Preventing Geriatric Syndromes in Hospitalized Older Adults

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Disclosure/Conflict of Interest

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Janice Hoffman-Simen PharmD, EdD, APh, BCGP, FASCP has no financial relationships with ineligible companies to disclose.

Michael R. Wasserman, MD, CMD has disclosed the following:

- Owns stock from Sanolla, Ltd.
- Receives honoraria from Merck in his role as a Member of the Editorial Board for the Merck Manual.
- Has a financial relationship with Presidium and The Key.

All conflicts of interest have been mitigated in accordance with the California Medical Association (CMA) Standards for Commercial Support.

Learning Objectives

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1. Describe the potential Geriatric Syndromes and needed assessment to determine the associated risks during hospitalization.
2. Outline the 5 M's for age-friendly care.
3. Discuss potential strategies to prevent Geriatric Syndromes during hospitalization.
4. Apply potential prevention strategies to minimize Geriatric Syndrome risks to a patient case.

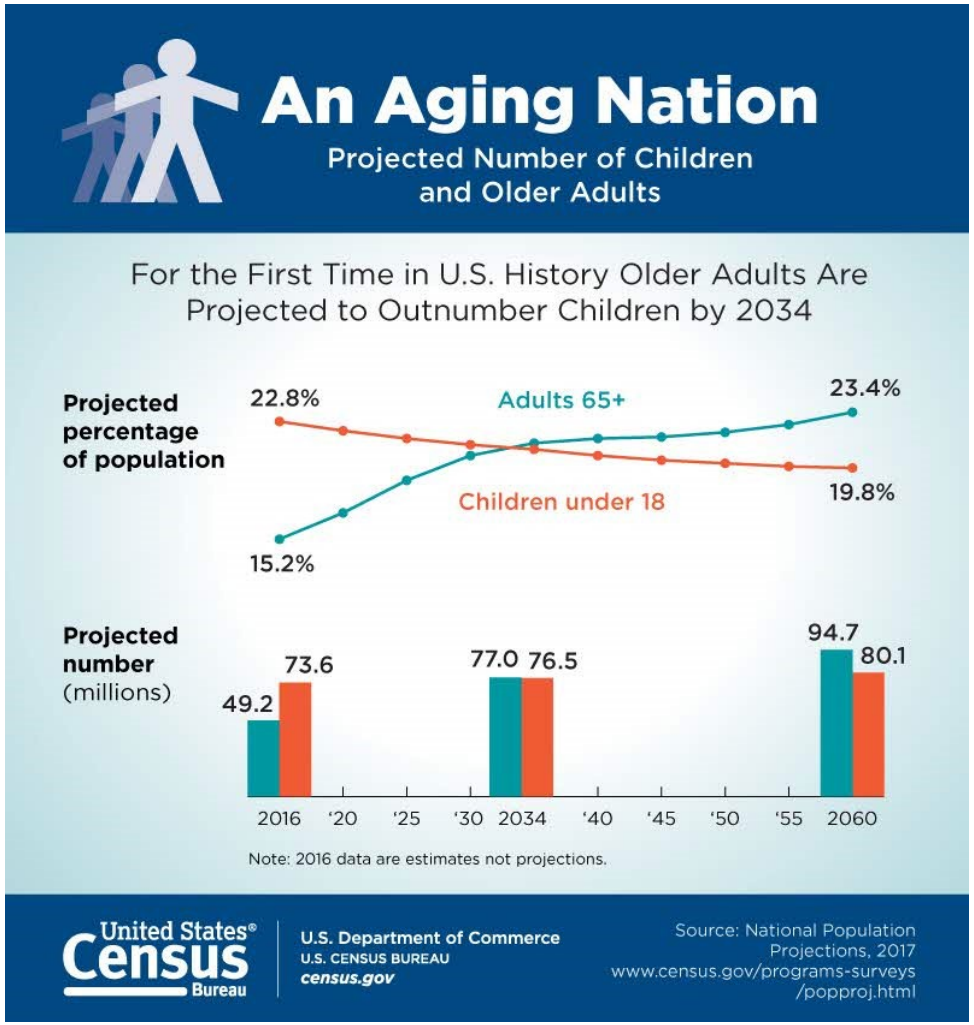
Content Overview

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- Statistical review of the older adult population in the USA
- Define Geriatric Syndromes
- Identify Assessment tools for Geriatric Syndromes
- Review and identify the 5 Ms of Geriatric age-friendly care
- Strategies to assist with prevention of Geriatric Syndromes
  - Deprescribing
- Applying strategies to patient cases

