Falls Workshop 2: Fall Risk INTERVENTIONS of Community-Dwelling Seniors

A Practical Approach

Geriatric Refresher Day – May 15, 2019

Dr. Shirley Huang,MD,FRCP,MSc,MSc(HQ)
Mary Haller, BScPT
Anna Banks, BScPT

Objectives

To understand specific interventions of a multi-factorial fall prevention program:

1. Exercise and Physical Activity
2. Footwear
3. Gait aids
4. Home Safety
5. Medications
6. Pain
7. Postural Hypotension
8. Bone Health

Case Study - Mrs. M.

- A pleasant 86 year-old retired teacher who lives alone independently in her own apartment with elevator access.
- She goes out of her apartment at least 3 times a week ("to run errands") and has close friends that she sees regularly.
- She walks with a cane but only when outside because she prefers to use her furniture to support her balance when at home ("I don't have a big apartment so it is no problem!").
- She fell once last winter after slipping on ice, causing a fractured wrist. She had a minor "tumble" when she bent down to wipe up a spill in her kitchen 2 weeks ago and bumped her head against a low cabinet door ("Luckily I have a hard head!").
- She has pain in her knees most days, especially if she walks too far or takes the stairs so she avoids doing much walking if she can.

Case Study - Mrs. M.

- Past Medical History
  - Hypertension
  - Type II diabetes
  - Osteoarthritis of knees
  - Osteopenia (diagnosed 10 years ago)
  - Urinary urge incontinence
  - Depression (started treatment after her husband passed away 3 years ago)
  - Mild Cognitive Impairment
  - Presbyopia (wears bifocals)
  - Cataract surgeries
  - Non-smoker, no regular alcohol intake
- Medications
  - Perindopril 8 mg daily
  - Amlodipine 10 mg daily
  - Metformin 500 mg BID
  - Celexa 20 mg daily
  - Lasix 20 mg daily
  - Tolterodine ER 4 mg daily
  - Celebrex 100 mg daily
  - Oxazepam 10 mg qhs
  - Tylenol Nighttime PRN

Case Study – Mrs. M.

- Supine BP 150/80, HR 68, standing BP after 1 minute 126/70, HR 80, mild dizziness reported
- Mild ankle edema
- No feet deformities
- Mildly antalgic gait – no aids
- TUG: 18 seconds
- Chair stand test: 5 repetitions in 30 seconds

Exercise – Move it or lose it!

Exercises for Fall Prevention:

Strength & Balance

Strength :

- Exercises need to be *progressive;* consider:
  - stairs
  - using light weights, bands
  - wall pushups
  - sit to stand repetitions
  - exercise classes

Balance :

