Medications and Falls: Friends or Foes?

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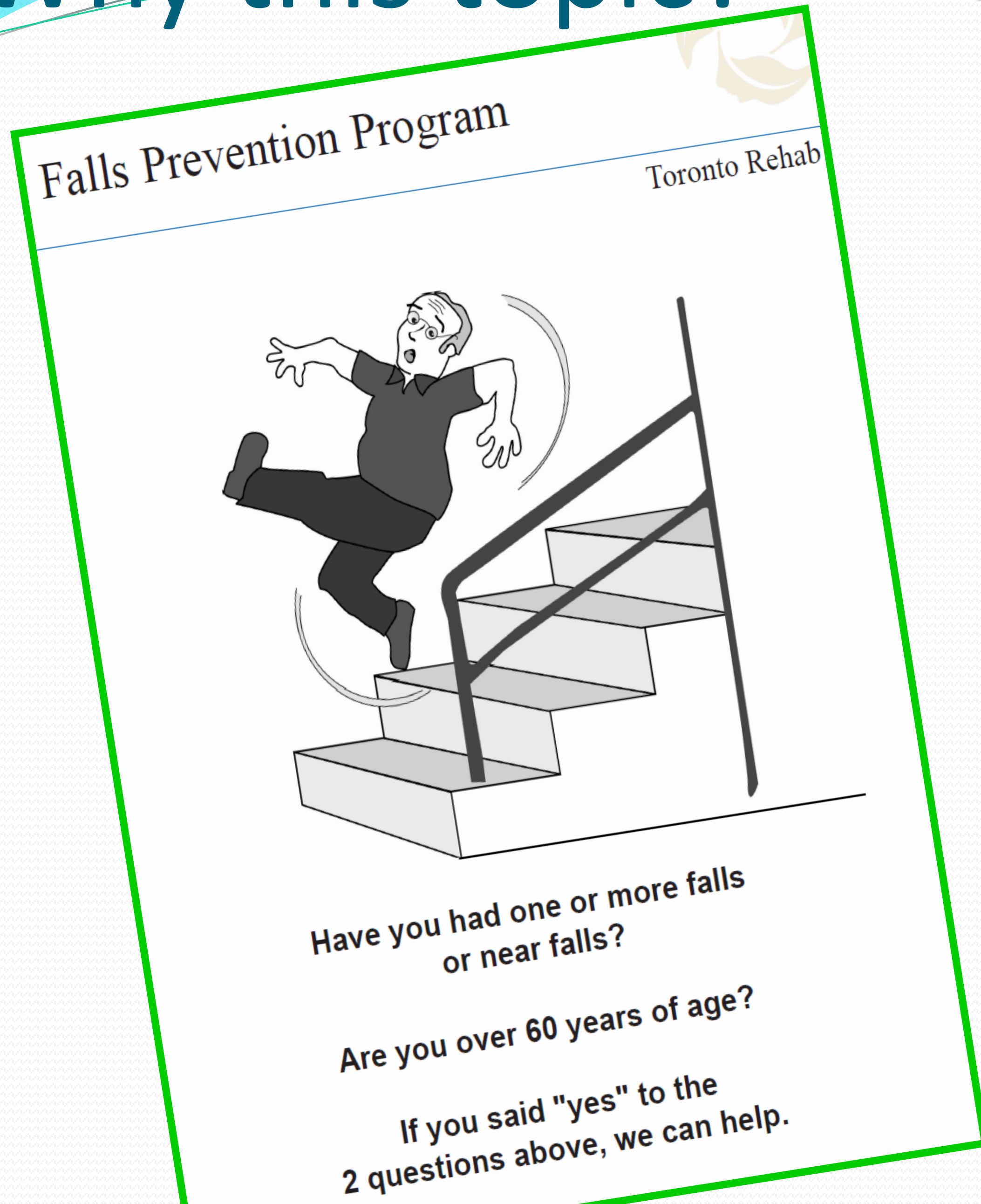
Why this topic?



