




Falls In Primary Care

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Outline

- ✚ Prevalence and significance
- ✚ Causes and risk factors
- ✚ The Timed Up & Go Test
- ✚ Assessment and management strategy for Primary Care: “Identify, Prepare, Evaluate, Action”
- ✚ Case studies

Falls Facts

- + 4.7 million seniors in Canada or approximately 280 seniors in an average practice of 2000.
- + This year 1/3 will fall and 1/3 of them will seek medical attention (500,000 in Canada or 31 in an average practice) 
- + 40% of seniors attending ER with a history of a fall are likely to sustain a fracture within a 12 month period
- + 40% of all nursing home admissions are related to falls.
- + This year Ontario will spend \$1.9 billion on falls (the most costly cause of injury)

(Adapted from Division of Aging and Seniors, 2005 and Statistics Canada, 2007)

Falls Facts - Hip Fractures

- + Over 4.5 million seniors in Canada
- + This means for this year:
 - There will be 25,500 hip #s (hip # rate of 1.7%)
 - Only 8415 (1/3) will regain prior level of function
 - 1785 (7%) will die within 30 days of hospitalization
 - 5100 (20%) will die within 1 year
 - \$27,000 per person avg. cost to health care system
 - \$6.9 billion total cost to healthcare system

Falling and Injuries – A Profile

- ✦ Those who sustain injuries are likely to be:
 - Female
 - 80+ years
 - Widowed, separated or divorced (i.e. living alone)
 - Post-secondary educated
 - In receipt of a household income < \$15, 000



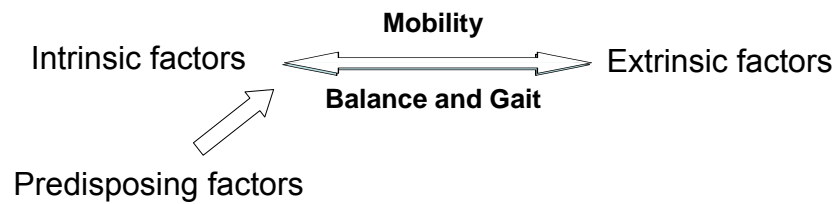
Missed Opportunities

- ✦ Those who **seek medical attention** after a fall and/or those who **are afraid of falling** are at **higher risk** of further falls, decline in function, fractures, premature morbidity and mortality.
- ✦ Of those who seek medical attention following a fall, the **majority (approx 70%), receive no immediate effective treatment of their risk factors.**
- ✦ The literature suggests **at least 1/3 of falls-related adverse outcomes are preventable**

(Division of Aging and Seniors, 2005)

Causes of Falls

- ✦ Significant falls are a result of complex interactions between multiple risk factors.



Predisposed to Falls

- ✦ ↓ sensory input (vision, hearing and proprioception)
- ✦ ↓ nerve conduction
- ✦ ↓ number motor neurons
- ✦ ↓ fast twitch fibers
- ✦ ↓ muscle mass
- ✦ Vascular changes - prone to postural hypotension

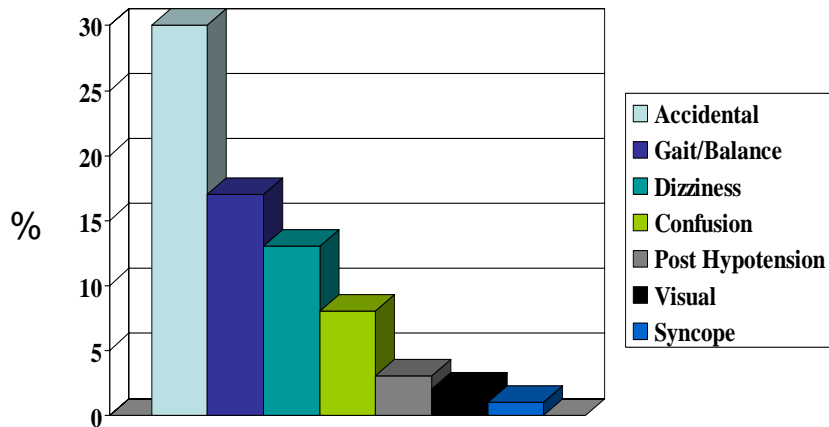


Intrinsic Risk Factors - Medical and Biological

- | | |
|---|--|
| <ul style="list-style-type: none"> + Lower extremity weakness + Balance / gait problems + Visual deficits + Acute or chronic illness + Decreased sensation + Depression + Hearing loss + Dizziness / postural hypotension + Foot problems + Cognitive impairment + Functional / ADL impairment | <p>Certain medications:</p> <ul style="list-style-type: none"> + Psychotropics/Benzodiazepines + Digoxin + Diuretics + Class 1a anti-arrhythmics + Polypharmacy (5 or more) |
|---|--|

