Comprehensive Assessment of Falls

Selected Physical Examination

Type	Exam	Red Flag
Vital Signs	Orthostatic BP and pulses	> 20 mmHg drops in SBP or >15 increase in pulse from lying to standing x 3 min
	Temperature	Hypothermia and fever
Eye	Snellen chart	Visual acuity impairment
	Visual field exam	Visual field impairment
	Dix-Hallpike maneuver	Nystagmus (indicating benign positional vertigo)
Ear	Whisper test	Unable to hear whisper
	Weber/Rinnie tests	Conduction vs. neurosensory deficits
	Otoscopic exam	Cerumen impaction, perforation of TM
Neck	Carotid auscultation	Bruit
Heart	Auscultation	Murmur and arrhythmia
Musculoskeletal	Observation of arms, legs, and feet	Deformity of joints bones and feet
	Range of Motion	Limitation and deformity
Neurological	Sensory	Decreased pinprick vibration, and propioception
	Romberg	Instability
	MMSE	Cognitive impairment
	Geriatric Depression Scale	Clinical depression
	Tone	Rigidity
	Strength	Muscle weakness
Functional gait	Get-Up-And-Go Test (Rise from the chair, walk 10 feet forward, turn around walk back to the chair and sit down)	Abnormal if it takes >10 seconds to complete the test. Also watch stride, length, velocity and symmetry.
Balance	Side-by-side stance (narrow stance) x 10 seconds	Instability
	Semi-tandem stance (one foot half in front of other with feet touching) x 10 sec	Instability
	Full-tandem stance (one foot in front of other) x 10 sec	Instability
	Pull test (Gentle pull back at waist from behind while standing)	Postural instability
Mobility	Observation of use of cane, walker, personal assistance, if any	Instability and inability to use assistive device
	Presence of restraints if any	Limitation of mobility
	Footwear evaluation	Unfit shoes

Adopted from: Reuben DB, Herr KA, Pacala JT, Pollock BG, Potter JF, Selma TP. Geriatric At Your Fingertips, 2005 edition. American Geriatrics Society

Risk Factors of Falls

AGAIN I'VE FALLEN:

A Again (Patient fallen before are at higher risk to fall AGAIN.)
G Gait and balance problems
A ADL loss (Ask about abilities to *bath, dress, groom, transfer, and be continent of urine and stools*)
I Impaired cognition (e.g. Alzheimer's disease, delirium)
N Number and type of drugs (See **How to Prevent Polypharmacy**, particularly neuroleptics, sedatives/hypnotics, antidepressants, antiarrhythmics and anticonvulsants)

I' Illness (Look for new acute illness which may also occur with delirium)
V Vestibular dysfunction (e.g. Benign positional vertigo)
E Eyes, Ears impairment (Obtain eye glasses and remove cerumen in the ear)

F Feet problems
A Alcoholism
L Low blood pressure (e.g. orthostatic or postural hypotension)
L Lower extremity weakness
E Environment
N Neurological problems (e.g. stroke, Parkinson's disease)

Adopted from Saint Louis University Geriatric Evaluation Mnemonics Screening Tools (SLU GEMS)

Drugs that May Increase the Risk of Falling

Potential adverse effects of medications contributing to falls in the elderly

Medication	Adverse Drug effect
Antidepressants, caffeine, neuroleptics, stimulants	Agitation
Antiarrhythmics	Arrhythmias
Benzodiazepines, narcotics, neuroleptics, any drug with anticholinergic effects	Cognitive impairment, Confusion
Anticonvulsants, antidepressants, antihypertensives, benzodiazepines, narcotics, neuroleptics	Dizziness, Orthostatic hypotension
Antidepressants, metoclopramide, neuroleptics	Gait abnormalities, Extrapyramidal reactions
Diuretics	Increased ambulation, Urinary incontinence
Anticonvulsants, benzodiazepines, neuroleptics	Postural disturbances (problems with balance)
Anticonvulsants, antidepressants, benzodiazepines, narcotics, neuroleptics	Sedation, drowsiness
Beta-blockers, nitrates, vasodilators	Syncope
Neuroleptics, any drug with anticholinergic effects	Visual disturbances (e.g., blurred vision)

Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL)

Basic ADL's	Instrumental ADL's
Bathing	Using the telephone
Dressing	Shopping
Toileting	Food preparation
Transfers	Housekeeping
Continence	Laundry
Feeding	Transportation
	Taking medicine
	Managing money
ADL Score: ___/6	IADL Score: ___/8

Get up and Go Test

TIMED "UP AND GO" TEST (Patients who require >10 seconds for this test have limited physical mobility and may be at risk for falls.)

