Hospital Pharmacy

Sixteen Things Clinicians and Patients Should Question
by
Canadian Society of Hospital Pharmacists
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Choosing Wisely Canada™
In partnership with the Canadian Medical Association

1 Don't continue medications that are no longer indicated or where the risks outweigh the benefits.

Polypharmacy, often defined as taking five or more medications at the same time, has been associated with a variety of adverse health outcomes. Therapy with a medication is initiated when the patient and care team conclude that the benefits of taking the medication outweigh the risks of not starting therapy. However, over time, patients and their conditions or goals of care change, new evidence is discovered, and other factors can tip the balance, such that the benefits no longer outweigh the risks or burdens of continued treatment. Few, if any, medications should be continued on a lifelong basis. Patients and caregivers should be made aware of the planned duration of therapy and the outcomes desired, and should feel empowered to follow up with providers to ensure that the benefits of therapy continue to outweigh the risks. The performance of medication reconciliation and transitions of care—such as admission to or discharge from a hospital—may serve as critical activities for deciding whether to continue therapy or create a plan to safely stop a medication.

2 Don't use a medication for long-term risk reduction if life expectancy is shorter than the time to benefit of the medication.

The "time to benefit" is the period between initiation of an intervention (in this case, a medication) and the point when the patient begins to experience a benefit. This period varies from one medication to another. Treatment with a medication is usually not indicated unless the "time to benefit" is clearly shorter than the patient's life expectancy and any potential adverse effects are deemed manageable. These factors are particularly relevant for older adults and those receiving palliative care.

3 Don't continue a proton pump inhibitor at discharge unless there is a compelling reason to continue therapy.

In many cases, a proton pump inhibitor (PPI) is initiated for a valid indication, in cases where the benefits outweigh the risks. During a hospital stay, PPIs may be started for stress ulcer prophylaxis or for patients who will receive certain treatments that increase the likelihood of high-risk gastrointestinal conditions. After the patient's risk for stress ulcer returns to baseline the PPI should be stopped. In addition, patients who did not require a PPI before their hospital admission typically will not need to continue taking one of these drugs after the underlying reason for PPI therapy has been addressed. Long-term adverse effects associated with the acid inhibition caused by PPIs are now emerging. Patients should talk to their healthcare team and only continue taking PPIs if the benefits truly outweigh the risks and to obtain advice on how to taper the dose towards discontinuation if warranted.

4 Don't start or prolong broad-spectrum antibiotic treatment unless clinically indicated.

Broad-spectrum antibiotics are effective in treating bacterial infections, particularly life-threating infections such as sepsis or febrile neutropenia. In certain high-risk situations, these drugs may be clinically indicated and started at the first signs or symptoms of an infection. Broad-spectrum antibiotics should be stopped as soon as the causative pathogen is known or suspected. Targeted antibiotic therapy should begin as soon as possible. When a broad-spectrum antibiotic is deemed necessary, it should be used for the shortest possible duration, according to guideline recommendations and the patient's clinical response.

5 Don't routinely prescribe benzodiazepines or other sedative-hypnotics for promotion of sleep without first a trial of non-pharmacologic interventions.

Non-pharmacologic options to treat insomnia, such as sleep hygiene and cognitive behavioural therapy, are less harmful than drugs, and should be first line therapy.

6 Don't initiate or escalate opioid doses for chronic non-cancer pain before optimizing non-opioid pharmacotherapy and non-pharmacologic therapy.

Evidence shows that opioids are not more effective than other analgesics for certain chronic pain conditions. Furthermore, evidence is mounting that the risks of opioid treatment, including opioid use disorder, overdose, and other previously under-recognized side effects (e.g., hyperalgesia, psychomotor impairment [which can increase the risk of fractures], myocardial infarction, sexual dysfunction) support the use of non-opioid therapy. Thorough patient-centred discussion about risks, benefits, and expectations is essential.

7 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.

Before prescribing or recommending inhalers, providers should ensure a confirmed objective diagnosis of asthma and/ or COPD exists to reduce unnecessary inhaler use and patient exposure. When inhalers are indicated, consider patient-specific factors and preferences to determine if lower carbon intensive inhaler device(s) (Dry Powder Inhalers (DPIs), or soft-mist inhalers (SMIs)) is clinically appropriate as both are often preferred by patients and are as effective as MDIs. Once a device has been selected, ensure the patient is trained on proper inhaler device technique, and technique is reviewed intermittently, as inhaler education programs have shown to reduce exacerbation rates. Additionally, non-pharmacologic strategies (e.g. education, trigger avoidance, action plans) should also be included in airway management, as they not only improve patient outcomes, but can also reduce rescue inhaler use.

