Geriatric Care and Counseling

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23 November 2024

Global Situation

	ประชากรอายุ 60 ปีขึ้นไป	ประชากรอายุ 65 ปีขึ้นไป
“สังคมสูงอายุ” (Aged society)	มากกว่าร้อยละ 10	มากกว่าร้อยละ 7
“สังคมสูงอายุอย่างสมบูรณ์” (Complete-aged society)	มากกว่าร้อยละ 20	มากกว่าร้อยละ 14
“สังคมสูงอายุระดับสุดยอด” (Super-aged society)	มากกว่าร้อยละ 28	มากกว่าร้อยละ 20

พ.ศ. 2565 (ค.ศ. 2022)

2044 Global complete-aged society

Age > 60 = 21.2%

Age > 65 = 14.2%

Mahidol population gazette 2024

สถานการณ์ผู้สูงอายุไทย พ.ศ. ๒๕๖๓

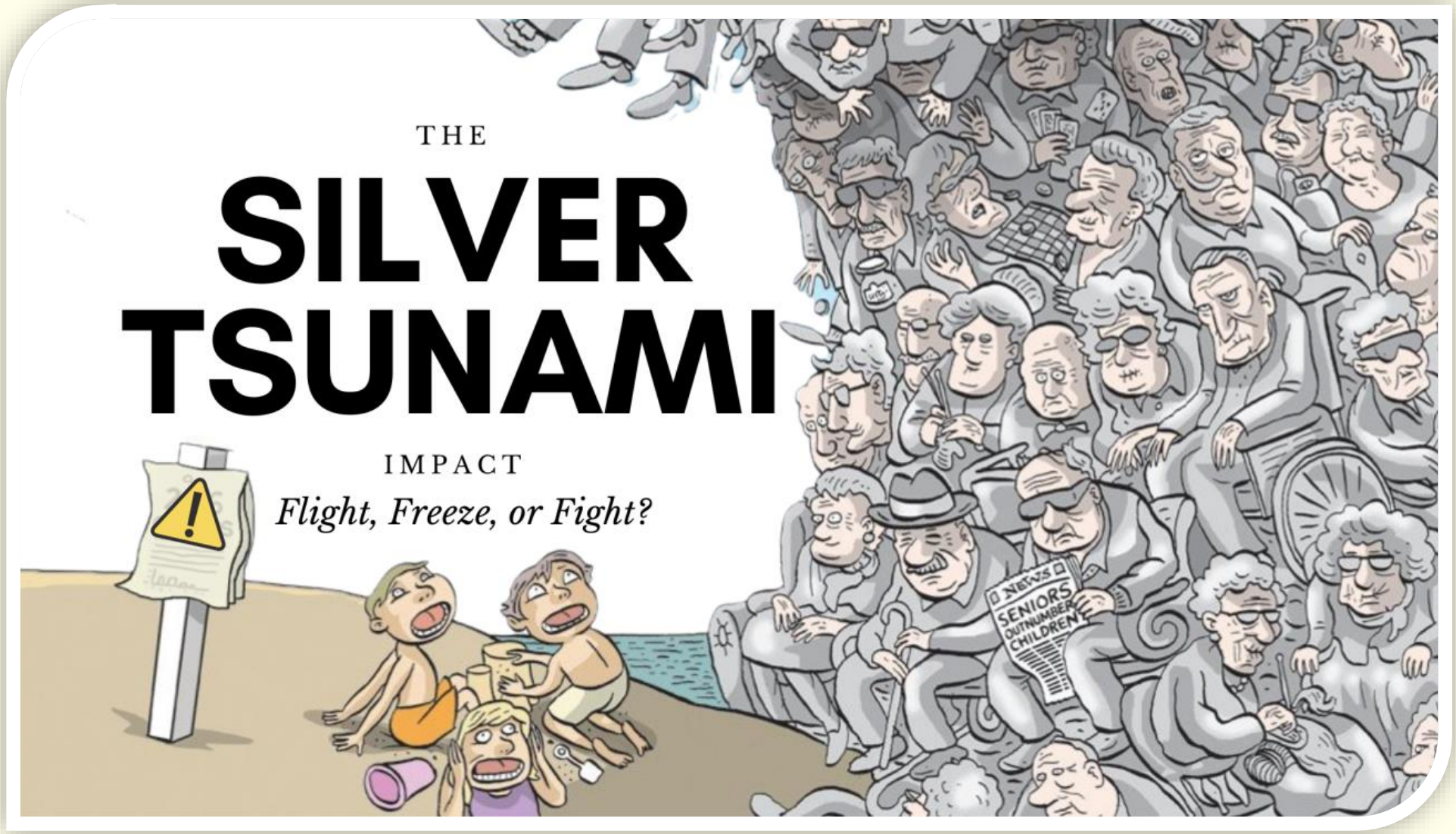

Photo Credit: Graham Mackay

Comprehensive Geriatric Assessment

Physical

- Acute illness
- Comorbid diseases
- Medication reconciliation
- Nutritional status
- Substance/ alcohol

Mental

- Delirium
- Dementia
- Depression

Functional

- BADLs
- IADLs
- Decision-making capacity

Social

- Caregiver
- Financial status
- Home environment
- Healthcare service

Cohen HJ, et al. N Engl J Med. 2002 Mar 21;346(12):905-12.

Geriatric Syndrome

• Intellectual impairment	TMSE, MOCA, MMSE-Thai 2002, RUDAS, etc.
• Incontinence	Fecal incontinence, urinary incontinence
• Immobility	Deconditioning after 1 week immobilization
• Instability	Falling > 2 episodes/ 1 yr → significant
• Inanition	Malnutrition, eating problem
• Iatrogenesis	**Medication problem**
• Frailty	
• Sarcopenia	


FRAILTY
MORTALITY
SARCOPENIA
FRAILTY
SARCOPENIA
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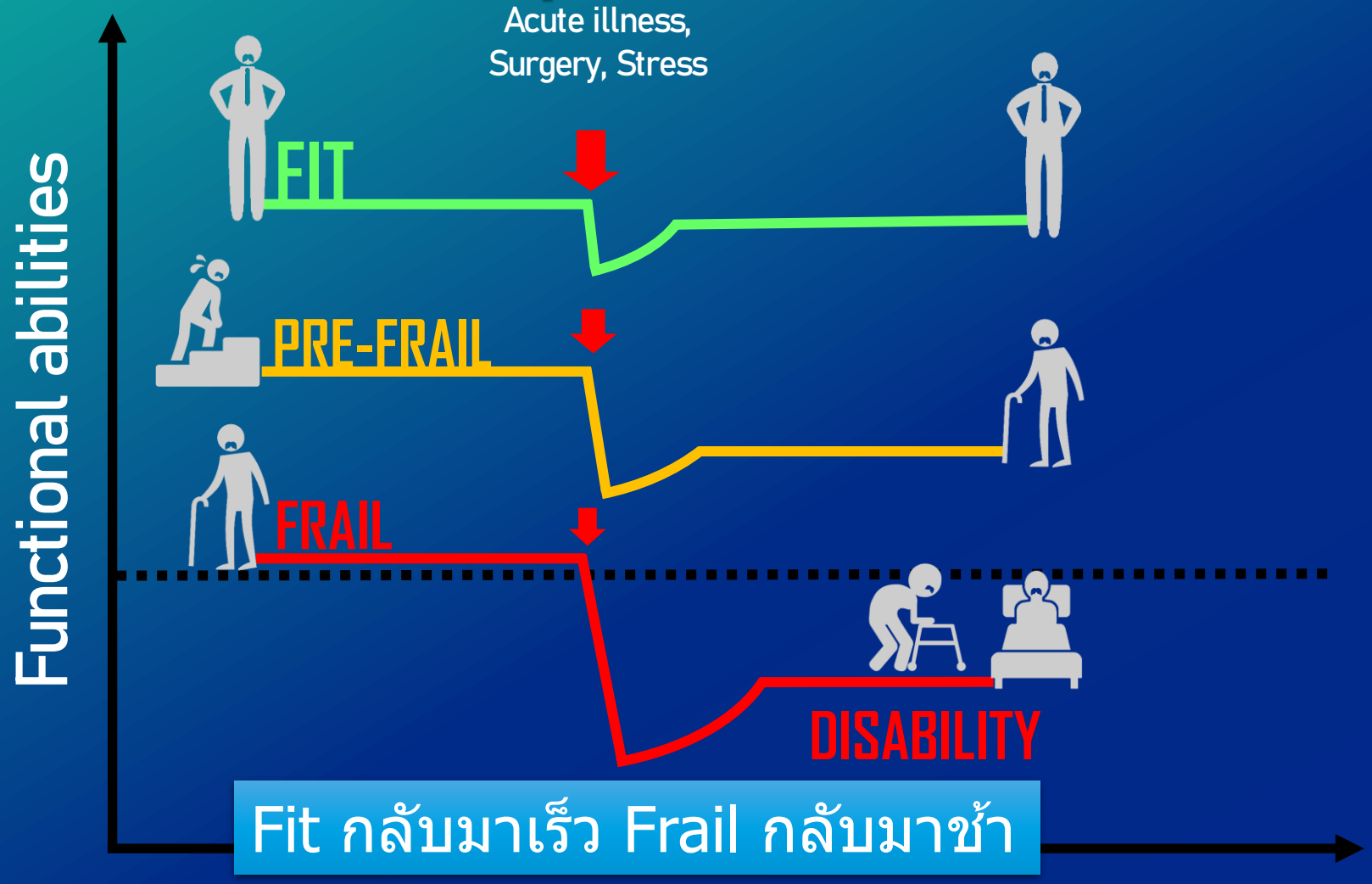
MORTALITY

Siriraj Health Policy

"Multidimensional geriatric syndrome"

INDEPENDENT

An independent risk factor for mortality



FRAIL

OLDER PERSON

A state of increased vulnerability to poor resolution of homoeostasis after a stressor event which increases the risk of adverse clinical outcomes

Clegg A, et al. Lancet. 2013 Mar 2;381(9868):752-62
Hoogendijk EO,et al. Lancet. 2019 Oct 12;394(10206):1365-1375
Dent E, et al. Lancet. 2019 Oct 12;394(10206):1376-1386

Diagnosis of Frailty

- Frailty Phenotype
- Frailty Index

- Clinical Frailty Scale
- FRAIL questionnaire

Thai frailty index

30 items for frailty assessment
0-3 items = fit
4-7 items = prefrail
≥ 8 items = frail

Deficits accumulation 30 items
Frailty: TFI >0.25
Frailty predicted mortality

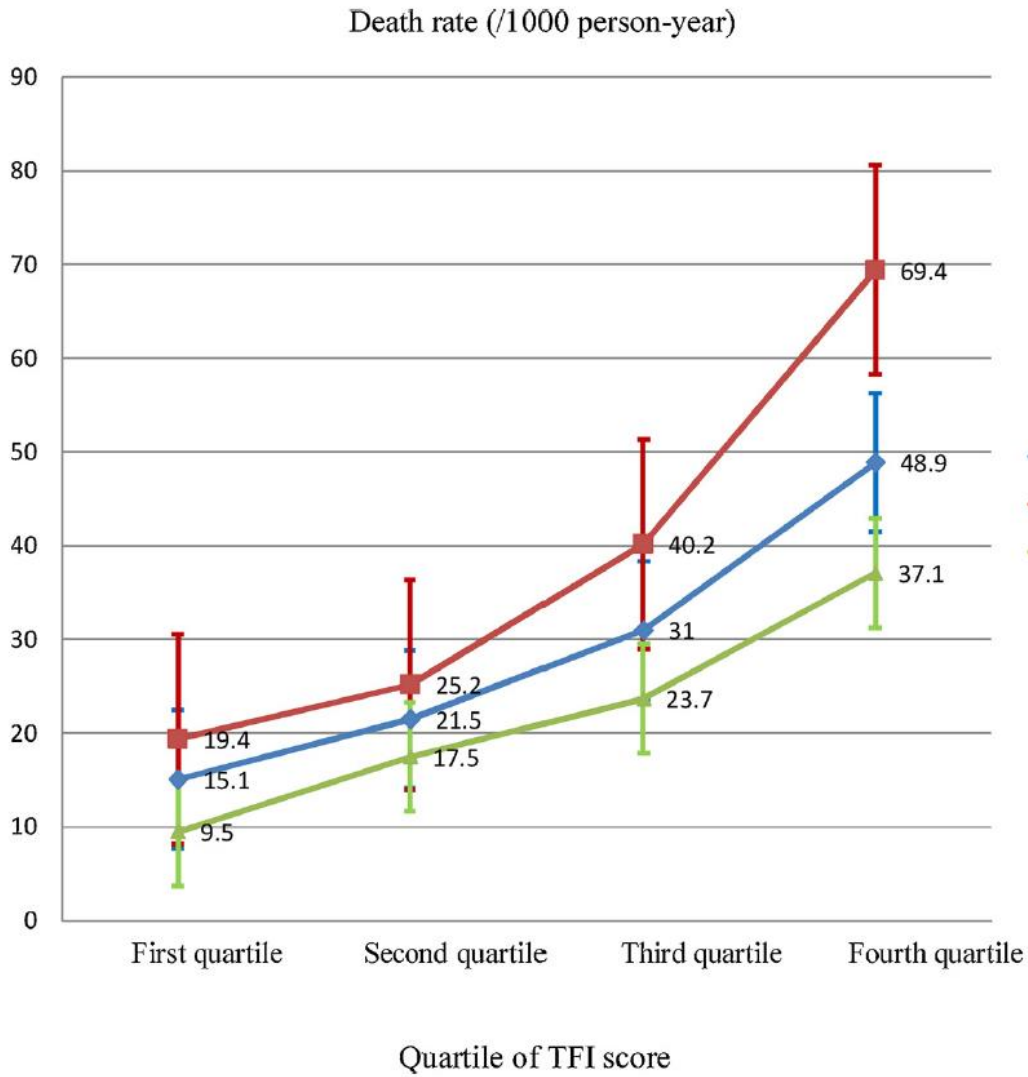


Fig. 1. Deaths per 1000 person-years according to quartile of TFI score comparing between genders.