- *Older adults are the fastest growing segment of the global population*
- *Number of injuries and falls-related deaths is increasing*

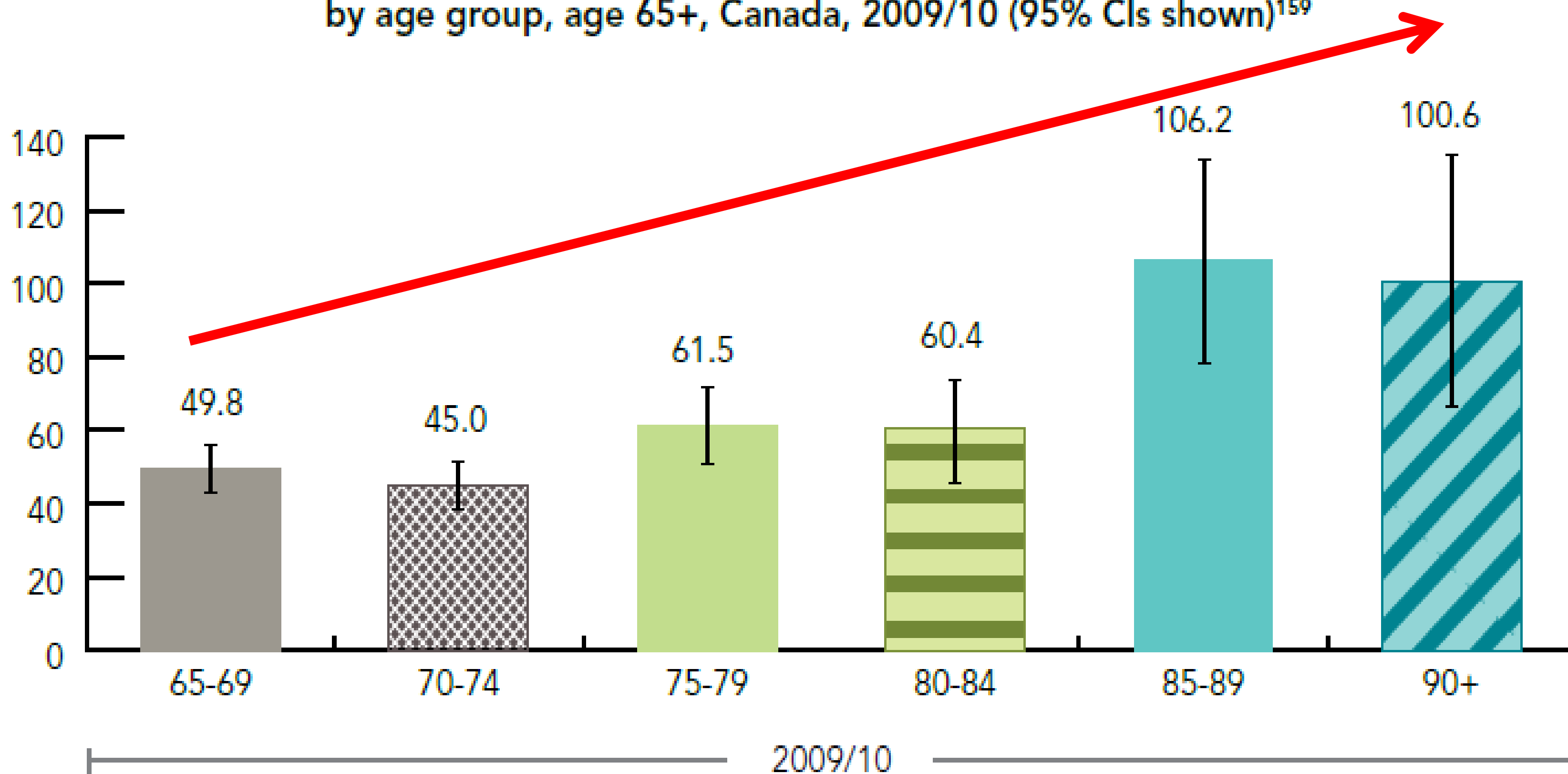
It’s not the fall….it’s the ***consequences***

- *“95% hip injuries are the result of a fall”*
- **Physical injury**
  - Mobility
  - Independence
- **Emotional toll & Psychological effects**
  - Fear of falling
  - Loss of confidence (self-efficacy)
- Hospitalization
- Institutionalization

Huang et al., Drugs Aging 2012

Who gets hurt?

