

Management of Nutrition in Malnourished older adults

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Objectives

Identify common risk factors for malnutrition in older adults

Describe the effects of malnutrition in older adults

Develop a nutrition care plan for malnourished older adults

Providing nutrition counseling

Identify the Importance of involving a multidisciplinary team in managing malnourished older adults

Case scenario



- 75 year old Mrs. CP is a widow was brought to the out patient department by her daughter saying that her mother was withdrawn, low mood and her food intake is reduced since the father's death 2 months ago. Reports a subjective weight loss.
- CP also had an accidental fall during the same time period where she had a R/hip fracture which needed AHR and with no major post surgical complications. She had rehabilitation and now is able to mobilize slowly with a cane.



- PHx – HTN, Osteoporosis, B/L cataract surgeries done 3 years ago
- SHx – CP lives with a maid, daughter married and lives out of Colombo. CP's siblings are there in the neighborhood.
- She reports being constipated and her food does not have much taste. She is with a denture. According to the dietary recall she takes around 1000kCal with 25g /day proteins.
- Examination;
 - Height 160 cm, Weight 50 kg
 - Thin, frail appearing lady with dry skin and muscle wasting. Pallor with angular stomatitis. No significant findings in other system examination



Q1: What could lead to nutritional problems in this patient?

Determinants of malnutrition

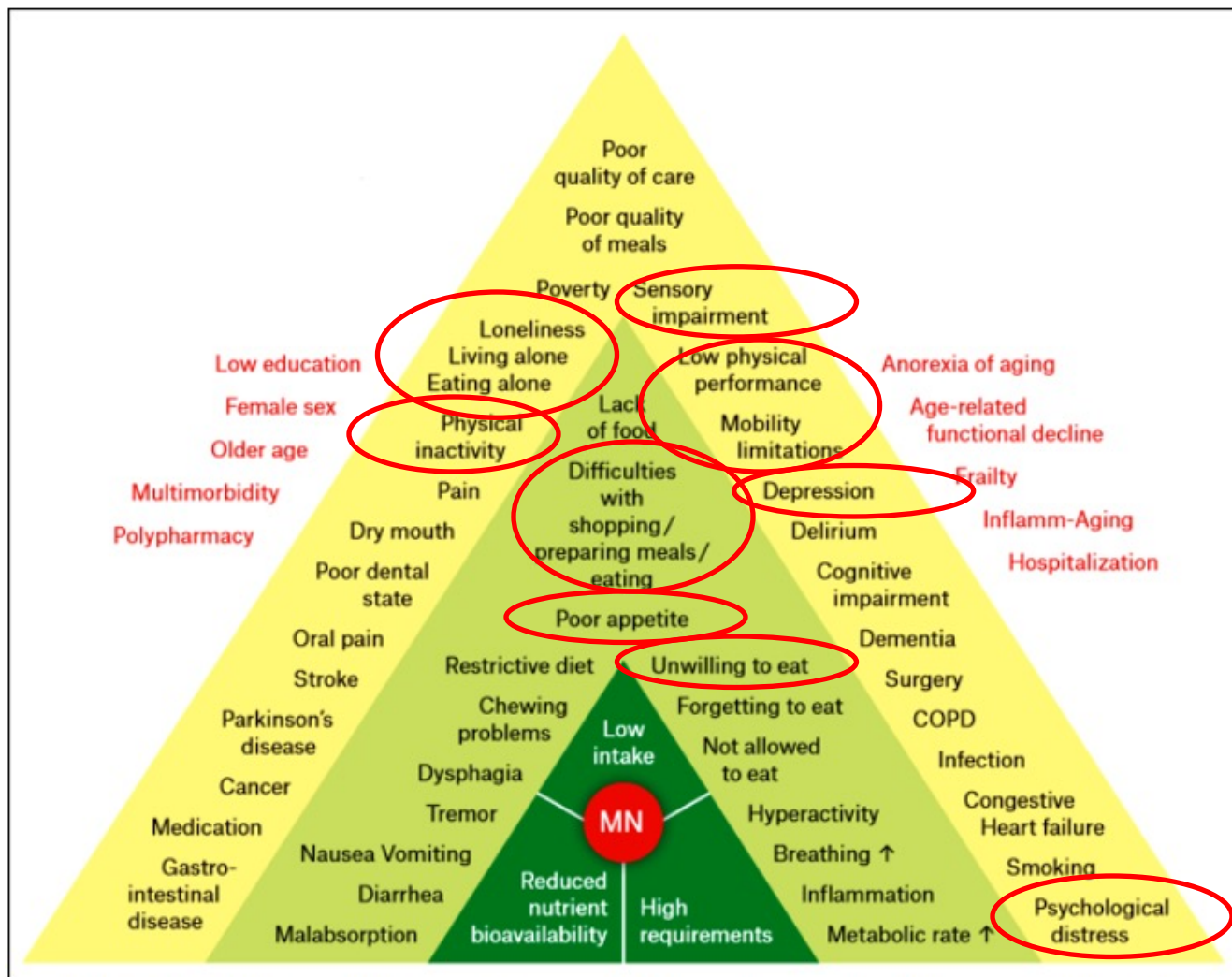


Fig. 1 DoMAP model (Determinants of Malnutrition in Aged Persons) (after (9))

