing [1,2]
- 80% of those with negative test results were on medication for asthma [1]
- If the basis of a patient’s diagnosis of asthma has not previously been documented, confirmation with objective testing should be sought [2]

1. Aaron et.al. JAMA. 2017; 317(3): 269-279. Re-evaluation of Diagnosis in Adults With Physician-Diagnosed Asthma
2. Global Initiative for Asthma (GINA) Guidelines 2020, page 26. Available at https://ginasthma.org/wp-content/uploads/2020/06/GINA-2020-report_20_06_04-1-wms.pdf

Recommendation: Canadian Thoracic Society

Choosing Wisely Canada™

Don't initiate medications for asthma in patients ≥ 6 years old who have not had confirmation of reversible airflow limitation with spirometry, and in its absence, a positive methacholine or exercise challenge test, or sufficient peak expiratory flow variability.

Upper Respiratory Illness

Observed typical duration of cough = **18 days**

VERSUS

Patient expectation for duration of cough = **5-9 days**

Ebell MH, Lundgren J, Youngpairoj S. How long does a cough last?
Comparing patients' expectations with data from a systematic review of the literature.
Ann Fam Med. 2013 Jan-Feb;11(1):5-13. doi: 10.1370/afm.1430. PMID: 23319500; PMCID: PMC3596033.
https://pubmed-ncbi-nlm-nih-gov.myaccess.library.utoronto.ca/23319500/

What are the potential harms of “over-prescribing” inhalers?

- Patient labels themselves as “sick”, believe they have chronic disease where there may be none
- Missed alternate diagnosis
- Financial cost to patient / payer
- Medication side effects
- Insurance implications
- Environmental cost