Female
85 +
unmarried



Seniors' Falls in Canada: Second report 2014

APPENDIX B: FACTORS ASSOCIATED WITH AN INCREASED RISK OF FALLING AMONG OLDER ADULTS

BIOLOGICAL/ INTRINSIC	BEHAVIOURAL	SOCIAL & ECONOMIC	ENVIRONMENTAL

• Impaired mobility
• Balance deficit
• Gait deficit
• Muscle weakness
• Advanced age
• Chronic illness/ disability:
  • Cognitive impairment
  • Stroke
  • Parkinson's disease
  • Diabetes
  • Arthritis
  • Heart disease
  • Incontinence
  • Foot disorders
  • Visual impairment
• Acute illness
	• History of falls
	• Fear of falling
	• Multiple medications
	• Use of:
	  • Antipsychotics
	  • Sedative/hypnotics
	  • Antidepressants
	• Excessive alcohol
	• Risk-taking behaviours
	• Lack of exercise
	• Inappropriate footwear/ clothing
	• Inappropriate assistive devices use
	• Poor nutrition or hydration
	• Lack of sleep
		• Low income
		• Lower level of education
		• Illiteracy/language barriers
		• Poor living conditions
		• Living alone
		• Lack of support networks and social interaction
		• Lack of transportation
		• Cultural/ethnicity
			• Poor building design and/or maintenance
			• Inadequate building codes
			• Stairs
			• Home hazards
			• Lack of:
			  • Handrails
			  • Curb ramps
			  • Rest areas
			  • Grab bars
			  • Good lighting or sharp contrasts
			• Slippery or uneven surfaces
			• Obstacles and tripping hazards

Updated from: Scott, Dukeshire, Gallagher, & Scanlan.[143]

Seniors' falls in Canada: Second Report 2014, Public Health Agency of Canada

Medication-related falls:

Why is the risk higher in older adults?

1. Age-related changes
2. Number of drugs (“Polypharmacy”)
3. Specific Drugs

1. Aging and drugs:

Factor	Consequence	Examples
Increased body fat	Slower elimination of lipophilic drugs	
Reduced hepatic blood flow and renal excretion (↓GFR)	Slower elimination of drugs	
Altered pharmacodynamics	Increased sensitivity to drugs	

Boyle et. al, 2010

2. Polypharmacy

- Definition?
- How many is too many (? > 4)
- Total # medications –> independent risk factor for falls and fractures

Boyle N. Clin Geriatr Med 2010

3. Medications & Falls: The evidence

- Observational
- Variable doses, durations
- Self-report vs. documented

↑ risk associated with:

- More medications
- Concurrent use of medications from the same class (e.g. psychotropics)

Zeimer H. J Phm Prac and Res 2008

Identifying specific medications:

http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Documents/Falls%20Getting%20Started%20Kit.pdf

Tip #1:
Look for drugs with the following effects:

- CNS effects
  - Ataxia/gait disturbance
  - Drowsiness
  - Dizziness
  - Hypotension
  - Parkinsonian effects
  - Visual disturbances

http://www.health.gov.bc.ca/prevention/pdf/medications-and-the-risk-of-falling.pdf

Boyle N. Clin Geriatr Med 2010

“High Risk”

- Antipsychotics (neuroleptics)
- Antidepressants
- Benzodiazepines, Zopiclone

“Moderate risk”

- Cardiac meds
  - Antihypertensives
  - Antiarrhythmics
- Anticholinergics
- AntiParkinsons meds
- Anticonvulsants
- Antihistamines
- Antinauseants
- Muscle Relaxants

OTC

“Use with caution”

- Opioids
- NSAIDs
- Insulin, sulfonylureas (e.g. glyburide)
- OTC, herbal products (esp. sedating or stimulating)
- Ophthalmic preparations
- Alcohol

www.saferhealthcarenow.ca (Getting Started Kit)

What can we do?

Case - Ellen

- 87 yr old
- Lives alone (retirement home)
- Hearing loss
- Ambulates with cane prn
- Thin, well-dressed

