CEP | Providers

Long-Term Care (LTC) Edition

Falls Prevention Discussion Guide

This discussion guide is designed to help providers assess falls risk and manage residents in long-term care (LTC) to prevent falls and the associated co-morbidities. This guide integrates best-practice evidence, clinical experience, and makes reference to relevant existing tools and services where possible.

Important principles include:

- Being resident-centered
- Being mindful of benefits, risks and safety concerns
- Using an inter-professional team approach and validated tools
- Prescribing conservatively
- Reassessing regularly for opportunities to deprescribe medications that are no longer needed

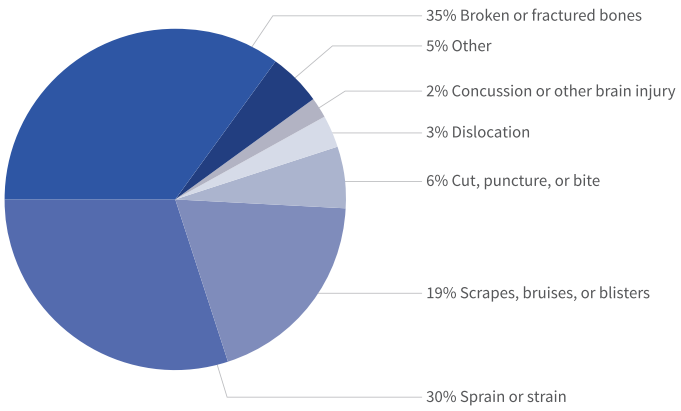
As always, efforts must be made to individualize any treatment decisions for the resident, with considerations for caregivers, family and LTC staff.

While the majority of this discussion guide focusses on fall reduction and reducing harm from falls, it is critical to remember the importance of enhancing resident mobility. The ability to move independently is a cornerstone of resident-centered care, enabling choice and autonomy. LTC home residents should be allowed the freedom to move, even if there are risks involved, and LTC home staff and physicians should strive to provide restorative programs and activities that encourage healthy and safe mobility. Physical restraints should NOT be used to reduce falls, as research consistently shows increased injuries and further decline when physical restraints are employed.[22] With increasing frailty, and for those at highest risk of fracture, the benefits of continued mobility may begin to be outweighed by other factors and discussions about goals of life and care may shift towards harm reduction, however always encourage as much safe movement as possible.

