Choosing Wisely Canada™

Choosing Wisely & Climate Action

Recommendations Handbook

V1

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Contents

Introduction

Every test, treatment, and procedure has an environmental impact, contributing to material waste and carbon emissions at the point of care or across the life cycle of the products used.

In fact, as a sector, health care accounts for 5% of greenhouse gas emissions, twice the amount emitted by the aviation industry.

Reducing unnecessary tests, treatments, and procedures is therefore an opportunity to make a positive contribution towards the health of patients and the planet.

This is the co-benefit of doing Choosing Wisely.

In 2024, Choosing Wisely Canada is embarking on the development of climate-focused recommendations through leadership and collaboration with our national society/association partners.

The starting point for Choosing Wisely Canada is the lists of recommendations created by the societies/associations paired with tools to help health professionals put these recommendations into practice. Choosing Wisely Canada is putting a new lens of these lists by taking into consideration recommendations that can mitigate environmental harm. We all collectively play a role in the global environmental crisis through our daily clinical practices.

This document is your guide to:

- Understanding the environmental co-benefits of existing Choosing Wisely Canada recommendations
- How to develop climate-focused Choosing Wisely Canada recommendations, with guiding principles
- Examples of how other societies are developing climate-related recommendations

Co-Benefits of Choosing Wisely

Existing Choosing Wisely Canada recommendations are already making a difference to both patients and the planet. Here's how:

ENERGY/ ELECTRICITY USAGE

Various health care-related activities consume electricity. Imaging is a typical example. Ultrasounds, CT scans and MRIs differ in their energy usage. On average, a CT scan of the spine consumes 0.97kWh of energy while an MRI of the spine consumes 17.4kWh of energy.[1] Depending on how electricity is generated in a particular locale, carbon emissions can be significant. In one study, an abdominal ultrasound, CT and MRI was found to produce 1.15kg, 6.61kg and 19.72kg of CO2e per examination, respectively.[2]

Reducing imaging tests, or selecting an imaging modality with lower energy use when appropriate, can help decrease greenhouse gas emissions.

TRAVEL (STAFF & PATIENTS)

Travel to get to and from health care facilities can generate carbon emissions, depending on the mode of transportation. Due to Canada's large geography, health care-related travel by staff and patients can be significant, especially in rural and remote communities. In a cross- sectional study of more than 10 million patients and 63 million virtual care visits, virtual care was associated with avoidance of 3.2 billion kilometres of patient travel, 545 to 658 million kilograms of carbon emissions.[3]

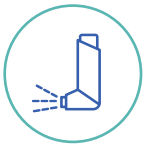
Cutting down on health care travel—by avoiding unnecessary tests, treatments or procedures, or substituting in-person visits with virtual ones when appropriate—can help decrease greenhouse gas emissions.

DRUGS

Medication prescribing is one of the most common activities in clinical practice. Medications impact the environment across their lifecycle, spanning production, transportation, use, and disposal. Pharmaceutical manufacturing often involves the use of chemicals, energy, and water. In the UK, it is estimated that medicines account for 25% of health care emissions, 20% of these specifically due to the pharmaceutical supply chain (the other 5% due to specific polluting medications, noted below).[4] In the US, figures are similar with 20% of US national health care greenhouse gas coming from pharmaceuticals and chemicals.[5]

With over one-third of Choosing Wisely Canada's recommendations being medication related, there's a sizeable opportunity to cut back on health care's carbon emissions through appropriate prescribing.

SPECIFIC POLLUTING MEDICATIONS



Metered-Dose Inhalers

Metered-dose inhalers (MDIs) are the most widely prescribed treatment option for respiratory conditions such as asthma and COPD. They account for 0.03% of the global greenhouse gas emissions. The carbon footprint of dry powder inhalers (DPIs) is 10 times less than MDIs.[6] In addition, there is evidence to support that DPIs and MDIs are at least equally acceptable to patients.[7] Choosing to prescribe DPIs or switch to DPIs, when appropriate, should be considered.