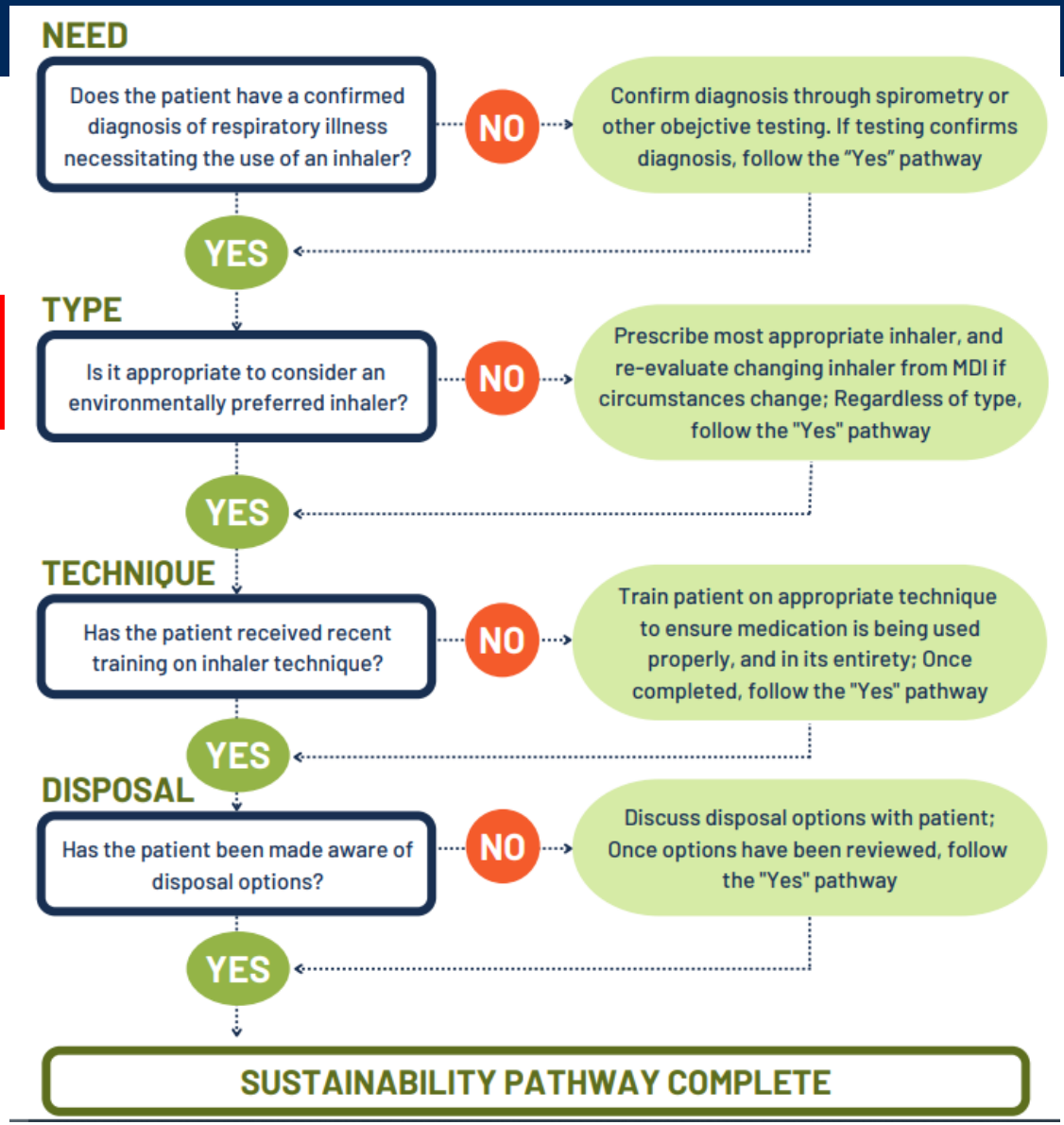
Climate Conscious Inhaler Practice

Step 1

Step 2

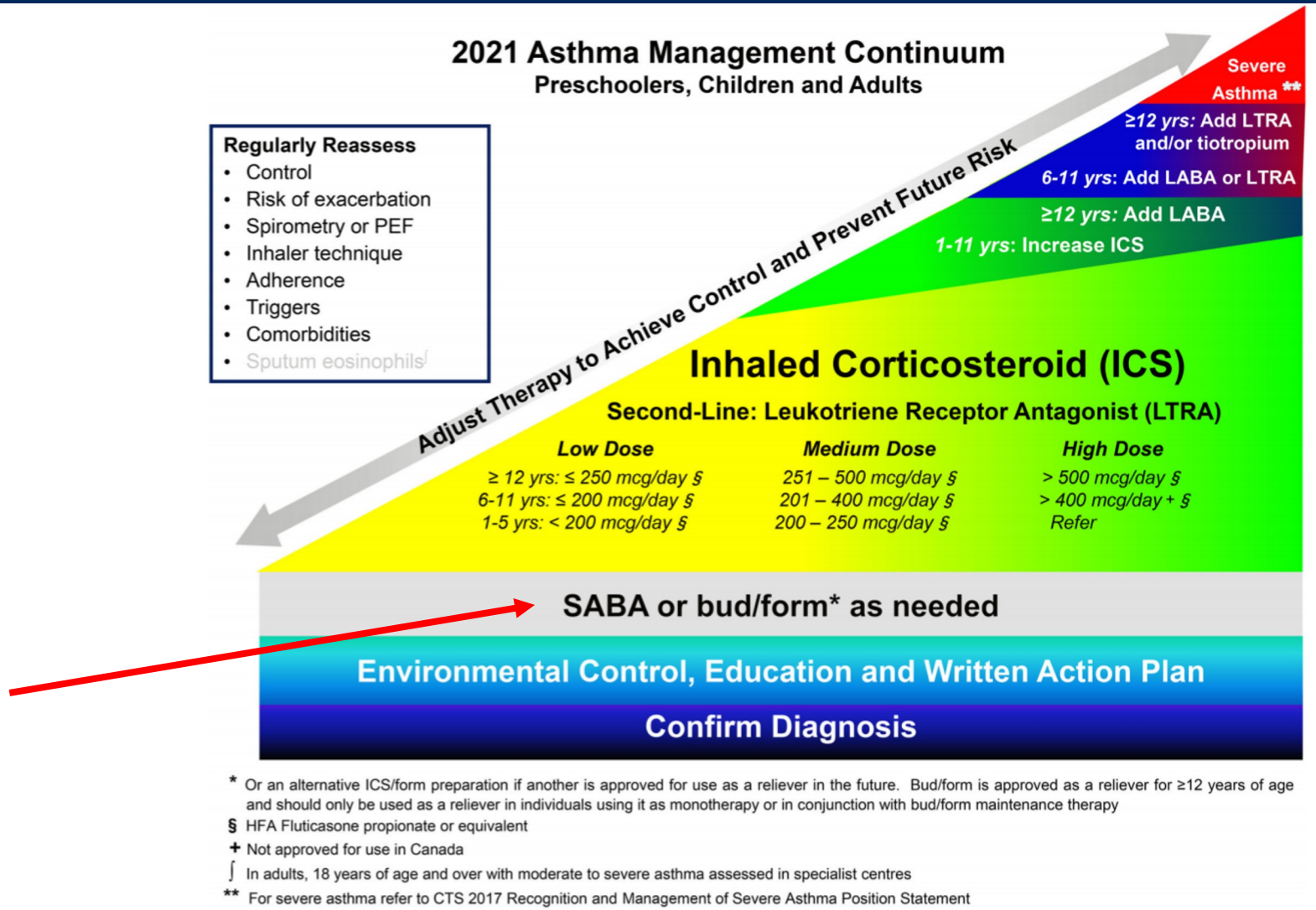
Step 3

Step 4



https://cascadescanada.ca/wp-content/uploads/2022/09/Sustainability-Pathway.pdf

Guidelines for Very Mild and Mild Asthma: Canadian Thoracic Society 2021



* Or an alternative ICS/form preparation if another is approved for use as a reliever in the future. Bud/form is approved as a reliever for ≥12 years of age and should only be used as a reliever in individuals using it as monotherapy or in conjunction with bud/form maintenance therapy