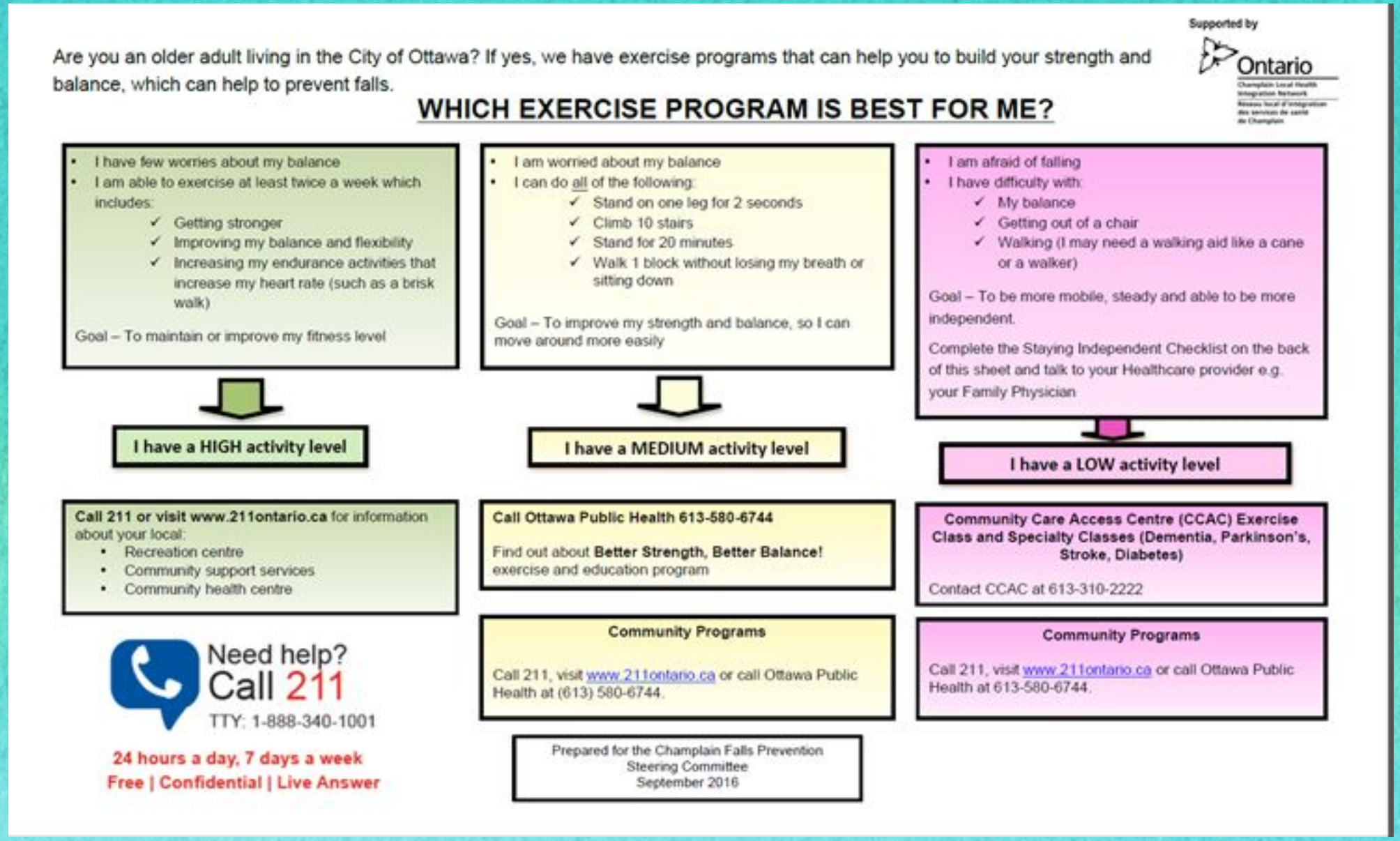
- Exercises need to be *challenging;* consider:
  - gardening
  - Tai Chi
  - Yoga
  - exercises at the kitchen sink
  - exercise classes

Exercises for Fall Prevention:

How much is enough?

- **50 hours** of training (Strength & Balance) required to reduce fall risk
- Fall prevention exercise in addition to usual activities
- Minimum **3 times/week**
- E.g. 30 minutes of exercise done three times per week = 33 weeks of training
- Lifelong approach to being active
- Incorporate exercise into daily activities:
  - sit to stand reps
  - balance exercises when brushing teeth
  - get up and walk every hour –i.e. reduce sitting time
  - be active during commercials on TV
  - exercise at the kitchen sink when preparing meals
  - use the stairs

Navigation Tool: Which Exercise Program is Best for me?



Supported by Ontario

Are you an older adult living in the City of Ottawa? If yes, we have exercise programs that can help you to build your strength and balance, which can help to prevent falls.

WHICH EXERCISE PROGRAM IS BEST FOR ME?

