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SUPERIOR HEALTH
Quality Alliance

Go Beyond "They Just Lost Their Balance" Identifying the Root Cause of Falls and Implementing Successful Interventions

Dr. Kathleen E. Walsh
University of Wisconsin School of Medicine and Public Health
March 26, 2024

Go Beyond "They Just Lost Their Balance"

Identifying the Root Cause of Falls and Implementing Successful Interventions

Dr. Kathleen E. Walsh
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University of Wisconsin School of Medicine and Public Health
Department of Medicine
Associate Director UW Faint and Fall Clinic
William S. Middleton Memorial Veterans Hospital

No relevant financial relationships to disclose

Objectives

- Recognize common causes of falls in the older population
- Determine the appropriate diagnostic assessment of people who fall
- Integrate targeted intervention and treatment strategies to reduce fall risk

Outline

Just the facts…

Who is at risk?

Multifactorial Assessment

Interventions

Bottom Line

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

ncoa
National Council on Aging

11

Every 11 seconds, an older adult is treated in the emergency room for a fall

FALLS AMONG OLDER ADULTS ARE

COSTLY

$50 Billion Annually

$29 Billion Medicare

$12 Billion Private/Out-of-Pocket

$9 Billion Medicaid

COMMON

1 in 4

Older adults (65+) falls each year

PREVENTABLE

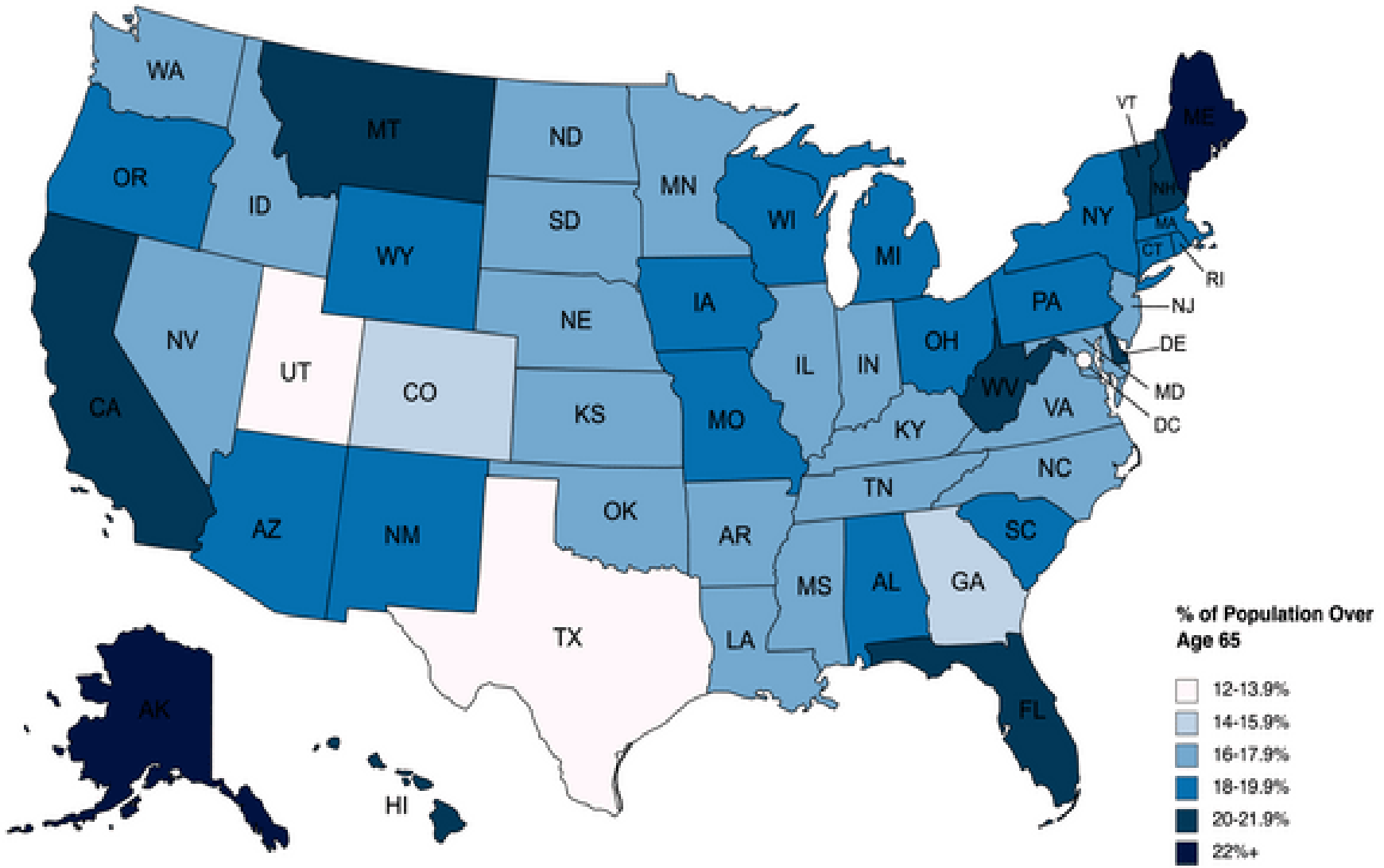
Clinicians can use **STEADI** to prevent falls & reduce costs

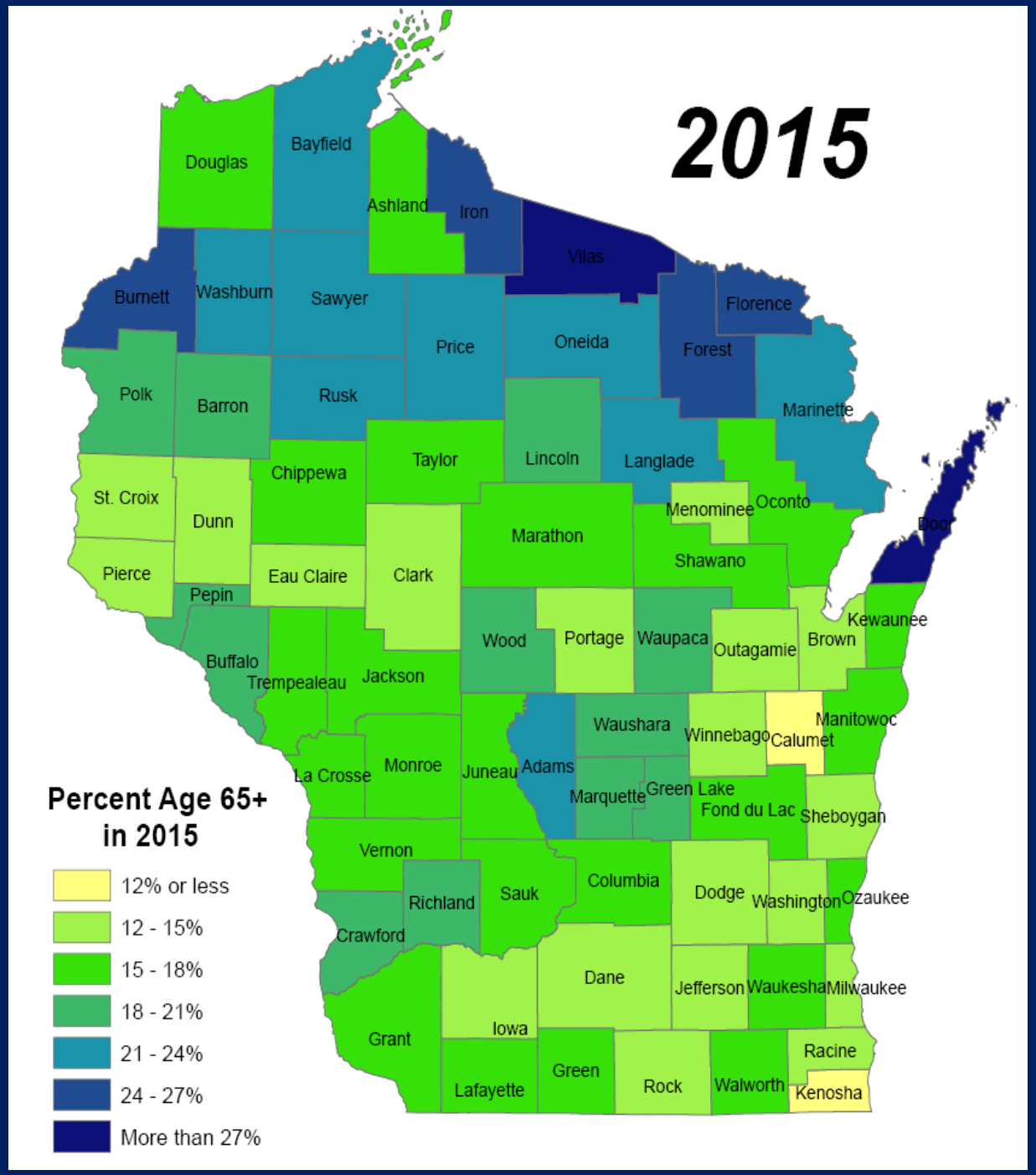
Florence CS, Bergen G, Atherly A, Burns ER, Stevens JA, Drake C. Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society*, March 2018.