Srinonprasert V, Chalermsri C, Aekplakorn W. Arch Gerontol Geriatr. 2018; 77:124-128

Cr Slide: EkEkkaphop Morkphrom

Frailty Phenotype

1. **Unintentional weight loss**
   - 4.5 or 5% of body weight in prior year
2. **Weakness**: grip strength
   - Male BMI ≤ 24 kg/m^2 ≤ 29 kg Female BMI ≤ 23 kg/m^2 ≤ 17 kg
     BMI 24.1-26 kg/m^2 ≤ 30 kg BMI 23.1-26 kg/m^2 ≤ 17.3 kg
     BMI 26.1-28 kg/m^2 ≤ 30 kg BMI 26.1-29 kg/m^2 ≤ 18 kg
     BMI > 28 kg/m^2 ≤ 32 kg BMI > 29 kg/m^2 ≤ 21 kg
3. **Poor endurance and energy**: self-report exhaustion
   i. Felt that everything I did was an effort in the last week
   ii. Could not get going in the last week
   0=1 day; 1=1-2 days; 2=3-4 days; 4= more than 4 days. Score ≥ 2 consider exhaustion
4. **Slowness**: time to walk 15 feet (4.57 m)
   - Male height ≤ 173 cm. ≥ 7 sec; > 173 cm ≥ 6 sec
   - Female height ≤ 159 cm. ≥ 7 sec; > 159 cm ≥ 6 sec
5. **Low physical activity level**: Minnesota Leisure Time Activity Questionnaire
   - Male < 383 kCal/week Female <270 kCal/week

0 = Robust
1-2 = Pre-frail
≥ 3 = Frail

SI GERIATRICS INTERNAL MEDICINE

Fried LP, et al.. J Gerontol A Biol Sci Med Sci. 2001; 56(3):M146-56.

FRAIL Questionnaire Screening Tool

Fatigue
Resistance
Aerobic
Illness
Loss of weight

0 = Robust
1-2 = Pre-frail
≥ 3 = Frail

SI GERIATRICS INTERNAL MEDICINE

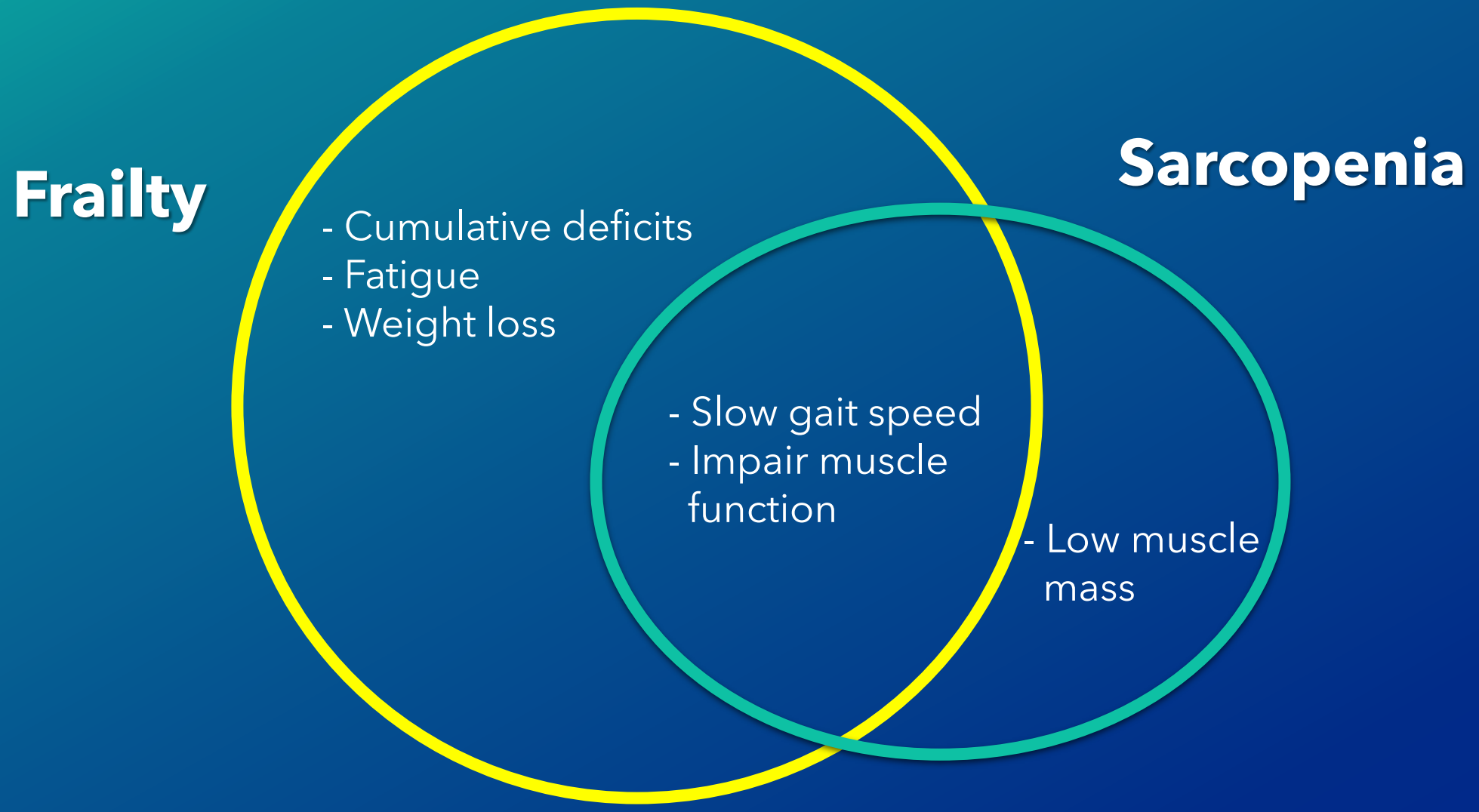
Lopez D, et al. J Am Geriatr Soc. 2012;60(1):171-3.

แบบสอบถามภาวะเปราะบางอย่างง่าย ฉบับภาษาไทย

คำถาม	คะแนน = 0	คะแนน = 1
1. ในช่วง 4 สัปดาห์ที่ผ่านมา ท่านรู้สึกอ่อนเพลียบ่อยมากแค่ไหน 1 = ตลอดเวลา, 2 = เกือบตลอดเวลา, 3 = บางเวลา, 4 = ส่วนน้อย, 5 = ไม่เคยเลย	□ บางเวลา หรือ ส่วนน้อย หรือ ไม่เคยเลย	□ ตลอดเวลา หรือ เกือบตลอดเวลา
2. เวลาท่านเดินขึ้นบันได 10 ขั้นด้วยตัวเองโดยไม่หยุดพัก และไม่ใช้อุปกรณ์ช่วย ท่านมีปัญหาหรือไม่	□ ไม่มี	□ มี
3. เวลาท่านเดินหลายร้อยเมตรด้วยตัวเองโดยไม่หยุดพัก และไม่ใช้อุปกรณ์ช่วย ท่านมีปัญหาหรือไม่	□ ไม่มี	□ มี
4. แพทย์เคยแจ้งว่าท่านมีโรคต่าง ๆ เหล่านี้หรือไม่ ได้แก่ □ โรคความดันโลหิตสูง □ โรคเบาหวาน □ โรคมะเร็ง (ไม่รวมมะเร็งผิวหนัง) □ โรคปอดเรื้อรัง □ โรคหลอดเลือดหัวใจกำเริบ □ ภาวะหัวใจวาย □ อาการแน่นหน้าอกจากโรคหลอดเลือดหัวใจ □ โรคหอบหืด □ ภาวะข้ออักเสบ □ โรคหลอดเลือดสมอง □ โรคไต **1-2 = Pre-frail** **≥ 3 = Frail**	□ 0-4 โรค	□ 5-11 โรค
5. ปัจจุบันท่านหนักเท่าไหร่ตอนที่ถอดรองเท้า = ... กิโลกรัม 1 ปีก่อนหน้านี้ ท่านหนักเท่าไหร่ตอนที่ถอดรองเท้า = ... กิโลกรัม	□ น้ำหนัก ลดน้อยกว่า 5%	□ น้ำหนัก ลดมากกว่าหรือเท่ากับ 5%

T.Sriwong et al. BMC Geriatrics (2022) 22:161

Frailty and Sarcopenia Relationship



Diagnosis of Sarcopenia: AWGS 2019

1. Low appendicular skeletal muscle mass (ASM)

2. Low muscle strength

3. Low physical performance

Sarcopenia = 1 + (2 or 3)

Severe sarcopenia = 1 + 2 + 3

SI GERIATRICS INTERNAL MEDICINE

L.-K. Chen et al. JAMDA 21 (2020) 300e307

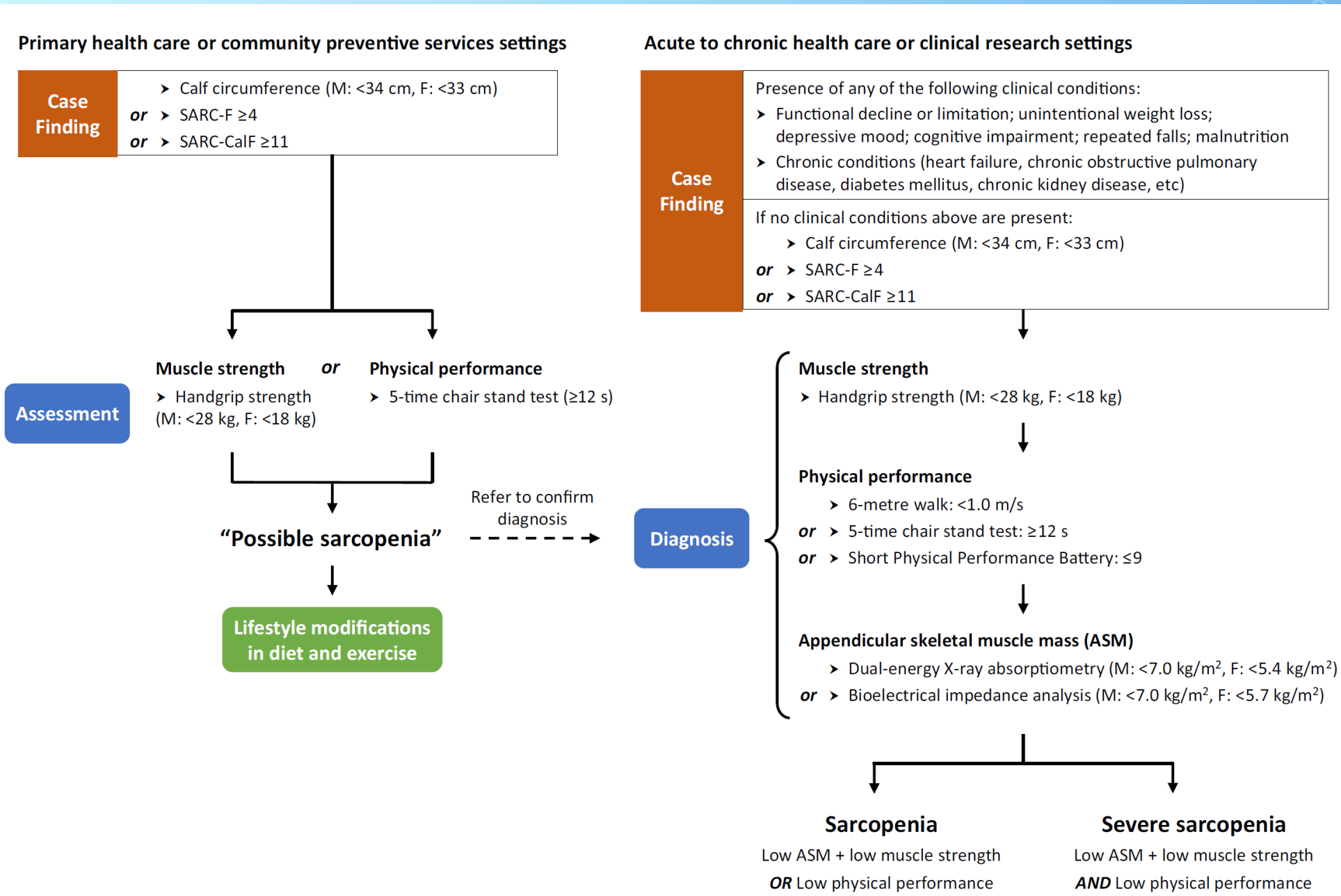


Fig. 1. AWGS 2019 algorithm for sarcopenia. F, female; M, male.

