

The background features a central white diamond shape with a grey border. The corners of the slide are decorated with overlapping yellow and blue geometric shapes, including triangles and diamonds. In the top right and bottom left corners, there are small blue icons of a medicine bottle with a white cross on it.

Falling Short of Medications: The Role of Pharmacists in Preventing Falls among Older Adults

Shireen Farzadeh, PharmD, BCPS, BCGP
Clinical Pharmacy Specialist –
Transitions of Care
NYC Health + Hospitals



Disclosures

I have no conflicts of interest

Objectives

1

Describe the prevalence and significance of falls in older adults

2

Identify medication, disease, and environmental related risks for falls in older adults

3

Recommend deprescribing fall-risk increasing medications and explain their mechanisms for causing falls

4

Educate patients on non-pharmacologic fall prevention measures

Fall

Unexpected event in which individual comes to rest on ground or lower level with no known loss of consciousness

Excludes falls secondary to major intrinsic events (seizure, stroke, syncope)

Epidemiology

Leading cause of injury among older adults

Cost of fall-related injuries in older adults: \$50 billion

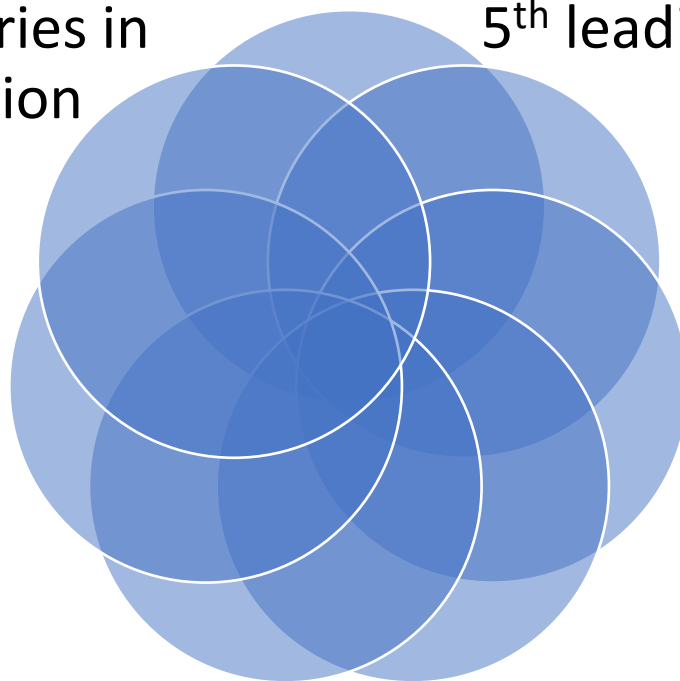
5th leading cause of death in older adults

32,000 deaths/year

One-half of adults can get up after falling

>950,000 hospitalizations/year

3 million emergency department visits/year



Risk Factors: Intrinsic

Chronic
illness



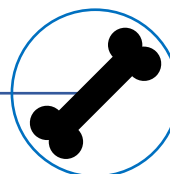
Orthostatic
hypotension



Arrhythmias



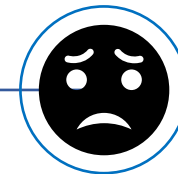
Parkinson's
disease



Rheumatic
disease

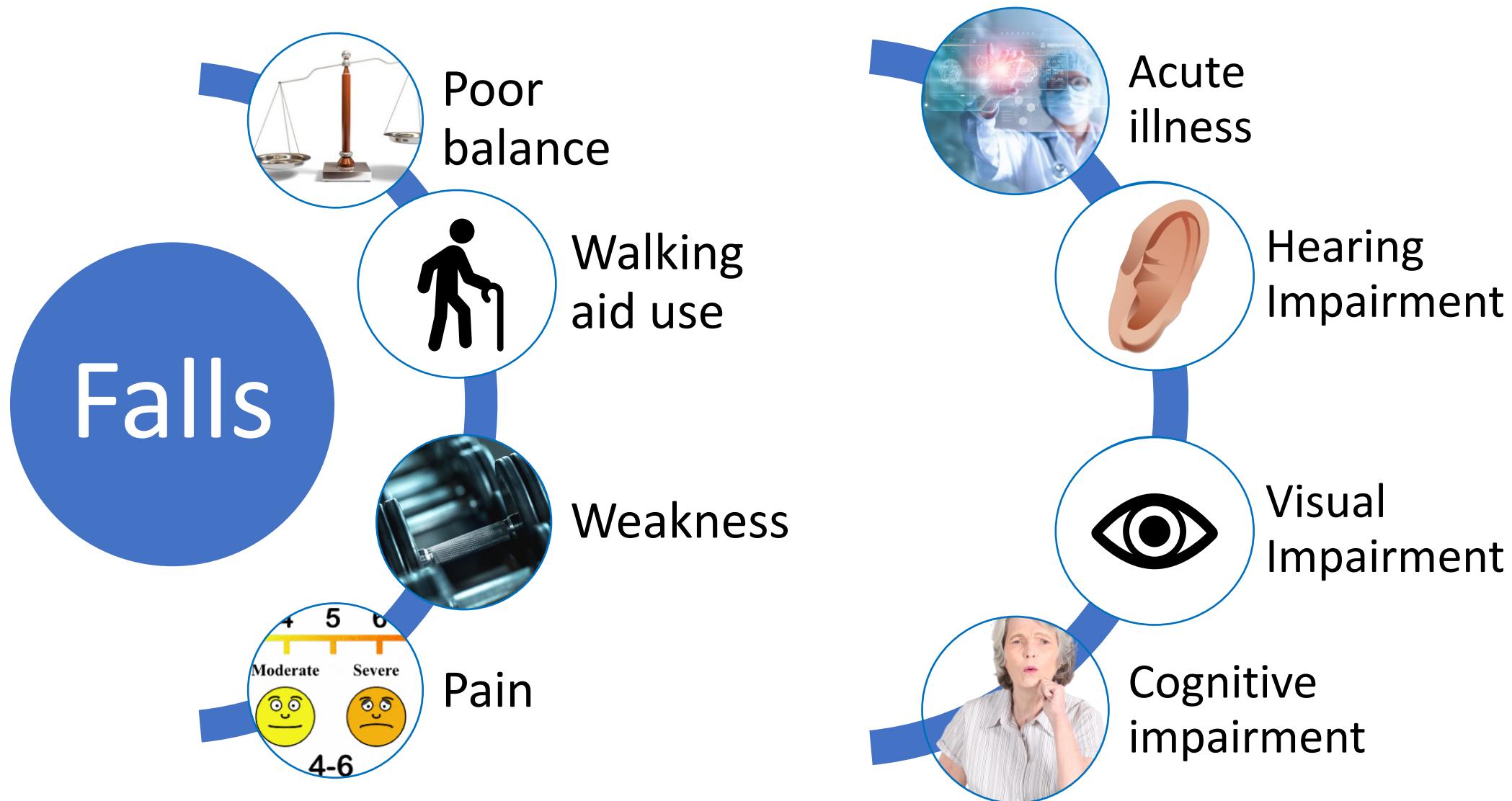


Urinary
Incontinence



Depression/anxiety
(including fear of falling)

Risk Factors: Intrinsic



Risk Factors: Intrinsic - Physiologic



Absorption:
Gastrointestinal
System

↓ motility

↓ acid secretion

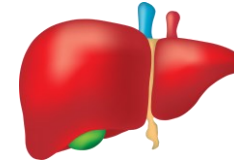
↓ blood flow



Distribution:
Volume of
Distribution

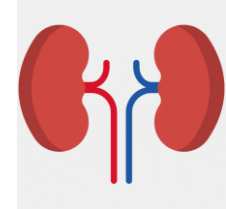
↑ Body Fat

↓ Water



Metabolism: Liver

↓ blood flow &
function



Excretion: Kidney

↓ blood flow &
function

Risk Factors: Environmental

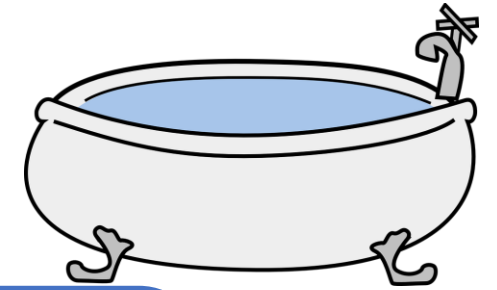
55% occur
inside the
home

Additional
23% of falls
outside but
near home



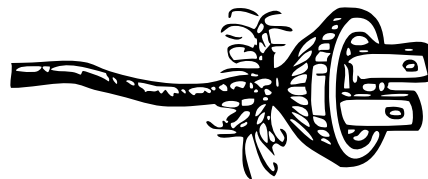
Poor
lighting

No safety
equipment
(bathtub)