287913-A

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

% of Population Over Age 65 in the US

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Langlade
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Buffalo
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Marquette
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Fond du Lac
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Vernon
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Richland
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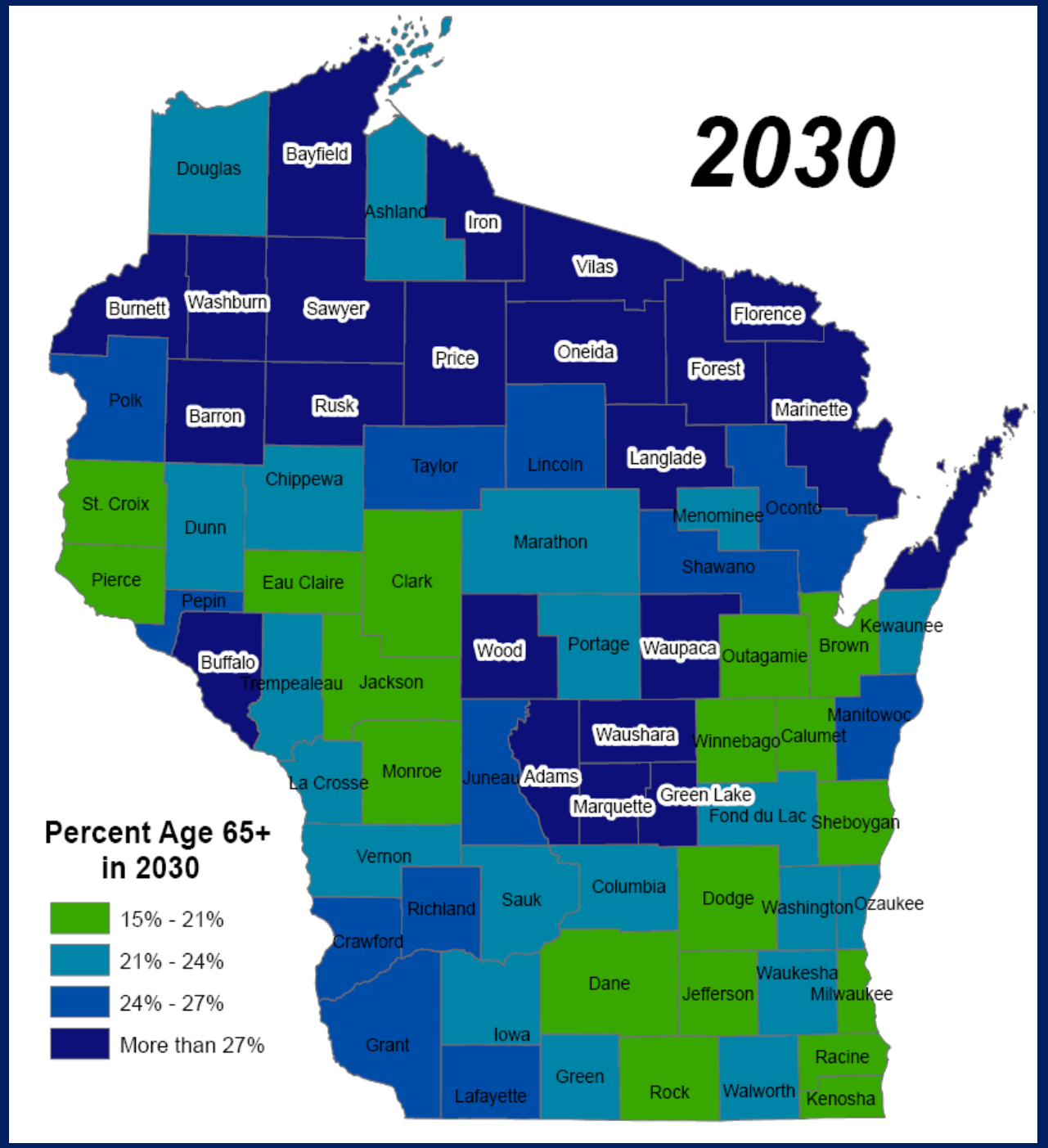
Ozaukee
Crawford
Dane
Jefferson
Waukesha
Milwaukee
Iowa
Grant
Racine
Lafayette
Green
Rock
Walworth
Kenosha
Percent Age 65+ in 2015
12% or less
12 - 15%
15 - 18%
18 - 21%
21 - 24%
24 - 27%
More than 27%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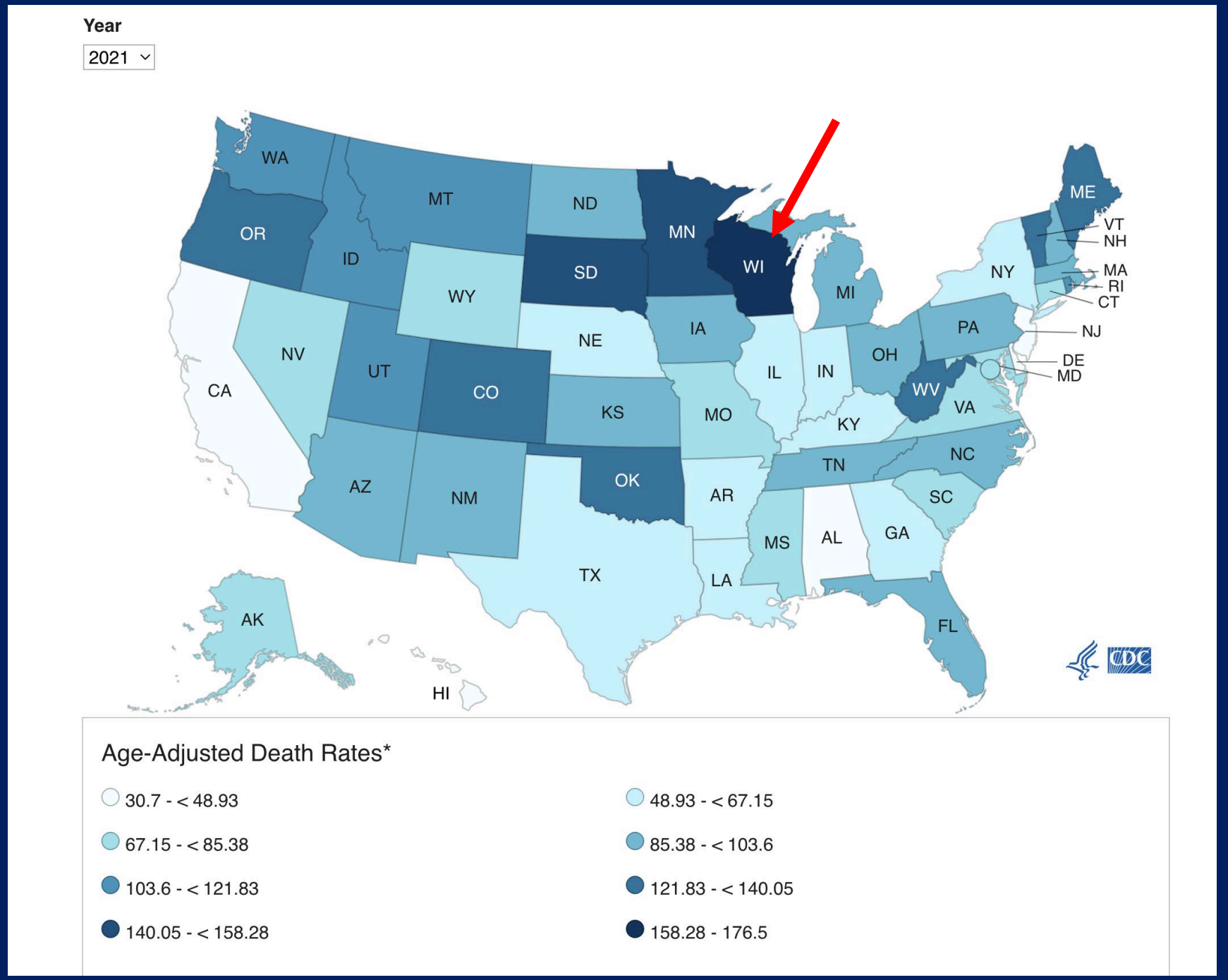
Racine
Lafayette
Green
Rock
Walworth
Kenosha
Percent Age 65+ in 2030
15% - 21%
21% - 24%
24% - 27%
More than 27%

CDC DATA 2021

% of adults 65+ who FELL in 2021 in each state

WI = 27%!



Why more deadly falls in Wisconsin?

- The population is older than the U.S. average
- Icy winters
- Excessive drinking, including among the **elderly**
- Officials in WI might report **FALLS** as a cause of death more than in other states

https://www.cdc.gov/mmwr/volumes/67/wr/mm6718a1.htm. National Center for Health Statistics. Health, United States, 2016: with chartbook on long-term trends in health. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2017.

Preventing Falls at Your Facility

Agency for Healthcare Research and Quality (AHRQ) Falls Toolkit
Centers for Disease Control and Prevention (CDC) STEADI Program

1) Assess staff knowledge

- Fall Knowledge Test (Form 2E) – 13 multiple choice self assessment questions

(*https://www.ahrq.gov/patient-safety/settings/hospital/fall-prevention/toolkit/fall-knowledge-test.html*)

2) Is your patient at risk? Why?

- Morse Fall Scale (https://www.unmc.edu/patientsafety/_documents/roadmap/capture-huddle-guide-5-1.pdf)
- STEADI Checklist (https://www.cdc.gov/steadi/pdf/STEADI-Form-RiskFactorsCk-508.pdf)

3) Post Fall Assessment – the "Huddle"

https://www.unmc.edu/patient-safety/documents/roadmap/capture-huddle-guide-5-1.pdf

Case Reports
Falls!


JOHN

John

SHX: widowed, retired plumber, no family near by

PMHX: HTN, HLD, T2DM, glaucoma, Vit D deficiency, aortic valve replacement, OSA (intolerant of CPAP)

MEDS: Lisinopril, Metformin, Warfarin, Timolol eye drops, Vitamin D

VSS – stable, not orthostatic

EXAM: gait slow, steady with mild balance deficits; uses 4WW

LABS: chronic anemia, mild RI

LOUISE

Louise

PMHX:

- HTN
- Parkinson's Disease
- Mild osteoarthritis
- Urge Urinary Incontinence
- Intermittent Constipation
- Hearing loss
- Macular degeneration
- Anxiety
- Insomnia

Louise Medications

1. Lisinopril/HCTZ 20/25 daily
2. Amlodipine 10 mg daily
3. Aspirin 81 mg daily
4. Carbidopa-Levodopa 4x/day
5. Oxybutynin 5 mg daily
6. MVI
7. Tylenol Arthritis 650 mg
8. Vitamin D 2000 units daily
8. Lorazepam 0.5 to 1 mg prn
9. Omeprazole 20 mg daily
11. Senna 8.6 mg daily
12. Docusate 100 mg 2x/day

Louise Physical Exam and Labs

Vitals: +Orthostatic

137/65 HR 62 (Sitting)

78/57 HR 88 (Standing)

"Dizzy"

135 lbs = lost 15 lbs *over 8 months*

LABS

- CBC - Hgb 9.8
- Cr 1.3
- Electrolytes wnl
- Hemoglobin A1C 6.4%

ECG: NSR nonspecific ST changes

ECHO (last year): mild AS, mild diastolic dysfunction, nml EF


TOM

TOM

Medical History

- Glaucoma (legally Blind)
- Severe Hearing Loss
- B/L knee pain
- BPH
- Hx subdural hematoma from previous falls