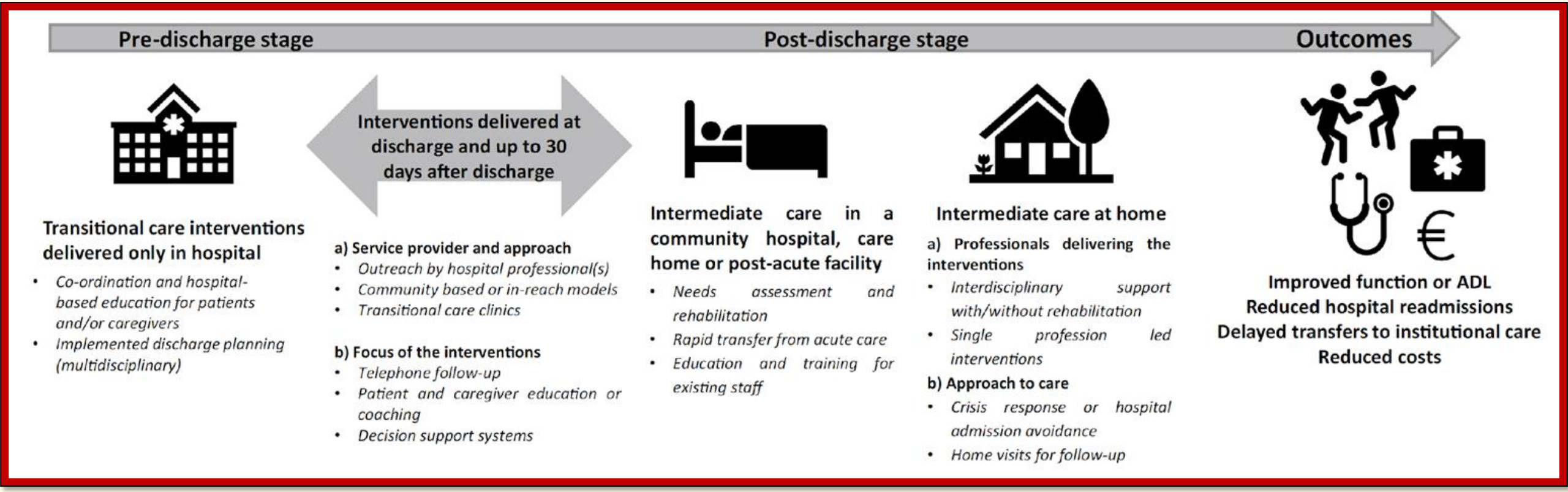
Prevention of Frailty and Sarcopenia

1. Resistance exercise and aerobic exercise
2. Adequate caloric and protein intake

   protein 1.0 – 1.2 g/kg/day
3. Lifestyle modification
   - Alcohol cessation
   - Smoking cessation
4. Avoid unnecessary medications

SI GERIATRICS INTERNAL MEDICINE

The effectiveness of intermediate care including transitional care interventions on FUNCTION, healthcare utilization and costs



Co-ordinate care

Enhance communication

Set goals of care

Systematic follow up

Sezgin D, et al. Eur Geriatr Med. 2020 Dec;11(6):961-974.

Siriraj Health Policy

1. Monitoring frailty screening process and collaborate with existing teams

2. Provide appropriate care model & discharge destinations
   - IMC (subacute / post-acute ward)
   - home with service & nursing home

3. Monitor and facilitate transitional process through multidisciplinary team

4. Continuing cooperation with discharge destinies & provide consultation to reduce readmission

Acute care

Transitional care

Intermediate care

Community care


ศูนย์บริการสุขภาพผู้สูงอายุศิริราช-สมุทรสาคร

Dietary Recommendation

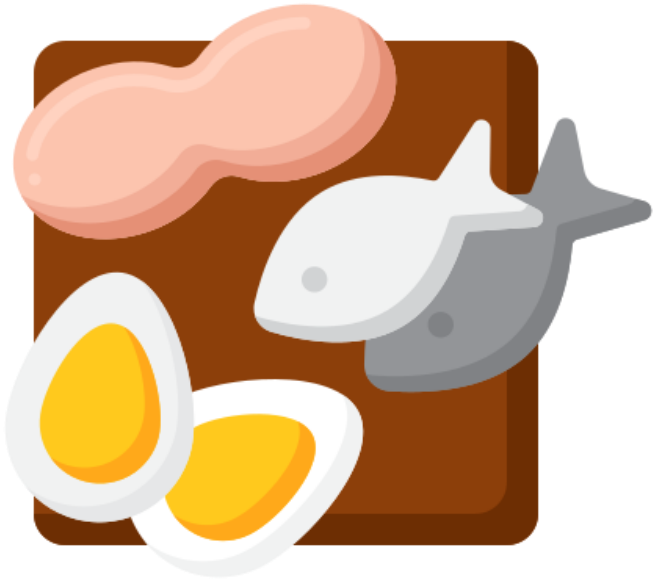
Recommended Diet for Older Adults

Population	Calories (kCal/kg/day)	Protein (g/kg/day)	ONS	Note
General elderly	30 – 35	1.0 – 1.2	N/A	Micronutrients, fiber Age > 75; avoid diet restriction
High risk elderly: frail, malnutrition, institutionalized, etc.		1.2 – 1.5	✓400 kCal/day (Prot.>30 g/d) ≥ 1 month	Environment, finger food, avoid diet restriction
Polymorbid internal medicine patients	27 – 30	> 1	✓ if needed within 48 hr → after discharge	Prefer oral feeding
Hip fracture			✓reduce postoperative complications	
Dementia	Food preference (Ad lib)		✓	Avoid diet restriction Avoid systemic appetite stimulant

Water: women 1.6 L, men 2.0 L

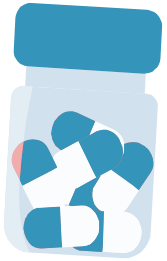
Volkert D, et al. *Clin Nutr.* 2022 Apr;41(4):958-989.
Gomes F, et al. Clin Nutr. 2018;37(1):336-53.
Deutz NE, et al. Clin Nutr. 2014;33(6):929-36.
AGS 2013

Synergistic Effect: protein and exercise



X

Meat (white), dairy product 50%
Plant 50%



1000 mg elemental calcium
800 IU vitamin D3

Sources of calcium

Main intake from food

Dairy
~300 mg/serving

Diet
~200 mg/day

Supplements
e.g. CaCO3
(40% elemental Ca)

Should not exceed 1,500 mg/day

Tube Feeding: when to employ?

Older persons with reasonable prognosis

- If oral intake is expected to be impossible for more than 3 days
- Total caloric intake is expected to be <50% for more than 7 days
- Aware of refeeding syndrome in malnourished patients in the first 3 days of feeding
- Avoid restraining patients (either by physical or medical) to achieve tube feeding
- Oral feeding is still important even when fed by tube
- NG or PEG – does not prevent aspiration*
  - Duration < 4 weeks: prefer NG tube
  - Duration > 4 weeks: prefer PEG
- Reconsider the benefit of tube feeding when prognosis is changed

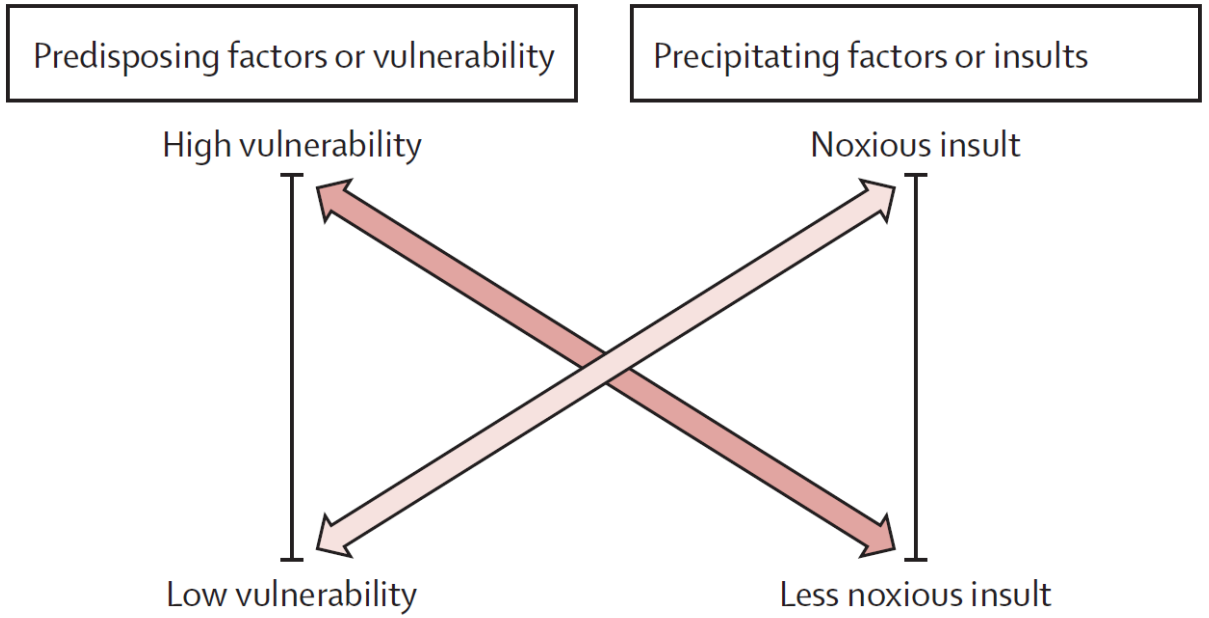
SI GERIATRICS INTERNAL MEDICINE

Volkert D, et al. Clinical Nutrition xxx (2018) 1e38

Delirium

Delirium

- Underdiagnosed leads to morbidity and mortality
- Gold standard for diagnosis
  - DSM-5 criteria
- Screening tools
  - CAM
  - CAM-ICU
  - 3D-CAM
  - 4AT
  - NuDESC
  - Etc.



SK Inouye, et al. *Delirium in elderly people*. www.thelancet.com Published online August 28, 2013

DSM-5

A. A disturbance in **attention** and **awareness** (reduced orientation to the environment)

B. The disturbance **develops over a short period of time**, represents a **change from baseline attention and awareness**, and tends to **fluctuate** in severity during the course of a day

C. An additional disturbance in cognition

D. The disturbances in Criteria A and C are **not better explained by another preexisting, established, or evolving neurocognitive disorder** and do not occur in the context of a severely reduced level of arousal, such as **coma**

E. There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal, or exposure to a toxin, or is due to multiple etiologies

SI GERIATRICS INTERNAL MEDICINE

American Psychiatric Association. DSM-5. 2013

CAM (Confusion Assessment Method)

1. Acute onset and fluctuating course
2. Inattention
3. Disorganized thinking
4. Altered level of consciousness

1+2+(3 or 4)

SI GERIATRICS INTERNAL MEDICINE

Treatment of Delirium

- Non-pharmacologic treatment

Mainstay therapy

- **Correct the cause!**
- **Delirium prevention**

- Pharmacologic treatment

Harm to
- **Patient**
- **Treatment**
- **Medical personnel**

Antipsychotics increase mortality esp. in dementia

Drugs
- Haloperidol (1st line); avoid IV route due to QT prolongation
- Risperidone
- Quetiapine
- Olanzapine
- Trazodone
- Lorazepam (withdrawal)

Drugs for prevention
- **NONE**

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Delirium Prevention Mnemonic

SMARD

Sleep hygiene

Mobility

Aids and appliances

Reorientation

Dehydration (avoid), **D**iet

Multicomponent Non-pharmacologic Interventions

Approach	Description
Orientation and therapeutic activities	Provide lighting, signs, calendars, clocks Reorient the patient to time, place, person, your role Introduce cognitively stimulating activities (eg, reminiscing) Facilitate regular visits from family, friends
Fluid repletion	Encourage patients to drink; consider parenteral fluids if necessary Seek advice regarding fluid balance in patients with comorbidities (heart failure, renal disease)
Early mobilization	Encourage early postoperative mobilization, regular ambulation Keep walking aids (canes, walkers) nearby at all times Encourage all patients to engage in active, range-of-motion exercises
Feeding assistance	Follow general nutrition guidelines and seek advice from dietician as needed Ensure proper fit of dentures
Vision and hearing	Resolve reversible cause of the impairment Ensure working hearing and visual aids are available and used by patients who need them

Inouye SK,et al. *N Engl J Med*. 1999;340(9):669-676.
Oh ES, et al. *JAMA*. 2017 Sep 26;318(12):1161-1174.

