



# The intersection of resource stewardship and planetary health

Mathilde Gaudreau-Simard, MD  
University of Ottawa

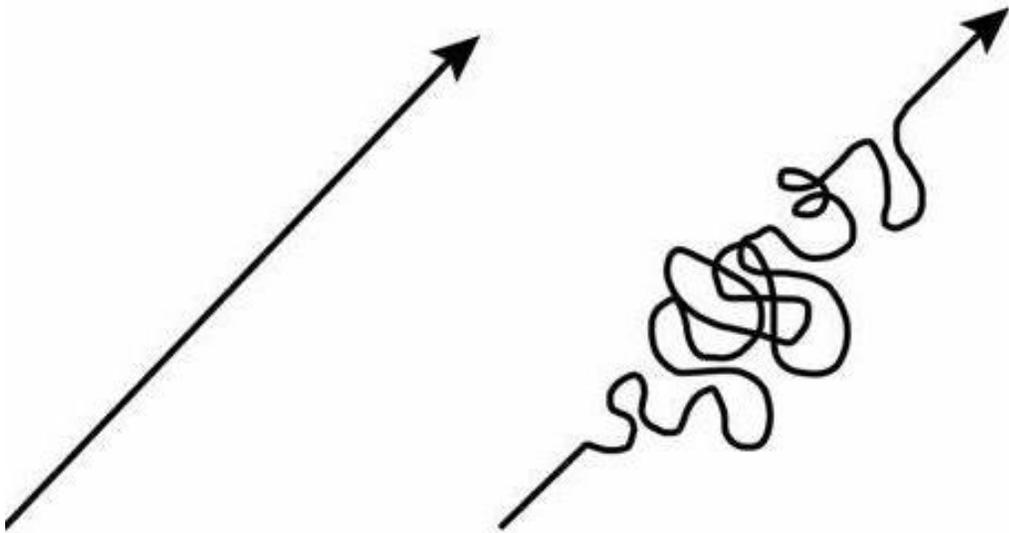


# Objectives

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- My journey
- What is planetary health & why is it relevant to clinicians
- How does resource stewardship and planetary health intersect
- Some examples of concrete projects

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Choosing Wisely Fellowship

Masters in Health Administration (UofT)

Critical Care Ultrasound fellowship (Western)

GIM subspecialty training (Ottawa)

McGill MD & Core IM

U. Montreal Law

What is planetary  
health?

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**“Planetary Health is a solutions-oriented, transdisciplinary field and social movement focused on analyzing and addressing the impacts of destabilized natural systems on human health and all life on Earth.” - Planetary Health Alliance**

# ***Mechanisms of Planetary Health Threats***



Climate Change



Air Pollution



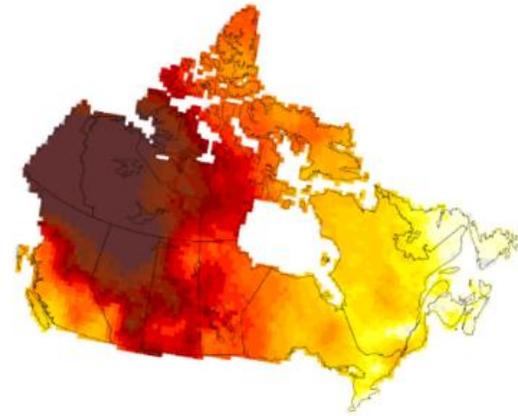
Land Degradation and  
Biodiversity Loss

Why is planetary  
health relevant to  
clinicians?