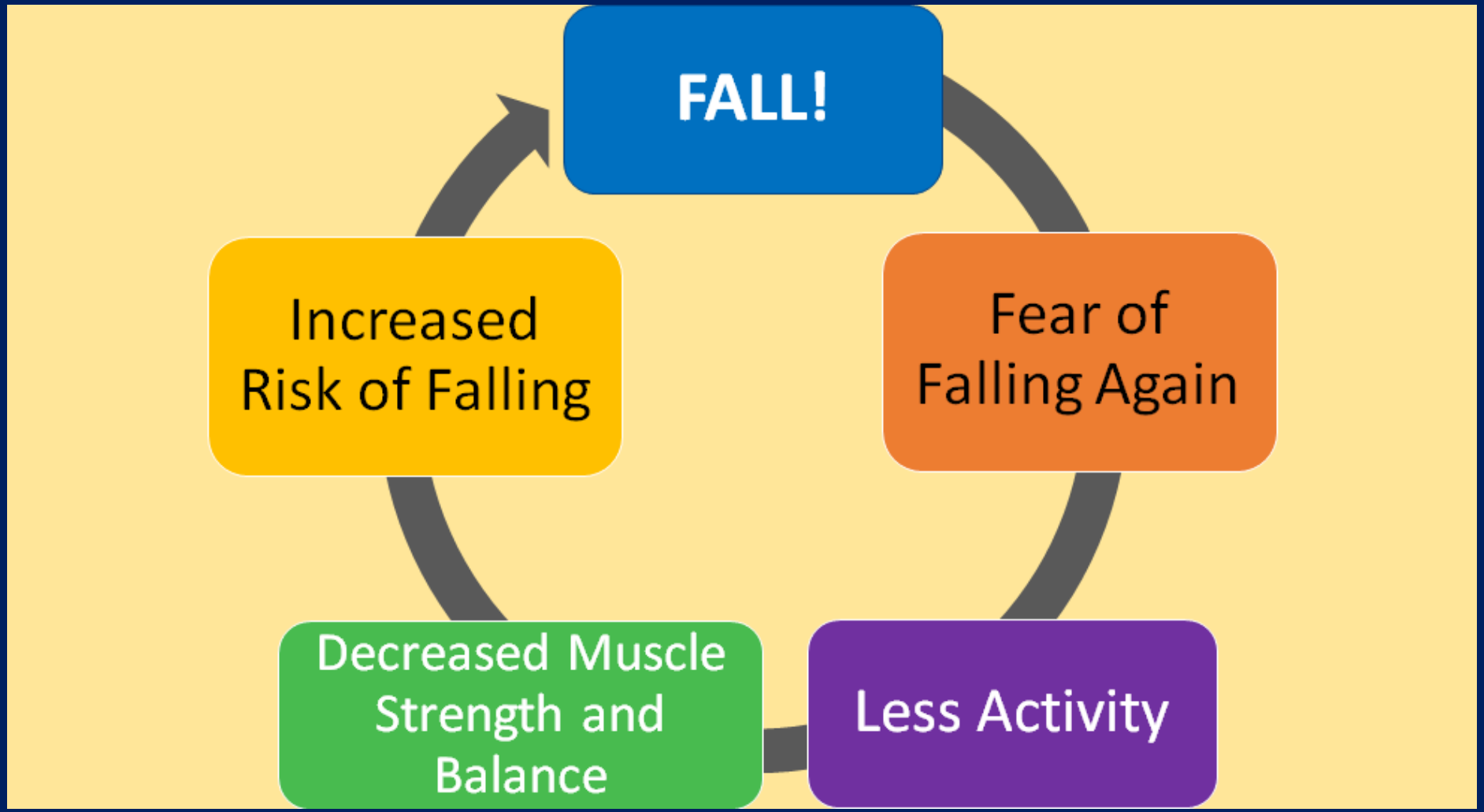
Medications

- Glaucoma eye drops
- Tylenol
- Flomax


DETECTIVE


Why?

“FEAR OF FALLING CYCLE”



Landers MR, et.al. Development of a Scale to Assess Avoidance Behavior Due to a Fear of Falling: The Fear of Falling Avoidance Behavior Questionnaire, Physical Therapy, Volume 91, Issue 8, 1 August 2011, 1253–1265.

4 Key Steps to Falls Assessment, Treatment and Prevention

1. Detailed History – what happened?
2. Multifactorial Risk Assessment
3. Individualized Interventions
4. “Steadi” Your Care Team

“Fall” History

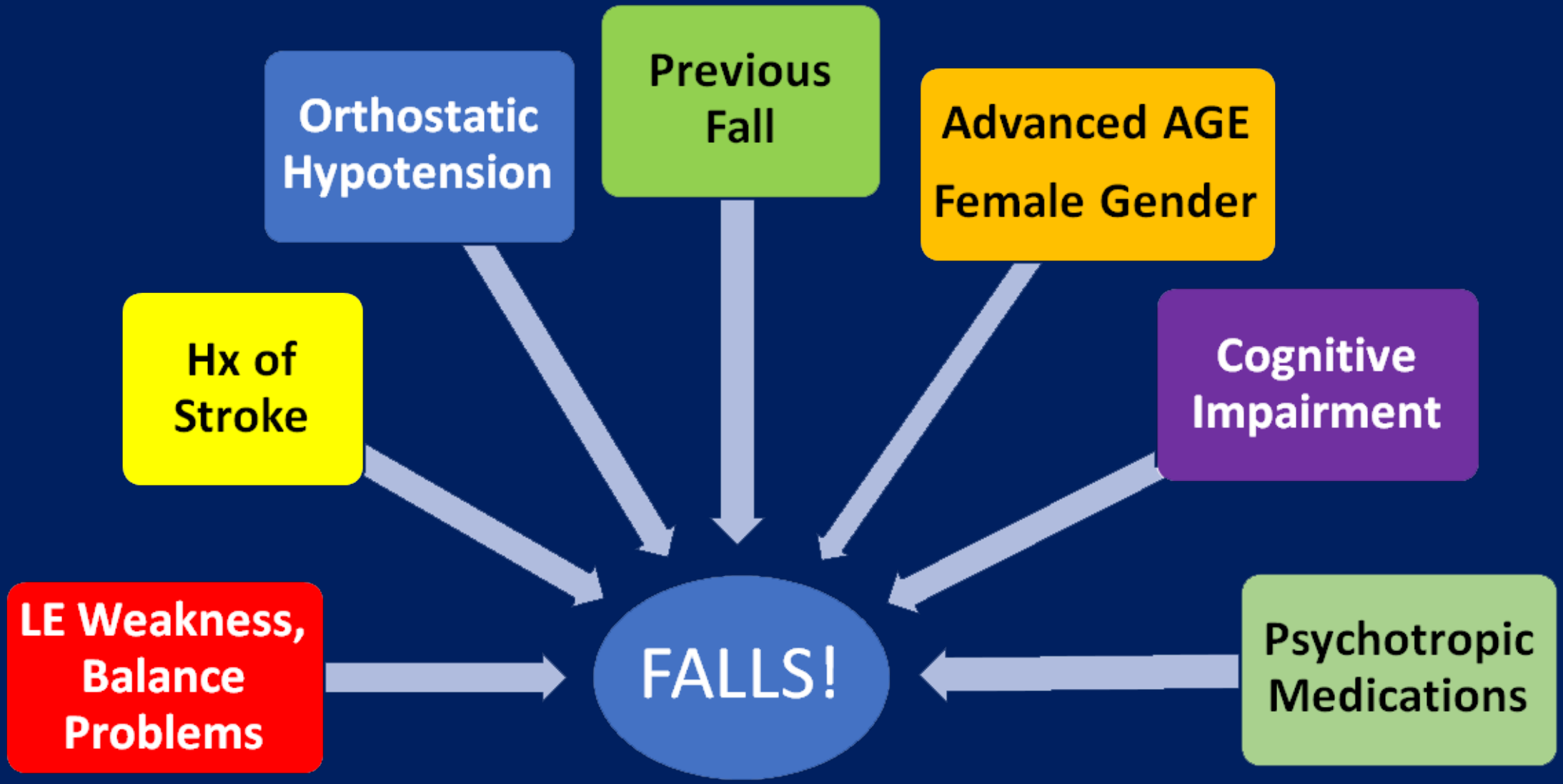
- Where did you fall?
- Time of day?
- What were you doing?
- Carrying anything?
- Do you remember falling?
- How were you feeling before you fell?
- What were you wearing? *(clothing and footwear)*

Fall History Questions Continued!

- Using assistive device?
  - ✓cane, walker (type?)
- New or recent changes in medications
  - ✓(Rx and OTC)
- Social history
  - ✓Living environment
- Any witnesses?
- Any injuries?


Risk
Factor

Known Risk Factors Associated with Falls



UpToDate: Falls in older persons: Risk Factors and patient evaluation June, 2019


LOW
HIGH
RISK ASSESSMENT

#2 Multifactorial Risk Assessment

Postural Vital Signs
- Orthostatic hypotension

Visual Acuity
- Acuity check
- Hx Visual Impairment
- Glasses? Type

Neurological/MSK
- Gait, Strength & Balance
- Focal Abnormalities
- Assistive device