Multicomponent Non-pharmacologic Interventions

Approach	Description
Sleep enhancement	Unit-wide noise-reduction strategies (e.g., silent pill crushers, vibrating beepers, and quiet hallways) Avoid medical or nursing procedures during sleep if possible Schedule medications to avoid disturbing sleep Reduce noise at night
Infection prevention	Look for and treat infections Avoid unnecessary catheterization Implement infection-control procedures
Pain management	Assess for pain, especially in patients with communication difficulties Begin and monitor pain management in patients with known or suspected pain
Hypoxia protocol	Assess for hypoxia and oxygen saturation
Psychoactive medication protocol	Review medication list for both types and number of medications

Adherence is an important

Inouye SK,et al. *N Engl J Med*. 1999;340(9):669-676.
Oh ES, et al. *JAMA*. 2017 Sep 26;318(12):1161-1174.

Appropriate Drug Use

Appropriate Drug Use in the Elderly

Older adults tend to have more drug adverse events

- Polypharmacy – drug-drug interaction, drug-disease interaction, drug duplication, prescribing cascade
- Multiple comorbidities
- Physiologic changes
  - Pharmacokinetics:
    - Reduced hepatic and renal clearance
    - Changes in Vd
  - Pharmacodynamics:
    - More sensitive to narcotics
    - Decrease baroreflex response

Any new symptoms - drugs could be the cause!

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AGS
BEERS
CRITERIA® 2023

Drugs with strong anticholinergic property

Antihistamines	Antimuscarinics	Antispasmodics	Antiemetic
- Brompheniramine - Chlorpheniramine - Cyproheptadine - Dimenhydrinate - Diphenhydramine - Hydroxyzine - Triprolidine	- Darifenacin - Fesoterodine - Flavoxate - Oxybutynin - Solifenacin - Tolterodine - Trospium	- Belladonna alkaloids - Clidinium/ chlordiazepoxide - Dicyclomine - Scopolamine	- Prochlorperazine - Promethazine
Antidepressants	**Antipsychotics**	**Skeletal muscle relaxants**	**Antiparkinsonian drugs**
- Amitriptyline - Amoxapine - Clomipramine - Desipramine - Doxepin (>6 mg) - Imipramine - Nortriptyline - Paroxetine	- Chlorpromazine - Clozapine - Loxapine - Olanzapine - Perphenazine - Thioridazine - Trifluoperazine	- Orphenadrine	- Benztropine - Trihexyphenidyl

The 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019;67(4):674-694.

Drugs to avoid

Drugs	Rationale	Alternative
CVS		
Doxazosin Prazosin Clonidine Methyldopa Reserpine (>0.1 mg/day)	Avoid as 1st line treatment of hypertension; Orthostatic hypotension	Thiazide diuretics, ACEI, ARB, long-acting dihydropyridine CCB
Digoxin	Avoid as 1st line treatment for heart failure. If used for AF or heart failure, avoid dosages >0.125 mg/day	
Nifedipine, immediate release	Orthostatic hypotension	Thiazide diuretics, ACEI, ARB, long-acting dihydropyridine CCB
Amiodarone	Avoid as 1st line treatment for AF unless patient has heart failure or substantial LVH (favor rhythm control than rate control)	

The 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019;67(4):674-694.

Drugs to avoid (2023)

Drugs	Rationale	Alternative
CVS		
Rivaroxaban for long-term treatment of nonvalvular atrial fibrillation or VTE	Avoid as rx as long-term for VTE/non-valvular AF: higher bleeding than other DOACs (esp. apixaban)	
Warfarin for treatment of nonvalvular atrial fibrillation or VTE	Compared with DOACs, warfarin has higher risks of major bleeding (particularly intracranial bleeding) and similar or lower effectiveness for treatment of nonvalvular atrial fibrillation and VTE. DOACs are thus the preferred choice for anticoagulation for most people with these conditions	Note:For older adults who have been using warfarin long-term, it may be reasonable to continue this medication, particularly among those with well-controlled INRs (>70% time in the therapeutic range) and no ADR
Aspirin for primary prevention of cardiovascular disease	Risk of major bleeding from aspirin increases markedly in older age. There is less evidence about stopping aspirin among long-term users, although similar principles as for initiation may apply.	Note: Aspirin is generally indicated for secondary prevention in older adults with established cardiovascular disease

American Geriatrics Society 2023 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc. 2023;71:2052–2081.

Drugs to avoid

Drugs	Rationale	Alternative
CNS		
Antidepressants • Amitriptyline • Doxepin >6 mg/day • Imipramine • Nortriptyline • Paroxetine	Highly anticholinergic, sedating, and cause orthostatic hypotension; safety profile of low-dose doxepin (≤6 mg/day)	Sertraline, escitalopram, etc.
Antipsychotics	Increased risk of cerebrovascular accident and greater rate of cognitive decline and mortality in persons with dementia	Except in schizophrenia or bipolar disorder, or for short-term use as antiemetic during chemotherapy
Benzodiazepines Benzodiazepine receptor agonist hypnotics (Z-drugs)	Increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle crashes in older adults	May be appropriate for seizure disorders, REM sleep behavior disorder, benzodiazepine/alcohol withdrawal, ethanol withdrawal, severe GAD

The 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019;67(4):674-694.

Drugs to avoid

Drugs	Rationale	Alternative
Gastrointestinal		
Metoclopramide	EPS in prolonged exposure elderly	Unless for gastroparesis with duration of use not to exceed 12 weeks except in rare cases
Mineral oil	Aspiration	
PPIs	*C.difficile* infection, bone loss and fractures	Avoid scheduled use for >8 weeks unless for high-risk patients

The 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019;67(4):674-694.

Drugs to avoid

Drugs	Rationale	Alternative
Pain medication		
Meperidine	Delirium	Other strong opioids
Non-cyclooxygenase-selective NSAIDs, oral	GI bleeding, nephrotoxicity, increase BP Avoid chronic use, unless other alternatives are not effective and patient can take gastroprotective agent	
Indomethacin Ketorolac	GI bleeding Indomethacin – delirium*	
Skeletal muscle relaxants	Anticholinergic adverse effects, sedation, increased risk of fractures. Questionable efficacy	Other medication , topical agents, non-pharmacologic therapy

The 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019;67(4):674-694.

Drugs	Rationale	Alternative
Endocrine		
Androgens	Potential for cardiac problems. Contraindicated in CA prostate	
Estrogens (± progestins)	Avoid systemic estrogen : Carcinogenic potential (breast, endimetrium)	Acceptable to use low-dose intravaginal estrogen for management of dyspareunia, recurrent lower UTI or other vaginal symptoms
Megestrol	Minimal effect on weight; increases risk of thrombotic events and possibly death	
SU, long actings • Chlorpropramide • Glibenclamide • Glimepiride	Pro 2023 – all S glipizide	
Insulin, sliding scale (without concurrent use of basal/long-acting insulin)	Higher risk of hypoglycemia	Use regimens that contain basal insulin or long-acting insulin

SUs long-acting agents (e.g., glibenclamide, glimepiride) confer a higher risk of prolonged hypoglycemia than short-acting agents (e.g., glipizide).

American Geriatrics Society 2023 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc. 2023;71:2052–2081.

Adverse drug events

Fall	**Sedatives, vasodilators, diuretics**
Parkinsonism	**Flunarizine, cinnarizine, antipsychotics, metoclopramide**
Orthostatic hypotension	**Diuretics, antihypertensive agents esp. α-blockers, sympatholytic, nitrate, bromocriptine, narcotics, sedatives, sildenafil, tricyclic antidepressants (TCA)**
Urinary incontinence	**Diuretics, anticholinergics (overflow incontinence), alcohol, caffeine**
Urinary retention	**Anticholinergics, antidepressants, antipsychotics, sedatives, narcotics, α-adrenergic agonists, β-adrenergic agonists, calcium-channel blockers**
Depression	**Propranolol, clonidine, hydralazine, reserpine, narcotics, digitalis**
Delirium	**Narcotics, anticholinergics, sedatives, anticonvulsants, antiarrhythmics, digitalis, methyldopa, β-blocker**
Renal failure	**NSAIDs, diuretics (volume depletion), aminoglycoside, amphotericin B, contrast media**

ADA 2024

Patient Characteristics	Reasonable A1c goal	Fasting glucose	Blood pressure	Lipid
Healthy (few coexisting chronic illnesses, intact cognitive and functional status)	<7.0-7.5%	80-130 mg/dL	<130/80 mmHg	Statins unless contraindicated or not tolerated
Complex / intermediate (multiple coexisting chronic illnesses* or 2+ instrumental ADL impairments or mild-to-moderate cognitive impairment)	<8.0%	90-150 mg/dL	<130/80 mmHg	Statins unless contraindicated or not tolerated
Very complex/poor health (LTC or end stage chronic illnesses** or moderate-to-severe cognitive impairment or 2+ basic ADL impairments)	Avoid reliance on A1C; avoiding hypoglycemia & symptomatic hyperglycemia	100-180 mg/dL	<140/90 mmHg	Consider likelihood benefit of statins

*** Coexisting chronic illnesses** are conditions serious enough to require medications or lifestyle management and may include arthritis, cancer, congestive heart failure, depression, emphysema, falls, hypertension, incontinence, stage 3 or worse chronic kidney disease, myocardial infarction, and stroke. “Multiple” means at least three, but many patients may have five or more.

****The presence of a single end-stage chronic illness**, such as stage 3–4 congestive heart failure or oxygen-dependent lung disease, chronic kidney disease requiring dialysis, or uncontrolled metastatic cancer, may cause significant symptoms or impairment of functional status and significantly reduce life expectancy.

American Diabetes Association Professional Practice Committee; 13. Older Adults: *Standards of Care in Diabetes—2024*. *Diabetes Care* 1 January 2024; 47 (Supplement_1): S244–S257

Diabetes and Frailty: An Expert Consensus Statement on the Management of Older Adults with Type 2 Diabetes

Level of frailty	Target	De-escalate threshold
Healthy Pre-frail Mild frailty	• HbA1c <7.5%, but ≥ 6% • FPG 90 – 130 mg/dL • BP <140/90 mmHg	**7.0%**
Moderate frailty	•HbA1c <8.0% •FPG 110–150 mgl/dL •BP <140/90 mmHg	**7.5%**
Severe Frailty	•HbA1c <8.5% •FPG 125–180 mg/dL •BP <150/90 mmHg	**7.5%**

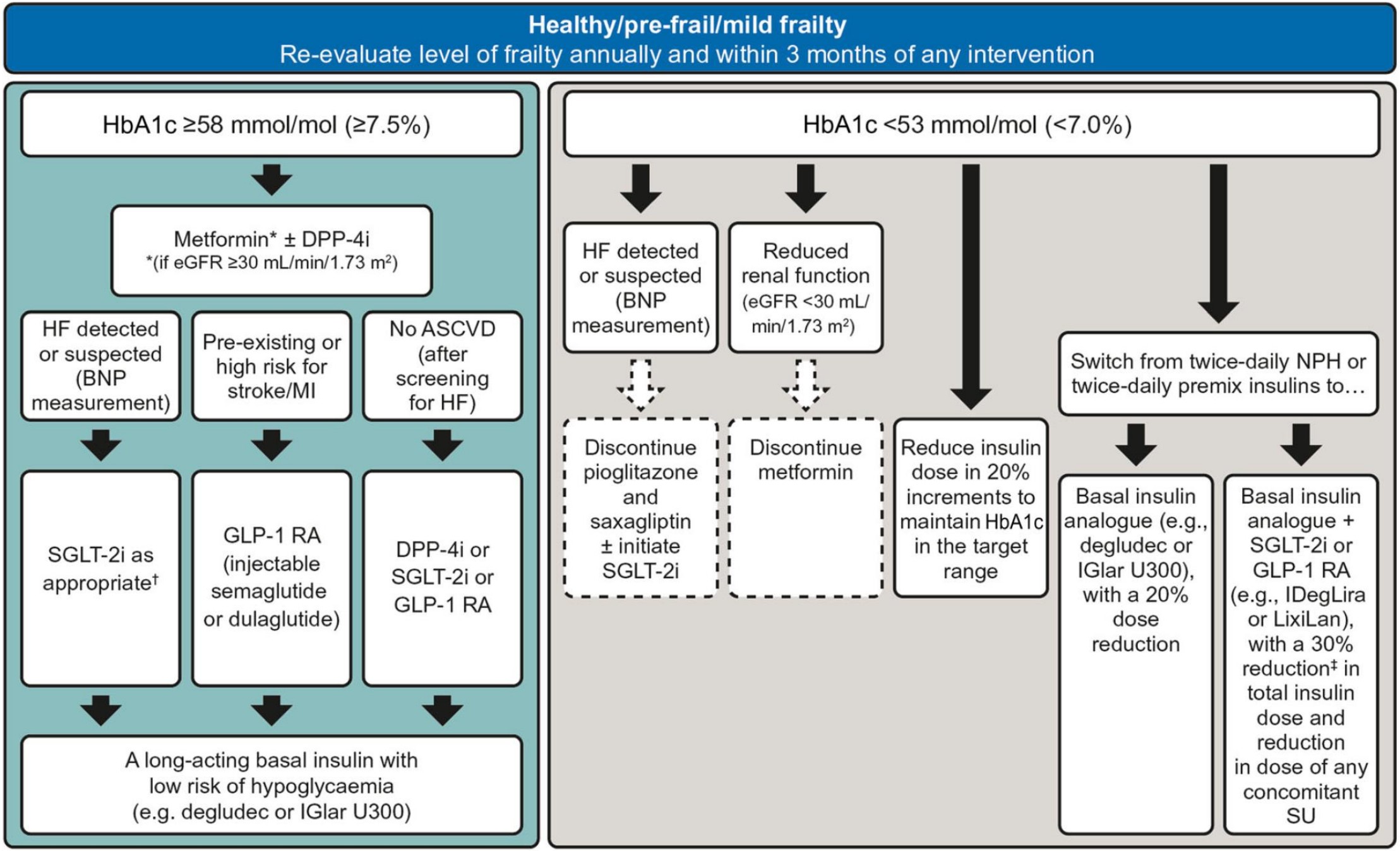
Strain WD, et al. *Diabetes Ther*. 2021 ;12(5):1227-1247