Medical/Surgical Factors

- Medical diagnosis/ disease stage
- Hospital admission/ surgery/ treatment
- GI complications
- Appetite
- Intake
- Difficulty in chewing and swallowing
- Medication and polypharmacy

Functional factors

- Hand grip strength
- Walking speed
- Activities
- Exercise/ sports
- ADL dependency

Factors affecting Nutritional Status

Cognitive Factors

Motivation/ stage of behavior change
Depression/ mental disorder
Cognitive disorder/ dementia
Mental stress
Disease insight

Social factors

- Financial status
- Educational level
- Activities/ interests
- Living and family situation
- Care givers and children
- Transportation options
- Loneliness

Q2: What possible geriatric syndromes can be associated with her malnutrition

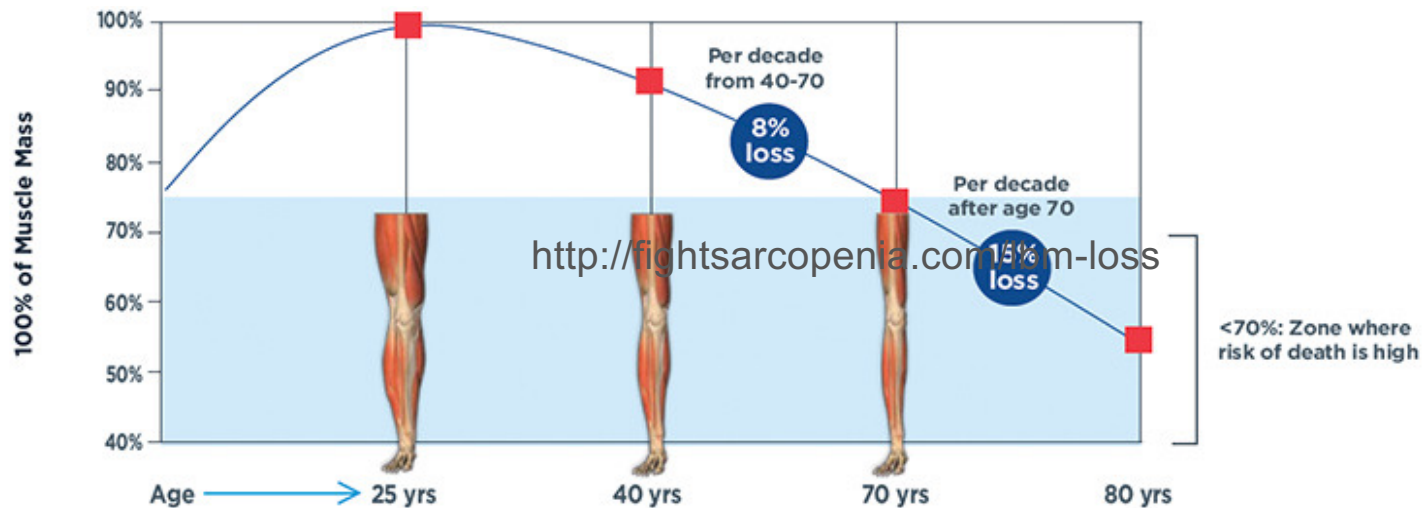


- Sarcopenia
- Frailty
- Fatigue



Sarcopenia

- Progressive loss of skeletal muscle with aging
- Predictor of frailty, disability and mortality
- Recognized as a disease: ICD-10
- Associated with malnutrition
- Nutritional interventions may prevent it