Feet and Footwear
- Bunions, nail/skin abnormalities
- Choice in footwear

Cardiovascular
- CHF, peripheral edema, arrhythmias

Mental Status
- Cognition, judgment

#2 Multifactorial Risk Assessment

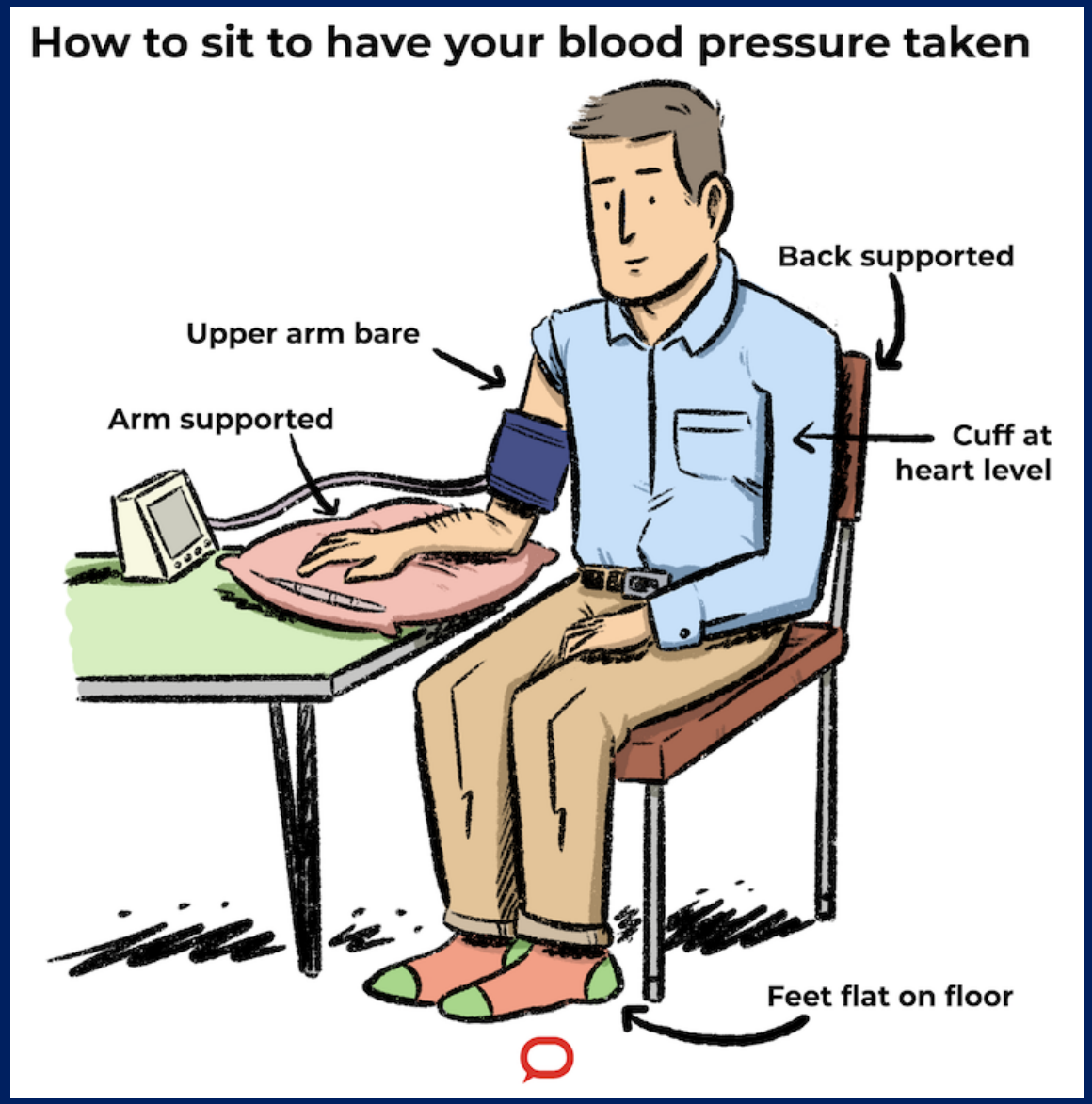
Medications

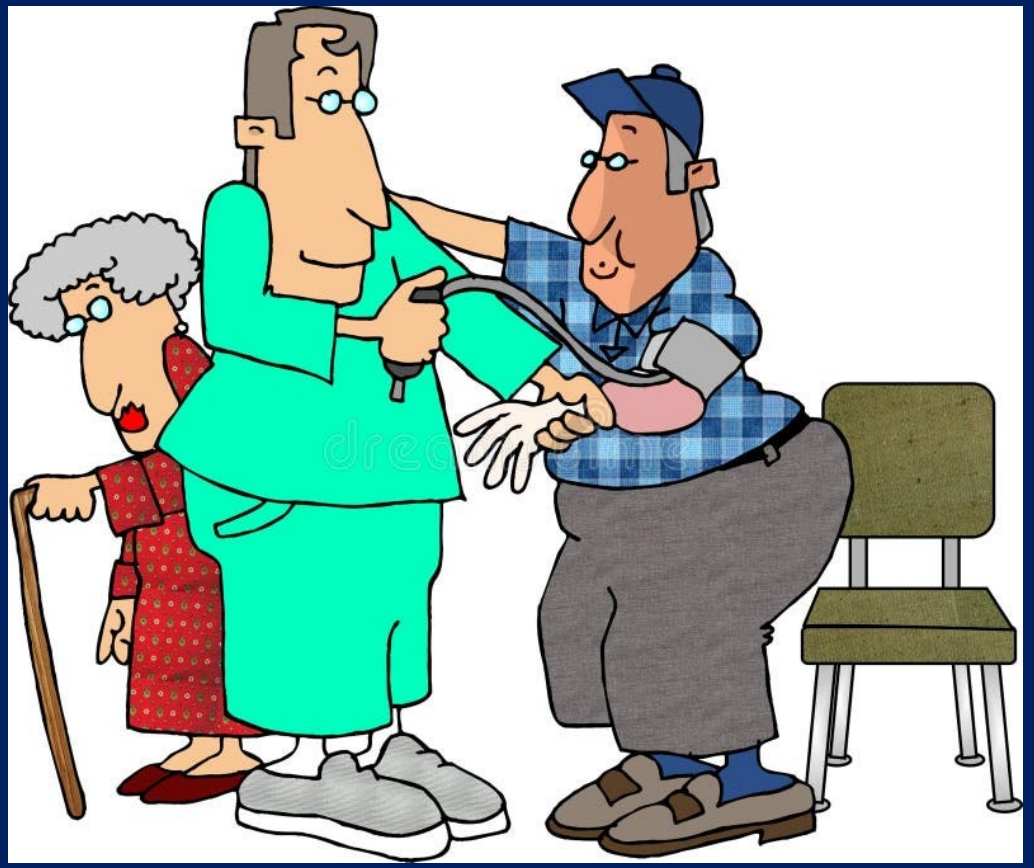
- Polypharmacy, high risk medications

Social History

- Living arrangements, support, stressors

Checking Blood Pressure





Standing for 1 to 3 minutes

Measuring Orthostatic Blood Pressure

1. Have the patient lie down for 5 minutes
2. Measure blood pressure and pulse rate
3. Have the patient stand
4. Repeat blood pressure and pulse rate measurements after standing 1 and 3-5 minutes

Positive = A drop in systolic BP≥ 20 mm Hg, or in diastolic BP of ≥10 mm Hg

Orthostatic Hypotension and Falls in Older Adults: A Systematic Review and Meta-analysis

Design: Systematic review and meta-analysis of the cross-sectional and longitudinal studies assessing the association between orthostatic hypotension and falls (PROSPERO database)

Measure: Unadjusted OR of the association between OH and Falls

Results: 63 studies (51,800 individuals) systematic review and 50 studies (49,164 individuals) in the meta-analysis

- OH was positively associated with falls (OR 1.73, 95% CI)

Mol, Arjen et al. J Am Med Dir Assoc. 2019 May;20(5):589-597

Delayed Orthostatic Hypotension

Symptoms are gradual in onset beginning with weakness, dizziness and lightheadedness ultimately leading to near syncope or syncope 3 to 45 minutes later

→ usually see a slow, progressive decrease in BP

→ common in patients with dysautonomia (Parkinson's, Lewy Body Dementia, Multiple System Atrophy, ETOH related neuropathy, Diabetes, Amyloid)

Gibbons CH, Freeman R. Clinical implications of delayed orthostatic hypotension: A 10-year follow-up study. Neurology. 2015;85(16):1362–1367.

Orthostatic Hypotension– Interventions "Lifestyle Modifications"

- Decrease or eliminate potential offending medications (e.g. BP medications, diuretics)
- Slowly rise from chair/bed to standing
- "March" legs up & down x 1-2 minutes before standing
- Hydration, salt in diet (if not contraindicated)
- Elevated head of bed 15 to 30 degrees *(decreases nocturia and supine hypertension)*
- Small frequent meals *(avoid heavy carbohydrate intake)*
- Compression sleeves, stockings, shorts, pelvic binder

Arnold AC, Raj SR. Orthostatic Hypotension: A Practical Approach to Investigation and Management. Can J Cardiol. 2017;33(12):1725–1728. Shibao C, Lipsitz LA, Biaggioni I. ASH position paper: evaluation and treatment of orthostatic hypotension. J Clin Hypertens. 2013;15:147–53.

Compression Options

Mills PB, Fung CK, et.al. Nonpharmacologic management of orthostatic hypotension: a systematic review. Arch Phys Med Rehabil. 2015 Feb;96(2):366-375

Medications used to treat orthostatic hypotension

- Fludrocortisone (0.05-0.3mg daily)

A synthetic selective mineralocorticoid; retains salt and water and promotes plasma volume expansion. AVOID in patients with heart failure, severe coronary artery disease

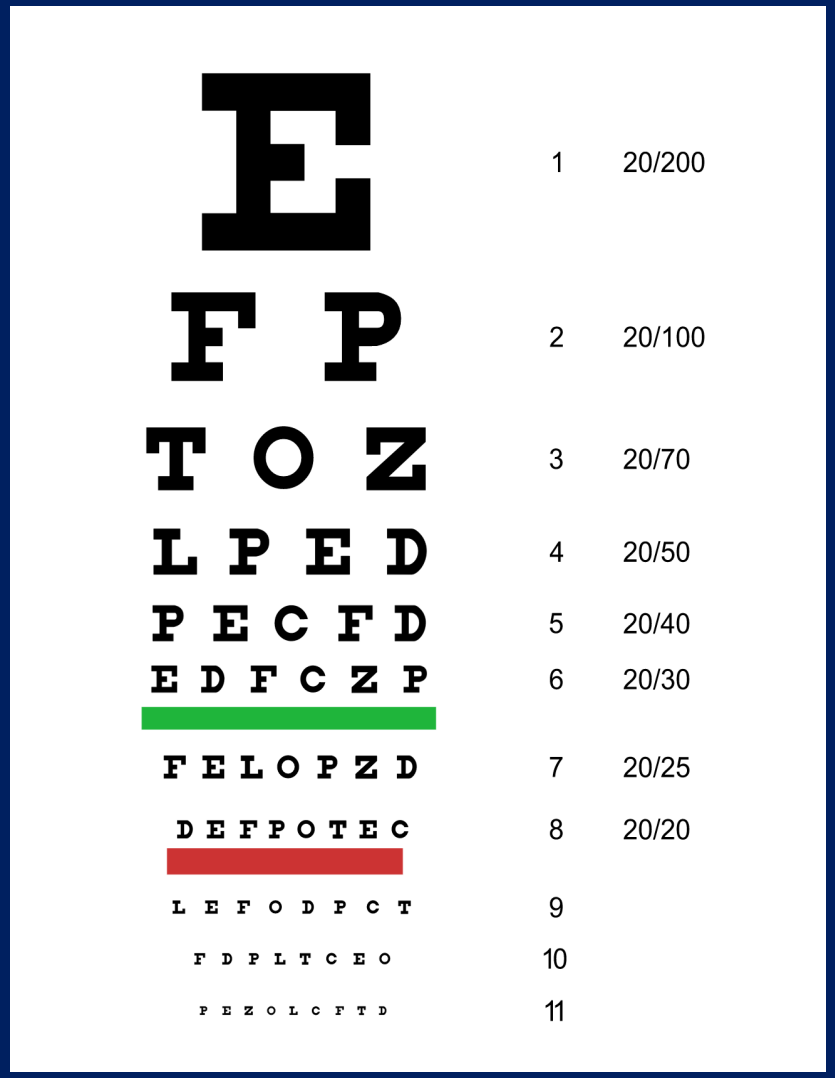
- Midodrine (2.5-10mg 2-3 times/day)

Direct alpha 1 adrenoreceptor agonist; on average will see an increase in standing systolic blood pressure 10 to 15 mm Hg; AVOID in patients with heart failure, severe coronary artery disease, urinary retention

Common Vision Abnormalities in the Older Population and Falls

1) Macular Degeneration
2) Cataracts
3) Glaucoma

Problems with <u>depth</u> perception, <u>reduced</u> ability to see contrast



Patino CM, McKean-Cowdin R, Azen SP, et al. Los Angeles Latino Eye Study Group. Central and peripheral visual impairment and the risk of falls and falls with injury Ophthalmology 2010; 117(2): 199-206.Coleman AL, Stone K, Ewing SK, et al. Higher risk of multiple falls among elderly women who lose visual acuity Ophthalmology 2004; 111(5): 857-62.

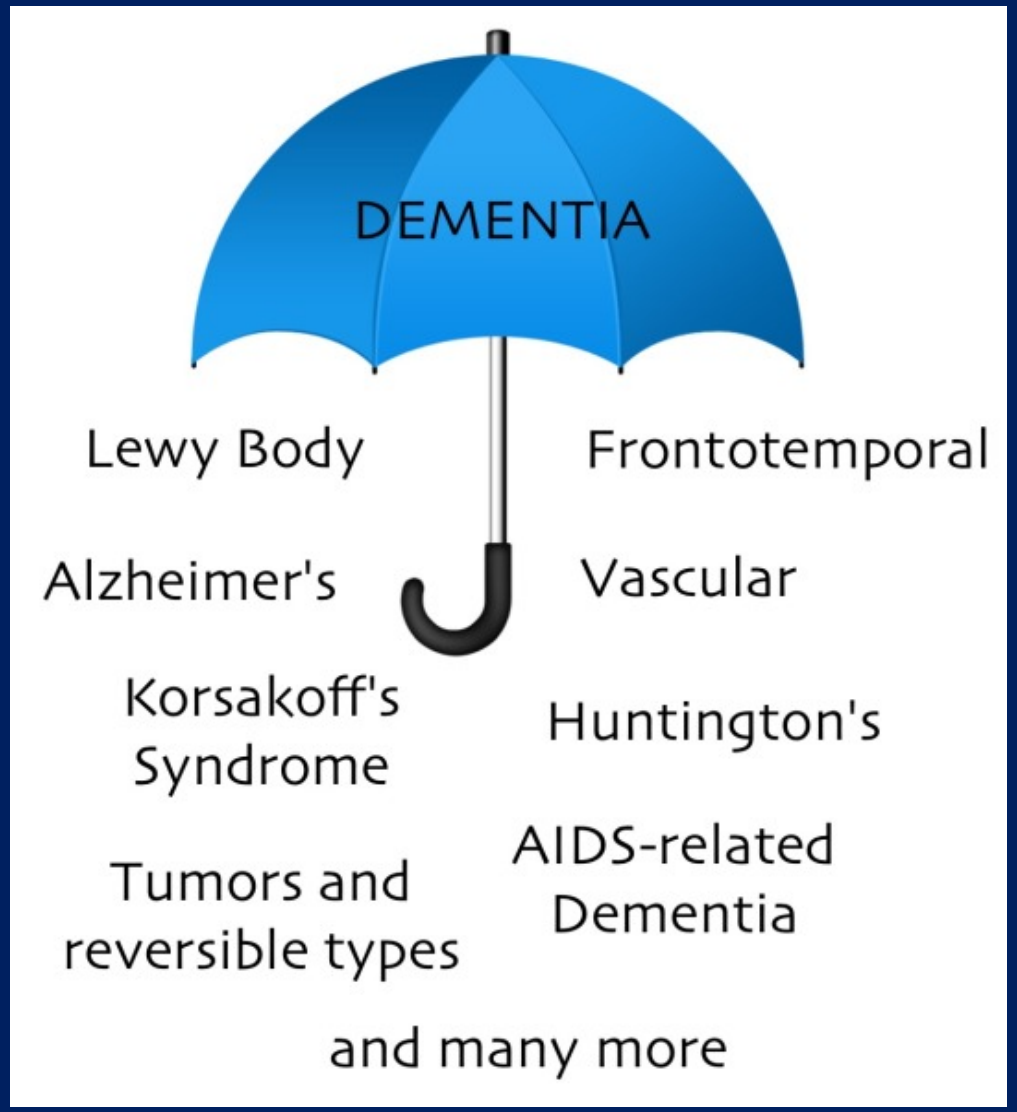
Eyeglasses!