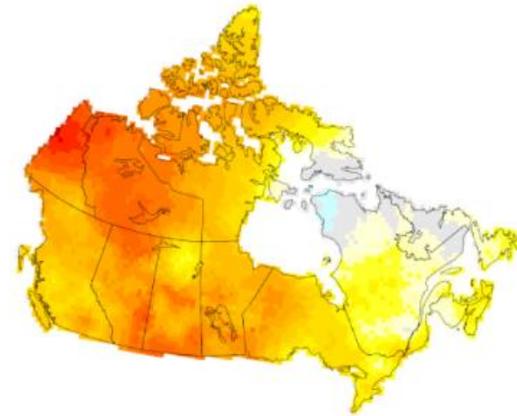
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a) Winter



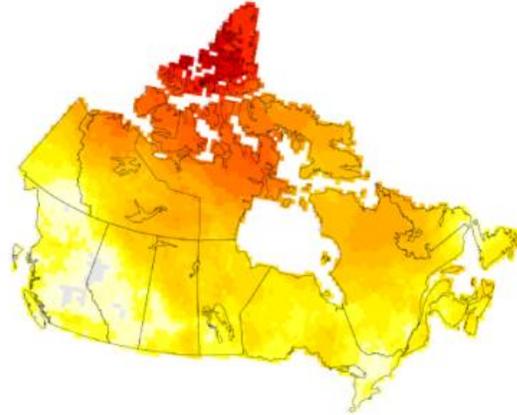
b) Spring



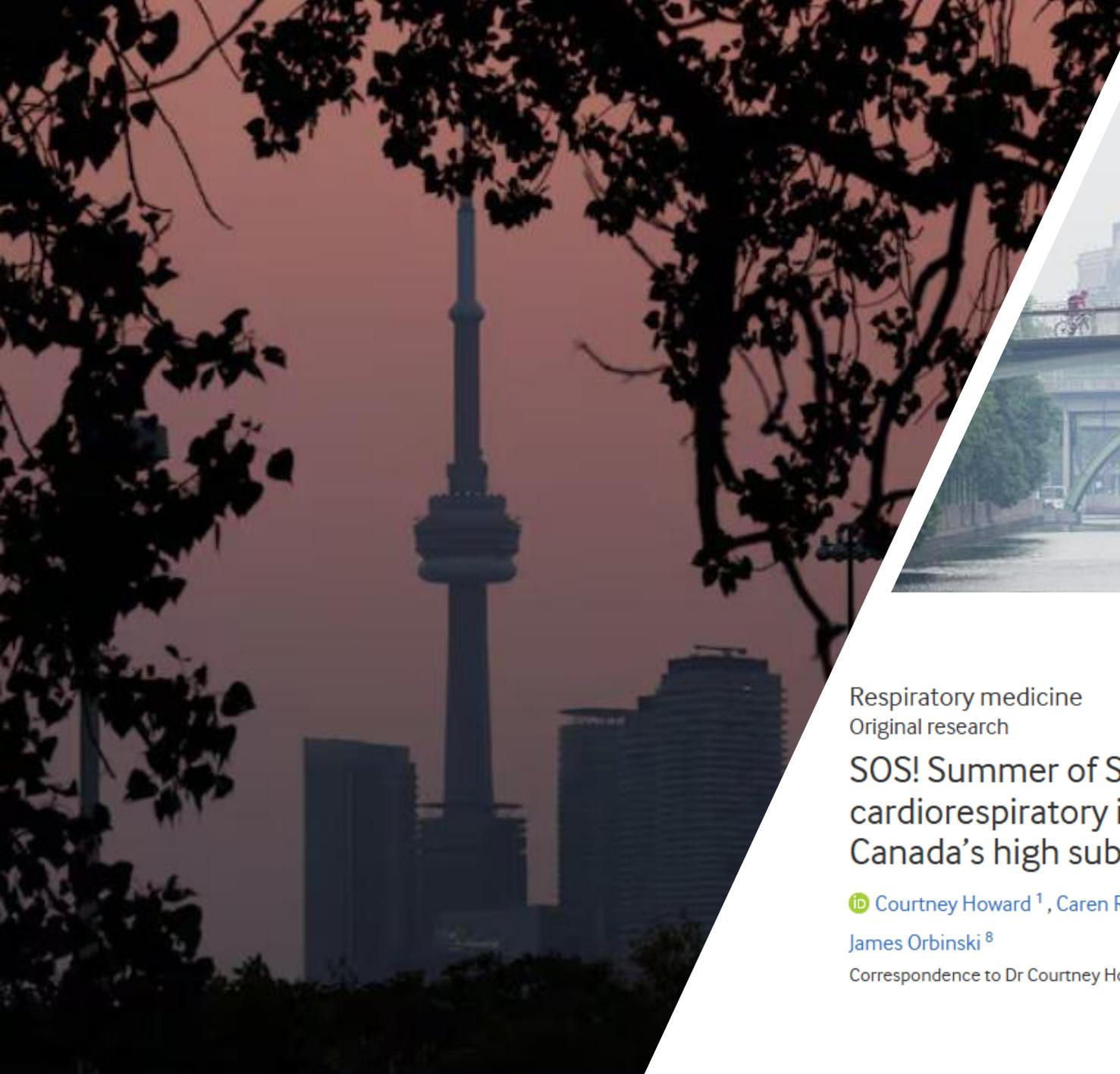
c) Summer



d) Autumn



Observed changes (°C) in seasonal mean temperatures from 1948 to 2016 for four seasons. Source: Zhang et al., 2019.



Respiratory medicine  
Original research

## SOS! Summer of Smoke: a retrospective cohort study examining the cardiorespiratory impacts of a severe and prolonged wildfire season in Canada's high subarctic

 Courtney Howard <sup>1</sup>, Caren Rose <sup>2</sup>, Warren Dodd <sup>3</sup>, Katherine Kohle <sup>4</sup>, Craig Scott <sup>5</sup>, Patrick Scott <sup>6</sup>, Ashlee Cunsolo <sup>7</sup>, James Orbinski <sup>8</sup>

Correspondence to Dr Courtney Howard; [doctorswithinborderscanada@gmail.com](mailto:doctorswithinborderscanada@gmail.com)



Explore geographic trends in vector-borne diseases dating back to 2014 up until the current week. Use the tabs at the bottom of the tool to navigate between vector-species and surveillance topics. Data will be updated weekly for all VBD human cases. Mosquito data will be updated weekly during the mosquito season (May–October).

**Key features:**

**Overview - ON:** View provincial-level most recent week (MRW) and year-to-date (YTD) case counts for all reportable vector-borne diseases (VBD), including West Nile virus illness, Lyme disease, anaplasmosis, babesiosis, Powassan virus infection.

**Overview - PHU:** Explore data at the public health unit level, including most recent week (MRW) and year-to-date (YTD) case counts, as well as positive pools (PP) for West Nile virus (WNV) and eastern equine encephalitis virus (EEEV).

**Maps:** To change VBD dimensions, turn on/off the layer of interest from the layer drop-down button within each map tab.

**Note:** All point coordinates within the tool have been rounded to two decimal places. This rounding means that each displayed point may have been shifted in both latitude and longitude by up to approximately 400 metres from the original point location. As a result, the