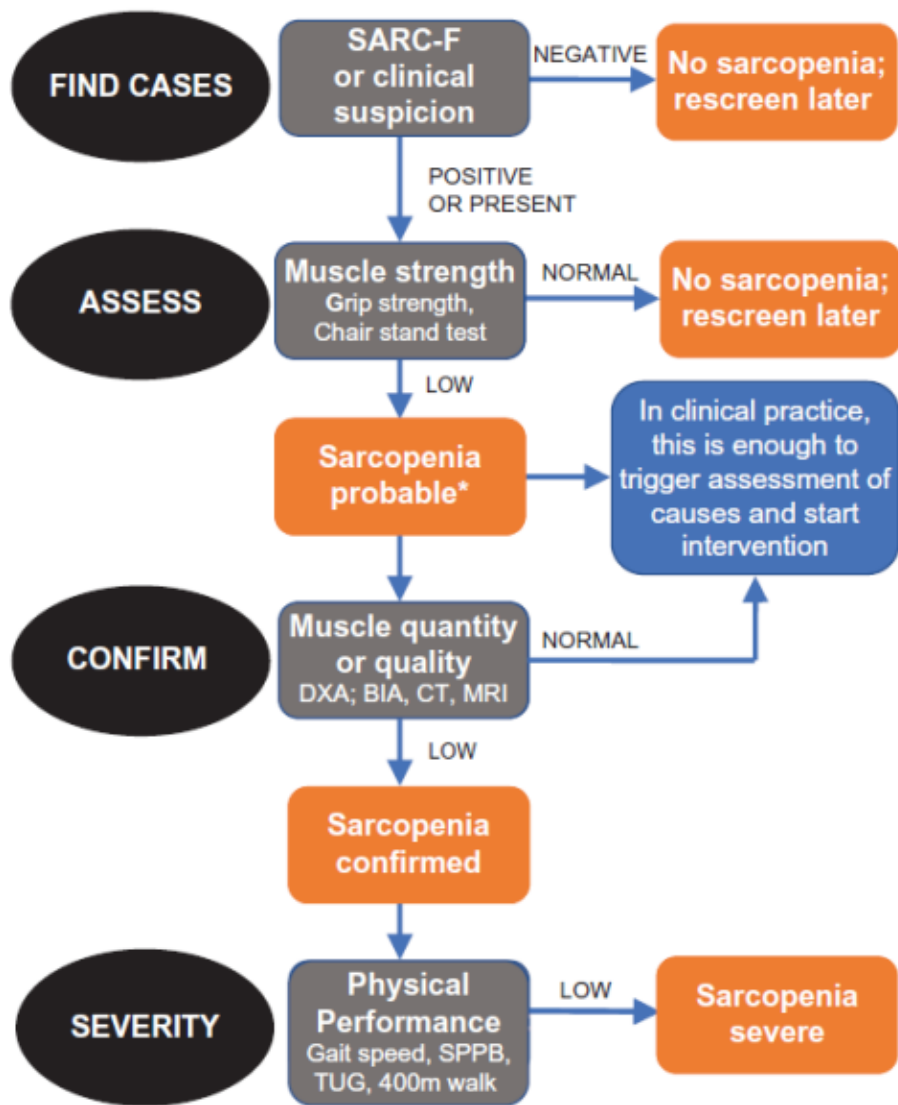


Table 2

Reference values to diagnose sarcopenia according to EWGSOP2 (11)

	Men	Women
Grip strength	< 27	< 16
Appendicular skeletal muscle mass divided by height ² (kg/m ²)	< 7	< 5.5
Gait speed (m/sec)	< 0.8	< 0.8
Timed Up and Go test (sec)	> 20	> 20

Frailty

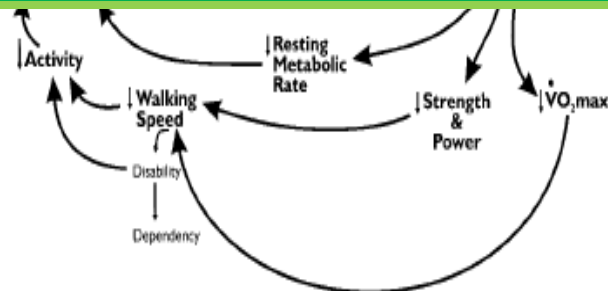
Linda Fried's criteria
(2001)


- **Weight loss**
- **Weakness**
- **Exhaustion**
- **Slowness**
- **Low physical activity**

Frailty is a state of vulnerability and reduced intrinsic capacity that affects older adults' ability to cope with adverse events (WHO).