Single, Bifocal, Trifocal, Progressive Lens

Memory Impairment and Falls

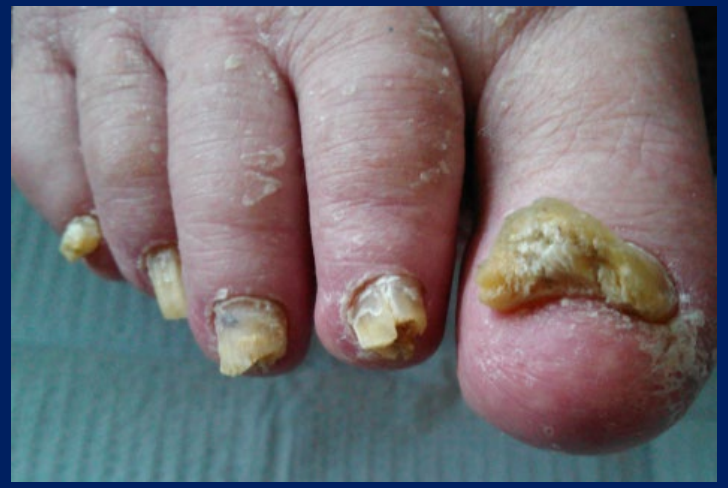
Just the facts…

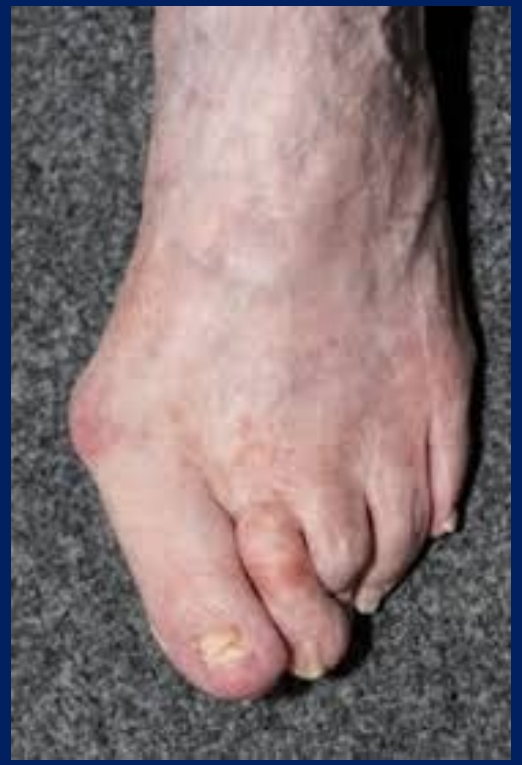
- **Falls can be one of the first signs of memory impairment**
- **More often occur in patients with non AD memory loss**
- **Office testing is easy - Mini-Cog: http://mini-cog.com/**

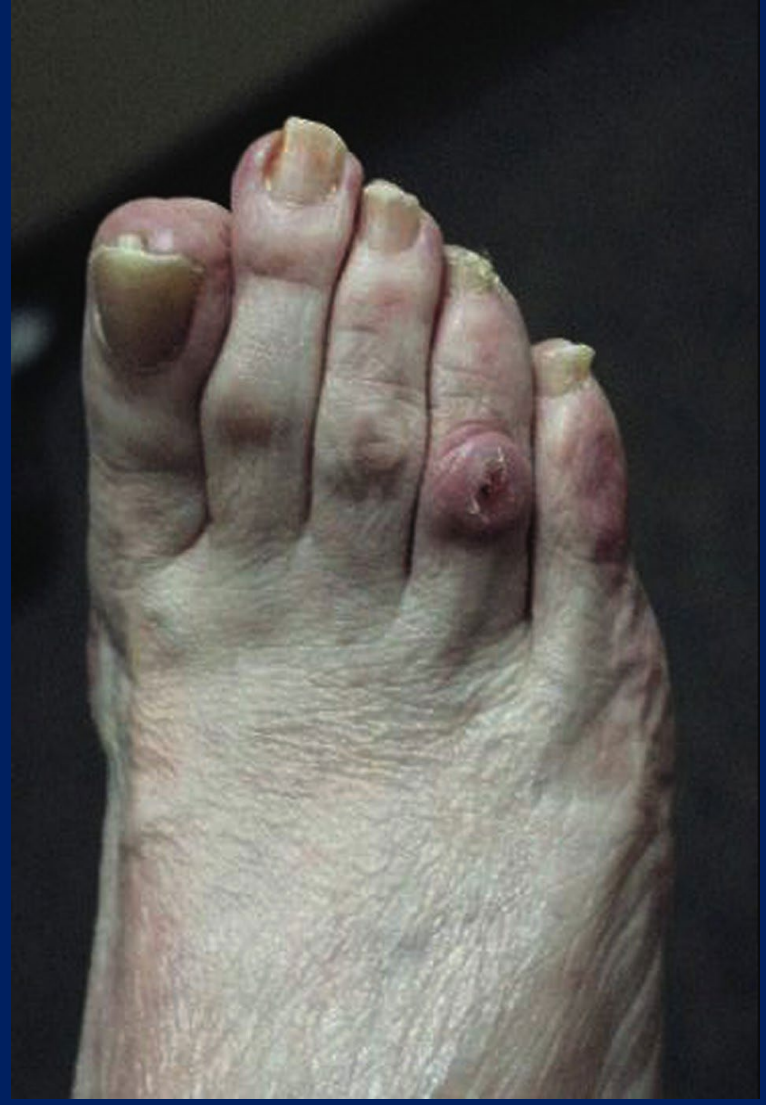


Allali G, Launay CP, Blumen HM, et al. Falls, Cognitive Impairment, and Gait Performance: Results From the GOOD Initiative. *J Am Med Dir Assoc*. 2017;18(4):335–340.

Check their feet!







Etiology?

Shoes, hygiene, diabetes

Referral to podiatry

Chaiwanichsiri D, Janchai S, Tantisiriwat N: Foot Disorders and Falls in Older Persons. Gerontology 2009;55:296-302.

Footwear

Not so good

Better Choice!

Foot Drop

AFO Braces

Polypharmacy

Defined as:

"Taking a medication that lacks an indication, is ineffective, or is duplicating treatment provided by another medication."

- Five or more medications is considered "polypharmacy" by many clinicians, researchers, pharmacists.

Stewart RB et al. Drug Intelligence and Clinical Pharmacy 1990;24:321-3. Montamat SC et al. Clinics in Geriatric Medicine 1992;8:143-58.

Health & Science

‘America’s other drug problem’: Giving the elderly too many prescriptions

THE NEW OLD AGE

The Dangers of ‘Polypharmacy,’ the Ever-Mounting Pile of Pills

HEALTH & FITNESS

Feel like you’re taking a never-ending spiral of medications? ‘It’s a huge problem’

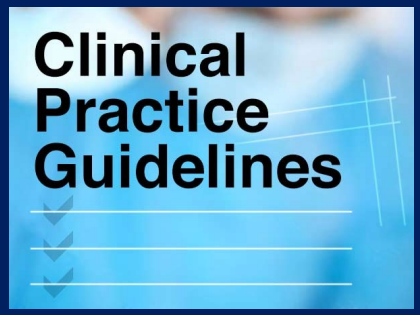
THE NEW OLD AGE

A Quiet Drug Problem Among the Elderly

Despite warnings from experts, older people are using more anti-anxiety and sleep medications, putting them at risk of serious side effects and even overdoses.

Factors Leading to Polypharmacy and ADE's

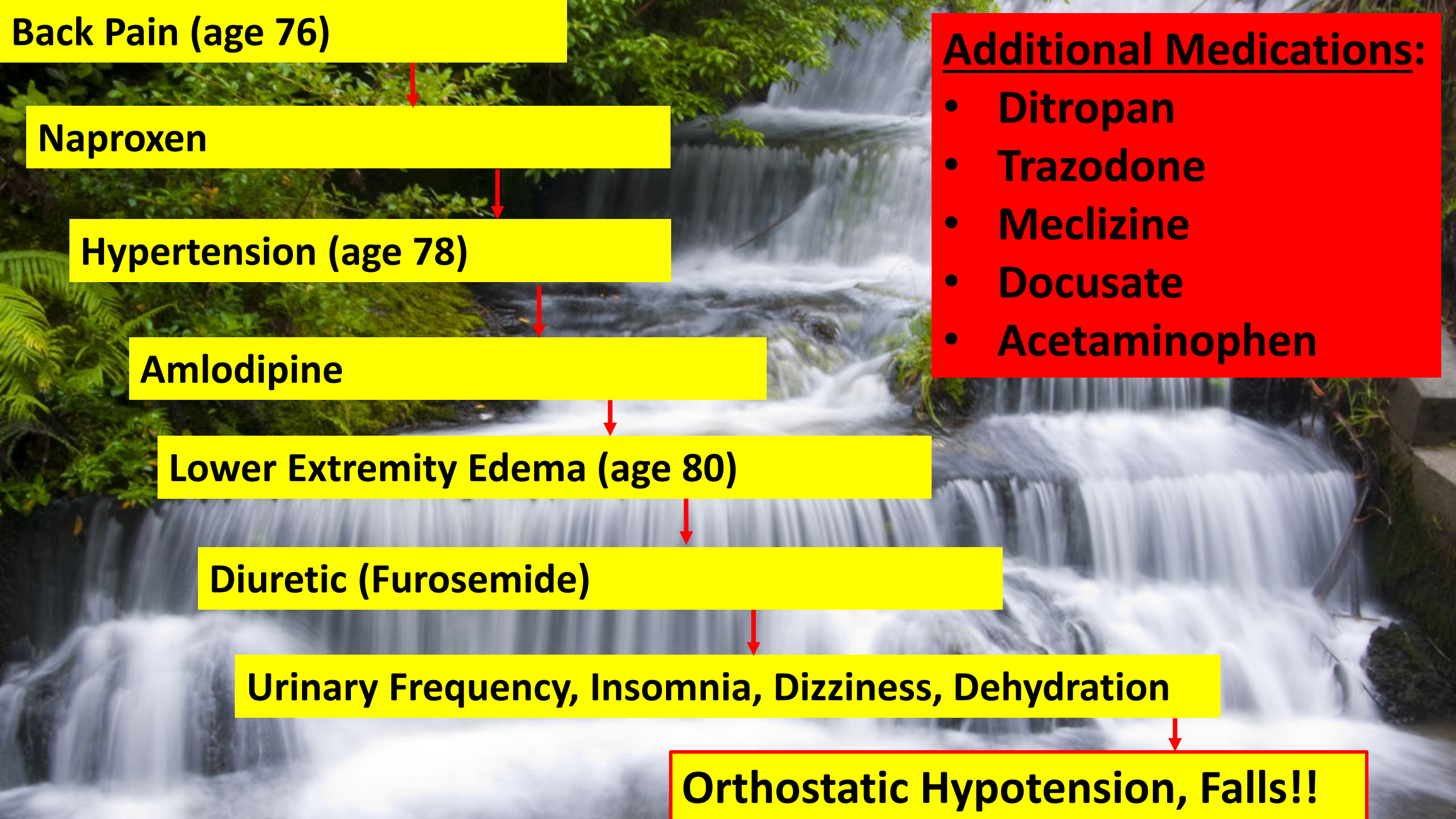
FACT: Approximately half of older adults have 3 or more chronic conditions and take 50% of all Rx medications