## West Nile Virus

1

Cases - Most Recent Week

11

Cases - YTD



## Lyme Disease

13

Cases - Most Recent Week

1523

Cases - YTD



## Anaplasmosis

1

Cases - Most Recent Week

165

Cases - YTD



## Babesiosis

0

Cases - Most Recent Week

1

Cases - YTD



## Powassan Virus Disease

0

Cases - Most Recent Week

1

Cases - YTD

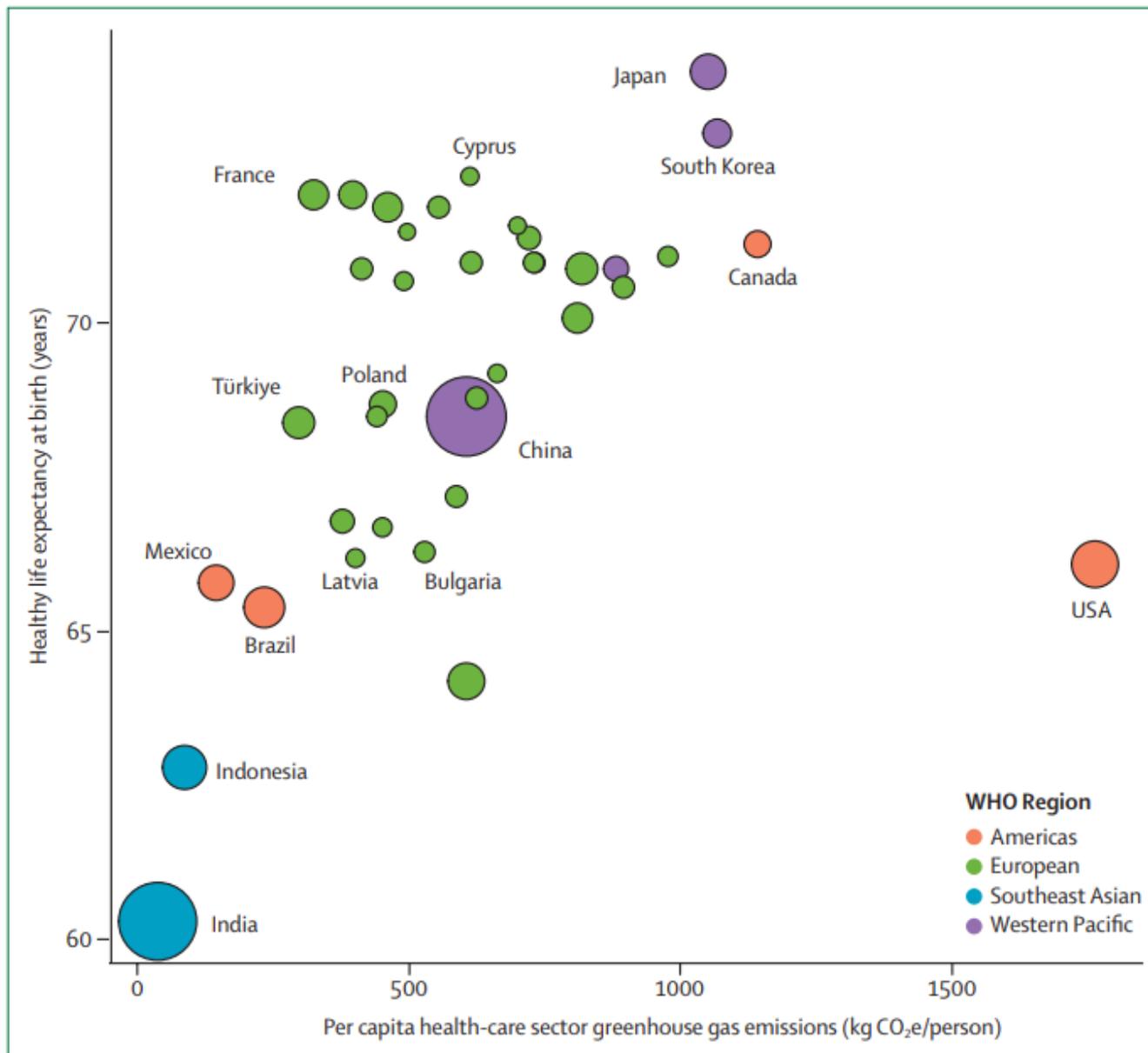
Most Recent Week: Week 33 (August 11 - August 17, 2025); YTD: Up to end of Week 33 (January 1 - August 17, 2025)

# Intersection of stewardship and planetary health



The healthcare  
sector accounts for  
4.6% of Canada's  
total GHG  
emissions





**Figure 11: National greenhouse gas emissions per person from the health-care sector against the healthy life expectancy at birth in 2019, by WHO region**

The point circle size is proportional to country population. kgCO<sub>2</sub>e=kilograms of carbon dioxide equivalent.

Romanello et al. The 2022 report of the Lancet Countdown on health and climate change. The Lancet. 2022.