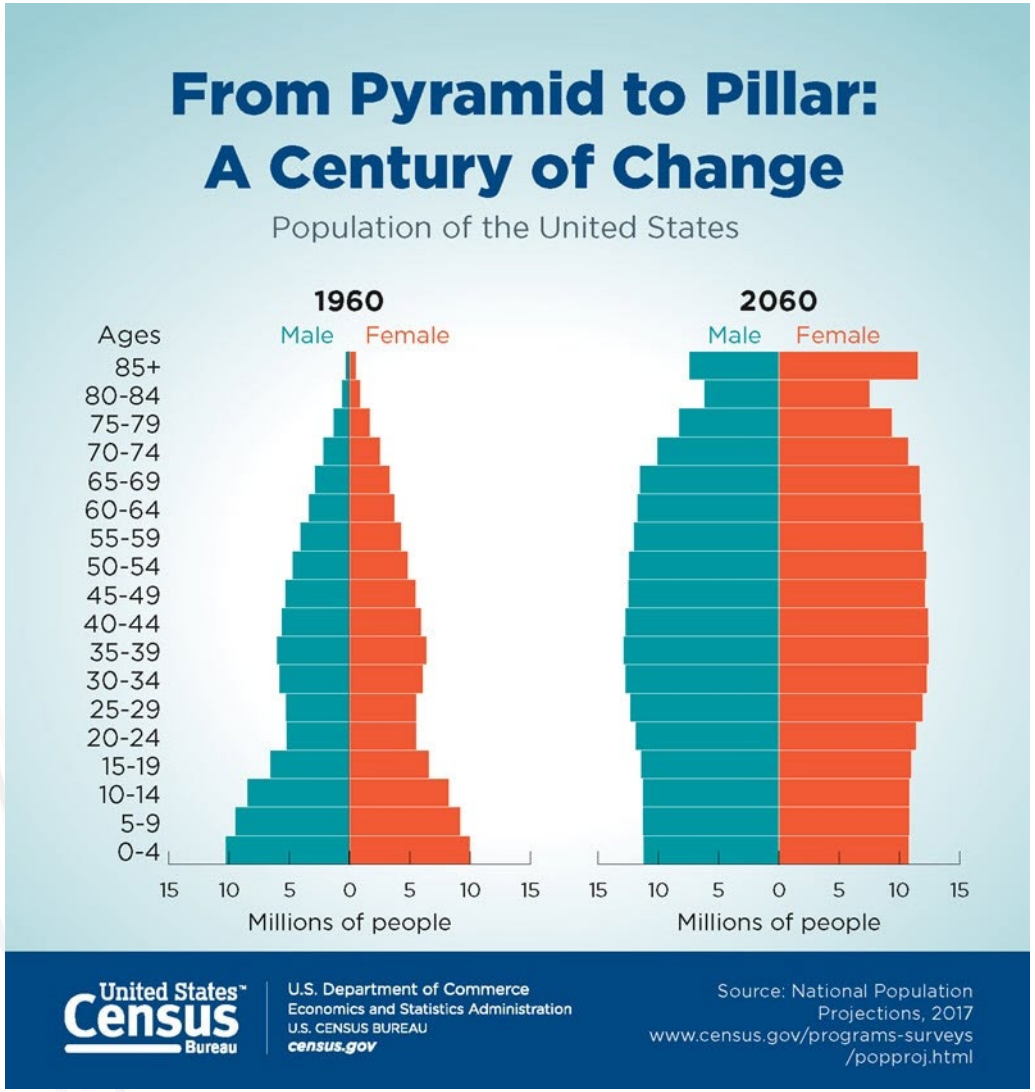
Tsunami of Older Adults

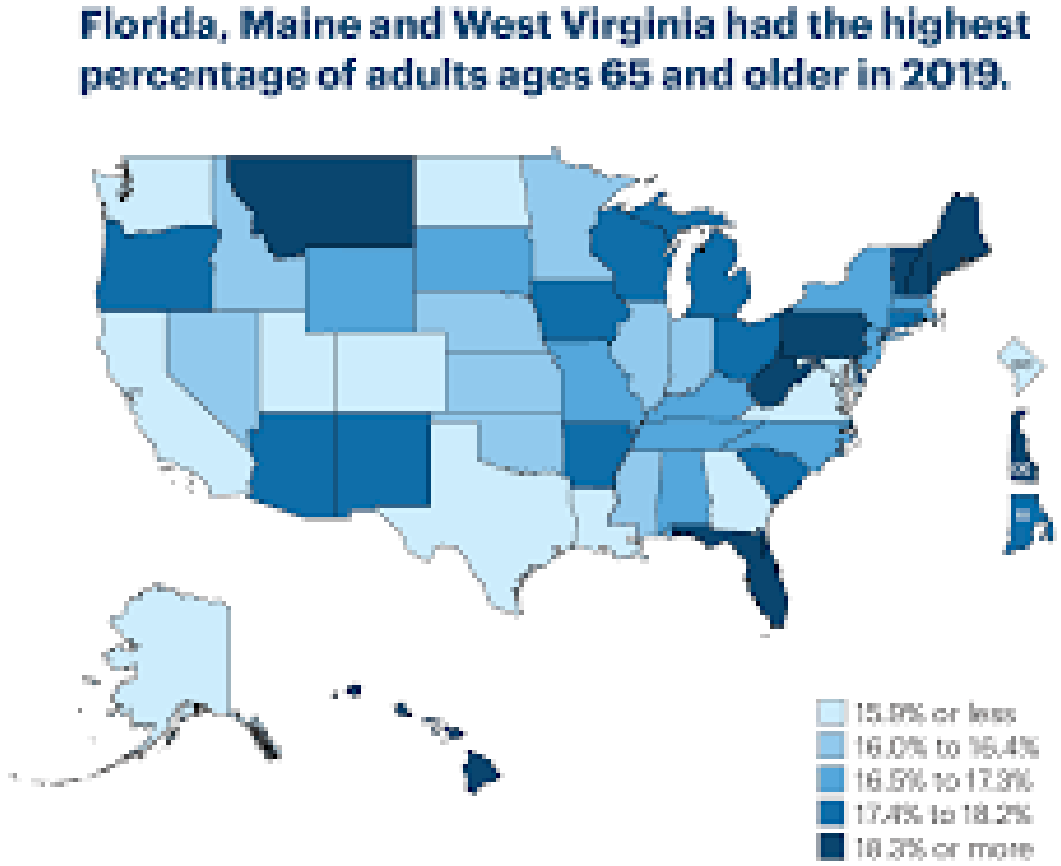
- Baby Boomers (born 1946 to 1964) started turning age 65 in 2011
- In 2019, 54.1 million US adults were 65 or older (16%)
  - More than 1 in every 7 Americans
  - Nearly 1 in 4 older adults are of racial or ethnic minority group
- By 2040, the number of older adults is expected to reach **80.8 million.**
- By **2060,** it will reach **94.7 million**
  - Older adults will make up nearly **25% of the US population**



https://www.cdc.gov/chronicdisease/resources/publications/factsheets/promoting-health-for-older-adults.htm accessed March 19, 2022

Graying of America





https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html accessed March 19, 2022

Current Statistics for Dementia

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- **6.2 MILLION ADULTS** have Alzheimer's disease
  - 2021, health care and long-term care costs associated with Alzheimer's and other dementias were **$355 billion,** making them some of the costliest conditions to society.
- **11 MILLION ADULTS** are UNPAID caregivers to a person with Alzheimer's disease
- **27.2 MILLION ADULTS** age 65 years or older have arthritis

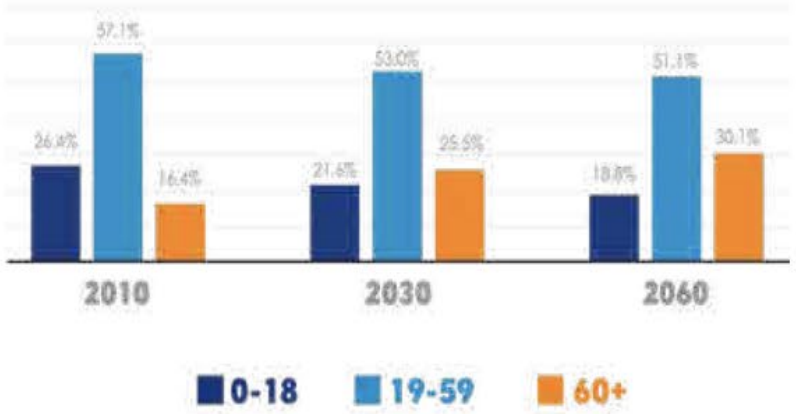
https://www.cdc.gov/chronicdisease/resources/publications/factsheets/promoting-health-for-older-adults.htm accessed March 19, 2022

California: Aging Statistics

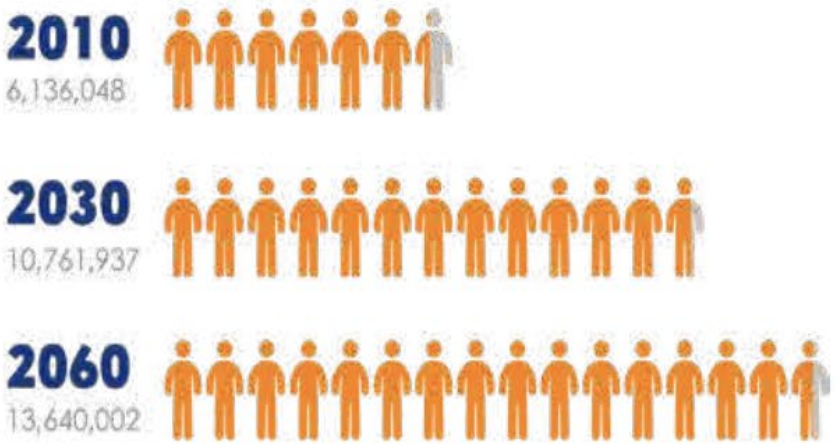


By 2030 adults 60 and over will make up 30% of California's population.

Distribution of the CA population by age group, by year



Number of Californians age 60+ by year



Source: CA Department of Finance

https://mpa.aging.ca.gov/

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California's households are changing

1.8M

Californians 60 and over live alone[1]

The number of people aging alone is increasing

746,000

California households consist of three or more generations[2]

California has more multigenerational households than any other state. Reasons why include housing costs and other financial constraints, care needs, and cultural preferences.

95,000

Californians live in nursing homes[3]

Nursing homes offer an important, and sometimes necessary, option for individuals needing LTSS.

300,000

The number of people that Long-term care and Residential Care Facilities for the Elderly are licensed to serve in California.

1,079

Homeless adults aged 50 or over in Sacramento alone[5]

Older Californians are the fastest growing age group experiencing homelessness. Sacramento County's 2019 Point-in-Time Count identified 1,079 homeless adults aged 50 or over.

[1] U.S. Census | 2019 California Health Interview Survey [2] Pew Research [3] California Department of Social Services
[4] California Office of Statewide Health Planning and Development [5] Sacramento Steps Forward 2019 Point-In-Time Count

Definition of Geriatric Syndromes

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- Geriatric syndromes, refer to

  "multifactorial health conditions that occur when accumulated effects of impairments in multiple systems render [an older] person vulnerable to situational challenges. The geriatric usage of the term "syndrome" emphasizes multiple causation of a unified manifestation."

