

You CAN help reduce falls in older people!

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Stopping Elderly
Accidents, Deaths & Injuries



OREGON
GERIATRIC
EDUCATION
CENTER




With input from:

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What we hope to accomplish:

- Understand STEADI and brainstorm ways to implement locally
- Share best practices for fall prevention in rural communities



What have been your
experiences with older
adults and falls?

Mrs. D



- Delightful 85 yo woman with a history of HTN, HLD, DMII, and overactive bladder
- 911 called to her home for confusion, fatigue, and she can't get up from a fall
- She is mildly confused, can't remember names, and her son worries she may not be safe at home anymore
- Luckily, she has no major injuries and does not need to be transported to the ED

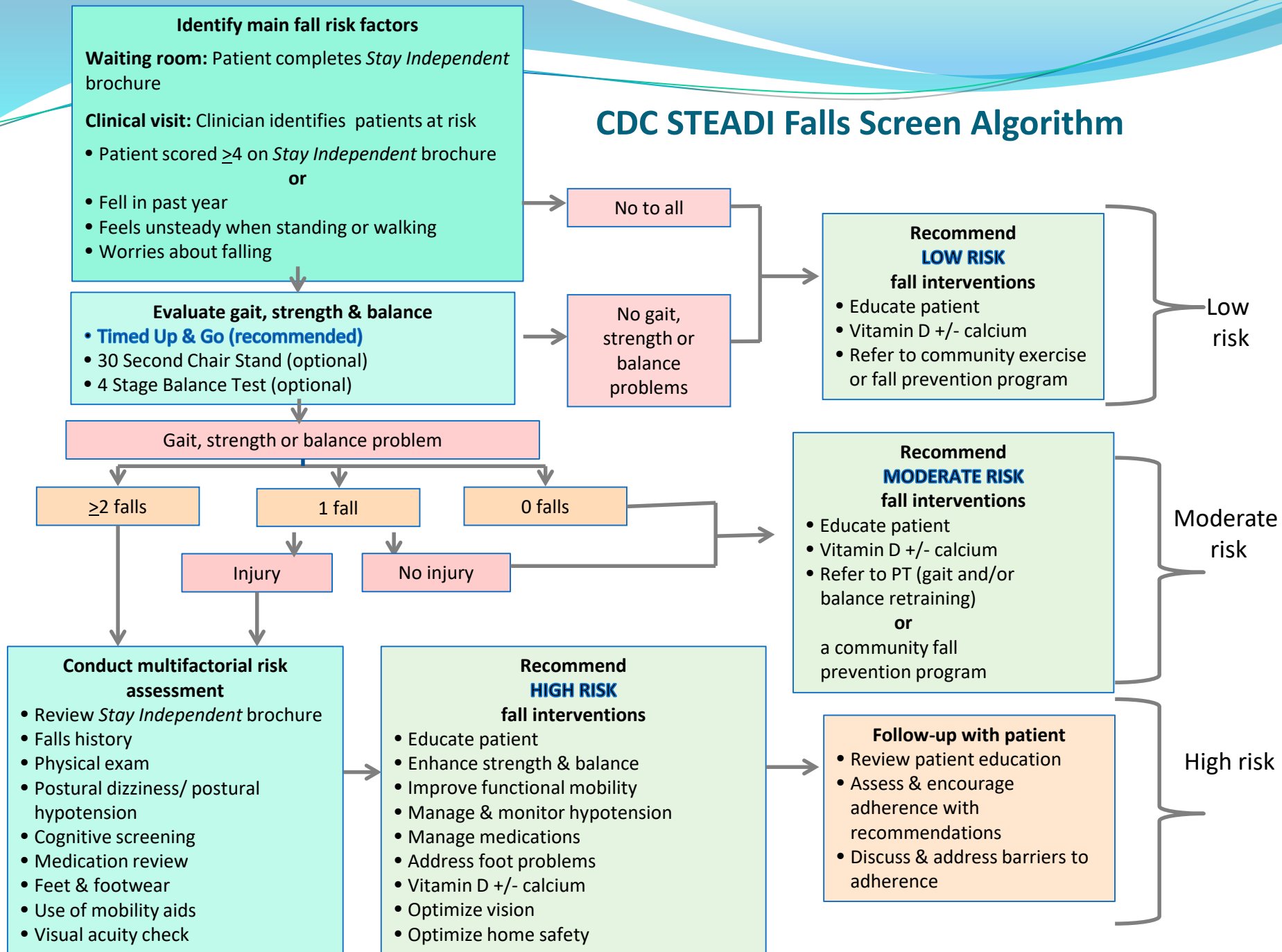
Mrs. D - PCP visit the next day

- Lisinopril 40 mg daily
- Metformin 1000 mg BID
- Atenolol 50 mg BID
- Clonidine 0.1 mg daily
- HCTZ 25 mg daily
- Vitamin D 400 IU daily
- Tylenol PM prn
- Citalopram 20 mg daily
- Atorvastatin 20 mg qhs
- Oxybutynin 5 mg qd
- BP 118/80, standing 98/54, HR 58
- Weight down 10 pounds (130#)
- Heart irregular, lungs clear
- Mild ankle edema
- TUG 25 seconds, and she uses her hands to stand.
- Gait unsteady with walker, knees hurt with walking
- Creatinine is 1.0
- HbA_{1c} is 7.2.
- LDL 112

Falls by the Numbers

2.4 million	# of 65+ patients seen in ED for falls in 2012 (CDC)
1st	Falls as leading cause of injurious deaths for 65+ (CDC, 2011)
22,900	Fall-related deaths in 65+ patients (CDC, 2011) (next highest was 6,200 MV traffic-related deaths)
600	Oregon seniors who died of a fall (OR, 2012)
3rd	Most costly hospitalized condition after cancer, heart disease; by 2020, \$55 billion/yr
8,600	Oregon seniors hospitalized due to a fall (OR, 2012)
60%	Oregon seniors who are discharged into LTC after falling (OR, 2012)
26x	Rate of fatal falls for seniors 85+ (vs 65-74)
100-200	# of falls reported by typical nursing home/year (100-bed)
50-75%	Nursing home residents who fall/year; 2x rate of community living older adults

CDC STEADI Falls Screen Algorithm



Four Things You Can Do to Prevent Falls:

① **Speak up.**

Talk openly with your healthcare provider about fall risks and prevention. Ask your doctor or pharmacist to review your medicines.

② **Keep moving.**

Begin an exercise program to improve your leg strength and balance.