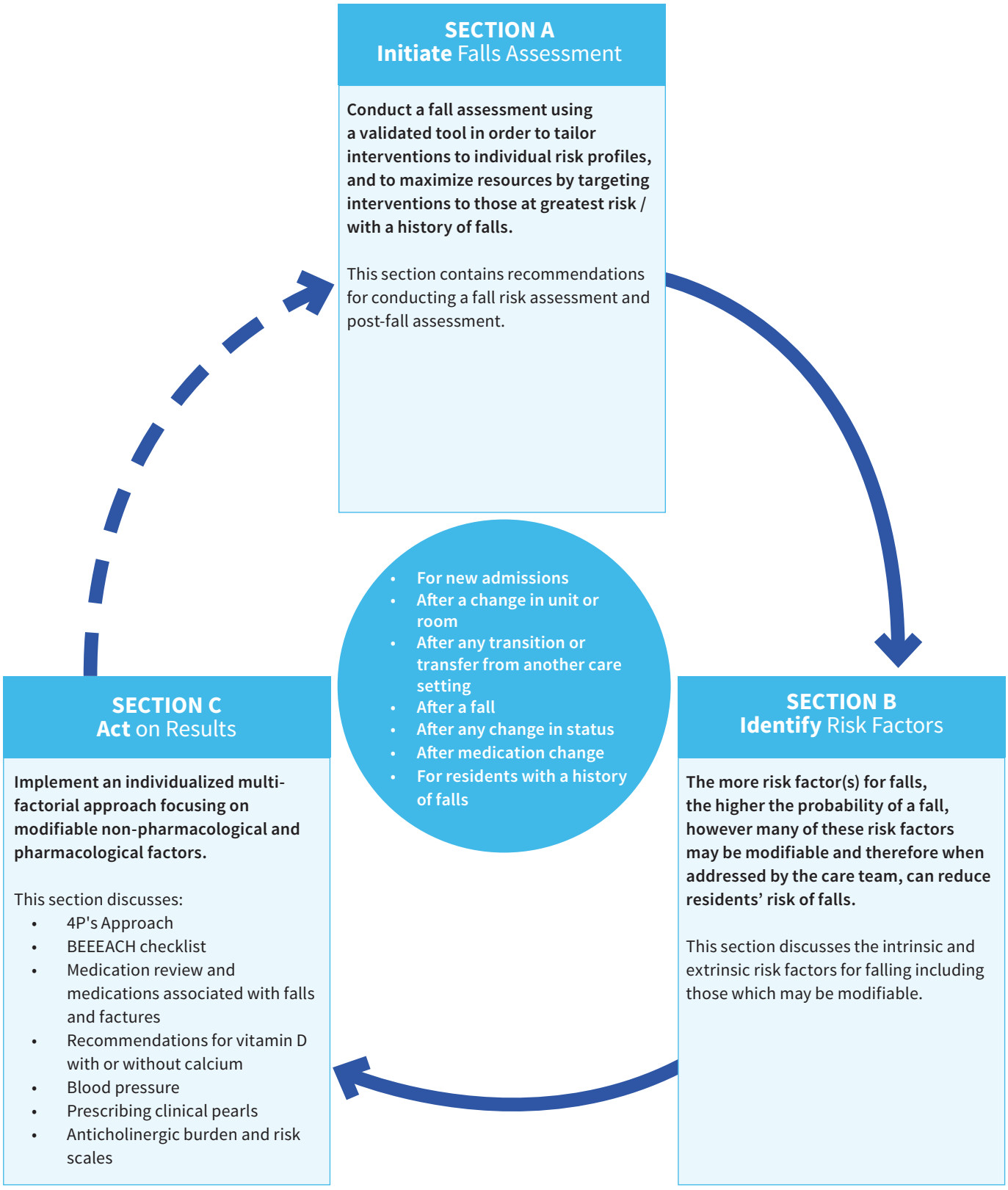
Why Preventing Falls Matters[1,2]

- Approximately 14.8% of Ontario residents and 15.3% of Canadian residents living in LTC have a history of at least one fall in the last 30 days[3]
- Approximately half of all LTC residents will fall at least once per year
- Recent hospitalization increases the risk of falling
- In LTC, residents are more likely to fall on the first day after moving into a new room or new unit[4]
- Of those that fall, 40% will fall two or more times

Figure 1. Type of fall-related injury, age 65+, Canada 2009/10[1]
This graph shows that the majority of injuries resulting from a fall were broken or fractured bones (35%) followed by sprains or strains (30%) and scrapes, bruises or blisters (19%). This finding highlights the importance of preventing fall-related injuries among seniors.



Overview of Falls Prevention Discussion Guide



Section A: Initiate Falls Assessment

How is a Fall Defined in Long-Term Care?

Any unintentional (witnessed or unwitnessed) change in position where the resident ends up on the floor, ground, or other lower level.[4]

A fall is considered:

- When a resident loses balance and a fall would have occurred if staff did not intervene
- If the fall resulted in an injury
- If a resident is found on the floor, and staff cannot definitively rule out a fall
- When the distance to the next lower surface is not a factor (e.g. if a resident rolls onto floor from a mattress placed on the floor, it is still considered a fall)[5]

Why Conduct a Fall Assessment?

1. To tailor interventions to individual risk profiles
2. To maximize resources by targeting interventions to those at greatest risk / with a history of falls

Pre-Fall Assessment	Post-Fall Assessment

Assess fall risk in the following situations
• For new admissions
• After any transition or transfer from another care setting (e.g. hospital/emergency department, another unit or room, other LTC facility)
• After a fall
• After any change in status
• After medication changes (e.g. adding psychotropics, benzodiazepines, or opioids)
• For residents with a history of falls
 	
