



Nutritional Assessment, Diagnosis, and Treatment in Geriatrics

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Abstract

The purpose of this chapter is to share knowledge about terminology and best practice approaches for the nutrition care process, including nutritional screening, assessment, diagnosis, intervention, and monitoring. This will focus on nutrition care for older adults with or at risk of malnutrition, in their own home, hospital, or caring facilities.

Keywords

Screening · Malnutrition · Nutritional assessment · Nutritional status · Nutritional requirements · Nutritional therapy · Nutritional support

This chapter is a component of Section 1: Nutritional Care in Old Age.

For an explanation of the grouping of chapters in this book, please see Chap. 1: “Overview of Nutrition Care in Geriatrics and Orthogeriatrics.”

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Learning Objectives

By the end of this chapter, you will be able to:

- Explain the nutrition care process for older adults.
- Explain incentives for nutritional screening and the key principles of successful screening.
- Describe the key elements of nutritional assessment and diagnosis.
- Describe how an intervention plan is made based on nutritional assessment, nutritional requirements, and nutrition impact factors.
- Describe the basic concepts of monitoring the efficacy of nutritional intervention.
- Describe the ethical aspects of when to introduce nutritional therapy and when to end.

Karen is 92 years old. For the past 5 years, she has lived in a residential aged care home. When she moved into her new home, she really came alive. There were people around her and staff to talk to. In addition to a little help in structuring daily life, remembering medicine, and small physical care tasks, Karen has largely managed on her own. In particular, she has enjoyed eating in the living room with the others for all meals. But for the past 3 weeks, Karen has been having problems with urinary tract infections. The antibiotics have given her stomach problems and she no longer like to get out of her own living room.

After 3 weeks, Karen's nurse Mary comes to visit to check up on the urinary tract infection. Karen is in bed, and it dawns on Mary that Karen has lost a lot of weight. On closer inspection, it becomes clear that Karen can barely stand on her feet. Although Karen is usually a little overweight (height 152 cm, weight 69 kg, BMI 30 kg/m²), she has lost 4.5 kilos, including an obvious lot of muscle mass, which is seen on her arms, legs, and thorax. Asked how she eats, Karen says she has not felt like eating. She has nausea, the food does not taste like usual – in fact it tastes ugly – and she is also afraid of needing to go to the toilet when she has eaten. She no longer feels safe walking to the toilet on her own and is afraid that help will not make it in time. Upon closer inspection, Karen still has a fever, and she has fungus in her mouth.

In a kind and caring way, Mary advises Karen that the nutritional screening tool results show that Karen is at risk of malnutrition and might already be malnourished. In an easy-to-understand, simple way, Karen and Mary then discuss the implications of ongoing poor intake and consider whether it is time for food for comfort, food as a medicine, or a bit of both. Karen was very keen to improve her intake to prevent further nutrition deterioration to support her to get back to her usual function and lifestyle and was keen to regain her lost weight over the next 3 months. Together, they initiate a nutrition plan including cold soft meals and two oral nutritional supplements daily to start

with. Mary then arranges for a dietitian to conduct a thorough assessment of Karen's nutritional status and to help with goal setting and a more specific nutrition care plan. A doctor is also called in to review antibiotics and look at Karen's mouth, and a physiotherapist is called in to make a physical rehabilitation plan for Karen. Last, but not least, the nurse makes an appointment with Karen and Karen's relatives. Together they agree that more help is needed in everyday life at the moment, more focus on small nutritious meals and a record of what Karen eats and drinks, increasing her regular weights to fortnightly, as well as a plan for mobilization. The nurse communicates the plan to the care team and documents appointments in Karen's care record, so that everyone can follow it and continuously document and revise over time.

3.1 The Nutrition Care Process

The nutrition care process (NCP) is a systematic sequence of distinct, but interrelated, steps to support to nutrition care for older adults like Karen [1, 2]. The NCP supports health professionals to detect the risk of protein-energy malnutrition, hereafter malnutrition, so that those who will benefit from nutrition care will be given the most appropriate individual nutritional therapy in due time. Malnutrition is a clinical disorder recognized under the International Classification of Diseases (ICD11) that encompasses starvation-related malnutrition and acute or chronic disease-related undernutrition [2–4]. Sarcopenia and frailty are nutrition-related conditions commonly associated with malnutrition and the geriatric syndrome [2, 5] (Fig. 3.1). The NCP aims to embrace all these areas of malnutrition.

How the NCP “looks” across settings and populations is in principle the same, but the work tools may be designed differently; Fig. 3.2 depicts the nutrition care process as presented by the Academy of Nutrition and Dietetics [1, 6, 7]. We draw your attention to the outer circles of the NCP model. While not the focus of this chapter, these constructs will be addressed by ensuing chapters to ensure the systems, resources, and infrastructure are in place to support the right nutrition care processes, delivered to the right older person, at the right time, and in the right place.

The NCP is traditionally applied by dietitians and medical and nursing nutrition specialists worldwide to deliver or coordinate malnutrition care, by applying a common framework for nutrition care, focused nutrition care documentation, and application of evidence-based guidelines. Nutrition care models for patients with or at risk of malnutrition are also available which support directing nutrition care to low, moderate, or high nutritional risk. Such approaches support timely and efficient malnutrition care processes to moderate-risk patients where specialist nutrition care is unlikely to be available or add value beyond the care able to be provided by nurses, other interdisciplinary healthcare providers, volunteers, family, and friend. This approach also not only engages diverse healthcare providers in nutrition care processes but also directs nutrition specialist resources to where there are most needed [8–11] (Chaps. 1 and 13).