Known modifiers of glycated hemoglobin values in older adults

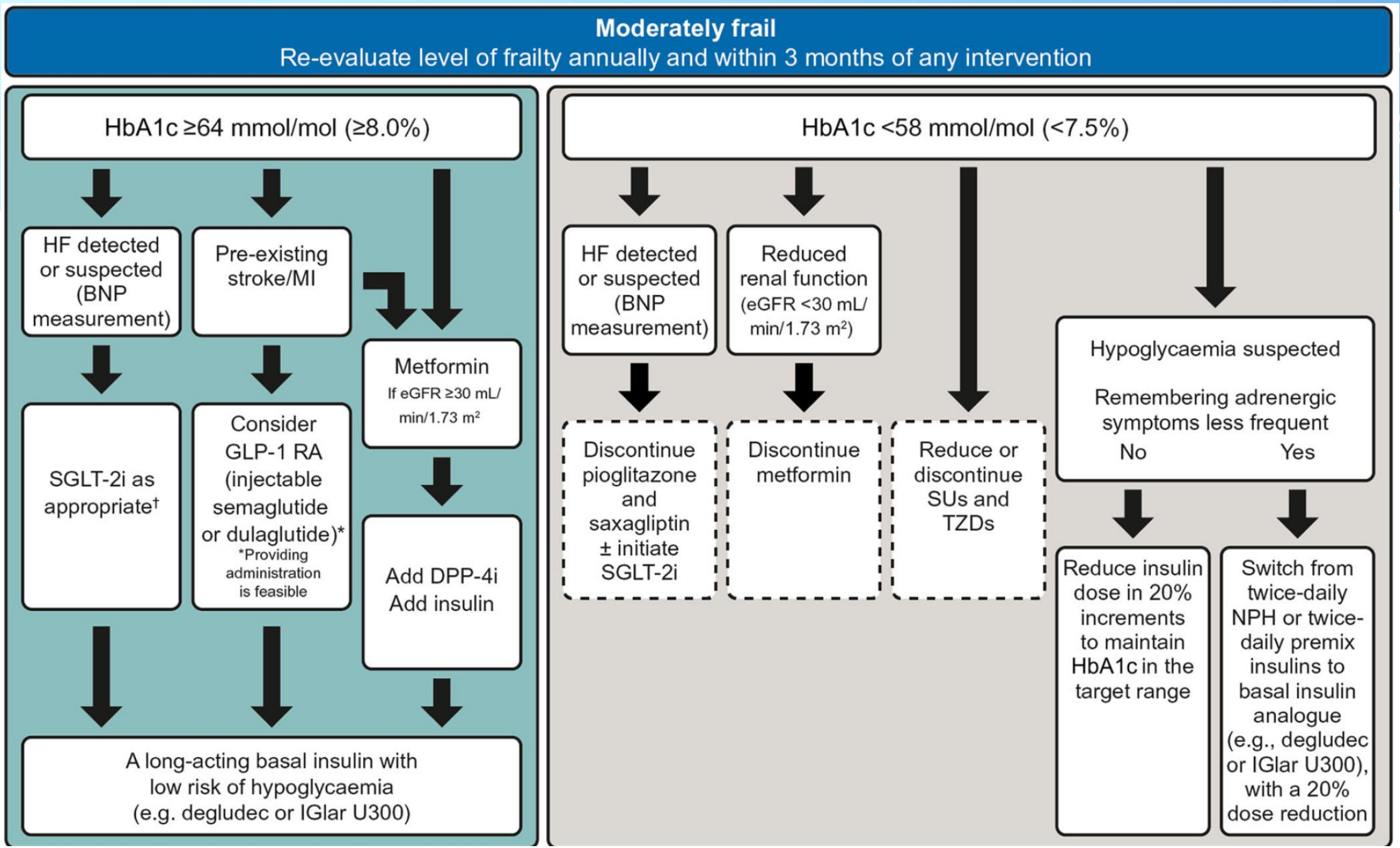
Artificially increases HbA1c	Artificially reduces HbA1c
Iron deficiency	Bleeding conditions (e.g. peptic ulcer disease)
B12 deficiency	Hemolytic conditions (e.g. valvular cardiac disease)
Anemia of chronic disease	Haemoglobinopathies (thalassemia/sickle cell etc.)
Chronic opioid use	Chronic liver disease

SI GERIATRICS INTERNAL MEDICINE

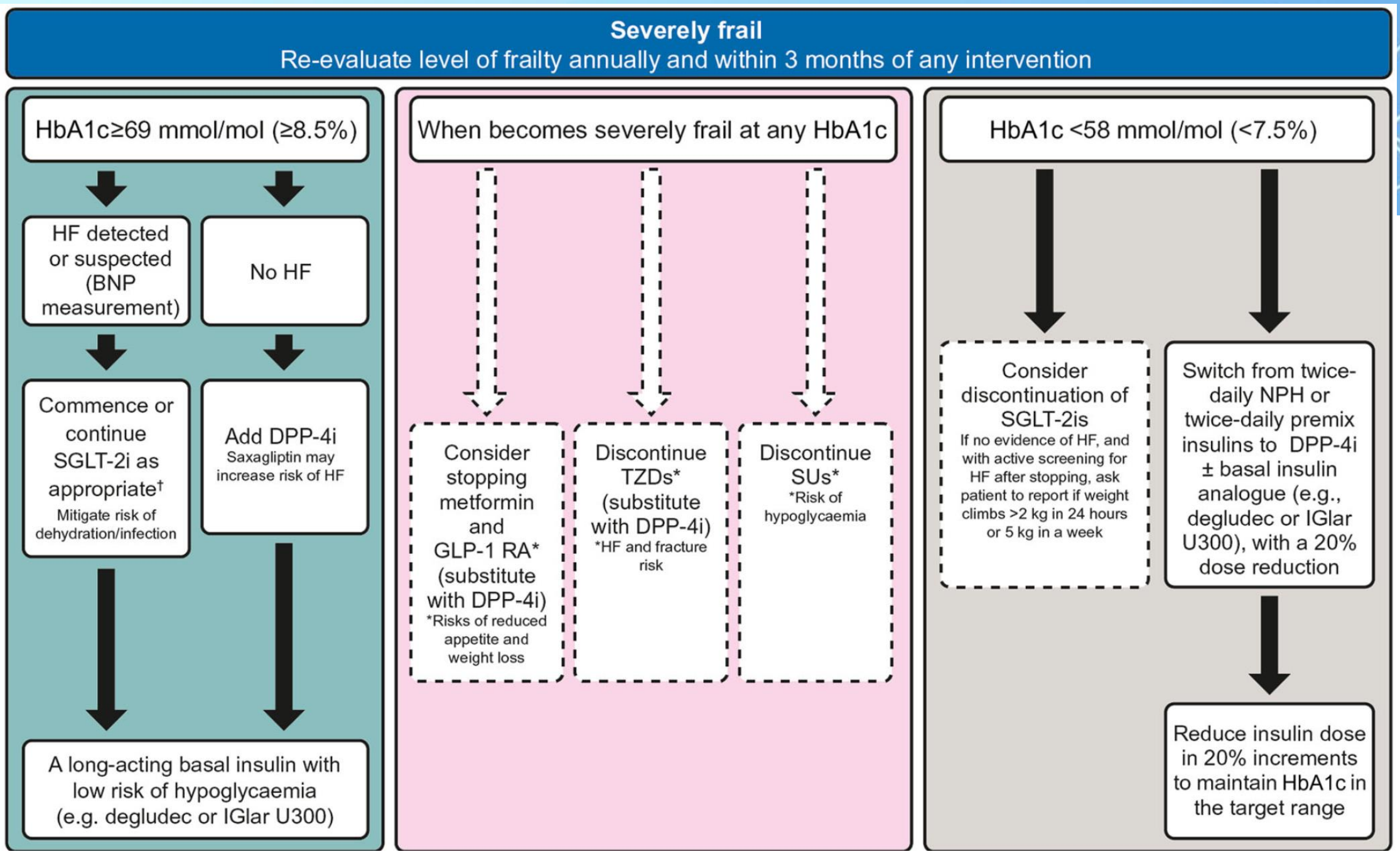
Sinclair AJ, et al. Diabet Med. 2019 Apr;36(4):399-413.



Sinclair AJ, et al. Diabet Med. 2019 Apr;36(4):399-413.



Sinclair AJ, et al. Diabet Med. 2019 Apr;36(4):399-413.



Sinclair AJ, et al. Diabet Med. 2019 Apr;36(4):399-413.

Blood Pressure Control in Frail Elderly

- SBP
  - Increases with age
- DBP
  - Age 50 – 60 yr – DBP starts to decline or stable
- Orthostatic hypotension – common in very old population, frail elderly, CVD
- Target BP
  - Healthy (fit) elderly = SBP 130 – 135 mmHg
  - Frail elderly (mild) = SBP 140 mmHg
  - Very frail elderly = SBP 130 – 150 mmHg
- CCB and diuretics are the most potent antihypertensive drugs in older adults

Wide pulse pressure

START LOW, GO SLOW, BUT GO !

SI GERIATRICS INTERNAL MEDICINE

Drug-induced Delirium

กลุ่มยา	ชื่อยา	**Mechanism**
ยาระบบหัวใจและหลอดเลือด	Beta-blockers (metoprolol, propranolol) Methyldopa Digitalis	ไม่ชัดเจน พิษต่อระบบประสาทส่วนกลาง
Antiarrhythmics	disopyramide	ฤทธิ์ anticholinergic
ยารักษาโรคระบบทางเดินหายใจ	Theophylline, steroids (high dose)	กระตุ้นระบบประสาทส่วนกลาง
ยาโรคระบบทางเดินอาหาร	Scopolamine, H_2-blockers	ฤทธิ์ anticholinergic
Benzodiazepines	Lorazepam, alprazolam, clonazepam, diazepam, clorazepate, chlordiazepoxide	กดการทำงานระบบประสาทส่วนกลางกรณีได้ยาติดต่อกันเป็นเวลานานและหยุดกระทันหันอาจเกิดอาการขาดยา (withdrawal)
Benzodiazepine receptor agonist	Zolpidem	กดการทำงานระบบประสาทส่วนกลาง
First-generation antihistamines	Diphenhydramine, cholrpheniramine, cyproheptadine, dimenhydrinate, hydroxyzine	ฤทธิ์ anticholinergic กดการทำงานระบบประสาทส่วนกลาง
Anticholinergics	Trihexyphenidyl, benztropine, oxybutynin	ฤทธิ์ anticholinergic
แอลกอฮอล์		กดการทำงานระบบประสาทส่วนกลางอาการขาดสุรา (withdrawal)

กลุ่มยา	ชื่อยา	**Mechanism**
ยากันชัก	Phenobarbital, phenytoin	CNS depression (even therapeutic level)
Tricyclic antidepressants	Amitriptyline, nortriptyline, imipramine, doxepin >6mg	Anticholinergic effect
Antipsychotic drugs*	Chlorpromazine, thioridazine	Anticholinergic effect
Dopaminergic drugs	selegiline, rasagiline, pergolide, pramipexole, bromocriptine, cabergoline, levodopa	Increase DA
ยาต้านจุลชีพ (**antibiotics**)	Fluoroquinolones Macrolides (clarithromycin) Penicillins (piperacillin/tazobactam) Cephalosporins (cefepime, ceftazidime, cefuroxime, cefazolin) Carbapenems (ertapenem)	Neurotoxicity
ยาคลายกล้ามเนื้อ	Orphenadrine, tolperisone, chlorzoxazone	Strong anticholinergic effect
ยาแก้ปวดกลุ่ม **NSAIDs**	Indomethacin	Uncertain
ยาแก้ปวดกลุ่ม **opioid**	Meperidine (pethidine), tramadol	Anticholinergic effect CNS depression
Non-opioid analgesics	Nefopam	Anticholinergic –like effect Monoaminergic effects (increase DA and NE) CNS hyperstimulation

Dementia

Dementia

- Diagnosis
  - ≥ 1 cognitive domain impairment
  - Functional disturbance
- Common dementia
  - Alzheimer's disease: memory, visuospatial
  - Vascular dementia: executive function
  - Dementia with Lewy bodies (Lewy body dementia): visuospatial
  - Frontotemporal lobar degeneration (FTLD or FTD – old name): behavioral problem
  - Parkinson disease with dementia: executive function/ visuospatial

SI GERIATRICS INTERNAL MEDICINE

DSM-5: major NCD

A. There is evidence of substantial cognitive decline from a previous level of performance in **one or more of the domains** listed below, based on the concerns of the individual, a knowledgeable informant, or the clinician; **and a decline in neurocognitive performance**, typically involving test performance in the range of two or more standard deviations below appropriate norms (i.e. below the third percentile) on formal testing or equivalent clinical evaluation.

