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### Educational Paper

# Virtual Clinical Nutrition University: Nutrition in the elderly, nutritional screening and assessment – Oral refeeding

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#### SUMMARY

Screening for malnutrition is mandatory in the elderly. Weight, weight loss and MNA are helpful, validated tools. Dietary counselling and fortification are first steps. The use of oral supplements may reduce morbidity and mortality.

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### 1. Learning objectives

- Know the age-independent and age-specific tools that can be used in the elderly;
- Know the recommended strategies for screening and assessing malnutrition;
- Know when and how to use nutritional supplements and the results of this supplementation.

### 2. Key messages

- The short version of the Mini Nutritional Assessment is a universal tool in the elderly;
- Measuring height and weight often need special resources;
- Screening strategies need to be implemented according to the subject's life settings;
- Enriched food can improve protein and energy intake;
- Oral nutritional supplements in the elderly can reduce morbidity and mortality.

### 3. Introduction

It has been repeatedly shown that there is a high prevalence of malnutrition in the elderly, especially in nursing homes and in hospitals. As a consequence of demographic trends including the increasing number of single households a rising rate of

malnutrition in the community will also have to be faced.<sup>1</sup> It is therefore necessary to implement practical measures for diagnosis and therapy of this medically and socially highly relevant condition.

### 4. Diagnosing malnutrition

#### 4.1. Medical history

For a starting point, it is of course essential to obtain an accurate medical history of the patient. With regard to the elderly it has to be kept in mind that often there is a lack of cooperation to be found. Either this may be caused by the patient's wish to stop the physician or nurse from starting a cascade of diagnostic or therapeutic measures after a medical problem has been recognized. Or the patient may no longer be capable to remember certain aspects of his/her immediate past. The latter condition is frequently met among patients with a cognitive deficit or dementia that are both relevant patient groups concerning the problem of malnutrition. Therefore, in many elderly patients especially in the frail ones and those in hospitals or nursing homes it is important to additionally contact a close relative or the caregiver to complete the patient's medical history.

The single most important clinical aspect leading to the diagnosis of malnutrition certainly addresses the course of the patient's weight and here especially weight loss, which should be expressed in kilograms or in percent of the patient's usual weight. Furthermore the interval since the weight loss started should be explored. With regard to prognosis it is obviously not relevant whether the weight loss is declared voluntary or involuntary by the patient. Both are equally disadvantageous.

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The patient should be asked whether a loss of appetite is present. Often it is helpful to question the patient about restrictive diets and consumption of alcohol or tobacco.

As has been shown above, the comorbidity of the elderly is of great significance for the development of malnutrition. Therefore concomitant illnesses and the accompanying medications including possible side effects have to be taken into account. Here special attention should be paid to the entities of depression, dementia and dysphagia.

Since functionality in the elderly is closely correlated with their nutritional status, it is usually advisable to determine their basic and instrumental activities of daily living (ADLs and IADLs).<sup>2</sup> Finally, isolation and poverty becoming more frequent some information about the living conditions and the social relationships of the patient have to be obtained.

#### 4.2. Signs of malnutrition

The attending nurse or physician has to pay attention to physical signs of overt malnutrition. The most prominent is muscle atrophy, loss of subcutaneous fat and peripheral oedema as a consequence of hypoproteinemia. Micronutrient deficiencies can cause a wide range of symptoms that may affect the skin, the mucous membranes, the central and peripheral nervous system, the eyes and other organs as well.<sup>3</sup>

#### 4.3. Oral intake

The evaluation of oral intake offers the opportunity to recognize low intake of energy and different nutrients and it is of utmost importance if one is to find out which patient is at risk of malnutrition. There are different methods available. The 7-day diary and the 24-hour recall strongly depend upon the cooperation of the patient and seem often inappropriate when memory loss is extremely common. It seems therefore to be more appropriate, especially in institutions, to use eating protocols where intake is documented by estimating it via quarters of the meals served. These eating protocols should be filled in for at least three days in a row.

