Update on Assessing and Managing the Falling Patient and the Use of Gait Aid Devices in the Community

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Disclosure

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Objectives

• To provide an update on the latest evidence related to assessing and managing the falling patient

• To review the use of gait aid devices

• To share falls-related programs at the Toronto Rehabilitation Institute (TRI)
Seniors’ Falls in Canada

• A third of community dwellers 65 years and older fall annually

• Approximately 75% occurred while walking on any surface (45%), snow/ice (16%), and stairs (13%)

• Majority of injuries resulted in fractures (35%) and sprain/strain (30%)

• More than 75% older adults sought medical treatment in the emergency department (67%) and doctors office (16%)

Case – Bob

- 83-y/o widowed man who lives in a house alone

- Presents to your office complaining of right sided rib pain the day after falling while trying to catch the bus

- Fractured 2 other ribs in the past from similar situations
Bob’s Case cont’d

<table>
<thead>
<tr>
<th>Past Medical History</th>
<th>Medications</th>
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<tbody>
<tr>
<td>- TIAs</td>
<td>- ASA 81 daily</td>
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<tr>
<td>- CAD</td>
<td>- Metoprolol 50mg bid</td>
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<tr>
<td>- Diabetes</td>
<td>- Ramipril 10mg daily</td>
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<tr>
<td>- HTN</td>
<td>- Amlodipine 10mg daily</td>
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<tr>
<td>- Macular degeneration</td>
<td>- Nitropatch 0.4mg daily</td>
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<tr>
<td>- Bilateral hearing loss</td>
<td>- Atorvastatin 40mg qHS</td>
</tr>
<tr>
<td>- OA</td>
<td>- Metformin 1000mg bid</td>
</tr>
<tr>
<td>- Depression</td>
<td>- Glicazide 30mg daily</td>
</tr>
<tr>
<td></td>
<td>- Citalopram 40mg daily</td>
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<tr>
<td></td>
<td>- Vitalux 1 tab daily</td>
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<tr>
<td></td>
<td>- Tylenol PRN</td>
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Bob’s Case, Cont’d

Social History
• Widowed for 2 years
• 2 sons live out of town
• Independent with BADLs, uses cane for ambulation, difficulty with grocery shopping due to pain in knees

Review of Systems
• Wears bifocals
• Knee pain not well managed

Physical Exam
• BP sitting 115/70, standing 98/60, HR 60, regular
• Vision 20/40, wears bifocals
• Cardiac – nil
• Neurological
  – No (extra)pyramidal signs
  – Slightly decreased fine touch sensation in his feet
• TUG > 15 secs
• MSK – OA in knees
• Foot – Loose sandals
Approach

- Vision
- Hearing
- Medications
- EtOH
- Postural Hypotension
- Carotid Hypersensitivity
- Cardiorespiratory
- Muscle weakness
- MSK
- Sensation
- Proprioception
- Gait aid
- Footwear
- Environment
- Dementia
- Delirium
- PD
- Stroke
- Mental Health
Risk Factors

Biological
- Age
- Acute illness
- Balance & gait deficits
- Chronic conditions
- Chronic disability
- Cognitive impairment
- Vision impairment
- Muscle weakness
- Reduced fitness

Behavioural
- Alcohol
- Fear of falling
- Inappropriate assistive device
- Inappropriate footwear & clothing
- Falls history
- Poor nutrition & hydration
- Medications
- Risk-taking behaviour
- Vitamin D

Social & Economic
- Living alone
- Poor living conditions
- Lack of social supports
- Lack of transportation
- Low education
- Literacy
- Language barriers

Environmental
- Stairs
- Home hazards
- Lack of home equipment
- Obstacles
- Tripping hazards
- Slippery or uneven surface
- Inadequate building codes
- Community design
- Building maintenance

Falls Prevention

Multifactorial Falls Assessment
- History
- Cognition & Function
- Physical Exam
- Environment

Multifactorial Interventions

Fall

Which intervention to reduce falls is supported by the evidence?

A. Multifactorial assessment
B. Vitamin D supplementation
C. Bilateral cataract extraction
D. Withdrawal of inappropriate medications
E. Exercise Program
Exercise

• Multicomponent Exercise Program: RR of falling 0.85
• Home-based Exercise: RR of falling 0.78
• Tai Chi: RR of falling 0.71

Multifactorial Interventions

- In-depth multifactorial risk assessment and comprehensive management
  - Tinetti 1994: 31% decrease in fall incidence
  - Cochrane: reduced rate of falls (RaR 0.76) but not risk of falling
  - Likely beneficial for high risk adults getting good follow up

Tinetti ME et al. NEJM 1994; 331:831.
Vitamin D

- Low vitamin D levels are associated with increased risk of falls
- Does treatment help?
  - Cochrane: RR 0.96
  - USSTF: RR 0.87
  - Heterogeneity in populations, Vitamin D levels at baseline, supplementation dose
  - Probably helpful, especially in ppl with low Vit D levels