### Reduce Demand for Health Services



Social Determinants of Health



Health Promotion



Disease Prevention



Chronic Disease Management



### Match Supply of Health Services to Demand



Primary and Community Care Services



Ensure Appropriateness of Care



Stewardship Programs



### Reduce Emissions from Supply of Health Services



Green Infrastructure and Operations



Decarbonised Transport



Circular Economy in Supply Chains



Coordinated Care Delivery



Integrated Technology Systems



Virtual Care

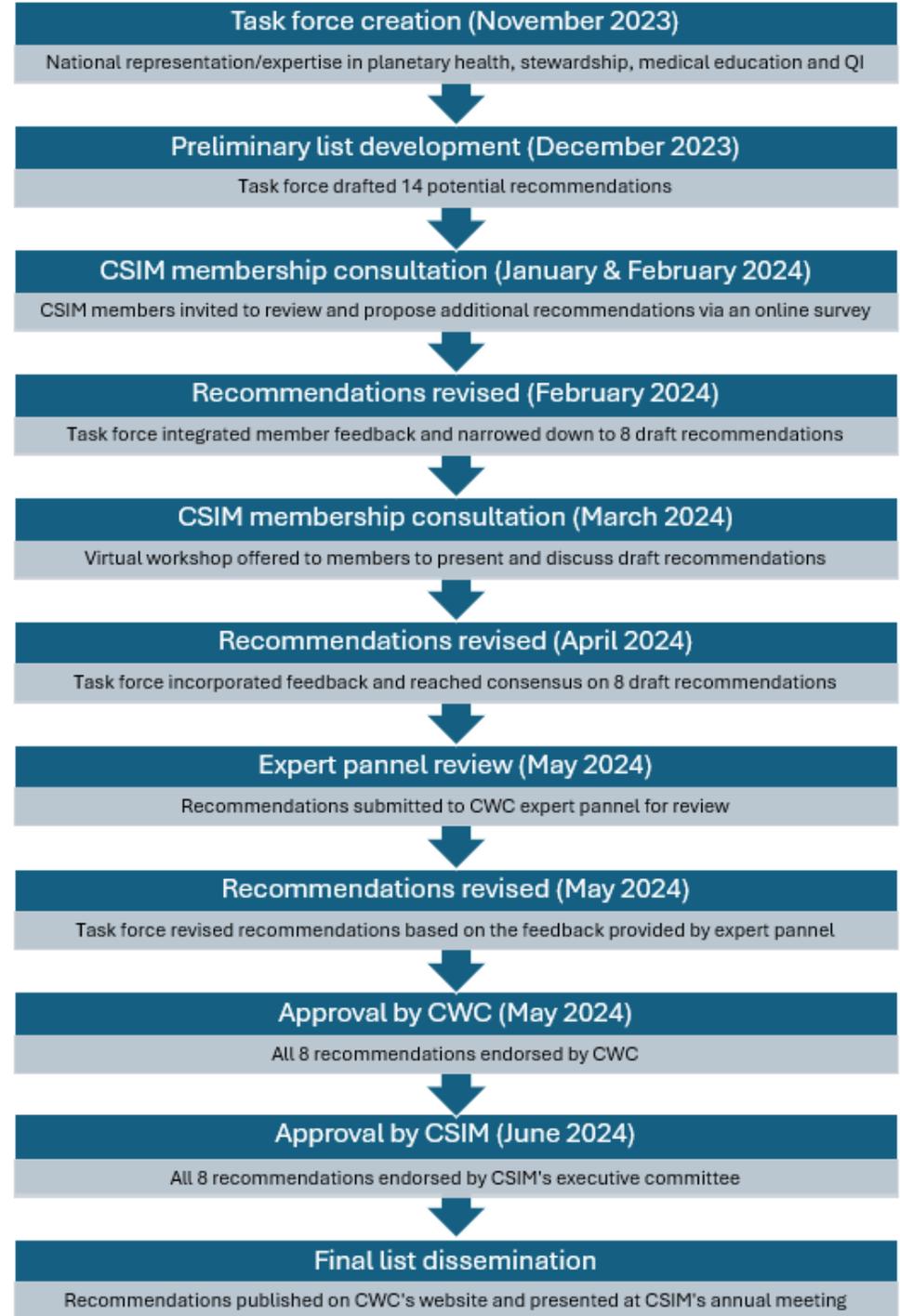
# Choosing Wisely & Climate Action

Reducing unnecessary tests, treatments and procedures is an opportunity to benefit both patients and the planet.