Loose
carpets,
extension
cords

Slippery
footwear



Fall Risk Reduction Toolkit



Falls Risk Reduction Toolkit: Patient Case



80 yo F with back pain (6/10), depression, hypertension (dizziness with standing), insomnia, history of falls (3 in 2021; hip fracture), obesity, CKD



SH: lives alone, ambulatory with cane, drinks 1 glass of wine/day



Presented to ED with fall & confusion; has medications in original vials in purse with fill histories from 2020



Diphenhydramine 25 mg nightly
Doxazosin 16 mg daily
Ibuprofen 200 mg every 8 hours as needed for pain
Oxycodone 5 mg three times daily
Paroxetine 50 mg daily
Vitamin C 500 mg daily
Zolpidem 5 mg nightly



Falls Risk Reduction Toolkit



Falls Risk Checklist

Check all that apply:

General Patient Factors

- Age over 65 Age over 80 Frail

Transition Status

- Pending transition Recent transition

Living Arrangements

- Lives alone In home care, full-time In home care, part-time
 Lives with spouse or other Assisted living facility Skilled care facility

Substance Use

- Alcohol, 1 drinks per day Marijuana Other Illicit substances

Falls Risk Reduction Toolkit

Vital Signs

Postural hypotension:

- Systolic BP falls \geq -20 mm Hg
- Diastolic BP falls \geq -10 mm Hg
- Dizzy or lightheaded with standing

Pulse:

- Irregular
- $<$ 50bpm

Pain:

- Complaint of pain
- Pain location(s): back
- Pain score 6 (0-10)

Temperature:

- Over 98.6° F

Ambulation Status

- Cane
- Front wheel walker
- Crutches
- Rollator
- Standard walker
- Wheelchair

Use appears correct: Yes No Correction provided: _____

Sensory Function

Vision:

- Acuity $<$ 20/40
- Blurred vision
- No eye exam in last year
- Corrected vision
- Regular use of glasses/contacts
- Sporadic use glasses/contacts

Hearing:

- Hearing deficit
- Regular use hearing aid
- Sporadic use hearing aid

Feet/lower extremities:

- Altered lower extremity sensation
- Foot pain
- Bunion
- Hammer toe
- Plantar fasciitis
- Heel spur
- Ingrown toenail

Taste/smell:

- Changes in taste
- Changes in smell

Falls Risk Reduction Toolkit

Refer to other healthcare team member

Gait, Strength, & Balance

Timed Up and Go (TUG) Test ≥ 12 seconds

Score: seconds

30-Second Chair Stand Test Below Average Score

Score: number

4-Stage Balance Test < 10 seconds

Score: seconds

Parallel Stance

Score: seconds

Semi-Tandem Stance

Score: seconds

Tandem Stance

Score: seconds

One-legged Stance

Observed gait problems or difficulty standing

Yes

No

Falls Risk Reduction Toolkit

Falls History

- Any falls in past year
- Expresses worry about falling
- Number of falls in past year 3
- Feels unsteady standing or walking
- Injury?

Medical Conditions

- Arrhythmia (e.g. a fib)
- Cerebellar ataxia
- Depression
- Impaired renal function
- Lower extremity arthroplasty
- Malnutrition, dehydration
- Pain
- Arthritis (osteo, rheumatoid)
- CVA/Stroke
- Hemophilia
- Incontinence
- Lower extremity (LE) injury/pain
- Multiple sclerosis
- Parkinson's disease
- Cardiovascular disease/MI
- Dementia
- Impaired hepatic function
- Infection (e.g. UTI)
- LE neuropathy - monofilament
- Obesity
- Seizures

Falls Risk Reduction Toolkit

Medication Self Management

Medications disorganized

Evidence of adherence issues

If yes, explain:

original vials with fill histories from 2020

Medication Assessment

Number of medications (Rx, prn, OTC, vitamin, supplement, herbal)

≥ 5 ≥ 10

Recent medication regimen change within last week

within last month

Falls risk Medication-Related-Problems detected:

Suboptimal dose*

Dose too high**

Interactions between medications, food, medical conditions

Lacking medication therapy for all medication-requiring indications

Allergies and intolerances within current regimen

Unnecessary medication

Safer evidence-based therapy available

Difficulty administering any medication (eye drops, inhalers, large dosage forms)

* suboptimal dose - check doses based on renal and hepatic function

** dose too high - causing adverse effects and/or unnecessary risk

Falls Risk Reduction Toolkit

Medications

- | | | |
|---|--|---|
| <input type="checkbox"/> Anticholinergics (e.g. oxybutinin, trihexiphenidyl, amitriptyline) | <input type="checkbox"/> Anticonvulsants | <input checked="" type="checkbox"/> Antidepressants |
| <input checked="" type="checkbox"/> Antihypertensives/CV meds (especially α -blockers, nitrates) | <input type="checkbox"/> Antipsychotics/neuroleptics - typical or atypical | <input type="checkbox"/> Benzodiazepines (short or long t 1/2) |
| <input type="checkbox"/> Dopaminergic agents | <input type="checkbox"/> Hypoglycemia agents | <input type="checkbox"/> Muscle relaxants |
| <input checked="" type="checkbox"/> Opioids | <input checked="" type="checkbox"/> Sedative/hypnotics | <input checked="" type="checkbox"/> Over-the-counter: diphenhydramine, doxylamine |



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Doxazosin 16 mg daily
Ibuprofen 200 mg every 8 hours as needed for pain
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Medication Reconciliations

Joint Commission

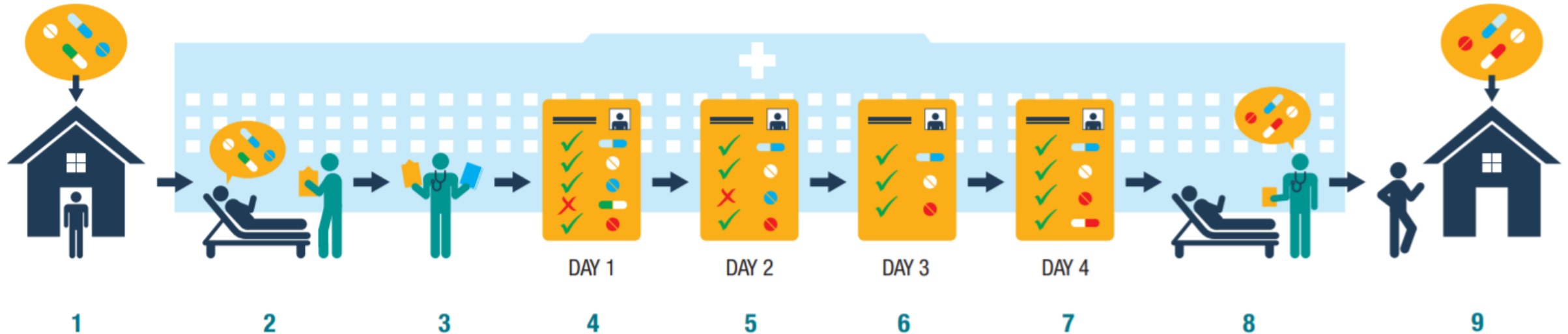


National Patient Safety Goal 2022: NPSG.03.06.01:
Maintain & communicate accurate patient medication information

Medication reconciliation:
“process of comparing a patient's medication orders to all of the medications that the patient has been taking”

Medication Changes in Transitions of Care

Systematic review: 11% - 59% of discrepancies at admission and discharge considered to have potential for harm