§ HFA Fluticasone propionate or equivalent

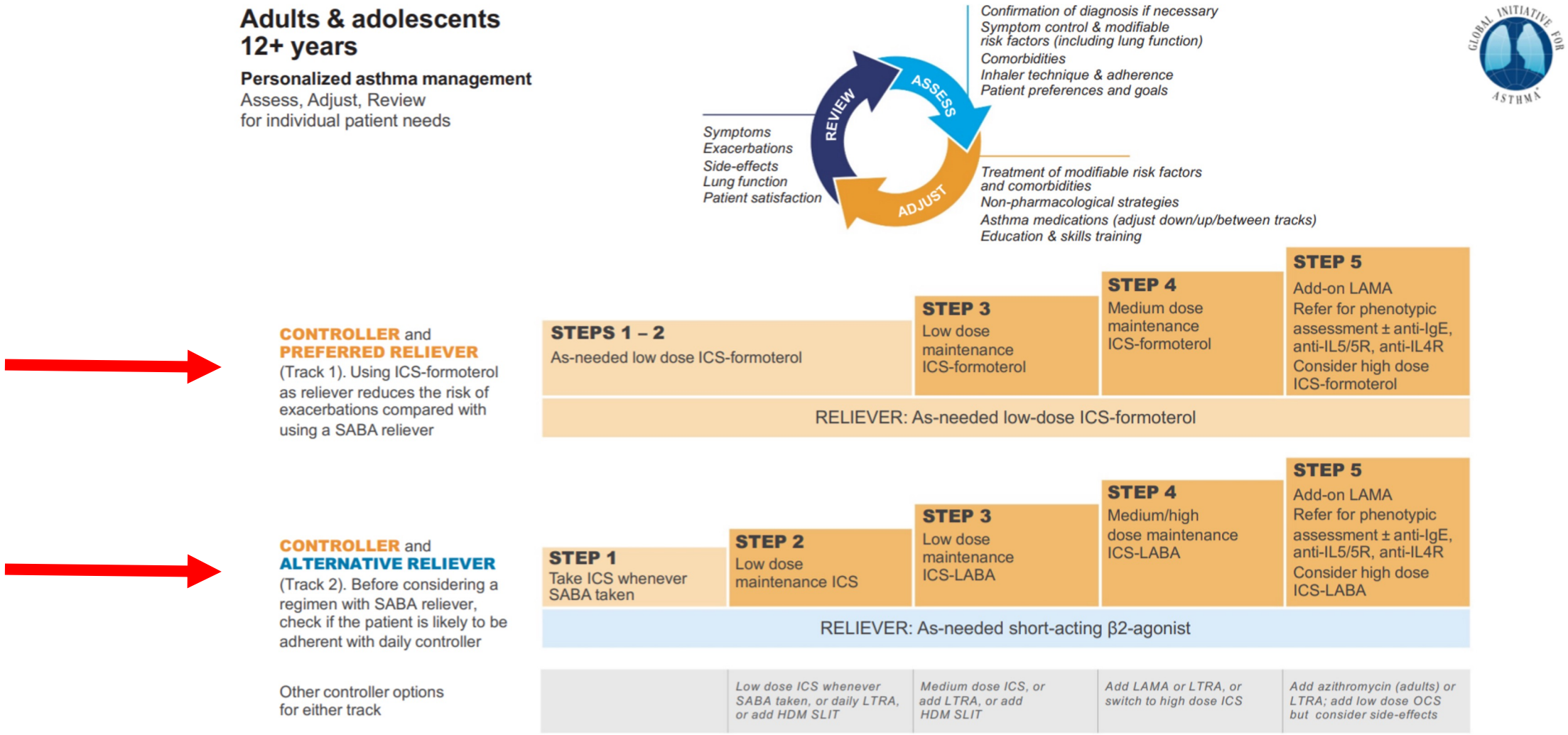
\+ Not approved for use in Canada

∫ In adults, 18 years of age and over with moderate to severe asthma assessed in specialist centres

** For severe asthma refer to CTS 2017 Recognition and Management of Severe Asthma Position Statement

https://cts-sct.ca/wp-content/uploads/2021/02/FINAL-CTS_Very-Mild-and-Mild-Asthma-CPG.pdf

Guidelines: GINA 2021



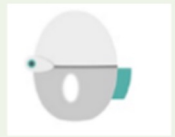
GINA 2021, Box 3-5A

CTS Guidelines 2021: Definition of “control” changed

Characteristic	Frequency or value 2021	Frequency or value 2012
Daytime symptoms	≤2 days/week	< 4 days/week
Nighttime symptoms	< 1 night/week and mild	<1 night/week
Physical activity	Normal	Normal
Exacerbations	Mild and infrequent*	Mild and infrequent
Absence from work or school	None	None
Need for reliever (SABA or bud/form)†	≤2 doses/week	<4 doses/week
FEV_1 or PEF	≥90% personal best	≥90% personal best
PEF diurnal variation#	<10-15%	<10-15%
Sputum eosinophils·	<2-3%	<2-3%

