Approach to Falls in Older Adults

Jenny Basran MD FRCPC
May 2012
What is a fall?

“The unexpected event in which a person comes to rest on the ground, floor or lower level”

This would include:

- Unwitnessed falls where the patient/client/resident is unable to explain the events and there is evidence to support that a fall has occurred; and
- Near falls, where the patient/client/resident is eased to the floor or lower surface by staff or family members.
- Near falls, where the patient/client/resident experiences a loss of balance and is able to correct themselves before an actual fall occurring.

Falls Statistics

Every year:

In community:
- 1 in 3 (35%) adults over age 65 will fall
- 1 in 2 (50%) adults over age 80 will fall

- 35% home care patients will fall
- 40% long term care patients will fall

Falls account for

- Majority of injury related hospitalizations in older adults
  - 77% for males, 88% for females
  - ALOS ~ 50% longer for falls than all other causes of hospitalization

- 40-50% of all LTC admissions
Figure 2: Crude Rate of Fall-related Hospitalizations by Age and Gender, Canada, Age 65+, 2008/09

Rate (per 1,000) Fall-related Hospitalizations

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-74</td>
<td>7.2</td>
<td>5.2</td>
</tr>
<tr>
<td>75-84</td>
<td>21.0</td>
<td>13.1</td>
</tr>
<tr>
<td>85+</td>
<td>52.1</td>
<td>35.0</td>
</tr>
</tbody>
</table>
Fall related injuries

- 22 – 60% will suffer injury from falls
  - 15-25% falls → serious injuries – fractures, head & spinal cord injuries, contusions
    - 2-6% → fractures

- 90% of all hip fractures due to a fall
  - 50% of all hip fracture patients already had a fracture
  - 25% hip fracture patients will die within 6 -12 months
  - 40% mortality following hip fracture if LTC patient
Injuries Sustained From Falls

- Cuts, abrasions, bruises & sprains – most common
- Fractures – most dangerous, esp hip
  - Most do not regain previous level of functioning
- Increased mortality – short and long term
- Fear of falling
Significant functional impairment

One year after an hip fracture:

- Death within one year: 20%
- Permanent disability: 30%
- Unable to walk independently: 40%
- Unable to carry out at least one independent activity of daily living: 80%

Cooper C, Am J Med, 1997;103(2A):12S-17S
Morbidity after vertebral fractures

- Back pain
- Loss of height
- Deformity
  - Kyphosis
  - Protuberant abdomen
- Reduced pulmonary function
- Decreased QoL
  - Self-esteem, body image, sleep problems
Fear of Falling = Vicious Cycle

- 48% say they are afraid of falling again
- 25% decrease their activity
What can we do?

- Although common in older adults, falls are not a normal part of aging

- Health professionals can:
  - Assess patients who are at risk of falling or who have fallen to find reasons for falls
  - Implement appropriate interventions
  - Vitamin D supplementation in all LTC patients (if no contraindications)

- What resources are available?
  - Safer Healthcare Now – Falls Prevention Kit
  - Social Care and Social Work – Managing Falls in Care Homes
  - Australia -
What causes falls?
older adults who are **predisposed** because of accumulated effects of diseases / impairments (intrinsic)

Are exposed to **precipitating challenges** (extrinsic)
Where do we start?
In 2011 falls prevention identified as a strategic priority as part of the Saskatchewan Surgical Initiative.

Phase one - Long-Term Care (LTC) Falls Prevention and Reduction Initiative, with targets for:

- Reducing the number of LTC residents who experience a fall
- Reducing the number of surgeries performed as a result of resident falls
- Increasing the number of facilities that have implemented the SHN! Falls prevention bundle

Contact information: Nadine.glenn@hqca.ca
Saskatchewan Falls Collaborative

- Updated SHN’s “Getting Started Kit”
  - New national expert panel updating kit
  - Incorporate what we learned in Saskatchewan

- Expert panel – front line clinicians
  - Geriatrician, pharmacist, physical therapist, nurses, care aids, quality improvement coordinators