- I have few worries about my balance
- I am able to exercise at least twice a week which includes:
  - ✓ Getting stronger
  - ✓ Improving my balance and flexibility
  - ✓ Increasing my endurance activities that increase my heart rate (such as a brisk walk)

Goal – To maintain or improve my fitness level

I have a HIGH activity level

Call 211 or visit www.211ontario.ca for information about your local:
- Recreation centre
- Community support services
- Community health centre

Need help? Call 211
TTY: 1-888-340-1001

24 hours a day, 7 days a week
Free | Confidential | Live Answer

- I am worried about my balance
- I can do all of the following:
  - ✓ Stand on one leg for 2 seconds
  - ✓ Climb 10 stairs
  - ✓ Stand for 20 minutes
  - ✓ Walk 1 block without losing my breath or sitting down

Goal – To improve my strength and balance, so I can move around more easily

I have a MEDIUM activity level

Call Ottawa Public Health 613-580-6744

Find out about **Better Strength, Better Balance!** exercise and education program

Community Programs

Call 211, visit www.211ontario.ca or call Ottawa Public Health at (613) 580-6744.

- I am afraid of falling
- I have difficulty with:
  - ✓ My balance
  - ✓ Getting out of a chair
  - ✓ Walking (I may need a walking aid like a cane or a walker)

Goal – To be more mobile, steady and able to be more independent.

Complete the Staying Independent Checklist on the back of this sheet and talk to your Healthcare provider e.g. your Family Physician

I have a LOW activity level

Community Care Access Centre (CCAC) Exercise Class and Specialty Classes (Dementia, Parkinson's, Stroke, Diabetes)

Contact CCAC at 613-310-2222

Community Programs

Call 211, visit www.211ontario.ca or call Ottawa Public Health at 613-580-6744.

Prepared for the Champlain Falls Prevention Steering Committee
September 2016

FREE exercise options for Fall Prevention in Ottawa

Medium activity level

Better Strength, Better Balance

-free class, twice a week

-progressive strength & balance exercises

-registration with Ottawa Public Health

-on Rogers TV (French & English)

-link on champlainhealthline.ca

Low activity level

Champlain HACC classes

-free "Exercise Classes for Seniors"

-sitting and supported standing exercises (ROM, strength, endurance, limited balance ex.)

-located at many retirement homes

-call ahead for schedule & notification

-link on champlainhealthline.ca

Other exercise options for Fall Prevention

- City of Ottawa 50+ programs
- Seniors' Centres
- Community Centres
- Personal trainers (experienced in work with older adults)
- Physiotherapy
  - Private clinic programs
  - Private Physiotherapy
  - Publicly Funded Physiotherapy
    - Ontario residents 65+ are eligible for publicly funded physiotherapy
    - Doctor's referral required
    - Link to clinics on champlainhealthline.ca

Exercise recommendations for Mrs. M:

Consider	Case findings	Considerations & Exercise recommendations
Functional findings	TUG=18 seconds 30 second chair stand=5 reps	**Low activity level-**low scores for age & sex
Patient Interest	Review with patient	Home program vs community; land vs water:
Current activity level	Does errands, limits walking and stairs due to pain	Limited activity for strength, balance & aerobic activities
Medical History	DM, Depression, **OA knees/pain,** urge incontinence, **MCI**	Treat pain: consider knee brace or cane Consider complexity of exercise program
Neighbourhood	Review	Specific programs in her neighbourhood may improve compliance
Transportation	Drives or takes public transportation	Home program vs community
Options: Champlain LHIN exercise classes, Community exercise program (Be Well & Fit), Pool C-LHIN Physio, Pedex/stationary bike, WEIFPP		

Footwear

Why are shoes important?

- Stability and shock absorption
- Comfort and pain reduction
- Protection (especially for diabetic feet)
- Increase traction/grip on different surfaces
- Reduce risk for falls

The IDEAL Shoe

- Good for walking outdoors, exercising and walking in your home.
- Avoid walking barefoot or in socks.

Please refer to the handout **"Better Shoes Better Balance"** for a Shopping Checklist and special considerations for Diabetics.

What NOT to Wear

Footwear Recommendations for Mrs. M:

Seniors should wear sneakers!