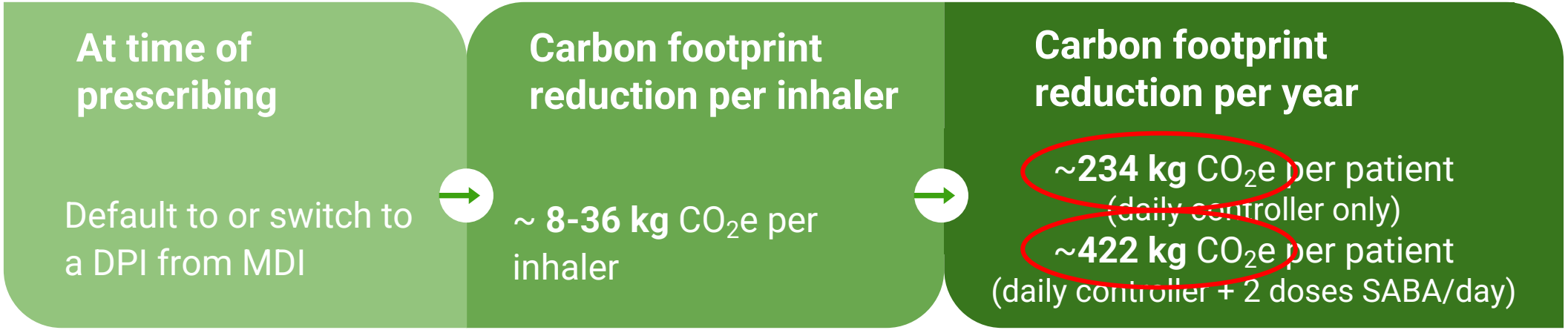
So Many Inhalers to Choose From!

0.4 – 6.8 kg CO_2 emissions / inhaler

MDIs	DPIs			SMIs
9 – 36 kg CO_2 emissions / inhaler 	Diskus 	Ellipta 	Twisthaler 	0.8 – 1.5 kg CO_2 emissions / inhaler 
	Turbuhaler 	Handihaler 	Breezhaler 	
	Genuair 	Respclick 	Inhub 	

https://cascadescanada.ca/resources/tools-templates/#inhalers

What kind of difference can we make?



DPI = Dry Powder Inhaler
MDI = Metered-Dose Inhaler
SABA = Short Acting Beta-agonist
CO_2e = carbon dioxide equivalent
= amount of greenhouse gas emissions X global warming potential