(Division of Aging and Seniors, 2005)

Common Causes of Falls



Intrinsic Risk Factors - Behavioural

- ✚ History of falls
- ✚ Improper footwear
- ✚ Excessive alcohol use (≥ 14 / wk)
- ✚ Fear of falling
- ✚ Risk-taking behaviours (lack of insight)

(Division of Aging and Seniors, 2005)

A walking disaster in
the making!



Extrinsic Risk Factors – Environmental

- ✦ Stairs
- ✦ Home hazards (kitchen, bathroom, bedroom)
- ✦ Outdoor hazards
- ✦ Public / community hazards
- ✦ Use of assistive device

(Division of Aging and Seniors, 2005)

- ✦ Most seniors fall in their own homes while doing their usual daily activities.

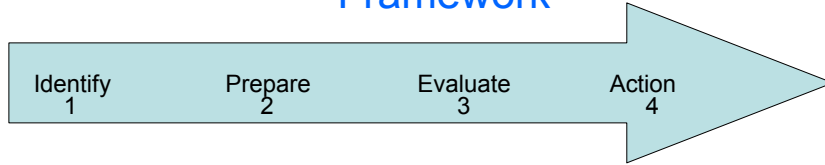
(British Columbia Ministry of Health, 2006)

Spot the 14 Hazards



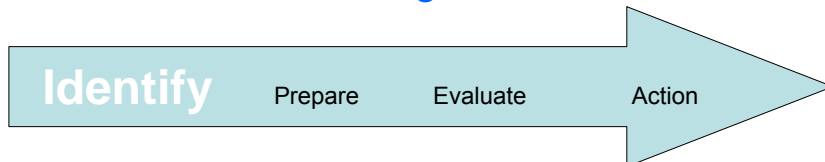
(Adapted from Public Health Agency of Canada, 2008)

Identify, Prepare, Evaluate and Action Framework



1. Identify = Case Finding and Targeting to “high-risk” (screening questions and Timed Up & Go test)
2. Prepare = Self-report and directed enquiry (Medical history, risk factors, medications, health habits)
3. Evaluate = Structured targeted assessment linked to Physician Assessment
4. Action = Inter-professional Care Plan including Further Assessment, Treatment, Education and Follow-up

Screening Questions



1. Have you fallen in the past 12 months?
 2. More than one fall (recurrent faller)?
 3. Did you seek medical attention?
 4. Are you afraid of falling?
- + “Case finding” - allows primary care practitioner to distinguish the “normal faller” from the “high risk faller”, and determine if a comprehensive falls assessment is required.
 - + If a person with a fall in the last 12 months answers “yes” to either or both of questions 3 and 4, they are at higher risk for falls.

Timed Up & Go (TUG)

Identify

Prepare

Evaluate

Action

- + If a single fall within past 12 months do the Timed Up & Go (TUG) test.
- + The purpose of the TUG is to identify individuals who require a comprehensive falls assessment.
- + In a study of community-dwelling adults, a time of:
 - 13.5 seconds correctly predicted fallers 90% of the time
 - 14 seconds indicated HIGH risk for falls



The TUG – 2 Minute Test

Identify

Prepare

Evaluate

Action

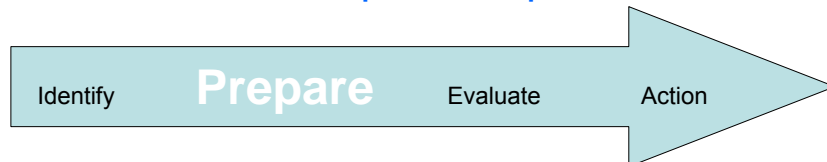
- + Equipment required:
 - Chair with arms
 - Visible floor mark at 3 metres
 - Individual's walking aid
 - Stop watch
- + On "Go", the individual rises, walks to the 3 m. mark at a comfortable, safe pace, turns, walks back to the chair and sits down.
- + The score is the actual time required to complete the task.
- + A practice trial is recommended.