- Webex sessions & Face to face meetings
  - Facilitated by SHN, CPSI, HQC

- Shared resources
  - Updated “Getting Started Kit” with new framework, evidence, appendix of resources;
  - Change package – summary of high leverage ideas
  - Google Listserv, dropbox, email questions
<table>
<thead>
<tr>
<th>Falls Intervention Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prevention: Universal Fall Precautions (SAFE) for all</td>
</tr>
<tr>
<td>a) Safe Environment, Assist with Mobility, Fall Risk Reduction, Engage Patient and family.</td>
</tr>
<tr>
<td>2. Screen all patients/clients/residents for risk of falls</td>
</tr>
<tr>
<td>b) Assess all patients'/clients'/residents' falls risk on admission, following a significant change in status, following a fall or near-fall, and on a regularly scheduled basis.</td>
</tr>
<tr>
<td>3. Multifactorial Risk Assessment in All Patients at Risk</td>
</tr>
<tr>
<td>Patient/Client/Resident level:</td>
</tr>
<tr>
<td>a) Fall history, observations of gait and balance and identify risk factors</td>
</tr>
<tr>
<td>Organizational level:</td>
</tr>
<tr>
<td>a) Develop organizational policies for falls prevention/reduction and management that includes roles and responsibilities of entire health team (care providers and maintenance/housekeeping staff).</td>
</tr>
<tr>
<td>b) Develop approaches for regular safety checks and include environmental audits and modifications as a component of falls prevention strategies.</td>
</tr>
<tr>
<td>c) Investigate each fall or near fall (near miss) to identify contributing factors and to prevent re-occurrence.</td>
</tr>
<tr>
<td>4. Create Personalized Care Plan Addressing the Specific Fall Risk Factors</td>
</tr>
<tr>
<td>a) Implement appropriate interventions specific to the risk factors identified and customized to the unique characteristics of the patient/client/resident.</td>
</tr>
<tr>
<td>b) Modify the environment and provide personal device, if required, to reduce risk of falls-related injury.</td>
</tr>
<tr>
<td>5. Document, evaluate and educate about Falls Risk</td>
</tr>
<tr>
<td>a) Create a record that summarizes the assessment findings and rationale for interventions.</td>
</tr>
<tr>
<td>b) Communicate the results of the falls risk assessment to the healthcare team, patient/client/resident, and the family.</td>
</tr>
<tr>
<td>c) Educate all staff on the prevention of falls and fall injuries.</td>
</tr>
<tr>
<td>d) Evaluate the effectiveness of the care plan.</td>
</tr>
</tbody>
</table>

**New Framework**

*(Getting Started Kit – Saskatchewan version)*
1. Prevention: Universal Fall Precautions for All
1. Prevention – Universal Falls Precautions

- 2 assumptions – in acute and LTC
  - All patients are at risk for falls
  - Everyone has a role in fall prevention

- S.A.F.E.
  - S – safe environment – bedrails down, clutter-free, brakes on, lights
  - A – assist with mobility – twice a day, scheduled toileting, glasses, aids
  - F – fall risk reduction – call bells, lower bed, proper footwear
  - E – engage patients & families – discuss risk factors, mutual plan

- 3 questions to ask before exiting a patient’s room:
  - “Do you need to use the toilet?”
  - “Do you have any pain or discomfort?”
  - “Do you need anything before I leave?”
2. Screen all patients for risk of falls
2. Screen all patients for risk of falls

- Screening not enough → do something with risk factors
- Must be validated and standardized
  - DO NOT MAKE UP YOUR OWN
  - periodically test tool - two staff administer separately then compare

- Not one that can be used across entire continuum of care
  - Community / Home Care
    - American Geriatrics Society (AGS/BGS) Fall Prevention Guidelines
    - FROP-Com
    - Strategies and Actions for Independent Living (SAIL)/ Promoting Active Living (PAL) – BC Fraser Health, Vicky Scott
  - Long term Care – is everyone already at risk?
    - Scott Fall Risk Screening Tool for Residential Care
    - Morse Fall Scale (needs to be calibrated for each site)
    - Scotland SCSWIS Multifactorial Risk Assessment & Management tool
AGS/BGS Guidelines for Prevention of Falls in Older Adults

J Am Geriatr Soc 2010

www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2010
## Screening Questions