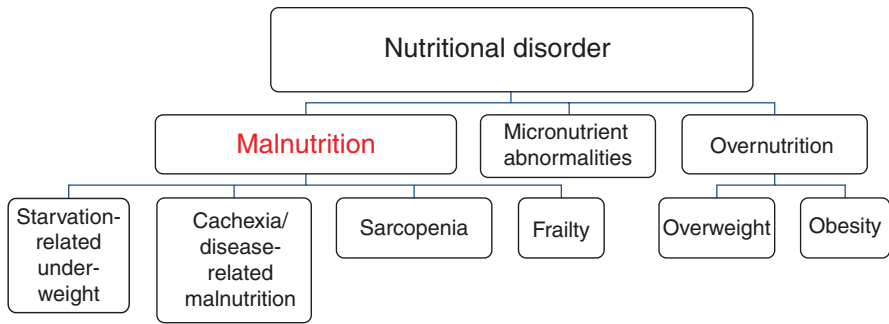


Fig. 3.1 The conceptual tree of nutritional disorders [1, 2]. (Reprinted from Clin Nutr, 34(3), T Cederholm, I Bosaeus, R Barazzoni, et al. A conceptual tree of nutritional disorders., p. 335–341., Copyright (2015), with permission from Elsevier)

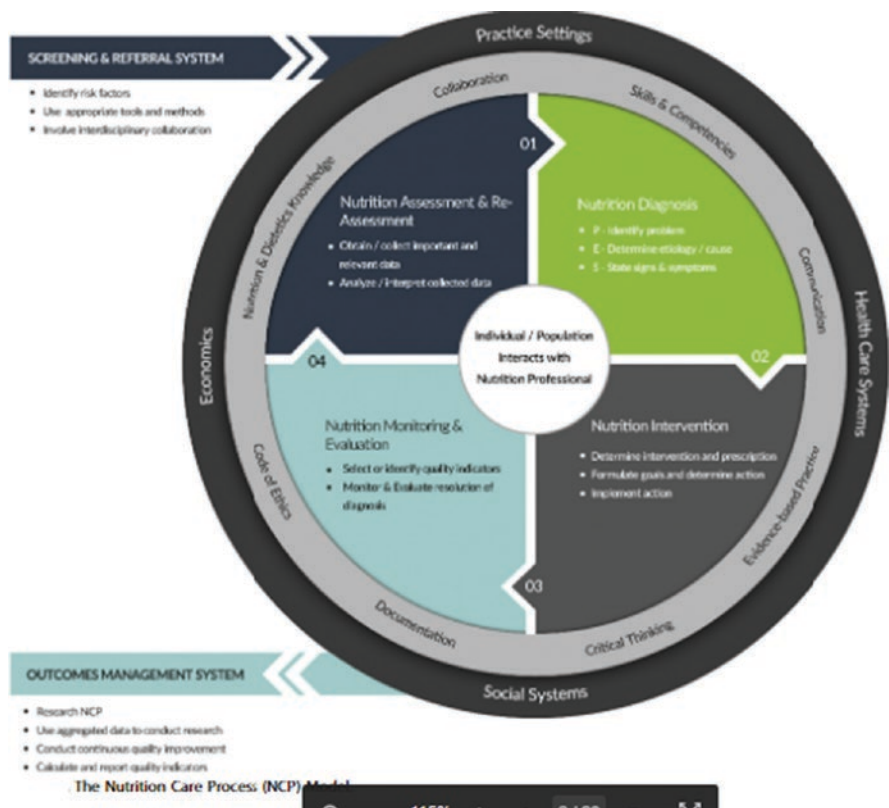


Fig. 3.2 Nutrition care process and model [1, 7]. (Reprint from Journal of the Academy of Nutrition and Dietetics, 117(12) William I. Swan, Angela Vivanti, Nancy A. Hakel-Smith, Brenda Hotson, Ylva Orrevall, Naomi Trostler, Kay Beck Howarter, Constantina Papoutsakis. Nutrition Care Process and Model Update: Toward Realizing People-Centered Care and Outcomes Management p. 2003–2014. Copyright (2017) with permission from Elsevier)

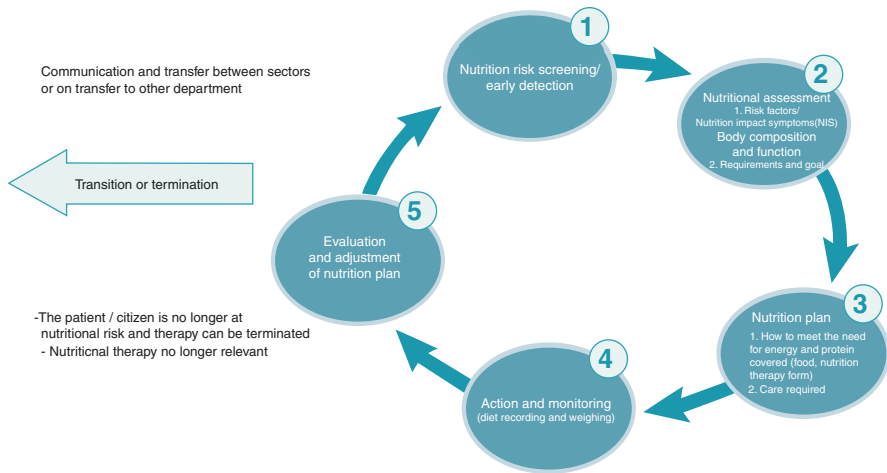


Fig. 3.3 The Multiprofessional Nutrition Care Process model. (Model by author Mette Holst)

Our case study above highlights the importance of nonspecialized nutrition care actions that can be performed by diverse healthcare providers and carers, wherever older adults are cared for in practice. Therefore, a multiprofessional approach which is based on the NCP, but to a greater extent clarifies the elements of the NCP model into action elements, is presented in the Multiprofessional Nutrition Care Process model (Fig. 3.3). The remainder of this chapter is based on the Multiprofessional Nutrition Care Process model, to highlight opportunities for nurses and the multiprofessional teams working with and around nurses to deliver nutrition care processes to older adults with or at risk of malnutrition.