http://www.saskatoonhealthregion.ca/your_health/ps_ip_falls_screening_tools.htm

Identify who needs a more detailed assessment

- + More than one fall last 12 months (recurrent)
or
- + Sought medical attention after a fall
or
- + Have a fear of falling
or
- + Have a positive TUG test
or
- + Have gait or balance abnormalities
(+/- abnormal TUG time)

Self-report component



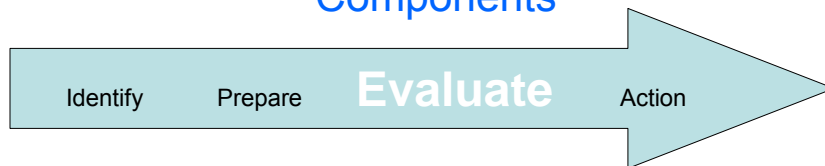
- + The fall “story”
- + Acute and chronic conditions (dementia, depression, arthritis, heart disease, etc)
- + Medications (#, type, OTC, borrowed)
- + Health habits
- + Potential environmental hazards
- + Social (alcohol, nutrition, abuse, footwear)

Evaluate – Example Nurse Components



- + Vision – acuity, pupil reactivity, field check
- + Hearing
- + Feet / footwear
- + Cognition, mood, behaviour
- + Timed Up & Go, gait, balance, mobility
- + CVS – postural BP, HR

Evaluate – Example Physician Components

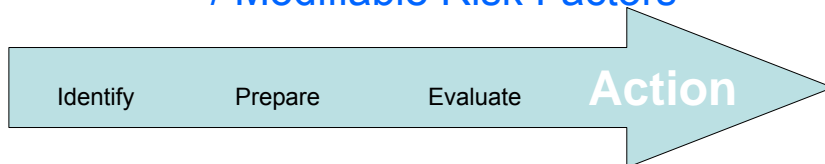


- + Medication review
- + Vision – fundus
- + ENT external – otoscopy, thyroid palpation
- + Resp – percussion, auscultation
- + CVS – auscultation heart, carotids (cont'd next pgs)
- + Abdomen – palpation
- + Neurologic - ROM, strength, tone, cranial nerves, coordination, DTRs, sensation (cont'd next pgs)
- + MSK - joints

Medications

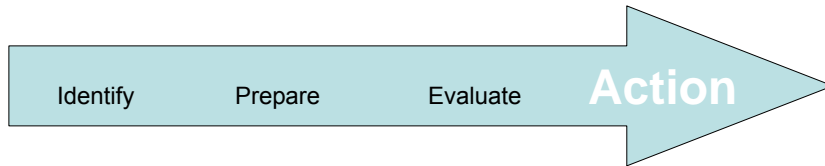
- + Polypharmacy (≥ 5 meds) increases falls risk
- + Certain medications increase risk of falls:
 - Psychotropics/Benzodiazepines
 - Digoxin
 - Diuretics
 - Class 1a anti-arrhythmics
- + Alcohol use
- + Issues of compliance (over/under use)
- + Over-the-counter or “over-the-fence”
- + Herbals
- + Certain foods (grapefruits, etc)

Action Framework For Identified Causes / Modifiable Risk Factors



1. Further **Investigation**
2. Multi-dimensional **Management**
3. **Education** of client and Family

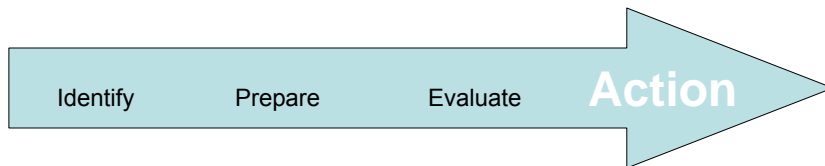
1. Further Investigation



Investigations

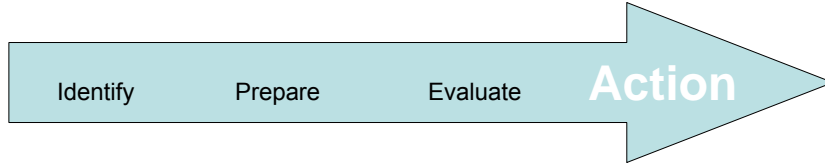
- Multi-professional Assessment
 - Occupational Therapy, Physiotherapy
- Consultations
 - Geriatrics, Neurology, Cardiology, Geriatric Psychiatry
- Environmental Assessment
- Ongoing Monitoring