③ **Get an annual eye exam.**

Replace eyeglasses as needed.

④ **Make your home safer.**

Remove clutter and tripping hazards.

Learn More

Contact your local community or senior center for information on exercise, fall prevention programs, and options for improving home safety, or visit:

- go.usa.gov/xN9XA
- www.stopfalls.org



1 in 4 people 65 and older falls each year.

Stay Independent

Learn more about fall prevention.



Check Your Risk for Falling

Circle "Yes" or "No" for each statement below			Why it matters
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.

Total

Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.

Tests for Gait, Strength, and Balance

- The Timed Up and Go (TUG)
 - Stand up from chair without using arms
 - Walk 10 feet
 - Turn around
 - Go back to chair
 - Sit down
 - At risk for falls if > 15 seconds
- Other possible performance tests:
 - 30-Second Chair Stand Test
 - 4-Stage Balance Test (4 steps, 10 seconds each)
 - Tinetti Gait and Balance



If the Patient Screens Positive for Fall Risk

- **Further assessment:** gait, orthostasis, cardiac problems, vision, cognitive screen
- **Exercise program** to prevent falls: Tai Chi is best
- **Vitamin D, calcium supplementation**
- **Reduction of risky medications** and total medications
- **Environmental modifications**
 - Eyewear, footwear, gait aids
 - Home safety, fear of falls

How Much Do these Things Help to Reduce the Risk of Falls?

- Tai Chi- 49% reduced risk for falls
- Muscle strengthening/ balance retraining- 17% reduced risk
- Vitamin D supplementation- 26% reduced risk
- Withdrawal of psychotropic meds- 66% reduced risk
- Home safety assessment for person with history of falls- 34% reduced risk

Cost Effectiveness of Falls Prevention Interventions

Intervention	Cost (2007 \$)	Relative Risk (Confidence Interval)
Psychotropic withdrawal	160	0.34 (0.16-0.74)
Group Tai Chi	104	0.51 (0.36- 0.73)
Home modification	326	0.66 (0.54- 0.81)
Vitamin D supplementation	99	0.74 (0.61- 0.88)
Muscle and balance training	371	0.83 (0.66- 0.98)

If focus only on cost, Vitamin D has highest net benefit

Tai Chi and Falls Reduction in Older Adults

- ✓ 6-month RCT in Oregon of 3x/wk Tai Chi vs. stretching
- ✓ 256 inactive, home-living elders (age 72-92)
- ✓ 6 month study

	Tai Chi	Stretching	
Falls	38%	73%	$p < .01$
Fallers	28%	46%	$p = .01$
Inj. falls	7%	18%	$p = .03$

Tai-chi group also significantly better in balance, physical performance & fear of falling