Empowering physicians to  
↓ Low-value care

# Recommendation Development Methodology



# Choosing Wisely Canada Climate-Conscious Recommendations

by: The Canadian Society of Internal Medicine



**1.** Don't prescribe intravenous (IV) antibiotics for patients who can safely be treated with an oral option, given that IV antibiotics have a higher carbon footprint.

**2.** Don't prescribe heparin or low molecular weight heparin in situations where oral options are effective, preferred by the patient, and felt to be safe by the prescriber.

**3.** Don't prescribe greenhouse gas-intensive metered-dose inhalers (MDIs) where a lower carbon alternative with comparable efficacy is available (e.g., dried-powder inhaler, soft-mist inhaler, or low-propellant MDI) in situations where technique is adequate and where patient preference has been considered.

**4.** Don't recommend/order investigations or interventions before discussing patients' expected trajectory of health and life expectancy, and exploring their preferences, values and goals of care.

**5.** Don't continue medications without confirming appropriate clinical indications, with particular attention paid to sedative medications, proton pump inhibitors and inhalers.

**6.** Don't routinely order daily blood tests on hospitalized patients if it will not change management.

**7.** Don't use non-sterile disposable gloves when hand hygiene is sufficient.

**8.** Don't book in-person follow-up appointments when a virtual visit is clinically appropriate and is preferred by the patient.



Some specific projects

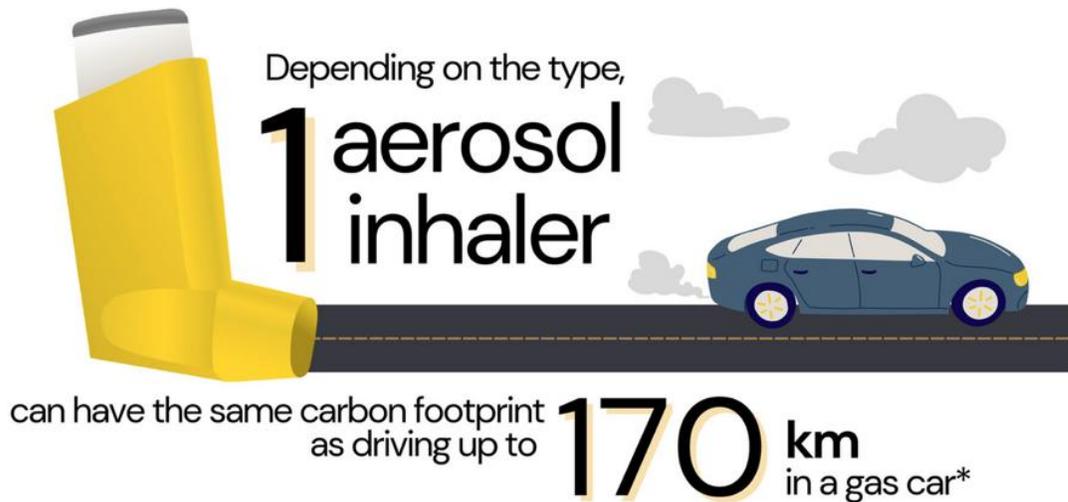


Image from: CASCADES - Patient Inhaler Poster available at: <https://cascadescanada.ca/action-areas/pharmacy-and-prescribing/>

**3.5% of NHS carbon footprint** comes exclusively from Metered Dose Inhalers (Tennison et al 2021)

	<b>100 patients</b>
<b># of inhalers dispensed</b>	191
<b># of inhalers with no documented use</b>	66
<b># of doses used/ dispensed</b>	2656/38200 (7%)

Caron C, Sajwani S, Bateman K, Degenhardt O, Gaudreau-Simard M, Parkhale S, et al. Environmentally sustainable opportunities for health systems: Metered-dose inhaler prescribing, dispensing, use and waste at a tertiary academic centre. *Canadian Pharmacists Journal / Revue des Pharmaciens du Canada*. 2024;0(0).