Systematic review: 66% reduction in medication discrepancies in pharmacy-led medication reconciliation

Steps

1) Develop list of current medications

- Based on 2+ sources: patient/caregiver, pharmacy fill history, nursing home MAR
- Update medication list in eMAR

2) List medication orders inpatient

3) Compare both lists

- **Identify medications with high fall risk**
- Identify clear indications for each medication
- Identify medication-related adverse events
- Clarify duration of therapy

4) Make clinical decisions based on comparison

5) Communicate new list to caregivers & patient

Case 1

- TD is an 83 yo M admitted to ED on 01/09/2022 with a CC of Fall

Home Medications per 2020 Medication Reconciliation

- Amlodipine 5 mg once daily
- Aspirin 325 mg twice daily
- Carvedilol 25 mg twice daily
- Insulin glargine 25 units once nightly
- Levothyroxine 25 mcg once daily
- Tramadol 100 mg nightly
- Rosuvastatin 5 mg once daily

Home Medications per Patient and Pharmacy

- Amlodipine 5 mg once daily
- Aspirin 81 mg once daily
- Carvedilol 12.5 mg ER once daily
- Insulin glargine 8 units once nightly
- Levocetirizine 5 mg once daily
- Trazodone 100 mg nightly
- Rosuvastatin 5 mg once daily

How many discrepancies did you find between the initial home medications listed and your home medication list?

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Deprescribing

WELL, THE **WHITE PILL** LOWERS MY BLOOD PRESSURE BUT MAKES MY LEGS SWELL, THE **YELLOW PILL** LOWERS THE SWELLING BUT CAUSES ME TO PEE, THE **BLUE PILL** STOPS ME FROM PEEING BUT MAKES ME CONFUSED, THE **TAN PILL** IMPROVES MY MEMORY BUT MAKES MY NOSE RUN, THE **PINK PILL** STOPS MY NOSE FROM RUNNING BUT MAKES ME SLEEPY, THE **ORANGE PILL** WAKES ME UP BUT INCREASES MY BLOOD PRESSURE, SO THE **WHITE PILL** LOWERS MY BLOOD PRESSURE BUT...



10 Things to Question – AGS Choosing Wisely

Do NOT...

1

Tube feed patients with advanced dementia

2

Use antipsychotics as 1st line for agitation associated with dementia

3

Use BZDs or sedative-hypnotics as 1st line for insomnia, agitation, delirium

4

Use medications besides metformin to target hemoglobin A1c <7.5%

5

Use antibiotics to treat asymptomatic bacteriuria

10 Things to Question – AGS Choosing Wisely

Do NOT...

6

Use AChEi's for dementia without monitoring for benefits and side effects

7

Screen for cancers without considering risks vs. benefits

8

Use appetite stimulants or high-calorie supplements to treat poor appetite

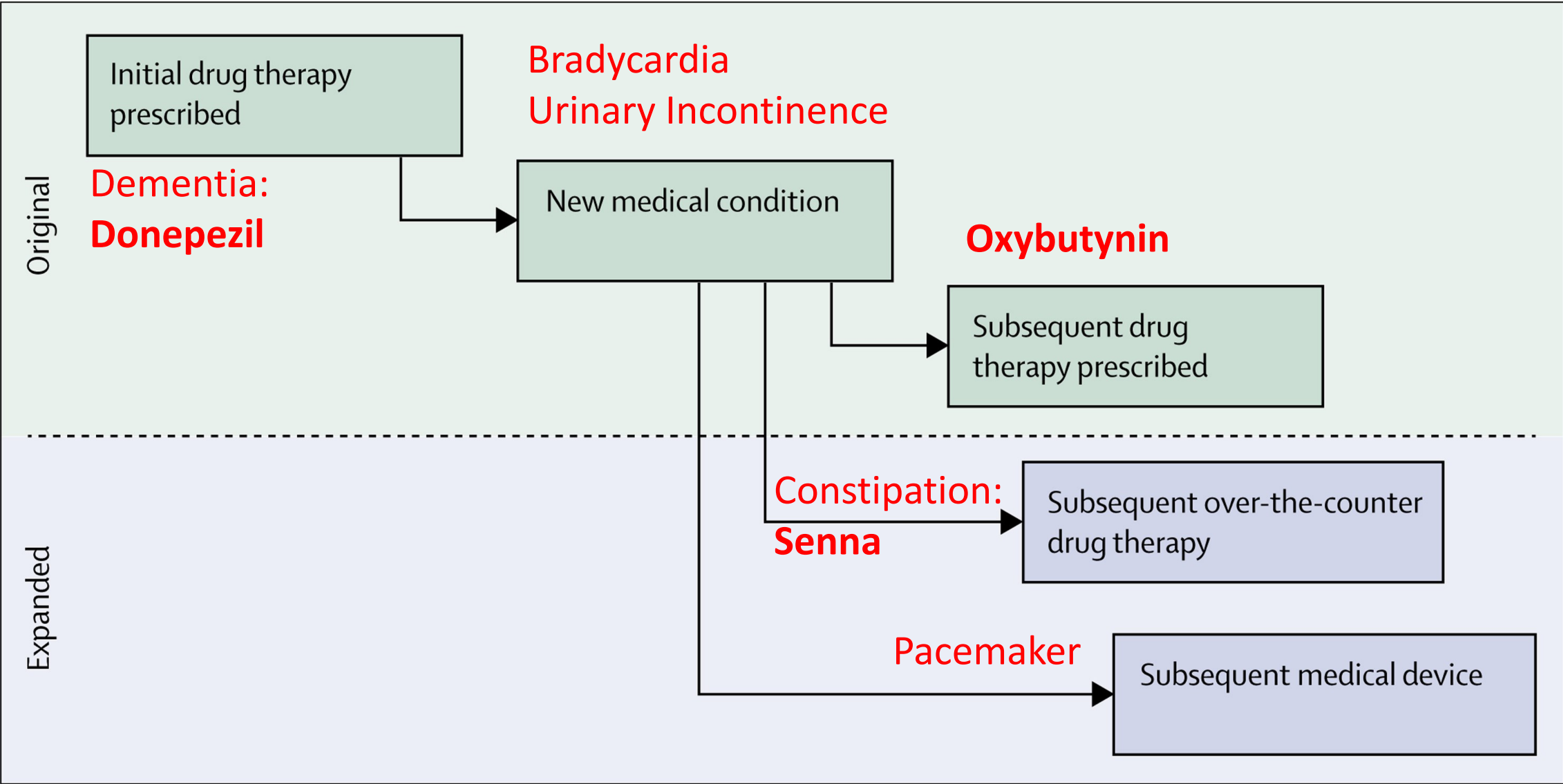
9

Prescribe a medication without reviewing current drug regimen

10

Use physical restraints to manage hospitalized patients with delirium

Prescribing Cascade



Deprescribing: Steps

1

- Complete medication reconciliation & identify indications for each medication

2

- Use geriatric tools to consider risk of drug-induced harms and determine necessity for deprescribing

3

- Assess each medication based on risks vs. benefit and guideline recommendations

4

- Prioritize drugs for discontinuation

5

- Implement deprescribing plan & monitor regimen

Medications with Increased Fall Risk



Fall Risk Inducing Medications

American Geriatrics Society 2019 Updated AGS Beers Criteria[®] for Potentially Inappropriate Medication Use in Older Adults

Anticholinergic Agents

Cardiovascular Diseases

- Antiarrhythmics
- Antihypertensives



Endocrine Disorders

- Insulin & Oral antihyperglycemics



Psychiatric Disorders

- Benzodiazepines
- CNS depressants
- Hypnotics



Neurologic Disorders

- Acetylcholinesterase Inhibitors
- Anticonvulsants

Pain

- Opioids
- Skeletal Muscle Relaxants

Anticholinergics

Beers Criteria[®] Table 7. Drugs With Strong Anticholinergic Properties

Antiarrhythmic	1st Generation Antihistamines	Urinary	Antipsychotics
Disopyramide	Brompheniramine	Darifenacin	Chlorpromazine
Antiemetics	Chlorpheniramine	Fesoterodine	Clozapine
Meclizine	Cyproheptadine	Oxybutynin	Loxapine
Prochlorperazine	Dimenhydrinate	Solifenacin	Olanzapine
Promethazine	Doxylamine	Tolterodine	Perphenazine
Gastrointestinal	Hydroxyzine	Trospium	Thioridazine
Dicyclomine	Parkinson's	Antispasmodics	Trufluoperazine
Homatropine	Benztropine	Atropine	Muscle relaxants
Hyoscyamine	Trihexyphenidyl	Belladonna	Cyclobenzaprine
		Scopolamine	