B. The cognitive deficits are sufficient to **interfere with independence** (i.e. requiring minimal assistance with instrumental activities of daily living).

C. The cognitive deficits do not occur exclusively in the context of a delirium.

D. The cognitive deficits are not primarily attributable to another mental disorder (for example major depressive disorder and schizophrenia).

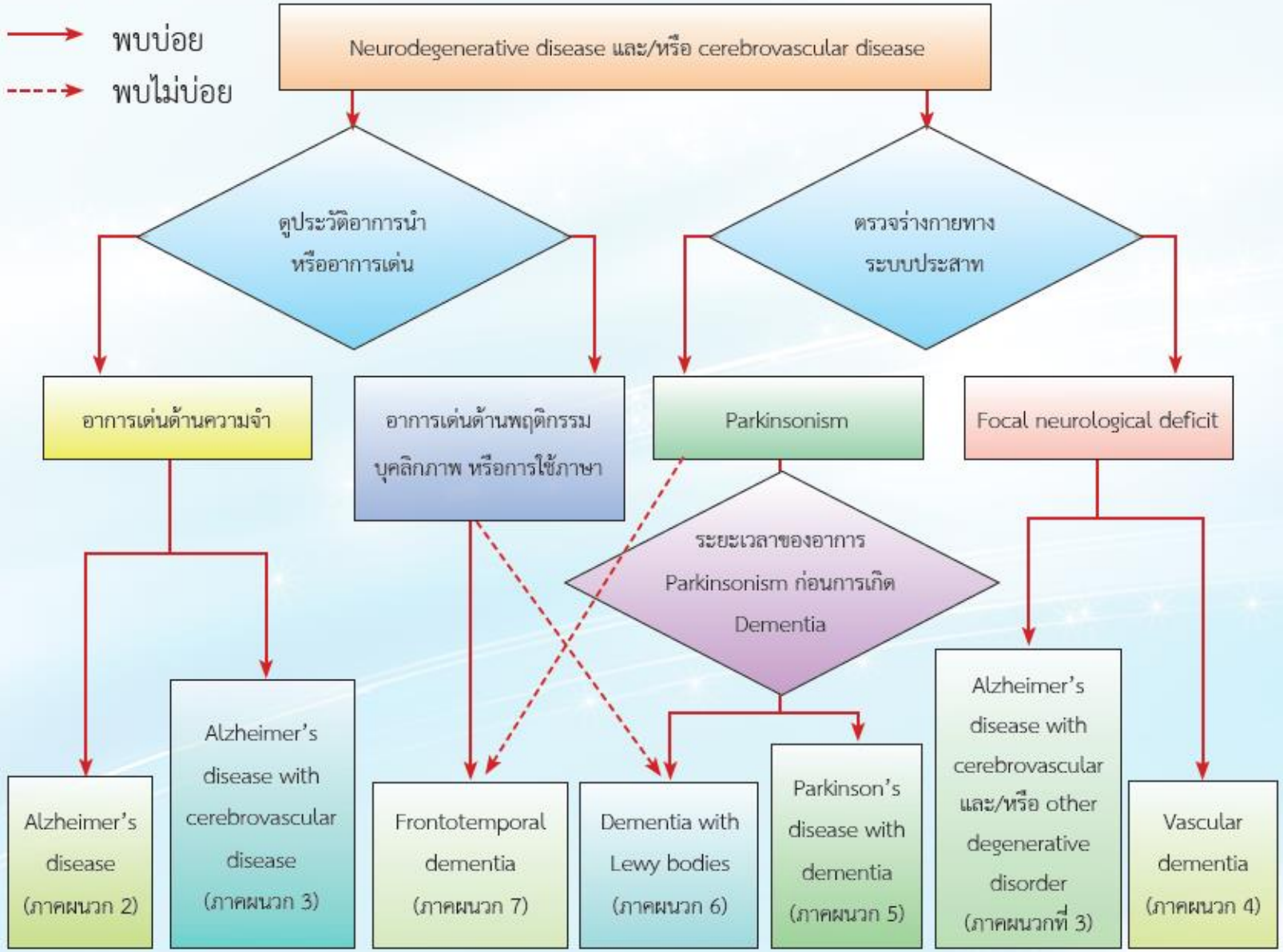
SI GERIATRICS INTERNAL MEDICINE

DSM-5 Cognitive Domains

- **Complex attention** - involves sustained attention, divided attention, selective attention and information processing speed
- **Executive ability** - involves planning, decision making, working memory, responding to feedback, error correction, overriding habits and mental flexibility
- **Learning and memory** - involves immediate memory, recent memory (free recall, cued recall and recognition memory) and long term memory
- **Language** - involves expressive language (naming, fluency, grammar and syntax) and receptive language
  Perceptual - Motor - Visual perception, praxis- involves picking up the telephone, handwriting, using a fork/spoon
- **Social cognition -** involves recognition of emotions and behavioural regulation, social appropriateness in terms of dress, grooming and topics of conversation

SI GERIATRICS INTERNAL MEDICINE

แผนภูมิที่ 3 การวินิจฉัยแยกโรคในภาวะสมองเสื่อม



แนวทางเวชปฏิบัติภาวะสมองเสื่อม 2563

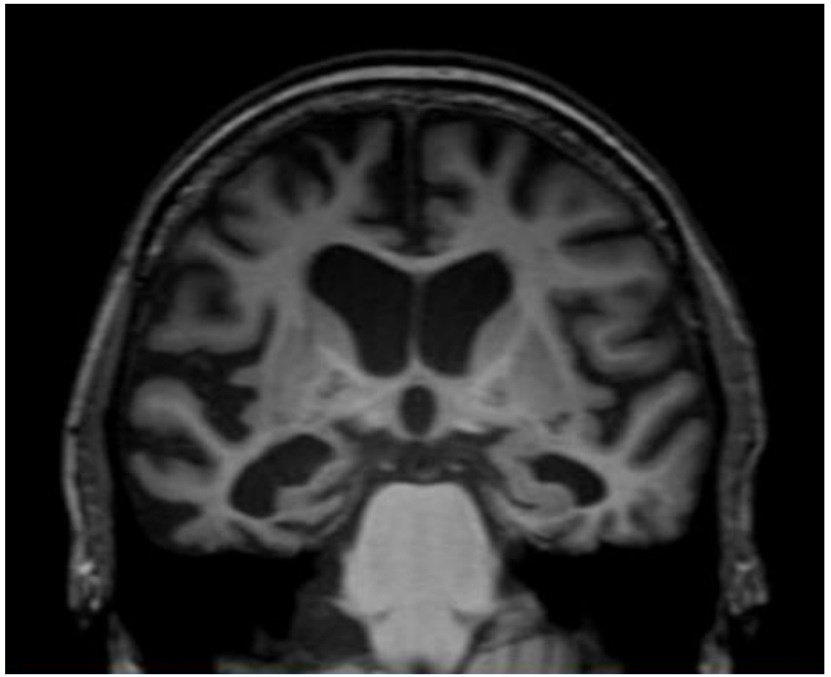
Dementia

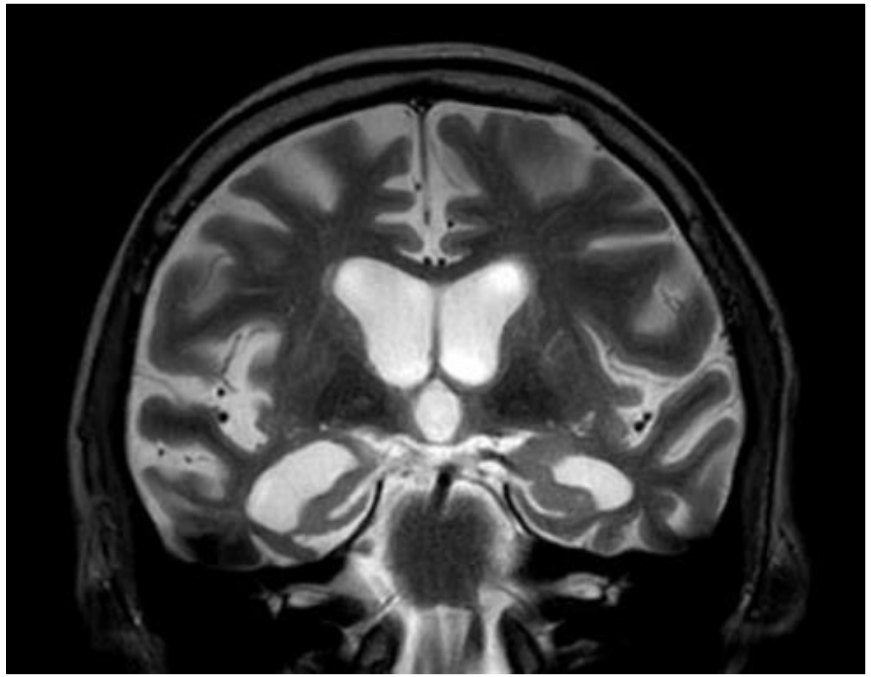
- Work up reversible cause
  - TSH, VDRL, B12
  - Organ failures
  - Mood problem esp. depression
- Neuroimaging of choice = MRI brain dementia protocol
- Treatment
  - Pharmacologic treatment
  - Non-pharmacologic treatment