- Clinical conditions in older adults that do not fit into disease categories examples:
  - delirium
  - Falls
  - Frailty
  - dizziness, syncope
  - urinary incontinence
  - constipation

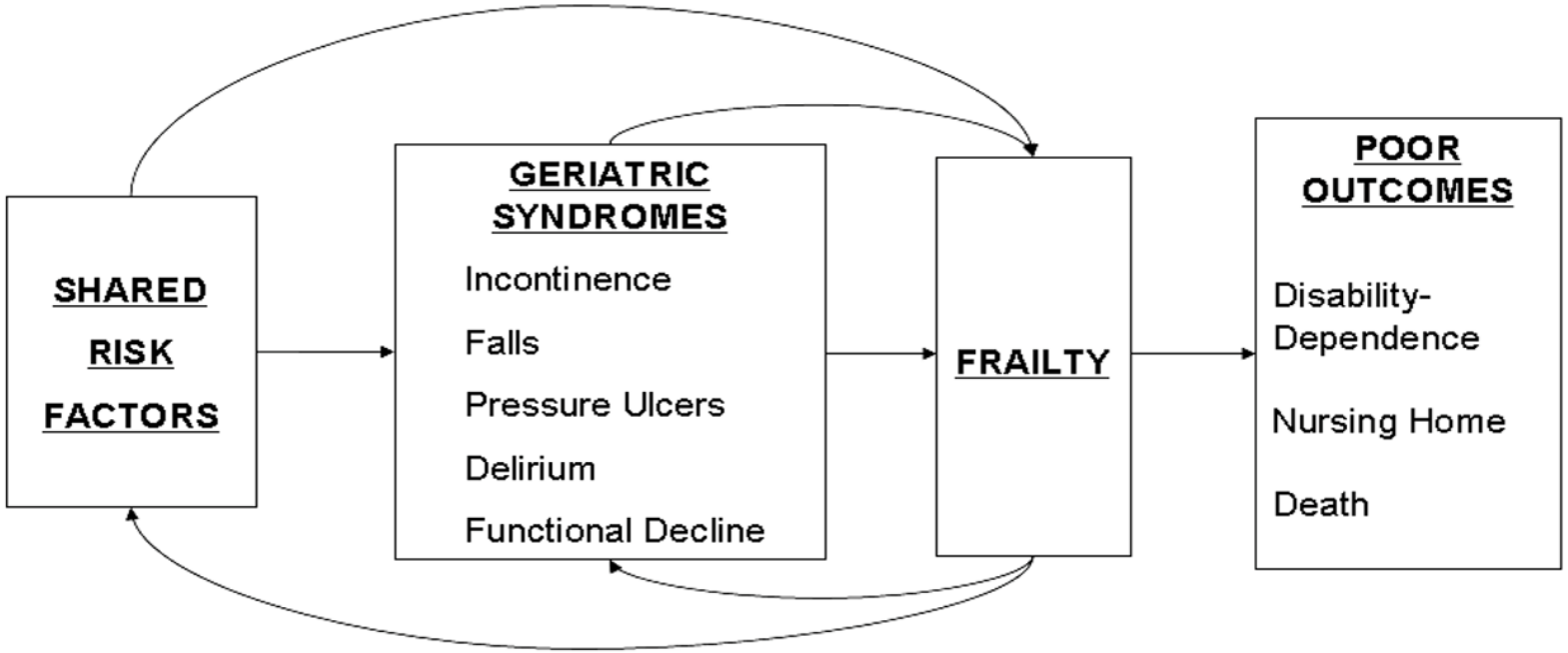
Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric Syndromes: Clinical, Research and Policy Implicationsof a Core Geriatric Concept . J Am Geriatr Soc. 2007 May ; 55(5): 780–791
Flacker JM. What is a geriatric syndrome anyway? J Am Geriatr Soc 2003;51:574–576. [PubMed:12657087]
Olde Rikkert MG, Rigaud AS, van Hoeyweghen RJ, et al. Geriatric syndromes: medical misnomer or progress in geriatrics? Neth J Med 2003;61:83–87. [PubMed: 12765229]

Special Clinical Considerations for Geriatric Syndromes

- Multi-factorial
- Multi-organ involved
- Burdensome
- Dangerous if not treated
- Costly

Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric Syndromes: Clinical, Research and Policy Implicationsof a Core Geriatric Concept . J Am Geriatr Soc. 2007 May ; 55(5): 780–791

Conceptual Model Geriatric Syndromes



- Shows shared risk factors may lead to geriatric syndromes leading to frailty, with feedback mechanisms enhancing the presence of shared risk factors and geriatric syndromes.
- Poorer outcomes involving disability-dependence, nursing home placement, and ultimately death.
- Pathophysiologic mechanisms and designing effective intervention strategies.

Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric Syndromes: Clinical, Research and Policy Implicationsof a Core Geriatric Concept . J Am Geriatr Soc. 2007 May ; 55(5): 780–791

Assessments for Geriatric Patients

Activities of Daily Living (Functional Status)

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Basic (Katz Index)

- Bathe
- Dress
- Continence and toileting
- Feed oneself
- Transfer from a chair to bed
- Walking
- Grooming

Instrumental ADL

- Use the telephone
- Shopping
- Prepare food
- Do Laundry
- Travel independently
- Handle finances
- Responsible medication use

Devens CAJ. Comprehensive geriatric assessment: making the most of the aging years. Current Opinion in Clinical Nutrition and Metabolic Care 2002, 5:19±24
Katz S, Ford AB, Moskowitz RW, et al. Studies of illness in the aged: the index of ADL: a standard measure of biological and psychosocial function. JAMA 1963; 185:914.

Fall Risk Pathophysiology

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Age related Physiologic Organ System Changes Affecting Fall Risk	
Muscle	Decreased muscle strength
Nervous System	
Balance	Increased postural sway Slowed righting reflexes
Gait	Decreased step height Decreased proprioception
Vision	Reduced papillary response to light variation Thickening and loss of elasticity of lens

Phelan EA, Mahoney JE, Voit JC, Stevens JA. Assessment and Management of Fall Risk in Primary Care Settings Med Clin N Am 99 (2015) Am 99 (2015) 281–293 http://dx.doi.org/10.1016/j.mcna.2014.11.004

Fall Risk

- 5%–10% of falls in older adults result in fracture or serious injury.
- Causes are most often multifactorial.
- Falls are associated with:
  - Increased use of medical services
  - Decline in functional status
  - Nursing home placement
  - Increased mortality

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Fall Risk Screening

- Has the patient fallen 2 or more times in the past year or sought medical attention for a fall.
- If have not fallen, whether they feel unsteady when walking.
- Patients who answer positively to any of these questions are at increased risk for falls and should receive further assessment.
- People who have fallen once without injury should have their balance and gait evaluated.
- A history of 1 fall without injury and without gait or balance problems does not warrant further assessment.

Phelan EA, Mahoney JE, Voit JC, Stevens JA. Assessment and Management of Fall Risk in Primary Care Settings Med Clin N Am 99 (2015) Am 99 (2015) 281–293 http://dx.doi.org/10.1016/j.mcna.2014.11.004

Panel on Prevention of Falls in Older Persons. Summary of the Updated American Geriatrics Society/British Geriatrics Society clinical practice guideline for prevention of falls in older persons. J Am Geriatr Soc 2011;59:148–57.

Medications That Increase Fall Risk

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Medication Class	Odds Ratio (95% CI)
Psychoactive Medications	
Antidepressants	1.68 (1.47–1.91)
Antipsychotics	1.59 (1.37–1.83)
Sedative hypnotics	1.47 (1.35–1.62)
Benzodiazepines	1.57 (1.43–1.72)
Other Medications	
Antihypertensives	1.24 (1.01–1.50)
Nonsteroidal antiinflammatory drugs	1.21 (1.01–1.44)
Diuretics	1.07 (1.01–1.14)

Abbreviation: CI, confidence interval.

Data from Woolcott JC, Richardson KJ, Wiens MO, et al. Meta-analysis of the impact of 9 medication classes on falls in elderly persons. Arch Intern Med 2009;169:1957.