2. Multi-dimensional Management



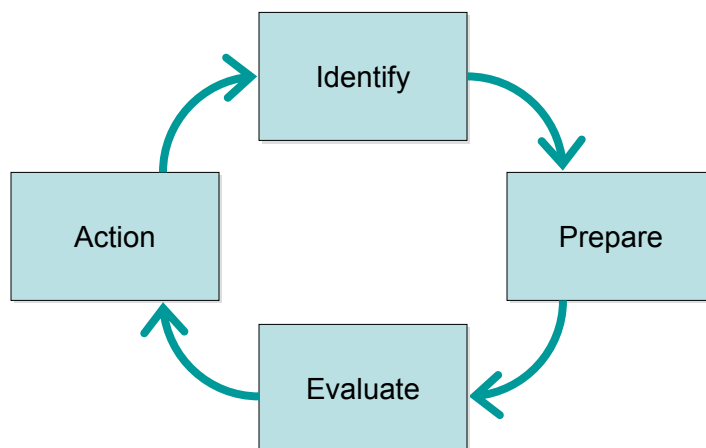
1. Further Investigation
2. Multi-dimensional **Management** (examples)
 - Treatment of postural hypotension, tapering, or reduction in number of medications where possible, treatment of arrhythmias
 - Home safety assessment with modification of hazards and use of appropriate aids
 - Exercise prescription & proper use of gait aids
 - Prescription of appropriate corrective lenses

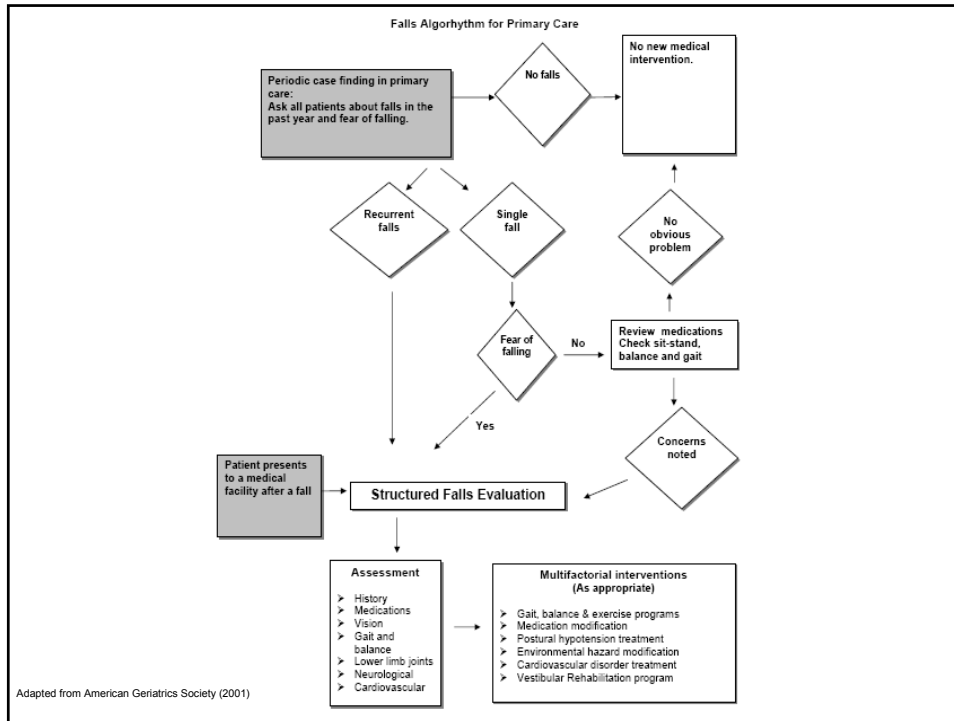
3. Patient and Family Education



1. Further **Investigation**
2. Multi-professional **Management**
3. **Education**
 - Many seniors unaware of their risk for falls
 - Seniors amenable to education re: risk factor modification if emphasis is on “maintaining independence”
 - Provide counseling and/or educational materials for specific modifiable risk factors: home safety questionnaires and tips, footwear, postural hypotension, exercise, assistive devices, etc.