- Cholinesterase inhibitors: Donepezil, rivastigmine, galantamine
- Memantine

SI GERIATRICS INTERNAL MEDICINE

Alzheimer’s disease





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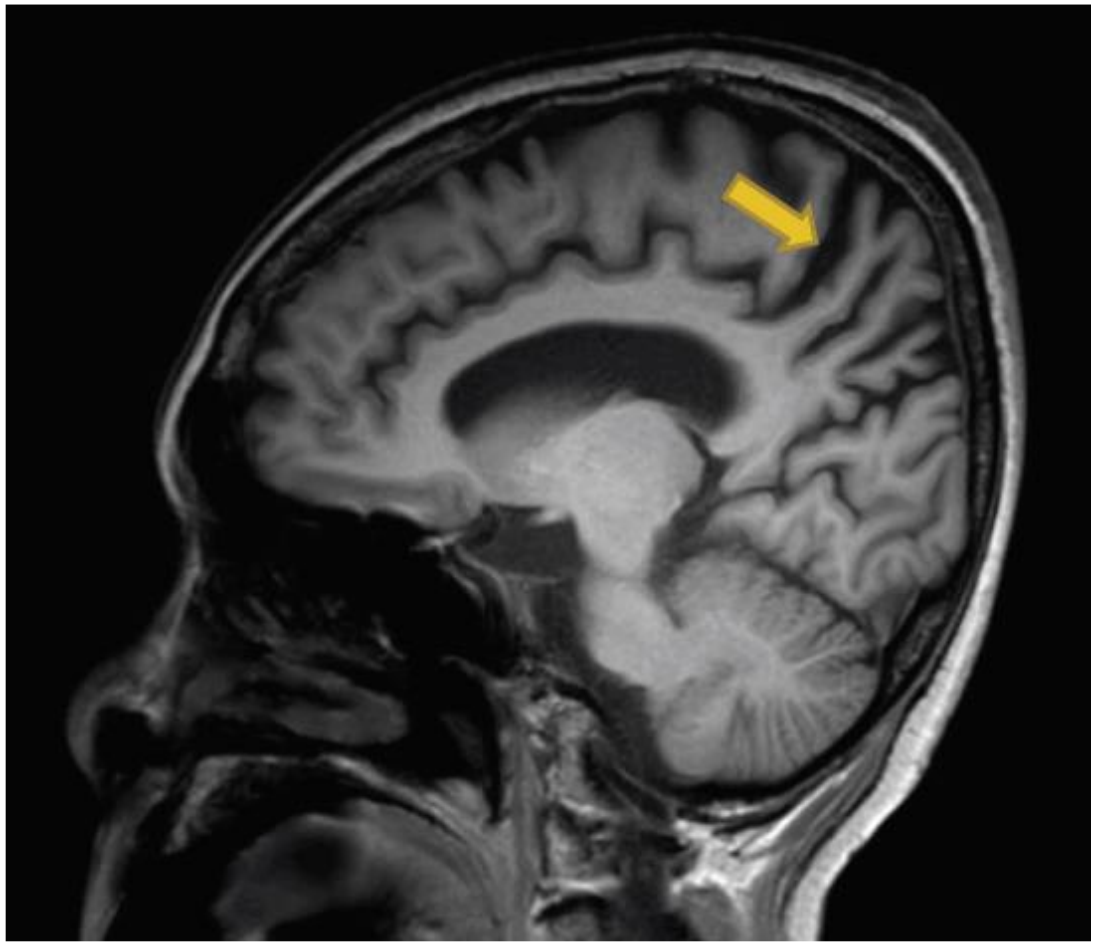
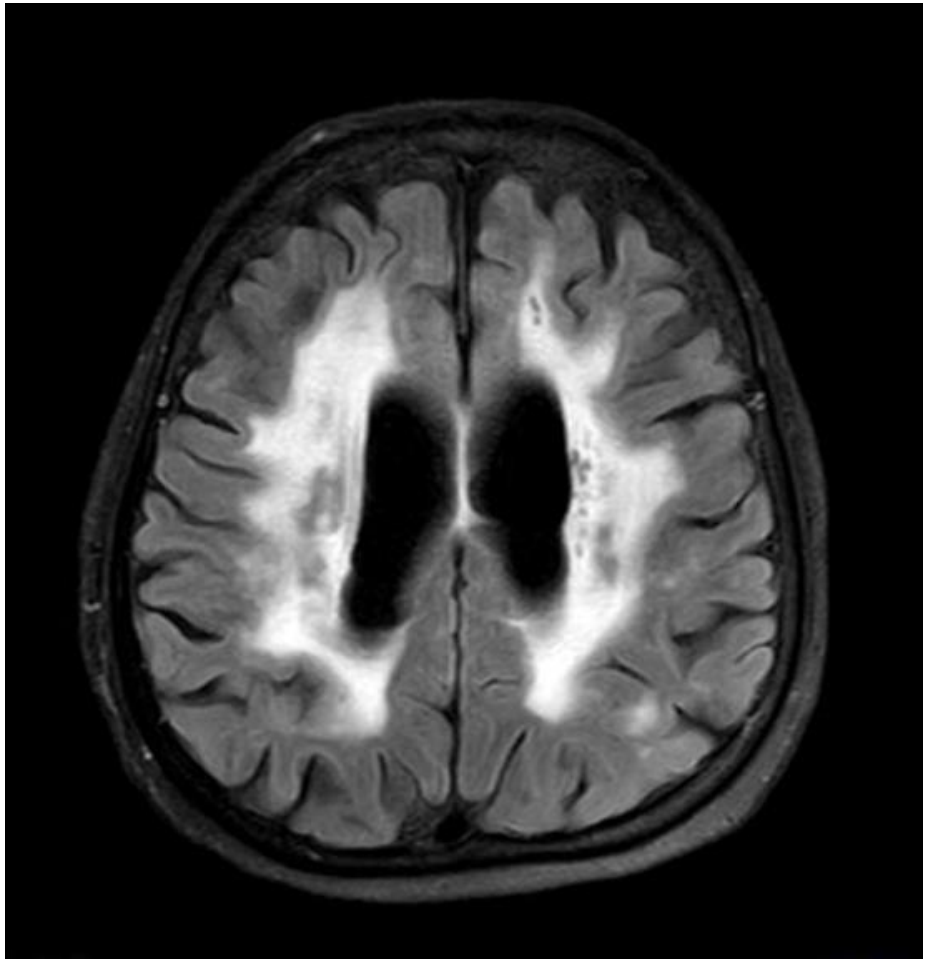
Early onset AD



Precuneus atrophy

SI GERIATRICS INTERNAL MEDICINE

Vascular dementia



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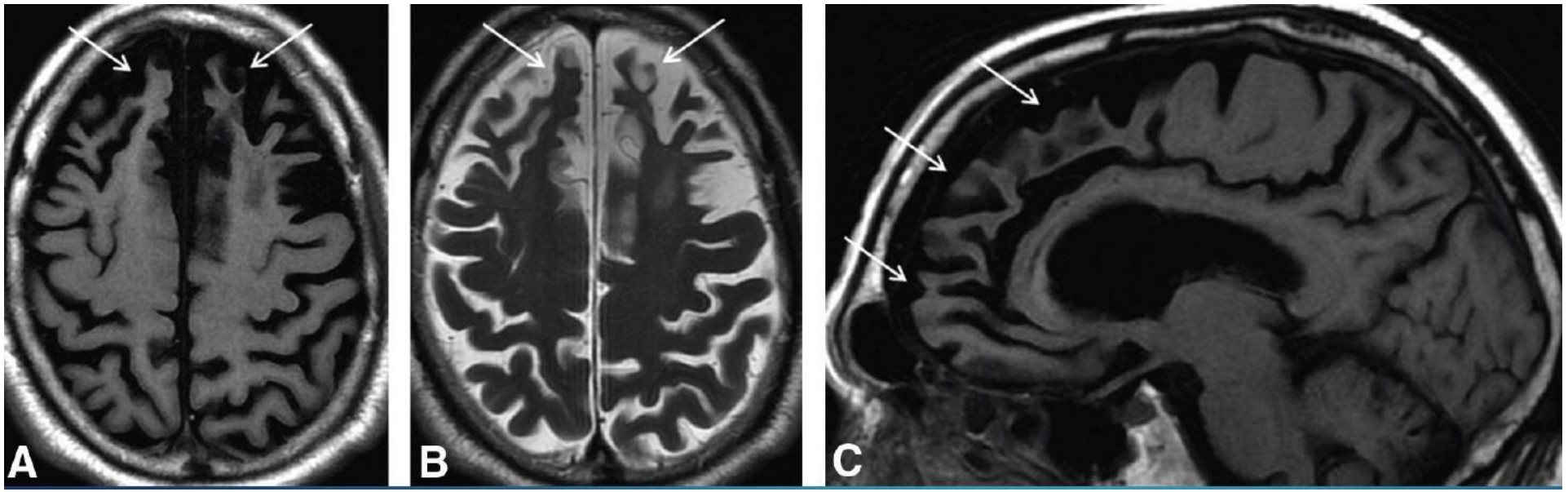
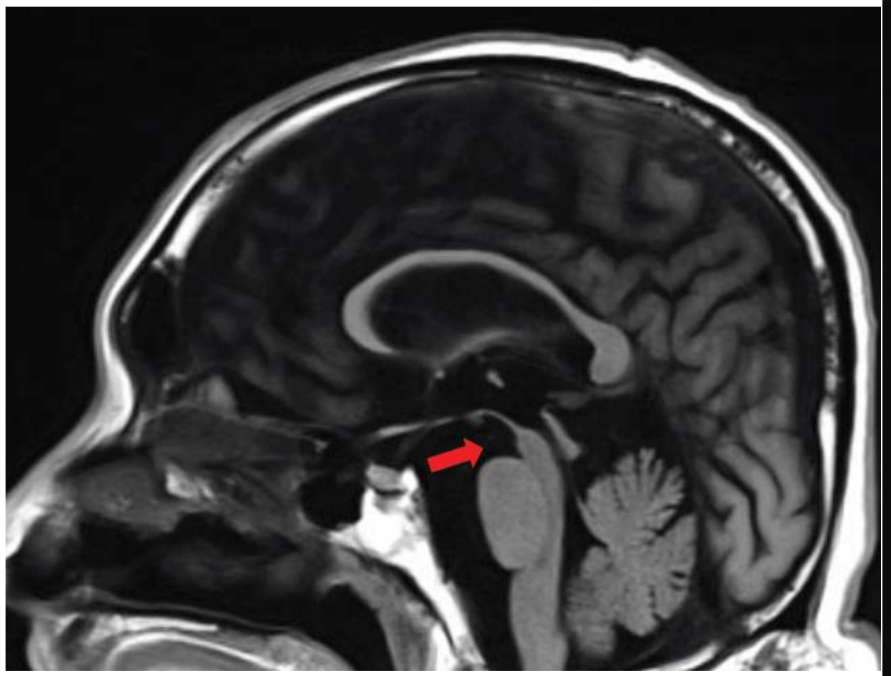
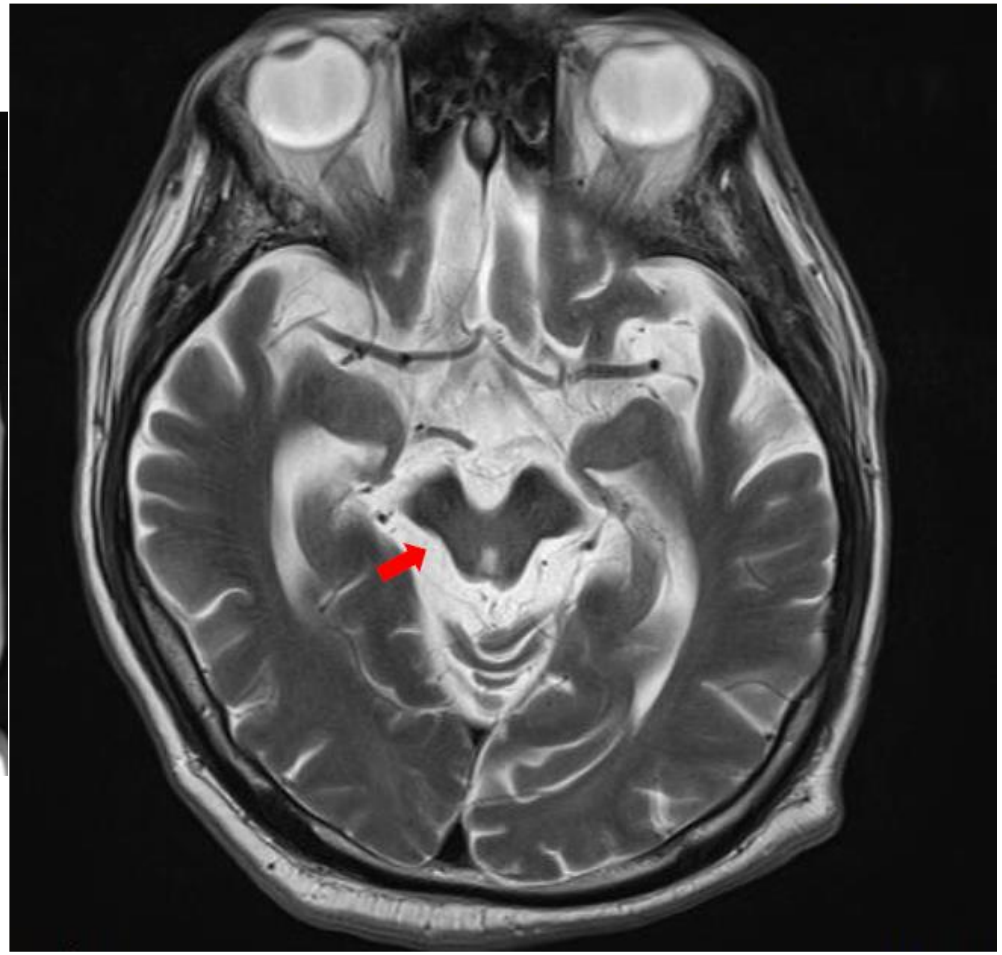
bvFTD