Anticholinergics

Cognitive impairment & anticholinergic side effect risks increase with use of medications, higher doses, total number of medications



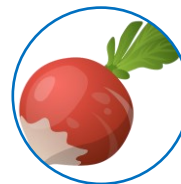
Hot as a Hare



Dry as a Bone



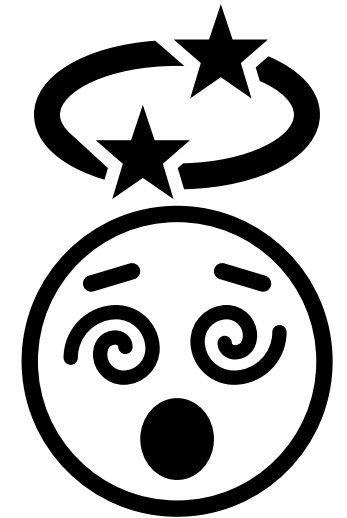
Blind as a Bat



Red as a Beet



Mad as a Hatter



Case 2

Case 2

History of Present Illness

- TP is a 76-year-old F with a PMH of atrial fibrillation, dementia, diabetes, and urinary incontinence admitted to ED with CC of Fall
- Fell down while getting out of bed to grab a glass of water and was found down on ground by husband
 - States she has been feeling very thirsty and her vision is worsening
 - **BP sitting:** 125/80; **BP standing:** 120/78;
 - **HR:** 75 **CK:** 50 **BG:** 160

Home medications

- Lisinopril 5 mg daily
- Metformin 1000 mg ER twice daily
- Simvastatin 20 mg at bedtime
- Oxybutynin 5 mg three times daily



Which medication may be contributing to the patient's current symptoms?

- a) Lisinopril
- b) Metformin
- c) Simvastatin
- d) Oxybutynin**

Antiarrhythmics

Beers Criteria: AVOID as 1st Line

Amiodarone

- Pulmonary & hepatic toxicity
- Hypo/hyperthyroidism

Dronedarone

- ↓ outcomes in atrial fibrillation or severe/recently decompensated heart failure

Digoxin for 1st line treatment of atrial fibrillation or heart failure

- ↑ toxicity in ↓ renal clearance

Disopyramide

- May induce heart failure (negative inotrope)
- Anticholinergic

Rate or Rhythm Control in Older Atrial Fibrillation Patients: Risk of Fall-Related Injuries and Syncope

Study	Dalgaard F et. al 2019
Design	<ul style="list-style-type: none">Retrospective cohort study from Danish registries 2000 - 2015
Objective	<ul style="list-style-type: none">Association of rate and/or rhythm control with fall-related injuries or syncope (composite end point) in older adults with atrial fibrillation
Population	<ul style="list-style-type: none">N = 100, 935 (median age: 78 years) on rate-lowering drug (RLD) and/or antiarrhythmic drug (AAD)
Results at follow-up: 2.1 years	<ul style="list-style-type: none">Fall-related injury or syncope: 21%AAD monotherapy vs. RLD monotherapy: 29%↑ riskAAD + RLD vs. RLD monotherapy: 46%↑ riskAmiodarone vs RLD: 40%↑ risk
Conclusion	<ul style="list-style-type: none">Antiarrhythmics, specifically amiodarone, had a significantly increased risk of fall-related injuries + syncope

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Antihypertensives

Beers Criteria: AVOID as 1st Line & routine treatment for hypertension

Loop Diuretics

- Bumetanide
 - Furosemide
 - Torsemide
- ↓
- Hypokalemia – muscle weakness
 - Hyponatremia - confusion

β-Blockers

- Atenolol
 - Bisoprolol
 - Carvedilol
 - Metoprolol
- ↓
- Bradycardia, especially with acetylcholinesterase inhibitors

α-1 Blockers

- Doxazosin
 - Prazosin
 - Terazosin
- ↓
- ↑ cardiovascular events
 - orthostatic hypotension

α-2 agonists

- Clonidine
 - Methyldopa
- ↓
- Orthostatic hypotension
 - Bradycardia
 - Confusion
 - Delirium

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α-2 agonists

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 - Methyldopa
- ↓
- Orthostatic hypotension
 - Bradycardia
 - Confusion
 - Delirium

Case 3

Case 3

History of Present Illness

- HN is a 93 yo M admitted to ED with CC of fall
- Was watching TV and when he got up, he felt dizzy and fell down.
 - **BP sitting:** 135/80 **BP standing:** 99/70
 - **HR:** 80 bpm **CK:** 30 **BG:** 130

Home medications

- Atorvastatin 40 mg at bedtime
- Clonidine 0.2 mg three times daily
- Insulin glargine 5 units at bedtime
- Metoprolol succinate 50 mg daily



Which medication may be contributing to the patient's current symptoms?

- a) Atorvastatin
- b) Clonidine
- c) Insulin glargine
- d) Metoprolol succinate

Statins

Beers Criteria: No statement

Highest risk of muscle injury:
CYP3A4 metabolism &
Lipophilic

Atorvastatin

Lovastatin

Simvastatin

Lowest risk of muscle injury:
Not metabolized by CYP3A4 &
Hydrophilic

Pitavastatin

Pravastatin

Rosuvastatin

>50% of cases of statin-induced-rhabdomyolysis due to drug interactions

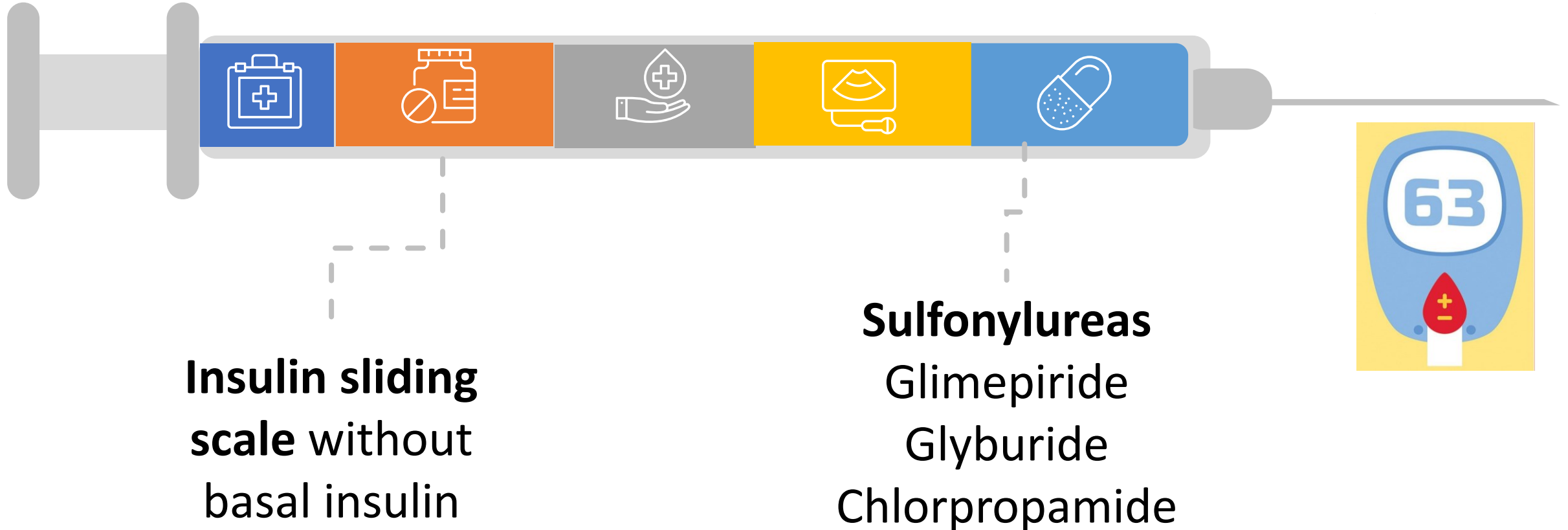
Meta-analysis by Iwere, et. al:
No difference in myopathy in older adults on statin vs. placebo → statins should not be withheld unless patient is intolerant