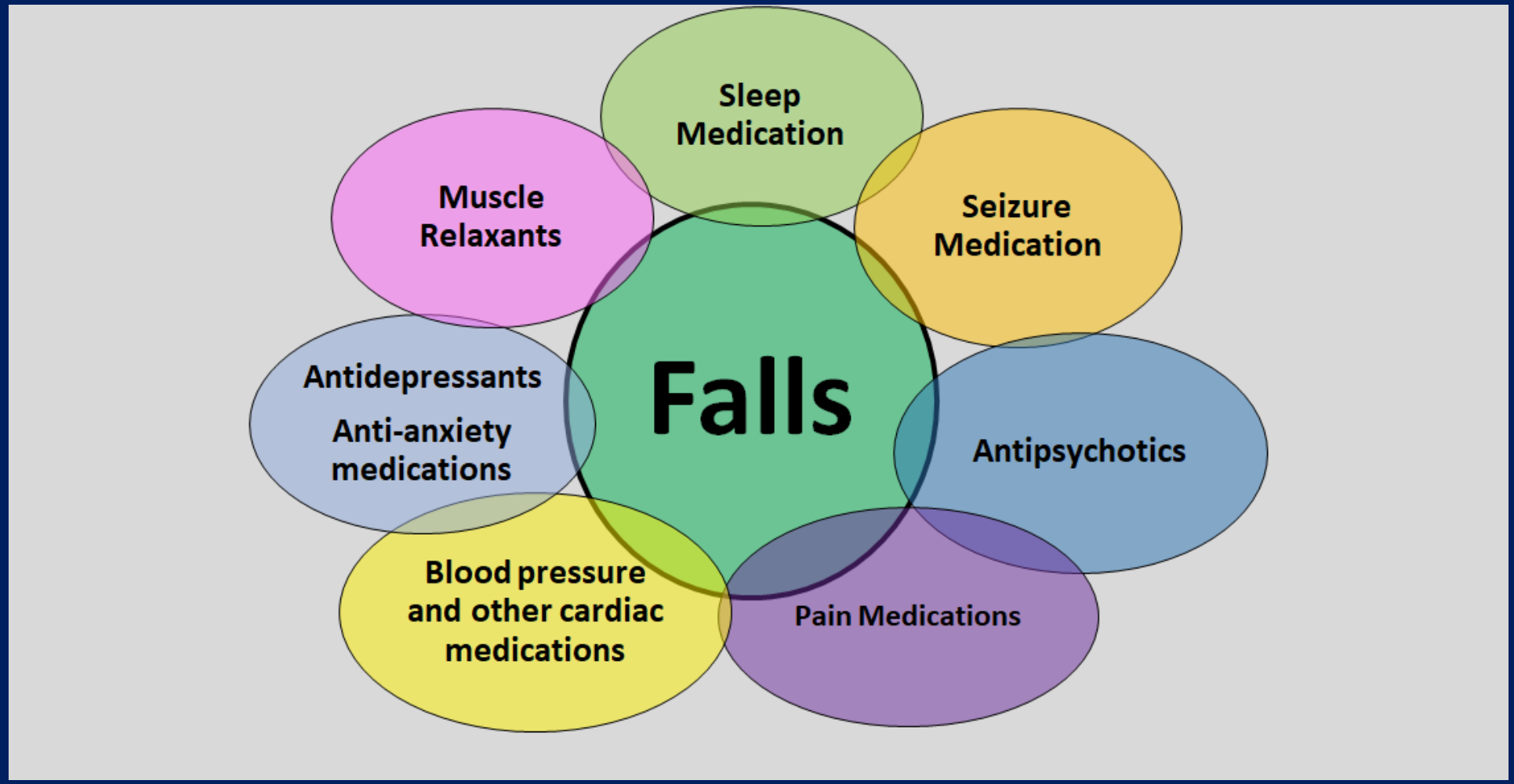
Clinical Practice Guidelines – Elderly

- Older people are often excluded from clinical trials, evidence of the benefits and harms of treatments and tests for this group is often limited
- Clinical trials often do not measure the outcomes with higher priority for many older adults, such as independent living and quality of life
- Applying single-disease guidelines for multiple conditions increases risk of polypharmacy and ADE's

A very common scenario ….


Back Pain (age 76)
Naproxen
Hypertension (age 78)
Amlodipine
Lower Extremity Edema (age 80)
Diuretic (Furosemide)
Urinary Frequency, Insomnia, Dizziness, Dehydration
Orthostatic Hypotension, Falls!!
Additional Medications:
• Ditropan
• Trazodone
• Meclizine
• Docusate
• Acetaminophen

Medications Associated with Falls



Woolcott J, Richardson K, Wiens M, et al. Meta-analysis of the impact of 9 medication classes on falls in elderly persons. ***Arch Intern Med***. 2009;169(21):1952-1960.

Beers Criteria
Dr. Mark Beers (1954-2009)

- Most commonly used tool
- List of potentially inappropriate medications in the elderly
- http://www.americangeriatrics.org
- Updated in 2023

STOPP and START Med Screening Tools

Organized by systems (e.g. GI, CV, Endocrine)

STOPP

- Screening Tool of Older Patients Potentially Inappropriate Medications

START

- Screening Tool to Alert doctors to the **Right** Treatment

https://pubmed.ncbi.nlm.nih.gov/37256475/

medstopper

online tool that allows you to enter a drug list for a specific patient and receive recommendations regarding which medications might be discontinued or switched

http://medstopper.com

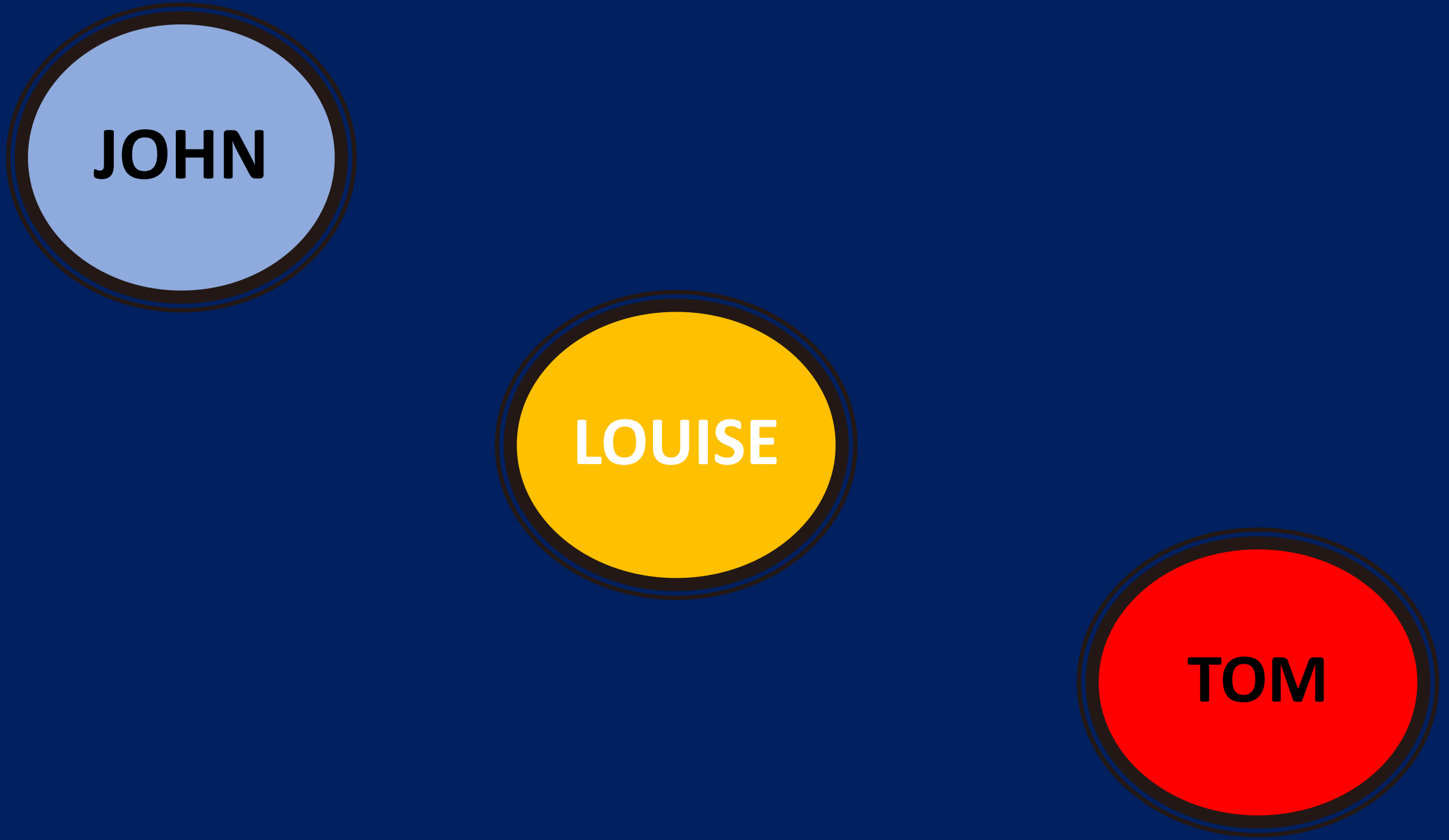
OPINIONS & FACTS

“More than 90% of patients are willing to stop a medication if their doctor says it is possible”

Reeve E, Wolff JL, Skehan M, Bayliss EA, Hilmer SN, Boyd CM (2018) “Assessment of attitudes toward deprescribing in older Medicare beneficiaries in the United States.” JAMA Internal Medicine; Published online 15 Oct 2018

Tools to identify polypharmacy and assist with appropriate medication use

Tool	Description
https://deprescribing.org	5 evidence-based guidelines: ▪ *Proton pump inhibitors* ▪ *Benzodiazepines* ▪ *Antipsychotics* ▪ *Antihyperglycemics* ▪ *Cholinesterase inhibitors and memantine*
Good Palliative-Geriatric Practice Algorithm *https://www.researchgate.net/figure/The-Good-Palliative-Geriatric-Practice-GPGP-algorithm-D-Garfinkel-S-Zur-Gil-J_fig3_304143731*	Assists with drug discontinuation in the outpatient setting. Asks the prescriber to consider drug indication, dose, benefits, and potential adverse effects.