Gait Aids

Gait Aids Recommendations:

- Walking aids can improve:

  Stability & safety
  Endurance
  Pain
  Function, quality of life & confidence

  Reduce fall risk

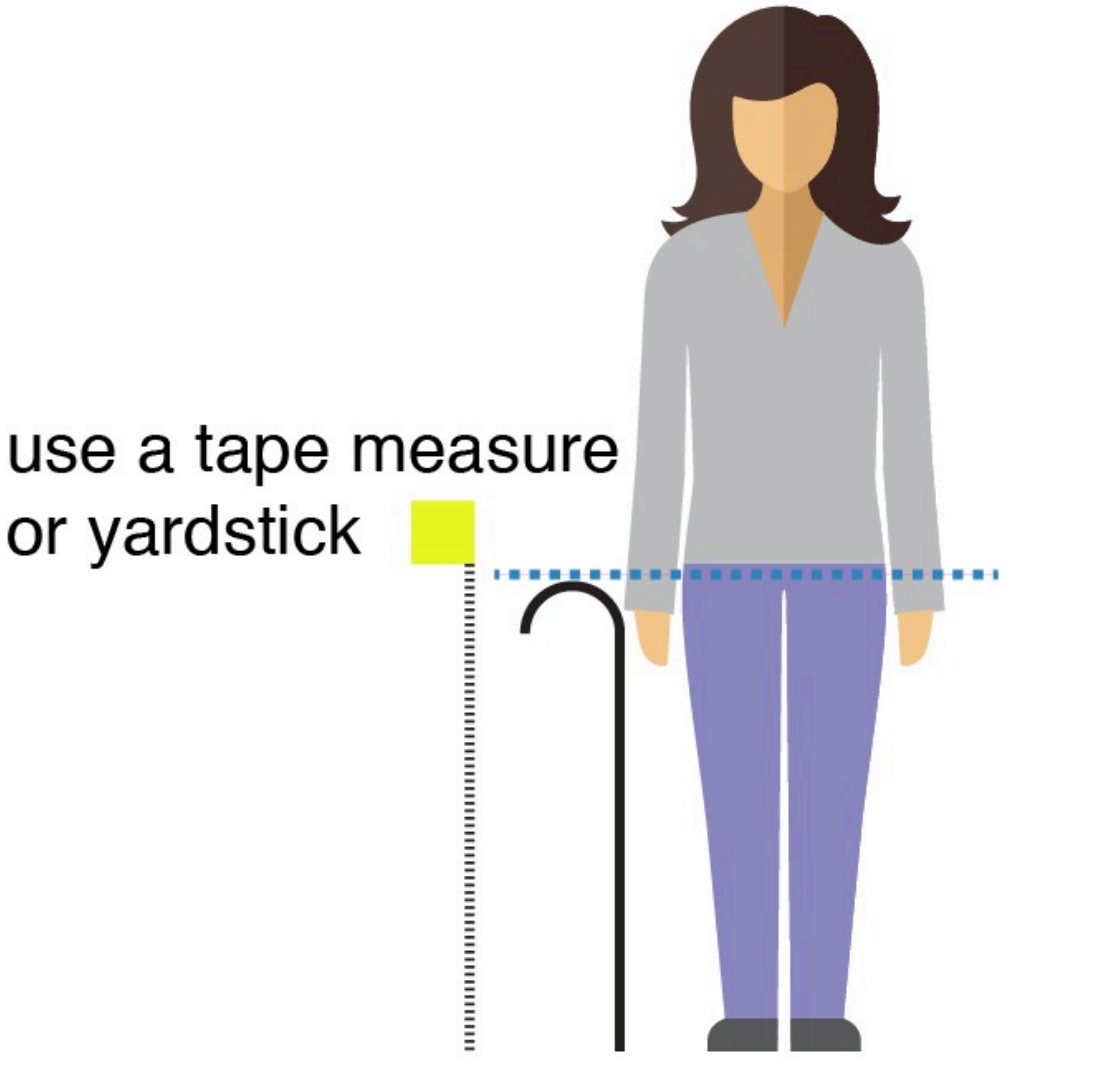
Choose a cane: for pain relief/light joint support, light balance and mobility

Choose a walker: for moderate balance or postural concerns, weakness, pain and/or limited energy