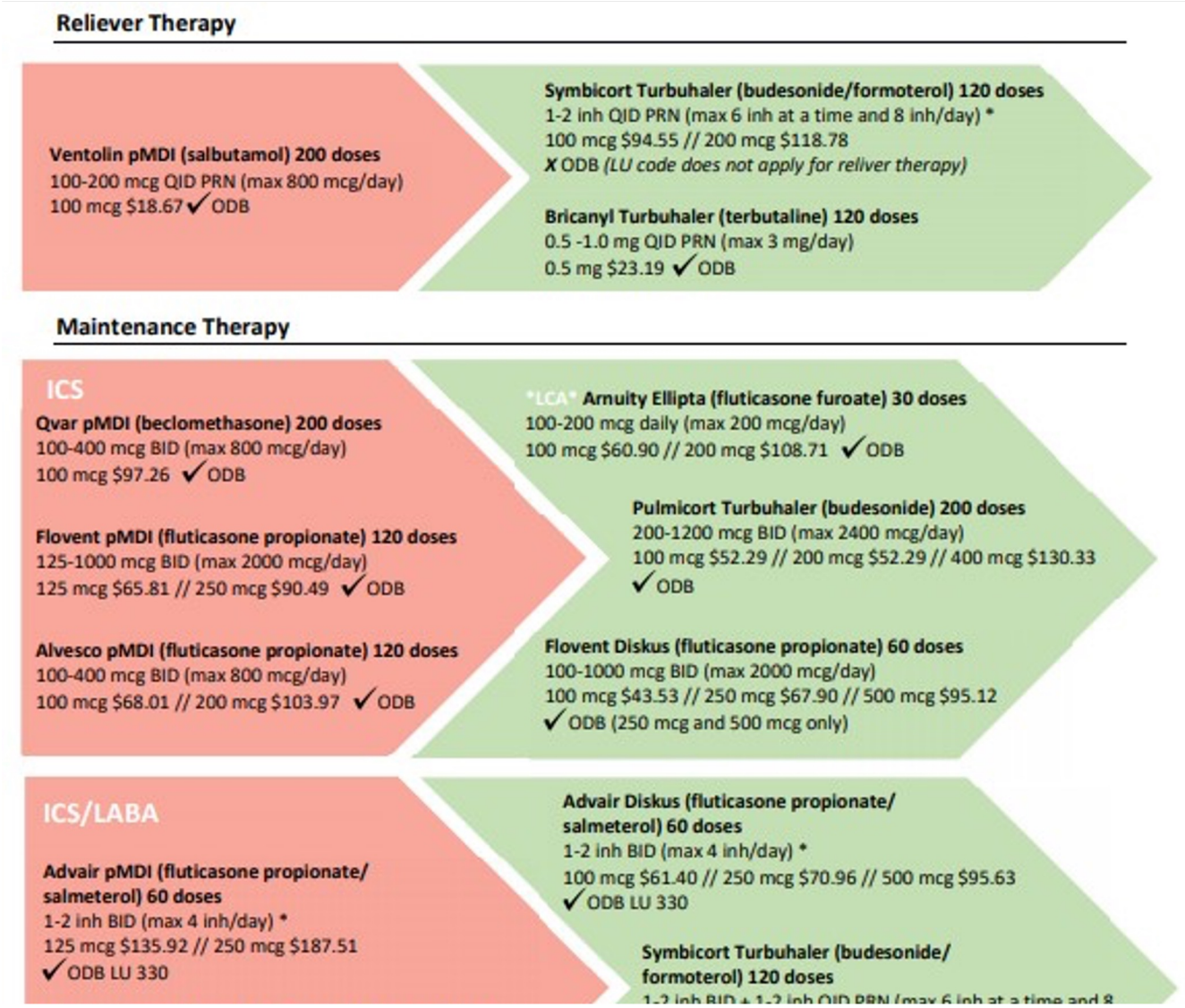
CO_2e savings Comparisons

Gasoline to hybrid car	500 kg
Meat-based to plant-based diet	500 kg
Avoiding all food waste	370 kg
Recycling	210 kg
Planting a tree	35 kg

Figure made by Gabrielle Busque, BSc, PharmD. Reviewed by Brenda Chang.

Janson et al, 2020; Wilkinson et al, 2019; British Thoracic Society 2020

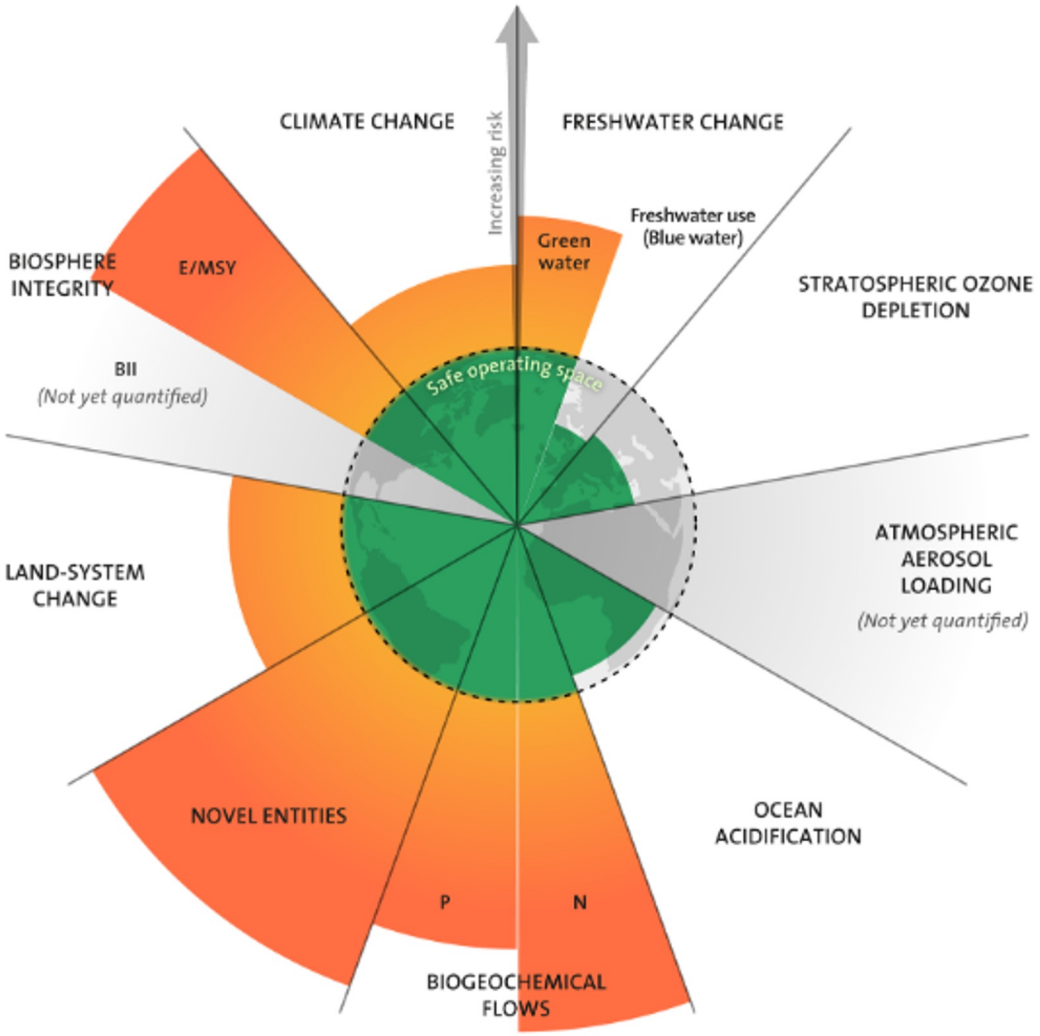
Reference Chart: Logical Switches to “Greener” inhalers