Consider drawing creatine kinase (CK) for patients admitted with falls on statins

Insulin & Oral Antihyperglycemics

Risk of hypoglycemia: Decreased awareness in older adults

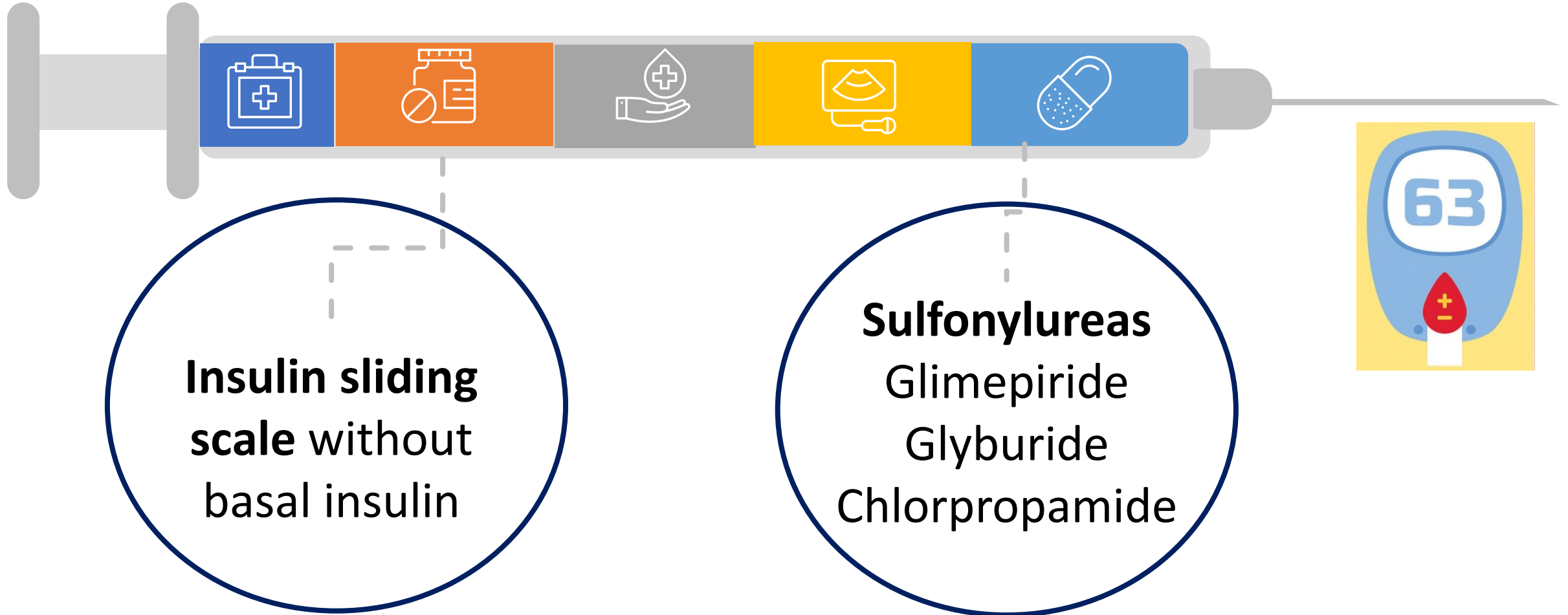
Beers Criteria: AVOID



Insulin & Oral Antihyperglycemics

Risk of hypoglycemia: Decreased awareness in older adults

Beers Criteria: AVOID



Deprescribing Antihyperglycemics

- Reduce dose(s) or stop agent(s)

- most likely to contribute to hypoglycemia (e.g. sulfonylurea, insulin; strong recommendation from systematic review and GRADE approach) or other adverse effects (good practice recommendation)

- Switch to an agent

- with lower risk of hypoglycemia (e.g. switch from glyburide to gliclazide or non-sulfonylurea; change NPH or mixed insulin to detemir or glargine insulin to reduce nocturnal hypoglycemia; strong recommendation from systematic review and GRADE approach)

- Reduce doses

- of renally eliminated antihyperglycemics (e.g. metformin, sitagliptin; good practice recommendation) – See guideline for recommended dosing

Monitor daily for 1-2 weeks after each change (TZD – up to 12 weeks):

- For signs of hyperglycemia (excessive thirst or urination, fatigue)
- For signs of hypoglycemia and/or resolution of adverse effects related to antihyperglycemic(s)

Increase frequency of blood glucose monitoring if needed
A1C changes may not be seen for several months

If hypoglycemia continues and/or adverse effects do not resolve:

- Reduce dose further or try another deprescribing strategy

If symptomatic hyperglycemia or blood glucose exceeds individual target:

- Return to previous dose or consider alternate drug with lower risk of hypoglycemia

Case 4

Case 4

History of Present Illness

WR is a 66-year-old M with a PMH of type 2 diabetes and hypertension admitted to ED with CC of fall

- Was found down in the kitchen
- **BP:** 128/78 **HR:** 77 bpm
- **A1c:** 8% **Fingerstick glucose:** 55

Home medications

Amlodipine 5 mg daily

Glyburide 20 mg daily

Losartan 100 mg daily

Metformin 1000 mg ER twice daily



Which medication would be best to recommend discontinuing due to increased risk for prolonged hypoglycemia?

- a) Amlodipine
- b) Glyburide**
- c) Losartan
- d) Metformin

Severe Hypoglycemia and Risk of Falls in Type 2 Diabetes: The Atherosclerosis Risk in Communities (ARIC) Study

Study	Lee AK et. al 2020
Design	<ul style="list-style-type: none">• Prospective cohort analysis
Objective	<ul style="list-style-type: none">• Association between severe hypoglycemia and falls
Population	<ul style="list-style-type: none">• N = 1162 with type 2 diabetes, N=149 (mean age: 65 years) of which had severe hypoglycemic event
Results	<ul style="list-style-type: none">• >2-fold ↑risk of falls in patients with severe hypoglycemia vs. no hypoglycemia (HR 2.23, 95% CI 1.61–3.07)
Conclusion	<ul style="list-style-type: none">• Severe hypoglycemia is associated with a substantially higher risk of falls in patients with type 2 diabetes• Fall risk should be considered when individualizing glycemic treatment in older adults