PSP





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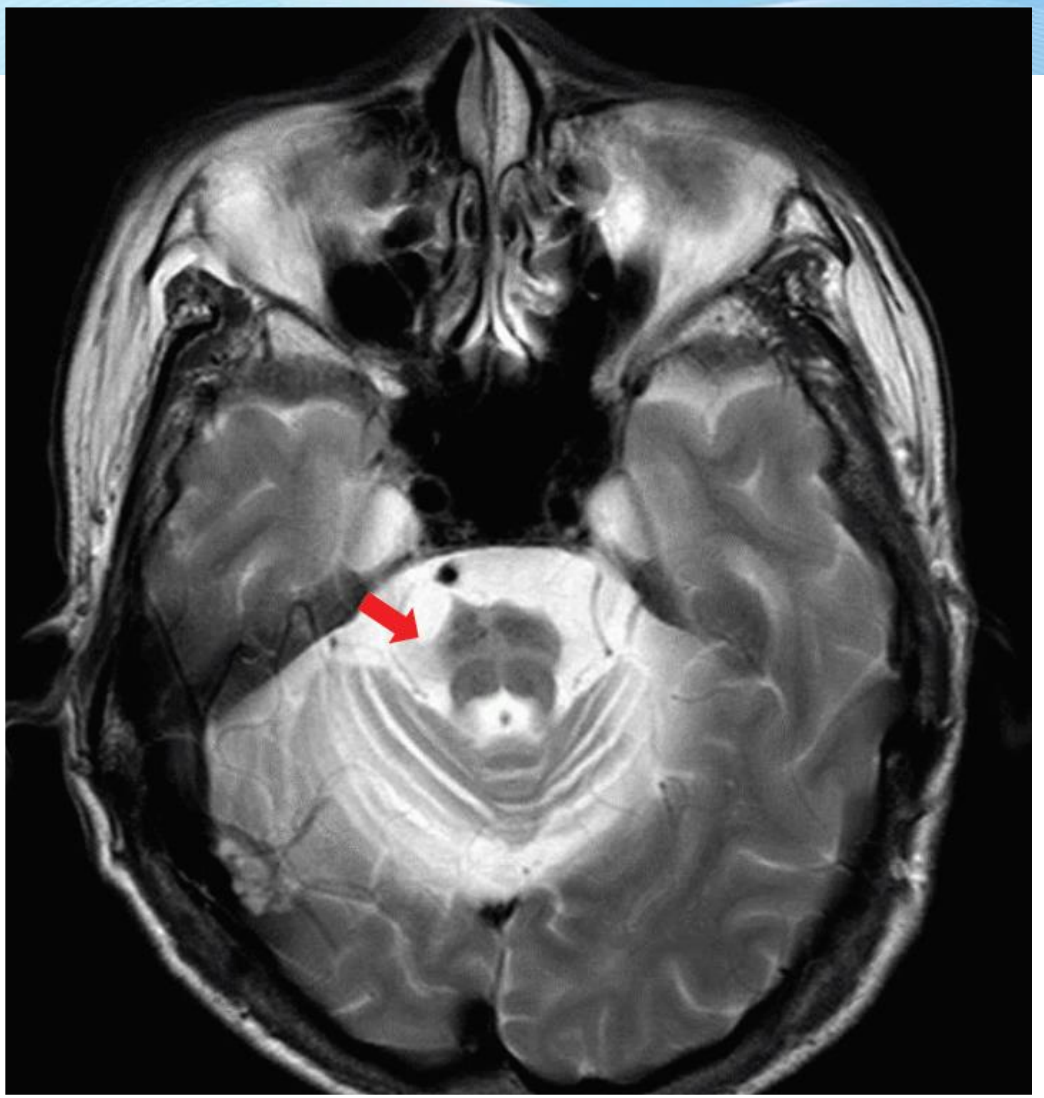
MSA



Pharmacologic Treatment

	Alzheimer's disease	AD with CVD	Vascular dementia	Parkinson's disease with dementia	Dementia with Lewy Bodies	bvFTD	MCI
Donepezil							
Rivastigmine							
Rivastigmine patch							
Galantamine							
Memantine							
Gingko biloba extract							
Nicergoline							

ข้อควรระวัง

Cholinesterase Inhibitors

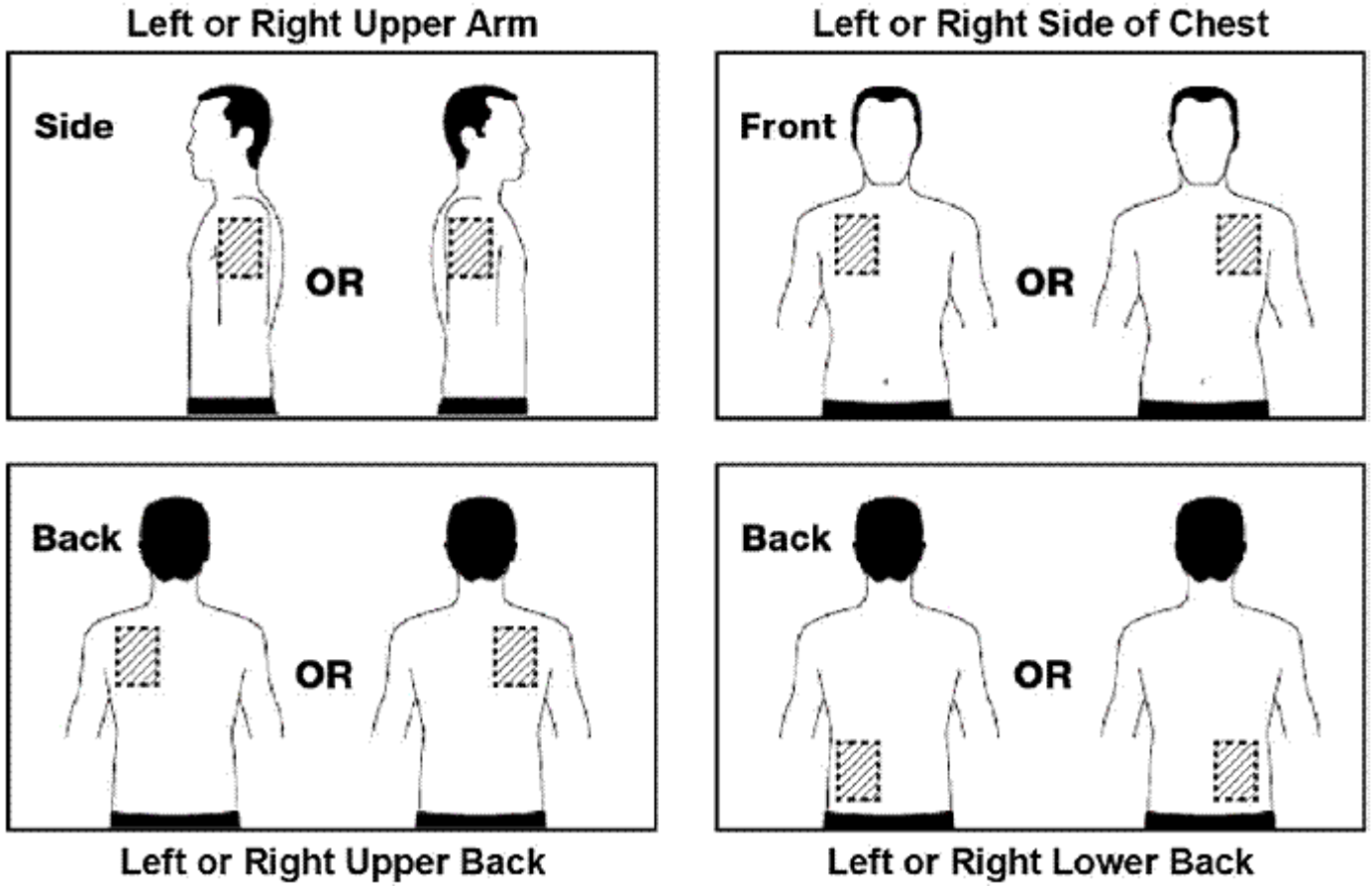
- Side effect: anorexia, N/V, diarrhea, bradycardia, syncope
- Drugs to avoid
  - Anticholinergic drugs
  - Cholinergic drugs
  - Antiarrhythmic drugs: beta-blockers, verapamil, diltiazem, digoxin
  - CYP2D6, CYP3A4 inducer/inhibitor

NMDA receptor antagonist

- Side effect: somnolence, constipation
- Do not prescribe if !
  - eGFR <30 → max dose 10 mg/day
  - Uncontrolled seizure

Drugs	Start dose	Available dose	Max dose/day
Donepezil	2.5-5 mg OD	5, 10, 23 mg	23 mg
Galantamine	8 mg OD	8, 16, 24 mg	24 mg
Rivastigmine	1.5 mg BID	1.5, 3, 4.5 mg	12 mg
Rivastigmine oral solution	1.5 mg BID	2 mg/mL (120 mL/bottle)	12 mg
Rivastigmine patch	4.6 mg/24 hr	4.6, 9.5, 13.3 mg	13.3 mg/24 hr
Memantine	5 mg HS (BID)	10 mg	20 mg
Memantine oral solution	5 mg HS (BID)	5 mg/ 1 pump =2 mg/mL (360 mL/bottle)	20 mg

Rivastigmine patch



SI GERIATRICS INTERNAL MEDICINE

BPSD
(Behavioral and Psychological Symptoms of Dementia)

BPSD

Aggression (physical or verbal)
Disinhibition:
– Socially inappropriate behavior
– Sexually inappropriate behavior
Irritability or lability
Motor disturbance (repetitive activities without purpose):
– Wandering
– Rummaging
Night-time behaviors (waking and getting up at night)

Depression or dysphoria
Anxiety:
– Worrying
– Shadowing (following care giver)

Apathy or indifference

Agitation:
– Easily upset
– Repeating questions
– Arguing or complaining
– Hoarding
– Pacing
– Inappropriate screaming, crying out, disruptive sounds
– Rejection of care (for example, bathing, dressing, grooming)
– Leaving home

Delusion
Hallucination

- Non-pharmacologic management
  → 1st line recommendation
- Pharmacologic management

Kale HC, et al. BMJ 2015; 350:h369

Factors Associated with BPSD

Patient	Caregiver	Environment
• Premorbid personality • Psychiatric illness • Acute medical problems • Unmet needs	• Stress, burden, depression • Lack of education about dementia • Negative communication styles • Coping abilities • Mismatch of expectations and dementia severity	• Overstimulation • Understimulation • Safety issues • Lack of activity and structure • Lack of established routines

Kale HC, et al. BMJ 2015; 350:h369

BPSD Management: A B C

- **A ntecedents**: What are the triggers for the behavior(s)?
- **B ehavior:** Which behavior, or behaviors, are targets for intervention?
- **C onsequences**: What are the consequences of the behavior(s) for the patient and others?

SI GERIATRICS INTERNAL MEDICINE

Kale HC, et al. BMJ 2015; 350:h369

Targeting Management

Patient

Caregiver

Environment

SI GERIATRICS INTERNAL MEDICINE

Functional Assessment Staging (FAST) tool

Stage	Stage Name	Characteristic
1	Normal Aging	No deficits whatsoever
2	Possible Mild Cognitive Impairment	Subjective functional deficit
3	Mild Cognitive Impairment	Objective functional deficit interferes with a person's most complex tasks
4	Mild Dementia	IADLs become affected, such as bill paying, cooking, cleaning, traveling
5	Moderate Dementia	Needs help selecting proper attire
6a	Moderately Severe Dementia	Needs help putting on clothes
6b	Moderately Severe Dementia	Needs help bathing
6c	Moderately Severe Dementia	Needs help toileting
6d	Moderately Severe Dementia	Urinary incontinence
6e	Moderately Severe Dementia	Fecal incontinence
7a	Severe Dementia	Speaks 5-6 words during day
7b	Severe Dementia	Speaks only 1 word clearly
7c	Severe Dementia	Can no longer walk
7d	Severe Dementia	Can no longer sit up
7e	Severe Dementia	Can no longer smile
7f	Severe Dementia	Can no longer hold up head

Predicting mortality rate in nursing home residents with advanced dementia

Patients who had	6 month mortality rate
Pneumonia	46.7%
Febrile episode	44.5%
Eating problem	38.6%

SI GERIATRICS INTERNAL MEDICINE

Mitchel, et al. *N Engl J Med*. 2009; 361(16): 1529–1538

Cause of death	Demented patients (%)	General population (%)
Neoplasm	**3.8**	**21.3**
Circulatory system disease	**37.4**	**47.9**
Ischaemic heart disease	23.1	22.0
Cerebrovascular disease	4.2	11.5
Pulmonary embolism	5.7	0.7
Other circulatory system disease	4.4	13.7
Respiratory system disease	**45.8**	**7.4**
Bronchopneumonia	38.4	2.8[a]
Aspiration pneumonia and asphyxia	6.7	0.2
Other respiratory system disease	0.8	4.5
Digestive system disease	**4.2**	**3.2**
Genitourinary system disease	**2.3**	**1.7**
Other cause	**6.5**	**18.5**
Cachexia	2.1	[b]
Traumatic falls	0.6	[b]
Specified infection (including tuberculosis)	0.4	[b]
Unresolved	3.4	[b]

H. R. Brunnstrom and E. M. Englund. European Journal of Neurology 2009, 16: 488–492

Medication Appropriateness in Advance Dementia

- **Always appropriate**:
  - Analgesics
  - Antidiarrheals
  - Antiemetics
  - Laxatives
  - Inhaled bronchodilators
  - Anxiolytics
  - Antiepileptics
  - Expectorants
  - Lubricating eye drops
  - Pressure ulcer treatment

- **Never appropriate:**
  - Acetylcholinesterase inhibitors
  - Memantine
  - Lipid modifying agents
  - Antiplatelets excluding aspirin
  - Hormone antagonists
  - Cytotoxic chemotherapy
  - Immunostimulators
  - Leukotriene receptor antagonists

Management of End-Stage Dementia. Prim Care Clin Office Pract 38 (2011)
Chuang H, et al. Geriatr Gerontol Int 2017: 17 (Suppl. 1): 65–74.