Reference Chart #2: Simplest Cost/Coverage for change to DPI

Very Mild Asthma (on salbutamol prn)	**Switch SABA to SABA:** terbutaline (Bricanyl) most cost effective; Symbicort as reliever alone more costly, not covered by ODB
Moderate Asthma (on fluticasone + salbutamol prn)	**Switch ICS +PRN SABA to ICS-LABA combination:** Symbicort as controller + reliever not much more costly, covered by ODB LU

Planetary Health Impacts of Other Inhalers…



Jeswani, 2019

Image: https://www.stockholmresilience.org/research/planetary-boundaries.html

Inhaler Switching and Shared Decision Making

- Once clinically appropriate inhaler options established, discuss with patient before finalizing decision
- Consider patient-specific factors
  - Ergonomics
  - Familiarity
  - Preferences
  - Lactose content
  - Cost/coverage
- Non-consensual switch associated with poor outcomes

Respiration 2014;88:346–52

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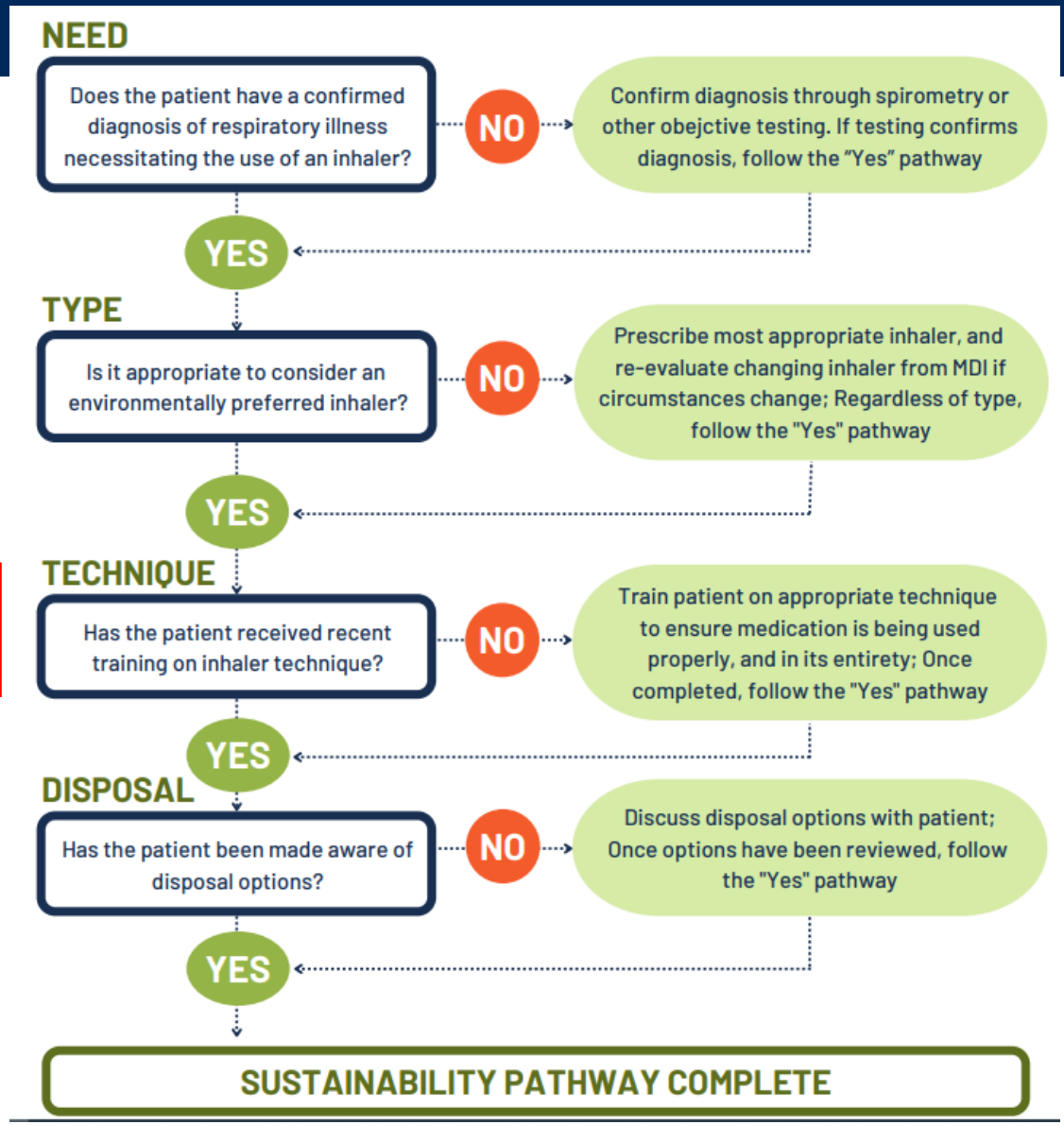
Step 1

Step 2

Step 3

Step 4



https://cascadescanada.ca/wp-content/uploads/2022/09/Sustainability-Pathway.pdf

Inhaler Technique – What Could Possibly Go Wrong?

https://www.rxfiles.ca/rxfiles/uploads/documents/COPD-Newsletter-Plus-Sept-2015.pdf

Again, So Many Inhalers!!

