Special article

Which screening method is appropriate for older cancer patients at risk for malnutrition?

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ARTICLE INFO

ABSTRACT

The risk for malnutrition increases with age and presence of cancer, and it is particularly common in older cancer patients. A range of simple and validated nutrition screening tools can be used to identify malnutrition risk in cancer patients (e.g., Malnutrition Screening Tool, Mini Nutritional Assessment Short Form Revised, Nutrition Risk Screening, and the Malnutrition Universal Screening Tool). Unintentional weight loss and current body mass index are common components of screening tools. Patients with cancer should be screened at diagnosis, on admission to hospitals or care homes, and during follow-up at outpatient or general practitioner clinics, at regular intervals depending on clinical status. Nutritional assessment is a comprehensive assessment of dietary intake, anthropometrics, and physical examination often conducted by dietitians or geriatricians after simple screening has identified at-risk patients. The result of nutritional screening, assessment and the associated care plans should be documented, and communicated, within and between care settings for best patient outcomes.

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Introduction

Patients with cancer are one of the diagnostic groups at greatest risk for developing malnutrition [1–4]. The prevalence of malnutrition, which is higher in cancer than noncancer patients [4], increases with age. Although age is a nonmodifiable risk factor, nutritional status is modifiable [5]. Meta-analyses have demonstrated that nutritional support in malnourished patients with cancer, including those undergoing surgery and radiotherapy, can significantly increase dietary intake, shorten hospital length of stay, and reduce infectious complications and sepsis scores [6]. Nutrition screening is a quick and easy process to identify patients at risk for malnutrition [7]. The advantage of nutrition screening is that it can be applied to all patients and it provides systematic identification as opposed to ad hoc referral of patients requiring further assessment and nutrition support [8]. As detailed in further sections of these consensus guidelines, early identification and appropriate nutrition intervention leads to beneficial outcomes, including improvements in nutritional status and in quality of life (QoL) [9,10]. In the absence of nutrition risk screening, malnutrition may go unrecognized or untreated [1,7], with detrimental effects on the patient and the health care service.

Why are older cancer patients at risk for malnutrition?

Malnutrition is both a cause and consequence of ill health across health care settings [1]. Causes include the following:

- Decreased oral intake due to swallowing or dentition problems, impaired functional capacity, reduced appetite, depression, polypharmacy, and/or illness [11];
- An acute care hospital admission with resultant deterioration in nutritional status;
- Symptoms that affect nutrition such as nausea and vomiting as a result of the tumor and/or anticancer treatment, drinking alcohol, sensory deficits, social isolation, dementia, delirium, dysphagia, depression, and destitution in the vulnerable geriatric population [1].

The prevalence of malnutrition depends on the tumor type, stage, and treatment but can range between 30% and 70%.

ME was involved in the development of MUST.
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Although any older patient with cancer is at nutritional risk, those at highest nutritional risk often include patients with gastrointestinal or head and neck cancers [12,13]. Malnutrition is a feature of many types of cancers and is found in many care settings, including hospital inpatients (most studied), outpatients, care homes, and hospices. In general, the prevalence of malnutrition in oncology is higher among hospital inpatients than outpatients, although a large series of hospital outpatients reported that those at risk for malnutrition using the Nutrition Risk Screening (NRS)-2002 was as high as 32% [14].

The number of symptoms affecting dietary intake, otherwise known as *nutrition impact symptoms*, can be a good indicator of nutritional risk. Examples of nutrition impact symptoms include nausea, dysphagia, poor appetite, and early satiety and may be used in the clinical setting to help identify those patients in need of nutrition intervention [2]. Likewise, unintentional weight loss is of prognostic and predictive relevance in patients with cancer [15]. However, any older cancer patient may become malnourished, so early identification using a validated nutrition screening method as outlined here is important.

Which screening method is appropriate?

Nutritional assessment is more informative than screening with respect to identification of malnutrition because it provides a more comprehensive and in-depth assessment of nutritional status [16]. However, this process is time consuming and requires nutritional expertise and training; thus it may be impractical for use in all cancer patients [2].