MDIs which contain hydrofluoroalkane (HFA) propellants known to contribute to climate change, account for 0.03% of global gas emissions annually. Thus prescribing low carbon footprint inhalers when medically indicated, ensuring adequate patient inhaler technique and incorporating nonpharmacologic strategies into airway management, can lead to better patient outcomes with environmental co-benefits.

8 Don't start or continue medications without an indication or where the risks outweigh the benefits.

Optimizing medication usage yields positive clinical outcomes for patients. In 2021, 25% of Canadian older adults were prescribed 10 or more medication classes, leading to polypharmacy and increased healthcare costs, adverse reactions, and potential interactions. Re-evaluating prescriptions to discontinue unnecessary medications can reduce adverse events, healthcare burdens, and enhance quality of patient care. Addressing polypharmacy enhances individual and healthcare system efficiency and sustainability. Furthermore, optimizing medication use reduces pharmaceutical waste and environmental impact. Close to 100000 million tonnes of CO_2 emissions are released from unused medications and pharmaceutical waste every year. Medications account for a quarter of carbon emissions within the healthcare sector. By avoiding the prescribing of unnecessary or unindicated prescriptions healthcare providers may contribute to reducing the overall demand for raw materials and energy-intensive processes involved in pharmaceutical production.

9 Don't pour any pharmaceuticals or chemicals down sinks, toilets, or drains or dispose of in the trash.

Ensuring proper medication disposal is crucial to minimize health risks, preventing misuse and adverse effects. Less than 1% of patients return unused medication, increasing the likelihood of accidental ingestion by children and pets. Flushing medications down the toilet, a prevalent disposal method, poses risks of antibiotic resistance and water contamination. The improper disposal introduces pharmaceutical residue into water systems, threatening aquatic life. Education on safe disposal and encouraging return to designated collection sites can reduce these risks. Regulatory measures, such as those implemented in British Columbia, aim to address pharmaceutical waste through recycling regulations, highlighting the importance of comprehensive strategies to minimize environmental harm.

10 Don't print prescription or educational materials when providers and patients have access to digital communication.

Reducing paper usage has been shown to minimize the risk of prescription errors. Decreasing paper prevents waste and recycling needs, hence is environmentally beneficial.

11 Don't use disposable gloves when standard hand hygiene disinfection practices are safe and sufficient.

In pharmacy settings, when the risk of body fluids exposure and infection transmission is low, maintaining safety standards in most routine healthcare interactions can most often be achieved by using proper hand hygiene without additional precautions. Do not use gloves in place of hand hygiene or when hand hygiene alone is sufficient. The pharmacy staff should reserve the use of gloves to situations in which the safeguard of pharmacy staff is required due to risk of infection, or to comply with infection prevention and control (IPAC) and National Association of Pharmacy Regulatory Authorities (NAPRA) standards and/or guidelines. Refraining from using latex or nitrile gloves when not medically necessary is an important aspect of environmental stewardship to be considered by healthcare professionals. Minimizing the use of gloves can help reduce environmental waste associated with disposable medical supplies, contributing to sustainability efforts in healthcare facilities. Approximately 500 boxes of gloves were found to emit 2 tonnes of CO_2 emissions. Limiting the use of gloves is highly effective in promoting environmental sustainability.

12 Don't continue an intravenous medication when clinically appropriate to step down to oral therapy.

While intravenous (IV) may be required for patients who do not or cannot tolerate oral therapy or for certain medical conditions or medications, iv therapy is associated with several complications. These include: phlebitis, thrombophlebitis, infiltration, extravasation, and catheter-related infections and bacteremia infections, hematoma, thrombosis, pain or discomfort, and fluid overload in fluid-restricted patients, such as some patients with renal or cardiac disease. Switching to oral therapy, when and if clinically appropriate, has other potential benefits for the patient including: increased ease of mobility, better quality of life (some patients feel less "medicalized"), earlier discharge from the hospital, thereby decreasing the risk of hospital-acquired infections. Other benefits include reduced length of stay, rate of hospital-acquired infections, lower drug costs and reduced waste (eg. Tubing, expired IV bags).

Although the life cycle analyses of most medications are not widely available, the carbon footprint of intravenous medications is estimated to be higher than oral medications due to primary packaging materials, plastic waste, equipment for administration and their disposal. Switching from IV to oral therapy reduces length of hospital stay and may reduce its associated environmental impacts.