Community programs

Tai Chi: Moving for Better Balance

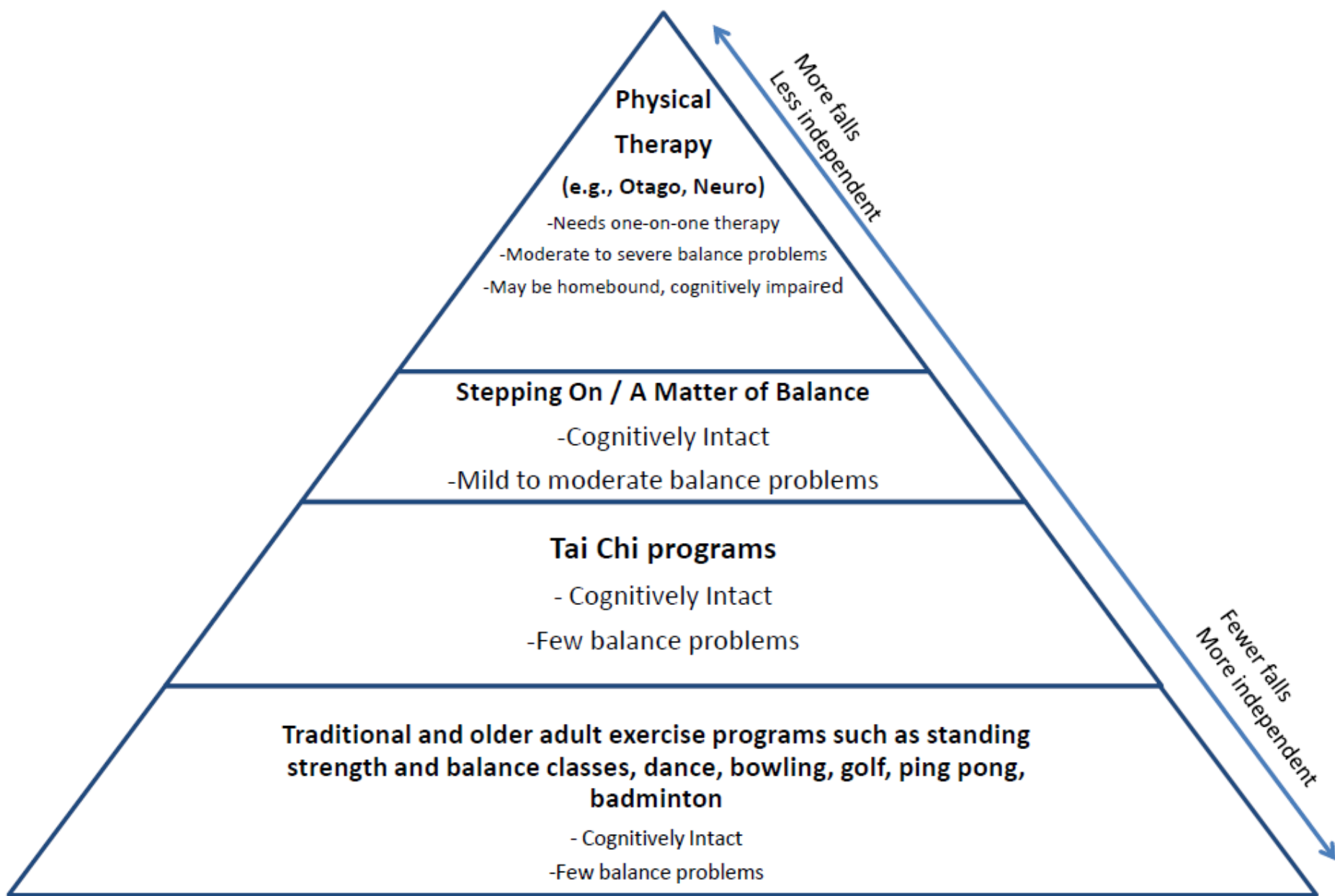
- Developed at Oregon Research Institute
- Fitness centers, health care, parks and recreation, senior centers, living communities

Stepping On

- Taught by health professionals
- Classes at Providence, Legacy, the Portland VA Medical Center, senior living, fitness centers

Otago Exercise Program

- For homebound seniors
- Taught by PT or OT
- Taught by personal trainers through NW Seniors and People with Disabilities and Beyond the Clinic in Portland



High-Risk Medications for Falls

- Psychoactive medications
 - Antipsychotics (e.g., Haldol, Risperdal)
 - Antianxiety drugs (Benzodiazepines, e.g., Xanax, Ativan)
 - Hypnotics (e.g., Ambien, Sonata)
 - Antidepressants (e.g., Tricyclics, Zoloft, Effexor)
- Opioids (e.g., hydrocodone, oxycodone)
- Antiparkinson (e.g., Sinemet)
- Antiepileptics (e.g., Tegretol, Dilantin)
- Anticholinergics (e.g., Ditropan, Detrol)
- Cardiovascular (e.g., diuretics, antihypertensives)