- Audit of 10 charts
  - On 7 occasions (5 patients) where an inhaler was re-dispensed was because it did not travel with the patient from ED to the ward



#### Alternative Recommended

You selected:

salbutamol (VENTOLIN) 100 mcg/actuation inhaler 2 puff: 2 puff, inhalation, Every 4 hours PRN, shortness of breath, Starting today at 1329

Details

Metered Dose Inhalers (i.e., salbutamol [Ventolin®]) use propellants that significantly contribute to greenhouse gas emissions when compared to Dry Powder Inhalers (i.e., terbutaline [Bricanyl®]). The approximate carbon footprint of a canister of salbutamol is the equivalent of driving a gas-powered car 113 km while the carbon footprint of terbutaline is approximately the equivalent of driving 1.9 km in the same car.

**Terbutaline may be considered in place of salbutamol provided that:**

- The patient is able to make an appropriate inspiratory effort required for dose delivery
- The patient is familiar with the inhalation technique or is competent enough to be taught

Metered dose inhalers or nebulized salbutamol are still preferred over dry powder inhalers for acute exacerbations of asthma or other acute presentations of reactive airway disease including chronic obstructive pulmonary disease (COPD).

#### Alternatives

Alternative

- terbutaline (BRICANYL) 0.5 mg/dose inhaler

Continue with:

- salbutamol (VENTOLIN) 100 mcg/actuation inhaler 2 puff: 2 puff, inhalation, Every 4 hours PRN, shortness of breath, Starting today at 1329

Accept Alternative

✗ Remove Order

# Complicated Urinary Tract Infections (cUTI): Clinical Guidelines for Treatment and Management



Published July 17, 2025



Last Updated July 17, 2025

Patients admitted to hospital with complicated UTI	N=92
Median day of IV to PO switch	3 days
Received IV antibiotics for entirety of their hospital stay	54 (59%)
Median course	8 days
Course >7 days	46 (50%)
Bacteremia	25 (27%)
Median course of Abx for bacteremia	11 days

# Reducing Procedural Waste on the Internal Medicine Wards

Concise Research Report | [Open access](#) | Published: 16 September 2024

(2024) [Cite this article](#)

“The implementation of a minimal supplies checklist, procedure cart optimization, adoption of a “just in time” approach, and educational initiatives led to a reduction of **more than 50%** in wasted procedural supplies.”





# Quality improvement work - metrics



Outcome	Metric	Resource for conversion	Example of studies reporting this metrics
Waste	Weight	-	<a href="#">Reducing Procedural Waste on the Internal Medicine Wards - PMC</a>
	# of items wasted	-	<a href="#">Development of a Framework for Addressing Skin Biopsy Tray Waste in Dermatology Clinics: A Quality Improvement Study   Dermatology   JAMA Dermatology   JAMA Network</a>
Water usage	m <sup>3</sup>	-	<a href="#">How to improve the environmental impact in haemodialysis: small actions, big changes   Clinical Kidney Journal   Oxford Academic</a>
Global warming potential	kgCO <sub>2</sub>	<a href="#">HealthcareLCA   Data driven sustainable health care</a> <a href="#">HealthcareLCA   Data driven sustainable health care</a> <a href="#">Measuring healthcare's environmental impacts - CASCADES Canada</a>	<a href="#">Managing greenhouse gas emissions in the terminal year of life in an overwhelmed health system: a paradigm shift for people and our planet - The Lancet Planetary Health</a>  <a href="#">The impact of surgery on global climate: a carbon footprinting study of operating theatres in three health systems - The Lancet Planetary Health</a>  <a href="#">Environmentally sustainable opportunities for health systems: Metered-dose inhaler prescribing, dispensing, use and waste at a tertiary academic centre - PMC</a>
Travel	km by car travelled	<a href="#">Greenhouse Gas Equivalencies Calculator   US EPA</a>	<a href="#">Does telemedicine reduce the carbon footprint of healthcare? A systematic review - PMC</a>

Reducing the Carbon Footprint of Healthcare  
One Trainee-Led Project at a Time

Get Involved

TRASH-CAN stands for  
Trainee-Led Research and  
Audit for Sustainable  
Healthcare Canada

# Resources



**CFMS**



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# CLIMATE ACTION + HEALTHCARE

Creating a Sustainable Canadian Health System in a Climate Crisis

Thank you!

[magaudreau@toh.ca](mailto:magaudreau@toh.ca)