JOHN
LOUISE
TOM


JOHN

"I never realized that I was losing consciousness. Each time I found myself on the ground, I thought I had tripped"
- 83 year old female

Syncope and Falls in the Elderly

O'Brien H, Kenny RA. Syncope in the Elderly. European Cardiology Review 2014;9(1):28–36

Just the facts…

- Syncope in the older patient is under-recognized, particularly in acute care settings because the presentation is frequently atypical.
- The older patient is less likely to have a warning or prodrome prior to syncope, commonly has amnesia for loss of consciousness.
- Events are frequently unwitnessed and the patient will present with a c/o of fall rather than T-LOC.

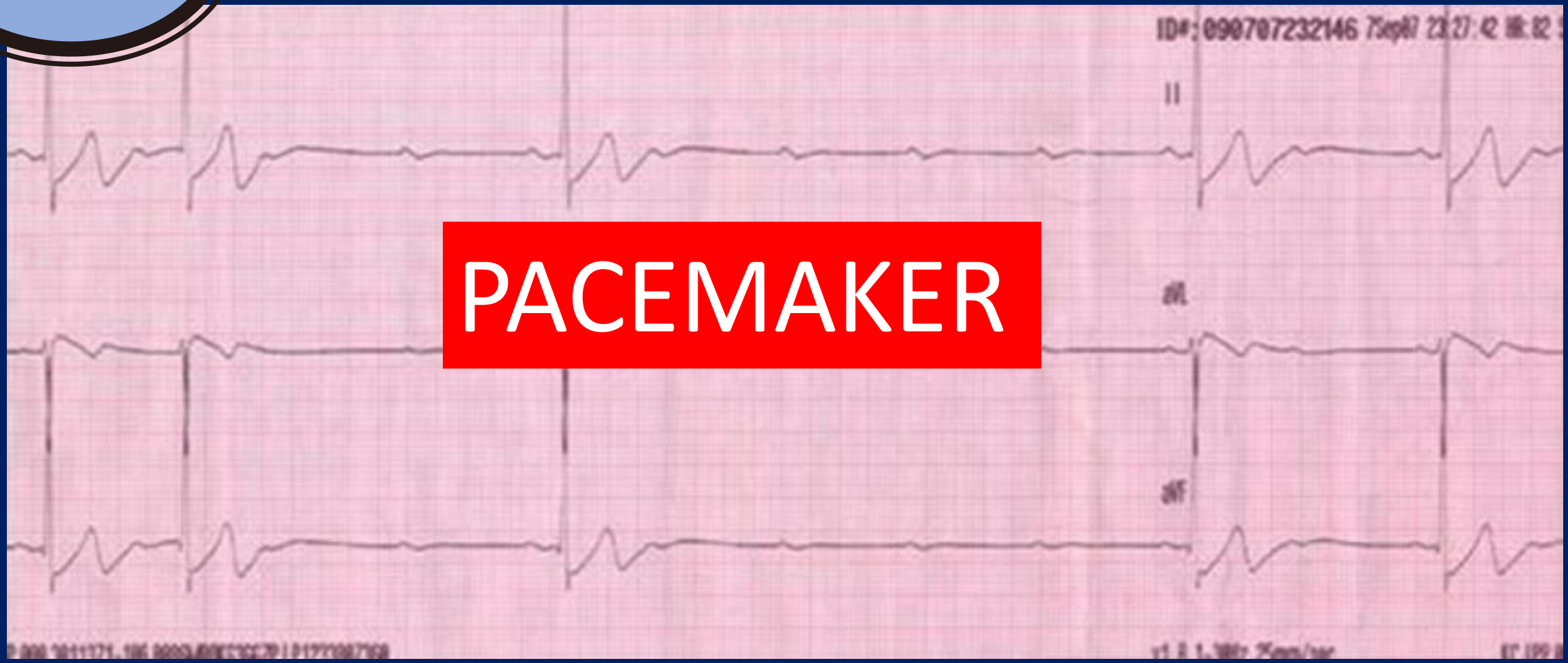
Classifications of "True" Syncope

Reflex Neurally-mediated syncope (NMS)	Orthostatic Dysautonomia	Cardiac Arrhythmia	Structural Cardiovascular
• Vasovagal *(Neurocardiogenic)* • Carotid Sinus Hypersensitivity • "Situational" ✓ *Post Cough* ✓ *Post Laugh* ✓ *Post Exercise* ✓ *Post Micturition and/or Defecation*	• Hypovolemia • Medication Induced • Post prandial • Parkinson's Disease; Lewy Body Dementia • Multiple System Atrophy • Diabetic/other Neuropathies • Amyloid	• Bradycardia • Sick Sinus Syndrome • Tachycardia (VT/SVT) • Atrial Fibrillation and flutter • AV Block • Pacemaker Syndrome • Channelopathy *(Long QT, Brugada)*	• Aortic Stenosis • Hypertrophic Cardiomyopathy • Pulmonary Embolism • Aortic Dissection • Subclavian Steel Syndrome
60%	15%	10%	5%

10% Miscellaneous including Psychogenic

JOHN

30 Day Event Monitor



Intermittent 3rd degree (complete) heart block

Back to Louise
over a few months…

Deprescribing Sophie's Medications

1. Lisinopril/HCTZ 20/25 daily
2. Amlodipine 10 mg daily – moved to evening
3. Aspirin 81 mg daily
4. Carbidopa-Levodopa 4x/day
5. Oxybutynin 5 mg daily – bladder training
6. MVI

Louise's Medications

7. Tylenol Arthritis 650 mg
8. Vitamin D 2000 units daily
8. Lorazepa  5 to 1 mg prn
9. Omeprazole 20 mg daily
11. Senna 8.6 mg daily
12. Docusate  mg 2x/day

ADDED

- Fludrocortisone 0.1 mg daily
- Midodrine 5 mg twice daily


Tom

Tom's Interventions

- Tom and his wife moved into separate rooms in the SNF
- New hearing aids
- Physical Therapy for LE strengthening
- Walker adjustment
- No recurrent falls!

Types of Exercise Shown to be Effective in Decreasing the Risk of Falls in the Elderly

Gait and Balance Training

Strength Training

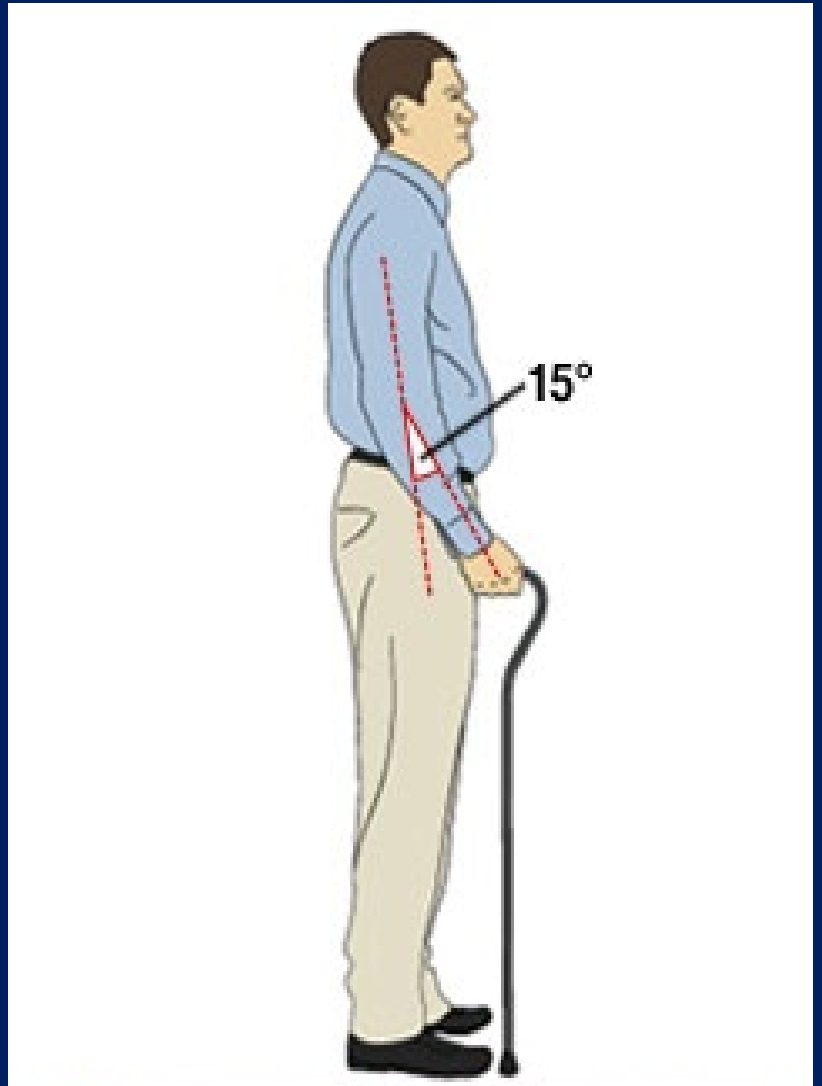
Movement (Tai Chi)

Aerobic Activity

Interventions to Prevent Falls in Older Adults: Updated Evidence Report and Systematic Review for the US Preventative Services Task Force Ja*ma 2018 Apr 24;319(16):1705-1716*

Canes – a few facts

- 10% of >65 use canes
- Carry cane opposite to weak leg
- Size handle to middle of wrist
- Look forward, not down
- Pivot on stronger leg
- Stairs!
  - "Good" leg goes first UP stairs
  - "Bad" leg goes first DOWN stairs