A combination of mal-nutrition and sarcopenia

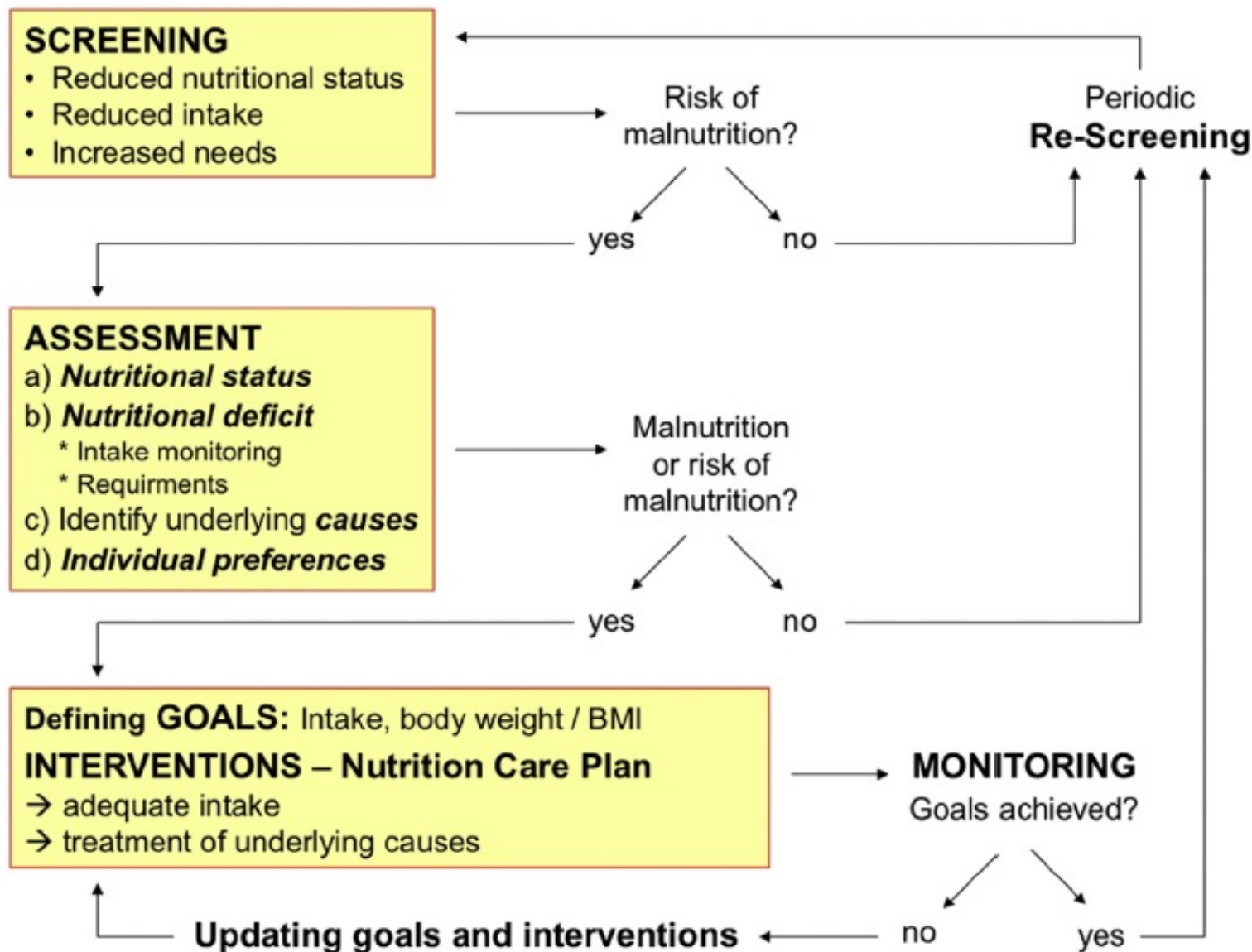
Fried L et al. Frailty in older adults: evidence for a phenotype. J Gerontol 2001





Q3:
Comment on
the
Nutritional
status of CP





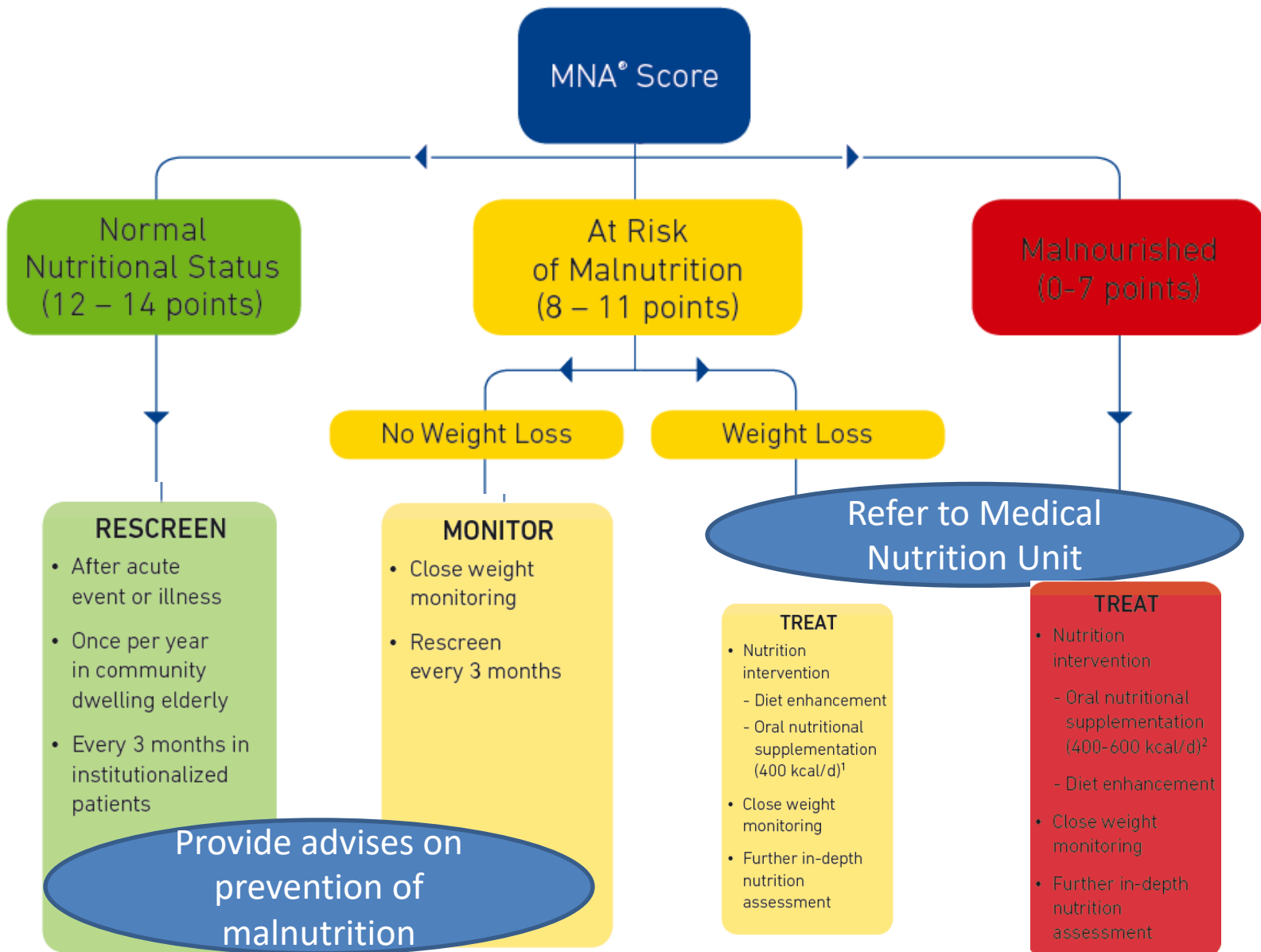
Process of nutritional care for older persons. Modified from Volkert et al.