Instruct patient to:

1. Rise from the chair
2. Walk 10 feet (or 3 meters) forward
3. Turn around
4. Walk back to the chair
5. Sit down

Normal time to complete the test: <10 seconds

*** Observe gait and balance for abnormalities during the test. In order to reproduce real-life scenario, may have patient repeat test carrying a full glass of water ***

Diagnosis and Treatment of Orthostatic Hypotension

Orthostatic Hypotension is very common in the elderly. It increases morbidity and is an independent predictor of all cause mortality. It is defined as a fall in systolic blood pressure greater than 20mm Hg or a fall in diastolic blood pressure greater than 10mm Hg within 3 minutes of standing.

Symptoms include lightheadedness, weakness, blurred vision, fatigue, lethargy and falls. Most patients have orthostatic hypotension due to non-neurogenic causes. Drugs like vasodilators and tricyclic antidepressants are very common causes of orthostatic hypotension.

Diagnosis is based on the history and a thorough physical exam. Based on results of the history and physical examination, further testing of the heart, kidneys, and autonomic nervous system may be required in selected patients.

Nonpharmacological methods like slow position change, increased fluid and sodium intake, compression stockings and elevation of head of bed while asleep are the key to management of orthostatic hypotension.

After these methods, pharmacological treatment with fludrocortisone and midodrine should be tried. Other drugs like desmopressin acetate, xamoterol, erythropoietin and octreotide can be used as second line agents in selected patients.

Nutritional Score

Nutritional Score	YES
I have an illness or condition that made me change the kind and/or amount of food I eat.	2
I eat fewer than 2 meals per day.	3
I eat few fruits or vegetables, or milk products.	2
I have 3 or more drinks of beer, liquor or wine almost every day	2
I have tooth or mouth problems that make it hard for me to eat.	2
I don't always have enough money to buy the food I need.	4
I eat alone most of the time.	1
I take 3 or more different prescribed or over-the-counter drugs a day.	1
Without wanting to, I have lost or gained 10 pounds in the last 6 months.	2
I am not always physically able to shop, cook and/or feed myself.	2
0-2 = GOOD 3-5 = Moderate Risk 6+ = High Risk **Total**	

How to Determine Rehabilitation Potential for Inpatient Rehabilitation

1. **Cognitive function:** The patient must be able to retain new information learned in therapy. (Patients with moderate-to-severe dementia may be a poor rehab candidate.)

2. **Medical status:** The patient must have stable medical status with no contraindications to do exercises.

3. **Motivation:** The patient must have good motivation in order to benefit from rehabilitation (although lack of motivation due to depression is NOT a contraindication).

4. **Social support:** The patient must have adequate social support to continue and complete rehabilitation.

5. **Economic resources:** The patient must have appropriate health insurance (i.e. Medicare) and/or private funds to receive rehabilitation.

6. **Others:**

    a. The patient must be able to tolerate therapy for *3 hours/day, 6 days/week.*

    b. The patient requires *at least two different therapies* (i.e., physical therapy, occupational therapy, speech therapy).

    c. The patient *must be evaluated by rehabilitation specialists* (i.e. physical therapy, occupational therapy, speech therapy) in the hospital as soon as medically stable.

When to Refer to Occupational, Physical, and/or Speech Therapy

When should you consider a physical therapy referral for your patient?

If the patient:

1) Is adapting to a new disability (i.e. after stroke, hip fracture, amputation, or trauma)
2) Has significant impairment in range of motion or strength
3) Has significant balance or gait disturbance
4) Needs cane, crutches, walker or any other ambulatory aids
5) Needs training in using ambulatory aides described above
6) Needs a wheelchair
7) Has seating and positioning problems with a wheelchair
8) Has difficulty with mobility or transfer (i.e. rolling in bed, sitting up, getting up from chair/bed, standing for more than 30 seconds, walking straight forward, and going up/down stairs)

When should you consider an occupational therapy referral for your patient?

If the patient:

1) Needs assistance in Activities of Daily living (ADL) and Instrumental Activities of Daily Living (IADL).
2) Is adapting to new disability (i.e. after stroke, hip fracture, amputation, or trauma)
3) Displays poor awareness of the environment and limited judgment about safety
4) Needs splint or orthotic fabrication to correct arm and leg positioning (i.e. resting hand splint and drop foot splint)
5) Needs adaptive equipments for work and home
6) Requires assessment of the home environment for safety and/or possible modification (=refer to home OT)
7) Needs training in using equipments at home and in the community

When should you consider a speech therapy referral for your patient?

If the patient:

1) Develops swallowing difficulty (i.e. pocketing within mouth, drooling, excessive chewing, decreased attempts at food intake, significant increased time required for mealtime intake)
2) Develops decreased communication abilities, expressively and/or receptively
3) Develops difficulty with organizing and processing thoughts, memory, sequencing, problem solving, and judgment

Adapted from guidelines for the use of assistive technology: Evaluation, Referral, Prescription. 2nd ed., and SLU GEM Handbook developed by St. Louis University Geriatrics Division.