Identify Prepare, Evaluate and Action Framework





Falls Evaluation Checklist

Assessment	Comment	Intervention
HISTORY		
• Number of falls		
• Circumstances of falls		• Suspected environmental hazards Refer to occupational therapist
• Related symptoms Altered consciousness Disequilibrium		• Altered conscious state Consider cardiology Consider neurology
• Medications 4 or more in total Psychotropic medication		• Critical review of medication requirements • Liaise with physician or psychiatrist as required
• Acute medical problems		• Treat all acute medical problems
• Chronic medical problems		• Manage all chronic medical problems to optimise function
• Change in mobility level and/or use of gait aid		• Refer to physiotherapist for education if in doubt about technique
EXAMINATION		
• Cognitive and mood assessment indicates: Impaired cognition Depression		• Investigate for cause, consider specific dementia treatment, manage depression to improve activity levels
• Vision Corrected acuity < 12/20 Bifocal use		• Optometry / ophthalmological review • Be wary of bifocal use when ambulating
• General condition Nutritional status, skin care Physical Endurance Muscle bulk		• Dietetic advice • Physical exercise / training
• Neurological assessment Muscle strength, tone & reflexes Proprioception Cerebellar function Extrapyramidal function Gait (get up and go test)		• Neurological diagnostic assessment • Allied health management of identified disability
• Cardiovascular Heart rate, rhythm, postural pulse & blood pressure Heart sounds		• Manage orthostatic hypertension (symptomatic or >20mm Hg) • Assessment of valvular lesions, ventricular function & rhythm
• Feet and footwear Disturbed foot anatomy		• Podiatry / orthotic advice
OFFICE-BASED FUNCTION ASSESSMENTS		
• Get Up & Go • Single Leg Stance • Sternal push test		• Poor functional performance Refer physiotherapy 1:1 / group physiotherapy / home based exercise program
• Vestibular assessment if indicated by symptoms		• Vestibular dysfunction Ear, Nose & Throat specialist Falls & Mobility Clinic Specialist physiotherapy

Small changes can result in major functional gains!



"It took me three hours, but I finally discovered why you're limping. You lost the heel off your shoe."

Foot wear
Walking aides
Home / environment:
Surface heights
Chairs/bed
Wall bars
Lighting
Flooring/mats
Medications
Vision

Case Studies

"Normal fall"



"Incidental fall"



"Medical" fall"

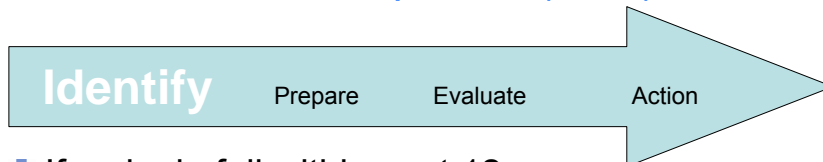


Case Study – Eleanor (“normal fall”)



Screening question indicates single fall while bird-watching

Timed Up & Go (TUG)



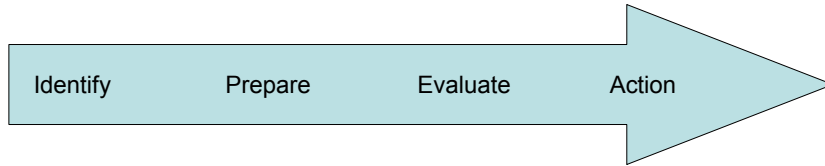
- + If a single fall within past 12 months do the Timed Up & Go (TUG) test.
- + TUG score 9 seconds and normal gait/balance



No Further Action !