CNS active agents

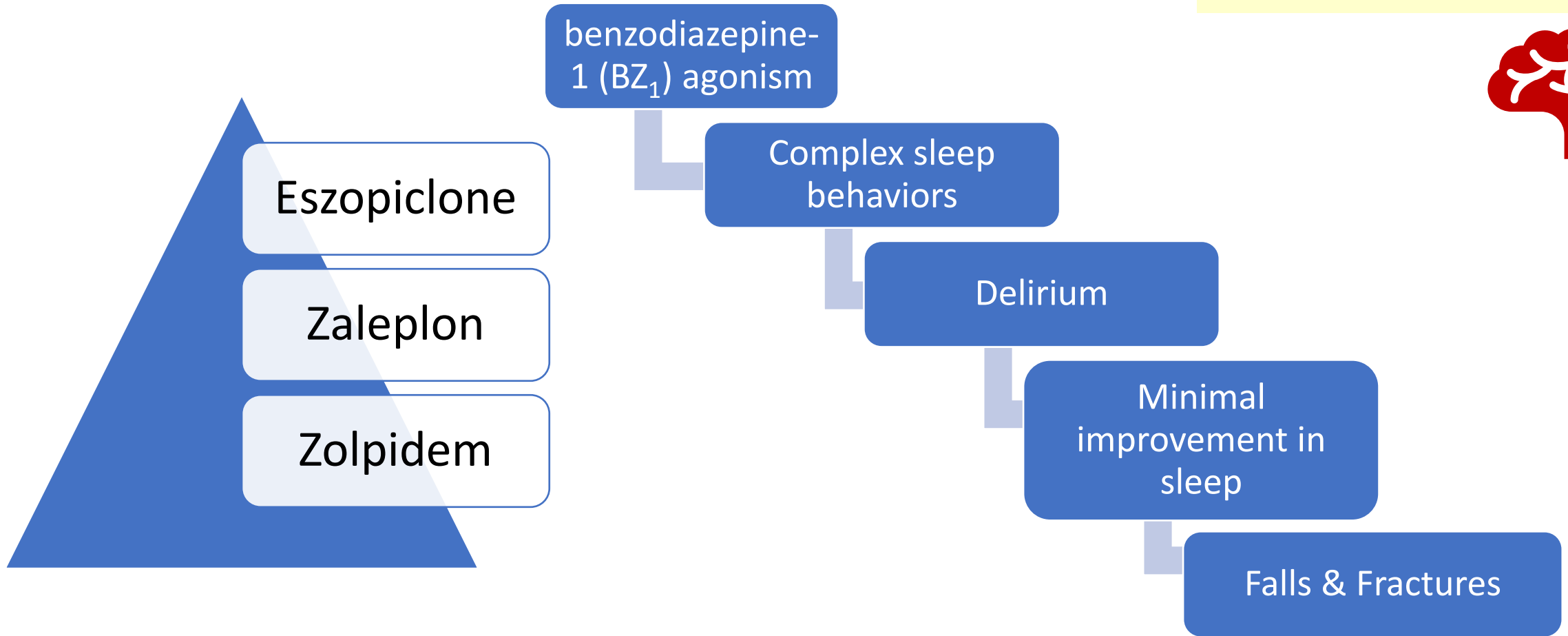
↑ Falls & Fractures



Beers Criteria:
AVOID 3+ CNS-
active drugs;
minimize # of
CNS-active
drugs

Non-Benzodiazepine Receptor Agonists

Beers Criteria: AVOID



Deprescribing Non-Benzodiazepine Receptor Agonists

Taper and then stop BZRA

(taper slowly in collaboration with patient, for example ~25% every two weeks, and if possible, 12.5% reductions near end and/or planned drug-free days)

- For those ≥ 65 years of age (strong recommendation from systematic review and GRADE approach)
- For those 18-64 years of age (weak recommendation from systematic review and GRADE approach)
- Offer behavioural sleeping advice; consider CBT if available (see reverse)

Monitor every 1-2 weeks for duration of tapering

Expected benefits:

- May improve alertness, cognition, daytime sedation and reduce falls

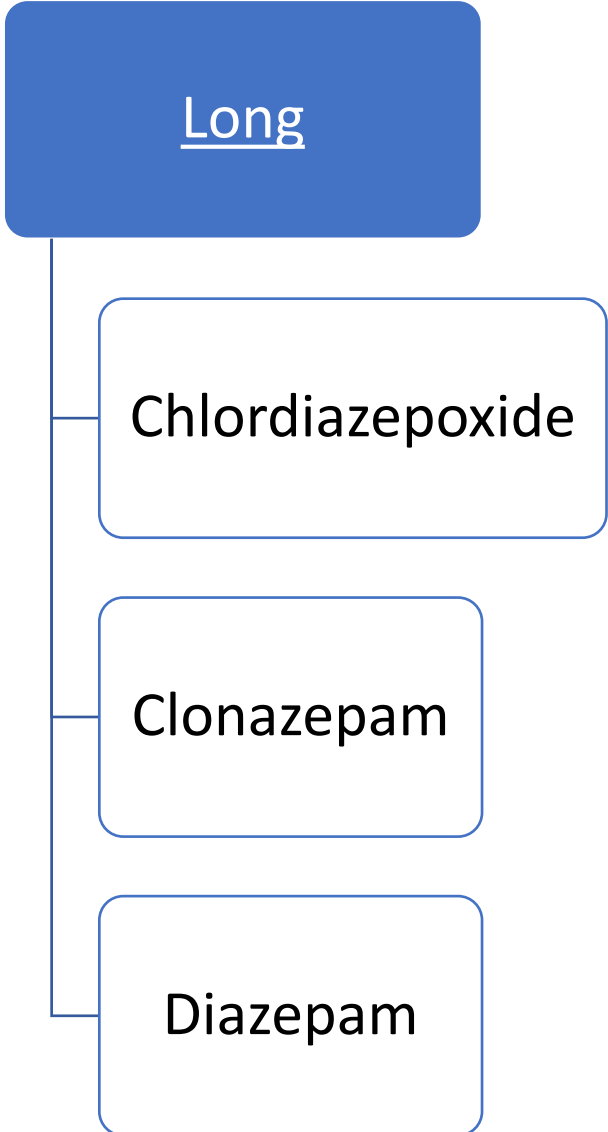
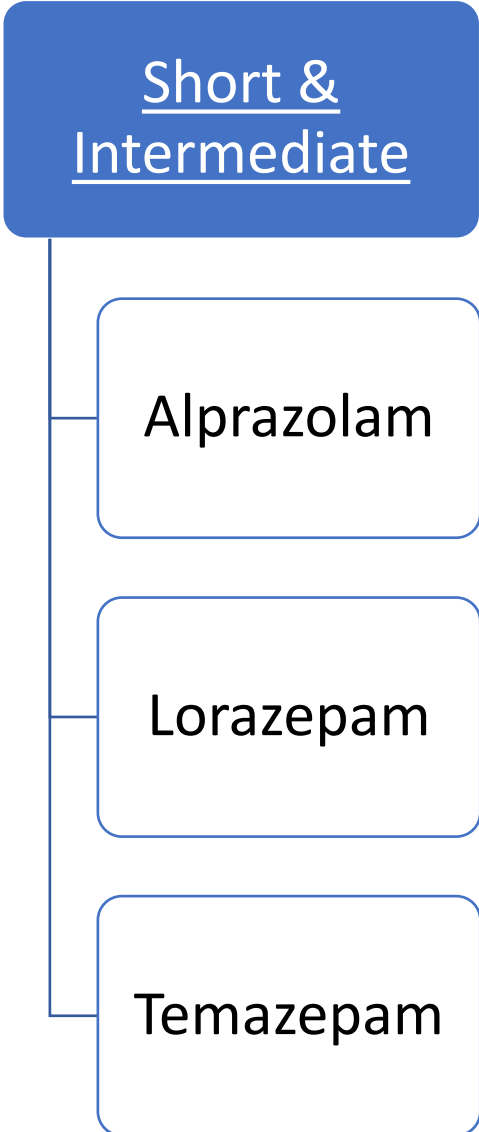
Withdrawal symptoms:

- Insomnia, anxiety, irritability, sweating, gastrointestinal symptoms (all usually mild and last for days to a few weeks)

Use non-drug approaches to manage insomnia

Use behavioral approaches and/or CBT (see reverse)