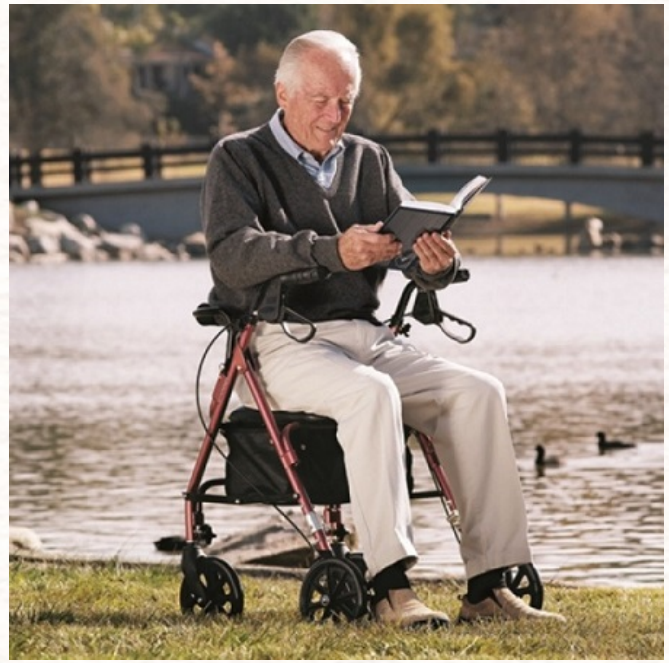
How to measure for a cane or walker

Handle height = wrist level
with arm straight at side (same measure for walker)

Which hand for a cane?
-for pain relief or joint support, hold *opposite* the weak side
-for balance typically *dominant side* is easier



Tips for using a walker safely



THE BRAKES:
Before getting up, the brakes must be locked (push down)

GETTING UP:
Push up from chair or bed then transfer hands to walker

WALKING:
Standing tall, push the walker forwards and walk stepping between the back wheels with each step

SITTING DOWN:
Walk to chair or bed, turn around and back up with walker until legs touch the seat, lock walker brakes, reach for chair/ support and sit down

USING WALKER SEAT:
Brakes must be locked (push down to lock); for extra safety walker can be positioned against a wall; hold on to walker while turning to sit

Assistive Devices Program

ADP Funding

How do you access ADP?

Eligibility:	-Ontario resident with valid health card -require device for mobility on daily basis within place of residence or to gain entry/exit -have long-term disability requiring use of device for 6 months or longer
Assessment:	-ADP authorizer (this may be a fee for service evaluation)
Vendors:	-Must be ADP approved -Will have contacts to ADP authorizers for assessment
Funding:	-ADP pays 75% of ADP approved price -ADP pays 100% if receiving social assistance benefits (ie. OW, ODSP)
Process:	-ADP authorizer completes assessment and initiates application; paperwork must be signed by client, authorizer and vendor; vendor submits paperwork to MOHLTC; await approval (8 weeks)

Gait aid recommendations for Mrs. M:

1) CANE recommended for all mobility based on:
   - TUG score
   - history of furniture walking
   - knee pain
   - falls

2) Ice pick recommended for outdoors in winter

3) Practice, practice, practice!!

4) Provide handouts regarding proper cane use, measurement

5) Consider Physio referral for education

Home Safety

Home Safety Checklist

- ✓Remove scatter mats and area rugs or secure them to the floor with 2-sided tape
- ✓Keep pathways clear of furniture, cords and clutter
- ✓Install handrails on BOTH sides of all steps and staircases
- ✓Relocate frequently used items to easy-to-reach places
- ✓Do not use step stools or ladders
- ✓Install good lighting in and around the house
- ✓Use a non-slip mat in the tub or shower
- ✓Remove reading glasses when using stairs
- ✓Wear a personal alarm when home alone

Home Safety Recommendations for Mrs. M.