3.2 Nutritional Screening/Risk Detection

Systematic nutritional risk detection, or malnutrition risk screening, has multiple aims, including identifying nutritional status, the need for nutritional intervention, and those who are at risk of negative outcomes such as infections, prolonged healing, or death, due to their nutritional status [12–15]. For our case study, a screening tool was applied that detected nutritional risk, informed the need for nutritional intervention, and also alerted the nurse and older adult to the relationship between poor nutrition intake and outcomes.

Malnutrition risk screening should be performed in all subjects interfacing with healthcare services, whether in hospital, community, or aged care home settings. Depending on the care setting, screening should be performed within the first 24 to 48 h after first contact and thereafter at regular intervals. The screening process allows healthcare providers to target prevention and treatment of undernutrition to relevant individuals in a timely manner. One of the most important things we can do

to prevent the negative consequences of malnutrition is to commence nutritional therapy as early as possible, because we know that the greater the weight loss, the greater the risk of negative outcomes; and in older, multimorbid adults, regaining lost muscle is at best difficult and in many cases unachievable.

ESPEN (the European Society for Clinical Nutrition and Metabolism) and ASPEN (American Society for Parenteral and Enteral Nutrition) recommend using validated screening tools [5, 16–18]. Malnutrition screening tools mostly combine weight loss, reduced food intake, and disease activity. When targeting community-dwelling older adults, physical and functional status, nutrition intake, and chronic conditions may be prioritized in addition to current nutritional status, whereas in the hospitalized patient, acute disease should also be considered in combination with the above. The various screening tools are validated in different settings and weigh the different parameters differently [19]. Unintentional weight loss is routinely included as a measure in screening tools regardless of setting and is used by itself also in primary early detection of malnutrition. Unplanned weight loss is the most readily available and best validated parameter for early detection of nutritional risk. When looking for weight loss in a course of treatment, it is important to look not only at the latest weight but at the entire course of treatment. If older adults, or those caring for them, are unable to answer if they have lost weight within a specified time period, many tools ascribe an “at risk” score, in order not to miss the opportunity for nutritional intervention in a person who might benefit [20]. In nursing homes and in frail community-dwelling older adults, monthly weighing is consequently recommended.

Although our case study was a clear-cut positive screen, no nutritional screening tool is perfect. For example, a patient with cardiac cachexia may not have lost weight due to fluid overload, or may still report a reasonable appetite, and still be at risk of malnutrition. Screening healthcare providers must apply critical thinking and clinical judgment. Treating teams may also choose to consider groups of older adults with specific conditions or treatment requirements “at risk,” for example, those admitted to intensive care or acute hip fracture units.

The result of the nutritional screen should trigger predefined actions. For those not at nutritional risk, standard nutrition care processes, for example, a general diet hospital, feeding assistance where required, and adequate time to eat, should be offered. Regardless of setting, older adults initially screened “not at risk” should be rescreened at specified time points to detect any change in risk status. Subjects who are found to be at risk need to undergo nutritional assessment [13].

3.3 Nutritional Assessment and Diagnosis

3.3.1 Nutrition Impact Symptoms

A nutritional assessment will acquire sufficient information about nutrition impact symptoms (NIS), body composition and function, stress metabolism, psychological and psychosocial parameters, as well as nutritional requirements to inform nutritional diagnosis(es), goal setting, and care planning (Fig. 3.3).

Some assessment data is provided as person-centered outcome measures; biases such as recall, interpretation, and wanting to please should be taken into consideration. Nutritional assessment in many older adults is further complicated by multimorbidity, cases of acute illness and hospitalizations, and disabilities in combination with nutrition-related problems such as dysphagia, decreased appetite, fatigue, and muscle weakness. The crossover between malnutrition, physical dysfunction, sarcopenia, frailty, and cachexia in aging further contributes to diagnostic difficulties (Chap. 8).

The purpose of the NIS assessment is to detect, reduce, or remove barriers to eating and ensure that the nutrition plan can take into account physiological, psychosocial, and environmental changes related to eating (Table 3.1). Chapters 2 and 4 highlight additional determinants of malnutrition.

Further investigation and relevant treatment should be initiated in relation to modifiable NIS factors detected. Our case study highlights how nurse Mary identified reversible nutrition impact symptoms and, together with Karen and other healthcare team members, actioned interventions that aligned with shared goals. Our case also highlights the need for dietitians, nurses, medical professionals, and other healthcare providers to work together. The multiprofessional team contributes a broader perspective than nutrition alone and may help to identify changeable barriers to nutrition intake. A systematic approach to both the NCP and assessing NIS is recommended, in order to understand the greater picture of the individual nutrition intake disturbances; there are many determinants of malnutrition and different tools for NIS assessment (Chaps. 2 and 4). As an example, the Nutrition Impact Symptoms Score for symptoms impacting on food intake [21] is built on PG-SGA, which is one of the best validated NIS instruments for cancer patients [22].