Benzodiazepines



Beers Criteria: AVOID with exceptions

Enhance effect of GABA at GABA-A receptor

Boxed warning with opioids

CNS Depression

Cognitive impairment

Delirium

Falls & Fractures



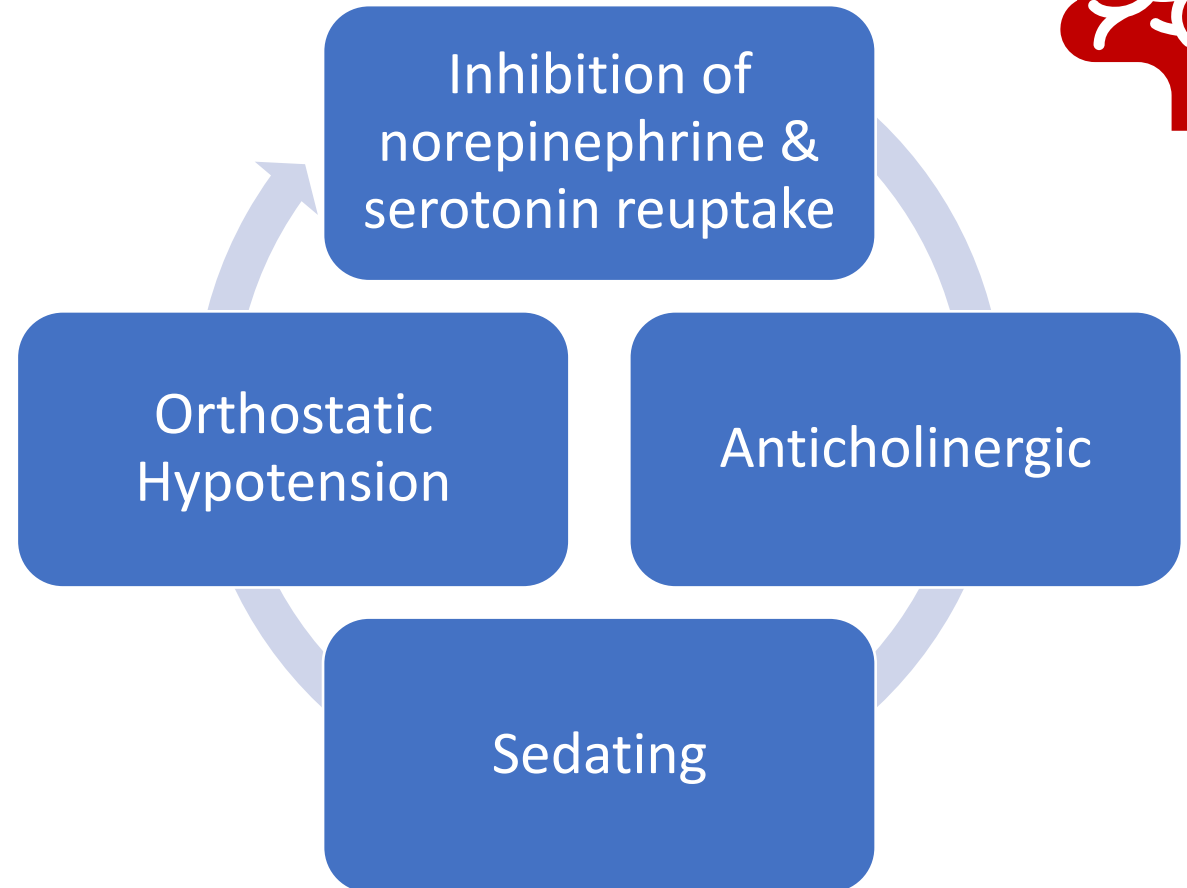
Tertiary Amine Tricyclic Antidepressants

Amitriptyline

Doxepin
>6 mg/day

Imipramine

Beers Criteria: AVOID



Antipsychotics

Beers Criteria: AVOID with exceptions

1st generation

- Chlorpromazine
- Fluphenazine
- Haloperidol

2nd generation

- Aripiprazole
- Clozapine
- Olanzapine
- Quetiapine
- Risperidone

Inhibition of Dopamine-2, 5-HT, Alpha1 & 2 (quetiapine, risperidone)

BOXED WARNING:
Cognitive decline & mortality in dementia

Stroke

Anticholinergic



Deprescribing Antipsychotics

Strong Recommendation (from Systematic Review and GRADE approach)

Taper and stop AP (slowly in collaboration with patient and/or caregiver; e.g. 25%-50% dose reduction every 1–2 weeks)

Stop AP

Good practice recommendation

Monitor every 1-2 weeks for duration of tapering

Expected benefits:

- May improve alertness, gait, reduce falls, or extrapyramidal symptoms

Adverse drug withdrawal events (closer monitoring for those with more severe baseline symptoms):

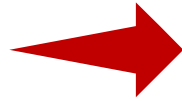
- Psychosis, aggression, agitation, delusions, hallucinations

Anticonvulsants

All may cause dizziness, drowsiness, ataxia

Beers Criteria: AVOID in patients with recent falls or fractures EXCEPT for seizures

Carbamazepine
Oxcarbazepine



↑ADH secretion
SIADH, Hyponatremia

Beers Criteria:
Use with caution

Barbiturates



↑GABA
Dependence, Overdose at low doses

Beers Criteria: AVOID

Gabapentin
Pregabalin



α 2-delta subunit inhibition
Fatal respiratory depression

Beers Criteria:
AVOID with opioids
unless transitioning

Others: Ethosuximide, Phenytoin, Topiramate, Valproate, Zonisamide

Opioids

Beers Criteria: AVOID in patients with recent falls or fractures EXCEPT for acute pain

Fentanyl
Morphine



Significant renal elimination

Methadone



Long and variable half-life

Meperidine



Active metabolites (normeperidine)
↑neurotoxicity than other opioids

Beers Criteria: AVOID

Tramadol



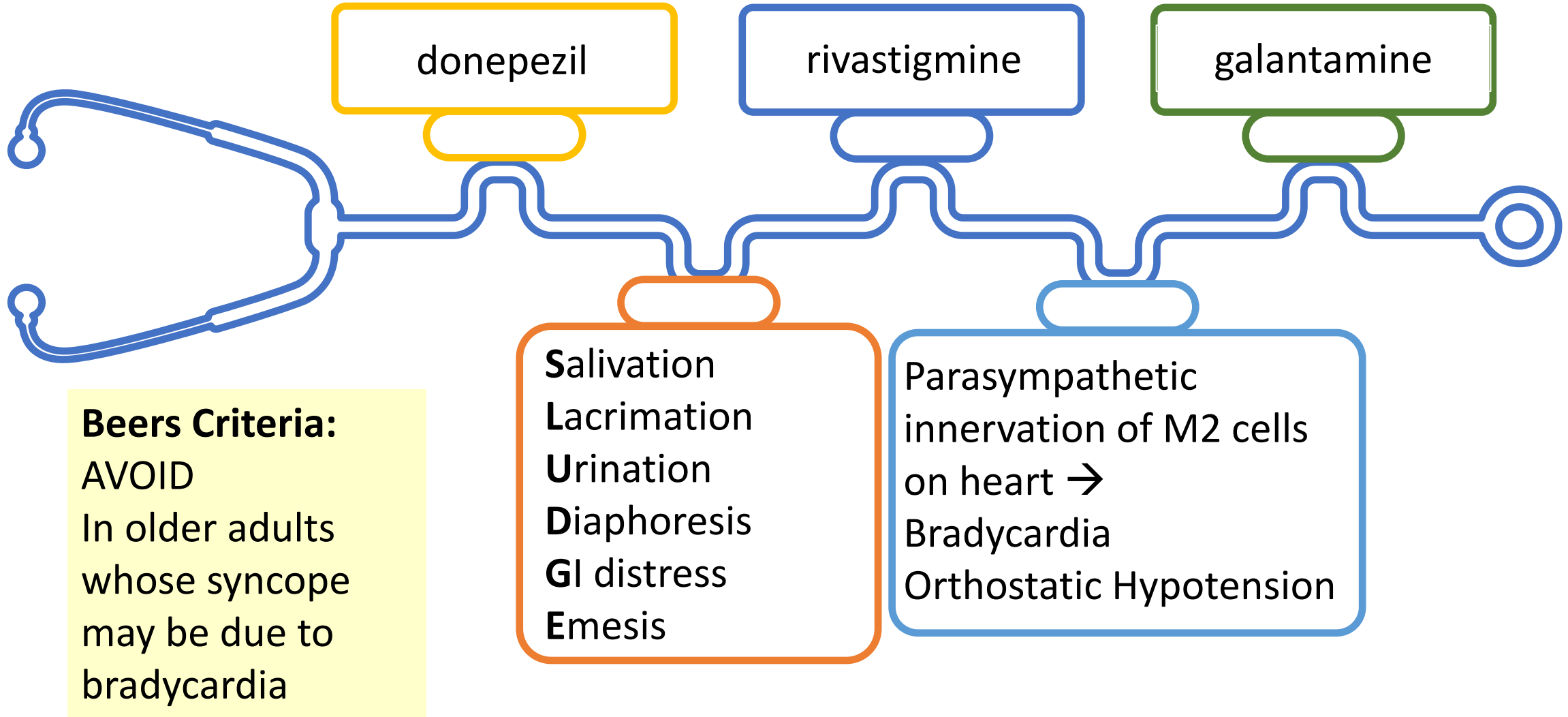
NE & 5-HT reuptake Inhibition
Serotonin syndrome