Phelan EA, Mahoney JE, Voit JC, Stevens JA. Assessment and Management of Fall Risk in Primary Care Settings Med Clin N Am 99 (2015) Am 99 (2015) 281–293 http://dx.doi.org/10.1016/j.mcna.2014.11.004

Fall Risk: Lab assessment

- ***Based on results of history and physical, may consider labs:***
  - Basic metabolic profile (dehydration, hypoglycemia)
  - Complete blood count (infection, anemia)
  - Vitamins D and B12 levels
  - ECG and echocardiography (cardiac conditions believed to contribute to the maintenance of blood flow to the brain)
  - Neuroimaging (head injury, new focal neurologic finding on exam, CNS process suspected)
  - Spinal imaging (abnormal gait, neuralgia examination, or lower-extremity spasticity or hyperreflexia) to exclude cervical spondylosis or lumbar stenosis
  - Bone Mineral Density (see AGS Geriatrics Evaluation & Management: Osteoporosis)

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Medication needs

- Optimize medication treatment of underlying medical conditions that can contribute to falls.
- Supplement vitamin D – vitamin D may reduce falls by
  - Increasing muscle strength
  - Decreasing body sway
  - Recommended dosage of vitamin D through sunlight, diet, or supplementation
    - Age 51–70: vitamin D 600 IU/day
    - Age >70: vitamin D 800 to 1,000 IU/day

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Assessment Tools for Fall and Gait

Assessment Tools for Falls	Brief Description
Performance-Oriented Mobility Assessment	Patient is asked to perform a series of maneuvers that test the quality of transfer, balance, and gait (ie, sitting balance, rising from a chair, standing balance, 1-leg balance, balance with eyes closed). Each movement is rated as normal, adaptive, or abnormal.[19]
Short Physical Performance Battery	Tests of standing balance (tandem, semitandem and side-by-side stands). Test of walking speed (8-foot walking speed). Test of ability to get up from a chair with arms across the chest.[20]
Berg Balance Test	14-item test including sitting to standing, standing unsupported, sitting unsupported, transfers, standing with eyes closed, reaching forward with an outstretched arm, and so forth. Each task is scored from 0–4. Maximum score is 56 and score <45 imply increased risk for falls.[21]
Get Up and Go	Patient is asked to get up from an armchair without using his or her hands. Then patient walks across the room (3 m) and turns and walks back to the chair and sits down. If this test takes >13.5 s to complete then he or she is at risk for future falls.[22]
Functional Reach Test	Patient is asked to stand perpendicular and close to a wall with arms forward. Then ask the patient to extend the arm forward as far as possible without losing balance to taking a step. Measure the difference in arm stretch from standing to the reached position. If the functional reach is <10 inches then he or she has increased risk for falling.[23]

19.Tinetti ME. Performance-oriented assessment of mobility problems in elderly patients. J Am Geriatr Soc 1986;34:119–26.
20. Guralnick JM, Simonsick EM, Ferrucci L, et al. A short physical performance batterassessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. J Gerontol A Biol Sci Med Sci 1994;49:M85–94.
21. Bogle Thorbahn LD, Newton RA. Use of the Berg balance test to predict falls inelderly persons. Phys Ther 1996;76:576–83.
22. Mathias S, Nayak US, Isaacs B. Balance in elderly patients: the "get-up and go"test. Arch Phys Med Rehabil 1986;34:119–26.
23. Duncan PW, Weiner DK, Chandler J, et al. Functional reach: a new clinical measureof balance. J Gerontol 1990;45:M192–7.

STEADI Algorithm for Fall Risk Screening, Assessment, and Intervention among Community-Dwelling Adults 65 years and older

START HERE

1 SCREEN for fall risk yearly, or any time patient presents with an acute fall.

Available Fall Risk Screening Tools:

- **Stay Independent: a 12-question tool** [at risk if score ≥ 4]
  - **Important:** If score < 4, ask if patient fell in the past year (If **YES** → patient is at risk)
- **Three key questions** for patients [at risk if **YES** to any question]
  - Feels unsteady when standing or walking?
  - Worries about falling?
  - Has fallen in past year?
    - » If **YES** ask, "How many times?" "Were you injured?"

SCREENED NOT AT RISK

PREVENT future risk by recommending effective prevention strategies.

- Educate patient on fall prevention
- Assess vitamin D intake
  - If deficient, recommend daily vitamin D supplement
- Refer to community exercise or fall prevention program
- Reassess yearly, or any time patient presents with an acute fall

SCREENED AT RISK

2 ASSESS patient's modifiable risk factors and fall history.

Common ways to assess fall risk factors are listed below:

Evaluate gait, strength, & balance

Common assessments:
- Timed Up & Go
- 30-Second Chair Stand
- 4-Stage Balance Test

Identify medications that increase fall risk

(e.g., Beers Criteria)

Ask about potential home hazards

(e.g., throw rugs, slippery tub floor)

Measure orthostatic blood pressure

(Lying and standing positions)

Check visual acuity

Common assessment tool:
- Snellen eye test

Assess feet/footwear

Assess vitamin D intake

Identify comorbidities

(e.g., depression, osteoporosis)

3 INTERVENE to reduce identified risk factors using effective strategies.

Reduce identified fall risk

- Discuss patient and provider health goals
- Develop an individualized patient care plan (see below)

Below are common interventions used to reduce fall risk:

Poor gait, strength, & balance observed
- Refer for physical therapy
- Refer to evidence-based exercise or fall prevention program (e.g., Tai Chi)

Medication(s) likely to increase fall risk
- Optimize medications by stopping, switching, or reducing dosage of medications that increase fall risk

Home hazards likely
- Refer to occupational therapist to evaluate home safety

Orthostatic hypotension observed
- Stop, switch, or reduce the dose of medications that increase fall risk
- Educate about importance of exercises (e.g., foot pumps)
- Establish appropriate blood pressure goal
- Encourage adequate hydration
- Consider compression stockings

Visual impairment observed
- Refer to ophthalmologist/optometrist
- Stop, switch, or reduce the dose of medication affecting vision (e.g., anticholinergics)
- Consider benefits of cataract surgery
- Provide education on depth perception and single vs. multifocal lenses

Feet/footwear issues identified
- Provide education on shoe fit, traction, insoles, and heel height
- Refer to podiatrist

Vitamin D deficiency observed or likely
- Recommend daily vitamin D supplement

Comorbidities documented
- Optimize treatment of conditions identified
- Be mindful of medications that increase fall risk

FOLLOW UP with patient in 30-90 days.

Discuss ways to improve patient receptiveness to the care plan and address barrier(s)

https://www.cdc.gov/steadi/pdf/STEADI-Algorithm-508.pdf

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Resources: Fall Risk for health care professionals

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Source	Item	Location
American Geriatrics Society	Clinical practice guideline (GEMS) on fall prevention	http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/prevention_of_falls_summary_of_recommendations
CDC	STEADI tool kit	www.cdc.gov/injury/steadi
Centers for Medicare and Medicaid Services	Welcome to Medicare (Initial Preventive Physical Examination) visit	www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/MPS_QRI_IPPE001a.pdf
Centers for Medicare and Medicaid Services	Annual Wellness visit	www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/AWV_Chart_ICN905706.pdf
National Council on Aging	Fact sheets about Medicare coverage for fall-related clinical services	www.ncoa.org/improve-health/falls-prevention
National Institute on Aging	Go4Life exercise DVD/ manual	http://go4life.nia.nih.gov

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Question # 1

- Which of the following medications can contribute to an increased risk of a fall (**Select ALL that apply**)
  a. Risperidone
  b. Furosemide
  c. Naproxen
  d. Vitamin D

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  d. Vitamin D

Frailty

- Definition of Frailty (note: framework)
  - A Clinical Syndrome Involving 3 or more of the following:
    - Unintentional weight loss of more than 10 lbs in the past year
    - Self report of exhaustion
    - Weakness (measured by grip strength of the lowest 20% by gender, BMI)
    - Slow walking speed (lowest 20% for gender and height)
    - Low physical activity (kcal/week in lowest 20%
  - About 5% of the population over 60 years is diagnosis with Frailty
  - Frailty can lead to:
    - Longer hospital stays, higher 30-day readmission rate

Carlson C, Merel SE,Yukawa M. Geriatric Syndromes and Geriatric Assessment for the Generalist. Med Clin N Am 99 (2015) 263–279
http://dx.doi.org/10.1016/j.mcna.2014.11.003
Adapted from Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001;56:M148; with permission.