Assess resident's risk of falls
• Consider quick screening tools (e.g. Morse Fall Scale, Scott Fall Risk Screen for Residential Long-Term Care) or in-depth assessment tools (e.g. Resident Assessment Instrument – Minimum Data Set (RAI-MDS)[6,7,8,9,10]
• In LTC, where the majority of residents may be at high risk, applying universal precautions for falls may be more appropriate[11]
 	
Identify resident's fall risk factors (see Section C)
• Modify risk factors if appropriate
	First 24 hours[12]
	• Rule out severe injury
	• Contact most responsible provider (e.g. attending physician, nurse practitioner)
	• When critical incidents occur, report to MOHLTC and substitute decision maker
	• Evaluate and monitor resident
	• Provide comfort and reassurance
	• Transfer with a mechanical lift if required
	• Investigate and document presence of injury and pain, including:[13]
	  • Details of the fall
	  • Physical examination (e.g. vital signs, sitting and standing blood pressure if possible)
	  • Contributing factors (e.g. behaviours, restraint use, bathroom, medications)
	  • Environmental context (e.g. location, footwear, floor surface, equipment)
	• Engage with physiotherapist, occupational therapist, other staff, family members; when possible, implement immediate intervention
	
	After 24 hours
	• Continue to evaluate and monitor for the first 72 hours after a fall
	• Post-fall huddle with relevant interdisciplinary team members and/or most responsible provider
	  • Assess resident's risk of falls

Section B: Identify Risk Factors[1,4,10,14,15,16,17,18,19,20,21,21,22]

The more risk factor(s) for falls, the higher the probability of a fall. Many of these risk *factors may be modifiable*; and therefore, if addressed by the care team, there is the potential to reduce falls.

Intrinsic Risk Factors (e.g. demographic and biological)	Extrinsic Risk Factors (e.g. behavioural, environment, and medication related)

• Age {age > 85, 1.16 for fall-related mortality}[7]
• Female {**2.2** for any fracture}
• Physical conditions
  • *Muscle weakness* {**5**}
  • *Visual impairment* {**3**}
  • Cognitive impairment {**2-5**}
  • *Foot disorders* {**2**}
  • Transfer independence {1.49}
  • Wheelchair independence {1.39}
  • Low body mass index and weight loss
  • Gait impairment
• *Chronic Medical Conditions*
  • *Bowel/bladder incontinence and urgency* {**3**}
  • *Parkinson's disease* {**2.2** for any fracture and **3.2** for hip fracture}[8,9]
  • *Blood pressure*
  • *Orthostatic hypotension* {**2**}
  • *Hypotension*
  • Alzheimer's disease {**2**}[10]
  • *Diabetes* {female: 1.6-**2**}[11]
  • Arthritis and *related pain*
  • Cardiovascular disease
  • *Chronic obstructive pulmonary disease*
  • *Depression*
  • *Obstructive sleep apnea*
  • End stage renal disease
  • Stroke
• Acute illness
	• *Restraint use* {**10.2** for fracture or serious injury in LTC}
	• Previous history of falls {3x risk of fall within the year}[12]
	• *Medications*[13]
	  • *Opioids* {**4.5** for fracture risk, compared to NSAIDS}[14]
	  • *Insulin* {**2.76**}
	  • *Psychotropics* {**2.80** in LTC}[15]
	  • *Antidepressants* {1.61 in LTC}
	  • *Selective serotonin reuptake inhibitors or serotonin-specific reuptake inhibitors (SSRIs)* {1.66}
	  • *Others* {1.39}
	  • *Tricyclic antidepressants (TCAs)* {1.30}
	  • *Combination* {1.70}
	  • *Benzodiazepines* {1.61 in LTC}
	  • *Short-acting* {1.44}
	  • *Long-acting* {1.32}
	  • *Antipsychotics* {1.50}
	  • *Sedatives, hypnotics* {1.39 in LTC}
	  • *Anticonvulsants* {1.75} *(e.g. phenytoin, phenobarbital, carbamazepine)*
	  • *Cardiovascular*
	  • *Vasodilators* {**3**} *(e.g. alpha1 receptor blockers, calcium channel blockers, long-acting nitrates, angiotensin converting enzyme inhibitors, and angiotensin I receptor blockers)*
	  • *Anti-arrhythmics* {1.59}
	  • *Digoxin* {1.22}
	  • *Diuretics* {1.08}
	• *Excessive alcohol*
	• *Assistive device(s)* {1.44}
	• *Improper footwear or clothing*
	• *Nutrition and hydration*
	• *Behaviour*
	  • Fear of falling → decreased sociability → possible depression
	  • Risk taking behaviour (e.g. not using a walking aid or grab bar when one is needed)
	  • Sedentary behaviour
	• *Environmental hazards (e.g. high bed, wax floor)*