1. Provide information about personal alarms.
2. Review risks related to furniture walking.
3. Encourage use of mop to wipe up spills.
4. Discuss use of sand/grit/cat litter to increase traction on icy surfaces.
5. Relocate frequently used items to easy-to-reach places.
6. Consider C-LHIN referral for OT home safety assessment

Medications

Medications

- A common modifiable risk factor for falls
  - Direct contribution: e.g. drug-induced sedation, hypotension, parkinsonism, balance impairment
  - Indirect contribution:
    - E.g. drug-induced urinary urgency -> rush to toilet -> fall;
    - E.g. drug-induced vision impairment -> trip -> fall
- Screening tools available to help clinicians identify potentially inappropriate drugs in the elderly that may increase fall risk
  - Beers' Criteria
  - STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions)

Many medications are known to increase fall risk!

- Psychotropic medications:
  - antidepressants, antipsychotic medications, sleeping pills, anti-anxiety medications (especially benzodiazepines)
- Narcotics: even "weaker" ones like codeine and tramadol at higher doses
- "Anticholinergic" drugs- as measured by the Anticholinergic risk scale

Anticholinergic Risk Scale-drug examples

3 points	2 Points	1 Point
Amitriptyline	Nortriptyline	Paroxetine
Diphenhydramine	Baclofen	Ranitidine
Hydroxyzine	Cimetidine	Trazodone
Oxybutynin	Tolterodine	Mirtazapine

Which high risk drugs are Mrs. M taking?
Tylenol Nighttime, tolterodine, Celexa and oxazepam

What can I do after reviewing a patient's medications?

I am NOT a practitioner who can prescribe or change medications

- Educate and empower your patients!
- If patients do not know why they are taking some "high risk" medications or seem unaware of whether their medications can be associated with increased fall risk, encourage them to speak to these care providers and ask:
  - Pharmacist
    - Am I taking medications that can cause dizziness, drowsiness or slow reaction time, parkinson-like symptoms or balance changes? Which drugs?
  - Primary care provider or specialist (regarding high risk drugs)
    - Do I still need this drug?
    - How much longer do I need it?
    - Is this the right dose considering my age, my health status and other health conditions I have?
    - Are there safer alternatives, including those that don't involve medications?

I AM a practitioner who can prescribe or change medications

- Deprescribing is an important iterative process that requires close partnership with your patients and your friendly neighborhood pharmacist
- Bruyere Research Institute:
  - https://deprescribing.org/resources/deprescribing-guidelines-algorithms/
  - Evidence-based deprescribing guidelines and algorithms for:
    - Benzodiazepines
    - Antipsychotics
    - other
- Regional Geriatric Program of Toronto
  - https://www.rgptoronto.ca/resources/polypharmacy-topic/
    - E.g. Senior Friendly Care toolkit on polypharmacy
    - E.g. EMPOWER Sedative Deprescribing tool for patients

What about Mrs. M's high risk medications?

- Encourage her to speak to her primary care provider and pharmacist
  - Detailed review of medications and their indications needed
  - Suspect presence of "prescribing cascade" ie. Use of a drug to treat the side effect of another drug
  - Deprescribing will take time, patience and close follow-up by PCP and patient

Postural Hypotension

Causes of Postural Hypotension

Table 1: DDX of postural hypotension - 4D-AID acronym

i. **Causes associated with a compensatory tachycardia – 4Ds**

- Deconditioning
- Dysfunctional heart
  - Myocardium (very low left ventricular ejection fraction)
  - Aortic stenosis
- Dehydration
  - Disease (e.g., acute illness, adrenal insufficiency)
  - Dialysis (post-dialysis dry weight too low)
  - Drugs
    - Diuretics
    - Anorexic drugs – narcotics, digoxin, antibiotics, cholinesterase inhibitors
- Drugs – 6 ANTIs
  - Anti-hypertensives
  - Anti-anginals
  - Anti-parkinsonian medications (e.g., levodopa)
  - Anti-depressants (e.g., anti-cholinergic tricyclics)
  - Anti-psychotics (anti-cholinergic effect)
  - Anti-BPH (e.g., terazosin, tamsulosin)

ii. **Causes that present with *lack* of compensatory tachycardia – AID**

- Autonomic dysfunction
  - Diabetic autonomic neuropathy (consider if patient has peripheral neuropathy)
  - Low B12
  - Hypothyroidism
  - ETOH abuse
  - Parkinsonism (Parkinson's disease, progressive supranuclear palsy, multisystem atrophy; e.g., Shy-Drager syndrome)
  - Amyloid
- Idiopathic (Bradbury-Eggleston)
  - Depletion of norepinephrine from sympathetic nerve terminals
- Drugs
  - Beta-blockers