Frailty: Weight Loss and Exhaustion

- **Weight loss**
  - Patient has unintentional weight loss of 5% of previous year's body weight.
- **Exhaustion**
  - Exhaustion Criterion: Patient answers "2" or "3" to either of these 2 questions:
  - "How often in the last week did you feel that everything you did was an effort?"
    - 0 = rarely or none of the time (<1 day)
    - 1 = some or a little of the time (1–2 days)
    - 2 = a moderate amount of the time (3–4 days)
    - 3 = most of the time
  - "How often in the last week did you feel that you could not get going?" (Use same scale)

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Frailty: Weakness Criterion

- Grip strength (average of 3 trials, dominant hand) is:
- Men
- ≤29 kg for BMI ≤24
- ≤30 kg for BMI 24.1–26
- ≤30 kg for BMI 26.1–28
- ≤32 kg for BMI >28

- Grip strength (average of 3 trials, dominant hand) is:
- Women
- ≤17 kg for BMI ≤23
- ≤17.3 kg for BMI 23.1–26
- ≤18 kg for BMI 26.1–29
- ≤21 kg for BMI >29

Equipment: Jamar hand dynamometer; participant attempts to squeeze the dynamometer maximally 3 times with the dominant hand.

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Frailty: Walking Speed and Physical Activity

- **<u>Slowed</u> Walking Speed Criterion:** Time to walk 15 feet (4.57 meters) is:
- *Men/ Women*
  - ≥7 seconds for height ≤173 cm (68″)/ ≥7 seconds for height ≤159 cm (63″)
  - ≥6 seconds for height >173 cm (68″)/ ≥6 seconds for height >159 cm (63″)
- Equipment: 4-meter course in walkway of ≥4.5 meters, a stopwatch. Patient walks 15-foot length 2x at his/her usual pace. Use **<u>average</u>** of 2 trials.
- **Physical Activity Criterion**
  - Men with <383 Kcals of physical activity per week
  - Women with <270 Kcals of physical activity per week

(Based on short version of the Minnesota Leisure Time Activity questionnaire Kcals per week expended are calculated using standardized algorithm.)*

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Frailty: Lab Assessment

- According to patient's goals, consider the following labs:
- TSH
- CBC
- Calcium, magnesium, phosphate, 25-hydroxyvitamin D
- B12/folate
- Prealbumin, albumin
- Total cholesterol

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Frailty Index Scales

Name of Scale	Descriptions	Scale
FI[39]	92 items[6] $FI = \frac{\text{Number of health deficits present}}{\text{Number of health deficits measured}}$	Score range from Frail score >0.25, prefrail score 0.25–0.2
Frail phenotype–based Cardiovascular Health Study[42]	Weight loss ≥10 pounds unintentionally in 12 mo Grip strength: lowest 20% Exhaustion: self-report Slow walking time/15 feet (by gender and height) Low activity: Men <383 kcal/wk Women <270 kcal/wk	Score range from 0–5 Frail score 3–5, prefrail score 1–2
FRAIL (Fatigue, Resistance, Ambulation, Illness, Loss of Weight)[43]	Fatigue: How much time during the past 4 wk they felt tired. 1 point if they answered most of the time or all the time. Resistance: They had any difficulty walking up 10 steps alone without rest or assistance. One point if they answered yes. Ambulation: Whether they had any difficulty walking several hundred yards alone and without aids. One point if they answered yes. Illness: scored 1 point if they reported ≥5 illness Loss of weight: scored 1 point if ≥5% weight loss within past 12 mo.	Score range from 0–5 Frail score 3–5, prefrail score 1–2
Study of Osteoporotic Fractures Frailty Scale[44]	Weight loss >5% in the past 12 mo Inability to get up from a chair 5 times without using the arms Negative answer to "do you feel full of energy?"	Score range from 0–3 Frail score 2–3, prefrail score 1

Carlson C, Merel SE,Yukawa M. Geriatric Syndromes and Geriatric Assessment for the Generalist. Med Clin N Am 99 (2015) 263–279 http://dx.doi.org/10.1016/j.mcna.2014.11.003

39. Mitniski AB, Mogliner AJ, Rockwood K. Accumulation of deficits as proxy measure of aging. ScientificWorldJournal 2001;1:323–36.

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43. Ensrud KE, Ewing SK, Taylor BC, et al. Comparison of 2 frailty indexes for predictionof falls, disability, fractures and death in older women. Arch Intern Med 2008; 168:382–9.

44. Ravindrarajah R, Lee DM, Pye SR, et al. The ability of three different models of frailty to predict all-cause mortality: results from the European Male Aging Study (EMAS). Arch Gerontol Geriatr 2013;57:360–8.

Cognitive Impairment

- If a patient or family member expresses concerns about cognitive decline, or a provider notices dementia warning signs, a mental status assessment and dementia evaluation is indicated.
- Possible warning signs include:
  - unkempt appearance
  - poor historian
  - difficulty following directions
  - repeating the same question
  - lost in familiar places
  - missing appointments
  - frequently misplacing items
  - difficulty managing bills, finances, or medications i-ADLs)

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Comparison of Types of Dementia

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	Alzheimer's Dementia	Vascular Dementia	Lewy-Body Dementia	Frontotemporal (Pick's) Dementia
Onset	Gradual	Sudden or stepwise	Gradual	Gradual (age of onset <65)
Cognitive domains and symptoms	Memory, difficulty learning, language, visuospatial, managing complex tasks	Depends on location of ischemia	Memory, visuospatial, visual hallucinations, fluctuating symptoms; REM sleep behaviors; extreme sensitivity to neuroleptic medication	Executive dysfunction, personality changes, disinhibition, language, ± memory
Motor symptoms	Rare early Apraxia later	Correlates with ischemia	Parkinsonism, present at time of onset of cognitive changes; frequent falls	None
Progression	Gradual (over 8-10 yr)	Gradual or stepwise	Gradual, but faster than Alzheimer's disease	Gradual, but faster than Alzheimer disease
Imaging	Possible global atrophy	Cortical/ subcortical ischemic changes on brain MRI	Possible global atrophy	Atrophy in frontal and temporal lobes

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Cognitive Impairment

- Cognitive testing should be conducted in the patient's primary language (if possible).
- Diagnosis of dementia is a clinical diagnosis taking multiple factors into account with cognitive screening being only one.
- **Thoroughly review medications and decrease or discontinue medications that increase cognitive, physical, or functional disability.
- Discontinue non-essential medications in late-stage dementia

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Cognitive Impairment Screening Assessments

Test	Description	Pros	Cons
Folstein Mini Mental Status Exam (MMSE)	○ 30-item test ○ copyright protected ○ Adjust for age & level of education ○ Score 24 or less is abnormal (Domains: Orientation, registration, attention, recall, naming, repetition, 3-step command, language, visuospatial)	Can detect specific area of impairment	-Costs -Copyrighted document for purchase: www.minimental.com -Takes 30 mins
Montreal Cognitive Assessment (MoCA)	○ 30-item test ○ validated in multiple languages ○ not copyright protected. ○ A Score of 26 is abnormal (domains: Orientation, recall, attention, naming, repetition, verbal fluency, abstraction, executive function, visuospatial)	downloaded free at www.mocatest.org For people with higher education level	-Takes about 20 mins -Not universal (need higher education) -Requires training/certification to administer, score and interpret
St. Louis Mental Status Exam (SLUMS)	○ 11-item test ○ validated in multiple languages ○ 1–20: Indicates dementia (Domains: Orientation, recall, calculation, naming, attention, executive function)	downloaded free at http://medschool.slu.edu/agingsuccessfully/pdfsur.veys/slumsexam_05.pdf Comparable in reliability and validity to MoCA	Not enough research in different populations
Mini-Cog	○ Clock-drawing test + 3-item recall. ○ If both are normal, No cognitive impairment. ○ If either one is abnormal,cognitive impairment ○ (domains: Visuospatial, executive function, recall)	Quick and easy (5 mins) Download Free http://geriatrics.uthscsa.edu/tools/MINICog.pdf	Not as specific