1. 2 or more falls in the past 12 months
2. Presents with acute fall
3. Difficulty with walking or balance

If no ➔ do they have one fall in last 6 months ➔ if yes ➔ evaluate gait & balance (TUG) ➔ if abnormal ➔ to yes

If yes ➔ multifactorial fall risk assessment and intervention
Screening tools – community / home care

FRPOP-Com

Falls Risk for Older People - Community setting (FRPOP-Com)

Address:

DOB:

Telephone:

Marital Status:
Single / Married (de facto) / Widowed / Divorced (separated) / Unknown (circle)

Usual living arrangements:

1. Community Aged Care Package/Services
2. Community Rehabilitation
3. Doctors Appointment
4. Doctor Home Visit
5. Home Help
6. Home Modifications
7. Home Rehabilitation
8. Linkages Package
9. Meals on Wheels
10. OT Home visit
11. Outpatient Appointment
12. Other
13. Post Acute Care
14. Personal Care
15. Respite Care
16. District Nursing Services
17. Psychosocial Assessment
18. Diabetic
19. Podiatrist
20. Personal Alarm
21. Day Centre
22. Falls and Balance clinic

Comments:

- Is English the individual's preferred language? If not, what is? (Yes/No)
- Does the individual have functional English? (Yes/No)

History of falls (Yes/No):

1. Number of falls in the past 12 months?
   - 1 fall (1)
   - 2 falls (2)
   - 3 or more (3)

2. Was an injury sustained at any of the falls in the past 12 months?
   - No injury sustained (1)
   - Minor injury, did not require medical attention (2)
   - Severe injury (Fracture, etc.) (3)

3. Describe the circumstances of the most recent fall in the past 12 months.
   - AM/PM please circle

Location of fall:
- Inside home
- Outside home / community

Direction of fall:
- Left / Right / Forward / Backward / Down / can't remember / others

Cause of fall:
- Slip / loss of balance / illness / gave way / tripped / feeling dizzy or drunk / alcohol or meds / fall out of bed / unknown

Comments:

Injuries:

National Ageing Research Institute  www.health.gov.bc.ca
Screening Tools - LTC

Scott Fall Risk Screening Tool for Residential Care

SCOTT FALL RISK SCREENING TOOL for Residential Care®

Reason for completing tool (circle one): 1. New admission; 2. Change of status; 3. Yearly review; 4. Serious fall injury/multiple falls.  [TO BE COMPLETED BY RN, LPN or PT/OT]

<table>
<thead>
<tr>
<th>RISK FACTOR PRESENT</th>
<th>CIRCLE</th>
<th>POSSIBLE STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 2 falls in previous 6 months</td>
<td>6</td>
<td>Review circumstances of prior falls from fall reports.</td>
</tr>
<tr>
<td>Impaired mobility, balance or gait</td>
<td>2</td>
<td>Refer for PT/OT assessment / recommend use of hip protectors.</td>
</tr>
<tr>
<td>Altered mental state (e.g., delirium, brain injury, dementia, depression)</td>
<td>2</td>
<td>Monitor daily for change in mental status and ability to remember and follow instructions.</td>
</tr>
<tr>
<td>Attempts to unsafely get out of bed due to lack of understanding, agitation or restlessness</td>
<td>3</td>
<td>If confused with impaired mobility, assess for bed alarm / mats / monitoring.</td>
</tr>
<tr>
<td>Move to facility in past month</td>
<td>1</td>
<td>Screen for fall risk / assess for mobility.</td>
</tr>
<tr>
<td>Dizziness or vertigo</td>
<td>1</td>
<td>Check for orthostatic hypotension, dehydration and vestibular problems. Refer for medical assessment.</td>
</tr>
<tr>
<td>Generalized weakness (see back page for indicators)</td>
<td>1</td>
<td>Assess for insomnia, pain, malnutrition, hypoxia or diuretic. Refer for medical assessment.</td>
</tr>
<tr>
<td>Alternations in urinary and bowel elimination (frequency, urgency, incontinence, etc.)</td>
<td>1</td>
<td>Bladder/bowel routine / bedside commode or light if unsafe at night.</td>
</tr>
<tr>
<td>Greater than 7 medications, especially narcotics, anti-depressants, anti-psychotics, diuretics</td>
<td>1</td>
<td>Regular review of medications.</td>
</tr>
<tr>
<td>Any prescribed benzodiazepine or psychotropic medications</td>
<td>1</td>
<td>Refer to pharmacist/physician for reduced dose or alternatives to benzodiazepine or psychotropic meds.</td>
</tr>
<tr>
<td>Immobile (unable to walk or stand unaided)</td>
<td>-5</td>
<td>Precautions for falling from bed or chair. Plan for fracture risk related to osteoporosis.</td>
</tr>
</tbody>
</table>