Jack's Visit to the Doctor

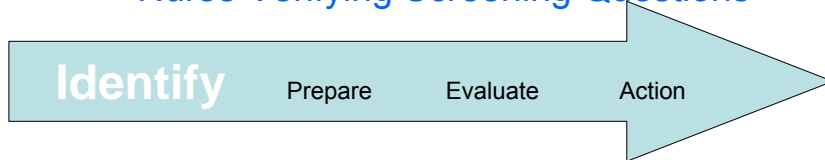


Case Study – Jack & Bea



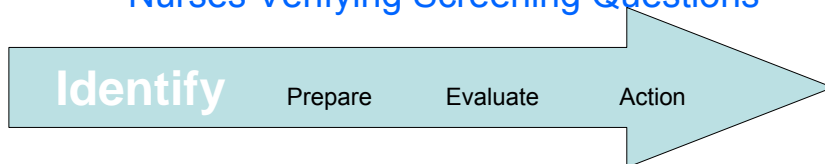
Self report screening question indicates single fall in garage previous week. No fear of falling. No immediate medical consultation.

Nurse Verifying Screening Questions



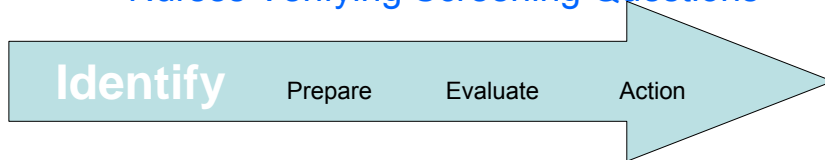
1. Have you fallen in the past 12 months?
 - “Well, I fell in the garage last week, but it was just an accident. I tripped over the cord for my miter saw.”
 - Bea mentions that Jack tripped over his slippers when getting out of bed almost a year ago – he had forgotten to mention this.

Nurses Verifying Screening Questions



2. Did you seek medical attention?
 - “No, I wasn’t hurt.”
 - Bea mentions she had to help him up. “He couldn’t get up because of the arthritis in his knees.”

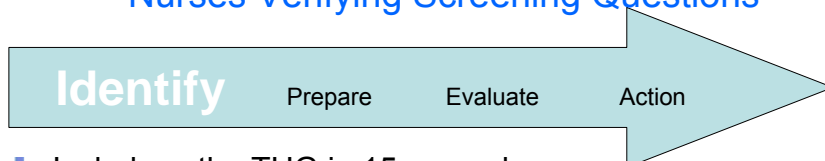
Nurses Verifying Screening Questions



3. Are you afraid of falling?

- “Oh no, I just wasn’t paying attention. I got a little lightheaded right before – probably because I hadn’t eaten yet. I guess I got distracted and I didn’t see the cord. I’ll just get the garage cleaned up and it won’t happen again. I’ve been meaning to get around to that for a while.”

Nurses Verifying Screening Questions



- + Jack does the TUG in 15 seconds.
- + Nurse’s observations during the TUG:
 - Bowed legs
 - Walks stiff legged
 - Difficulty rising from chair



Nurses Verifying Screening Questions

Identify

Prepare

Evaluate

Action

- + Jack has actually had perhaps 2 accidental falls in the past 12 months
- + Abnormal TUG
- + Abnormal gait, balance and difficulty getting out of chair



Proceed to
Comprehensive
Falls Evaluation



Jack's Previous Medical History

Identify

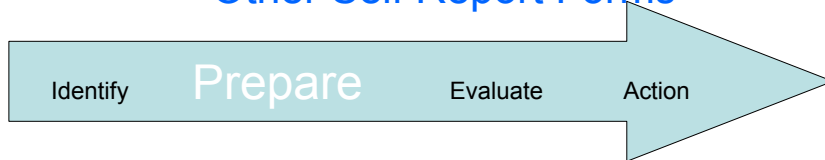
Prepare

Evaluate

Action

- + Jack and Bea complete the medical history form revealing:
 - OA in both knees, HTN, Mild COPD, Type II Diabetes, Cataracts, Hyperlipidemia
 - Medications: Avapro (ARB), Tylenol Arthritis, Lipitor, Salbutamol, Serevent, Glyburide Other (Alcohol 1-2 drinks/day)