Previously published as 3D-AID in Canadian Family Physician (Reproduced with permission of Canadian Family Physicians (CFP Nov 2010; 56: p1123 – 1129)

CGS Journal of CME 2016, volume 6, Issue 1
www.posturalhypotension.ca

Postural Hypotension: Management

- Investigate and correct the cause!
- Goal: to improve symptoms, optimize safety (reduce syncope and falls) and maximize function
- Non-pharmacologic:
  - Full medication review and gradual de-prescribing if appropriate
    - E.g. need to balance risk of hypertension vs. risk of postural hypotension
  - Patient and family education
- Pharmacologic:
  - Fludrocortisone (increase body's fluid and salt retention)
  - Midodrine (artery constriction to increase blood pressure)

What to do for Mrs. M's postural hypotension?

- Thorough medical evaluation and medication review needed
  - Suspect polypharmacy and prescribing cascade contributing
- Address cause
- Discuss non-pharmacologic measures and educate patient

Pain

Pain

- Treatment of pain may improve gait, balance (and desire to be more active?)
- Non-pharmacologic
  - Adjustments in daily routine, gait aid, exercise, joint replacements, physiotherapy
  - Psychological approaches
- Pharmacologic
  - acetaminophen preparations are first-line if medication is desired
  - Avoid oral NSAIDs and opioids if possible

Arch Phys Med Rehabil. 2014 Jan;95(1):175-187.
Brocklehurst's textbook of Geriatric Medicine and Gerontology. 7th Edition.

Pain

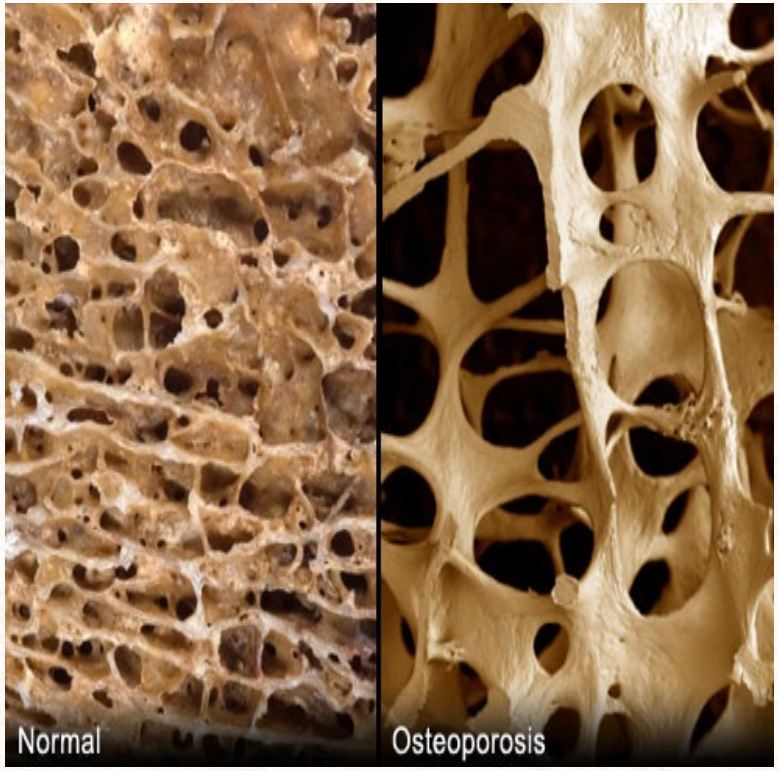
- Educate and empower your patients!
- Encourage patients to speak to their primary care providers about pain
- Acetaminophen e.g. Tylenol (not to exceed 3000 mg daily in older adults); safer for daily use
- NSAIDS (non-steroidal anti-inflammatories) e.g. Celebrex, ibuprofen; short-term intermittent use
- Use opioids judiciously if pain still significant and no other options available

What about Mrs. M's pain?