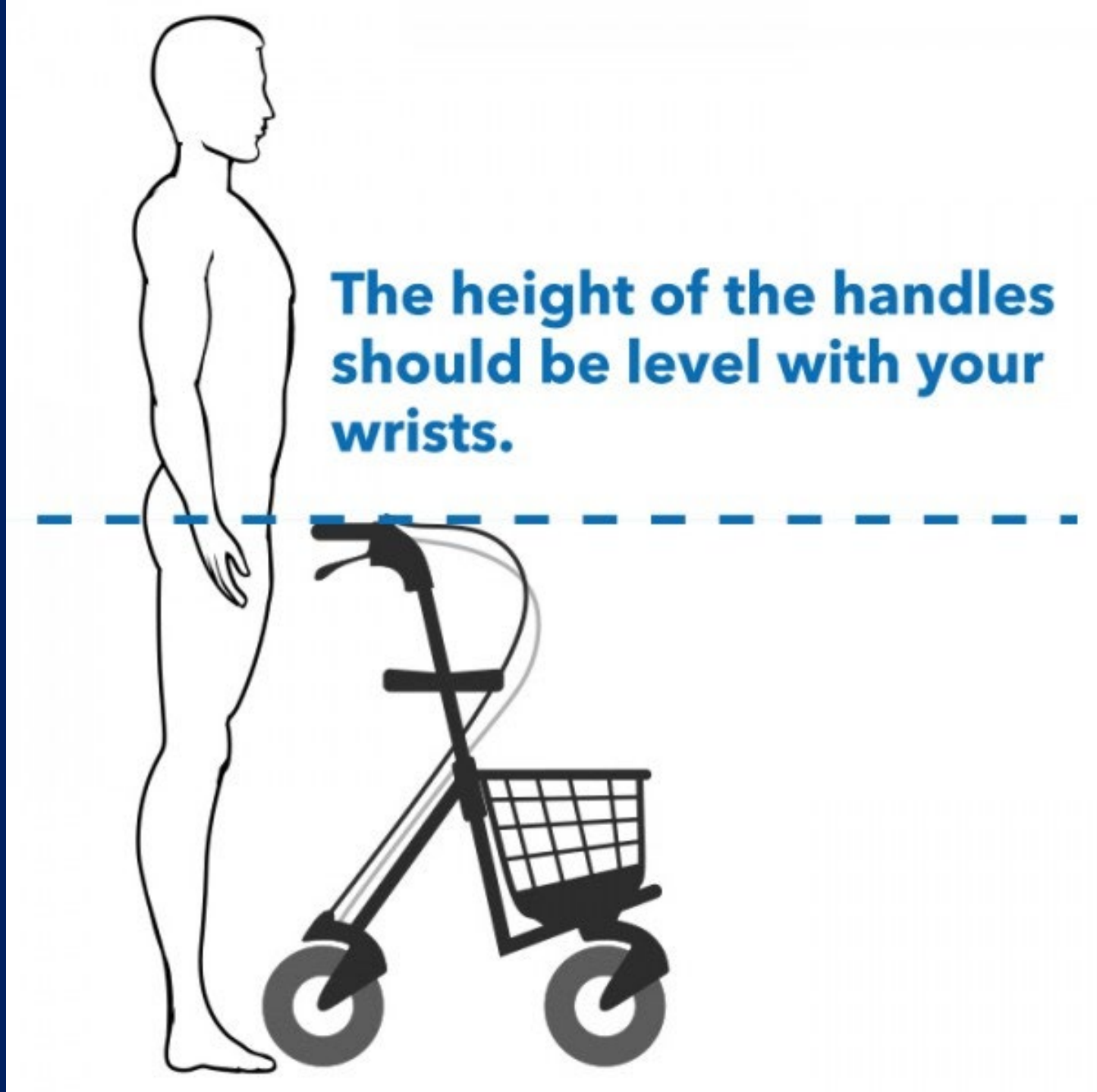
Walkers – "they are not all the same"

Two wheeled walker with glides

Rollator Walker

USTEP Walker

Setting the handle height on a walker

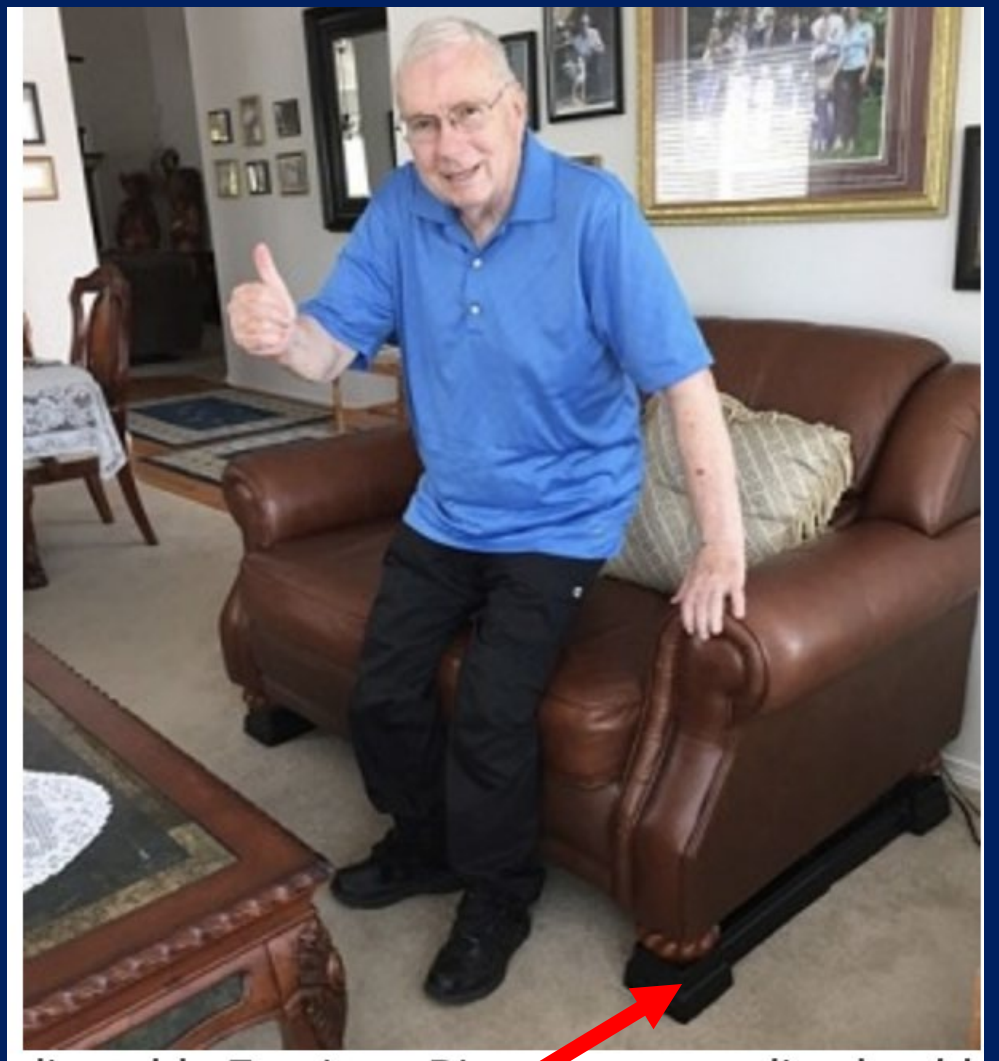


Home/Facility Safety Evaluation

Checklists available:

- CDC
- AARP
- National Council on Aging (NCOA)

Furnishings too low or too high

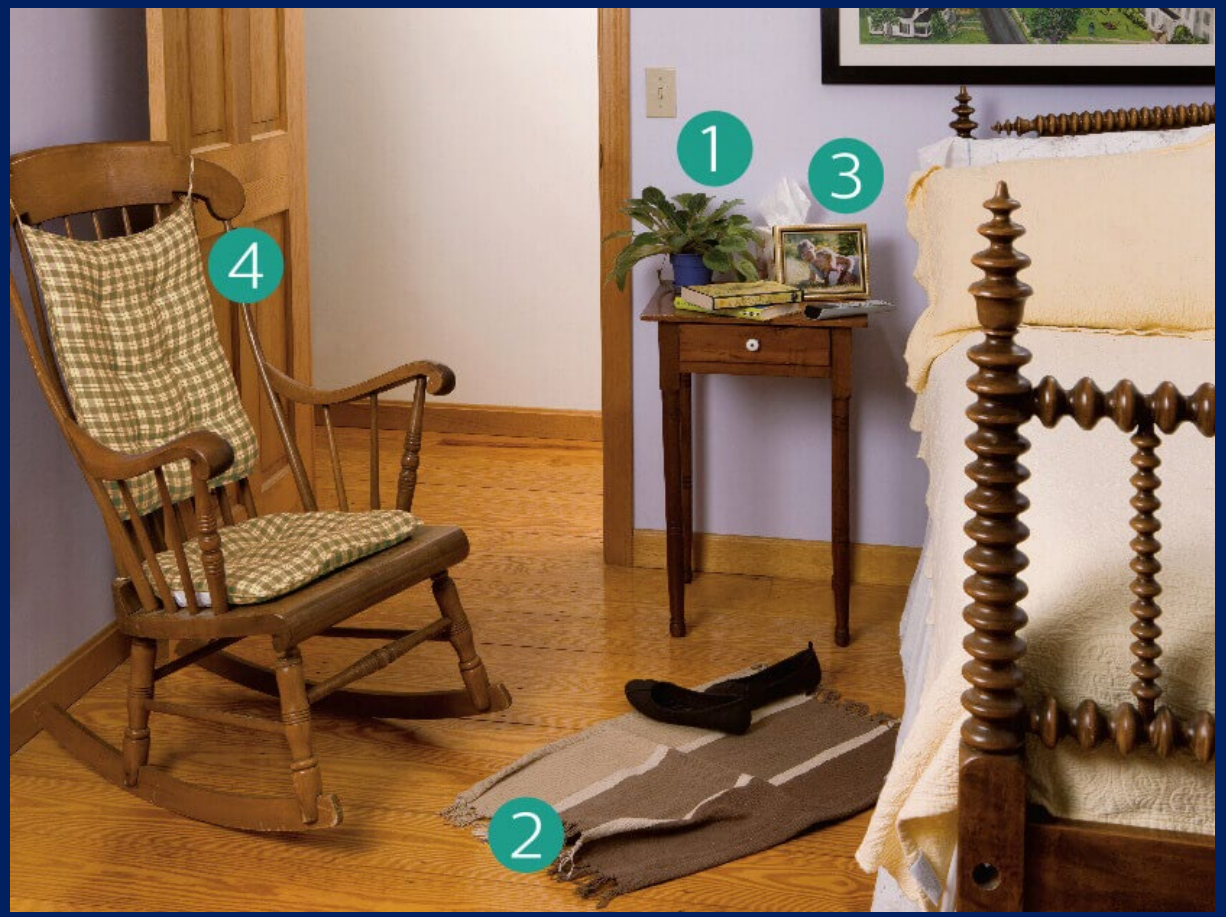


Consider risers, extra stiff padding

Slick or Irregular Floor Surfaces
Various Floor patterns

Loose Carpeting, Rugs

Clutter, Extension Cords!



Poor illumination

Too Bright and Too Much Glare

Use Nightlights!

Flooring Contrast and Colors

Outdoor step with high contrast tape added for improved visibility and safety

Install Grab Bars!

Intervention & Prevention

Assistive Devices

Reacher

Bed Aids

FALLS

“Steadi” Your Health Care Team….

CDC Tool for Falls - Screening, Assessment and Intervention

https://www.cdc.gov/steadi/index.html

Bottom Line….

- Identifying patients at risk for falls
- Multifactorial Assessment
- Individualized interventions

Schoberer D, Breimaier HE, et al. Fall prevention in hospitals and nursing homes: Clinical practice guideline. Worldviews Evid Based Nurs. 2022 Apr;19(2):86-93

Thank you!

Superior Health Training Opportunities

Viven Health

- Virtual interactive learning at no cost.
- Improve vaccination rates.
- Welcome to Viven Health
- Contact Cetrov@metastar.com for more information.

Emergency Tabletop Exercise (nursing homes and assisted living)

- Meet the CMS Requirement: Virtually facilitated tabletop exercise
- Contact tkettner@metastar.com for more information

Fall Resources

- Front Line Forces: Preventing Falls and Injury from Falls, Superior Health Quality Alliance
  - Three short modules with quizzes.
- Nursing Home Falls Tracking Tool, Health Quality Innovation Network (HQIN)
- Safety Program for Nursing Homes: On-Time Falls Prevention, Agency for Healthcare Research and Quality (AHRQ)

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES

SUPERIOR HEALTH
Quality Alliance

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