While evaluating a patient with regard to his or her nutritional status it is necessary to look for potential causes for malnutrition early on. In about 70 percent of the elderly who are malnourished it is possible to establish contributing etiologic factors most of which can be specifically addressed. John Morley's mnemonic MEALS ON WHEELS summarizes a variety of treatable pathologic causes (Table 1).<sup>4</sup>

Chronic diseases and medications can also be risk factors for malnutrition in the elderly (Tables 2 and 3).

**Table 1**  
Mnemonic meals on wheels.<sup>4</sup>

Medications (e.g. digoxin, theophylline, fluoxetine)
Emotional causes (depression)
Alcoholism
Late-life paranoia
Swallowing problems (dysphagia)
Oral problems
Nosocomial infections (tb, Clostridium difficile, Helicobacter pylori)
Wandering (dementia)
Hyperthyroidism, hyperparathyroidism, hypoadrenalism
Enteral problems (malabsorption)
Eating problems (inability to self-feed)
Low salt, low fat diet
Shopping and social problems

**Table 2**  
Chronic diseases that may cause malnutrition in the elderly.

Chronic cardiac failure	Chronic pulmonary diseases
Cancer	Chronic infectious diseases
Gastrointestinal diseases	Diabetes
Severe osteoarthritis	Hypo-/hyperthyroidism
Cerebral ischaemia	Intracerebral bleeding
Pressure ulcerations	Morbus Parkinson disease
Dementia	Depression

#### 4.4. Anthropometry

Anthropometric measurements are an essential part of the nutritional screening and assessment in the elderly.<sup>5</sup> They comprise the determination of body height, body weight, circumference of upper arm and calf and the measurement of the triceps skinfold.

An agile patient should be weighed standing on a well-calibrated scale with light clothing and without shoes. If the patient is immobile a chair scale or a lifting scale depending on the amount of his/her disability has to be used. When assessing the body weight, special conditions like oedema, ascites, pleural effusion and loss of body parts have to be taken into account. The significance of an individual's weight course always exceeds that of a single measurement.

With regard to height, the measurement of the knee height and the calculation of the original body height are helpful in immobile patients and in those with kyphosis.<sup>6</sup>

Generally the BMI reflects body composition in the elderly with regard to body fat and lean body mass to a lesser degree than in a younger population. The cut off for malnutrition for adults below age 65 has been set at 18.5 kg/m<sup>2</sup>, while for prognostic reasons in the elderly the threshold is usually set between 20 and 22 kg/m<sup>2</sup>.<sup>7</sup>

Because of its relevance with regard to functionality, a parameter reflecting muscle status in the aged will be particularly useful. Calf circumference proved to be superior to upper arm circumference.<sup>8</sup> The former shows a good correlation with other nutritional anthropometric markers (BMI, free fat mass, triceps skinfold) and mobility.<sup>9,10</sup> The cut off for calf circumference is set at 31 cm. Below that value there is a strong indication for sarcopenia.

With regard to the anthropometric parameters, the individual patient should not be judged malnourished considering only one pathological value but on the basis of a combined view of all available anthropometric information (Table 4).

#### 4.5. Laboratory examinations

The most widely used laboratory parameter to assess the nutritional status has been serum albumin. Its strong association with prognosis has been documented in different populations.<sup>11</sup> But its serum level may be influenced by a wide variety of acute and chronic inflammatory conditions. In addition aging *per se* as well as hepatic and renal dysfunction can cause decreases of the serum level. Another disadvantageous factor is its long half-life of 18 days. Especially in hospital patients a diminished serum albumin rarely is the consequence of a poor nutritional status. On the whole, serum

**Table 3**  
Drugs that may cause malnutrition in the elderly.

ACE-inhibitors	Analgetics
Antacids	Antiarrhythmic drugs
Antibiotics	Antiepileptic drugs
Antidepressants	β-blocking agents
Calcium channel blocking agents	Digoxin/digitoxin
H <sub>2</sub> -antagonists	Laxatives
Non-steroidal antiinflammatory drug	Oral antidiabetic substances
Potassium	Corticosteroids

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