Nutrition screening tools

Revised short form of the Mini Nutritional Assessment

A. Has food intake declined over the past 3 months, due to loss of appetite, digestive problems, chewing or swallowing difficulties?	E. Neuropsychological problems?
0 = severe loss of appetite	0 = severe dementia or depression
1 = moderate loss of appetite	1 = mild dementia
2 = no loss of appetite	2 = no psychological problems
B. Weight loss during last months?	F1. BMI
0 = weight loss greater than 3 kg	0 = BMI less than 19
1 = does not know	1 = BMI 19 to less than 21
2 = weight loss between 1 and 3 kg	2 = BMI 21 to less than 23
3 = no weight loss	3 = BMI 23 or greater
C. Mobility	IF BMI IS NOT AVAILABLE, REPLACE QUESTION F1 WITH QUESTION F2. DO NOT ANSWER QUESTION F2 IS QUESTION F1 IS ALREADY COMPLETED
0 = bed - or chair-bound	F2. Calf circumference
1 = able to get out of bed / chair but does not go out	0 = CC less than 31
2 = goes out	1 = CC 31 or greater
D. Has suffered psychological distress or acute disease in the past 3 months?	Screening score (max 14 points)
0 = yes	12 - 14 points: normal nutritional status
2 = no	8 - 11 points: at risk of malnutrition
	0 - 7 points: malnourished

Decision Making and intervention



Diagnosing malnutrition

- To diagnose malnutrition in the older persons, following cut-off points are frequently used (expert opinion):

Involuntary weight loss:	> 5% in the last 3 months or > 10% indefinite of time:
BMI	< 22 kg/m ² when older than 70 years < 20 kg/m ² up to 70 years
Arm circumference	< 26 cm
Calf circumference	< 31 cm