LEGEND

Green/italics — *Potentially modifiable risk factors.*

{OR} — Where possible, odds ratio (OR) provided for the risk of fall unless otherwise noted, and **bolded** when equal to or greater than 2.

For example: Restraint use {**10.2** for fracture or serious injury in LTC} = Residents using restraints has a 10.2 time increased risk of fracture or serious injury compared to residents who did not use restraints in LTC.

Note: Risk factors are based on observational evidence where association has been found. Interpretation may be limited due to confounding, especially as many diseases and indicated medications both are associated with fall risk (e.g. is it the worsening disease or the medication that causes falls?)

Section C: Act on Results

Key Concepts

- Focus interventions on major contributing modifiable risk factors or causes
- Use the BEEEACH checklist (see page 6) to select potential interventions to address resident's contributing risk factors, with the aim of reducing their risk of falls
- Multifactorial interventions may reduce the risk of falls, the evidence is inconclusive for single or multiple interventions in LTC[23,24,25]
- Individualize interventions according to resident's needs, goals of care, available family member/caregiver supports and resources
- Everyone has a role in fall prevention

4P's Approach[29]

- This approach can be used by nurses, personal care workers, unit managers and other health care professionals to ensure universal fall precautions are in place
- Consider asking resident about the 4Ps on a regular basis (e.g. after each interaction with resident, one to two times per shift, during rounds, etc.)

4P's Approach	
 **Pain** Are you in pain? Do you have any discomfort?	 **Position** Do you want me to help you move into a better position?
 **Placement** Do you need anything to be placed within easy reach? (e.g. call bell, phone, reading material)	 **Personal Needs** Do you need anything to drink or eat? Do you need to go to the washroom?

BEEEACH Checklist (Adapted from BEEEACH approach[26])

Behaviour

- ☐ *Behaviour change and assessment to prevent a fall*

Environment

- ☐ Bed in lowest position
- ☐ Bed, commode locked
- ☐ Contrasting colour behind toilet/toilet seat
- ☐ Declutter resident environment
- ☐ Exits bed toward stronger side
- ☐ Fluorescent tape path to bathroom
- ☐ Improve lighting
- ☐ Move room closer to station
- ☐ Non-glare floor surface
- ☐ Non-slip floor tape
- ☐ *Personal items within reach*
- ☐ Support resident to get into a comfortable position
- ☐ *Review bedrail use*

Equipment

- ☐ Hearing aid
- ☐ *Helmet**
- ☐ *Hip protector**
  - Significant reduction in hip fracture (NNT = 91); may increase pelvic fracture (NNH = 1000) in one year[27]
- ☐ *Mobility aids appropriate and accessible**
- ☐ Sensor systems/alarm devices
  - Wearable (socks, ankle, thigh)
  - Non-wearable (chair/bed mats)
  - Sensor systems may have a role for some individuals; however evidence is inconsistent whether sensor systems can prevent falls and fall-related injuries in LTC[28]
- ☐ Visual aids (e.g. glasses, prescription up to date, no bifocals for cognitively impaired)

Education

- ☐ Orient resident/family to unit, room and call bell
- ☐ Proper footwear and clothing
- ☐ Proper use of assistive devices
- ☐ Review individual fall risk factors with resident/family

Activity

- ☐ Appropriate assistance when mobilizing and transferring
- ☐ Exercise (e.g. balance, strength, resistance and functional training two to three times per week); take caution in very frail elderly (may increase falls)[25]
- ☐ Individualized toileting schedule
- ☐ *Occupational therapy for assistive devices**
- ☐ *Physiotherapy for assessment**
- ☐ Restorative therapy/mobility program
- ☐ Turn immobile residents to maintain skin integrity