TOTAL

Risk Assessment Total Score: *see reverse for further guidelines for item completion *
Score <7 – universal precautions for fall, plus a plan in place to reduce impact of each identified risk above.
Score ≥ 7 – deemed to be at high risk for falls.
Score >12 – deemed to be at high risk for falls and unsafe ambulation.

To use
Contact: vicky.scott@gov.bc.ca
managing falls and fractures in care homes for older people

Good practice self assessment resource

- [www.scswis.com](http://www.scswis.com)
- Self-assessment guide
- Information, guidance & tools
- Multifactorial Risk Assessment and Management tool (#5)
3. Multifactorial Risk Assessment for all Patients at Risk
3. Multifactorial Risk Assessment for All At Risk Patients

- Individual Level
  - Fall history
  - Identify risk factors
  - Physical Exam – including gait & balance assessment

- Organizational Level
  - Policies and procedures
  - Roles & responsibilities of entire team – care providers, maintenance / housekeeping
  - Safety checks, environmental audits
  - Investigate each fall (or near fall) for contributing factors to prevent recurrences
1. Obtain relevant medical history, P/E, cognitive and functional assessment

2. Determine multifactorial fall risk:
   a) History of falls
   b) Medications
   c) Gait, balance & mobility
   d) Visual acuity
   e) Other neurological impairments
   f) Muscle strength
   g) Heart rate and rhythm
   h) Postural hypotension
   i) Feet & footwear
   j) Environmental hazards
Physical Exam Essentials

- **Lying and Standing BP & HR**
  - Greater than 20 mmHg drop in SBP and 10 mmHg drop in DBP +/- symptoms
  - Does BP & HR go back to baseline after 3-5 min?
    - If not, consider autonomic dysfunction
- **Look for vertebral fractures (osteoporosis)**
  - Weight & Height
  - Wall-occiput distance
  - Rib-pelvic distance
- **Timed Up and Go (TUG)**
### Assessment

#### Recommended Elements of Clinical Assessment

<table>
<thead>
<tr>
<th>Physical examination</th>
<th>Recommended Elements of Clinical Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure <strong>weight</strong> (weight loss of ≥10% since age 25 is significant)</td>
<td></td>
</tr>
<tr>
<td>Measure <strong>height</strong> annually (prospective loss &gt; 2cm) (historical height loss &gt; 6 cm)</td>
<td></td>
</tr>
<tr>
<td>Measure <strong>rib to pelvis distance</strong> ≤ 2 fingers' breadth</td>
<td></td>
</tr>
<tr>
<td>Measure <strong>occiput-to-wall distance</strong> (for kyphosis) &gt; 5cm</td>
<td></td>
</tr>
<tr>
<td>Assess fall risk by using Get-Up-and-Go Test (TUG) (ability to get out of chair without using arms, walk several steps and return)</td>
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**Diagnosis of vertebral fractures**
Osteoporosis physical exam

A Wall-Occiput Test for Occult Thoracic Vertebral Fractures
- Negative Test Result
- Positive Test Result
  - Wall-Occiput Distance >0 cm

B Rib-Pelvis Distance Test for Occult Lumbar Vertebral Fractures
- Negative Test Result
- Positive Test Result
  - Rib-Pelvis Distance ≤2 Fingerbreadths

Green, A. JAMA 2004; 292(23):2890-2900
4. Create personalized care plan - specific fall risk factors
4. Create Personalized Care Plan Addressing the Specific Fall Risk Factors