Glim diagnostic process

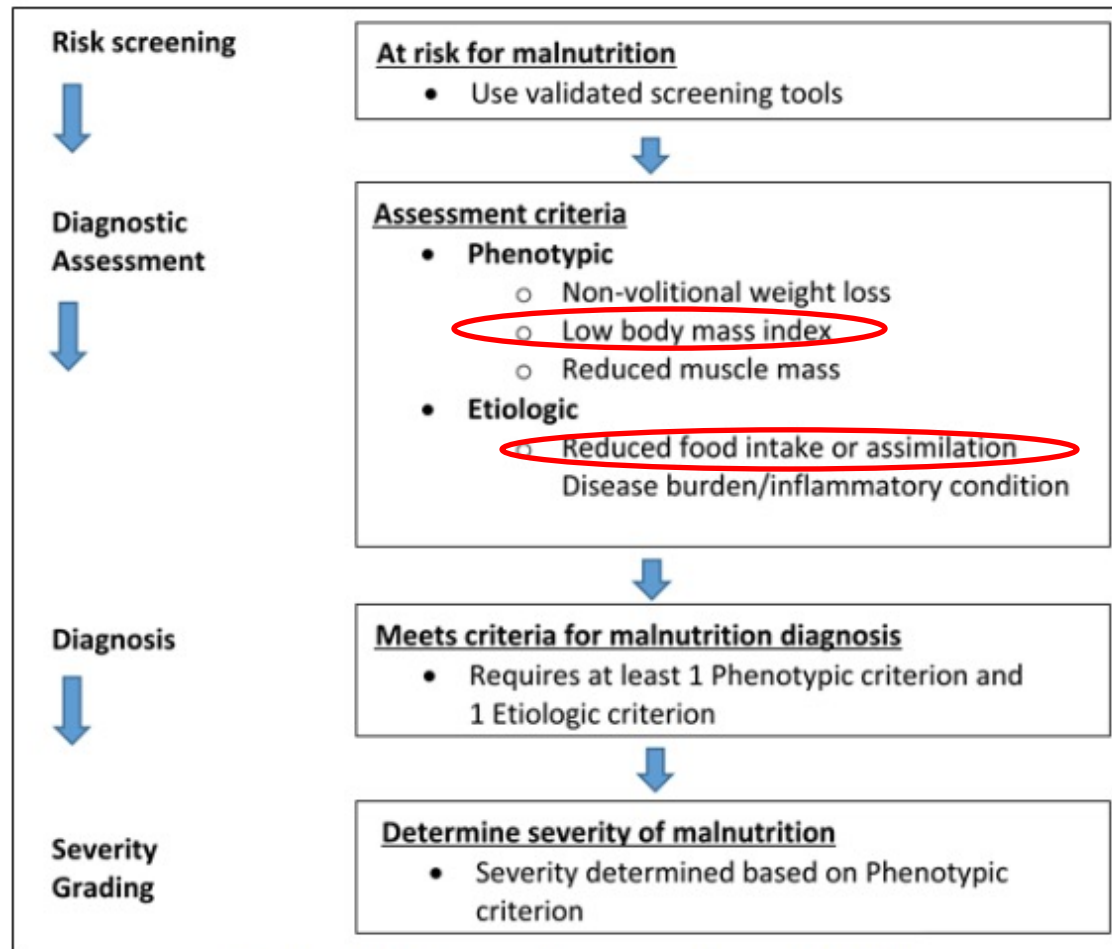



Fig. 5 GLIM diagnostic process (from (14, 15))

Severity grading within GLIM

	Phenotypic Criteria		
	Weight loss (%)	Low body mass index (kg/m ²)	Reduced muscle mass
Stage 1/ Moderate Malnutrition (Requires 1 phenotypic criterion that meets this grade)	5-10% within the past 6 mo, or 10-20% beyond 6 mo	< 20 if < 70 yr, < 22 if ≥ 70 yr)	Mild to moderate deficit (per validated assessment methods)
Stage 2/ Severe Malnutrition (Requires 1 phenotypic criterion that meets this grade)	>10% within the past 6 mo, or 1>20% beyond 6 mo	< 18.5 if <70 yr, < 20 if ≥ 70 yr)	Severe deficit (per validated assessment methods)

Fig. 6 Severity grading within GLIM (from (14, 15))



Q4: What are
the nutrition
requirements?

Energy

Recommendation 1

Guiding value for energy intake in older persons is 30 kcal per kg body weight and day; this value should be individually adjusted with regard to nutritional status, physical activity level, disease status and tolerance. (BM)

Grade of recommendation B – strong consensus (97% agreement)

- Energy Requirement for CP → 1500 kcal/day



- Make the food with increased energy density
- 3 main meals and 2 – 3 snacks



Snack options

ONS



Protein

Recommendation 2

Protein intake in older persons should be at least 1 g protein per kg body weight and day. The amount should be individually adjusted with regard to nutritional status, physical activity level, disease status and tolerance. (BM)

Grade of recommendation B – strong consensus (100% agreement)

ESPEN guideline on clinical nutrition and hydration in geriatrics -Volkert et al et al. Clin Nutr 2018