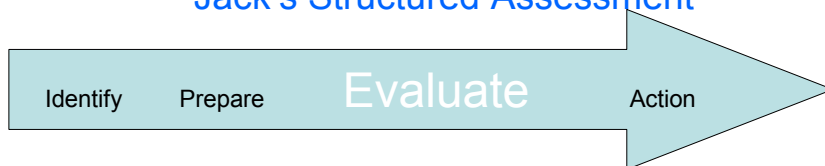
Other Self Report Forms



+ Home Safety Questionnaire

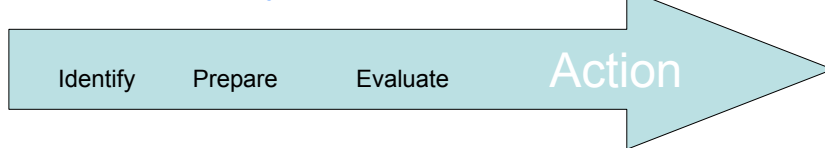
- Lack of lighting especially in bathroom at night
- Usually wears slippers around the house
- Electrical cord hazards
- Uses shower not tub (can't get out of tub)

Jack's Structured Assessment



- + Medications
- + Cognitive Assessment
- + Vision - acuity, field cuts and age related conditions
- + CVS
 - Pulse and BP
 - Auscultation
- + Neuro:
 - Balance (Cerebellar and Vestibular Function)
 - Extra Pyramidal Symptoms
 - Pyramidal Tract deficits
 - Peripheral and Autonomic Neuropathy
 - Proximal Weakness
- + Musculoskeletal – Pain, strength, ROM, feet and walking aids

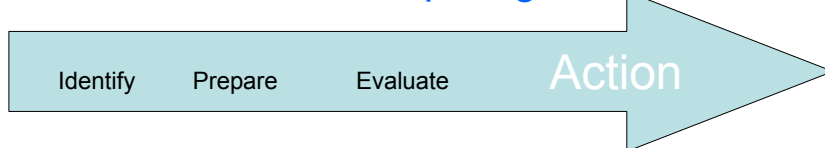
Identify Modifiable Risk Factors



+ What are Jack's potential risk factors for falls?

- Sensory changes feet (DM neuropathy)
- Vision
- Memory/insight?
- Hypotension / postural hypotension (BP meds same dose X yrs)
- >5 medications (including alcohol)
- Weakness and pain in knees causing abnormal gait (OA)
- Aspects of his environment are unsafe

Issues Requiring Action



- 1. Further Investigation:**
 - Monitor BP
 - Reassess DM – control, vision
- 2. Multi-dimensional Management**
 - Review medications and compliance
 - Home safety assessment with modification of hazards and use of appropriate aids
 - Home environmental assessment and functional cognitive screening by OT
 - Assessment by PT for gait, need for exercises and gait aid
- 3. Education**
 - Provide counseling and/or educational materials for specific modifiable risk factors: home safety questionnaires and tips, footwear, postural hypotension, exercise, assistive devices, etc.

Case Study - Frieda



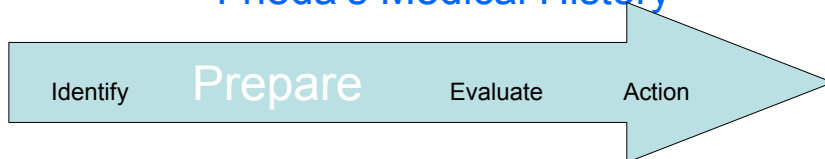
Frieda attends with daughter having been in ER with falls twice in last week

High risk faller



Proceed to
Comprehensive Falls
Evaluation

Frieda's Medical History



- + Daughter reports history of MCI but more confused last week and mixing up medications
- + Osteoarthritis
- + Insulin-dependent diabetes
- + Diabetic retinopathy
- + Diabetic neuropathy
- + Hypertension
- + Mild renal insufficiency
- + Anxiety
- + Post-herpetic neuralgia



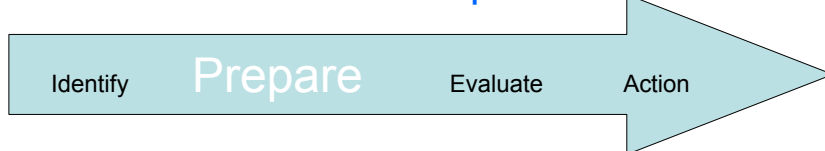
Frieda's Medications



- + Arthrotec
- + Insulin
- + HCTZ
- + Captopril
- + Micardis (ARB)
- + Lorazepam
- + Gabapentin
- + St. John's Wort