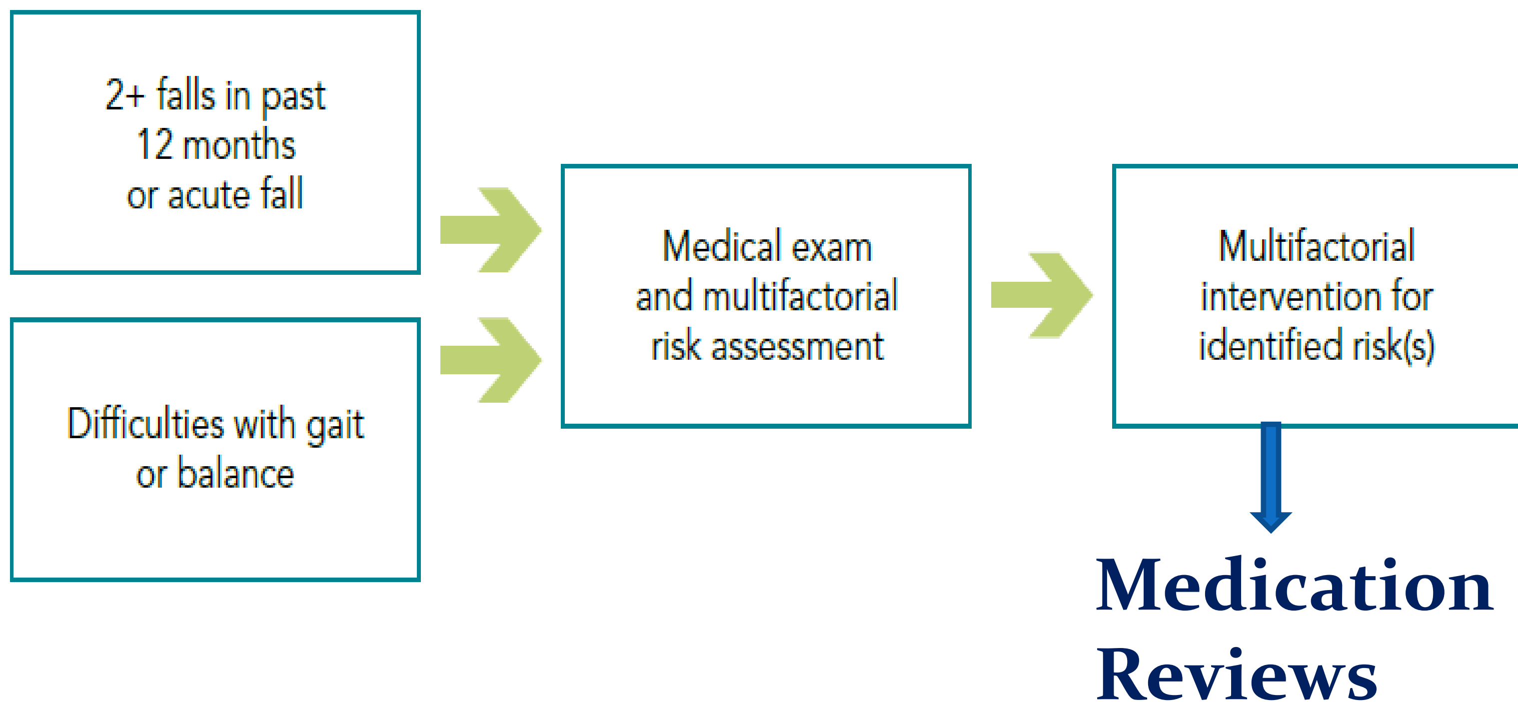
BP 160-180/75-90

orthostatic hypotension:

Rx Fludrocortisone

Medications:

- Warfarin *(a.fib)*
- Amiodarone 100 mg daily *(a.fib)*
- Diltiazem 60 mg QID prn *(HTN)*
- Trazodone 50 mg qhs *(insomnia)*
- Bromazepam 3 mg qhs *(insomnia)*
- Venlafaxine 37.5 mg daily *(dep./anxiety)*
- Citalopram 10 mg daily *(dep./anxiety)*
- Oxybutynin 5 mg BID *(incontinence)*
- Levothyroxine 0.025 mg daily
- Acetaminophen 500 mg ii q6h prn pain *(OA)*



Seniors' Falls in Canada: Second Report

Reviewing is just part of the process.....

BPMH (Best Possible Medication History)

Identify potentially inappropriate medications

MODIFY therapy

Benzodiazepines

Falls risk associated with BZD can be minimized by:

a) Prescribing lowest effective dose
b) Using a short acting BZD (e.g. lorazepam)
c) Use a non-BZD (e.g. zopiclone)

Zopiclone:

- Risks:
  - Dependence – tapering recommended
  - Next day impairment (driving)
- Lower starting dose: 3.75 mg
- Maximum dose in older adults: 5 mg
- Temporary (< 2 weeks)

http://www.hc-sc.gc.ca/dhp-mps/medeff/reviews-examens/imovane-eng.php
Curreen et al., Int'l J risk and safety in Med 2014

Strategies for stopping sleep meds:

- Don’t start them
  - ***Tip #2: Always do a post-hospital discharge Med. Rec.***

- Incorporate non-drug strategies
- Stop medications less likely to have ADWE first
- Successful tapering requires:
  - +/- several attempts
  - non-drug strategies (multi-faceted approach)
  - Tapering takes time (several months)
  - Patient/caregiver involvement

Patient Education Tool:

Tannenbaum et al., JAMA Intern Med 2014 (EMPOWER)

http://www.criugm.qc.ca/images/stories/les_chercheurs/risk_ct.pdf

Antihypertensives:

Which statement is true regarding BP in patients > 80 yr:

1. Target systolic BP < 150 mmHg (if no target organ damage or diabetes)
2. Avoid DBP < 65 mmHg (esp. in ISH and CAD)
3. > 160 mmHg systolic BP threshold for initiating pharmacotherapy
4. Antihypertensives can contribute to orthostatic changes