Clothing and Footwear

- ☐ Appropriate footwear (see safe shoe checklist on page 10)
- ☐ Non-slip socks
- ☐ Review clothing (e.g. easy to put on clothing, not too long)

Health Management

- ☐ *Chronic disease management (incorporate individual goals of care)*
  - ☐ *Behaviour/cognition*
  - ☐ *Bladder/bowel incontinence and urgency*
  - ☐ *Blood pressure, hypotension, orthostatic hypotension (see page 8)*
  - ☐ *Cardiovascular disease*
  - ☐ *Chronic obstructive pulmonary disease (COPD)*
  - ☐ *Depression*
  - ☐ *Diabetes (hypoglycemia)*
  - ☐ *Pain*
  - ☐ *Parkinson's disease*
  - ☐ *Sleep, obstructive sleep apnea*
- ☐ *Medication review*
- ☐ *Nutrition and hydration (dietitian referral)*
- ☐ *Supplement Vitamin D +/- calcium (if calcium intake not sufficient through diet)*
- ☐ *Vision/hearing and aid review*

LEGEND

Green/italics *Where physicians or nurse practitioners have a role in coordinating care.*

*Referral to Occupational Therapist/Physiotherapist

NNT = number needed to treat, NNH = number needed to harm

Medication Review

- Consider conducting a medication review after each fall and/or for the "frequent" fallers in a reasonable manner (e.g. within the month of a fall)
- Incorporate individual fall risk with each quarterly interprofessional medication review, and try a "trial of discontinuation" by targeting the medications causing the highest risk of falls or fracture
- In residents taking three or more central nervous system (CNS) drugs, assess and reduce polypharmacy where possible (e.g. BEERS criteria[30], STOPP criteria[31])

Medication Associated with Falls and Fractures[32,33,34,35]

Medication Class	Evidence to Support Outcomes			Number of Fall Reports Meeting ISMP Criteria (n=243)*
	Falls	Fractures	Hip Fracture	
Opioids	✓	✓	✓	*25.1%*
Psychotropics: Antidepressants (e.g. tricyclic antidepressants, selective serotonin reuptake inhibitors) Antipsychotics (typical, atypical) Sedatives and hypnotics (e.g. zopiclone)	✓	✓	✓	*21.4%*
Cardiac medications (e.g. antihypertensives, diuretics)	✓	✓	✓	*17.3%*
Hypoglycemic agents (including insulin)	?**			*13.6%*
Benzodiazepines	✓	✓		
Nonsteroidal anti-inflammatory drugs	✓			

*Institute for Safe Medication and Practices (ISMP) Canada report (August 1, 2000 to December 31, 2014).[34]
** Evidence for hypoglycemic agents and falls is lacking, expecially in frail older adults. Clinically, caution is warranted.
See page 10 for examples of medication review tools.

Vitamin D with or without Calcium

Evidence Summary
Evidence supporting a role for vitamin D +/- calcium in preventing falls and fractures is somewhat mixed. A recent CADTH Rapid Review[65] concluded that evidence does not support vitamin D supplementation in elderly residents in LTC. This was based on a review where four of five meta-analysis did not find a statistical benefit on falls.

The evidence review for the recent Canadian guidelines for preventing fracture in LTC reported the following:[67]

Benefits (actual vitamin D intake in most studies approximately 800 IU / day)	Harms for vitamin D + calcium*
• A reduction in hip fractures for vitamin D + calcium • Five fewer per 1000 treated (confidence range two to eight fewer)	• Gastrointestinal adverse events (eight more per 1000)
• No effect of vitamin D +/- calcium on other vertebral or non-vertebral fractures	• Hypercalcemia (possibly five more per 1000)
• No effect of vitamin D +/- calcium on preventing falls	• Renal insufficiency or calculi (three more per 1000)
• A reduction in mortality for vitamin D + calcium • Seven fewer deaths per 1000 treated from any cause (range 1-14 fewer)	• MI risk (controversial data)