Carlson C, Merel SE,Yukawa M. Geriatric Syndromes and Geriatric Assessment for the Generalist. Med Clin N Am 99 (2015) 263–279
http://dx.doi.org/10.1016/j.mcna.2014.11.003

Cognitive Impairment: Lab Assessment

- Evaluate for potentially reversible causes of cognitive loss with labs:
  - CBC
  - CMP (metabolic issues)
  - Vitamin B12/folate
  - TSH
  - If indicated, consider serologic tests for syphilis and HIV.
- Neuroimaging☐ brain CT or MRI without contrast or FDG PET, useful if:
  - Onset <65 years old
  - Symptoms begin suddenly or progress rapidly
  - Evidence of focal or asymmetrical neurologic deficits
  - Clinical picture suggests normal-pressure hydrocephalus (eg, onset has occurred within 1 year, gait disorder or unexplained incontinence is present)
  - History of recent fall or other head trauma

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Question #2

Which of the following is the fastest and is a reliable tool to assess cognitive function?

a. Mini-mental Status Exam
b. Mini-cog
c. Montreal Cognitive Assessment (MoCA)
d. St. Louis Mental Status Exam (SLUMS)

Question #2

Which of the following is the fastest and is a reliable tool to assess cognitive function?

a. Mini-mental Status Exam
b. Mini-cog
c. Montreal Cognitive Assessment (MoCA)
d. St. Louis Mental Status Exam (SLUMS)

Urinary Incontinence

- 15-30% of older adults dwelling in the community
- Under-reported due to patient embarrassment
- 2 categories
  - Acute, reversible
    - Atrophic vaginitis or Infection
    - Delirium, psychologic disorders
    - Reduced mobility
    - Excessive urine input (fluid intake)
    - Stool impaction
    - Medication
  - Chronic

Carlson C, Merel SE,Yukawa M. Geriatric Syndromes and Geriatric Assessment for the Generalist. Med Clin N Am 99 (2015) 263–279 http://dx.doi.org/10.1016/j.mcna.2014.11.003

Urinary Incontinence Screening Assessments

TOOL	DESCRIPTION
The 3 Incontinence Questions (Brown et al,31 2006)	1. During the past 3 mo, have you leaked urine? If yes, then complete the rest of the questionnaire. 2. During the past 3 mo, did you leak urine: when you were performing some physical activity? Without physical activity? When you had the urge to urinate, could you get to the toilet fast enough? 3. During the past 3 mo, did you leak urine most often: when you were performing some physical activity? Without physical activity? When you had the urge to urinate, could you get to the toilet fast enough?
American Urologic Association BPH Symptom Score Index (Barry et al,32 1995)	During the past month: (Likert scale of 0–5: 0 5 not at all and 5 5 almost always) How often did you feel you did not empty your bladder fully? How often did you have to urinate within 2 hr? How often did you have to stop and restart urination? How often did you find it difficult to delay urination? How often did you notice a weak urinary stream? How often did you have to push and strain to start urination? How often did you have to urinate at night?
Overactive Bladder Validated 8 Question Awareness Tool (Coyne et al,33 2005)	How much have you been bothered by the following: (Likert scale of 0–5: 0 5 not at all and 5 5 bothered a very great deal) Frequent daytime urination? Uncomfortable urge to urinate? Sudden urge to urinate? Loss of small amount of urine? Uncontrollable urge to urinate? Urine loss due to strong desire to urinate? Nighttime urination?Waking up at night to urinate?

Carlson C, Merel SE,Yukawa M. Geriatric Syndromes and Geriatric Assessment for the Generalist. Med Clin N Am 99 (2015) 263–279 http://dx.doi.org/10.1016/j.mcna.2014.11.003

Urinary Incontinence Diagnostic Assessment

- DIAPPERS mnemonic
  - Delirium
  - Infection
  - Atrophic vaginitis/urethritis
  - Pharmaceuticals
  - Psychologic disorders
  - Excess urine output
  - Restricted mobility
  - Stool impaction

Resnick NM, Yalla SV. Management of urinary incontinence in the elderly. N Engl J Med. 1985;313(13):800–5.

Delirium

- Clinical phenomenon ☐ Acute encephalopathy neurobiological process (acute confusional state, altered mental status)
- Failure to diagnose/manage delirium leads to costly, life-threatening complications
  - loss of function and independence
  - increased risk of death.
- Delirium can be found
  - 33% of hospitalized medical patients > age 70
  - 15% of patients older than age 70 presenting to Emergency Dept
  - Under-recognized: less than 50% of all cases recognized in routine care

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Confusional Assessment Method (CAM)

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Requires #1 and #2 (3 and 4 add support)

1. Acute change in mental status and fluctuating course:
   - Is there evidence of an acute change in cognition from the patient's baseline?
   - Does abnormal behavior fluctuate during the day (tend to come and go, or increase or decrease in severity)?

2. Inattention: Does the patient have difficulty focusing attention? Can use one of the following tests for attention:
   - Digit span up to 5 forward, 4 backward
   - "World" backward
   - Days of the week backward, months of the year backwards
   - Continuous performance task such as "Vigilance A

3. Disorganized thinking: Is the patient's thinking disorganized or incoherent (rambling or irrelevant conversation, unclear or illogical flow of ideas, unpredictable switching from subject to subject)?

4. Altered level of consciousness: Is the patient's mental status anything other than alert (vigilant, lethargic, stuporous, comatose)?

Inouye SK, vanDyck CH, Alessi CA, et al. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. Ann Intern Med. 1990;113(12):941–948.
Marcantonio ER, Ngo LH, O'Connor M, et al. 3D-CAM: derivation and validation of a 3-minute diagnostic interview for CAM-defined delirium: a cross-sectional diagnostic test study [published correction appears in Ann Intern Med. 2014 Nov 18;161(10):764]. Ann Intern Med. 2014;161(8):554-561. doi:10.7326/M14-0865
Agscocare.org
https://geriatricscareonline.org/ContentAbstract/abstract-toc-content/B007/B007_CH007

Potential Contributing factors (DELIRIUMS)

Drugs	New additions, increased dosages, or DDI; OTC drugs and alcohol; High-risk drugs (psychoactive, anesthesia)
Electrolyte Imbalance	Dehydration, sodium imbalance; Thyroid Imbalance
Lack of drugs	Withdrawal from chronic sedatives, including alcohol and sleeping pills, Uncontrolled pain
Infection	Respiratory, skin, and urinary tract
Reduced sensory input or mobility	Poor vision, poor hearing Use of restraints, bedbound status
Intracranial	**Rare**: if new focal neurologic findings or suggestive history, or diagnostic eval is otherwise (-); Infection, hemorrhage, tumor, stroke
Urinary, fecal	Urinary retention ("cystocerebral syndrome"), Urinary catheterization; Fecal impaction
Myocardial, pulmonary	MI, arrhythmia, exacerbations of CHF or COPD, hypoxia
Surgery	Incidence15-25% after elective noncardiac surgery; Up to 50% after cardiac bypass, abdominal aortic aneurysm or hip fracture repair

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Delirium: Medications that contribute

- Alcohol
- Anticholinergics (oxybutynin, benztropine)
- Anticonvulsants (primidone, phenobarbital, phenytoin),
- Antidepressants (amitriptyline, imipramine, doxepin)
- Antihistamines (diphenhydramine),
- Anti-inflammatory agents (prednisone)
- Antiparkinsonian agents (levodopa-carbidopa, dopamine agonists, amantadine)
- Antipsychotics, barbiturates,
- Benzodiazepines (triazolam, alprazolam, diazepam, flurazepam, chlordiazepoxide),
- H2-antagonists (cimetidine)
- opioid analgesics (especially meperidine)