Table 3.1 Commonly reported nutrition impact symptoms

<i>Medical/physiological</i>	<i>Psychosocial</i>
Altered tastes and smells	Carer burden
Anorexia of aging, lack of appetite, or early satiety	Social isolation
Cognitive impairment, delirium, or dementia	Food or financial insecurity
Depression	Poor emotional well-being
Dry mouth	Self-administered dietary restrictions and preferences
Dysphagia (swallowing difficulty)	<i>Environmental</i>
Fatigue	Older adult, clinician, and community beliefs, biases, and perceptions
Gastrointestinal upset, e.g., nausea, vomiting, diarrhea, constipation	Misinformation and misdirection and treatment biases
Lack of teeth or ill-fitting dentures	
Malabsorption or endocrine issues	
Medical comorbidities	
Mouth sores	
Pain	
Polypharmacy or medication side effects	
Prescribed dietary restrictions	

3.3.2 Nutritional Diagnosis

The Global Leadership Initiative on Malnutrition (GLIM) criteria is a recent global initiative and consensus initiative convened by several of the major global clinical nutrition societies and experts [16]. The purpose is to be able to make a “nutritional diagnosis” for malnutrition, which clarifies which factors contribute to nutritional risk (Table 3.2). This should make the intervention effort more action oriented.

The procedure is first an “early detection” of nutritional risk applying a validated screening tool as described above. This informs a thorough assessment which

Table 3.2 GLIM criteria: phenotypic and etiologic criteria for the diagnosis of malnutrition

Phenotypic criteria*			Etiologic criteria*	
Weight loss (%)	Low body mass index (kg/m ²)	Reduced muscle mass ^a	Reduced food intake or assimilation	Inflammation
>5% within the past 6 months or >10% beyond 6 months	<20 if <70 years or <22 if >70 years	Reduced by validated body composition measuring techniques ^a	≤50% of ER >1 week, or any reduction for >2 weeks, or any chronic GI condition that adversely impacts food assimilation or absorption	Acute disease/injury or chronic disease-related
	Asia: <18.5 if <70 years or <20 if >70 years			

Thresholds for severity grading of malnutrition into stage 1 (moderate) and stage 2 (severe) malnutrition

	Phenotypic criteria ^a		
	Weight loss (%)	Low body mass index (kg/m ²) ^b	Reduced muscle mass ^c
<i>Stage 1/moderate malnutrition</i> (requires one phenotypic criterion that meets this grade)	5–10% within the past 6 months or 10–20% beyond 6 months	<20 if <70 years, <22 if ≥70 years	Mild to moderate deficit (per validated assessment methods—see below)
<i>Stage 2/severe malnutrition</i> (requires one phenotypic criterion that meets this grade)	>10% within the past 6 months or >20% beyond 6 months	<18.5 if <70 years, <20 if ≥70 years	Severe deficit (per validated assessment methods—see below)

^aSeverity grading is based upon the noted phenotypic criteria, while the etiologic criteria described in the text and Fig. 3.4 are used to provide the context to guide intervention and anticipated outcomes

^bFurther research is needed to secure consensus reference BMI data for Asian populations in clinical settings

^cFor example, appendicular lean mass index (ALMI, kg/m²) by dual-energy absorptiometry or corresponding standards using other body composition methods like bioelectrical impedance analysis (BIA), CT, or MRI. When not available or by regional preference, physical examination or standard anthropometric measures like mid-arm muscle or calf circumferences may be used. Functional assessments like handgrip strength may be used as a supportive measure [16, 23]

consists of the criteria: phenotypic (unplanned weight loss, BMI, or muscle mass) and etiologic, which considers reduced dietary intake and disease state (Table 3.2 and Fig. 3.4).

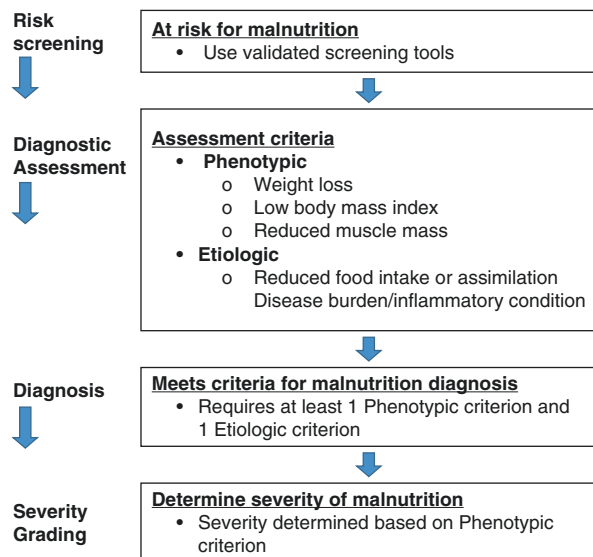
Of the phenotypic criteria, muscle mass is the most important indicator of survival or complications. During active disease, we know that weight loss mainly takes place in the muscle mass. The bottom line is that muscle mass is the fastest “food” for those who have not received enough energy and protein for combustion. In addition, muscle mass is an indicator of maintaining physical activity. Therefore, it is also primarily muscle mass we look at when we make a more thorough assessment of body composition. Sarcopenia is a syndrome that is defined predominantly by the simultaneous occurrence of lower skeletal muscle mass, strength, and function in older adults. Sarcopenia significantly impacts self-reported quality of life and physical activity level as well as function and is associated with inadequate protein intake and/or reduced physical activity [24].

Muscle mass is monitored in different ways. Commonly reported trusted methods for application in research include dual-energy X-ray absorptiometry (DXA), magnetic resonance index (MRI), and computerized tomography (CT). Access to these is limited in most clinical settings, costs can be prohibitive, and radiation exposure also needs consideration for the latter (Fig. 3.5).

Until ready access to trusted methods is available in the clinic, we have various tools to use.