Correct Inhaler Usage Resources

Using your inhaler correctly will ensure that your treatment is the most effective, that you use the inhaler in its entirety, and if you are using an aerosol inhaler, prevent the release of aersol into the air.

Click on the inhaler category or image to view a video demonstrating the correct technique for usage.

Diskus


Ventolin Diskus


Flovent Diskus


Advair Diskus


Serevent Diskus

Respiclick


Aermony Respiclick

Inhub


Wixela Inhub

Turbuhaler


Bricanyl Turbuhaler


Symbicort Turbuhaler


Pulmicort Turbuhaler


Oxeze Turbuhaler

Genuair


Tudorza Genuair


Duaklir Genuair

Ellipta


Arnuity Ellipta


Breo Ellipta


Incruse Ellipta


Anoro Ellipta


Trelegy Ellipta

Twisthaler


Asmanex Twisthaler

Breezhaler


Atectura Breezhaler


Onbrez Breezhaler


Ultibro Breezhaler


Enerzair Breezhaler


Seebri Breezhaler

Handihaler


Spiriva Handihaler

Respimat


Spiriva Respimat


Combivent Respimat


Inspiolto Respimat

Aerolizer


Foradil via Aerolizer

Aerosol Inhaler


With Spacer (Recommended)


Without Spacer

To view all inhaler videos, go to:
Canadian Lung Association: How to use your inhaler
https://www.lung.ca/lung-health/get-help/how-use-your-inhaler

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BREATHE
the lung association

Search

Lung Health ▾ Lung Research ▾ Get Involved ▾ News ▾

Home > Lung Health > Get Help > How to use your inhaler > **Ellipta**

Ellipta

How to use your Ellipta:

- On first use, you will have to open a foil tray and remove the inhaler. Discard the packaging and tray. On the inhaler, write the date the package was opened as well as the discard date for 6 weeks from opening.
- Slide open the cover. You should hear a click.
- Breathe out fully, away from the mouthpiece.
- Seal your lips around the mouthpiece and take in a long, steady, deep breath, ensuring you do not block the vent with your fingers.
- Remove the inhaler from your mouth and hold your breath for 5-10 seconds.
- Breathe out.
- Close the cover.
- Rinse your mouth.

https://cascadescanada.ca/wp-content/uploads/2022/09/Correct-Inhalers-Usage-Resources-English-1.pdf
https://www.lung.ca/lung-health/get-help/how-use-your-inhaler/ellipta