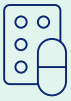
Anesthetic Gases

Inhaled anesthetics account for 5% of acute hospital CO2e emissions and 50% of perioperative department emissions in high-income countries. Desflurane, specifically, has the highest Global Warming Potential (GWP) of all anesthetic gases as it creates 80% of the carbon dioxide released into the atmosphere by all anesthetic gases. Choosing gases with a lower GWP, such as sevoflurane, is a key step in mitigating the environmental impact of anesthetic gases.[8] Avoiding anesthetic gases entirely, if possible, through total intravenous anesthesia (TIVA) and regional anesthesia also has environmental benefits.[9, 10]

MEDICAL DEVICES AND SUPPLIES

Up to 80% health care's climate impact is due to indirect upstream emissions from the supply chain and downstream emissions from waste disposal. The largest contributors are pharmaceuticals and chemicals, but a significant amount is accounted for by medical devices, supplies, plastics, rubber, and textiles and their related water, energy, and transpiration.[5] These are all items that compose many of the medical supplies that are used in common tests and procedures.

For example, gastrointestinal endoscopy is a significant contributor to the carbon footprint of healthcare facilities. This is not only due to its high daily caseloads, and repetitive travel by patients, but it also contributes to the production of high-volume non-renewable waste, the use of single-use devices, and reprocessing or decontamination processes.[11]



WASTE GENERATION

Proper management of health care waste is essential to prevent environmental contamination, reduce the risk of infections, and minimize the impact of waste disposal on landfills and incineration. Examples of waste include: single-use items like needles, syringes, test kits, gloves, gowns and masks, as well as pharmaceutical waste.

One pair of nitrile gloves can take up to 100 years to break down in the environment and leave toxic chemicals behind.[12] In acute care settings with low-risk of infection transmission, discontinuing contact precautions (i.e., gloves and gown) may result in similar rates of hospital-acquired MRSA and may lower the risk of hospital-acquired VRE, compared to scenarios in which such precautions were employed.[13]

In addition, not all waste is disposed of equally. Biohazardous waste is incinerated during the disposal process and produces a far greater carbon footprint compared to other waste streams. The carbon footprint of disposal of biohazardous clinical waste via high-temperature incineration is 1074 kg CO2e/ton compared to regular waste (172–249 kg CO2e/ton) and recycling (21–65 kg CO2e).[14] Thus, not only should waste be reduced, but the waste that is created should be disposed of properly.

Developing Climate-Focused Recommendations

Societies and associations now have the opportunity to develop climate-focused recommendations. These recommendations emphasize reducing tests, treatments, procedures and practices that are detrimental to planetary health.

Choosing Wisely Canada has revised its existing operating principles (**in bold**) to include developing climate-focused recommendations. It is important to remember that any recommendation should be individualized to the patient encounter and should ensure that patients participate in informed choice.

Updated Operating Principles

1. Societies and associations are free to determine their process for creating their lists.

2. Each recommendation should be specific, practical, and within specialty's scope of practice.

3. The tests, treatments, procedures, **and practices** under consideration should be common and potentially expose patients to harm, stress or avoidable burden

4. Recommendations can also address strain on our health care system **or impact to the environment, provided that such recommendations do not compromise the welfare of the individual patient.**

5. There should be generally accepted evidence to support each recommendation.

6. **Environmental recommendations should have a plausible link to the environmental impact. (Existing measurement of impact is not required*)**

   * While revising these principles to include climate considerations, questions regarding measurement, quantification of climate impacts, and applicability across different geographical areas were debated. Precise measurement of climate impact is a burgeoning field. After consultation with experts, it was decided that new recommendations do not need to specify climate impact metrics. For now, establishing a clear link to climate impact—such as highlighting waste reduction by avoiding specific procedures—is sufficient without exact measurement amounts.

7. If a recommendation overlaps or is anticipated to overlap with another professional society or association, work with them to ensure all related parties are in agreement.

Similar to the existing recommendation development process, we encourage societies/association partners to engage their members in developing potential suggestions for climate-fcoused recommendations. Some societies have surveyed their members to identify their ideas as we know clinicians are already working on climate related practice changes.

As with other recommendations, the Canadian Agency for Drugs and Technology in Health (CADTH) can assist with rapid reviews to support your work (email Wendy Levinson if you need this).

Climate recommendations will follow the same process as existing recommendations with an additional review by climate experts. In addition, any recommendations that are patient facing should undergo review by a patient advisory group. If your society does not have a patient advisory group, Choosing Wisely Canada provide a review through our patient advisory council.

Example Recommendations

The following climate-intensive recommendations have been developed (but not yet published) by several of societies and associations. While some of these examples remain in draft form and may undergo further revisions, they serve as inspiration to help you get started.