Drugs to Avoid in Older Adults

- Prochlorperazine
- Promethazine
- Amitriptyline (TCAs)
- Doxepin
- Meperidine
- Zolpidem, temazepam
- Tylenol PM
- Diphenhydramine, alone or in any product
- H₂ blockers
- Haldol esp if LBD/PD
- Glyburide
- Dicyclomine
- Theophylline
- Benzodiazepines

Footwear Style & Fall Risk

Prospective 2-year study of independent elders (327 fallers compared to 327 controls) found:

- Footwear *matters*
 - Safest shoes = **athletic & canvas shoes**
(other types increased falls by 70%)
 - Going barefoot dramatically increased falls 10-fold
(1000%)

Single-Lens Distance Vision Glasses May Reduce Falls

RCT of 606 multifocal wearers, avg age 80, who had fallen in past year or had Timed Up and Go >15 seconds found:

- Falls were prevented by **getting rid of bifocals and progressive lenses** for subjects with above-median levels of outdoor activity
- If subjects NOT active, single lenses increased falls

Home Safety Hazards

- Consider a home safety evaluation by OT
- Uneven or slippery surfaces
(e.g., bathroom floor after shower or if resident incontinent)
- Throw rugs or loose carpets, mats
- Poor lighting (insufficient or uneven)
- Items that are difficult to reach
- Electrical cords (long, unsecured); oxygen tubing
- Chairs/toilet too low and/or without arms

Home Modifications

- Edges of stairs, uneven surfaces marked
- No (or secured) throw rugs, mats, long electrical cords
- Less clutter (easier said than done!)
- Chairs, toilet at appropriate height
- Furniture arranged so provides assistance, not obstacles
- Night lights
- Nonslip pads in shower, tub
- Grab bars in shower, next to toilet (raised, handbars)
- Handrails along staircases
- Even, non-glare lighting

Multi-Component Falls Prevention Interventions

Rec	Problem	Interventions	Referral prn
A	Function, fear of falling, and unsafe home environment	Home safety eval (OT); PT; mobility/gait aid eval (PT); Tai Chi; Otago	PT, OT, ST (if MCI); pelvic floor PT, MSW
A	Vitamin D/ Calcium	Recommend 4000 units D ₃ & 1200-1500 Ca from all sources; goal D>30	NA
B	Visual impairment	Review meds affecting vision, switch bifocals to single focal distance lenses (NNT=2!)	Optometry; Ophthalmology
B	Manage HR/rhythm abnormalities	Holter monitoring, medication optimization, hydration, pacer	Cardiology
B	Medication/ Polypharmacy	Med optimization & minimization; gradual dose reduction	NCM/PharmD; psych MD; geri consult
C	Hypotension, Orthostasis, Dizziness	Establish right goal; Med titration; hydration; compression stockings; warm up exercises	Neurovestibular rehab; PT/OT
C	Feet/footwear	Avoid bare feet, slippers, flip flops	Podiatry
	Morbidities (in addition to above)	Optimize treatment of PD, UI, COPD, DM2, OA/pain, MCI, MS, CHF, mood	As needed

Mrs. Beech has fallen- and she also has dementia

Dementia and Falls

Glenise McKenzie,
PhD, RN, MN

Vicki Cotrell, PhD



Falls and Dementia

- Cognitively-impaired patients compared to cognitively intact:
 - more likely to be fallers or recurrent fallers (8Xs)
 - more likely to sustain an injury
 - higher incidence of nursing home discharges
 - significantly higher mortality

Allan LM, Ballard CG, Rowan EN, Kenny RA. Incidence and prediction of falls in dementia: A prospective study in older people. *PLoS One*. 2009;4(5):e5521. doi:10.1371/journal.pone.0005521

Vassallo M, Mallela SK, Williams A, Kwan J, Allen S, Sharma JC. Fall risk factors in elderly patients with cognitive impairment on rehabilitation wards. *Geriatr Gerontol Int*. 2009;9(1):41-46.