Canadian Guideline Recommendations (2015) [44]
For residents at HIGH RISK of FRACTURES, we **recommend** daily supplements of 800 IU to 2000 IU vitamin D3 *(strong recommendation, moderate quality evidence).*

For residents NOT at high RISK of fractures, we **suggest** daily supplements of 800 IU to 2000 IU vitamin D3 to meet the recommended dietary allowance, depending on resources and their (or their family/caregiver's) values and preferences *(conditional recommendation, moderate quality evidence).*

For residents at high risk of falls or fractures and older than 70 years of age, recommended a daily dietary allowance of 1200mg calcium (three servings of dairy or dairy equivalents); if supplement required, no more than elemental calcium 500mg per day.

Cost per year (approximate):
- Vitamin D 1000IU tablets or drops once per day, $30
- Elemental calcium 500mg once per day supplement, $50
- Combination calcium 500mg + vitamin D 1000IU tablet, ~$100

*Harms provided for vitamin D + calcium only as only the combination was associated with a benefit.

Blood Pressure

- Hypotension has been shown to be associated with falls[62]
- Orthostatic hypotension may or may not be associated with falls (mixed evidence)[63]
- Serious risk of fall injuries is highest within 15 days of antihypertensive medication initiation or intensification
  - The odds for a serious fall injury were increased during the 15 days after antihypertensive medication initiation (odds ratio, 1.36 [95% confidence interval, 1.19–1.55]), adding a new class (odds ratio, 1.16 [95% confidence interval, 1.10–1.23]), and titration (odds ratio, 1.13 [95% confidence interval, 1.08–1.18])[66]
- While lowering blood pressure may be associated with fall risk, evidence is lacking regarding which specific antihypertensive drug classes actually increase risk[64]
- Individualize blood pressure target based on resident's individual goals of care, functional status, and life expectancy
- Consider stopping, reducing, changing the time the drugs are taken, or changing the drug(s) that may contribute to low blood pressure (e.g. antihypertensive, antipsychotics, trazodone, antiparkinson's, tricyclic antidepressants)

Prescribing Clinical Pearls

When starting a new medicine

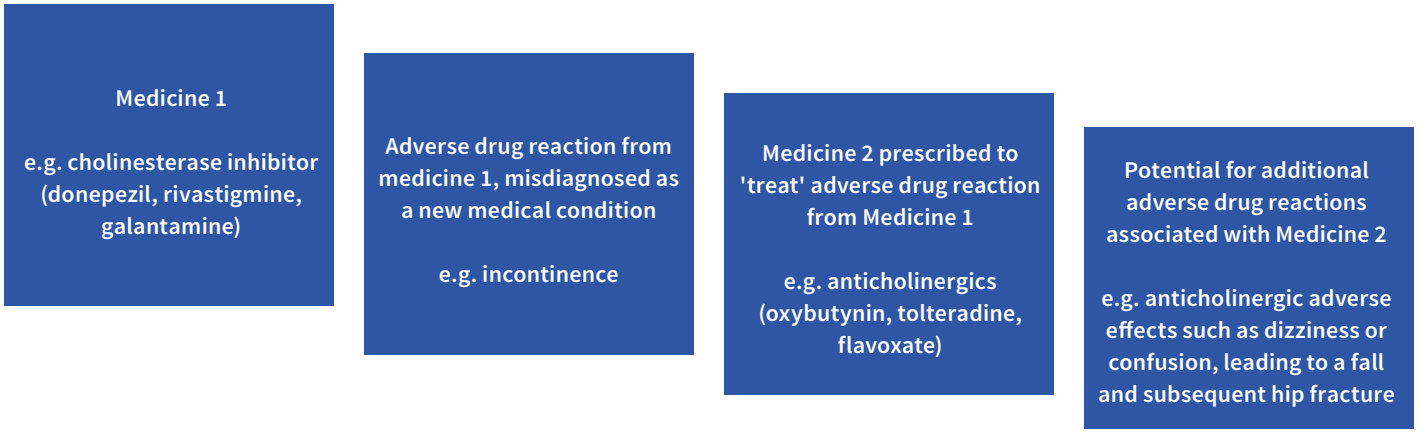
- Start low and go slow
- Try choosing medication with less anticholinergic burden or less CNS effect (e.g. choose famotidine [Pepcid®] over ranitidine [Zantac®])
- Consider lowering the dose of other concurrent medications that have higher risk of falls or anticholinergic burden