Commonly applied measures of muscle mass in clinical settings globally are the calf circumference and upper arm circumference measures. These are of low cost, are easy to perform, and generally correlate with trusted methods. However, their precision is reduced in obese subjects [25]. Although broad uptake is yet to be realized, ultrasound has demonstrated potential for application as a measure of muscle

Fig. 3.4 GLIM criteria [16]. (Copyright © 2018 Elsevier Ltd., the European Society for Clinical Nutrition and Metabolism and American Society for Parenteral and Enteral Nutrition. All rights reserved. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6438340/figure/jcsm12383-fig-0001/>)



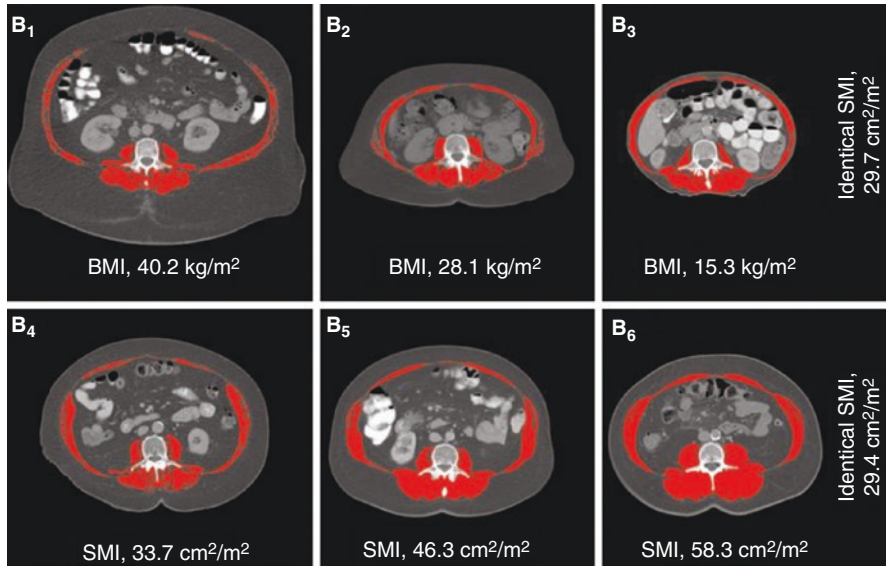


Fig. 3.5 Skeletal muscle mass and different BMI vs same body size with different skeletal muscle mass (Martin L. et al. [23]) B₁, B₂, and B₃ show the same skeletal muscle mass index (SMI) but different body mass index (BMI), that is, the same amount of muscle mass for different body size. B₄, B₅, and B₆, shown in Fig. 3.5 show the same BMI with different SMI, that is, the same body size with different amount of muscle mass (Martin L. et al. [22]). (With permission from Martin, L., et al., Cancer cachexia in the age of obesity: skeletal muscle depletion is a powerful prognostic factor, independent of body mass index. *J Clin Oncol*, 2013. 31(12): p. 1539–47. <https://doi.org/10.1200/JCO.2012.45.2722>)

mass. Bioimpedance (BIA) is relatively easily accessible and quick to read and translate into results. It is increasingly applied across a variety of patients and settings by trained healthcare providers. BIA measures the amount and ratio of fat, muscle tissue, and fluid. This is done by the device sending a weak current through the tissue and measuring the different resistances for each tissue type. A reliable bioimpedance measurement requires a little rigor in the method, for example, bladder emptying shortly prior to measurement and fasting and avoidance of moderate or intense physical activity. The latter, however, should probably be passable in many clinical settings. BIA is not appropriate for those with pacemakers and is unlikely to be accurate in those with fluid overload or electrolyte imbalance. As a doubly indirect method, BIA has limited precision and is poorly correlated with sarcopenia in at least some older adult populations [25, 26]. However, we would suggest that at present, BIA provides a valuable source of clinical setting muscle mass information, if the right validated device and methodological process is applied.

The GLIM criteria allow for functional assessments to be used as a supportive measure. There are many ways of measuring muscle strength and function, noting these have traditionally been applied to assess status before an intervention or the effect of an intervention. Handgrip strength, gait speed (4- or 6-min walk at a usual

Table 3.3 EWGSOP2 sarcopenia cut-off points for physical strength [27]

Test	Cut-off points for men	Cut-off points for women
<i>EWGSOP2 sarcopenia cut-off points for low strength by chair stand and grip strength</i>		
Grip strength	<27 kg	<16 kg
Chair stand	>15 s for five rises	
ASM	<20 kg	<15 kg
ASM/height ²	<7.0 kg/m ²	<5.5 kg/m ²
<i>EWGSOP2 sarcopenia cut-off points for low performance</i>		
Gait speed	≤0.8 m/s	
SPPB	≤8 point score	
TUG	≥20 s	
400-m walk test	Non-completion or ≥ 6 min for completion	

From: EWGSOP2. Sarcopenia: revised European consensus on definition and diagnosis [27]

pace, and measure the distance in meters), chair-stand test which measures time taken to rise five consecutive times from a chair as quickly as possible without arm rests, or 30-s chair-stand test, where the number of times raised in 30 s is counted, are among the single parameters measured and recommended (Table 3.3 EWGSOP2 [27]). Combined estimates including patient-reported outcomes are often used as well [28].

For our case study above, although Karen had a relatively high BMI, she had lost more than 5% of body weight. As such she meets the phenotypic criteria for malnutrition diagnosis, without the need for further scanning, clinical, or functional assessment. Regarding BMI, this case draws attention to the fact that both sarcopenia and malnutrition can occur in all weight classes, i.e., in older adults who are already thin but also in those who are in “healthy,” overweight, or obese categories (Chaps. 8 and 16).

3.3.3 Etiologic Criteria

When we look at the etiologic criteria of GLIM, the question “Have you eaten less than you usually do in the past week” is well validated, included in many screening tools, and directly associated with unplanned weight loss. Many healthcare providers work with quartiles and thus do not go for a specific figure, but a rough estimate. Nurse Mary probably asked something like “Have you eaten as you usually do in the past week or less than usual?” And in response to Karen’s answer, she would probably have questioned further to ask if she had eaten 50, 75, or maybe only 25% of usual. Further questions may consider if poor intake has continued for a longer time period. Where time allows and where appropriate, a detailed dietary history may be undertaken. Although this may take some time and level of skill to assess, a detailed history will provide a good impression of food and fluid intake adequacy and potentially reversible barriers and enablers to this (Fig. 3.4) [29].