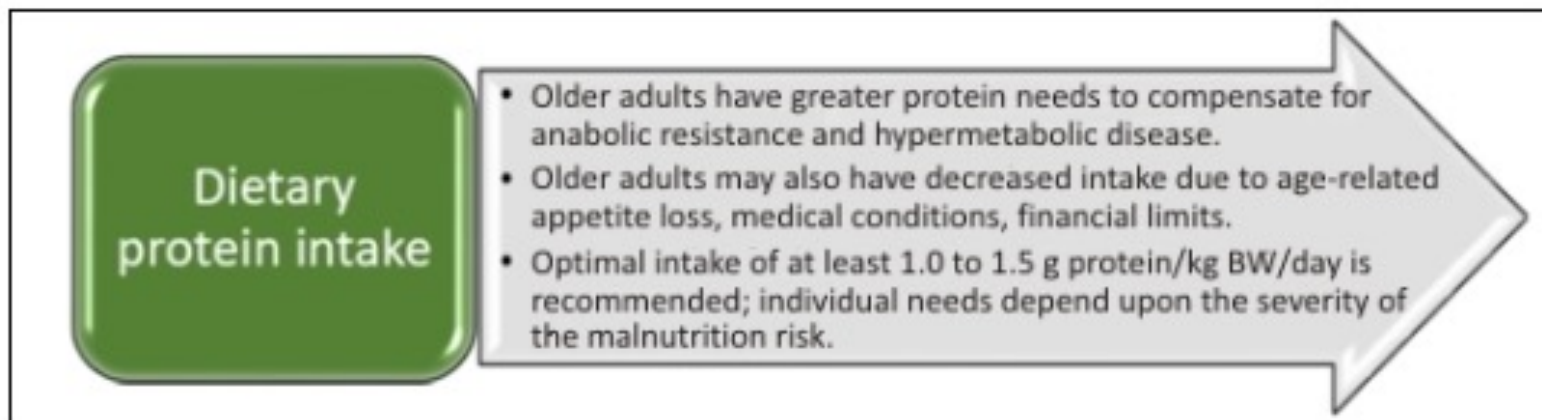


Fig. 7 Recommendations for protein intake of older adults
Recommendation by Deutz et al, from (40)

PROT-AGE recommendations for protein intake of healthy older people (40)

PROT-AGE recommendations for dietary protein intake in *healthy* older adults

- To maintain and regain muscle, older people need more dietary protein than do younger people; older people should consume an average daily intake in the range of 1.0 to 1.2 g/kg BW/d.
- The per-meal anabolic threshold of dietary protein/amino acid intake is higher in older individuals (ie, 25 to 30 g protein per meal, containing about 2.5 to 2.8 g leucine) in comparison to young adults.
- Protein source, timing of intake, and amino acid supplementation may be considered when making recommendation for dietary protein intake by older adults.
- More research studies with better methodologies are desired to fine tune protein needs in older adults.

PROT-AGE recommendations for protein intake of older patients with specific acute or chronic disease (41)

PROT-AGE recommendations for protein levels in geriatric patients with *specific acute or chronic diseases*

- The amount of additional dietary protein or supplemental protein needed depends on the disease, its severity, the patient's nutritional status prior to disease, as well as the disease impact on the patient's nutritional status.
- Most older adults who have an acute or chronic disease need more dietary protein (ie, 1.2-1.5 g/kg BW/d); people with severe illness or injury or with marked malnutrition may need as much as 2.0 g/kg BW/d.
- Older people with severe kidney disease (ie, estimated glomerular filtration rate [GFR] < 30 mL/min/1.73m²) who are not on dialysis are an exception to the high-protein rule; these individuals need to limit protein intake.

- Protein requirement for CP – 1.2g/kg/day → 60g/day

How to provide??



Food items giving 7g of proteins

Animal protein sources	Plant proteins sources
Fish 30g (size of 2 match boxes)	Lentils ½ cup
Poultry 30g (size of 2 match boxes)	Cooked/ boiled Chick pea ½ cup
Egg 1	Cooked/boiled green gram ½ cup
Milk 200ml (1 glass)	Cooked/boiled cowpea ½ cup
Milk powder 30g (2 table spoons)	Peanuts 30g
	Tofu ½ cup (120g)
	(Rice 1 cup has 4g proteins)

ONS

If a patient's nutritional status does not stabilize or improve with basic strategies (Using fortified food, texture modified food, etc), oral nutritional supplements (ONS) should be considered.

Recommendation 23

Older persons with malnutrition or at risk of malnutrition with chronic conditions shall be offered ONS when dietary counseling and food fortification are not sufficient to increase dietary intake and reach nutritional goals.

Grade of recommendation GPP – strong consensus (100% agreement)

Recommendation 24

Hospitalized older persons with malnutrition or at risk of malnutrition shall be offered ONS, in order to improve dietary intake and body weight, and to lower the risk of complications and readmission. (BM)

Grade of recommendation A – strong consensus (100% agreement)

Recommendation 25

After discharge from the hospital, older persons with malnutrition or at risk of malnutrition shall be offered ONS in order to improve dietary intake and body weight, and to lower the risk of functional decline. (BM)

Grade of recommendation A – strong consensus (100% agreement)

Recommendation 26

Oral nutritional supplements offered to an older person with malnutrition or at risk of malnutrition, shall provide at least 400 kcal/day including 30 g or more of protein/day. (BM)

Grade of recommendation A – strong consensus (97% agreement)

Other modes of nutrition interventions

- Enteral Nutrition
 - The expected benefits and potential risks of EN shall be evaluated individually and reassessed regularly and when the clinical condition changes.

Recommendation 29

Older persons with reasonable prognosis shall be offered EN if oral intake is expected to be impossible for more than three days or expected to be below half of energy requirements for more than one week, despite interventions to ensure adequate oral intake, in order to meet nutritional requirements and maintain or improve nutritional status.