Other Self Report Forms



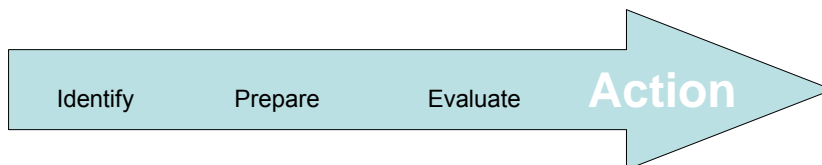
- + Home Safety Questionnaire
 - Poor lighting & clutter
 - Lives in old farm house
 - Bedroom upstairs
 - No main floor bathroom
 - Wears slippers at home
- + Description of Your Falls
 - She is very vague in recalling her falls and thinks she tripped.
 - Her daughter reports that both falls happened at night.
 - She was not seriously injured.
 - There was no loss of consciousness.

Frieda's Structured Assessment



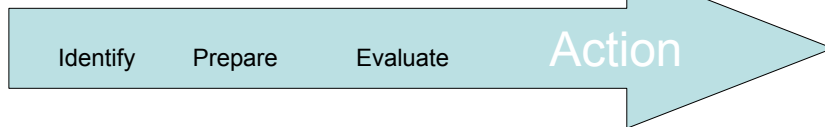
- + Medications
- + Cognitive Assessment
- + Vision - acuity, field cuts and age related conditions
- + CVS
 - Pulse and BP
 - Auscultation
- + Neuro:
 - Balance (Cerebellar and Vestibular Function)
 - Extra Pyramidal Symptoms
 - Pyramidal Tract deficits
 - Peripheral and Autonomic Neuropathy
 - Proximal Weakness
- + Musculoskeletal – Pain, strength, ROM, feet and walking aids

Modifiable Risk Factors



- + Cognitive issues – worsening ? Cause
- + Medication:
 - Polypharmacy
 - Benzodiazepine
 - Compliance (cognition)
- + Abnormal gait and impaired balance
- + Muscle weakness and wasting
- + Altered sensation – diabetic neuropathy
- + Pain
- + Environment – lighting, clutter, footwear

Issues Requiring Action



1. **Further Investigation:**
 - Causes of "acute confusion"
 - Reassess pain control and hypnotic use
2. **Multi-dimensional Management**
 - Review medications and consider compliance aids
 - Home safety assessment with modification of hazards and use of appropriate aids
 - Home environmental assessment and safety by OT
 - Assessment by PT for gait, need for exercises and gait aid
3. **Education**
 - Provide counseling and/or educational materials for specific modifiable risk factors: home safety questionnaires and tips, footwear, postural hypotension, exercise, assistive devices, etc.

Take Home Message

- ✚ Primary care teams need to annually screen all patients 65+ for fall risk.
- ✚ Most falls are predictable and preventable.
- ✚ Falls are often the presenting issue of an underlying medical condition/s.
- ✚ Significant falls are multi-factorial, therefore, require a structured multi-dimensional approach to assessment and treatment using ***Identify, Prepare, Evaluate, Action.***

Tools You Can Take to Your Practice

- + Best Practice Guidelines
- + Specific Recommendations for Primary Care
- + Assessment Guides
- + Clinician Assessment Forms
 - Falls Evaluation Initial Visit
 - Timed Up & Go Test
 - Primary Care Falls Evaluation Checklist
- + Patient Forms
 - Medical History
 - Home Safety Questionnaire
 - Description of Your Falls
 - Are You in Jeopardy? Home Safety Checklist
 - Meds Check Personal Medication Record
- + Resources available in your community

Further Resources

- + **KFLA Falls Coalition** - www.stepsafe.com
- + **Practicing Physician Education in Geriatrics Toolkits** - <http://www.gericareonline.net/tools/index.html>
- + **The Mississauga Halton Falls Prevention Resource Guide** - http://www.mississaugahaltonhin.on.ca/uploadedFiles/Home_Page/Report_and_Publications/Falls%20Prevention%20Resources%20Guide%20%202008.pdf
- + **Promising Pathways (Public Health Agency of Canada)** - http://www.phac-aspc.gc.ca/seniors-aines/pubs/Falls_Prevention/Promising_Pathways/promising_about_e.htm
- + **Report on Seniors' Falls in Canada** - http://www.phac-aspc.gc.ca/seniors-aines/pubs/seniors_falls/pdf/seniors-falls_e.pdf

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