For assessment of comorbid disease activity, it would be helpful to have a biomarker which could inform a malnutrition diagnosis or whether an older adult needs

nutritional treatment or not. Unfortunately, despite its popular application in clinical and research settings, albumin levels are more likely to reflect overall disease rather than nutritional status or requirements. A systematic review assessed the role of albumin in otherwise healthy subjects who had a very small dietary intake, mainly due to anorexia nervosa. The study showed that serum albumin and prealbumin levels were maintained even at a marked weight loss, and they were only lowered during extreme hunger – that is, at a BMI below 11 [30, 31]. Many other blood markers have been tested, but none have been shown to be adequately sensitive to nutritional status to be used as stand-alone malnutrition markers [32, 33]. We would not recommend testing albumin or other blood markers for our case study, as these are likely to be influenced by the acute phase response due to her active infections. That is not to say that laboratory measures should not be considered; electrolytes; vitamin and mineral; endocrine, renal, and liver function tests; protein; and immune measures may be appropriate to be considered when undertaking a thorough nutritional assessment. For example, Karen has been indoors for some time, and a vitamin D test may be appropriate, if she is not receiving supplements (Chap. 9). As an older adult, if not already supplemented, B12 may also be worth considering in case she has poor absorption. Although our case is not at risk of refeeding syndrome, for the prevention and management of refeeding syndrome, it is recommended to initially test and monitor patients with blood tests at the start of nutritional treatment, especially if they have had a greater weight loss or a greatly reduced dietary intake for longer than a week [34].

3.3.4 Estimating Requirements

The next logical step in the nutrition care process is to estimate an individual's requirements for energy, protein, fluid, and other macro- and micronutrients. This is described in Chap. 2. However, in our case it was simply a ballpark clinical judgment call by nurse Mary that Karen's intake of protein and energy was greatly reduced for >2 weeks and clearly inadequate to meet her requirements.

3.3.5 Nutritional Diagnosis

The nurse must always make an individual assessment of the older adult's current situation, which will form the basis for the clinical decisions chosen in consultation with the patient. Best practice in nutritional nursing care can be found in Chap. 6.

A thorough nutritional assessment will inform a nutritional diagnosis; a well-crafted nutritional diagnosis will not only highlight a modifiable nutritional problem but also document underlying etiologies, signs, and symptoms [1, 7]. It is clear from above that Karen should have a documented diagnosis of malnutrition; and this should also be discussed with the older adult. While we have focused on malnutrition, it is important to note the diversity of nutritional diagnoses commonly observed in older adults across the continuum of care [6]. For our case, a key second diagnosis might be "inadequate protein, energy, and micronutrient intake, related to

medication-related GIT upset, mouth ulcers, and fear of incontinence, evidenced by intake <50% of requirements and weight loss >5% over the past 3 weeks”.

3.4 The Nutrition Plan and Care Required

The nutrition plan targets individualized nutritional therapy approaches most likely to meet the older adult’s nutritional requirements and address the nutritional diagnosis(es) and shared treatment goals (Chaps. 1, 5, 10, 11, 13, and 21). For those with active nutrition care goals, the care required generally follows a three-step process as briefly outlined below and detailed in Chap. 5.

Step 1: Energy- and protein-dense food/fortified foods including snack meals and Oral Nutritional Supplements (ONS) [11].

Older persons with malnutrition or at risk of malnutrition should be offered energy- and protein-dense foods. Fortified food, additional snacks, and/or finger food may be used in order to facilitate dietary intake [5]. Many studies have shown that it is especially difficult to achieve an adequate protein intake without the use of nutritional supplements for people at nutritional risk [35]. Consequently, hospitalized older persons with malnutrition or at risk of malnutrition should also be offered ONS, in order to improve dietary intake and body weight and to lower the risk of complications and readmission [5].

Restrictive diet deprescription should be considered by treating teams for older adults with or at risk of malnutrition. Those at nutritional risk who would normally follow a special diet such as patients with heart disease, kidney disease, diabetes, and obesity often require a more energy- and protein-rich diet during illness. In the case of heart and kidney disease, the nutrition plan may require planning in consultation with a dietitian or, alternatively, may be deprescribed by the treating medical team where intake is likely to be inadequate. Similarly, an acutely unwell inpatient with diabetes may be better off receiving extra insulin and more frequent blood sugar monitoring rather than a sugar-free or low-fat diet that may lead to further nutritional status decline. Weight loss diets are not recommended during periods of illness and should only be resumed when the older adult is healthy or in a stable phase of the disease course, only if, after careful consideration, they remain appropriate [5] (Chap. 16). The need for careful across team communication is especially crucial where multimorbid patients are vulnerable to mixed advice from multiple specialities regarding what is “healthy” (Chaps. 1 and 13). Although not mentioned in the case study above, Karen was not taking her supplements as she thought they were bad for her diabetes. This was observed by her doctor who assured her that the supplements were a very important medicine to support her recovery.

Our case highlights the need for nurses and multiprofessional healthcare providers to advocate for individualized, nutrition care planning and decision-making. Team members should also ensure relevant information is provided and equally understood and clarify goals and expectations as core factors for patient-focused nutrition care (Chaps. 10–12). A practical and considerate approach will provide the individual and/or relatives with information of when to get help if it gets difficult to follow the plan and where to get help specifically, including name of the

professional, phone number/e-mail, and office hours. Both are preferably individualized and written down for the individual to take home. It is also important that nutrition care is coordinated to be applied by healthcare providers across contexts. It also must be clear to all who is the primary responsible clinician for these coordination tasks [36].