Grade of recommendation GPP – strong consensus (100% agreement)

1. Is EN likely to improve or maintain the quality of life of this patient?
2. Is EN likely to improve or maintain the functionality of this patient?
3. Is EN likely to prolong survival in this patient?
4. Is prolongation of life desirable from the patient's perspective?
5. Are the risks of feeding tube insertion and EN lower than the expected benefit?

- Parenteral Nutrition

Recommendation 36

Older persons with reasonable prognosis (expected benefit) shall be offered PN if oral and enteral intake are expected to be impossible for more than three days or expected to be below half of energy requirements for more than one week, in order to meet nutritional requirements and maintain or improve nutritional status.

Grade of recommendation GGP – strong consensus (100% agreement)

Recommendation 37

EN and PN and hydration shall be considered as medical treatments rather than as basic care, and therefore should only be used if there is a realistic chance of improvement or maintenance of the patient's condition and quality of life.

Grade of recommendation GPP – strong consensus (96% agreement)



Q5: What are the possible micronutrient deficiencies?

Vitamin B12 deficiency

- Atrophic gastritis → gastric achlorhydria → malabsorption of the food-protein-B12 complex in the stomach

Vitamin D deficiency

- Lack of sun exposure
- Impaired skin synthesis of pre-vitamin D
- Decreased hydroxylation in the kidney with advancing age

Calcium

- Efficiency of calcium absorption from the gastrointestinal tract decreases significantly

Other

- Zn, Fe, Vitamin B6, Vitamin C, E

A wooden bowl filled with oatmeal, topped with sliced bananas and a dusting of chia seeds. The bowl sits on a white cloth napkin on a wooden surface. In the background, there are other wooden bowls and a wooden spoon, suggesting a rustic or natural setting.

Q6: Other dietary alterations

Fiber – Vegetables and fruits

- Include a variety in the diet to maintain the healthy gut
 - Make use of seasonal fruits and get the added non-nutritive benefits



overcome changes in taste and smell

- Try and variety of new flavors, experiment with different types of low sodium seasonings
- Don't over cook food
- Adequate intake of zn (8 – 11 mg/day)

Selected Foods with 1.5 – 3 mg zn per serving



Meat 90g

Fish 90g

Chicken 90g

Baked beans 1/2 cup

Sesame seeds 30g

Pumpkin seeds 30g

Legumes 1/2 cup

For bone health

- Adequate intake of calcium 1200mg per day

Food items containing 250mg of Calcium



1 glass (200ml) Full cream milk

1 cup (200ml) Yoghurt/ curd

1 piece (30g) Cheddar cheese

1 tablespoon dried Kunissa

1 tablespoon (15g) Gingerly seed

Boiled 1 cup (100g Raw) Soya bean

- Vitamin D at least 800IU per day
- Vitamin B12
- Other micronutrients in RDA (Routine supplementation not recommended)

Prevent dehydration

- Provision of adequate fluids (at least 6 – 8 glasses per day)



Dealing with other potential causes of malnutrition

Potential cause	Potential intervention
Chewing problems	Oral care Dental treatment Texture modified diet
Dysphagia	Professional swallowing evaluation Swallowing training Texture modified diet according to swallowing evaluation
	Physiotherapy, Occupational therapy Cutting food, hand feeding Eating and drinking aid provision Finger foods Meals on wheels
Restricted mobility, immobility	Physiotherapy, resistant training, group exercises
Cognitive impairment	Supervision of meals, Meals assistance



Potential cause	Potential intervention
Depressive mood, depression	Adequate medical treatment shared meals Pleasant eating environment group activities
Acute disease, chronic pain	Adequate medical treatment
Adverse effects of medication	Reduce dose of medication Replace or stop medication
Restricted diets	Revision and liberalization of dietary restrictions





Exercises

- Aerobic - minimum of 30 minutes of moderate-intensity exercise on five days each week, or a minimum of 20 minutes of vigorous-intensity activity on three days each week
- Exercises to maintain and increase muscle strength
- 10 minutes of some static stretching of major muscle groups on days when aerobic or muscle strengthening exercise is performed, to maintain range of motion
- Balance training exercises



Other specific interventions to CP to improve nutritional status

- Referring to Psychiatrist / Psychotherapist
- Have a family meeting and arrange a close relative to have a frequent watch – even to have shared mealtimes (Nutrition counseling for patient and family)
- Further rehabilitation and exercise programme to improve her mobility
- Referring to a dental surgeon to reassess the denture
- Using an appetite stimulant



Monitoring and Arranging Follow up



Conclusion



Older adults are at risk of malnutrition due to multiple factors

Malnutrition has a close association with geriatric syndromes

Identification & Individualized interventions are important in management of malnutrition in older adults

Nutrition counselling is an important intervention together with other nutrition & hydration interventions

Multidisciplinary involvement is essential to get an overall improvement and successful management of malnutrition

THANK YOU