Vision

Wear single lens distance glasses
  ─ Those who regularly participate in outside activities

Remove first cataract (RaR 0.66)

Consider CNIB referral
  ─ Macular degeneration
  ─ Diabetic retinopathy

Medication Review

• Highest risk meds:
  – Psychotropics
  – Anticholinergics
  – Antihypertensives

Environmental & Home Modifications

- Home safety assessments and modifications are associated with more than 20% fewer injuries annually from falls.
  - RaR 0.81, 95% CI 0.68 to 0.97

Receive 15% back on up to $10,000 home modifications

http://www.ontario.ca/taxes-and-benefits/healthy-homes-renovation-tax-credit

Gait Aid Assessment & Monitoring

• Gait aid?
  – Cane, walker, wheelchair
  – Gait observation

• Use?
  – Height

• Condition?
  – Hand grips
  – Legs
  – Cane Tips
  – Wheels
  – Brake conditions

Single Point Cane (SPC)

- Mainly for unilateral and/or mild balance impairment
- Standard vs. offset cane
- In/outdoors, stairs
- May be used in conjunction with another gait aid
2 Wheeled Walker (2WW)

- Bilateral and/or moderate balance impairments

- Features
  - Unidirectional front wheels vs. swivel
  - Rear skis vs. auto-stop mechanism
  - Portable

- Used in a variety of cognitive, medical, and physical disabilities

- Commonly used in home (indoors), hospitals, LTC, and rehab
4 Wheeled Walker (4WW/Rollator)

• Enhances walking in higher functioning individuals with fair balance, although can be used in lower functioning patients with limited endurance

• Features
  – 4 wheels, front swivel, bilateral hand brakes, seat, folding mechanism
  – Modifications

• Used in a variety of cognitive, medical, and physical disabilities
  – Caution: moderate cognitive and functional impairments

• Typically used outdoors
How Do You Measure a Cane/Walker?

While standing in an upright position with arms relaxed at the sides, where should the height of cane/walker be measured?

A. At the level of the palm to optimize balance

B. At the level of the wrist crease

C. Above the level of the wrist for easy access

D. Appropriate cane/walker height depends on patient preference
How Do You Use A Cane?

When using a cane, it should be held:

A. In a position most comfortable to the patient

B. On the same side as the affected limb

C. The affected limb does not influence how the cane is used

D. On the opposite side of the affected limb
How Do You Measure the Seat Height of a Walker Appropriately?

The walker seat height is measured when the patient seated with their:

A. Feet flat on the floor, knees at 90-120

B. Feet flat on the floor, knees at 130-160

C. Toes touching the floor, knees at 90-120

D. Feet flat on the floor, knees at 80
• Provides consumer centred support and funding for a variety of assistive devices to Ontario residents with physical disabilities

• Pays up to 75% of the equipment costs, including walkers and wheelchairs

• Valid Ontario Health Card with greater than 6 months physical disability

• Assessment and equipment prescription by an ADP certified health care professional

Falls Prevention Program

• Appropriate for community-dwelling older adults with a history of falls or at high risk for falls

• One-time inter-professional comprehensive assessment

• 12-week group exercise and education program
Geriatric Day Hospital

• Outpatient rehab program for community dwelling older adults requiring 2 or more modalities of therapy, including:
  – PT -- Recreation Therapy
  – OT -- Social Work
  – SLP -- Nursing

• Program is individualized, therapy in smaller groups

• 12-week program, two visits/week

• Medical care overseen by a geriatrician
# FPP vs. GDH

<table>
<thead>
<tr>
<th>Falls Prevention Program</th>
<th>Geriatric Day Hospital</th>
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<tbody>
<tr>
<td><strong>Ideal Patient</strong></td>
<td>≥ 65y with falls or high risk for falls</td>
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</table>
| **Exclusion** | - Cannot speak English  
- Cannot hear/understand group instructions  
- Non-ambulatory | - Non-ambulatory- may not be able to participate in PT  
- Advanced dementia |
| **Special considerations** | | - Can accommodate patients requiring accompaniment for cognitive, functional or language barrier reasons |
| **Fax number** | Fax: (416) 597-7074 | Fax: (416) 597-7066 |
Case Conclusion

- Gradually reduce and/or discontinue unnecessary medications
  - Specifically, decrease amlodipine with a goal BP closer to 140 systolic and/or resolution of postural drop
  - Titrate off citalopram slowly since no longer depressed

- Vision
  - Advise single lens glasses

- Vitamin D supplementation

- Environment/Behavior
  - Education about safe use of TTC
  - Appropriate footwear
  - CCAC OT in-home safety assessment

- Falls Prevention Program
  - Further education
  - Exercise program
  - Gait aid reassessment
Summary

• Falls are common and are a large source of morbidity

• Falls are a result of a complex interaction of biological, behavioural, social & economic, and environmental risk factors

• Falls prevention requires multifactorial assessment and interventions for the falling older adult

• Falls prevention programs are available resources in the community
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  – Alison Ha
References