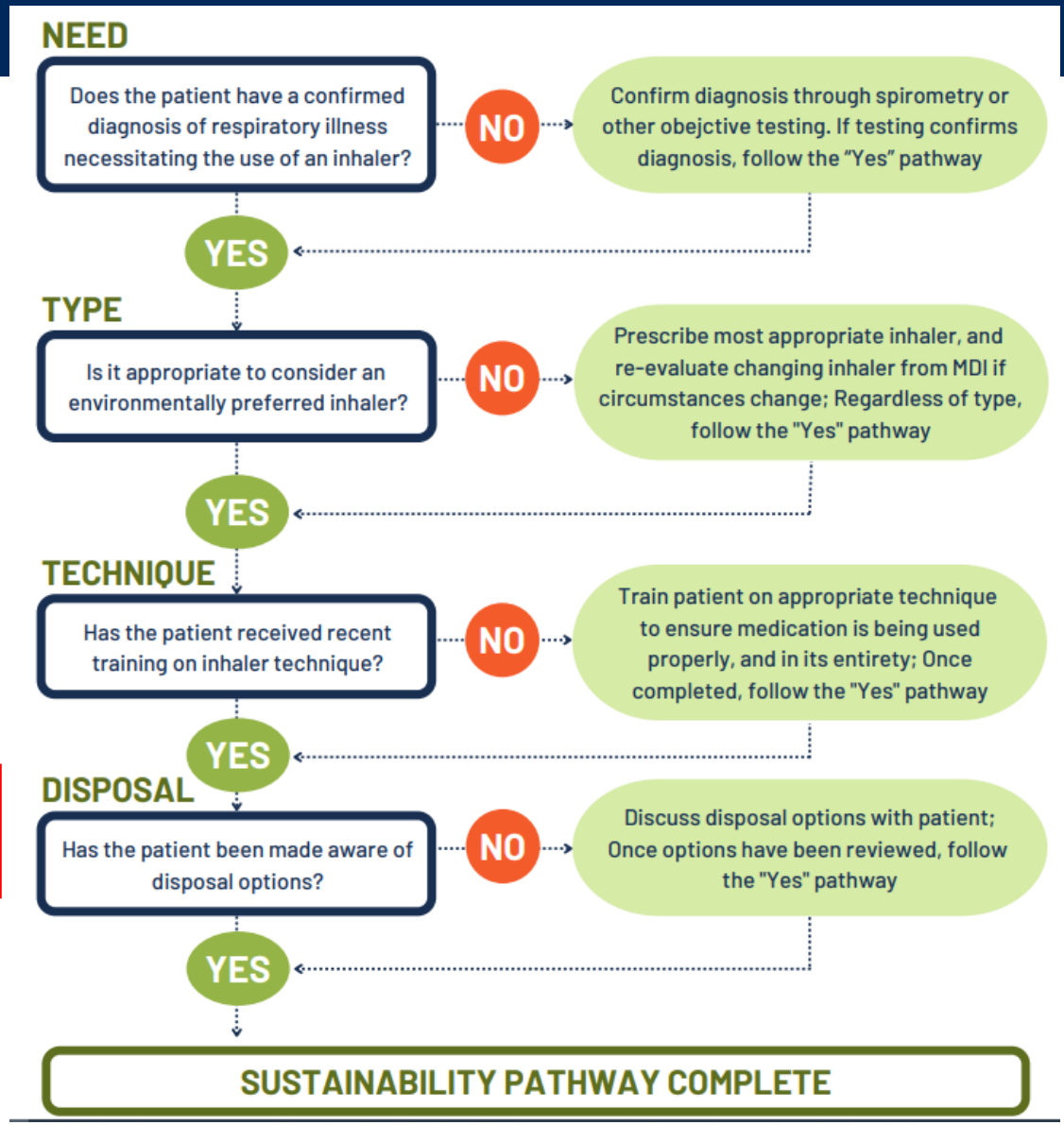
Climate Conscious Inhaler Practice

Step 1

Step 2

Step 3

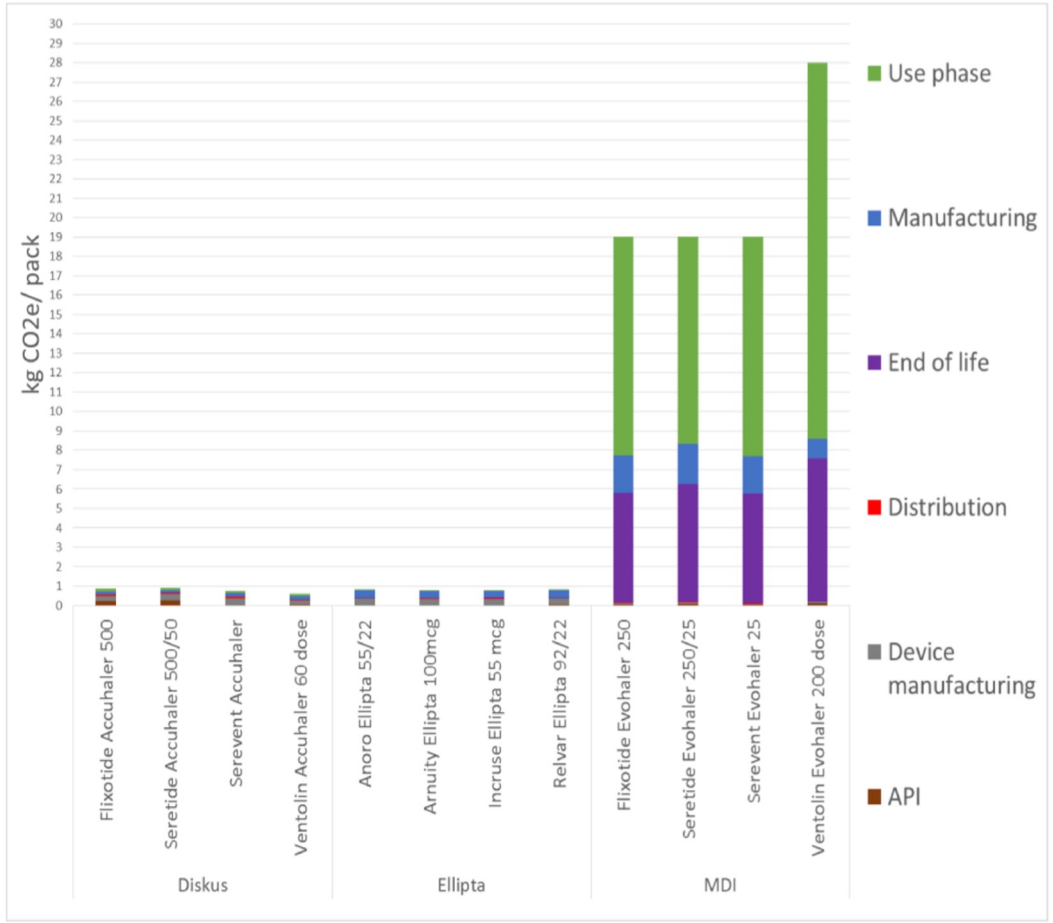
Step 4



https://cascadescanada.ca/wp-content/uploads/2022/09/Sustainability-Pathway.pdf

The Importance of Proper Disposal

Figure 1: Absolute emissions per pack (kg CO2e/pack) for all products



Bottom Line:
Educate patients to return inhalers they are no longer using to a pharmacy for safe disposal

https://pubmed.ncbi.nlm.nih.gov/31699805/

Andy

- Patient with URI symptoms requesting salbutamol MDI
- Should we renew?
  - Yes
  - No

Source: Creative Commons

Tools / Resources for Practice Change

https://cascadescanada.ca/resources/tools-templates/#inhalers

Questions,

Discussion