There is a lot of care associated with food, meals, and nutritional nursing, and it can be a difficult balancing act to meet the individual person's wishes, preferences, and needs, while meeting the needs for energy and protein. Healthcare providers are recommended to be aware of the possibilities for creating social communities in a hospital ward, in a nursing home, or in the citizen's immediate environment, to enable those people who want to eat with others. The importance of clinically focused foodservice systems is further discussed in Chap. 5.

The nurse and other healthcare providers who serve the day's meals must take on a "hosting role" in connection with the meal before, during, and after the meal, with thoughts on how the best meal is created in the current context. It is a well-known fact that the duration of the meal, eating with others, the surroundings, and the meal influence how much and what one eats [37, 38]. An appetite-stimulating environment supports the person's desire to eat, for example, by removing unpleasant odors and ventilating the living room and cleaning up. In addition, our case highlights the importance of nurse's tasks to make sure that the older adult has received the necessary help for oral and hand hygiene and toileting before the meal is served.

Step 2: Enteral tube feeding.

For older adults who are unable to consume adequate nutrition orally, tube feeding may be an option. ESPEN recommends tube feeding for those patients, including older persons with reasonable prognosis, for whom oral intake is expected to be impossible for more than 3 days or expected to be below half of energy requirements for more than 1 week, despite interventions to ensure adequate oral intake, in order to meet nutritional requirements and maintain or improve nutritional status [5, 39]. The older person should of course be sufficiently informed and give consent, where the option of tube feeding is considered in their best interest [5, 40].

Patients with dysphagia, intensive care patients, cancer patients, as well as patients who have lost the urge to eat due to discomfort from illness or treatment will often be able to be helped with a tube for a period of time. Enteral tube feeding, also called "enteral nutrition," can be given as complete and partial nutrition to patients. Details regarding enteral tube feeding are provided in Chap. 5. Our example older adult (Karen) had previously documented in her advanced care plan that should she be acutely unwell with a chance for recovery and unable to eat, she was willing to receive short-term tube feeding, although she did not want any long-term feeding tube devices placed if she did not have capacity to make that decision.

Step 3: Parenteral nutrition.

Parenteral nutrition (PN) should be reserved for those who are unable to ingest or absorb adequate nutrition through their gastrointestinal tract. Parenteral nutrition can be administered through an intravenous (iv) approach. Central iv accesses are often used, but with a duration of a few days, parenteral nutrition can also be provided using peripheral iv access. Older persons with reasonable prognosis and active treatment goals (expected benefit) are recommended to be offered PN if oral and enteral intake are expected to be impossible for more than 3 days or expected to

be below half of energy requirements for more than 1 week, in order to meet nutritional requirements and maintain or improve nutritional status [5]. Details regarding administration and monitoring of patients on parenteral nutrition are provided in Chap. 5.

3.4.1 Nursing Care Required for Nutritional Therapy

Each of the above three steps will fail in the absence of supportive nursing care. In many countries, the hospital, home-care, or aged care home nurse plans and performs the daily care of the patient and assesses the patient's need for help in connection with eating and coordinates with the involved healthcare professionals. This can of course differ between countries. Studies have shown that patients with poor intake find it difficult to ask the nursing staff for help with eating, which means that the nurse must pay special attention to assessing these patients' care needs. Assistance with eating can in practice be shared with other healthcare staff, volunteers, family, and friends around the patient. Chapters 6 and 10 describe the nursing care efforts in detail.

3.5 Action and Monitoring

In this phase, the practical enactment of the nutritional support plan is performed, monitored, and documented (Chap. 6). Ongoing evaluation is planned for and made, depending on setting and severity of nutritional risk. Local or national standards for community and hospital may provide actual standards for action and monitoring [8, 9]. When initiating nutritional therapy or a special diet for an older adult at nutritional risk, it is crucial that the effort is documented, evaluated, and adapted during the process. Karen was going along well in life. Perhaps not unexpectedly, she became ill suddenly, probably due to her chronic diseases. She then self-isolates and lost her desire to eat not only due to multiple acute nutrition impact symptoms but also because the community and socializing around the meal were lost. It is crucial that nurses and other staff who serve or prepare the food for the older adult consider that the day's meals also have a social significance for the older adult and relatives. Nurses and other healthcare providers are ideally placed to identify factors in the environment that may affect the appetite.

The best and most widely used monitoring method is diet recording of the patient's dietary intake. Where possible, self-monitoring, or involvement in monitoring, should be considered. This allows active engagement, and feedback can be used in the guiding conversations with the patient, including relatives when possible and relevant. Based on a diet registration, the healthcare provider or dietitian and the patient can discuss problems around meals and meal frequency and can clarify the individual patient's issues, wishes, and need for help. Documentation of the individual agreement is necessary, as it will ensure that the patient, for example, will be offered the right help in all eating situations. Increasingly across settings, diet registration forms are being implemented that integrate with electronic work tools on computers or apps on phones and tablets. The individual abilities, as well as tools,

infrastructure, and resources available, will determine the choice of registration method. However, the 24-h recall method, while a relatively good tool for intake adequacy assessment, does not help neither the nursing staff nor the patient to improve the patient's intake across the course of the day. Conversely, a "real-time" time registration method is recommended for actual motivation [41–43]. The nurse and other nursing staff handle the diet registration and are responsible for documenting the result of the patient's intake in the medical record.