- Appropriate interventions for specific risk factors
  - Withdrawal of psychotropics – falls by 63%
  - Cardiac pacing – pts with carotid hypersensitivity - falls by up to 70%
  - Cataract surgery – falls by 40%

- Customized to unique characteristics of the individual
  - Tai Chi classes – falls by 49%
  - Professionally supervised strength & balance training –falls by 20%
    - High dose (2 hrs/wk X 6 months) - falls by 42%
    - Otago (home based program) - falls by 34%

- Modify environment
  - Home modifications in fallers can falls by 34%

- Provide personal device
  - Mobility aids, hip protectors
Multifactorial Interventions

1. Minimize medications, especially psychoactive drugs
2. Provide individually tailored exercise program
3. Treat vision impairment (incl cataracts)
4. Manage postural hypotension
5. Manage heart rate & rhythm abnormalities
6. Supplement Vitamin D
7. Manage foot & footwear problems
8. Modify the home environment
9. Provide education and information

- 27% (2-37%) fall risk reduction for community dwelling older adults
Vitamin D Supplementation – Must Do

- Low Vitamin D levels cause:
  - Muscle weakness & atrophy (esp fast twitch fibers)
  - Increased postural sway
  - Impaired psychomotor function
  - Increased bone turnover → osteoporosis
  - Osteomalacia → migratory pain in bones

- Benefits:
  - Vitamin D reduced falls risk by 28% (meta-analysis)
  - Potential – cancer, CV, anti-inflammatory

- OP Canada guidelines – Vit D 1000 - 2000 IU OD
Vitamin D in LTC

- **Best intervention to prevent falls in LTC**
  - Mandated in Australia / NZ
  - Fraser Health Region (BC) 2 weeks ago, SHR soon?

- **Dose?**
  - ViDOS study (40 LTC - Ontario): Vitamin D3 1000 IU OD
  - Fraser Health Region: 20,000 IU D3 weekly
  - Australia / NZ:
    - Loading dose: 2 X 50,000 IU D3 in first month
    - Maintenance dose: 50,000 IU D3 per month

- Not for patients with hypercalcemia and/or severe renal failure (GFR<20 mL/min)
ViDOS study

% Achieving 75 nmol/L or greater

<table>
<thead>
<tr>
<th>Vitamin D Dose</th>
<th>0</th>
<th>200/400 IU</th>
<th>800 IU</th>
<th>1000 IU+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26%</td>
<td>44%</td>
<td>78%</td>
<td>81%</td>
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Risk Factors for Injury following fall

- Osteoporosis assessment
  - Care gap

- Anticoagulation:
  - Usual benefits outweigh risks unless repeat or high risk faller (>300 falls per year)

- Can the person get up from fall?

- Is there a way to notify others in case of falling?
  - Lifeline & accessible telephones
  - Friendly phone calls, visits
Osteoporosis Care Gap

- Forearm Fracture
- Vertebral Fracture
- Hip Fracture

Normal
Ipswich Hospital NHS Trust Fracture Liaison Service (FLS)

Fragility fracture Ortho wards

- >75y
  - Medical assess
  - Falls assess
  - Screening tests
  - Recorded on db (Treat)

- <75y
  - Blood tests

Fragility fracture Fracture clinic

- >75y
  - Falls assess >75y
  - Further tests
  - Recorded on db

- >50y
  - FLS clinic
  - DXA scan if < 75y

DISCHARGE

FLS Nurse Screens clinic list

Apply NICE or FRAX algorithm

Discussion with doctor

DISCHARGE

BONE CLINIC

Intermediate Care

Kaiser Permanente
FLS Southern California Style

- 37% reduction in expected hip fractures → 50% this year
- Saved 100,000 hip fractures = $5 billion annually

JBJS 2008;90:S4:188-194 Dell et al
Do we fall differently when we age?