- She has pain in her knees most days, especially if she walks too far or takes the stairs so she avoids doing much walking if she can.
  - Stop Celebrex
  - Use Tylenol Extra-strength or Tylenol Arthritis 3 times a day
  - Physiotherapy referral (can modalities, exercise and/or gait aids help?)
  - Speak to family physician (does she need knee replacement?)

Bone Health

Osteoporosis is a condition characterized by low bone mass, reduced bone strength and increased risk of fracture (spontaneous or trauma-associated)



- At least 1 in 3 women or 1 in 5 men will suffer from an osteoporotic fracture in their life time
- Fracturing a long bone after falling from standing height is not normal
- Over 80% of all fractures in people 50+ are caused by osteoporosis
- Associated with loss of independence, disfigurement, pain, reduced mobility

Bone Health

- Osteoporosis Canada website is a good resource for patients and health care providers
- Vitamin D and calcium recommendations:
  - Calcium: 1200 mg daily (get from diet if possible)
  - Vitamin D: 800-2000 units daily
  - Patients with kidney disease or conditions associated with high blood calcium levels need to speak to their primary care provider for special recommendations
- Bone mineral density testing
  - All men and women ≥ 65 yo should have at least one BMD
- Osteoporosis medication treatment

CALCIUM CONTENT OF SOME COMMON FOODS	PORTION	CALCIUM*
Food Product – 250 to 300+ mg Ca		
Buttermilk	1 cup/250mL	186 mg
Fortified orange juice	1 cup/250mL	300 mg
Fortified almond, rice or soy beverage	1 cup/250mL	300 mg**
Milk – whole, 2%, 1%, skim, chocolate	1 cup/250mL	300 mg***
Milk, evaporated	1/2 cup/125 mL	367 mg
Milk – powder, dry	1/3 cup/75 mL	270 mg
Yogurt – plain, 1-2% M.F.	3/4 cup/175 mL	332 mg
Food Product – 160 to 249 mg Ca		
Almonds, dry roast	1/2 cup/125 mL	186 mg
Beans – white, canned	1 cup/250 mL	191 mg
Cheese – Blue, Brick, Cheddar, Edam, Gouda, Gruyere, Swiss	1 ¼"/3 cm cube	245 mg

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https://osteoporosis.ca/bone-health-osteoporosis/nutrition/calcium-requirements/

What to do for Mrs. M's bone health?

- She had a history of fragility fracture (broken wrist after falling from standing height) so she has osteoporosis by definition
  - Need to talk to primary care provider about starting drug treatment to decrease future risk of fractures
  - Start vitamin D 800-2000 units daily
  - Optimize dietary calcium intake

Summary of Recommendations – Mrs. M.

Other Fall Risks (not yet addressed):

- *Vision*
- *Urinary Urge Incontinence*
- *Depression*
- *Mild Cognitive Impairment*

Fall Risks	Recommendations
Medications	Thorough evaluation and deprescribe high risk meds if possible
Postural Hypotension	Evaluation by PCP and educate
Pain	Stop Celebrex; use Tylenol regularly; PT
Bone Health	See PCP; discuss dietary calcium
Exercise/Physical Activity	-150 minutes of physical activity 5 days a week -Champlain LHIN exercise classes, Community exercise program (Be Well & Fit), Pool, C-LHIN Physio, Pedex/ stationary bike, WEIFPP
Footwear	-Wear SNEAKERS
Gait Aids	-Cane (ice pick for winter)
Home Safety	-Personal alarm, mop, relocate frequently used items, use grit