Nutrition risk screening is a quick and easy process to identify patients at risk for malnutrition [1]. Those identified as being at risk can be referred for assessment. Most of the validated screening tools consist of key items such as current weight status (often as body mass index [BMI]), unintentional weight loss, and decreased dietary intake [2] (Table 1).

The absence of a universally agreed definition for malnutrition, which is associated with the absence of a gold standard to identify malnutrition, makes it difficult to ascertain which screening tool produces the more "correct" classification [5,17,18]. There is no consensus among experts as to the best way to screen for nutritional status, either for mixed groups of patients or for cancer patients [14]. However, several valid and reliable nutrition screening tools exist and are considered appropriate for this population of cancer patients. Among such tools are the Malnutrition Screening Tool (MST) [19], the Mini Nutritional Assessment Short Form Revised (MNA-SF) [20], and the

Table 1
Data required to complete Nutrition screening tools validated for use in older cancer patients

Criteria	Tools			
	NRS-2002	MNA-SF	MST	MUST
Recent unintentional weight loss	X	X	X	X
Appetite		X	X	
Body mass index	X			X
Age >70 y	X			
Housebound		X		
Height				
Dementia or depression		X		
Food intake or eating problem; skipping meals	X	X		X

MNA-SF, Mini Nutritional Assessment-Short Form; MST, Malnutrition Screening Tool; MUST, Malnutrition Universal Screening Tool; NRS-2002, Nutrition Risk Screening. Adapted from [16].

Malnutrition Universal Screening Tool (MUST) [21] developed for use in multiple care settings. The NRS-2002 [22] was developed for use in the hospital setting. A recent review provided evidence to support the use of these nutrition screening tools in practice [16]. General reviews relevant to selection of the screening tool, which include the purpose for which different screening tools were developed, are also available [5,7,23]. All the tools listed here have had at least some validation in cancer patients. Table 1 highlights the parameters that make up each of the following validated nutrition screening tools.

MST

The MST consists of two questions related to recent unintentional weight loss and eating poorly because of a decreased appetite. The MST provides a score between 0 and 5, with patients considered to be at risk for malnutrition if they score ≥2 [19]. The MST has been validated in a range of settings and is one of the simplest nutrition screens; administration staff or the patient themselves can complete it. The MST was developed to identify patients at nutritional risk using the minimum parameters associated with nutritional status as determined by subjective global indicators.

MNA-SF

The six-item MNA-SF was developed from the original 18-item full MNA [24] for use as a nutrition screening tool for older adults. The MNA-SF consists of recent poor intake, recent weight loss, BMI, mobility, recent psychological stress or acute disease, and neuropsychological problems. The MNA-SF focuses on nutrition risk to determine appropriate interventions.

NRS-2002

The NRS-2002 was designed to include measures of current malnutrition as well as disease severity [22]. Scoring ranges from 0 to 6, with a score ≥3 indicating risk and requiring a nutrition assessment for potential nutrition intervention. The NRS-2002 has been validated against controlled trials of nutrition support in hospitalized patients and therefore should identify patients likely to benefit from nutrition support [22].

MUST

MUST also has been recommended as the screening tool of first choice for various groups of patients and settings and has become the most commonly used tool in hospitals and care homes in several countries [3]. The MUST is based on the extent of weight loss in the preceding 3 to 6 mo and current BMI, but in the case of hospitalized patients there is an additional component, the "acute disease effect," which is whether there has been or there likely is to be no dietary intake for >5 d. It is intended to identify those at risk for malnutrition and in need of nutritional support. It was developed for use in all care settings, facilitating continuity of care from one setting to another. Most of the validation studies involving MUST have included older people and many of these have included cancer patients in hospital inpatient, outpatient, and community settings, such as care homes. It also has been specifically validated in cancer patients [25].

Screening tool selection should take into account the different purposes for which the tool was developed (e.g., to predict outcomes, to identify malnutrition risk, or to treat nutritional problems), the user (e.g., nurse, dietitian, doctor,