Antidepressants

- SSRIs are a safer option with respect to falls:
  a) True
  b) False

- Risks
  - Sedation
  - Hypotension
  - Anticholinergic effects
  - Cardiac arrhythmias (TCAs)
  - Decrease bone density (SSRIs)
  - GI bleed (SSRIs, SNRIs)

Zeimer, H. 2008
Boyle N. Clin Geriatr Med 2010
Pharmacists Letter 2014

Strategies for Antidepressant use:

- Is drug therapy indicated?
- SSRI’s better tolerated (vs. TCA)
- Use lowest effective dose

Antipsychotics (neuroleptics)

- The atypical antipsychotics are safer with respect to falls:
  a) True
  b) False

- Risks:
  - Sedation
  - Extrapyramidal effects
  - Orthostasis

Zeimer H, 2008

Strategies for reducing antipsychotics:

- *Few intervention trials*
  - Decrease in antipsychotic use but not in falls
  - Resumption of therapy post-trial
- *Challenges:*
  - Pressure to prescribe
  - Placebo effect
  - Lack of awareness of adverse effects
  - Lack of awareness and resources for alternatives
- ***Considerations:***
  - Avoid use
  - Lowest dose
  - Regular re-assessment

Hill et al., Drugs Aging 2012

Reviewing is just part of the process.....

BPMH (Best Possible Medication History)

Identify potentially inappropriate medications

MODIFY therapy

MODIFY therapy:

Ask:

- Is the drug indicated?
- Are there safer alternatives?
- What's the lowest effective dose?
- Is timing optimal?
- Does it duplicate existing therapy?

Tip #3: Identify and discontinue risky medications

http://www.health.gov.bc.ca/prevention/pdf/medications-and-the-risk-of-falling.pdf

Discontinue inappropriate therapy ("Deprescribe"):

1. Prioritize which drugs to discontinue
2. Develop a plan (taper vs. stop)
3. Coordinate and communicate with prescriber and patient

Getting buy in

- Ask:
  - What questions do you have about your medications?
    - *My blood pressure pills don't work long enough*
    - *Am I taking too many sleeping pills?*
  - What medications do you feel most strongly about keeping?
    - *I need something to help me sleep (OA pain)*
  - What medications do you wonder about how well they're working for you?
    - *I need something stronger than acetaminophen (++ OA pain)*

Tip #4: Manage Unmanaged symptoms

Pain:

- E.g. arthritis, diabetic neuropathy
- Adequate use of analgesics, e.g.
  - ATC +/- breakthrough
  - Pre-medication prior to activities
- Non-drug strategies

Fracture prevention in Osteoporosis

Supplements:

- Calcium 1200 mg / day (diet preferable)
- Vitamin D 800- 2000 IU daily

Pharmacotherapy:

- Bisphosphonates
- Denosumab
- (Teriparatide)

Individualized Exercise program

www.osteoporosis.ca
Safer Healthcare Now – Reducing Falls (June 2013)

Other conditions/symptoms:

- **Diabetes:**
  - Watch for repeated hypoglycemia
  - Adjust medications as needed
    - Avoid sulfonylurea + insulin combination
- **Incontinence:**
  - Urinary frequency, nocturia and rushing to the bathroom -> increase falling risk (Brown et al., JAGS 2000; 48: 721-25)
  - Supportive, lifestyle management
  - Pharmacotherapy (urinary incontinence, UTI)
- **Arrhythmias:**
  - Untreated or drug-induced

Other considerations:

1. **PRN Adherence:**
   - Intermittent drug use is common – always ask (never believe the label)
   - Caution: switching to blister packaging may exacerbate side effects due to improved adherence
2. **Timing of medications**
   - In relation to expected effects (e.g. diuretics, laxatives)
   - Relevant interactions (e.g. levothyroxine)
   - Perform a Dose reconciliation
3. **Regular Medication Reviews** (esp. high risk meds)

Ellen – What happened

Summary
Medications and Falls:

✓ **Tip #1: Look for meds that have CNS effects**

✓ **Tip #2: Do a Med. Rec. after EACH hospital stay**

✓ **Tip #3: Identify and discontinue risky medications**

✓ **Tip #4: Manage unmanaged symptoms**

Prevention is the best strategy :

- **AVOID** starting medications associated with high falls risk
- Start low -> re-assess regularly
- Be extra vigilant in the period soon after starting a new medication

Objectives

Can you:

1. Identify medications which can contribute to falls.
2. Explain which medications may benefit a patient at risk of falling.
3. Use a systematic approach to assess appropriateness of medication therapy in a patient at risk for falls.

Thank you!

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