Start at
LOW
doses

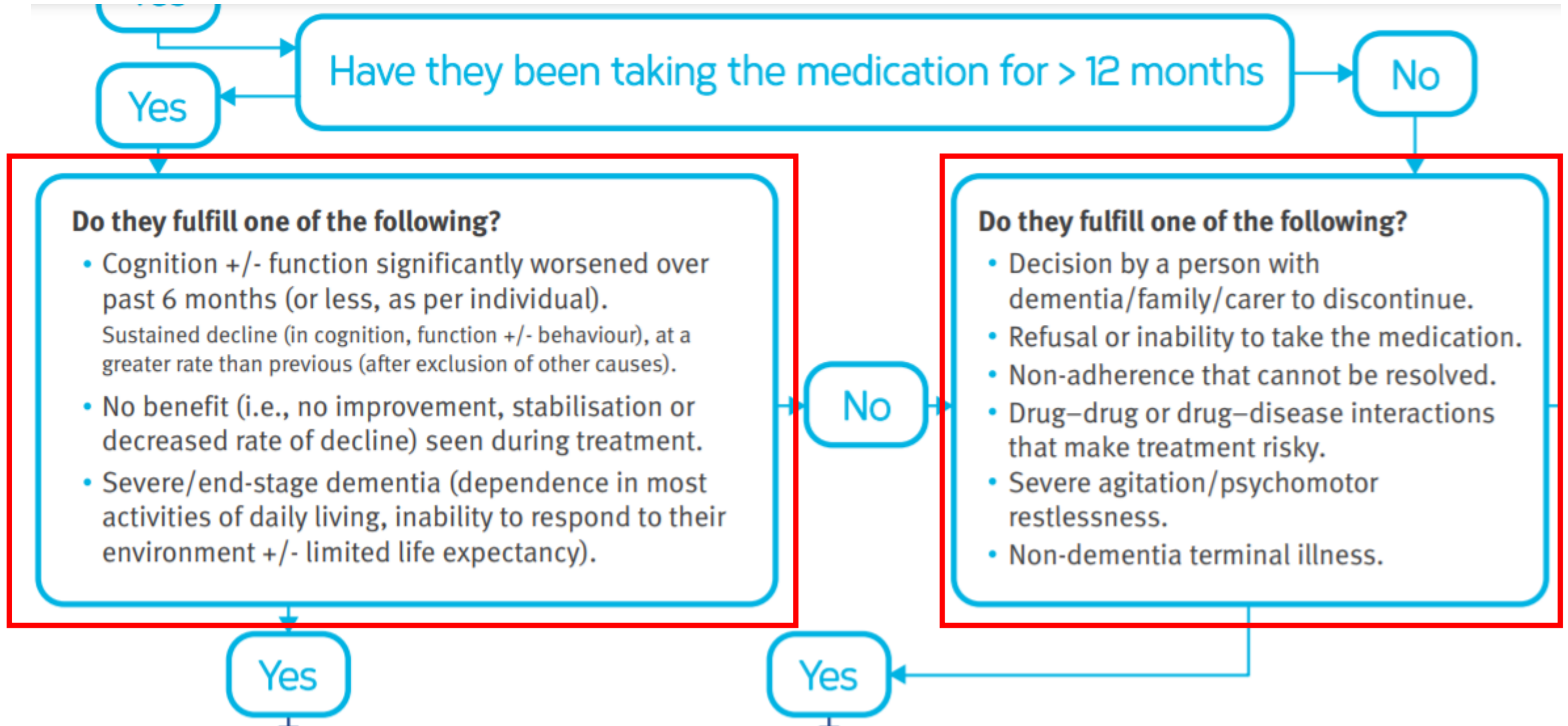
Recent opioid use and fall-related injury among older patients with trauma

Study	Daoust R et. al 2018
Design	<ul style="list-style-type: none">Retrospective, observational, multicenter cohort study
Objective	<ul style="list-style-type: none">Association between opioid use and fall risk in older adults
Population	<ul style="list-style-type: none">N = 67,929 (mean age: 81 years) of which N = 3,126 had opioid prescriptions filled in the 2 weeks preceding hospital fall-related admission
Results	<ul style="list-style-type: none"><u>In-hospital death in patients with fall-related injury on opioids vs. no opioids: OR 1.58 (95% CI 1.34 – 1.86)</u><u>Fall-related injury in patients on opioids vs. no opioids: 2.4x↑ risk</u>
Conclusion	<ul style="list-style-type: none">Recent opioid use is associated with an increased risk of fall and an increased likelihood of death in older adults

Acetylcholinesterase Inhibitors



Deprescribing Acetylcholinesterase Inhibitors



Deprescribing Acetylcholinesterase Inhibitors

Taper and then stop

Halve dose (or step down through available dose forms) every 4 weeks to lowest available dose, followed by discontinuation. Plan this in collaboration with the individual/carer and relevant healthcare professionals.

Conduct close periodic monitoring (e.g. every 4 weeks)

- cognition, function and neuropsychiatric symptoms.

Consider other causes of changes (e.g. delirium).

Case 5

Case 5

History of Present Illness

GH is a 83-year-old F with a PMH of severe dementia, depression, and hypertension admitted to ED with CC of fall

- Fell down at the grocery store and stated that she been feeling dizzy often, especially when she stands up
- **BP:** 148/85 sitting, 90/70 standing
- **HR:** 49 bpm **Na:** 132 mEq/L

Home medications

Aspirin 81 mg daily

Donepezil 10 mg daily

Lisinopril 5 mg daily

Sertraline 100 mg daily



Which medication would be best to recommend discontinuing due to increased risk for dizziness?

- a) Aspirin
- b) Donepezil
- c) Lisinopril
- d) Sertraline

Cholinesterase inhibitors (AChEIs) and incidence of bradycardia in patients with dementia in the veterans affairs new England healthcare system

Study	Hernandez RK et. al 2009
Design	<ul style="list-style-type: none">Retrospective, observational, multicenter cohort study
Objective	<ul style="list-style-type: none">Association between AChEI and bradycardia
Population	<ul style="list-style-type: none">AChEI (N = 3,198)No AChEI (N = 8,130)
Results	<ul style="list-style-type: none"><u>Bradycardia in patients on AChEI vs. no AChEI: HR 1.4</u> (95% CI 1.1 – 1.6)<ul style="list-style-type: none">- 13% (n = 82) with decreased heart rate >10 bpm
Conclusion	<ul style="list-style-type: none">AChEIs are associated with an increased risk of bradycardia in older patients with dementia



Prevention

Stay Safe, Stay Active: ↓ falls by 40%

1) Hip to side



2) Foot Circles



3) Lift Leg



4) Shoulder Blade



5) Arm Curl



6) Knees in & out



7) Ankle Pumps



8) Hip Extension



Tai Chi - Moving for Better Balance: ↓ falls by 49%



Stepping On: ↓ falls by 31%

Risk appraisal; introducing balance and strength exercises



How to move safely in the home



How to reduce hazards in and around home



How to move safely in the community; safe footwear



Benefits of vitamin D & calcium



Medication management



Follow-up home visit

Stepping On

Conclusion



Older adults are prone to falls secondary to chronic and acute illnesses, environmental factors, and medications



Alongside with interdisciplinary team, identify environmental factors for falls in older adults and provide family/patient education



Thorough medication reconciliation & medication review is essential in optimization of acute and chronic illnesses and prevention of future falls




Identify potentially inappropriate medications, recommend discontinuation of culprit medications, and suggest pharmacologic and non-pharmacologic alternatives to help our patients 1 fall at a time

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Falling Short of Medications: The Role of Pharmacists in Preventing Falls among Older Adults

Shireen Farzadeh, PharmD, BCPS, BCGP
Clinical Pharmacy Specialist –
Transitions of Care
NYC Health + Hospitals

