



Evidence Brief

To Healthcare Providers on Optimizing Pharmacotherapy
& Preventing Prescribing Cascades in Older Adults

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ISSUE

Inappropriate drug prescribing for older adults is a growing concern as the world's population ages and the prevalence of multimorbidity increases as well. One form of potentially inappropriate prescribing is a **prescribing cascade**, when the side effect of a medication is misinterpreted as a new condition and results in the prescription of another usually unnecessary medication. Women, who represent the largest proportion of older adults, are at the greatest risk for drug-related harms. The addition of potentially inappropriate drugs, as occurs in a prescribing cascade, increases the risk of adverse drug events. **This brief aims to provide healthcare providers with guidance on optimizing pharmacotherapy to improve patient outcomes.**

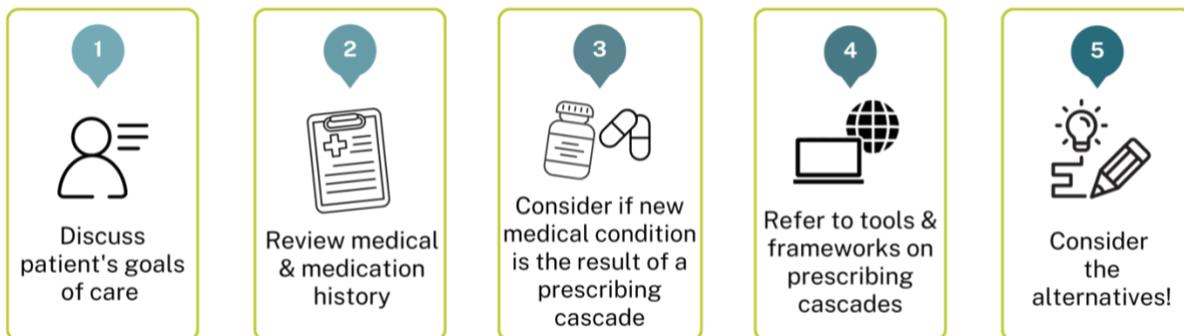
BACKGROUND

- By 2026, approximately 20% of Canadians will be 65 or older, making Canada a super-aged society¹
- Nearly two-thirds of older adults are prescribed five or more different drug classes²
- Older adults, and especially older women, are vastly underrepresented in clinical trials, limiting efficacy safety, and the generalizability of drug dosing recommendations for this population³
- Prescribing cascades increase the risk of adverse drug events and hospitalization⁴
- Due to a lack of sex and gender disaggregated data, coupled with women living into advanced age and being more likely to suffer from poverty, **older women are at a heightened risk for medication-related harm**⁵

RECOMMENDATIONS

To improve pharmacological prescription for older adults and reduce inappropriate prescribing, it's important to prevent, recognize, and interrupt problematic prescribing cascades. Several guidelines have been developed to optimize medication safety for older adults. Healthcare providers should use the following framework, which aligns with the geriatrician-created DRUGS guide.⁶

Summary of Recommendations



1. Discuss goals of care and what matters most to the patient

- Consider patient preferences and values, focus on goals of care
- Review the benefits and risks of treatments with the patient or their caregiver, and involve them in the decision-making process
- Consider the individual's cognitive ability and frailty when assessing medication appropriateness
- Women are more likely than men to be caregivers, and may not have a caregiver to advocate for themselves warranting greater attention to their medications

2. Review medications and understand the patient's medical background

- a. Before prescribing, have a thorough understanding of the patient's medical history and all the medications they're taking (including over-the-counter medications and supplements)
- b. Review medications on a regular basis as conditions and goals of care change over time
- c. Older adults experiencing polypharmacy (the use of 5+ drugs concurrently) should be screened for potential prescribing cascades by determining when and why each medication was started

3. Consider whether a new medical condition might be the result of a prescribing cascade

Questions to ask:

- a. Could the presenting condition be a result of a medication's side effect?
- b. Is the first medication the only option to treat the original condition?
- c. Can the side effects of the first medication be managed without another drug?
- d. Can the dose of the first drug be reduced?
 - Recognize that women might need a lower dose of specific drug therapies due to sex-based pharmacokinetic and pharmacodynamic differences^{7,8,9}

4. Use existing tools and frameworks

- a. Refer to evidence-based prescribing tools and inventories:
 - Explicit criteria of potentially inappropriate medications in older adults (The Screening Tool of Older Persons' Prescriptions - [STOPP](#)¹⁰ and the American Geriatrics Society's [Beers Criteria](#)¹¹)
 - [ThinkCascades](#), a tool for identifying clinically important prescribing cascades affecting older adults¹²
- b. Encourage teaching other prescribers about the concurrent or sequential use of certain drugs that may result in inappropriate prescribing
- c. Stay updated on sex-based pharmacokinetic differences and consider gender roles, gender norms (e.g., caregiver status) and gender relations (e.g., social support) to inform prescribing

5. Consider alternatives, such as judicious deprescribing

- a. Where appropriate and applicable, consider alternatives such as reducing doses or in some cases discontinuing medication(s), especially for those experiencing polypharmacy
 - Follow-up with the patient regarding improvements in outcomes or watch for adverse events following deprescribing, in which case the drug regimen should be reassessed
- b. Refer to a five-step deprescribing protocol, [the CEASE algorithm](#)¹³

CONCLUSION

Optimizing pharmacotherapy is important to improve the health and well-being of older adults. This includes understanding an individual's experiences and values, conducting regular medication reviews, and ensuring prescribing decisions are evidence-based. Healthcare providers can ensure they are minimizing the risks associated with prescribing cascades by using existing tools and following the above guidelines. As women live longer than men, and have more chronic conditions, they are more likely to be prescribed potentially inappropriate drug therapies and experience adverse drug events. Read the following article to learn more about how to optimize medication prescribing for older adults and how sex- (biological) and gender- related (sociocultural) factors are important for safe prescribing: "[Polypharmacy, inappropriate prescribing, and deprescribing in older people: through a sex and gender lens](#)" (Rochon et al., 2021).

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To learn more about the team's international GENDER-NET Plus research funded project involving partners from six countries, Identifying Key Prescribing Cascades in the Elderly: A Transnational Initiative on Drug Safety (iKASCADE), please click [here](#).

¹ Rochon, Paula A, and Surbhi Kalia. "Canada needs a national aging strategy that includes older women," *Toronto Star*, Jan 3, 2022.

<https://www.thestar.com/opinion/contributors/2022/01/03/canada-needs-a-national-aging-strategy-that-includes-older-women.html>

² "Drug Use Among Seniors, 2016," *Canadian Institute for Health Information*, 2018, https://secure.cihi.ca/free_products/drug-use-among-seniors-2016-en-web.pdf

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⁷ Ibid.

⁸ Sternberg, Shelley A., Mirko Petrovic, Graziano Onder, Antonio Cherubini, Denis O'Mahony, Jerry H Gurwitz, Francesco Pegreff, et al. "Identifying Key Prescribing Cascades in Older People (iKASCADE): a Transnational Initiative on Drug Safety through a Sex and Gender Lens—rationale and Design." *European Geriatric Medicine* 12, no. 3 (2021): 475–83. <https://doi.org/10.1007/s41999-021-00480-w>

⁹ Soldin, Offie P, and Donald R Mattison. "Sex Differences in Pharmacokinetics and Pharmacodynamics." *Clinical Pharmacokinetics* 48, no. 3 (2009): 143–57. <https://doi.org/10.2165/00003088-200948030-00001>

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¹¹ Fick, Donna M., Todd P. Semla, Michael Steinman, Judith Beizer, Nicole Brandt, Robert Dombrowski, Catherine E. DuBeau, et al. "American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults." *Journal of the American Geriatrics Society* 67, no. 4 (2019): 674–94. <https://doi.org/10.1111/jgs.15767>

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