Risk of falls or fracture may be highest shortly after a new medication or dose change

- Benzodiazepines, psychotropics and opioids have the highest risk of falls within the first day of initiation, and this risk of fall may last up to seven days[37,38,39]
- Review dose/tolerability in the first 24-72 hours

Avoid prescribing cascades

- The prescribing cascade occurs when a new medicine is prescribed to "treat" an adverse drug reaction associated with another medicine, in the mistaken belief that a new medical condition requiring treatment is present[40]



Ontario Data

In Ontario, between June 1, 1999 and March 31, 2003, residents in LTC receiving cholinesterase inhibitors (donepezil, galantamine or rivastigmine) were almost two times more likely to receive an anticholinergic medication (oxybutynin, tolteradine, or flavoxate) compared to control; HR = 1.94, 95% CI (1.45-2.60)[42]

- Cholinesterase inhibitors and anticholinergic medications have opposing actions, and concomitant use of anticholinergic medications may dilute the benefits of cholinesterase inhibitors
- It may be more beneficial to reduce the dose of the cholinesterase inhibitor rather than add an anticholinergic medication to treat incontinence

The Anticholinergic Burden

- The anticholinergic adverse effects are divided into central (e.g. falls, dizziness, confusion) and peripheral (e.g. dry mouth, dry eyes, and constipation)

- Calculate the anticholinergic burden for residents using an anticholinergic risk scale
  - When possible, consult with pharmacist
  - Consider reporting the anticholinergic burden score in the quarterly medication review in residents at high risk of falls (e.g. frequent fallers, Parkinson's disease residents)
  - Include PRN use (e.g. dimenhydrinate [Gravol®], diphenhydramine [Benadryl®]) and episodic conditions (e.g. gout, COPD)
  - For those with a high anticholinergic burden, consider decreasing the dose or changing to another medication with less anticholinergic burden, if feasible
- When possible, avoid medications with high anticholinergic activity in older adults (>65 years of age)
- Moderate to high anticholinergic drugs not accounted for on Ontario Drug Benefit (ODB) formulary (e.g. government stock) include:
  1. Dimenhydrinate (Gravol®)
  2. Diphenhydramine (Benadryl®)
  3. Chlorpheniramine (Chlor-Tripolon®)
  4. Cyproheptadine (Periactin®)

What are the Top Four Prescribed Drugs in Ontario LTC with Significant Anticholinergic Effect?[36]

Most prescribed ↑ Least prescribed

1. Quetiapine (Seroquel®)
2. Olanzapine (Zyprexa®)
3. Loperamide (Imodium®)
4. Ranitidine > 150mg/d (Zantac®)

Common PRNs to Watch For

Note: Dimenhydrinate and diphenhydramine may be on some medical directives and may be given PRN without notifying the most responsible provider.

Anticholinergic Risk Scales[60]

Scale Name, Country of Origin, Year of Publication	Description	# of Medications Listed
1. The Anticholinergic Drug Scale (ADS), USA, 2006[52]	ADS is a four-point (0-3) scale that ranks anticholinergic drugs based on expert opinion	117
2. Anticholinergic Burden Classification (ABC), France, 2006[53]	ABC is a four-point scale (0-3) based on serum anticholinergic activity and expert opinion	27
3. Clinician-rated Anticholinergic Score (CrAS), USA, 2008[54]	CrAS is a four-point scale (0-3) based on pre-existing published anticholinergic scales and expert opinion	60
4. The Anticholinergic Risk Scale (ARS), USA, 2008[55]	ARS is a four-point scale (0-3) based on extensive literature review and expert opinion	49
5. Anticholinergic Cognitive Burden Scale (ACB), USA, 2008[56]	ACB is a four-point (0-3) scale developed based on published data and expert opinion	88
6. Anticholinergic Activity Scale (AAS), Norway, 2010[57]	AAS is a five-point scale (0-4) based on existing evidence and expert opinion	99
7. Anticholinergic Loading Scale (ACL), Australia, 2011[58]	ACL is a four-point (0-3) scale based on pre-existing published anticholinergic scales and expert opinion	49