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Delirium: Lab Assessment

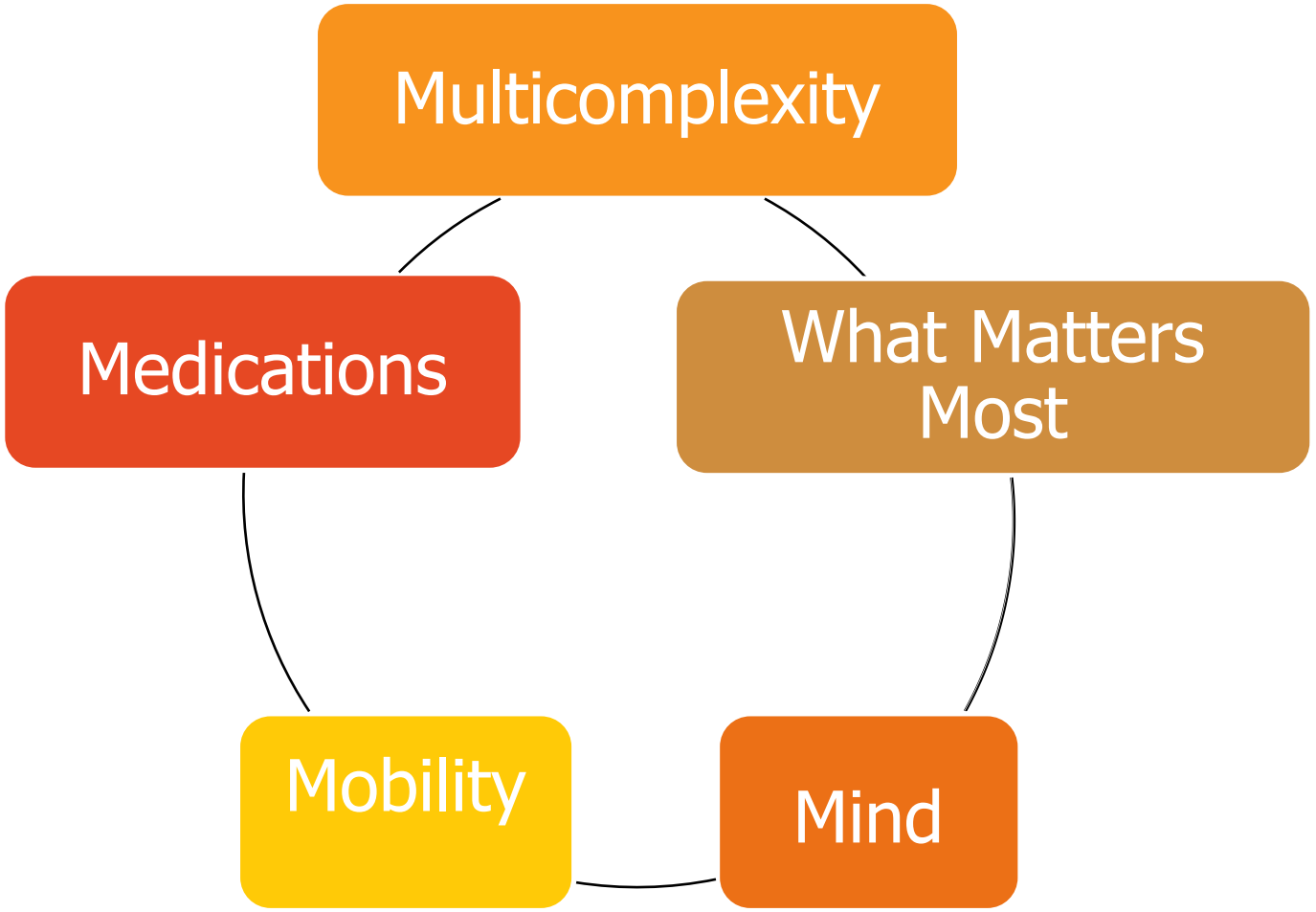
- CBC
- CMP + Serum calcium, Ammonia
- Thyroid panel
- Serum drug levels, Blood alcohol levels
- Blood cultures, Arterial blood gases
- Chest X-ray, ECG
- Urinalysis
- CSF, EEG, CT if head trauma,or s/sx meningitis

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Age-friendly Healthcare

5 M's of Geriatric Care



American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Multicomplexity

- Many co-morbidities
- Complex bio-psycho-social situations
- Navigating health care settings and transitions
- Balancing multiple chronic conditions
- Addressing social determinants of health

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Medications

- Polypharmacy
- Optimizing medications/deprescribing
- Adverse effects
  - Ability of patient to deal with
  - Co-morbidities
  - DDI, contraindications
- Medication burden
  - Cost
  - Number of tablets/capsules
  - Ability to get medication – transportation, family or caregiver

Adapted by the American Geriatrics Society (AGS) with permission from "The public launch of the Geriatric 5Ms [on-line]," by F. Molnar and available from the Canadian Geriatrics Society (CGS) at http://canadiangeriatrics.ca/2017/04/update-the-public-launch-of-the-ge… Accessed March 17,2022.

Medications

- Does each medication have an indication?
  - Consider stopping medication started for a problem that has resolved
  - Review American Geriatrics Society Beers Criteria., J Am Geriatr Soc, 2023
- Are any conditions lacking indicated medications?
  - e.g., consider calcium + Vit. D supplementation for Osteoporosis

(Gallagher et al., Consensus validation Int J Clin Pharmacol Ther, 2008)

- Is each medication still indicated given individualized treatment goals, the patient's goals of care, and prognosis
  - e.g., A1c, BP goals? (Triantafylidis et al., American Geriatrics Society, 2021)

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Medications

- What concerns does the patient have?
  - Cost
  - Opening pill bottles
  - Swallowing pills
  - Forgetting doses
  - Adverse effects
- Any difficulty taking medications?
  - Reading labels
  - Administering patches or ointments
  - Giving self injections
  - Instilling eye drops
  - Keeping track of changes

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Avoid High -Risk Medications:

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- Any of patient's medications are on AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults? (American Geriatrics Society Beers Criteria., J Am Geriatr Soc, 2023)
- Any safer alternatives that may be appropriate?
  - Consider nonpharmacologic therapy for pain, sleep, incontinence, depression.
- Avoid anticholinergic medications if possible (Rudolph et al., Arch Intern Med, 2008)
- Look out for prescribing cascade
  - e.g., Anticholinergic drugs or drug for many adverse effect
  - new drug e.g., oxybutynin☐ constipation ☐ stool softener added

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Risky Prescribing Cascades for Older Adults

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Drug A	Side Effects	Drug B
Cardiovascular Agents		
Calcium Channel Blocker	Peripheral Edema	Diuretic
Diuretic	Urinary incontinence	Anticholinergic for Overactive bladder
Central Nervous System Agents		
Antipsychotics	Extrapyramidal symptoms	Antiparkinson agents
Benzodiazepine	Cognitive impairment	Cholinesterase Inhibitor/Memantine
Benzodiazepine	Paradoxical agitation/secondary to withdrawal	Antipsychotic
SSRI SNRI	Insomnia	Sleep agent (Benzodiazepine (BZN), BZN receptor agonist, melatonin, sedating antidepressant)
Musculoskeletal		
NSAID	Hypertension	Antihypertensive Agent
Urogenital		
Anticholinergic Agent OAB	Cognitive Impairment	Cholinesterase Inhibitor/memantine
Alpha-1 Blocker	Orthostatic hypotension/dizziness	Vestibular Sedatives (antihistamines, BZN, Betahistine)

McCarthy LM, Savage R, Dalton K et al Drugs/Aging 2022 39-829. Doi 10.1007/s40266-022-00964-9

What Matters Most to the Patient

- Identify what matters most to each older adult
- Identify health outcome goals based on what matters most
- Discuss medications, treatments and healthcare tasks
  - Helpful
  - Burdensome
- Align care with the health goals and healthcare preferences
- Advance Directives
  - Polst
  - Living Will
  - Healthcare proxy – Medical Power of Attorney

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Tools for What Matters Most

- www.prepareforyourcare.org (Freytag et al., J Am Geriatr Soc, 2020)
- www.theconversationproject.org
- https://myhealthpriorities.org
- www.vitaltalk.org/resources/quick-guides/

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Mobility

- Optimizing functional status
- Maintaining safe mobility
  - Ability to walk
  - Maintain balance
- Fall injury prevention

American Geriatrics Society. The Geriatrics 5 Ms Quick Guide. https://geriatricscareonline.org/toc/5Ms-Quick-Guide/PC0012/ Accessed 10/15/2023.