Weight and especially serial weights are routinely applied as a monitoring parameter, but weight alone is an uncertain parameter in older adults with, for example, dehydration or overhydration. Regardless of the setting for weighing, it is advised to weigh the subject in the same kind of clothes and shoes, every time. While many weigh without shoes, weighing in light shoes and indoor clothing is recommended in the older, as shoes may help prevent them from slipping on the floor. Weighing circumstances, for example, clothes and type of weighing scale, should be documented. Height may be measured standing back to a wall without shoes to the nearest centimeter (cm). If height is unable to be accurately measured standing, for example, due to kyphosis, one approach is to measure the patient in bed with the patient lying flat and stretched, measuring from top head to heel. Other proxy height measurement measures, for example, ulna measurement, are recommended across settings and populations [44].

There are a broad variety of other monitoring opportunities that should be considered including biochemical, clinical, physiological, and functional measures, psychosocial changes, and older adult knowledge, understanding, and adherence to shared treatment plans (Chaps. 4 and 5). Clear documentation of monitoring measures and results can form the basis for an interdisciplinary discussion of the older adult's nutrition plan, and as per our case above, this may include, for instance, dietitians, pharmacists, physicians, physiotherapists, occupational therapists, social workers, or speech pathologists (Chaps. 13 and 18).

3.6 Evaluation and Adjustment of Nutrition Plan

The above monitoring measures can be used to evaluate and adjust the nutrition plan. For example, the dietitian or nurse uses the total daily intake and the monitored weight to determine if the client has achieved, or is making progress toward, the planned goals. Otherwise, the plan must be adjusted. Furthermore, NIS should be reconsidered, to evaluate whether changes should be made and whether interdisciplinary healthcare providers should be referred. When the individual demonstrates adequate intake and weight stabilization, the monitoring frequency can decrease.

3.7 Discharge from Hospital or Handover to Another Caretaker

With consent of the older adult, it may be appropriate to provide information to the next care-person, for them to be able to support high-quality nutrition care. Information about actual weight, nutrition plan including consistency

modifications, nutritional requirements and goals, allergies, or other food restrictions or preferences (e.g., cultural or religious requirements) should be followed by recommendations for monitoring and motivation, as well as how the individual and other carers are engaged. If the individual has cognitive impairment, information should also include likes and dislikes for foods and feeding preferences.

3.8 End of Nutritional Therapy

Nutritional therapy is ended when goals are met. Even where the goals are not quite met, where the acute condition is stabilized, and if individual is able to self-monitor and has sufficient capability, opportunity, and motivation, it may be appropriate to discharge the patient from nutrition specialist care. However, encouraging meal-times, supporting adequate food and fluid intake, and monitoring nutrition intake, impact symptoms, and related outcome measurements remains a core role for nurses like Mary. For older and particularly multimorbid or institutionalized older adults, we know that diseases and life events may rapidly again put the individual back at risk. Therefore, regular nutritional screening in line with local recommendations is required unless other events suggest screening should be more frequent.

3.9 Ethical Considerations

The main aim of geriatric medicine including geriatric nutritional therapy is to optimize functional status of the older person and, thus, to ensure greatest possible autonomy and best possible quality of life. There is sufficient consensus that oral nutrition, apart from providing nutrients, has significant psychological and social functions, enables sensation of taste and flavor, and is a mediator of pleasure and well-being. Therefore, oral options of nutrition are routinely the first choice and should include encouragement and time to eat, high-quality food choices, and consideration of the need for dedicated assisted feeding, even if these may prove difficult, time-consuming, resource intensive, and demanding. Sufficient training of caregivers should be provided [5, 43].

According to the ESPEN guideline on ethical aspects of artificial nutrition and hydration [40], the ethical principles “autonomy, beneficence, non-maleficence and justice” have to be applied in the act of medical decision-making. In life-threatening situations where a well-founded decision cannot be made, across many cultures and settings, the principle *in dubio pro vita* (when in doubt, favor life) should be considered. Autonomy does however not mean that an older adult has the right to obtain every treatment they wish or request, if this particular treatment is not medically indicated. Furthermore, the guideline states that a competent patient has the right to refuse a treatment after adequate information even when this refusal would lead to his or her death, although again we note differences across cultures and settings in this regard [40].

For nutrition and hydration in dementia, the guideline claims that the decision to discontinue artificial feeding might be misunderstood as an order “do not feed” as nutrition is associated with life and its absence with starvation. For patients with

eating difficulties requiring support, an individual care plan has to be established. Especially the guideline states that in regard to medical decisions at the end of life, appropriate terminology has to be carefully chosen. In palliative care, artificial nutrition has become an integral part, allowing increased survival in terminal cases where the individual would otherwise have died from starvation and not primarily from their malignant disease. In the terminal state, it may be considered difficult to end or decrease nutrition or fluid therapy, even if this might benefit the patient. It is thus recommended that from the very beginning of nutritional therapy, the treatment is evaluated every time the patient is seen in the clinic, just as with all other medication and treatment. This is of course especially required in progressive or terminal diseases such as cancer, lung fibrosis, Parkinson's, or motor neurone disease. Ethical issues are covered in further detail in Chap. 21.

3.10 Summary

Karen lives in a nursing home. However, Karen could just the same live in her own home and may in that case even for a short while need hospitalization or a relief stay in a care home. Regardless of setting, requirements for good nutritional practice and care remain the same. While these nutrition care processes may be at times directed by a nutrition care specialist, they are reliant on all members of the healthcare team to work together.

Take-Home Points

- Nurses are ideally placed to lead nutrition care process actions.
- The nutrition care process must engage the older adult, family and friends as appropriate, and diverse healthcare providers.
- Nutrition impact symptom assessment is vital to detect, remove, or reduce barriers to eating.
- The older adult is center of the nutrition plan and needs to agree on short- and long-term goals.
- Nutrition care for the old person with, or at risk of, malnutrition should not be limited to the acute care setting or short-term follow-up.

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