Young adult

Older adult
Hip Protectors

80% risk reduction of fracture following a fall but poor compliance
5. Document, evaluate and educate about Falls Risk
5. Document, evaluate and educate about Falls Risk

- **Home care**
  - Fall calendar
  - Home / environmental scan
  - Exercise – community or home based

- **Long term care**
  - Fall diaries
  - Measles charts

- **Outcome measures, audits**
  - Safer Healthcare Now!
  - PDSA cycles

- **Ongoing education**
  - But not as a stand alone intervention – not enough
Home Based Exercise Programs

- Published in June 2011
- Free to print and distribute to patient
- Make own DVD by having patients model

http://www.laterlifetraining.co.uk/home-exercise-booklets-free-to-download/
Measles Chart

Tool 13b: Measles chart example
How did it work in Saskatchewan?

Saskatchewan Falls Collaborative
25 Teams From Across Saskatchewan

- Athabasca Health Authority HC Team (withdrew due to resource issues)
- Saskatoon Regional HC Team
- Sherbrooke/Central Haven LTC Team
- Stensrud Lodge LTC Team
- Parkridge Centre LTC Team
- Extendicare Preston LTC Team
- Golden Acres LTC Team
- Last Mountain Pioneer Home LTC Team
- Luther Care Communities LTC Team
- Pleasant View Care Home - Wadena LTC Team
- Oliver Lodge LTC Team
- Sunrise Regional HC Team
- Sunrise Regional LTC Team
- ROHR Regional HC Team
- ROHR Regional HC Palliative Care Team
- Extendicare Parkside LTC Team
- Regina Lutheran LTC Team

Prairie North Regional LTC Team
- Five Hills Regional HC Team
- Pioneer Lodge LTC Team
- Providence Place LTC Team
- Ross Payant Nursing Home LTC Team

Cypress Regional EMS/HC Team
- Cypress Regional LTC Team (Represents 12 LTC sites)

Sun Country Regional HC Team
- Sun Country Regional LTC Team - (Including Tatagwa View - Weyburn)
- Moose Mountain Lodge LTC Team

Falls Reducing Harm in LTC and HC
What did we do?

Chartered our Team and Tested Lots of Ideas for Improvement

What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that will result in improvement?

Act       Plan
Study    Do

Aim

Measures

Ideas

Test and implement using small tests of change

Expanded conditions – Multiple small tests of change

Shared our learning along the way...

Measure 1

0%  25%  50%  75%  100%
8:03  8:13  8:23  8:33  8:43  8:53  9:13  9:23  9:29

Used data & feedback for learning

skfallscollaborative@googlegroups.com

Monthly Team Calls

SHN Community of Practice

Saskatchewan Falls Collaborative: Reducing Falls Reducing Harm in LTC and HC
Measures –

**Outcome:**
- Fall rate per 1000 resident days (1000 home care clients)
- Percentage of falls causing injury

**Process:**
- Percentage of residents (clients) with completed falls risk assessment on admission
- Percentage of residents (clients) with completed falls risk assessment following a fall or change in medical status
- Percentage of “at risk” residents (clients) with a documented fall / injury reduction plan

**Balancing:**
- Percentage of residents with restraints
Falls per 1,000 Resident Days

- Sun Country, Five Hills and Saskatoon Health Region facilities reduced total number of falls and total number of falls per 1,000 Resident days by ~ 25%
Percentage of falls causing injury
Percentage of residents / clients with completed falls risk assessment on admission.
Team Self-Assessment Rating

Average Self-Assessment Rating

Month:
- May-11
- Jun-11
- Jul-11
- Aug-11
- Sep-11
- Oct-11
- Nov-11
- Dec-11
- Jan-12
- Feb-12
- Mar-12
- Apr-12
- May-12

Rating:
- 0
- 0.5
- 1
- 1.5
- 2
- 2.5
- 3
- 3.5
- 4
- 4.5
- 5
Conclusions

- Falls are common, but not normal part of aging
- Previous fall is a big predictor of future fall
  - Screen – ask falls history and/or balance problem
  - Always check orthostatic vitals, TUG, OP exam
- Multifactorial – risk factor assessment AND intervention
- Treat fragility fractures – don’t need to wait for BMD
- Vitamin D for everyone!
- Get support from local experts
- Share resources
- Measure your progress
It takes a child one year to acquire independent movement and ten years to acquire mobility.

An old person can lose both in a day.

Bernard Isaacs