Mind

- Mentation: Maintaining mental activity
- Dementia: Helping manage dementia (a decline in memory and other mental abilities that make daily living difficult)
- Delirium: Helping treat and prevent delirium (an abrupt, rapid change in mental function that goes well beyond typical forgetfulness of aging)
- Depression: Working to evaluate and treat depression (a mood disorder that can interfere with all aspects of daily life)

https://www.va.gov/covidtraining/docs/HIA_TipSheet_Geriatric_5Ms_19.pdf

Question # 3

- What do the 5 M's of Age-Friendly Health care mean?

  M

  M

  M

  M

  M

Question # 3

- What do the 5 M's of Age-Friendly Health care mean?

  Mentation (Mind)

  Medications

  Multicomplexity

  Mobility

  What Matters most to the patient/family

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Strategy for Prevention of Geriatric Syndromes

Strategy: Delirium Prevention

- Prevention of delirium ☐ better patient outcomes
- Two 2019 systematic reviews found no evidence that antipsychotics were helpful in prevention or treatment of delirium.
- Multifactorial approach to management is most successful
  - multiple factors contribute to delirium☐ multiple interventions, even if individually small, can yield marked clinical improvement

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Strategy: Delirium Prevention

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Steps		Actions
1. Identify and treat reversible contributors	Medications Infections Fluid balance disorders Impaired CNS oxygenation Severe pain Sensory deprivation Elimination problems	✓Reduce/eliminate offending medications ✓Treat common infections: urinary, respiratory, soft tissue. ✓Assess/treat dehydration, heart failure, electrolyte disorders. ✓Treat severe anemia (transfusion), hypoxia, hypotension. ✓Assess and treat; use local measures and scheduled pain regimens that minimize opioids; avoid meperidine. ✓Use eyeglasses, hearing aid, portable amplifier; clear cerumen. ✓Assess/treat urinary retention, constipation, fecal impaction.
2. Maintain behavioral control	Behavioral interventions Pharmacologic interventions	Teach hospital staff appropriate interaction in delirium; encourage family visitations. Teach de-escalation strategies. Last effort
3. Anticipate and prevent or manage complications	Interdisciplinary Team Assessment	Communication and care coordination
4. Restore function	Deconditioning	Rehabilitation

Strategy: Optimize medications ☐ Deprescribing

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Definition: Planned or supervised process of **dose reduction** or **stopping medication(s)** that may be causing **harm** or **no longer providing benefit**



Scott IA, Hilmer SN, Reeve E, Potter K, Le Couteur D et al. Reducing Inappropriate Polypharmacy The Process of Deprescribing. *JAMA Intern Med*. 2015;175(5): 827-834.

Deprescribing Protocol

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Drugs with adverse withdrawal effects	
Drug	**Monitoring**
Beta Blocker	↑ HR, BP, angina
Diuretics	↑ edema, SOB, weight gain
PPIs	Rebound sx
NSAIDs Gabapentin	↑pain, ↓mobility
Antihypertensive	↑ BP

Anticholinergic Risk Scale[3]		
3 points	**2 points**	**1 point**
Diphenhydramine	Cyclobenzaprine	Mirtazapine
Oxybutynin	Loperamide	Ranitidine
Amitriptyline	Loratadine	Trazodone

> 3 points: 77.8% risk of 2+ anticholinergic ADEs
1-2 points: 61.5% risk of 2+ anticholinergic ADEs
0 points: 17% risk of 2+ anticholinergic ADEs

1. Reconcile all medications according to indication

2. Consider appropriateness, risks, and benefits of each medication

3. Assess each drug for eligibility to be discontinued

4. Prioritize drugs for discontinuation

5. Implement and monitor drug discontinuation

Beers Criteria[4]
Proton pump inhibitors (PPIs)
Alpha-1 blockers (ex prazosin)
Benzodiazepines
"Z-drugs" (ex zolpidem)
NSAIDS
Skeletal muscle relaxants
Gabapentin, Pregabalin when CrCl < 60ml/min

*Medication Assessment Tools not pictured: STOPP/START Criteria, Medication Appropriateness Index

Tools for monitoring and discontinuation[5]
www.MedStopper.com
www.Deprescribing.org

[Type a quote from the document or the summary of an interesting point. You can position the text box anywhere in the document. Use the Drawing Tools tab to change the formatting of the pull quote text box.]

Prioritization
Greatest harm and least benefit
Easiest to discontinue; lowest likelihood of withdrawal
Patient willingness to discontinue ("buy-in")

Eligibility considerations
Potential or active adverse drug reaction
No indication
Ineffective for indication
Prescribing cascade
Treatment burden/Impractical instructions
Safer alternatives available
Drug interactions

Geriatrics 5Ms[1] for Primary Care Workshop – Created by Sarah C. Phillips, MD; Chelsea Hawley, PharmD; Laura Triantafylidis, PharmD; Andrea Wershof Schwartz, MD MPH
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Application of prevention strategies: Case Study

Patient Case #1

- 90 year old man admitted to ER and then hospital for syncope, fall and "dementia"
  - Was driving and managing own finances one month ago
  - Found down at home by daughter
  - Disoriented with altered mental status
- 6 months ago had dental procedure and started on amlodipine for elevated blood pressure reported at dentist office

Patient Case #1 (cont.)

- 3 months ago started on hydrochlorthiazide
  - For recent onset of ankle edema
- 1 month ago given temazepam for insomnia
  - Kept getting up at night to urinate and couldn't fall back to sleep
- Passed out at home and fell, found by daughter and taken to ER
- In ER, was disoriented. Admission note described patient as "confused." Diagnosis of Dementia in Assessment.

Case Question #1

What is this case an example of

a. Normal decline of a 90 year old

b. Prescribing Cascade

c. Alzheimer's Disease

d. Appropriate disease-specific prescribing

Case Question #1

What is this case an example of

a. Normal decline of a 90 year old

b. Prescribing Cascade

c. Alzheimer's Disease

d. Appropriate disease-specific prescribing

Case Question #2

What is the most likely etiology for ankle edema?

a. Congestive Heart Failure
b. Venous Stasis
c. Adverse drug reaction
d. Old age

Case Question #2

What is the most likely etiology for ankle edema?

a. Congestive Heart Failure
b. Venous Stasis
c. Adverse drug reaction
d. Old age

Case Question #3

What is the most likely diagnosis related to altered mental status?

a. Alzheimer's Disease
b. Multi-infarct Dementia
c. Delirium
d. Normopressure Hydrocephalus

Case Question #3

What is the most likely diagnosis related to altered mental status?

a. Alzheimer's Disease
b. Multi-infarct Dementia
c. Delirium
d. Normopressure Hydrocephalus

Clinical Pearls – Take away

- Apply the 5M's of age friendly care to each older adults for best practices
  - Mind
  - Mobility
  - Medications
  - Multicomplexity
  - What Matters most to the patient/family
- Prevent medical complications (Geriatric Syndromes) by
  - Assessing symptoms
  - Labs are monitored
- Optimize medications when appropriate
  - deprescribing
  - Avoid prescribing cascades
  - Avoid high risk medications

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