Fall Risk – Specific to Dementia

- Type of dementia (DLB, PD = >risk)
- Severity of dementia (MMSE <20)
- Unsafe gait
- Mood/Behavioral disturbances (>depression)
- Symptomatic orthostatic hypotension
- Use of psychotropic drugs

Allan LM, Ballard CG, Rowan EN, Kenny RA. Incidence and prediction of falls in dementia: A prospective study in older people. *PLoS One*. 2009;4(5):e5521. doi:10.1371/journal.pone.0005521

Härlein J, Dassen T, Halfens RJ, Heinze C. Fall risk factors in older people with dementia or cognitive impairment: A systematic review. *J Adv Nurs*. 2009;65(5):922-933.

Kröpelin TF, Neyens JC, Halfens RJ, Kempen GI, Hamers JP. Fall determinants in older long-term care residents with dementia: a systematic review. *Int Psychogeriatr*. 2013;25(4):549-563. doi:10.1017/S1041610212001937.

Vassallo M, Mallela SK, Williams A, Kwan J, Allen S, Sharma JC. Fall risk factors in elderly patients with cognitive impairment on rehabilitation wards. *Geriatr Gerontol Int*. 2009;9(1):41-46.

Falls and Dementia - Circumstances

- Half of falls occur during evening and night hours
- Peak fall time is 5-7 pm
- Most falls occur unobserved and in the resident's room
- Most falls occur while walking, standing up or sitting down unassisted

Pellfolk T, Gustafsson T, Gustafson Y, Karlsson S. Risk factors for falls among residents with dementia living in group dwellings. *Int Psychogeriatr*. 2009;21(1):187-194. doi:10.1017/S1041610208007837

What you can do for Mrs. Beech if she also has dementia?

- Engage family and other caregivers
- Awareness of increased risk (mealtime, nighttime)
- Pay attention and manage orthostatic blood pressure, vitamin D,
- Medication review/reduce or stop psychotropics
- Investigate and treat depression, anxiety and delirium
- Implement strategies to help make it as safe and interesting as possible for patient to increase activity
 - What are some of these strategies?

Strategies to Reduce Falls in Patients with Dementia

ANTICIPATE NEEDS: **Daytime**

- Engage in **activities/exercise**
- Evaluate and treat **incontinence**: prompted voiding as needed (BIG help!).
- Minimize naps to insure quality **sleep** at night
- Manage **pain**- may become agitated and wander because they hurt but they can't recognize they are in pain- consider trail of scheduled Tylenol
- Adequate **nutrition**- dementia patients don't recognize hunger but it can make them restless

Strategies to Reduce Falls in Patients with Dementia

ANTICIPATE NEEDS: **Nighttime**

- Scheduled **toileting** before bed. Anticipate toileting needs in night.
- Manage **pain**- evening dose of Tylenol, heating pad before bed, gentle stretches
- Adequate **nutrition**- consider nighttime snack
- Good night **lights** and clear path to bathroom
- **Sleep** hygiene and schedule. In bed no more than 8 hours.

Back to Mrs. D

85 yo woman who presents with gradually worsening confusion, fatigue, and a recent fall.

BP 118/80 → 98/54. HR 58. RR 12. T 98.6 Wt. 130lbs

Medications:

- Lisinopril 40 mg daily
- Metformin 1000 mg BID
- Atenolol 50 mg BID
- Clonidine 0.1 mg daily
- HCTZ 25 mg daily
- Vitamin D 400 IU daily
- Tylenol PM prn
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What could you do to help reduce risk for falls?

- Whatever your role, talk to the person next to you about how you can reduce falls
- We will have a group report out, and you will describe your partner's role in fall prevention

Mrs. B

Interventions:

Refer to PT (Medicare will pay!), topical pain rx, pelvic floor exercises and timed voiding, home safety evaluation, Tai chi class after PT

Evaluation Post Intervention:

- Vitals: BP 140/78, seated. 135/74 standing, HR 74
- No more episodes of confusion and feels she has more energy
- No more falls
- She and her son are extremely pleased with her care!



Med List Now:

- Lisinopril 20 mg daily
- Calcium 600 mg daily
- D3 2000 IU Daily
- Citalopram 20 mg daily
- Tylenol 1000 mg TID
- Diclofenac gel for knees

In Summary...

- Falls screening
 - For everyone 75+ (or 65+ for quality measures)
 - For those at risk: Timed Up and Go is easy and helpful, vision, and orthostatics to get started
 - Fear of falling matters- and can be reduced
- Evidence-based strategies to reduce risk of falls
 - Exercise including Tai Chi, PT if needed
 - Vitamin D
 - Medication review and reduction
 - Environmental approaches

My grandmother started walking five miles a day when she was sixty.

She's ninety-seven now, and we don't know where the hell she is.

-- Ellen DeGeneres

http://www.dailymotion.com/video/xat3md_tai-chi-24-step-form_school

Also check out
Youtube/Zuanchuan,
James Lusk of Portland