Supporting Material

Fall Risk Assessment Tools

Morse Fall Scale - Morse, Morse and Tylko[6,47]

Quick screening fall risk assessment tool which demonstrated high predictive values in both developmental and follow-up samples. It can be completed in under one minute (6 items).
https://link.cep.health/fp1

Scott Fall Risk Screen for Residential Long-Term Care - V. Scott[7]

Alternative quick screening fall risk assessment tool (11 items).
https://link.cep.health/fp2

Post-Fall Assessment Tools

Post-Fall Assessment Tool (PFAT) - Providence Care[49]

Checklist to be used post-fall to document symptoms, previous falls, location, activity and environment, time, and trauma.
https://link.cep.health/fp3

Fall Response 8-Steps - Agency for Healthcare Research and Quality[12]

Guidance document which contains a series of eight steps on how to respond quickly and effectively to a residents' fall.
https://link.cep.health/fp4

Intervention Tools

Safe Shoe Checklist - Providence Care[26]

Checklist to be used to assess footwear and ensure it meets the safety criteria.
https://link.cep.health/fp3

Medication Review Tools

Don't Fall for It: Pills and Spills Post and Quick Reference Chart: Medication Class, Impacts and Examples - Hamilton Health Sciences and Safer Healthcare Now![50]

List and poster of medications and the associated increase risk of falls.
https://link.cep.health/fp5

Beers Criteria - American Geriatrics Society[30]

Consensus list of potentially inappropriate medications of older persons.
https://link.cep.health/fp6

STOPP/START Toolkit - National Health Service (adapted from D. O'Mahony et al.)[31,61]

List of screening criteria to be applied to resident prescriptions to identify potentially inappropriate medications.
https://link.cep.health/fp7

A Guide to Deprescribing - Consultant Pharmacy Services[51]

Series of deprescribing guides for various medication classes.
https://link.cep.health/fp8

Deprescribing.org - B. Farrell and C. Tannenbaum[59]

A website designed to share and exchange tools, information and links about deprescribing approaches and research in the elderly population.
https://link.cep.health/fp9

Anticholinergic Drug Scale - Carnahan et al.[52]

A four-point (0-3) scale that ranks anticholinergic drugs based on expert opinion.
https://link.cep.health/fp10

Anticholinergic Burden Classification - Ancelin et al.[53]

A four-point scale (0-3) based on serum anticholinergic activity and expert opinion.
https://link.cep.health/fp11

Clinician-rated Anticholinergic Score - Han et al.[54]

A four-point scale (0-3) based on pre-existing published anticholinergic scales and expert opinion.
https://link.cep.health/fp12

Anticholinergic Risk Scale - Rudolph et al.[55]

A four-point scale (0-3) based on extensive literature review and expert opinion.
https://link.cep.health/fp13

Anticholinergic Cognitive Burden Scale - Boustani et al.[56]

A four-point (0-3) scale developed based on published data and expert opinion.
https://link.cep.health/fp14

Anticholinergic Activity Scale - Ehrt et al.[57]

A five-point scale (0-4) based on existing evidence and expert opinion.
https://link.cep.health/fp15

Anticholinergic Loading Scale - Sittironnarit et al.[58]

A four-point (0-3) scale based on pre-existing published anticholinergic scales and expert opinion.
https://link.cep.health/fp16

Quality Improvement Tools

Quality Compass - Health Quality Ontario

Quality improvement guidence and tools.
https://link.cep.health/fp17

Additional Guidelines

Prevention of Falls and Fall Injuries in the Older Adult - Registered Nurses' Association of Ontario[9]

A nursing focused best-practice guideline for identifying fall risk factors and decreasing the incidence of falls.
https://link.cep.health/fp18

2015 Recommendations for Preventing Fracture in Long-Term Care - Papaioannou et al.[44]

Guidelines for the management of osteoporosis in patients over the age of 50.
https://link.cep.health/fp19

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