13 Don't use desflurane when other anesthetic drugs and techniques are equally effective and less harmful to the environment.

Anesthetic gases possess significant global warming potential (GWP) and contribute approximately 5% of the harmful greenhouse gas emissions of a typical hospital. However, not all anesthetic gases are equally harmful. The anesthetic gas desflurane has the highest GWP at twenty times more than that of sevoflurane. In addition, when both are delivered at equal fresh gas flows, desflurane has approximately 50 times the impact of sevoflurane due to its lower potency. Patient care can be provided safely and efficiently without desflurane; anesthetic alternatives such as sevoflurane, intravenous anesthesia or regional techniques should be considered, depending on clinical and geographical context. The restriction of the use of desflurane is supported by the Canadian Anesthesia Society, American Society of Anesthesiologists and World Federation of Societies of Anaesthesiologists. The elimination of desflurane is an effective change that aligns with the Choosing Wisely environmental practice recommendations.

14 Don't discard medications that are appropriate for re-dispense.

Considerable pharmaceutical waste is generated in hospital settings which can be reduced by appropriately re-dispensing unused medications. A study from three Fraser Health hospitals extrapolated the results to show re-dispensing unused oral solid medications in 21 hospitals could divert ~ 461 000 units of medication from the incinerator with an estimated net value of ~ 415 000 per year. Re-dispensing unused medications will decrease environmental impact associated with unnecessary drug wastage (disposal/incineration).

15 Don't continue medications upon hospital transitions (admission, transfers, and discharge) unless there is a clinical indication.

The continuation of unnecessary medications can lead to potential adverse effects and increase consumption and costs to the patient. The performance of medication reviews at transitions of care within hospitals has been shown to decrease adverse drug event-related hospital revisits, emergency department (ED) visits and hospital readmissions. One study estimated that avoiding in-hospital activity and journeys to and from hospital resulted in a reduction in avoidable medicine-related admissions of 110 tonnes of greenhouse gas emissions, 179 million m3 of fresh water and 13, 300 tonnes of waste. Thus, performing medication reviews throughout a hospital stay and optimizing medications may help reduce the overall use and consumption of health care resources and impacts to the environment.

16 Don't make formulary decisions, without consideration of environmental impact.

Embedding a planetary health lens when making pharmacy system-level decisions, benefits the health of the population by reducing the associated adverse health impacts. Selecting medications with lower environmental impact to be added to hospital formularies, adopting green purchasing strategies (such as streamline ordering and delivery of medications to reduce carbon emissions) and ensuring medicine procurement policies incorporate and where possible prioritize manufactures, supplier and distributors with commitments to sustainability are a few examples of embedding planetary health lens in pharmacy system-level decisions.

How the list was created

The Canadian Society of Hospital Pharmacists (CSHP) formed a working group of pharmacists who practice in a variety of settings (e.g., hospital, primary care). Members of CSHP were invited to contribute recommendations to CSHP, via email, an online survey, and paper forms distributed at national and regional conferences. The suggested recommendations were reviewed by the working group: duplicate and similar recommendations were combined and recommendations that did not meet criteria (i.e., those that could not be written as a "don't" statement) were removed. Two lists of recommendations resulted: "medication-based" (consisting of 17 items) and "practice-based" (consisting of 14 items). CSHP members were asked to identify their "top 5" recommendations in each of those two categories. The results of the survey were reviewed by the working group. A shortened set of recommendations was created by identifying the recommendations that had support from at least 40% of the respondents.

Evidence supporting each of CSHP's proposed recommendations was gathered, and Choosing Wisely Canada's recommendations from other organizations were reviewed to identify if similar recommendations already exist. The proposed recommendations were compared to each other to remove any obvious duplication. CSHP's Board voted on the draft set of recommendations in October 2018. After the recommendations were approved by Choosing Wisely Canada, CSHP's Board approved the final set of recommendations in January 2019.

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About the Canadian Society of Hospital Pharmacists

The Canadian Society of Hospital Pharmacists is the national voluntary organization of pharmacists committed to patient care through the advancement of safe, effective medication use in hospitals and other collaborative healthcare settings.

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About Choosing Wisely Canada

Choosing Wisely Canada is the national voice for reducing unnecessary tests and treatments in health care. One of its important functions is to help clinicians and patients engage in conversations that lead to smart and effective care choices.

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