CANADIAN THORACIC SOCIETY

Don't prescribe greenhouse gas-intensive metered-dose inhalers (MDIs) for asthma and/or COPD where an alternative inhaler with a lower carbon footprint (e.g. dry powder inhaler (DPI), soft-mist inhaler, or MDI with a low greenhouse gas potential propellant) containing medications with comparable efficacy is available, and where the patient has demonstrated adequate technique and patient preference has been considered.

Rationale:

Metered-dose inhalers (MDIs) contain HFC propellants, which contribute to global warming. When prescribing inhalers, providers should consider whether an objective diagnosis of asthma and/or COPD exists or needs to be confirmed, in keeping with existing CWC CTS recommendations (#1 and #5). Also, optimal choice of controller inhaler agents and non-pharmacologic strategies (e.g. education, trigger avoidance, action plans) should always be included in airway disease management, as they not only improve patient outcomes, but can also reduce rescue inhaler use.

Low carbon footprint inhalers may not be appropriate for some patients (i.e. preschool children, individuals with certain cognitive limitations, end-stage lung disease, muscle weakness or other physical limitations, and during respiratory emergencies). Other patients simply prefer MDIs. Ultimately, whether starting or substituting an inhaler, providers must consider medication efficacy, patient preference, adherence, technique, cost, and side-effect profile. A shared decision-making approach should be used, and the environmental benefits of alternatives to greenhouse gas-intensive MDIs should also inform this decision.

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CANADIAN ORTHOPAEDIC ASSOCIATION

Don't dispose of non-contaminated wrapping materials in contaminated waste bins in order to reduce carbon emissions.

Rationale:

Disposal of non-contaminated waste leads to CO2 emissions due to the need for high-temperature incineration. The carbon footprint of disposal of biohazardous clinical waste via high temperature incineration is 1074 kg CO2e/ton compared to regular waste (172–249 kg CO2e/ton) and recycling (21–65 kg CO2e).[1] Various studies have shown that non-contaminated waste generated in the operating room during a primary joint replacement is on average between 5.2 kg and 6.2 kg.[2] Thus, implementing correct waste segregation practices of non-contaminated materials, will aid in reducing the overall impact of emissions on the environment.

References:

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CANADIAN CRITICAL CARE SOCIETY

Don't use non-sterile disposable gloves when hand hygiene is sufficient. Gloves don't need to be used for most routine healthcare interactions.

In acute care settings, when providing care considered at low risk of infection transmission, standard precautions (e.g., hand hygiene or glove use only when there is a high risk of contact with bodily fluids) may offer a similar level of protection against infection, compared with the universal use of NSGs. While some guidelines recommend wearing gloves to protect HCWs and patients from exposure to bodily fluids, the overuse of gloves may contribute to unnecessary medical waste. In addition, glove use can negatively impact compliance with hand hygiene. In ICU studies in the United Kingdom it has been shown that up to 100 pairs of gloves are used per day per patient, leading to significant waste and disposal issues.

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CANADIAN ASSOCIATION OF GASTROENTEROLOGY

Do not conduct in-person visits for GI care when a virtual visit can be performed and is clinically appropriate (for example - routine follow-up visit, post-endoscopy review of normal biopsy results, etc.,) and is preferred by the patient.

Rationale

There is an increasing volume of literature which shows that delivery of health care in digestive health by telemedicine can be safe and effective.[1]

Driving is one of the activities with a high carbon footprint. Cars emit an average of 206g of CO2e per kilometer[2]. To put this in context a mature tree metabolizes about 20kg of CO2 per year, the equivalent of driving less than 100km. Travel to and from health facilities by patients, visitors and staff accounted for 10% of the UK NHS emissions. Travel is a significant contributor to health care emissions[3].

In a cross-sectional study of more than 10 million patients and 63 million virtual care visits, virtual care was associated with avoidance of 3.2 billion km of patient travel, 545 to 658 million kg of carbon dioxide emissions, and $569 to $733 million (Canadian [US $465-$599 million]) in expenses for gasoline, parking, or public transit.[4]

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3 Tennison I, Roschnik S, Ashby B, Boyd R, Hamilton I, Oreszczyn T, Owen A, Romanello M, Ruyssevelt P, Sherman JD, Smith AZP, Steele K, Watts N, Eckelman MJ. Health care's response to climate change: a carbon footprint assessment of the NHS in England. Lancet Planet Health. 2021 Feb;5(2):e84-e92. doi: 10.1016/S2542-5196(20)30271-0. PMID: 33581070; PMCID: PMC7887664.

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